A COMPARATIVE SURVEY OF REDUPLICATION IN AUSTRALIAN LANGUAGES

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Except where otherwise indicated, this thesis is the original work of the author.

G'day, I'm Burnum Burnum of the Wurundjeri people, who married a girl from the Yotta Yottas and had children at Wagga Wagga. My mother grew up close to Nowa Nowa, which is just near Mount Baw Baw. I've travelled to Goonoo Goonoo, Kwork Kwork, Yerri Yerri and Bulu Bulu, and once, at the Bong Bong picnic races, I backed a horse in the Melbourne Cup called Gatum Gatum.

Burnum Burnum's Aboriginal Australia, a Traveller's Guide. (1988:vii)

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Finally, I am indebted to my family and to many friends, in Canberra and in Brisbane, who continually supported and encouraged me.

Abstract

This thesis is a cross-linguistic study of reduplicative constructions found in a sample of 120 Australian languages. The study is based on an examination of reduplications in various languages, and a comparison of these particular constructions with aspects of the structure of the language in question. In this way, the role of reduplication in grammar may be clarified. This is especially relevant to Australian languages since reduplication is largely used to express 'grammatical' rather than 'lexical' meaning.

Chapter one provides an introduction to the aims and methods of the thesis. Chapter two discusses the phonological structure of reduplication in Australian languages by examining reduplication together with such phonological parameters as phonological word boundaries and stress patterns.

Chapter three characterises nominal reduplications and sets out to show that reduplication of 'nouns' and 'adjectives' can be distinguished on a semantic or conceptual basis, although formal grammatical differences between the two classes may rarely be evident in Australian languages.

Chapter four examines the variety of meanings which verbal reduplication may have, and shows a correlation between the types of meanings found and the role of reduplication in marking differences in verbal semantics in any one language.

Finally, the thesis ends with a summary of the findings in chapters two, three and four, some conclusions, and suggestions for further areas of study relevant to the current topic.

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List of Tables

List of Abbreviations and Symbols used in text.

Abbreviations

1	First Person
2	Second Person
3	Third Person
A	Transitive subject, Agent
ABL	Ablative Case
ACC	Accusative Case
ACT	Actual
ADD	Additional
ADJ	Adjective
ADV	Adverb
ALLA	Allative Case
ANTIP	Antipassive
AOR	Aorist Tense
ASP	Aspect
AUG	Augmented Pronoun
AUX	Verbal Auxiliary
BEN	Benefactive
BP	Body part
Br	Brother
C	Consonant
CARIT	Caritative
CAUS	Causative
CF	Counterfactual
Ch	Child
Chn	Children
CIRC	Circumstantial
COLL	Collective
CONJ	Conjugation marker
CONT	Continuous, Continuative Aspect
DAT	Dative Case
DEF	Definite
DELOC	Delocutive
DEM	Demonstrative
DT	Detransitivizer
DU	Dual Number
DUR	Durative Aspect
ERG	Ergative Case
EST	Established
EXCLAM	Exclamative
EXT	Extension
FF	Father's father
FM	Father's mother
FUT	Future Tense
GEN	Genitive Case
HABIT	Habitual Aspect
HD	Head
IMP	Imperative Mood
IMPF	Imperfective Aspect
INCEP	Inceptive
INCH	Inchoative
IND	Indicative Mood
INST	Instrumental Case
INTR	Intransitive verb
INVIS	Invisible
IRR	Irrealis Mood
LIG	Ligative

LOC	Locative Case
LOT	Lot of
MASC	Masculine
MIN	Minimal Pronoun
MM	Mother's mother
Mo	Mother
N	Noun
NC	Noun class marker
NEG	Negation marker
NEWSUBJECT	New subject marker
NOM	Nominative Case
NOML	Nominalizer
NONFUT	Non Future Tense
NPAST	Non Past Tense
O	Transitive Object
PA2	Past a2 class (Nunggubuyu)
PART	Participle
PARTIC	Particular
PASS	Passive
PAST	Past Tense
PERF	Perfective Aspect
PLU	Plural Number
PN	Person
POSS	Possessive
PRES	Present Tense
PRIV	Privative
PRO	Pronoun
PROC	Processive
PROG	Progressive Aspect
PROHIB	Prohibitive
PUNCT	Punctual
PURP	Purposive Case, Mood
QUANT	Quantifier
REAL	Realis Mood
REDUP	Reduplication
REFL	Reflexive
REP	Repetitive
S	Intransitive subject, Experiencer
SER	Serializer
SG	Singular Number
SS	Same Subject
SUB1	Subordinator class 1 (Guugu Yimidhirr)
TD	Traditional Dyirbal
TNS	Tense marker
TR	Transitive verb
TRSVR	Transitivizer
UAUG	Unit Augmented Pronoun
V	Vowel
VB	Verb
VBL	Verbalizer
VPART	Verbal Particle
YD	Young People's Dyirbal

Symbols:

[ ]	footnote
-	morpheme boundary
ʔ	glottal stop
ŋ	velar nasal
ɟ	lamino-palatal voiced stop

ɾ	retroflex continuant
ɲ	lamino-palatal nasal
ʎ	lamino-palatal lateral
n̲	lamino-dental nasal
l̲	lamino-dental lateral
r̲, ɾ̲	trilled or tapped apical rhotic
ṭ	retroflex voiceless stop
ḍ	retroflex voiced stop
ṇ	retroflex nasal
ḷ	retroflex lateral

Chapter One

Introduction: Aims and Methodology

1. Aims: why study reduplication cross-linguistically?

The current study focusses on the phonological, morphological and semantic structure of reduplications in Australian languages. As such, it relies on previous comparative studies of reduplication for its methodological principles, and on grammars of Australian languages for its corpus. The following section considers some methodological issues arising within this work.

Reduplication, as noted in Dixon (1980) and Dixon and Blake (1979:15), is a widespread phenomenon in Australian languages.

Cross-linguistic surveys of reduplication in the past have either surveyed a wide range of language families (for example Moravcsik 1978, Key 1965), focussed on a single family of languages (Haeberlin 1918 for Salish languages), or examined a single language in depth (for instance, Botha 1988 for Afrikaans). These studies have generally provided lists of different structural types of reduplication and their respective meanings. The present study takes a slightly different approach, in that I seek to study reduplication as part of the general morphological organization of the language in which it is found. This general principle frames the discussions to follow in later chapters in various ways. For instance, the data is presented alongside further relevant wider structural details of the language in question. In the chapter on phonological organization, for

example, the effects of reduplication are compared with other details of phonological structure such as stress patterning and phonotactics. The chapter on nominal reduplication compares reduplicative number marking with other types of number marking on nominals in noun class and non-noun class languages. The chapter on verbal reduplication discusses an interaction between the role of reduplication in verbal inflection vis-à-vis other means of marking aspect. Thus, the aim of this thesis is to compare reduplication not only across languages but within languages to see how it may interact with other parts of grammar.

The study of reduplication in Australian languages may make an important contribution to the wider arena of linguistic theory. As an empirical study, it provides data and interpretations of data which may inform linguistic theory by giving detailed characterizations and generalizations from the Australian language family.

2. Methodology

The data for this study was gathered mainly from grammars and grammatical sketches of Australian languages, as listed in Appendix One. The corpus consists of sample words and sentences, together with commentary from the source reference. The orthographic conventions of the original sources have been maintained rather than attempting to standardise the orthography. For the purposes of each of the chapters, additional information concerning the phonology, nominal morphology and verbal

morphology of the language was gathered from language descriptions as required.

A comparative study such as this one is always limited by the quality of its corpus. As one aim of the current work was to characterise as many languages as possible, about 120 different languages from across the continent were examined. These are listed and shown on the map (Appendix 11). This corpus represents a significant proportion of the languages of Australia for which detailed information on reduplication is available in published and otherwise readily accessible form. A special focus was placed on non-Pama-Nyungan languages, since these represent an area of typological and genetic diversity in contrast with the more geographically widespread Pama-Nyungan language family.

Some gaps remain in cases where data was not readily available until late in the production of this thesis. Arrernte (Wilkins 1989) and Mayali, a Gunwingguan language (Evans p.c.), are two languages with extensive and interesting reduplications both in their nominal and verbal systems. Neither language is included in any systematic way due to late access to material.

3. The data

This study examines mainly productive grammatical and lexical reduplication. The term 'productive' indicates that the apparent base of the reduplication occurs as a separate free form in the language with a more-or-less closely related meaning. Productive reduplication contrasts with lexicalised or 'inherent'

reduplication, the case where the apparent base of the reduplication does not occur as a free form in the language. Inherent reduplication is a very widespread process in some parts of Australia -- large data sets have been found for Yankunytjatjara, Arrernte and Warlpiri -- but since a large amount of data on productive reduplications was easily accessible from grammatical descriptions, the productive data was favoured. In addition, since the aim of this study was to seek wider generalizations on the place of reduplication in language systems, inherent reduplications provided no key to reduplication structure. In the case of productive reduplications, both base forms and reduplicated forms could be analyzed and compared. Data on inherent reduplication is easily accessible from computer dictionary databases, and the semantics of such reduplications would certainly provide a fruitful area of research for the future.

I use the term *reduplication* to refer to the situation wherein a complex word form in a language may be recognised as being made up of two parts which are identical or partly identical in phonological form [1]. Furthermore, the complex form constitutes a single grammatical word, and usually, though not always, a single phonological word. The distinction between the two types of word depends upon the use of several types of criteria to define a word. Phonological criteria such as stress patterning and phonotactic constraints define the phonological word.

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1. The structural specification is actually a little more complex than that, given the actual range of phonological types of reduplication occurring in the world's languages. Since, however, the phonological structures are not crucially at issue here, I will leave that question aside (but see Chapter two).

Grammatical criteria such as cohesiveness, the requirement that all parts of the one grammatical word occur together in the utterance, in a set order, define the grammatical word. In many languages these criteria will overlap (Yidiɲ being a notable exception; Dixon 1977); see also further discussion of the concept of 'word' in chapter two. Most of the discussion in chapter two will deal with the status of reduplications in terms of criteria which define the phonological word, rather than the grammatical word. The term *Phonological word boundary*, then, is to be understood as referring to a boundary within a grammatical word, which has some consequences for phonological structure, in terms of stress patterns, phonological rules or phonotactics, for example.

In defining a reduplication as a complex word form, I intend to exclude the following type of construction commonly found in texts (here from Nunggubuyu):

3.1. Nunggubuyu (Heath 1980c:18)

[ŋi -yama -yama: -ʔ] waŋi =ŋa -ŋ wangi=wa -ŋ
[NGARA-REDUP-do that-PA2] =eat-PA2 NGARA=hit-PA2
waŋi =wa -ŋ dum! dum! dum! waŋi=wa-ŋ
=hit-PA2 guip! =hit-PA2
It [mother python] kept doing that [to the two boys]. It attacked them, hit them, and ate them. It swallowed them.

The forms dum! dum! dum! constitute repeated tokens of the one verbal word, and thus separate grammatical words, and form a different structure from the word-internal reduplication *-yama-yama* at the beginning of the text portion. The former construction is often commonly called reduplication, but I will label it 'narrative repetition', on the basis of three structural criteria. First, the structure above is a complex formation

pattern usually restricted to predicates, whereas reduplication is theoretically available to any word class, open or closed [2]. Secondly, the number of repetitions in constructions such as 1.1 above is, in theory at least, open-ended, while reduplication as defined here is limited to two tokens (where one may be a partial token) of the same type. Thirdly, a reduplication may consist of one or two phonological words, within the one grammatical word, but narrative repetition always consists of separate phonological and grammatical words [3].

Reduplication is thus defined here as the partial or complete copying, to the left or right of, or internal to, the lexical root or stem, of some portion of greater length than a single segment. By this definition, the type of lengthening process in the final word of 3.2 is excluded from consideration:

3.2. Kaytej (Koch 1984)

eyle -l -eyle -l -arre-ranytye kwereee
pick.up-LIG-REDUP-LIG-go -PROG it.ACC+EXT
then they keep picking them (plums) up

The 'eee' suffix glossed as EXT is a lengthening of the final vowel of the word, with a raised and sustained pitch. Since this 'extension' process involves only a single segment being 'extended' or 'repeated' (note that the orthography is ambiguous on this), this process is not considered to be reduplication.

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2. Some cases of closed-class reduplication have been found in Australian languages. Yukulta (Keen 1983) allows personal and interrogative pronouns to reduplicate, expressing a 'collective plural' meaning.

3. I have found only one example of triplication in verbs: *dhutthutthut*, the triplicated form of *thut* 'descend'. I thank Michael Walsh for bringing this example to my attention.

A large proportion of the data in this study is from the major open word classes, nominal and verb. Several instances of reduplication in minor, closed word classes were identified. These include pronouns (Yukulta), directional prefixes (Yankunytjatjara), kin-dyadic terms (Mangarayi, Ngalakan) and noun markers (Dyirbal and Bandjalang). Since the two major chapters on nominals and verbs cover morphology and semantics, the data on minor word classes is mainly considered in chapter two (phonology).

Another category of excluded data is that of onomatopoeic words. Several instances of onomatopoeic reduplication have been cited in grammatical descriptions of Australian languages. These reduplications tend to be inherent rather than productive reduplications, and are thus excluded from the database on the grounds given above. However, they illustrate the use of onomatopoeia and imitation in Australian languages. The following examples are bird names in Yankunytjatjara. Goddard notes that there are many inherent reduplications in Yankunytjara, including the following (non-exhaustive) set of names "usually based on a conventionalized rendering of the bird's call" (1985:147).

3.3. Yankunytjatjara (Goddard 1985)

nyiinyii	*zebra finch*
mininymininy	*yellow-rumped thornbill*
tiiltiil	*magpie lark*
piilpiil	*yellow-throated miner*

Nor does the data include reduplicated language names such as Waga Waga, Gabi Gabi, Goreng Goreng (all from South-East Queensland), or Yabala Yabala, Yota Yota, Yitha Yitha (all from

Northern Victoria). These language names are all based on reduplications of the word for 'no' in the particular language, and such language naming is an areal feature of those two regions of Australia.

In addition, the terms for introduced animals, piki piki 'pig', gugi gugi 'chicken', and so on, which are found in many Australian languages, are not included. These reduplications again tend to be inherent rather than productive reduplications, and sometimes do not conform to general reduplicative patterns in the language.

4. Reduplication and other morphological processes

Having excluded various kinds of data from the corpus, it remains to provide a characterisation of reduplication. We have tentatively identified reduplication as a word-formation process, in which case it needs to be compared with other word formation processes such as affixation, compounding, and cliticisation.

In one of the classic expositions of linguistic theory, Sapir (1921) lists six main types of grammatical processes:

> word order; composition; affixation, including the use of prefixes, suffixes and infixes; internal modification of the radical or grammatical element, whether this affects a vowel or a consonant; reduplication; and accentual differences, whether dynamic (stress) or tonal (pitch). (1921:61)

This recognition of a difference between reduplication and all other methods of word-formation (or, as Sapir called them, grammatical processes) no doubt informed most structuralist

analysis of reduplication, and many treatments of reduplication of the time (such as Haeberlin 1918) make no attempt to relate reduplication to any other morphological process.

The Generativist paradigm, however, has recently sought to examine this classification more closely. Two theoretical issues involving reduplication have received attention in recent literature on Generative Morphology [4]. One issue is the nature of reduplication itself, the other its relationship to other parts of the morphological component of the grammar as conceived by generative linguistics. The theoretical position on reduplication which has become "more or less standard in current work" (Anderson 1988a:157, see also Marantz 1982, Bauer 1988, Yip 1982) is that reduplication may be united with affixation morphologically by decomposing the process into two constituent parts. The first is just affixation: affixation of a skeletal morpheme to an existing stem. The second process is the copying process: that which copies phonological and morphological information from the stem to the affixed skeletal morpheme. Since the latter process is part of the universal characterization of reduplication (in that it must apply to every language which exhibits reduplication, by definition), only the former process is subject to detailed specification in individual languages. Thus, a language may be specified to reduplicate

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4. The literature within generative morphology is now vast. Discussions such as Aronoff 1976 and Selkirk 1982 are focussed on English derivational morphology and compounding respectively. The issue of hierarchical structure in morphology is raised in Williams 1981, among others. Anderson 1988 provides a survey of the general issues raised within this framework. Scalise 1984 is an introduction to the conceptual and methodological framework of the model.

according to CV segments, according to syllable, or according to morphemes. The affixational process itself is the same across all languages, and hence reduplication is a distinct sub-process within affixation in general (Marantz 1982). Reduplication preserves its identity as reduplication due to the uniqueness of the copying process, which, by whatever means, attaches identical phonological material to the affixed skeletal morpheme. Later writers (Kitagawa 1987, Mester 1988) make different claims as to the placement of the reduplicate and its relation to abstract morphological operations such as Tier Conflation (McCarthy 1981) [5].

Assuming that reduplication is an easily identifiable, if complex, phenomena in many Australian languages, we will seek to identify its major characteristics. In order to do this, it may be useful to also characterise affixation, compounding, and cliticisation. Since this study is not a systematic comparison of morphological processes in Australian languages, my comments will be schematic, but, I hope, will still be sufficient to show similarities and differences between these processes.

To begin with reduplication, it is clear that, phonologically, reduplication operates upon a single base form of a word to produce a complex structure which contains two separable elements, one of which partially or wholly resembles the other in that it is made up of a set of segments in the same sequence. Thus, a form *pika* 'angry' in Yankunytjatjara is reduplicated to

5. This approach owes its origin to Autosegmental phonology, for which see Clements and Keyser 1983, McCarthy 1981, 1986.

form a longer word *pikapika* 'irritated, annoyed', which is easily recognised as comprising two instances of the original base. The form *olgomen* in Kriol, meaning 'old woman', undergoes a process of plural marking which produces the form *olgolgomen*. Here, the reduplication affects only part of the word (leaving aside for the moment how the reduplicate, the segment reduplicated, is to be defined). The (partial) identity between the two separable parts is one defining characteristic of reduplication.

Reduplicated words in Australian languages, as we have defined them, always constitute a single grammatical word. Only in nouns in the data were grammatical affixes found attached to both elements of the reduplication. Thus, in Warlpiri, where the allomorphy of the case suffixes depends on number of syllables, a disyllabic root case-marked for ergative such as *karnta-ngku* 'woman-ERG' would, if reduplicated, have the form *karnta-karnta-rlu*, with the appropriate suffix allomorph [6] attached to the reduplicated root, rather than the form **karnta-ngku-karnta-ngku* (Nash 1986). Note also that the *-rlu* form indicates the unity of the whole as a grammatical word. Furthermore, reduplication of a stem or root in Australian languages tends to occur adjacent to the root and not separated from the root by morphological material (the Arandic languages, such as Kaytej and Arrernte are an exception in this respect; but an analysis of Arandic reduplication as discontinuous is still a question for further debate).

6. The rule (Nash 1986:35) states that *-ngku* occurs after disyllabic roots, *-rlu* after roots of greater length. In Warlpiri, as in many other Australian languages, all monosyllabic roots are bound, and all words must have at least two syllables.

Semantically, reduplication in Australian languages is quite cohesive, as in other language families (Moravcsik 1978). In the case of nominals, reduplication may express plurality of various kinds or collectivity. 'Plural' in this context means 'non-dual non-singular', since reduplication is rarely used to mark duality. The only convincing cases of dual marking occur in the formation of dyadic kin terms in some northern languages, but even these terms may also have plural reference. With verbs, reduplication is used generally to mark aspect, more specifically, imperfective or durative/continuative aspect, rather than perfective aspect. The extent to which this process is grammaticalized in the language varies widely. Chapter four discusses this in greater detail. The semantic groupings with respect to reduplication are thus fairly transparent, but it is also evident that aspect marking in Australian languages is often performed by quite different morphological and syntactic devices, such as auxiliaries. While the semantic domain of reduplication is easy to characterise, it is not exclusive to reduplication.

Clearly, however, reduplication is most commonly used to mark concepts which may be considered more "grammatical" than "lexical", and in some cases, more "inflectional" than derivational" (Anderson 1985, 1988b, Bybee 1985). This is not to claim that reduplication will never mark lexical meaning; it clearly does. However, the tendency in Australia is for reduplication to mark productive grammatical meanings.

Affixation may be characterised as a 'process' attaching bound morphemes, forms which cannot occur alone as free forms, to forms

which may or may not occur as free forms (note in this respect Wurzel's distinction between word-inflection and stem inflection; Wurzel 1989). Together with the root to which they attach, they form a single grammatical word. In Australian languages, which are mostly agglutinative, the typical affixes are verbal inflections for tense/aspect, and, more systematically in Pama-Nyungan than in Non-Pama-Nyungan languages, nominal inflections for case. Affixes are typically monosyllabic, although disyllabic affixes do occur. Note that in Yidiɲ, disyllabic affixes begin with an internal boundary which is affected by phonological processes, and they tend to have 'derivational' type meanings, whereas the grammatical, inflectional affixes are all monosyllabic or consist only of syllable-closing consonants (Dixon's distinction between non-cohering and cohering affixes, Dixon 1977:90). A reduplication boundary is always a phonological word boundary in the same sense as the boundary before disyllabic affixes (ibid: 156).

A further phonological characteristic of affixes is that they may exhibit allomorphy. For example, many Pama-Nyungan languages have an allomorph of the Ergative suffix, marking A, of the form *-du*. The initial segment of this suffix assimilates in place of articulation with the preceding consonant of the root (Dixon 1980:317). Non-Pama-Nyungan languages also typically display a certain amount of allomorphy in their lexical stems, such that, for languages such as Tiwi (Osborne 1974) and Nunggubuyu (Heath 1984), systematic morphophonemes are posited within the noun class and tense markers.

Finally, affixes are not systematically identical or partially identical with the roots and stems to which they attach. There may be chance identities, but these are not generally found. The affix has a set of fixed forms, governed by certain conditions, whether grammatical or phonological. Affixes do not systematically copy their phonological material from the stem to which they attach [7].

In terms of morphological structure in many Australian languages, there are certain systematic positional features of affixes which serve to distinguish affixation from reduplication. First, inflectional prefixation, in the languages in which it occurs, does not often constitute part of a reduplication. Thus, in noun-class languages, where a set of prefixes mark noun class onto lexical stems, these prefixes will not form part of the reduplication. Reduplication will involve only the stem. Similarly, languages with extensive verbal prefixing, such as Nunggubuyu and Marithiyel, show reduplication only of the stem. Secondly, suffixes on nominals never occur as part of a nominal reduplication, as shown in the Warlpiri example above, and in chapter three in greater detail. Verbal suffixation may however occur as part of a reduplication under certain conditions. If the language has a general reduplication rule which requires disyllabic reduplication, and the language has monosyllabic verb roots, the syllable requirement will condition reduplication of the monosyllabic root and the next syllable of the stem, which will be some sort of affix (see further in chapter two). Thus,

7. A possible exception to this needs to be made in the cases of consonant and vowel harmony, and of phonologically conditioned allomorphy.

within the morphological component of the language, some provision will have to be made for the ordering of reduplication vis-à-vis affixation. Thirdly, Australian languages generally have several orders of affixes, suffixes and prefixes, which must occur in strict linear order, and result in a hierarchical structure within the word that reflects successive layers of affixation, usually of increasing semantic scope in the progression from inner to outer affixes. The extreme example of this is provided by Tiwi (Osborne 1974), with seventeen orders of affixes on the verb. This contrasts with the relatively free word order and 'flat' (non-hierarchical) phrase structure of Australian languages.

Finally, affixation has a wide range of inflectional, derivational, and even lexical meanings of greater and lesser productivity and semantic generality. Affixes may have semantic scope over whole phrases and clauses (see, for example, Dench and Evans 1988 on multiple case-marking in Australian languages). However, affixes are at the same time relatively fixed as to the surface category of their possible host word.

Compounding is another process in Australian languages which appears to be widespread and productive, as well as having general similarities across the continent. Compound nominals in Australian languages have been studied in depth by McFarlane 1987. The reader is referred to that work for further discussion of this topic [8].

8. Compounding has received attention in the literature on Generative morphology, especially in the work of Aronoff 1976 and Selkirk 1982. For a critique of the generative analysis of

Compounds may or may not constitute a single phonological word. That is, the two free forms combining to produce the compound may be more or less closely bound to each other. McFarlane 1987 reports that grammatical descriptions of Australian languages do not usually comment extensively on the phonological structure of compounds, and that it is often impossible to judge their phonological status (Nash 1986 is an exception).

Compounds are most distinct in terms of their morphological and semantic structure (McFarlane 1987:4-13). Compounds, by definition, are formed by the concatenation of two or more lexical stems, and, if more than two, the compounding will have a hierarchical structure [9]. Moreover, the two free forms are phonologically and semantically unrelated. Semantically, the compound will not constitute the sum of its parts. There are often metaphoric extensions associated with compounding, which give interesting insights into culture-specific conceptualization. This is not the case for reduplication, whose semantics, while clearly iconic, do not generally involve a metaphoric extension of the type found in compounds. This significant difference between reduplication and compounding lies in their semantics, as McFarlane (1987:12) points out:

> Reduplicated nominals ... cannot generally be considered as compound nominals on semantic grounds, in that reduplication is mainly used to express grammatical, rather than lexical or semantic concepts (while compounding is used only to express lexical concepts).

compounding from within the framework of Lexicalist Morphology, see Botha 1984.

9. Botha 1988:79ff reports on the hierarchical structure of compounds in Afrikaans, which he contrasts with the flat, non-recursive structure of reduplications.

Finally, we consider cliticisation (for an extensive typology of clitics, see Klavans 1980; clitics are also discussed in Zwicky 1977, Zwicky and Pullum 1983, and Carstairs 1981). The phonological characteristic of a clitic is that it coheres phonologically with its host word, that is, that it forms part of the same phonological word, while being at the same time a separate grammatical constituent. Clitics are defined as being of a different grammatical category to their host, and their host may be from any one of a number of grammatical categories. Zwicky and Pullum 1983 include this condition as condition A in their definition of clitics: "[c]litics can exhibit a low degree of selection with respect to their hosts" (1983:503). Clitics are 'non-selective', whereas affixes are 'selective' in the sense that affixes are usually attached to words or stems of a particular grammatical category, and not those of other categories. Dixon 1972 refers to clitics as 'universal affixes', a term which well describes their ability to cohere to host words of various kinds. This contrasts with reduplication, since, while seen as a whole, Australian languages may exhibit reduplication with a fairly wide range of word classes, any one language will at most have reduplication on nominals, verbs, and perhaps one other minor word class (in Nunggubuyu, for example).

Zwicky and Pullum also mention the prevalence of morphophonological alternations with affixes, but not with clitics. They state this as a tendency only, claiming that such alternations are "more characteristic of affixed words than of clitic groups" (ibid).

Semantically, a clitic, since it is of a different word class to its host, will express a meaning which has scope over a whole syntactic constituent, not just a single word, as is the case with, for example, compounding. This follows from its association "relative to adjacent syntactic constituents, rather than relative to (roots or stems belonging to) particular parts of speech" (Carstairs 1981:4, cited in Zwicky and Pullum 1983:503). Note that some verbal reduplications may express meanings which refer to the type of activity, as well as the number of participants. This is however, a different type of situation from the one described for cliticisation, since the clitic will often have propositional or illocutionary meaning. The reader is referred to Nash 1986:56 for a sample discussion of the types of clitics in an Australian language (Warlpiri); another Australian language with a system of pronominal clitics is Ngiyampaa (Donaldson 1980:124f); see also Dixon (1980:284-5).

In summary then, consider the following table which lists the phonological, morphological, and semantic characteristics of all of these processes in Australian languages.

	Compound	Affix	Redup	Clitic
phonology				
same phonol. word	+/−	+ (*)	+/−	+
free form?	+(both)	−	+(full) −(partial)	−
morphology				
same gramm. word?	+	+	+	−
same category both constituents?	+/−	−	+	−
semantics				
scope over word only?	+	+	+	−
co-occur with any category of word?	−	−	−	+
grammatical meanings expressed	−	+/−	+/−	+/−

Table 1. The features of reduplication, affixation, compounding, and cliticisation compared. (+ = yes, − = no, +/− = both possibilities found)
(*)In general, but for Yidiɲ, +/−

The table above shows that reduplication shares several features with affixation, and with compounding, but few with cliticisation. Reduplication, affixation, and compounding, however, differ in at least two ways. For example, as the table shows, a full reduplication contains two instances of one free form (Marantz's 'constituent copying'), whereas an affix is usually not a free form. Note that compounding and reduplication differ in phonological detail in that compounds consist of two free forms, but reduplications of two instances of one free form. Reduplication does not generally effect a change in grammatical category in Australian languages, while compounds may be exocentric as well as endocentric, although exocentric compounds are much rarer in Australian languages (McFarlane 1987).

5. Is reduplication inflectional, derivational, or neither?

Several criteria are usually given to distinguish inflectional from derivational morphology. These are discussed by Anderson 1985, 1988b and Bybee 1985. Anderson (1985:163) suggests the following:

> ...any process which involves a shift in word class between the basic and the derived forms (as for instance nominalization) could probably be called derivational, since it is rather far from the notion of inflection as 'completing' a form or integrating it into a larger structure.

However, this is not sufficient, since many derivational processes, especially in Australian languages, do not change word class, and no cases of reduplication changing word class occurred in my language sample [10].

Anderson suggests productivity as a supplementary criterion: an inflectional process will tend to be fully productive in the language, but a derivational one will be less productive (see also Aronoff 1976:35ff). However, many cases from familiar languages (English -ing de-verbal nominalizations, for example) counter this claim.

Finally, then, Anderson suggests that inflectional categories provide contrasts along the **paradigmatic** dimension. Thus, within a category of 'case' of nouns, a typical Pama-Nyungan language will have a set of core syntactic cases, being in the majority of

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10. Tsunoda 1981 does suggest reduplication can form adverbs from nouns in Djaru, however, and gives examples such as binga *creek*, bingabinga *along the creek*, and limbal *one's own*, limbal-limbal *separately*.

languages, ergative versus absolutive. In addition, and at the same place in word structure, there will be a set of syntactic peripheral cases, instrumental and dative/purposive, for example, and a set of local peripheral cases such as locative, allative, and ablative (Dixon 1980:293-301). Pama-Nyungan inflections, therefore, form a paradigm which in many languages is syntagmatically separate from a form expressing another meaning (alienable possession) commonly classed as a nominal case, the genitive [11]. Whether the Pama-Nyungan genitive is inflectional or derivational is a complex question (Dixon 1980:300; cf. Dench and Evans 1988).

Bybee 1985 acknowledges that no hard and fast criteria will be successful in separating inflectional and derivational morphology in the case of every language, and therefore the best that can be achieved is a characterization of the two types of morphology, and an admission that grey areas may well exist in between. The distinction between inflectional and derivational morphology is, according to Bybee, on a scale of greater to lesser relevance to the central meaning of the root to which the morphology applies. According to Bybee (1985:81), the "most successful criterion" with which to draw a line between the two "is *obligatoriness*" which, as Bybee notes, was first discussed in Greenberg 1954. This means that if some morphological category, the exponent of which is a discrete item or some type of process, is required by the grammar of the language, then that morphological category will be considered to be inflectional. Inflectional morphology

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11. Presumably because of an Indo-European bias in the theory and practice of the description of case systems.

is further characterised by the presence of paradigmatic organization, as Bloomfield (1933:223, cited in Bybee 1985) pointed out.

Derivational morphology, on the other hand, is characterised by optionality, as well as the type of meaning changes which Bybee calls "quite substantial". This means that derivational morphology is concerned with creating new lexical items, new items to which inflectional processes will then apply. Another important feature of derivational morphology is that such morphemes or morphological processes are often lexically restricted; they may apply to a small subset of words, whether that subset is defined phonologically, morphologically or semantically.

Reduplication occurs more commonly as a derivational process in Australian languages than as an inflectional process. Generally, in Australian languages, reduplication is not a choice in an obligatory system in the morphology of nominals. In verbs, there is a great deal of variation cross-linguistically. Only some languages could be said to have an obligatory reduplication process. This is discussed in detail in chapter four.

On the criterion of meaning change, while this is hard to quantify, it is relatively obvious that reduplication does make substantial, and semantically unified, contributions to the meanings of the roots to which it applies. Meanings such as number marking and formation of colour terms on nominals, and iterative/durative marking on verbs may be considered to be

substantial meaning changes when compared with case marking on nominals and tense marking on verbs, both of which are required for at least some functions in all Australian languages. Reduplication in the former case does appear to be contributing to the formation of new lexical items, while in the latter case these categories are considered to be canonical inflections.

Lastly, reduplication does appear to be lexically restricted in at least some languages. Chapter three discusses some lexical restrictions on number marking by reduplication in nominals. Chapter four shows that the presence of lexical restriction in verbal reduplication is quite rare, and that generally verbal reduplication is prominent and productive, especially in non-Pama-Nyungan languages [12].

Generally, Australian languages vary as to whether reduplication may be considered to be derivational or inflectional. In a large number of cases, reduplication does seem to tend to be derivational, but there are also languages in which reduplication may be seen as inflectional. These important cases will be discussed in chapter 4.

6. Structure of the present study

Each of the next three chapters of the study focus on phonological structure, nominal morphology, and verbal morphology

12. Ndjébbana is an exception to this generalization, having no synchronically productive reduplication, but much evidence of historically productive reduplication, as in: mandjamandja *whiskers, beard*, balawurrwurr *wind* (McKay, p.c.).

respectively. The chapters present a range of data and on that basis draw conclusions about reduplication in Australian languages as a whole. Chapter two, discussing phonological structure, presents a case for a systematic structural difference between nominal and verbal reduplication in Australian languages, and suggests a correlation between these different structures and the general phonological structure of nominal and verbal words themselves. This in turn suggests that reduplication preserves the phonological 'integrity' of the distinction between nominal and verb. Chapter three presents an analysis of nominal reduplication, covering noun and adjective reduplication and the semantics involved in each case. This chapter also considers the role of iconicity in productive nominal reduplications. In the second half of the chapter, entitled 'Noun versus Adjective revisited', I examine the arguments for and against a systematic formal and semantic distinction between the two classes in Australian languages. Chapter four surveys verbal reduplication, a process which is particularly rich semantically. I argue that, while most verbal reduplicative meanings may be seen as 'iconic' in one way or another, the relationship between different types of iconic meaning only becomes apparent when we examine the role of reduplication in the grammar of the language as a whole. This chapter argues that verbal reduplication will tend towards less clearly iconic meanings the more important its role is in marking aspectual meanings in the grammar. In this way, a clear correlation between semantics and structure is identified, a correlation not accessible from the vantage point of a single language. Finally, chapter five provides a summary of the findings of this study.

Chapter Two

The phonological structure of reduplication in Australian Languages

This chapter presents a description of the types of phonological structures found in productive reduplications in Australian languages. The comments here are based on an analysis of the phonological patterns of reduplicative constructions in forty-three Australian languages. The languages referred to in this analysis are listed in Appendix One marked with the symbol PHO.

2.1. Introduction

The aim of this cross-linguistic study is to examine the phonological patterns of reduplication in Australian languages, to establish major and minor recurrent patterns, and to seek out patterns which could logically occur but do not.

There are several theoretical and methodological considerations in this type of study. Firstly, although significant phonological patterns may well emerge, one would not expect the phonological structure of a reduplicative construction in an Australian language to vary widely from the patterns known to be possible in other language families. For example, it would be unusual to find a recurrent pattern of final reduplication of a segment defined as -VC(C), the syllable minus the onset, where the reduplicated segment constituted a separate phonological word, subject to its own word stress, for example. It seems to

be the case that reduplicative patterns defined in terms of segments smaller than the syllable (perhaps also those lower than two syllables) are unlikely to constitute phonological words separate from their bases. Reduplicative patterns defined in terms of the root or the root plus some affixal material are much more likely to constitute separate phonological words, at least in the case of Australian languages.

A second methodological consideration for this study concerns the nature of the database. A survey of this type is always limited by its corpus. It is not possible to know, without exhaustive knowledge of languages within the family that are not represented here, whether gaps in the data are real or are caused by the limits of the corpus. For this reason, the best a comparative study of this type can do is to balance the language corpus as much as possible according to geographical spread, typological characteristics, and, to the extent that subgrouping is established in Australia, genetic affiliation.

The corpus is also limited by the quality of information available on each language. In the Australian context, this quality varies widely. Scanty information is available on languages whose speakers experienced early and devastating contact with English-speaking people, while excellent comprehensive grammars and dictionaries have been compiled in the last thirty years on languages which are currently being spoken by Aboriginal people [1]. Consequently, in choosing the forty-three languages which eventually made up the sample, issues such

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1. On the history of the study of Australian Languages, see Dixon 1980:8-17.

as the availability of information, and its quality, had to be taken into account. Languages with less easily accessible data were examined, but not used for the phonological section of the survey, due to the difficulty (or near-impossibility) of extracting the necessary phonological detail.

This study, then, will set out to establish certain tendencies within Australian languages which may help those investigating reduplication in other as-yet unknown Australian languages. Its contribution will also be methodological, in that it will establish a method of investigating reduplicative constructions for close phonological detail cross-linguistically, a method which may then be applied to other language families.

2.2. Methods of analysis

In order to analyze and compare phonological data across forty-three Australian languages, and to discover the phonological patterns which occurred, it was necessary to construct a set of parameters to define the structural variation possible for reduplications. Four particular features of the reduplication pattern were found to be significant. These were:

1. word class
2. placement of the reduplicated morpheme
3. length of the reduplicated morpheme
4. presence or absence of a phonological word boundary

The values used in each parameter are listed in Appendix two. The first parameter, morphological word class, was used because it became clear that many languages had quite distinct patterns for reduplications in different grammatically-defined word classes. Moreover, there were found to be similarities in the

phonological structures of verbal reduplications as opposed to nominal reduplications across Australian languages. This aspect was incorporated into the study, and the results below will show that several patterns did emerge which were dependent on grammatical word class.

This claim forms the major part of the analysis below. 'Typical' nominal and verbal patterns of reduplication can be identified and described for Australian languages generally, just as a 'typical' Australian phonological system, phonotactic system, or case-marking system can be identified and described [2].

Another parameter used to classify reduplication patterns was placement of the reduplicated morpheme. Traditional analyses of reduplication make a distinction between initial, medial and final reduplication. This three-fold distinction is used here. While initial and final reduplication are common in the corpus, medial reduplication is relatively rare. In addition, there were certain cases of complete reduplication in which it was impossible to tell which part of the reduplicated word was to be considered the original and which the copy, and the choice did not seem to matter from the point of view of the phonology of the particular language. Since these cases could be analysed as either initial or final reduplication, they were classified as 'symmetrical' reduplications. For example, Dyirbal has complete

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2. The value of 'typical' frameworks is two-edged. On the one hand, it gives the investigator a guide as to what may reasonably be expected (as is the case in any area of linguistics, not just study of a language family). On the other hand, caution is needed if 'typical' definitions are not to act as blinkers to other possibilities.

reduplication of a noun root as a productive morphological process.

2.1. Dyirbal (Dixon 1972)

guda	*dog*
gudaguda	(lots of) *dogs*

One might argue that, in terms of morphological structure, the reduplicate is prefixed to the noun root, since only the second half of the reduplication is inflected for case and other types of marking. In terms of phonological structure, however, we do not have any way to decide which portion of the reduplication is the original and which the copy, since both parts of the grammatical word receive stress patterning identical to that of other single phonological words.

The 'length of reduplication' parameter included categories based on consonant and vowel segments, on syllables, or on morphological units. Some cases require both segments and syllables to be used in the specification. In Ngiyambaa, for example, the productive reduplication process (which has a different phonological form to the roots with inherent reduplication) copies the first syllable and the next CV, never reduplicating the syllable-closing consonant of the second syllable. The following examples are from this language:

2.2. Ngiyambaa (Donaldson 1980:72-3)

gulbir	*a few*
gulbi-gulbir	*around about a few*
baamir	*tall, long*
baami-baamir	*tallish, longish*

Several languages used different length patterns across different word classes. For example, Bandjalang has final whole root reduplication in nominals (according to Crowley 1978:34), but

monosyllabic or monosyllabic plus following CV- for verbal reduplication. Other languages showed more than one pattern within the one word class. This situation occurs most commonly when reduplication in the language is a process which, while transparent for certain word classes or semantic domains (for example, within nouns, in human age-sex terms as in Djaru and Nunggubuyu), is not fully productive within the word class, and idiosyncratic structures occur.

The fourth parameter used to describe the phonological structure of reduplication constructions was that of phonological word boundary. Discussions of the status in linguistics of the pre-theoretical concept of 'word' (eg Palmer 1971:41ff) recognise that at least three types of word need to be defined. As noted in chapter one, the phonological word is the unit of phonological structure over which certain generalisations of stress patterning, phonotactic constraints, and syllable structure can be seen to apply. The grammatical word is the unit of syntax, the form which enters into larger syntactic units. The semantic or lexical concept of the word is the conventional pairing of meaning and form such as is represented in a dictionary.

Using the criteria above for determining phonological word status, then, in the majority of cases it was possible to determine whether or not a word boundary was present between base and the reduplicate. Only three languages (Gumbaynggir, Maung, and Nyigina) exhibited ambiguity in this area. In the case of Nyigina, inherently reduplicated nominal forms (there is no productive nominal reduplication) attract a different stress

pattern to unreduplicated roots. but since Stokes argues that stress assignment seems to be determined by the status of the syllable, whether open or closed, rather than in terms of concatenations of syllables, it is not clear whether phonological word boundaries play a role in reduplications (Stokes 1982:33). If the phonological word status of the reduplicated construction was not stated explicitly in the grammar (as was generally the case), a deduction was made on the basis of independent phonological parameters such as stress patterning, phonotactic constraints, and the operation of phonological rules. For example, if a language disallowed certain consonant clusters within words but allowed them across reduplication boundaries, the status of the reduplicative construction is clearly that of two phonological words (which may or may not be equivalent to compounding phonologically). Another type of potential distinction occurs in Martuthunira (Dench 1987a:79) where in terms of intonation and stress patterns, trisyllabic reduplications behave similar to words in apposition, in contrast to disyllabic reduplications. Similarly, a phonological rule may operate within the base and reduplicate of one reduplicated word, even though the phonological environment for the rule does not obtain for both parts of the reduplication, suggesting that the complex word is 'transparent' for the purposes of phonological rules. Marantz 1982 discusses these apparent over-applications of phonological rules (following Wilbur's discussion of them, Wilbur 1973), since they suggest that reduplication may need to be ordered either as part of or after the phonological rules. In the current conception of the organisation of grammar, this would mean that reduplication could not be a canonical morphological

rule. In all cases cited by Wilbur, however, Marantz claims that the rule in question is found to be a morpho-lexical or allomorphic rule, and not a phonological rule at all. The data from Ngawun (discussed below) support Marantz's claim in this respect.

Having defined the parameters and their values, the next stage in the analysis was to determine trends of co-occurrence which were present. In order to do this, I decided to code the different values within each parameter, and to set up a computer program which would compare and count patterns. Each pattern of reduplication within a language was allocated a code which represented the four parameters in turn [3]. This was then prefixed by a two-digit language identification code (based on an alphabetical list), to give a unique number for each reduplicative construction within each language, and to enable identification of the code with a particular language. This also meant that doubled-up patterns within the one language would be ignored in determining the frequency of the particular pattern across the language sample. The data is listed in Appendix three.

At this stage of the analysis, I was not concerned with the relative productivity of the patterns within each language. This study set out to establish only occurrences and non-occurrences. There was no attempt to weight each pattern according to its productivity in the grammar. Perhaps this aspect of the analysis could be carried out in future, in order to give an absolute

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3. The values within each column are listed in Appendix Two.

frequency scale rather than a scale based on instances across languages.

By coding the data in this manner, I obtained 130 codes for 43 languages. These were then analyzed using a computer program to find significantly occurring sequences within any combination of columns. The data was searched for one, two, three, and four columns at once. The cut-off points were kept low so as to not exclude any interesting co-occurrences.

Once the significantly occurring sequences were established and analyzed, the non-occurring sequences were established to determine whether any interesting gaps in the data occurred. These gaps will be examined briefly in the later part of the discussion.

2.3. Analysis

The first part of the discussion will be concerned with the independent frequency in terms of languages of the single values of each of the five parameters. Section 2.3.2 will present tables which show the more common and less common 'profiles' of nominal, verbal, and closed class reduplications. Full details of the data are given in Appendix three.

2.3.1. Single parameter frequencies

In the discussion below, we will briefly examine the relative frequency of each value within a parameter.

2.3.1.1. Word class

The following table indicates the occurrence of reduplications by word class within the forty-three languages in the sample.

Number of cases	Value
34	nominal reduplication
31	verb reduplication *
5	verbal auxiliary/ particle/ preverb reduplication
4	adjective reduplication **
4	adverb reduplication
2	noun marker reduplication

Table 1. Single parameters: Word class
* 24 languages have both nominal and verb
** a separate morphological class from nouns

As the table above shows, nominal and verbal reduplications are found in most languages in the sample. Several languages show reduplication of lesser word classes, and some of closed class items [4]. The types of construction listed here under categories such as nominal and verbal reduplication are quite diverse in their other phonological characteristics. However, within that diversity, several coherent patterns emerge. To anticipate the discussion below, it is very common for languages to have distinct and distinctive patterns for nominal and verbal reduplications, even if they have reduplications in no other word class. Some examples from Dyirbal show this:

3.1. Dyirbal (Dixon 1972)

miyaburmiyabur	*(three or more)black oaks*
guŋgagaguŋgaga	*kookaburras*

3.2. Dyirbal (Dixon 1972)

bani-ɲu *come-*NONFUT	banibani-ɲu *come* too far-NONFUT
miyandaɲu *laugh-*NONFUT	miyamiyandaɲu *laugh more than is appropriate-*NONFUT

4. In addition, Yidiɲ (Dixon 1977:227), Kaytej and the Arandic languages have reduplicated affixes (generally regarded as derivational rather than inflectional affixes).

Nominal reduplication in 3.1. is full reduplication of the noun root, and, if we examine the phonological structure a little more carefully, we find no reason to consider one part of the nominal reduplication more likely to be the base form. Thus, this is classed as symmetrical reduplication, which in addition has no word boundary present. Verbal reduplication, on the other hand, is prefixing, and involves only the first two syllables of the form. These particular formal patterns are widespread across the sample of languages surveyed here.

2.3.1.2 Placement of reduplication

Number of languages	Value
24	initial
20	symmetrical
11	final
5	medial

Table 2. Single parameters: Place of reduplicated morpheme

Initial reduplication occurred in several more languages than the next most common type of reduplication, symmetrical reduplication. As we will see below, initial reduplication correlates strongly with verbs, while symmetrical reduplication is a particular feature of many nominal reduplications. Final reduplication occurred in eleven languages, while medial reduplication appeared in only five languages in the sample (also found in Mudbura and Gurindji, languages not included in the sample (David Nash, p.c.)). One pattern of medial reduplication occurs in Yir Yoront, where the vowel within the stem is reduplicated with a consonant /l/, either single or geminate, intervening:

3.3. Yir Yoront (Alpher 1973:266-7)

ken-	*cough*	kelen	*cough-CONT NPAST*
parŋ-	*blow*	palarŋ	*blow-CONT NPAST*
ṯun-	*stand*	ṯullun	*stand-CONT NPAST*

Final reduplication appears to be spread between nominal and verbal reduplication, unlike the more common placement types, symmetrical and initial, which favour nominal and verbal reduplication respectively.

2.3.1.3. Length of reduplication

Number of cases	Value
28	root or stem [5]
18	two syllables
12	one syllable or CV
8	one syllable plus following CV

Table 3. Single parameters: Length of reduplicated segment

The three most commonly occurring types of lengths of reduplication are root reduplication, and one-or-two syllable reduplication. Root reduplication is reduplication defined in terms of morphemes and morpheme boundaries, while the other two reduplication lengths are defined in a fundamentally different way, that is, in terms of syllables. The first is an instance of a reduplication pattern which refers to the morphemic structure (or tier, to use an autosegmental term), without reference to syllabic structure, (although often syllabic structure may have implications for the form of the reduplication [6]). Likewise,

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5. Root will be used in the discussion in the rest of the chapter. It should, however, in certain cases (mostly verbal reduplications) be understood to include compound roots or derived lexical stems. I will indicate in the text where this is so.

6. This occurs in Martuthunira, where reduplicated disyllabic roots do not contain a word boundary between the base and the reduplicated morpheme. There is, however, some

the second type of length definition, in terms of syllables, makes no reference to morphemic structure, and thus may copy part of a morpheme, or copy phonetic material from both sides of a morpheme boundary. One interesting case is that of Ngiyambaa, which has regular reduplication throughout its nominal and verbal system, all conforming to the pattern of reduplicating the first syllable plus the following CV. This poses no problem for disyllabic and polysyllabic roots. In many languages with **monosyllabic** roots (verbs only in Ngiyambaa, and some other Australian languages), the pattern of reduplication will change for these forms, and monosyllabic reduplication will apply. This means the reduplication pattern is taking its base from the morphemic tier (Marantz 1982). This is not the case in Ngiyambaa. As Donaldson notes, "[i]t proved impossible to elicit reduplicated forms of any monosyllabic verb roots" (1978:198). However, transitive monosyllabic roots can become derived intransitives (reflexives, for example), and thus become polysyllabic. In this case it is possible to reduplicate the first two syllables, consisting of the root plus a derivational affix. Thus:

3.4. Ngiyambaa (Donaldson 1980)

ŋa:gi-ŋa: -gi -ɟili-ɲa=na
REDUP-look-RECIP-REFL-PRES=3ABS
She's stealing a look at herself in the mirror

In autosegmental terms, the reduplication pattern in Ngiyambaa uses the syllabic tier right throughout the language to define the reduplicated element.

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phonological evidence suggesting that reduplicated trisyllabic roots form two separate phonological words (Dench 1987:79).

2.3.1.4. Presence or absence of phonological word boundary

Number of cases	Value
38	phonological word boundary not present
10	phonological word boundary present
3(*)	data not sufficient to judge

Table 4. Single parameters: word boundary; (*) Maung, one pattern only.

The table above clearly shows that the majority of Australian languages form reduplicated constructions, which, like their bases, constitute single phonological words. Only in Gumbaynggir and Nyigina was it not possible to determine the status of the reduplicated constructions as phonological words. In Maung this applied to one pattern of verb reduplication. Evidence used to detect the presence of a word boundary was discussed in section 2.2 above.

2.3.2 Nominal and verbal reduplications.

In this section, we will present the major findings of the chapter in the form of 'typical' profiles of nominal and verbal reduplication. Based on a sample of forty-two languages, the following recurrent characteristics of major word-class reduplication have been identified.

2.3.2.1 Nominal reduplication in Australian languages

The following list gives the major structural patterns of nominal reduplication in order of frequency.

MOST FREQUENT	**1.** Symmetrical root/stem reduplication, no word boundary present: 12 languages, plus 2 with word boundary present, Total 14 languages
	2a. Initial disyllabic reduplication: 5 languages
	2b. Initial one syllable plus CV: 3 languages
	Total 'disyllabic': 8 languages
	3. Initial monosyllabic reduplication: 5 languages, plus 1 language VC (Kriol), 1 language CV (Tiwi), total 7 languages
LEAST FREQUENT	**4.** Medial reduplication: 3 languages (on adjectives only in Uradhi)

Table 5. The profile of nominal reduplication (note that some languages exhibit patterns with only one or two occurrences overall, not included here. See the data in full in Appendix 3).

Nominal reduplication is overwhelmingly either initial or symmetrical. Of the symmetrical noun reduplications, all reduplicate the whole root. Within languages showing initial nominal reduplication, it is most common for the reduplicated segment to be defined in terms of syllables, evenly split between disyllabic and monosyllabic lengths. Many languages have no phonological word boundary present between the root and its reduplicate, regardless of the length of the reduplicate.

1. Symmetrical reduplication

We will now proceed to exemplify and discuss these various patterns for nominal reduplication. The most fully productive nominal reduplication pattern is symmetrical reduplication of the

whole root, which occurs in the following fourteen languages. All of these languages are (with the interesting exceptions of Kayardild and Yukulta, members of the Tangkic subgroup) Pama-Nyungan:

Arrernte	Djaru	Dyirbal [7]	Kayardild
Kuku Yalanji	Margany	Martuthunira [8]	Pitta Pitta
Ungarinyin	Victorian [9]	Warlpiri	Watjarri
Yankunytjatjara		Yukulta	

Of these, twelve languages show no phonological word boundary present. Some of the languages will now be discussed in detail.

The productive pattern of noun reduplication in Arrernte is symmetrical root reduplication. Wilkins gives the following examples:

3.5. Arrernte (Wilkins 1984)

therrke	*general term for useless green plants [weeds]*
therrke-therrke	*green*
lyeke	*thorn, prickle*
lyeke-lyeke	*thorny, prickly*
atnerte	*stomach*
atnerte-atnerte	*pregnant*
impatye	*an animal track or print*
impatye-impatye	*lots of different kinds of tracks*
aperle	*grandmother (FM)*
aperle-aperle	*grandmother (FM) affectionate*
irrkaye	*invisible*
irrkaye-irrkaye	*faded*

---

7. Dyirbal has a phonological word boundary present between the two parts of the reduplication.

8. Martuthunira probably has a phonological word boundary present within reduplications of trisyllabic roots (but not within reduplications of disyllabic roots).

9. By 'Victorian', I refer to the three dialects of the large Western Victorian language described in Hercus 1986: Madi-Madi, Wergaia and Wemba Wemba.

These are clearly one word reduplications because (a) they take a single word stress on the first element, and (b) when the base form begins with a vowel, the final vowel of the base (always /e/) is not pronounced before the vowel of the reduplication. The following minimal pair is attested in Arrernte (Wilkins 1984:17):

3.6. Arrernte (Wilkins 1984:17)

iperte-iperte		*rough of roads, holey, corrugated*
iperte	iperte	
N	Adj	*a deep hole*

Wilkins gives no indication as to whether this process resembles any other word-formation process in the language.

In Yankunytjatjara, also, this process is productive. The following examples show cases in which the root is capable of standing alone as an independent word, and the reduplicated form has a meaning which is clearly related to the reduplicated root. Goddard (1985:145) gives the following examples [10]:

3.7. Yankunytjatjara (Goddard 1985)

kulpi	*cave*	kulpikulpi	*sort of cave, a small cave*
purtju	*rash*	purtjupurtju	*itch*
ngura	*camp*	ngurangura	*a temporary camp*

In Watjarri this process does not seem to be morphologically productive. Douglas (1981:212) claims complete reduplication may extend the root meaning of certain nominal roots. The examples in 3.8 illustrate this process in Watjarri.

10. See the Pitjantjatjara/Yankunytjatjara Dictionary for many more examples.

3.8. Watjarri (Douglas 1981)

mili-mili	*north*	mili	*a light*
munga-munga	*evening*	mungal	*morning* [11]

Reduplication of nominals is a far more extensive and much more transparent process in Warlpiri than in Watjarri. Human reference nouns form plurals by reduplication of the entire root. Nominal reduplication in Warlpiri is phonologically complex because of the following morpheme structure conditions which apply to phonological words. Firstly, long vowels may generally appear only in the first syllable of the word, and those forms which are exceptions to this generalization are all, bar one, reduplications. Secondly, a morpheme does not contain the sequence iCu, unless the C is /p/ or /w/, or unless the sequence occurs thus: i+Cu where + is a morpheme boundary, such as a reduplication boundary. 3.9 shows some examples of reduplicated Warlpiri nominals; note the iCu sequence in the first example.

3.9. Warlpiri (Nash 1986)

rdulpulpari	*prominent hillock*
rdulpulparirdulpulpari	*undulating country*

kurdu	*child*	kurdukurdu	*children*
kamina	*girl, maiden*	kaminakamina	*girls*
rduju	*woman*	rdujurduju	*women*

Topographic terms are another semantic domain within the class of nominals which undergo the same regular process:

3.10. Warlpiri (Nash 1986)

yaturlu	*rock, boulder*
yaturluyaturlu	*rocky country*
rdaku	*1. hole in the ground, 2. deep, 3. flesh wound resembling a hole*
rdakurdaku	*bad holes in the ground, bumpy*
marluri	*claypan*

---

11. Munga *night* occurs in Western Desert.

marlurimarluri *several separate claypans on a single plain*

One southern Queensland language, Margany, shows a similar type of reduplication to Warlpiri in the derivation of colour terms and other attributives.

3.11. Margany (Breen 1981a)

gud̲igud̲i	*red*	from gud̲i	*red ochre*
bud̲abud̲a	*white*	from bud̲a	*ashes*
makamaka	*bony*	from maka	*bone*

In Kuku Yalanji (Patz 1982:91) a quite disparate group of nominals form general plurals by reduplication of this type.

3.12. Kuku Yalanji (Patz 1982)

wulman-wulman	*old men*
kangkal-kangkal	*own children*
kumu-kumu	*mosquitoes*
juku-juku	*trees*
bilngkumu-bilngkumu	*saltwater crocodiles*

Dyirbal also has root or stem reduplication. In Dyirbal, however, in constrast to most Australian languages, stress patterning shows that a phonological word boundary is present between the reduplicated morpheme and the base. Stress is indicated on the example in 3.13. (' marks the beginning of a primary stressed syllable). The second primary word stress on the third syllable indicates the beginning of a new phonological word, although the reduplicate is still part of the same grammatical word, given the allomorphy of the ergative suffix here: -ŋgu on disyllabic stems, -gu on stems of more than two syllables. If the word boundary were not present, a non-final third syllable would receive secondary, not primary, stress.

3.13. Dyirbal (Dixon 1972:242)

'ɲalŋga-ŋgu
girl(s)-ERG

'ɲalŋga'ɲalŋga-gu
girls *-ERG*

Other examples of nominal full root reduplication are found in Djaru and Kayardild.

3.14. Djaru (Tsunoda 1981:234)

jambi	*big*	jambijambi	*very big*
gunga	*dead*	gungagunga	*dead in large numbers*
guda	*short*	gudaguda	*short ones*
bulga	*old man*	bulgawulga	*old men* [12]

3.15. Kayardild (Evans 1985)

kandu	*blood*	kandukandu	*red*
junku	*straight*	junkuyunku	*in return, in retaliation*
murruku	*woomera*	murrukumurruku	*bellicose, with hostile intent*

2a. Disyllabic reduplication

Aside from root reduplication, other productive patterns of nominal reduplication occur in the languages surveyed. Initial nominal reduplication, of either one or two syllables in length, occurred in several languages.

Initial disyllabic reduplication not involving a word boundary is a common process in several languages, as the following discussion shows.

In Kriol, initial disyllabic reduplication occurs in the plural of some nouns.

---

12. /b/-> [w] / V+_V is a morphophonemically conditioned sound change in Djaru, applying just to one dialect of Djaru (see also examples of Djaru verb reduplication below). Note the mixture of meanings involved in these nominal reduplications; for further discussion see chapter three.

3.16. Kriol (Sandefur 1979)

wangulubala	*orphan*	wanguwangulubala	*orphans*

In Mara, nominal reduplication is somewhat restricted in scope, verbal reduplication being much more common. Certain human nouns and topographical terms reduplicate to form plurals. Reduplication is also used with the 'having' nominal derivation, *-ya* (3.19). Examples of all three types of constructions are included. Note that some of these reduplications seem to be root reduplications; if so, Mara is a language with two different types of length specification (see the reanalysis of Mangarayi verb reduplication below, however). The data is not extensive enough to decide if one or two length specifications are required.

3.17. Mara (Heath 1981)

jawulba	*old person*	jawu-yawulba [13]	*old people*
njiwa	*widow*	njiwa-njiwa	*widows*

3.18.

ŋargu	*billabong*	ŋargu-ŋargu	*billabongs*
l̩ul̩ga	*island*	l̩ul̩ga-l̩ul̩ga	*islands*

3.19.

giriya	*woman*	giri-giriya-ya	*married man*
murji	*hand*	murji-murji-ya	*scorpion*

The first example in 3.17 shows that the syllable-closing consonant /l/ is not reduplicated.

The following examples from Ungarinyin are also somewhat unclear as to whether the reduplication is being defined in terms of syllables or morphemes.

---

13. The /y/ segment occurs intervocalically by productive phonological rule.

3.20 Ungarinyin (Coate and Oates 1970)

njindi-njindi	*she's the one*
njindi	*this woman*
ganda-ganda	*right here*
ganda	*here*
mindi-mindi-jali	*that's the place* (also **mi-mindi**)
mindi	*place*
marga-marga	*tribal brothers*
marga	*tribal brother*

2b. One syllable plus CV reduplication

While disyllabic reduplication occurs in several languages, a variant on this, one-syllable plus following CV reduplication also occurs in some nominal reduplications. It has been found in Ngiyambaa, Waray, Diyari and Nunggubuyu. Initial nominal one-syllable-plus-CV reduplication is a productive process in Nunggubuyu. Heath writes:

> "For nouns, the regular grammatical function of reduplication is [three or more] plural marking. This function is found with a large number of adjectival nouns (NAdj), and hence with translation equivalents of many English human nouns (other than kin terms and personal names)" (1984:193).

The following are examples:

3.21. Nunggubuyu (Heath 1984:193-4)

lhalmar	*foreigner*
lhalma-lhalmar	*foreigners*
r̲unggal	*big*
r̲unggu-r̲unggal	*big ones*

As the examples above show, the final -C of the second syllable is not reduplicated. Note also the operation of vowel change in the reduplicated segment. Heath makes no comment on a vowel harmony rule in Nunggubuyu.

3. 'Monosyllabic' reduplication

While examples of intial 'monosyllabic' (including CV-, and VC-

patterns [14]) reduplication of nouns are rare, a few languages do show this pattern. Maung, according to Capell and Hinch (1970:43) has initial monosyllabic reduplication. They give one example of a reduplicated nominal which has a plural meaning. As only one example is given, however, it is not possible to determine if the proper structural description is VC- or one syllable. *Dja* and *bada* are class prefixes indicating masculine and human plural respectively.

3.22. Maung (Capell and Hinch 1970)

dja arargbi	*the man*	bada ararargbi	*mankind*

Monosyllabic nominal reduplication in Nunggubuyu is similarly restricted. Examples are given in 3.23 and 3.24 below:

3.23. Nunggubuyu (Heath 1984:38)

yi-yilg	*silly ones*	from	yilg	*silly*
ba-ba<u>d</u>irinya	*ghosts*	from	ba<u>d</u>irinya	*ghost*

3.24.

ma-mama<u>r</u>	*empty ones*	from	mama<u>r</u>	*empty*

Note that the form in 3.24 is ambiguous since *ma-* may be a reduplicate, but is also one allomorph of the class prefix morpheme *mana-* [15].

A handful of nouns in Ritharngu indicate multiplicity by reduplication. One monosyllabic example is the following:

3.25. Ritharngu (Heath 1980a: 22)

yu-yu<u>t</u>u	*all the small ones*	yu:<u>t</u>u	*small*

---

14. These are distinct types of reduplication in Marantz's terms since one relies on syllables, the other on CV segments. However, given their rarity in Australian languages, Ihave considered them together.

15. A non-human noun class used to mark, among other things, containers or vehicles (Heath 1984:188).

Only one example of initial monosyllabic reduplication (indicating plural) is given for Ungarinyin, a language with noun classes. Rumsey 1982 makes no comment on this.

3.26. Ungarinyin (Coate and Oates 1970)

banmaṇ *magician* ban-banmaṇ *magicians*

The following are also examples of initial reduplicated nominal roots.

3.27. Ungarinyin (Coate and Oates 1970:23)

mi-mindi	*that's the place*	from **mindi** *place*
dji-djiri	*that's the man*	from **djiri** *man*
di-di	*that's it*	from **di** *it*

Nominalisations in Mara are derived from verbal roots of one syllable by reduplication of initial CV-. This is a more productive process than in the languages above. Thus:

3.28. Mara (Heath 1981:285)

yab	*to steal*
yayab	*thief, one prone to stealing*

The striking fact about the initial 'monosyllabic' type of reduplication is its relative unproductivity, although it does occur as a semantically transparent process (that is, it signals the same kind of meaning as other reduplication lengths in the same language). We might speculate that, given that the tendency in Australian languages for nominal roots to be fully reduplicated, the rarity of monosyllabic nominal roots relative to polysyllabic roots in many languages could account for the infrequently attested monosyllabic nominal reduplication.

4. Medial reduplication

Finally, medial reduplication in nouns occurs in Djingili:

3.29. Djingili (Chadwick 1975)

jabandja	*young one*
jababandja	*young ones*
maḷuga	*old man*
maḷaḷuga	*old men*
biṇmiriṇi	*single girl*
biṇmiṇmiriṇi	*single girls*

The second form, maḷuga, provides a test case for our claim that this reduplication is infixed. If the reduplication were simply initial monosyllabic reduplication, the form would be *mamaḷuga. The most general analysis is to treat these reduplications as infixation of VC(C) or V(C)C after the first CV(C)C.

2.3.2.2. Verbal reduplication in Australian languages.

We turn now to the description of verbal reduplications.

MOST FREQUENT

1. Initial disyllabic reduplication, no word boundary present: 7 languages, plus one syllable plus CV, 7 languages, plus reduplication of stems (root plus morphemes) according to syllabic definition, 2 languages, Total 16 languages
2. Symmetrical root reduplication: 9 languages, initial root reduplication: 2 languages, Total 11 languages
3. Initial monosyllabic reduplication: 5 languages, plus CV-, 1 language, Total 6 languages.
4. Final reduplication, 6 languages

5. Root plus morphemes reduplication: morpheme-based or syllable-based?: 3 languages	
6. Word boundary present: 3 languages	

Table 6: The profile of verbal reduplications
Note: many languages exhibit more than one reduplication pattern on verbs; see Appendix three.

Whereas nominal reduplications in the sample of Australian languages are split between initial and symmetrical reduplication, verbal reduplication is more commonly initial than symmetrical or final. Initial disyllabic reduplication (including one syllable plus following CV) is more common than initial monosyllabic reduplication. Symmetrical verbal reduplication is also quite common, occurring in nine languages. Final verbal reduplication occurred in six languages. Overall, in verbal reduplications, reduplicates defined in terms of syllables are more common than those defined in terms of morphemes. This contrasts with nominal reduplication, which was evenly split between syllable-defined reduplicates and morpheme-defined reduplications.

1. Initial 'disyllabic' reduplication

The most productive pattern within verbal reduplications is initial disyllabic verbal reduplication, with no boundary present. The languages which show initial disyllabic (or one syllable plus CV) verbal reduplication are a mixture of Pama-Nyungan and non-Pama-Nyungan languages:

Bandjalang	Diyari	Djapu	Dyirbal
Mara	Ngiyambaa	Nunggubuyu	Nyigina
Rembarrnga	Ritharngu	Waray	Yanyuwa
Yidiɲ	Yukulta		

Bandjalang, for example, reduplicates the first syllable and the following -CV in verbal reduplications most commonly. Monosyllabic verbs reduplicate only the first syllable, without vowel length being repeated:

3.30. ɲaa *see* --> ɲaɲaa

Vowel length is never reduplicated in verbal reduplications, although it may be in some nominal reduplications. Reduplication is productive in Bandjalang, as suggested by the range of semantic values which reduplication may have. The following sentences show just some of these.

3.31.Bandjalang (Crowley 1978:84)

mani ga:ɲ baramga:-la gulgan-da
kangaroo-S these-S jump-PRES road-LOC
These kangaroos are jumping on the road.

mani ga:ɲ bara-baramga:-la gulgan-da
kangaroo-S these-S REDUP-jump-PRES road-LOC
These kangaroos are jumping about all over the road.
(DISTRIBUTED PLURAL)

3.32.

mali-yu buma-ni mala daba:y
that-A kill-PAST.DEF that-0 dog-0
He killed that dog.

mali-yu buma-buma-ni mala daba:y
that-A hit.about-PAST.DEF that-0 dog-0
He hit that dog about. (ATTENUATION)

3.33.

guna: dandaygam bala:ya-ni
this+invis+S old.man-S die-PAST.DEF
The old man has died.

guna: dandaygam-bi:n bala-bala:ya-ni
these+S old.man-PL+S REDUP-die-PAST.DEF
The old people are all dead.

Dyirbal is a similar case of thoroughly productive reduplication in verbs. The final syllable-closing consonant of the root may (optionally) appear in the reduplication prefix only if it occurs unchanged in the final form of the verbal word (Dixon 1972:251). Thus, four different phonological forms of the reciprocal of

baɽan *punch* were noted by Dixon. Reduplication boundaries are indicated by +:

3.34.
baɽan
punch

baɽa+baɽal-nbari-ɲu
baɽal+baɽal-nbari-ɲu
baɽan+baɽal-nbari-ɲu
baɽaln+baɽal-nbari-ɲu [16]

REDUP+punch-RECIP-NONFUT
punch each other

These forms differ as to whether the conjugation marker l is included in the initial reduplication or not.

The meaning of verbal reduplication in Dyirbal is similarly consistent. In each case, reduplication indicates an action done to excess, done to an inappropriate degree. Reduplication is optional (and derivational, not inflectional) except in reciprocal roots which reduplicate as well as taking a derivational suffix, as shown above [17].

Rembarrnga also shows productive initial disyllabic reduplication. If the stem form is monosyllabic, the vowel of the stem will be reduplicated after the stem syllable copy, effecting a disyllabic reduplication (assuming it to be prefixed along with the reduplications deriving from polysyllabic stems).

---

16. Dixon notes that the additional [n] here is due to a phonological rule.

17. An interesting feature of Young People's Dyirbal is that speakers of YD at the middle of Schmidt's continuum from TD to most English-affected YD have lost the {-(n)baɽiy} reciprocal suffix, which combines with obligatory reduplication in TD, and instead use the reflexive suffix {-yiɽiy} together with root reduplication, and **obligatory number marking** (which is not required in TD) (Schmidt 1985:70).

A regular change ŋ>y occurs intervocalically in the fifth and sixth examples below.

3.35. Rembarrnga (McKay 1975)

Polysyllabic:

taŋaṛa --> taŋa-ttaŋaṛa
stand TR + FUT

petpun --> petpu-petpun
climb + PRES

pimpun --> pimpu?-pimpun
write + PRES

ŋawaniŋ --> ŋawa-ŋawaniŋ
hear + PAST CONT

Monosyllabic:

taŋ --> tay+a-ttaŋ
stand INTR + PAST CONT

ṇeŋ --> ṇey+e-ṇeŋ
cook + PAST PUNCT

nan --> nan+a-nan
see + PRES

ṛun --> ṛun+u-ṛun
cry +PRES

Yidiŋ takes initial disyllabic reduplication with a phonological word boundary present. This is so because the reduplicated morpheme will be disyllabic, and in accordance with other affixational principles, will be non-cohering and thus form a separate phonological word (see discussion in chapter one).

3.36. Yidiŋ (Dixon 1977)

ŋalal *big*
ŋalal-daga-n *big-INCH-CM*

ŋalalŋalal-daga-n
big-big-INCH-conj
really grow up (become big)

Nyigina, on the other hand, presents an unclear case in this respect. This language has initial reduplicated verbs, as in :

3.37. Nyigina (Stokes 1982:232)

yin-GALBI-GALBIRA -na -yirr nilawal
3SG-REDUP-call.name-PAST-3NSOPRO name
He went through naming them (all their) names.

Stress assignment in Nyigina seems to operate partly according to whether the syllable involved is closed or open. This does not clearly differentiate between reduplicated words and unreduplicated words (Stokes 1982:33-35).

In Mara, several types of verbs show disyllabic reduplication. 3.38 is an example of a verbal word containing a verbal particle which is reduplicated:

3.38. Mara (Heath 1981:24)

ŋaṇarg+u-mindini	-->	ŋaṇarg-ŋaṇarg+u-mindini
VPART -snore		REDUP -VPART -snore
he snored		*he snored and snored*

Inflected verbs without preceding verbal particles may also reduplicate.

3.39. Mara (Heath 1981:24-25)

ba-wayi-wayiŋgaḷi	from ba-wayiŋgaḷi *to hit with thrown object* [18]
-jara-yarawuni [19]	from -jarawuni *to take (dog) hunting*
-mina-mi-nani	from -mi-na -ni DUR-see-PAST *to see*

A variant on disyllabic reduplication, reduplication of the first syllable and the following CV, is found within the category of verbal reduplication in several languages. These languages are

18. The status of ba- is not made clear in Heath's example.

19. See 3.17 for morphophonemic alternation involved here.

Djapu, Diyari, Alawa (where it occurs on a verbal particle), Bandjalang, Dyirbal, Ngiyambaa, and Waray. Examples follow below.

In Bandjalang, for instance, verbs reduplicate the whole of the initial syllable and the following CV-. A long V at the end of the portion to be reduplicated is repeated in its short form. Phonotactic constraints are not breached by these reduplicated forms since no non-permissible clusters occur.

3.40. Bandjalang (Crowley 1978)

yaruuma	*swim*	-->	yaruyaruuma
baramga	*jump*	-->	barabaramga
galga	*drop*	-->	galgagalga

Stress marking does not seem to mark a distinction between surface forms created by different morphological processes. Crowley (1978:21) comments that

> vowel length and position in a word are the main determinants of which syllable will be stressed. Primary stress goes onto the first syllable of a word, or, if the second syllable contains a long vowel, stress is optionally shifted onto this syllable.

For these reasons, it seems that we can tentatively assert that reduplicated nouns have a different phonological status from unreduplicated nouns, shown in the following examples:

3.41.

ɟaaɟam	*child*	ɟaaɟam-ɟaaɟam	*little child*

3.42.

deber	*white*	deber-debeer	*plover*

Note that the vowel in the second syllable of a disyllabic nominal reduplicate may be lengthened. Vowel length is never added to reduplicated verbs. Reduplicated verbs and noun markers (see 3.77 below) on the other hand, seem to represent single phonological words whether reduplicated or not.

By contrast, Waray has an interesting set of conditions on the length properties of reduplicative constructions. The rule is as follows: base forms of one syllable in length, and disyllabic forms ending in a vowel reduplicate the complete stem, while disyllabic forms ending in a consonant (that is, with a closed syllable) and forms of three syllables and above reduplicate only the first syllable and the following CV.

3.43. Waray (Harvey 1984)

an-tjen ka-tjen-walng-walng-m-al
BP-tongue NC-tongue-REDUP-hang.out-Aux-Irr
The dog's tongue is hanging out (one syllable, C#)

3.44.

at-put-kara-karay-pu-m
1sgSC-3PLO-REDUP-tease-Aux-Real
I really teased them (two syllables, C#)

In Ngiyambaa, roots which undergo productive reduplication, by contrast with lexical reduplications, reduplicate the first syllable and the first CV of the second syllable of the root (1980:69). This reduplicated portion occurs at the front of the stem, as a prefix. Furthermore, if the V in the second syllable is long, it is copied as a short vowel. Syllable-closing consonants are not copied. There are no internal boundaries affecting phonological rules in this complex word form.

3.45. Ngiyambaa (Donaldson 1980:70)

yuwa-yuwa-y-ga:-dha
REDUP-lie-cmkr-A BIT-IMP
Have a nice little lie-in

2. Reduplication of verb roots

We turn now to reduplicated verb root forms. Root reduplication in verbs occurs in eleven languages spread right across the

continent. Symmetrical verbal root reduplication occurs in the following nine languages:

Baagandji	Kayardild	Kuku Yalanji	Maranungku
Maung	Ngawun	Nyigina	Watjarri
Yankunytjatjara			

Initial root reduplication occurs in Waray and Warlpiri.

To begin with symmetrical root reduplication, verb reduplication in Kayardild for example usually involves the entire form being repeated. Lenitions of several types may occur across the reduplication boundary. Evans (1985:148) gives the following rules.

3.46.i. b, j, k, lenite to w, y, w word-medially.
ii. rd may lenite to r
iii. initial velars in verb stems may palatalize.

Other consonants are not altered under reduplication. No other phonological criteria (stress patterns or phonotactic constraints) can be found to differentiate between reduplicated and unreduplicated words.

3.47. Kayardild (Evans 1985:233)

jirrma-jirrma-ja	*lift REDUP*
dara-dara-tha	*break REDUP*
kulma-julma-ja	*pile up REDUP*
ngarrkuwa-nyarrkuwa-tha	*recover REDUP*
ngawi-nyawi-ja	*breathe-REDUP (=pant)*

Yankunytjatjara also has symmetrical reduplication of entire verbal roots as a productive derivational process in verbs with several semantic effects. It is found productively co-occurring with most verbal inflectional endings, although Goddard notes that his corpus contains no examples of reduplication co-occurring with perfect past tense verbs of the perfective imperative (Goddard 1985:241).

3.48. Yankunytjatjara (Goddard 1985)
puu-ra manta pata-pata-ni,
blow-SERIAL dirt(ACC) make drop off-make drop off-pres

waru unu, mayi-ngka ngari-nytja-la
fire ash food-LOC lie-NOM-LOC

(You) blow on it to make the dirt come off (and) the ashes, that are on the food.

3.49. Yankunytjatjara (Goddard 1985)
nyaa-ku-n munga-munga-ni? ngura puriny-tju
what-PURP-2sg(ERG) eat-eat-pres well slow-ERG

munga-mna ngalkal-ku-ŋ munu ilu-ku
eat-imp.impf choke-fut-2sg(ERG) ADD die-FUT

Why are you bolting your food down? Just eat slowly, (otherwise) you might choke and die.

Note also these examples of symmetrical root reduplication in Nyigina. Both instances of the root are glossed according to the root meaning of the verb.

3.50.
yi-rr-a-BA-BA-na-yina guya.....malina
3-nmin-SET-see-see-PST-3sg.DAT.PRO mother.....lacking
They looked and looked for their mother... in vain.

3.51.
ŋan-a-MARRA-MARRA wali
1SG-FUT-burn-burn meat
I'm going to start cooking the meat.

Kuku Yalanji verbs also reduplicate the verbal stem with the conjugation marker -l- in the case of L-conjugation verbs, and -n- in the case of Y-conjugation roots. We will analyse the conjugation marker as part of the stem, and not an inflection, for these purposes.

3.52. Kuku Yalanji (Patz 1982)

dinda-l-dinda-l	*keep roasting*
wukurri-l-wukurri-l	*keep following*
kima-ma-l-kima-ma-l	*keep getting soft*

dunga-y	*go*	dunga-n-dunga-y	*keep going*
yirrka-y	*shout*	yirrka-n-yirrka-y	*keep shouting*

In addition, some Y-conjugation verbs in Kuku Yalanji show idiosyncratic reduplications:

3.53. Kuku Yalanji (Patz 1982)

badi-y	*cry, weep*	ban-badi-y	*keep crying, weeping*
warri-y	*run*	wanarri-y	*keep running*
bunda-y	*sit (down)*	bundanda-y	*keep sitting, live at*
wuna-y	*lie (down)*	wunana-y	*keep lying, sleep*

Full reduplication also seems to be possible in preverbs and adverbs in Djaru [20]. One dialect, Nyininy, is more phonologically conservative than the other dialect, Wawarl, which exhibits certain phonological innovations, including

/b/ -> [w]/ V+_V

as noted above in footnote 12 and example 3.14. These innovations make the reduplicated preverbs in Wawarl seem to be partial rather than full reduplications synchronically. The following examples are given by Tsunoda (1981:287):

3.54. Djaru (Tsunoda 1981)

burda	*running*	burda-burda (N) burda-wurda (W)	*running (races)*
narag (W)		nara-narag (W)	*making*

Reduplicated roots in Djaru, like compounded roots and inflected forms, constitute single phonological words (Tsunoda 1981:46). This can be seen from the application of stress patterns. Tsunoda writes that stress is usually word-initial, and that this is the case whether the word is mono-morphemic or bi-morphemic (as in reduplicated words). The first syllable of the second morpheme may receive stress as well (either equal to or greater

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20. Preverbs in Djaru are a separate word class which semantically are verbs, but which inflect like nominals or, in the case of reduplication, adverbs.

than the first), but this is optional. Thus, the phonological word for the purposes of phonological structure, may be either mono-morphemic or bi-morphemic (1981:47).

Whole root reduplication also occurs in Ngawun. In this language, root reduplication is the productive means of marking continuative aspect forms. Breen (1981b) gives several examples. Note that Breen claims these reduplications are disyllabic, but since most monomorphemic verbs stems are in fact disyllabic -- most trisyllabic roots appear to contain suffixed stem formatives (Breen 1981b:54) -- the data is analysed here as root reduplication. The roots are puwa 'hit' [21], yina 'sit', wata 'call' 'out', mantha 'eat', drink, and kanpa 'play', respectively.

3.55. Ngawun (Breen 1981b:60)

3.55.1. waṭi panytyil puwa-puwa-lpu-ŋu yampi
that man REDUP-hit-lpu-PRES dog
That fellow's always belting his dog

3.55.2. waṭi yalmir yini-yini-ŋu kiḷtya-nta
that man REDUP-sit-PRES grass-LOC
That's fellow's sitting on the grass

3.55.3. wanyu waṭi waṯi -waṯi-ŋu / ŋananta-pir
who that REDUP-call-PRES / we.(PLU)+ACC-ALLA
Someone's calling out. Is it for us?

3.55.4. waṭi ṯimulŋur manṯa-manṯa-nu
that bone REDUP-eat -PAST
He was chewing the bone

3.55.5. patyaŋur wulu wapa-nu /kanpa-kanpa-ntu
child there go-PAST / REDUP-play -PURP
The kids went over there to play.

Other examples of these continuative aspect forms illustrate the vowel replacement which occurs between a disyllabic root ending in /a/ and the present tense suffix. The root vowel replacement

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21. Listed as such in Breen (1981b:214). No gloss is given on p.60. for the -lpu form in the example 3.60.1.

occurs in both the reduplicated morpheme and the base form. Marantz (1982:460) discusses the apparent over-application of phonological rules in many reduplicative constructions. Most are similar to the examples in Ngawun, and are essentially morpholexical rules (as in Lieber 1983), whose input and output are listed in the lexicon. For Marantz's theory of reduplication, these cases become a problem simply of specifying in the lexicon which form the reduplication rule will choose [22].

3.56. Ngawun (Breen 1981b:59)

wapa	*to go*	wapiwapiŋu	REDUP-go-PRES
pima	*to swim*	pimipimiŋu	REDUP-swim-PRES
maya	*to talk*	mayimayiŋu	REDUP-talk-PRES
ŋampa	*to look (for)*	ŋampiŋampiŋu	REDUP-look for-PRES

3. Initial 'monosyllabic' reduplication

Within the category of initial (or 'prefixed', since reduplication occurs within the verbal word, prefixed to the root in prefixing languages in Australia) verbal reduplication, five languages reduplicate a single syllable, with no boundary present within the reduplicated construction. This pattern occurs in Bandjalang, Djapu, Mara, Ngangikurrunggur, Nunggubuyu, and Yanyuwa.

In Mara, certain inflected verb stems (without the pronoun prefix) exhibit reduplication of initial (C)VC:

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22. The other class of exceptions, that of underapplication of a phonological rule within a reduplication 'copy', is dealt with by the current (in Marantz's terms) theory of the cycle, which claims that phonological rules will not apply in non-derived environments. This in effect means that a reduplication 'copy' is a 'black box' for the purposes of cyclic phonological rules.

3.57. Mara (Heath 1981:25)

-anj-anji (from **-a-nji** *to sit-PASTCONT*)

Monosyllabic prefixed reduplication in Ngangikurrunggur is fully productive. Here only the root is involved. The following are examples:

3.58. Ngangikurrunggur (Reid 1982:92)
ŋibem-madi-fili
1sg su-chest-roll over
I rolled over

ŋibem-madi-**fi**fili
I rolled over and over

3.59.ŋagarri-tu-tje
1Sg S go PAST-camp-Past
I camped

ŋagarri-tutu-tje
I camped all the way along

Some of the slightly modified verb forms which are altered to fit with the phonotactic constraints of the language show that this is prefixed reduplication.

3.60. wirr --> wiwirr not *wirrwirr or *wirrwi

Prefixed monosyllabic verbal reduplication also applies in some Nunggubuyu verbs.

3.61. Nunggubuyu (Heath 1984: 40)

-l̲u=l̲u:lha	from l̲u:lha	*to wade*
-bu=bu:la	from bu:la	*to be smoking*
-ju-ju̲ra	from ju̲ra	*to push*

Further examples occur in Yanyuwa. Here the -l̲- or -n̲- consonant is added between the prefixed reduplicated morpheme and the base, a reduplication of CVl or CVn in autosegmental terms.

3.62. Yanyuwa (Kirton 1978:31)

bulbuma	from **buma**	*rest*
nilniri	from **niri**	*pick up*
ŋulŋunda	from **ŋunda**	*give*
walwanda	from **wanda**	*follow*
walwani	from **wani**	*return*
minmirinma	from **mirinma**	*hurry*

4. Final reduplication

Six languages in the corpus have final verbal reduplication: Victorian languages, Murinpata, Nyigina, Burarra, Kriol, and Mangarayi. This is a productive process in Victorian languages as it forms one of the inflectional forms of the verb, the continuative-frequentative. The present tense base of the verb is reduplicated here. Hercus (1986:132) claims that the reduplication is final, in that the reduplicating base is considered to be to the left, although these examples seem to suggest either initial or symmetrical reduplication.

3.63. Victorian Languages: Madi-Madi (Hercus 1986:131-2)

niradа	*to poke*	nira-niradа	*to grope about, to feel for*
dugadа	*to move*	duga-dugadа	*to fidget*

The -da form which appears to be a suffix, is listed as part of the verb root in Hercus' vocabulary listing from Madi-Madi. Note also the following form, in Madi-Madi, which shows that a derived base can be input to the reduplication rule, this demonstrating that reduplication will have to be ordered after affixation of the continuative-frequentative siffix -ila for this language.

3.64.

wilga	*to turn around*
wilg-ila	*to go on turning*
wilgila-wilgila-da	*to twist, to tangle*

A change in the vowel of the reduplicated morpheme occurs in the form below:

3.65. Victorian Languages (Hercus 1986)

wigadа	*to starve*	wigu-wigadа	*to feel afflicted*

Interestingly, this vowel change also occurs in Baagandji (Hercus 1982; where at least one example shows it not to be a conditioned

sound change (a->u/ conditioned by an adjacent velar). The evidence that these forms in Baagandji lack a phonological word boundary between the parts of the reduplication lies in the stress patterning. Sometimes the stress of the reduplicated constructions is like that of lexical items of comparable length, but at other times the reduplication boundary seems to trigger compound-like stress, and so both elements of the reduplicated construction have the same stress pattern. 'Final' (in this case 'suffixed' is a better term) verbal reduplications also occur in Nyigina:

3.66. Nyigina (Stokes 1982)

midyibirri giny-abu yin-NIGA -GA -na banugu
(place name) dem-ABL 3sg-follow-REDUP-PAST from.east
From that place, Midyibirri, he followed on and on from the east.

5. Root plus morpheme reduplication: morpheme-based or syllable-based?

Three languages, Mangarayi, Djaru and Kriol, show verbal reduplications involving roots as well as another morpheme, usually compounding elements or bound auxiliaries, although some languages do reduplicate unanalysable tensed forms (as in Victoria). These root-plus-morpheme (usually a grammatical morpheme) reduplications are confined to verbal reduplications, not occurring in nominal reduplications in the corpus. These examples seem to arise due to a basic 'syllabicity condition' applying in the language [23]. One such language which reduplicates root plus morpheme forms is Mangarayi. In Mangarayi, in many forms with a bound auxiliary, the two

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23. The Waray examples above are also relevant here.

reduplicated syllables are made up of the initial compounding element and the auxiliary, as in 3.67 below, where -bu is an auxiliary. In 3.68, the tense suffix -ni forms a disyllabic stem together with the root -ga- *take*, and so both morphemes are reduplicated. The glottal stop may well be acting as a boundary signal here (as in Yolngu languages).

3.67. Mangarayi (Merlan 1982:214)

ŋa- ŋan- ŋuj +bu -ʔ-ŋuj+bu-n
PERS-PERS-deceive+AUX-ʔ-REDUP-TNS
he deceives me and deceives me

3.68.

0 -ga -ni -ʔ-gani
PERS-take-TNS-ʔ-REDUP
he kept on taking it

Merlan writes that

> The constraint that the reduplicated segment be bisyllabic is evidently independent to a great extent of meaning and more dependent on the grammatical identity of elements, e.g., suffixes can form one of the reduplicative syllables, prefixes cannot and initial elements can whether independently meaningful or not. (Merlan 1982:214)

This overarching constraint in the language that a reduplicative segment be a certain number of syllables long has the same consequence in Djaru which employs 'root plus morpheme' combinations in verbal reduplication (not in reduplication of other word classes) to fulfil the syllabicity condition on reduplication. The examples in Tsunoda's grammar are of monosyllabic verb roots which are reduplicated after the addition of an -u- increment, which is the marker of a 'verbid' in Tsunoda's analysis. Tsunoda gives no examples of polysyllabic root reduplication, only of root-plus-verbid increment reduplication. Verbids seem to function either as a particle or a gerund (Tsunoda 1981:172). Djaru is a suffixing language, and

Tsunoda adopts a suffixation analysis for verbal reduplications, but does not give any systematic justification for this.

3.69. Djaru (Tsunoda 1981:172, 176)

jambagina luŋ-u-luŋ-u-wara jan-i
child cry-U-REDUP-wara come-PAST
A child came, crying.

3.70.
murgun-du mawun-du ŋa-lu-ɲunu-ŋgu-la naŋ-u-naŋu -man
three-ERG man-ERG C-3PlNOM-M-ŋgu-3sg.DAT watch-u-REDUP-?

-an jani-wu jalu-wu ŋumbir-gu
PRES one-DAT1 that-DAT1 woman-DAT1

Three men watch each other over/about that one/same woman.

In Kriol, a 'root-plus-morphemes' based length condition operates slightly differently. Here, the verbal word, of whatever length, is reduplicated to form the continuative aspect, that is, root plus -im suffix (essentially a transitivity marker) plus adverbial suffix.

3.71. Kriol (Sandefur 1979:117)

imin baj-im-ap-baj-im-ap
3sg brought-tm-adv-brought-tm-adv
He was bringing it.

Reduplication is not the only means of marking continuative aspect available in Kriol; the suffix -(a)bat is more commonly used for marked verbs, "verbs occurring with the transitive suffix -im or one of its variants" (Sandefur 1979:115). Unmarked verbs, those without the -im suffix, may function either transitively or intransitively. Reduplication occurs more commonly with verbs not marked with -im, although most -im verbs can also be reduplicated. 3.72 and 3.73 show the -(a)bat form suffixed to an intransitive and transitive verb respectively, while 3.74 and 3.75 exemplify reduplication with intransitive and transitive verbs. Thus:

3.72.
olabat bin leidan-abat
3PL TNS lie.down-ASP
they were lying down

3.73.
olabat bin gugu-m-bat yem
3PL TNS cook-TRSVR-ASP yam
they were cooking yams

3.74.
olabat bin godan-godan
3PL TNS go.down-REDUP
they were going down

3.75.
olabat bin graj-im-grajim yem
3PL TNS dig-TRSVR-REDUP yam
they were digging yams (Sandefur 1979:119f)

Note also the semantic difference between reduplication and affixation on the one root (ibid):

3.76.
olabat bin wok-wok
3PL TNS walk-REDUP
they were walking

3.77.
olabat bin wok-abat
3PL TNS walk-ASP
they were going on an outing

Sandefur at least implicitly acknowledges that *wokabat* may well represent a separate lexeme, however (Sandefur 1979:119).

6. Phonological word boundary present

While for most of the languages in the corpus, as illustrated above, the verbal reduplicate is characterised as forming part of the same phonological word as the base, this is not universally so. Three languages show reduplication which is characterised by a phonological boundary of some kind between the reduplicated morpheme and the base. This is the case in Diyari, Waray, and Yidiɲ.

For example, in Waray, Harvey (1984:37) writes:

> While for the purposes of the placement of pauses,... complete reduplications behave as single words, for all other phonotactic purposes, such as the placement of stress and syllable structure, they behave as if their component parts were separate words.

This applies only to monosyllabic roots and disyllabic roots ending in a vowel, since these forms reduplicate completely, while disyllabic roots ending in a consonant, and roots of three or more syllables reduplicate only the first syllable and the following CV.

In Diyari, also, a phonological word boundary occurs between the base and reduplicate. Reduplication in Diyari involves the initial CV(C)CV of the root, as in:

3.78. Diyari (Austin 1981:69)

ŋama-	*to sit*
ŋama#ŋama-	*to be sitting (for some time)*
n̲ayi-	to see, look
n̲ayi#n̲ayi-	to *watch*
yat̲a-	*to speak*
yat̲a#yat̲a-	*to converse*

Evidence of the word boundary present in the reduplicated forms above derives from the following. In the first example in 3.78 above, both instances of the root-medial nasal consonant within the reduplicated form are realised as the pre-stopped allomorph, [bm]. Secondly, positionally-conditioned allomorphy of the vowels is identical in the base and reduplicate in the reduplicated forms. Thirdly, and related to the second condition, the first vowel in the base and in the reduplicate receive primary stress.

2.3.3 Some other word classes

As the discussion above has shown, an examination of the major word classes yields several recurrent patterns of reduplication characteristic of these classes in Australian languages. In addition, several minor word classes and sub-classes were examined in this study, and their formal properties compared with those of the major word classes. These are discussed below.

2.3.3.1. Adverbs

Adverb reduplication occurs in Mara, Burarra, Djaru and Kriol. Locative cardinal-direction adverbs in Mara often reduplicate with little change in meaning. Allative and Ablative forms do not reduplicate. Heath gives as example:

3.79. Mara (Heath 1981:24)

gargaḷa *far in the west* gar-gargaḷa *far in the west* [24]

Adverb reduplication also occurs in Burarra (Glasgow 1984:24-25), and in Kriol (Sandefur 1979:117), although in Kriol the adverbial forms are suffixes to the verb:

3.80. Kriol (Sandefur 1979:117)

imin bajim-ap-bajim-ap
3sg brought-adv-brought-adv
He was bringing it

This example is perhaps better analysed as full verbal word reduplication, since the adverbial meaning of the suffix is not clearly distinct from the verbal meaning, and the entire word is a verbal, not adverbial, word.

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24. Heath notes "little change of meaning" for these adverb reduplications (ibid).

2.3.3.2. Noun markers

In Bandjalang and Dyirbal, noun markers, a class of locational (temporal and spatial) words, can be reduplicated. These forms are different from the directional prefixes in Yankunytjatjara which reduplicate their entire form to "indicate plurality and dispersion of the subject" (Goddard 1985:240).

In Bandjalang,

> Noun markers optionally reduplicate either the first CV (without length) or the entire form. No difference in meaning could be determined between the reduplicated and the unreduplicated forms. (Crowley 1978:70) [25]

Crowley gives the following examples (note that Crowley does not gloss the reduplicated forms any differently from the unreduplicated forms):

3.81. Bandjalang (Crowley 1978:70f)

gala	S/O Singular Proximate noun marker
galagala / gagala	+REDUP
mala	S/O Singular Intermediate noun marker
malamala / mamala	+REDUP

Noun markers reduplicate by prefixing, if we assume that the placing of the one-syllable and the two-syllable reduplications are the same, whereas nouns in Bandjalang show final reduplication. Formally, then, noun markers reduplicate in a manner more reminiscent of verbs.

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25. Bandjalang's noun markers specify the nouns with which they agree along the following parameters:
    1. distance from the speaker, whether close, intermediate or a long way off;
    2. number, whether singular or plural;
    3. visibility, whether the noun can or cannot be seen by the speaker;
    4. if invisible, whether the noun in question was previously visible and has since become invisible, or whether it is not presumed to have ever been present in the first place.

Dyirbal noun markers are similar semantically to noun markers in Bandjalang, indicating distance and visibility of the object in relation to the speaker. The first two syllables are reduplicated, without the syllable-closing consonant. No word boundary is present between the base and the reduplication. This is formally identical with nominal reduplication in Dyirbal.

3.82. Dyirbal (Dixon 1972:260)

bayi	*he*
bayimbayi	*he himself*

2.3.3.3. Preverbs and verbal particles

Preverbs and verbal particles (as well as verbal auxiliaries) reduplicate in Alawa, Mara, Warlpiri, and Mangarayi.
A definition of the category 'preverb' in Warlpiri and a comparison between the concept 'preverb' and that of 'auxiliary' is found in Nash 1982.

Monosyllabic preverbs in Warlpiri which have a long vowel show that the general rule of reduplication can probably be framed in Warlpiri as a rule of reduplicating two morae (see also Bandjalang verbs, above). The following examples of reduplicated preverbs are from Nash (1986:138):

3.83. Warlpiri (Nash 1986)

maarr-ma-ni	*1. flash, of lightning; 2. wink, of eye*
maarr-maarr-ma-ni	*1. blink, of eye; twinkle, of star*

3.84. Warlpiri (Nash 1986)

wuurr-(w)angka-mi	*to whirr*
wuurr-wuurr-(w)angka-mi	*to howl, of the wind*

Preverbs provide a further interesting case of morphological class differentiation which is accompanied by phonological differentiation. In general, the form of preverb and verbal

particle reduplication corresponds in place and boundary condition with the general pattern of ordinary verbal reduplication, but may vary in its length specification. In Mara, for example, verbal particles prefix the full (monosyllabic) form with no boundary present, while verbs reduplicate according to syllables (usually disyllabic). The situation in Mangarayi is that verbal particles reduplicate the entire form (usually monosyllabic) while verbs reduplicate two syllables (and, in the case of monosyllabic verb roots, including affixes in the reduplicate, whereas verbal particles never do). But in Warlpiri, as shown above, the two morae rule accounts for both verbal and preverbal reduplication.

2.3.3.4. Pronouns

Yukulta is the only language in the forty-two language sample which shows reduplication of pronouns. Pronouns in fact reduplicate according to the same pattern as nominal reduplication in the language, which is full root reduplication, as in 3.81 below:

3.85.

kiyarŋka	*two*
kiyarŋka-kiyarŋka	*four*

The use of pronoun reduplication makes Yukulta an interesting case among Australian languages. Keen's data is reproduced here:

3.86. Yukulta (Keen 1983:208)

ŋityi-ŋityi-nta yakukaṯu-liŋka waratya
my -my -ABS older Z-PL +PAST go (Vi)+IND
All my sisters have gone.

3.87.

ŋaka-ŋaka-ya -lkari kuritja ṭaṯinta ŋawu
who?-who?-ERG-they+PRES see+IND that+ABS dog
Who are those people looking at that dog?

2.3.3.5. 'Adjectives'

Ngiyambaa provides an interesting case for the differentiation within the class of nominals between 'nouns' and 'adjectives'. Nominal reduplication in Ngiyambaa proceeds regularly according to one phonological rule: prefix the first syllable and the following CV with no word boundary between the two parts of the construction. Reduplication however, provides a formal basis for distinguishing adjectives or 'qualities' from nouns or 'entities'. Only semantic adjectives, with one or two exceptions, can reduplicate, having the meaning 'more or less X'. In addition, verbs may also reduplicate, according the the same structural rule, with exactly the same meanings conveyed by verbal reduplication as by adjectival reduplication. Since both adjectives and verbs are 'predicates', the formal and semantic unity of the reduplications in these two classes is an intriguing facet of this language (see also chapter three).

Burarra, Waray and Yankunytjatjara also show reduplication of terms for 'qualities'. Adjectives are not morphologically distinct, but are syntactially distinct from nouns in Yankunytjatjara, and in Waray. In Burarra, descriptives (which includes the major adjectival types) consititute a separate formal class from nouns, because descriptives are not modified as nouns are.

2.3.4 Non-occurring parameter combinations

Finally, before considering the pan-Australian implications of this survey, we will briefly note the parameter combination which

do not occur so far in the data. The most interesting omission from the corpus is nominal reduplication involving a root plus additional morphemes such as derivational or inflectional suffixes. Note also that no language reduplicated verbs including inflectional prefixes to the root. This fact, together with the possibility of verbal inflectional morphemes being included within the reduplicate in several languages, and the tendency for verbal reduplication to be defined in terms of syllables, correlates well with other observations of word structure in Australian languages. As noted in Dixon 1980 (266ff), in many Australian languages, nominal roots may also occur as nominal words in isolation, while verb roots, although they can be segmented from inflectional affixes fairly easily, never occur as words in isolation. Reduplication may thus follow these patterns: reduplication of nominals defined by roots, but verbal reduplication defined in terms of syllables or parts of roots.

2.3.5 Conclusions: Reduplication and the Australian language family

Some general tendencies appear in the data. For instance, prefixing, multiple-classifying languages in the northern part of the continent tend to have far less productive nominal reduplication, and what there is somewhat atrophied. This may be partly because classifying languages tend to use noun class markers to mark the major types of meaning marked by reduplication in non-classifying languages. For example, if a classifying language has a productive plural class-prefix (such

as class III, signifying 'human plural' in Maung (Capell and Hinch 1970:48)), which marks much the same meaning as reduplication in several Pama-Nyungan languages (such as Dyirbal), that of 'significant or collective plural', or even just 'plural', the need for reduplication in the same function will be obviated. It will be redundant if the class prefix is grammatically more central to the language, and, given the general case that noun classes are fully grammaticalized in the language, this will be the case.

Non-Pama Nyungan languages tend to have more productive verbal reduplication than nominal reduplication, and it tends to be shorter in length. This may be due to a certain percentage of monosyllabic verb roots and verbal auxiliaries in these languages.

Suffixing languages sometimes show clear formal pattern differentiation between major word classes such as noun and verb. Just as many languages of the suffixing type, however, make no formal distinction across word classes. This may interact with the morphological systems of suffixing languages in interesting ways. So far we have seen that many nominal reduplications are strikingly similar, usually involving whole root reduplication, either initial, final, or, most commonly, symmetrical. Verbal reduplications tend to be prefixed, and more commonly involve length definitions depending on syllables rather than roots. In this way, the patterns discussed above constitute a comparative template against which other Australian languages may be measured.

One other finding of this phonological survey for the purposes of Comparative Australian studies is a negative one, in that, generally, reduplication cannot be precisely delimited along areal, genetic or typological lines. Some characteristics of reduplication spread right across the continent; others are found in sporadic, isolated and unrelated areas. Even the one securely established genetic grouping (Evans 1988), Pama-Nyungan versus non-Pama-Nyungan, cannot be considered an absolute predictor of the phonological nature of reduplication [26].

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26. This contrasts somewhat with the findings of the following chapters, where some local groupings can be identified, such as verbal reduplications in Cape York languages.

Chapter Three

Nominal Reduplication in Australian Languages

3.1. Introduction

In chapter two, we established certain correlations between the word class in which a reduplicative construction occurs and the phonological structure of that reduplication. This particular aspect of reduplication has not been investigated previously. The subject of the current chapter, by contrast, is one which is far more familiar in cross-linguistic discussions of reduplication.

Here we are concerned with the functions which reduplication may realize in the domain of nominal words in Australian languages. Several previous studies have examined the functions of reduplication *sui generis*, and made observations on such issues as the role of iconicity in reduplication. Reduplication as a process *sui generis*, however, is interesting for as long as new and previously unobserved nuances of meaning keep appearing. Once the set of observed meanings is more or less established by extensive cross-linguistic comparison (c.f. Moravcsik 1978, Ezard 1980, Gonda 1949, Kroeber 1988, Marchand 1969, Rigsby 1988, Wilkis 1984, Yip 1982), the time has arrived for taking this set as given. The next descriptive step, then, is to relate instances of reduplication back to the language structure from which they came, and to investigate how this process, so unusual from a Eurocentric point of view, relates to the rest of the linguistic structure from which it originates.

In the literature, analyses of reduplication have carried out a simple listing procedure, perhaps drawing some semantic links between the types of meanings observed (see, for example, Moravcsik 1978 and the references therein). Noun reduplication, adjectival reduplication, verbal reduplication, all to some extent show their own 'typical' systems of meaning.

This listing procedure, however, is somewhat complicated in the case of Australian languages, since the status and validity of the traditional distinction between noun and adjective when applied to these languages is the subject of continuing debate (Dixon 1982, Goddard 1985, Wilkins p.c., McGregor 1984) It is clear enough that in many non-noun-class languages in Australia there are no decisive grammatical (inflectional or distributional) tests which will separate two classes (as in Gumbaynggir, Eades 1979, and Ngiyambaa, Donaldson 1980; see also Dixon 1980:274). Some writers on Australian languages posit a sub-class distinction, based on distribution in the noun phrase (Nunggubuyu, Heath 1984, Victorian languages, Hercus 1986, Murinypata, Walsh 1976). But, as Dixon points out, (1980:274f), languages with noun classes will exhibit very few semantic 'nouns' which can co-occur with the morphological markers of more than one noun class. Adjectives, however, will take noun class membership as a result of concord, and not as a result of inherent noun class. Languages such as Yidiɲ (Dixon 1977) and Murinypata (Walsh 1976) with extensive systems of generic terms operate in the same way as noun class languages in this respect [1].

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1. For a series of studies of noun classes and the basis for noun class categorization in languages from different parts of the world, see the papers in Craig (ed) 1986, such as that of

Word class distinctions are an issue which have been extensively discussed in the linguistic literature. The classic structuralist method has several types of criteria available to distinguish between classes of words, including both inflectional and distributional criteria. Another type of criteria sometimes suggested is derivational potential. Thus, for example, only certain classes of words will be subject to derivations which change word-class membership.

However, if no morphological or syntactic criteria can separate noun and adjective in the case of the remainder of non-classifying languages, then a clear semantic distinction may still hold. Anna Wierzbicka, in an important paper (Wierzbicka 1986, revised version in Wierzbicka 1988), 'What's in a noun?', discusses the differences in semantic structure between nouns and adjectives. She then goes on to suggest that many, if not all, languages will show some sorts of differences in grammatical behaviour. Her paper will be examined in section two below.

The current chapter, therefore, as well as being concerned with the structure and (iconic) functions of nominal (noun and adjective) reduplication in Australian languages, is also concerned with the nature of the syntax/semantics interface, and the possibility of examining reduplication from the points of view of both structure and function. This means that there is more to be said about reduplication than its function. It is possible that the structural features of reduplication can shed light on the nature of the rest of the grammatical system, and

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Lakoff, who argues for a prototype model of categorization.

especially the noun/adjective distinction in Australian languages.

The point of this study, and of all cross-linguistic typological work, is that an examination of a wide geographic and typological range of languages may reveal tendencies which do not emerge from the intensive study of one language [2]. The data base for this study, as in the other chapters of this thesis, consists of some fifty Australian languages, spread across the Pama-Nyungan and non-Pama-Nyungan families. As noted in the introduction, this number is a substantial proportion of the set of Australian languages for which detailed description of reduplication is available.

A note on terminology is needed here. When referring specifically to functions which relate to the semantic word class of the base form of the reduplication, I will use the terms *noun reduplication* and *adjective reduplication*. The term *nominal reduplication* will act as a cover term for both types.

The structure of the present discussion will be as follows. Part one of the chapter will present nominal reduplication, discuss the various functions which it may have, and give examples. This part of the chapter will consider mainly productive reduplications, those wherein the 'base' form exists as a separate form in the language [3]. In general, it is noticeable

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2. As Greenberg's (1963) work convincingly demonstrated.

3. Inherent reduplication, where the form of the word appears to be reduplicated but the apparent phonological base does not occur as a meaningful unit in the language, is

that nominal reduplication in Australian languages does not seem to be as widespread across languages or as productive in the grammar of a single language as verbal reduplication. An example is Rembarrnga, a language of Arnhem Land, which has quite extensive verbal reduplication, but synchronically productive nominal reduplication is only attested in one form, the form for 'child' (McKay 1975 and p.c.; see further in chapter four of this thesis). In addition, nominal reduplication is generally less common and productive in non-Pama-Nyungan languages than in Pama-Nyungan languages. To some extent, the first part of the chapter will examine nominal reduplication in the context of other grammatical devices in the language. This means that we will be examining the role of nominal reduplication in the wider context of the grammar, especially with respect to non-reduplicative morphology which may mark related categories of meaning.

Part two of this chapter will focus on reduplication from the two points of view of semantics and grammar, and on the nature of the noun/adjective distinction in Australian languages from the point of view of reduplication.

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considered briefly in chapter one and chapter two. There are many interesting semantic links cross-linguistically in inherent reduplication, and abundant lexical data on this is available on computer. A study of inherent reduplications would be a productive area of research for the future.

3.2. The functions of nominal reduplication in Australian Languages.

Table one summarises the functions of nominal reduplication found in Australian languages:

BASE FORMS	DERIVED FORMS: **NOUN**	DERIVED FORMS: **ADJECTIVE**
NOUN	plural of various kinds emphasis diminution 'like', 'similarity'	object–> quality colour terms
ADJECTIVE	quality–> object number (rare)	intensification deintensification

Table 1. Functions of nominal reduplication in Australian languages.

Nominal reduplication, as we shall see in the examples below, is particularly prone to express meanings which can be considered to be **iconic**. Consider the following general definition of iconicity applied to reduplication in Botha (1988:149).

> ...form and meaning resemble each other in a quantitative respect: an increase in form corresponds [to] an increase in the projected referents of the form.

Iconicity, therefore, requires that we can see a diagrammatic relationship between form and meaning such that the form of the word presents some type of icon or representation of the meanings involved. Clearly, the **form** of reduplication always involves increase to a greater or lesser extent (as in full versus partial reduplications, as discussed in chapter two). Which of the

meanings in the table above, then, represents the notion of 'increase' as part of its semantic structure.

Nominal reduplication marking number is the most straightforward case of iconic meaning. Number marking by reduplication, as we shall see below, usually represents 'three or more', and not 'two', that is, a non-dual non-singular number and not simply non-singular number. That is, there is an extension of the icon of form, such that two instances of the form of the noun root within the one reduplicated word indicates 'three or more entities'. This is of course the case for all number marking by affixation: one occurrence of the non-singular affix serves to extend reference to at least two, and frequently more, entities. In addition, there is a parallel to be drawn here between this most straightforwardly iconic (and most common in Australian languages) function of nominal reduplication and the most straightforwardly iconic function of **verbal** reduplication, as presented in chapter four, that of iteration. This parallel is noted by Botha 1988:172, drawing on the work of Jackendoff 1983.

Other functions can also be seen to be iconically reflecting the formal structure of nominal reduplication. The notions of emphasis (exemplified by Ungarinyin below) and dimunition (Yankunytjatjara), as well as those of intensification and de-intensification, relate concepts and entities which are seen to have more of a quality or identity, in the case of intensification and emphasis, but less of a quality or something less than identity in the case of de-intensification and dimunition. These last two relate to the attenuative function

found in verbal reduplications. The attentuative type function of reduplication has been noted with some puzzlement by previous commentators. However, Bhaskararao (1977:4) comments on derivations such as *red* --> *reddish* in Telugu in the following ways:

> The case of less intensity can be viewed as a characteristic or quality spread out over a larger area, giving rise to lightness in the case of colours.

This analysis could be suggestive for similar reduplications in Australian languages. However, the prevalence and productivity of reduplication with the de-intensification function in at least one Australian language, Ngiyambaa, where it occurs with a wide spectrum of adjectival concepts make it seem unlikely that 'spreading the quality over a larger area' would necessarily be applicable to adjectives, of, for example, valuation and human propensity. (See discussion of Ngiyambaa below).

The table above also refers to derivations by reduplication which derive reference to a quality by reduplicating the term referring to an entity, as in the case of colour term formation, and in the opposite direction (although this is rare): deriving the name of an object by reduplciating the form referring to its salient quality. How do these functions relate to iconicity?

As iconicity is formulated above, as the notion of 'increase in reference to entities or events', it is somewhat straightforward to see that object-to-quality derivation will extend the term for the object to potentially apply to all objects possessing the quality for which the original object is notable (as when the term for *grass* is reduplicated and can then apply to all green objects). In the other direction, as for example when the

quality *soft* is reduplicated in Kayardild to form the name of a soft weed found in swamps which is used to swaddle new-borns, it is also fairly clear that a conceptual relationship between the quality and the entity leads to the possibility of naming the entity on the basis of its salient quality.

However, there may be more to the iconic significance of these types of reduplication than has been captured by the strict definition of iconicity given above in terms of quantitative increase. Perhaps we need to expand the definition of iconicity (not, I hope, with loss of clarity of definition) to include **qualitative** relationships. By this I intend to refer to the notion of similarity which lies behind these latter reduplicative meanings. Thus, those reduplications which mark object-to-quality and quality-to-object functions are iconic to the extent that they mark a similarity in 'quality' by drawing a formal link (reduplication) between one conceptual element and another. I suggest the following additional clause to our definition above:

> and form and meaning resemble each other in a qualitative respect: an increase in form corresponds [to] an increase in similarity of quality between the concepts.

These definitions will be discussed further in part two.

3.2.1 Noun reduplication

By far the most commonly occurring function of noun reduplication is that of number marking. Rather than being a simple non-singular marker referring to two or more entities, however,

reduplication as a number marker on nouns [4] most commonly signifies three or more entities. It has long been recognised and noted that Australian languages generally mark number optionally on nouns, but obligatorily on pronouns (see for example Dixon 1980:267) [5]. This does not mean that these languages will be deficient in number marking morphology [6]. Reduplication is but one of several means of number marking in Australian languages, together with others such as number suffixation (for example Dyirbal, Dixon 1972; Yidiɲ, Dixon 1977), number-marking noun classes (for example Djingili, Chadwick 1975; Mara, Heath 1981), cardinal number adjectives in the noun phrase (most languages), non-number specific quantifiers such as 'a lot of', and 'several', and juxtaposition of a number-marking pronoun with a noun.

Moreover, many Australian languages mark a three-way number constrast in nouns as well as in pronouns, with a contrast between singular, dual and plural [7]. In languages with a grammaticalized three-way number-marking system, the reduplicated nominal is used most commonly to refer to plurals, and very rarely to refer to duals. Only in a few cases is reduplication the general means for marking non-singular. There seem to be several varieties of number marking commonly found with

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4. Commonly by reduplication of the entire noun root, but other patterns may occur; see chapter two.

5. The whole question of the grammar and semantics of number marking in Australian languages, I believe, deserves a study in itself.

6. On a related issue, the system of cardinal numbers in Aboriginal languages, see Harris 1987.

7. Sometimes with the addition of paucal, *a few, three*.

reduplication in Australian languages: the *significant plural function, meaning 'a large number, more of X than usually occur together' [8]*; the *distributive plural function*, meaning 'many X spread out over an area'; collectivity, meaning 'a collection of X forming an identifable unit'; and another function which differs slightly from the last, '**all** of a set'. The 'significant plural' function is the most common in Australia as a whole, but certain groups of languages (for example the Victorian languages, Hercus 1986) more commonly show other types of plural function.

We should note that many languages in Australia, while having explicit means of various kinds for marking number, often also employ other strategies which force a non-singular reading on the NP without any explicit marker of number being present. Merlan notes this in her description of Mangarayi.

> Though both number and case can both be marked by overt morphological material in the same word, various strategies are employed which eliminate the need for explicit number suffixation in many instances... the fact that morphologically singular nouns may be interpreted as plural in many instances reduces the incidence of nouns in which number is overtly marked. (Merlan 1982:85-86.)

Clearly, then, if we are to make any precise judgment of the role of reduplication in these languages, we need to be able to examine reduplication in conjunction with other means of marking number in the language. In order to do this, I examined twenty-nine languages with a non-singular of some kind signalled by

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8. The term 'significant plural' also relates to the general tendency in Australian languages for number not to be marked obligatorily. A 'siginificant plural' function means that reduplication will mark number that is "out of the ordinary" and thus specified, and marked by morphological material, in contrast with number which is not usually specified.

reduplication [9]. I compared the types of nominals (mostly, with a few notable exceptions, 'nouns' and not 'adjectives') which could take reduplication with a number marking function and those which took other types of number marking, whether by morphological or syntactic means. It is significant that in all cases these languages had some other means of number marking on NPs. The results showed some connection between reduplicative versus non-reduplicative number marking morphology and various semantic fields.

The semantic range of nouns in a language with which reduplication may occur is generally quite restricted. In the survey of twenty-nine Australian languages, of which thirteen are noun class languages, fourteen languages (eight of these with noun classes) exhibited nominal reduplication marking the 'significant plural' function described above, restricted to HUMAN nouns only. In Lardil, for example, the cases of reduplication attested occur only with Human nouns. Moreover,

> plurals may be formed by reduplication of the entire noun stem, but this is marginal and the forms are rare in use. Normally, a nominal, apart from a pronoun, is not marked for number. (Klokeid 1976:66).

On the subject of number in noun class languages, we may note the following comments from Frigo 1989, based on a survey of five non-Pama-Nyungan noun class languages: Gunwinggu, Mangarayi, Ngandi, Ungarinyin, and Yanyuwa.

> In some grammars a division has been made between human and non-human in nouns which share the same class prefix. This division is made on the basis that only nouns which refer to humans take a different prefix in

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9. Listed as Appendix four.

> the plural. In some grammars these plural forms have been analysed as separate classes. (1989:9)

Thus, for example in Lardil (a non-noun-class language), the reduplicated terms are human terms, such as:

2.1. Lardil (Klokeid 1973)

marun	*boy*
marunmarun	*boys*

However, sometimes only a subset of all human nouns can be subject to reduplication. This case obtains in Mara, a noun class language, where "certain human nouns form a (3+) plural by reduplication" (Heath 1981:24).

2.2. Mara (Heath 1981)

jawulba	*old person*
jawu-yawulba	*old people*
njiwa	*widow*
njiwa-njiwa	*widows*

The word for *man*, however, does not follow this pattern:

2.3. Mara (Heath 1981)

gaṛiyi-mar	*man*
gaṛiyi-Ø	*men*

and is in fact counter-iconic (Mayerthaler 1988), since the marker of what appears to be number is zero in the non-singular case.

Stem internal changes for number in Mara, whether by reduplication as in 2.2 above, or by other means (2.3) seem to be restricted to human terms. In addition to reduplication as a number marker, Mara has five noun classes, Masculine, Feminine, Neuter, Dual and Plural, all marked by prefixes to the noun root. Only human nouns tend to be marked by Dual and Plural prefixes.

If a stem is already marked for number by reduplication, it may still be prefixed. Terms which take a 'generic' interpretation are the most commmon exemplars of this. Non-human nouns are mainly found in the masculine class, but some terms for higher animates distinguish male and female (eg. *euro*), in which case the female term will be a member of the feminine class. As noted above, non-human forms tend not to occur marked Dual or Plural by prefixation, even when the referent is non-singular. Numerals are usually used if explicit number reference is required (Heath 1981:73).

Reduplication in Mara is not entirely restricted to human age-status terms. Reduplication may also occur with a small set of terms referring to topography. In these instances it also marks plurality, in the sense of an "indefinite large number".

2.4. Mara (Heath 1981:24)

ŋargu-ŋargu	*billabongs*
ɭuɭga-ɭuɭga [10]	*islands*

In Kalkatungu, a non-classifying language, reduplication appears to be restricted to human terms, and in this case reduplication clearly sets off nouns from adjectives. Compare the two forms below, where the first is a noun and the second is an adjective, and the meaning differences reflect a difference in semantic structure according to the noun class to which each form belongs.

2.5. Kalkatungu (Blake 1979a:94)

kujiri	*boy*
kuji-kujiri	*boys*
pujur	*hot*
pujur-pujur	*very hot*

10. This form also occurs in Warndarang.

Reduplication in Djingili is possibly restricted to human nouns, but Chadwick's analysis makes it somewhat unclear. Djingili has noun classes, separated into masculine, feminine, particular neuter and general neuter. All noun classes may take suffixes for dual and plural, and so reduplication seems to be somewhat marginal when compared with this grammaticalised system of number marking. 1.6. gives some instances of reduplication in Djingili

2.6. Djingili (Chadwick 1975)

jabandja	*young one*
jababandja	*young ones*
maḷuga	*old man*
maḷaḷuga	*old men*
biṇmiriṇi	*single girl*
biṇmiṇmiriṇi	*single girls*

These forms may be compared with the following adjectival reduplication in Djingili:

2.7. Djingili (Chadwick 1975)

ŋamuḷa	*big*
ŋamamuḷa	*very big*

Warndarang, another noun class language, has the following system. Reduplication occurs most commonly on human age-status terms (about two dozen forms are attested), being rare with non-human terms and with adjectives. Warndarang's classes show a basic binary split between human and non-human nouns, with further divisions in each category according to natural gender, (or shape in the case of non-human nouns. Noun class membership is marked by means of prefixes to the root, and these prefixes are never included as part of the reduplicated structure. 2.8 below gives some cases which show the types of reduplication present (the third is an inherently reduplicated form):

2.8. Warndarang (Heath 1980b:19)

wulu -muna -munaŋa -ɲu
PLURAL-REDUP-white person-?
white people

wulu -ṛiḏa -ṛiḏarŋu -ɲu
PLURAL-REDUP-Ritharngu-?
Ritharngu people

wu -ḷuḷga-ḷuḷga
TREE-REDUP-island
islands

We noted above that, in general, reduplication is not used to mark duality. Reduplication in Alawa marks 3+ plural, along with the plural prefix yil-. Duality, however, can only be marked by a dual prefix yirr-. Reduplication and prefixation can co-occur, as the following examples in 2.9 show.

2.9. Alawa (Sharpe 1972:53)

yatjatja	*child*
(yil)yatja-yatjatja	*(PL)REDUP-child*
yirr-yatjatja	*DU-child*
ankiriya	*woman*
(yil)kiri-kiriya	*(PL)REDUP-woman*
yirr-kiriya	*DU-woman*
ǰalkuyi	*young man*
ǰalkalkuyi	*young men*
mupul	*bachelor*
yilmupulmupul	*bachelors*

The use of reduplication combined with affixation to mark number also occurs in Mangarayi (Merlan 1982). Merlan claims that there may be some syntactic justification for this, since

> number suffixes have case-forms, while syntactic case distinctions cannot be explicitly marked in nouns where plurality is expressed only by reduplication.(1982:85)

Reduplication reserved for non-dual non-singulars seems to be the norm in Australian languages. Mangarayi (Merlan 1982), however,

has reduplication in the derivation of dyadic kin pair terms, as in the following example:

2.10. Mangarayi (Merlan 1982)

ŋala	*mother*
ŋalaŋala-yi	*mother(s) and child(ren)*

These kinship dyads may refer to either dual or plural groups. Duality in nouns, by contrast, can only be marked by suffixation, not by reduplication:

2.11. Mangarayi (Merlan 1982)

bugbug-garan	*two old people.*
bugbugbug	*old people + PLURAL*

In general then, the system of Mangarayi with respect to number marking in most nouns fits the general Australian pattern. The class of exceptions is a semantically well-defined one, that of kinship terms. Moreover, in terms of general productivity and frequency in text, Mangarayi also fits the general Australian pattern, viz:

> Reduplication is only a secondary means of plural number expression compared with suffixation. There tends to be a standard set of nouns - especially human status nouns - which frequently occur in reduplicated form, especially in syntactic case functions. Some of these are ... waŋgaŋgij *children*, gababuji *old blind people*, and a few others; other nouns tend not to occur in reduplicated form unless in the proprietive construction (Merlan 1982:86).

A similar case of kinship dyad reduplication obtains in Ngalakan, a language in the same area (but not the same genetic subgroup). Here the unreduplicated form refers to a dyad, while a reduplicated form must refer to a plural entity (Merlan 1983:20). /go?~ko?/ is a kin dyadic suffix.

2.12. Ngalakan

buypu-go?	*Br + Br*
buypubuypu-go?	*Br + Br PL*

mana-ko?	*Mo + Ch*
manamana-ko?	*Mo + Chn*

Another language with reduplication involving its human nouns is Tiwi (Osborne 1974). All reduplicating plurals in the corpus are human terms. In addition to reduplication, Tiwi has a class suffix for plural number, -Wi. The phonological formula for Tiwi reduplication is somewhat unusual for Australian languages, at least for noun reduplication: left reduplication of Ca on the stem.

2.13. Tiwi (Osborne 1974:53)

murukupwara	*big girl*
mamurukupwarauwi	*big girls*
parlini	*ancestor m*
parlika	*ancestor f*
paparluwi	*ancestors*

Suffixation of -Wi (where /W/ is a morphophoneme) is the only productive means of plural marking in Tiwi, reduplication being limited to human nouns. Noun classes in Tiwi are split along two dimensions, human versus non-human, masculine versus feminine. While masculine and feminine are distinguished by overt suffixes, Osborne claims that human and non-human are not formally distinct (Osborne 1974:52). However, as we have seen above, this is not really accurate, since human nouns undergo reduplication, but non-human ones do not.

Similarly, reduplication in Djapu is attested only for two human terms.

2.14. Djapu (Morphy 1983:47)

yolŋu	*person*
yolŋuyolŋu	*person PL*
ŋa̲la̲pa̲l	*senior person*
ŋa̲la̲pa̲lŋa̲la̲pa̲l	*senior person PL*

Number marking in this language may be achieved in other ways, such as the use of the 3rd person dual pronoun together with the noun word (usually following the noun if it is a number marker, and occurring with zero case inflection) to mark duality. This is in fact a common strategy in Australian languages. Plural marking may occur either on the noun, or rarely, on the verb (a suppletive verb form). If on the noun, it is marked by the use of a plural suffix (only attested with human terms) or with the noun *mala* 'group, set'. The latter is the most productive process of number marking in Djapu.

Warlpiri reduplication occurs with human and animate nouns, as in the following cases in 2.15. With human nouns and some higher animates, our by now familiar significant plural seems to prevail:

2.15. Warlpiri (Nash 1986:130)

kurdu	*child*
kurdukurdu	*children*
wati	*man*
watiwati	*men*
kamina	*girl, maiden*
kaminakamina	*girls, maidens*
purlka	*old man*
purlkapurlka	*old men*
yakalpa	*emu chick*
yakalpayakalpa	*emu chicks*

With lower animates, as in 2.16., however, a collective meaning is found:

2.16. Warlpiri (Nash 1986:130)

kiwinyi	*mosquito*
kiwinyikiwinyi	*swarm of mosquitoes*

murruru	*hornet*
murrurumurruru	*swarm of hornets*

Finally, Ngandi, Ngawun and Warrgamay also have reduplication only on human age-status terms, but other types of marking on nouns from other semantic groupings.

2.17. Ngandi (Heath 1978:15)

ḏaku-ḏaku	*children*
jawu?-jawulpa	*old men*
wiṛi?-wiṛipu	*others*

2.18. Ngawun: Nominal plural (Breen 1981b:34)

panya	*woman*
panyapanya	*women*

2.19. Warrgamay: Nominal plural (Dixon 1981:35)

gilaŋ	*old man*
gilaŋgilaŋ	*lots of old men*
yibi	*child*
yibiyibi	*children*
ɟambi	*old woman*
ɟambiɟambi	*old women*

Five languages exhibit other semantic restrictions of the types of nouns with which reduplication may co-occur. For example, in the Victorian languages (Hercus 1986), reduplication with pluralising/collectivising function occurred only on certain inanimate nouns. In other languages, where the reduplication is more semantically general, human nouns or some subset of human nouns constitute the exception to an otherwise highly grammatical reduplicative process.

For example, in Dyirbal, a set of eight nouns, all human age-status terms with the exception of the nominal for *big*,

constitute the only exceptions to a very general reduplicative process. The following examples show reduplicating nouns in Dyirbal:

2.20. Dyirbal (Dixon 1972:242)

ɲalŋga	*girl*
ɲalŋgaɲalŋga	*girls*
gabul	*carpet snake*
gabulgabul	*carpet snakes*

But terms such as 'man' form their plural by suffixation of semi-productive affixes:

2.21. Dyirbal (Dixon 1972)

yaɽa	*man*
yaɽargi	*men*

Reduplicative patterns do not distinguish formally between nouns and adjectives in Dyirbal. Adjectives, which are a distinct formal class in Dyirbal according to co-occurrence with noun class markers, reduplicate for number in the same formal manner as nouns:

2.22. Dyirbal (Dixon 1972)

midi	*little, little one*
midimidi	*lots of little ones*

The complete set of exceptions to the general process of reduplication are the following human age-status or 'stage of life' terms (which seems to be a common conceptualization; see also Goddard 1985).

2.23. Dyirbal (Dixon 1972:241)

bulgan ɟagiɲ	*big* [11]
yaɽa	*man*
barŋan	*young boy (just before initiation)*
ɽugun	*youth (initiated)*
ɟaɟiya	*young girl (just before puberty)*

11. These two Dyirbal forms are dialectal variants.

nayi	*girl (past puberty)*
ɲalŋga	*child (any age up to puberty)*

In Victorian languages, however, the restriction appears to be that mostly inanimates (or, in the case of Maḍi Maḍi, wider set of 'non-humans') will be reduplicated, and the reduplicated forms seem to express some sort of collectivity, at least in Hercus' glosses.

2.24. Weṛgaia (Hercus 1986)

bunudj	*tea-tree*
bunudj-bunudj	*a thicket of tea-tree*

2.25. Maḍi Maḍi (Hercus 1986)

wilegilwilegil	*a flock of galahs*
bialbial	*a forest of red gums*
bunedbuned	*the Pleiades*

2.26. Wemba Wemba (Hercus 1986)

maruŋ	*Murray pine*
maruŋ-maruŋ	*a forest of Murray pine*
beṛg	*a prickle*
beṛg-beṛg	*a lot of prickles*
lib	*a spike*
lib-lib	*a lot of spikes* [12]

"One plural based on internal reduplication" is a human term in Wemba Wemba (Hercus 1986:27).

2.27. Wemba Wemba (Hercus 1986)

baiŋgug	*child*
bembeŋgug	*children*

In Ritharngu, reduplication in nouns seems to be restricted to non-humans, and some adjectives also take this plural function. This process is not productive, however. The glosses given by

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12. Note also lib-lib-wil *Murray crayfish*, with the proprietive suffix -wil, also in Wemba Wemba.

Heath seem to indicate the "all of a set" pluralising function is being marked here.

2.28. Ritharngu (Heath 1980a:22)

guyaguya	*all the fish*
ṇigaṛṇigaṛ	*all the billabongs*
yuyuṯu	*all the small ones*

Finally, note that Kaytej has reduplication of adjectival-like elements with a plural function when they occur as modifiers in the noun phrase (Koch 1984:example 12c):

2.29. weye akelyakelye alarre-rapeynte-rantye
animal small-REDUP kill-while going-PROG
(a man hunting larger game) kills small animals as he goes along.

For the remaining nine languages in the sample I considered, reduplication for number marking was either very marginal (being attested in one or two forms), so that no significant claim could be made in either direction, or so general that no semantic restriction seemed to exist. The former case obtained in three languages: Nyawaygi, Gumbaynggir, and Murinypata. The following examples exhaust the set of number marking reduplications in the data sets given for these languages [13].

2.30. Nyawaygi (Dixon 1983:460)

gumu	*mosquito*
gumugumu	*lots of mosquitoes*

2.31. Gumbaynggir (Eades 1979:270)

baga-baga *knee-knee*	(site of Birugan's (legendary hero) knees landing when he was slain, i.e. Nambucca Heads.)

13. As noted in Dixon's grammar of Nyawaygi (Dixon 1983), it should not be assumed that there were no more reduplicated forms in the language.

Note that in example 2.31, reduplication seems to be marking duality in its most natural interpretation (presumably even legendary heroes have only two knees!). With only one example, however, it is difficult to be sure.

2.32. Murinypata (Walsh 1976:201)

ŋayi lawaŋga pam(-0) -ŋkaḍu
1sg wallaby 1sg(-3sg)-see
I saw wallaby/wallabies

ŋayi lawaŋga lawaŋga pam(-0)-ŋkaḍu
I saw wallabies

We come now to languages with reduplication as a number marking process in nouns without a semantic restriction on the types of nouns which may undergo this process. The following list of examples demonstrates the semantic spread of nouns which can co-occur with reduplication in these languages. The examples cover human and non-human terms, animates and inanimates.

2.33. Yidiɲ (Dixon 1977:156)

buɲa	*woman*
buɲabuɲa	*women*
ɟimurU	*house*
ɟimuɟimurU	*houses*
gindalba	*lizard*
gindalgindalba	*lizards*
galambaɽa	*march fly*
galamgalambaɽa	*march flies*

2.34. Bandjalang (Crowley 1978:42)

baygal	*man*
baygalbayga:l	*men*
baliŋ	*young man*
baliŋbali:ŋ	*young men*
buwiɲ	*bubble*
buwiɲbuwi:ɲ	*bubbles*

dugun	*mountain*
dugundugu:n	*mountains*
dali	*tree*
dalidali:	*trees*

2.35. Kayardild (Evans 1985:148)

marnganda	*pre-pubescent girl-NOM*
marngan-marngan-da	*pre-pubescent girls-NOM*
kurda-a	*coolamon-NOM*
kurdakurda-a	*many coolamons-NOM*

2.36. Nunggubuyu: Noun significant plural (Heath 1984:193)

badirinya	*ghost*
babadirinya	*ghosts*
dhudabada	*white man*
dhudhudabada	*white men*
lhalmar	*foreigner*
lhalmalhalmar	*foreigners*
wurugu	*billabong*
wuru-wurugu	*billabong COLL*

2.37. Kuku Yalanji: Noun general plural (Patz 1982:91)

wulman [14]	*old man*
wulmanwulman	*old men*
kangkal	*own child*
kangkalkangkal	*own children*
bilngkumu	*saltwater crocodile*
bilngkumubilngkumu	*saltwater crocodiles*
juku	*tree*
jukujuku	*trees*

While the vast majority of languages in this sample seem to use reduplication as a straightforward multiple plural marker, some languages seemed have an extra nuance or slight variation in the meaning of the number marking. One language which seemed to show a variant on significant plural number marking is Arrernte. In

14. Presumably a borrowing from English.

the following examples in 2.38 the semantic nuance of 'Xs of different kinds' is found.

2.38. Arrernte (Wilkins 1984:18)

impatye [15]	*an animal track or print*
impatyeimpatye	*lots of different kinds of tracks*
tyipe	*a piece of something, esp. meat*
tyipetyipe	*lots of different pieces*

As we noted above, another number-marking function found in the sample of languages was the distributive plural. This is exemplified below.

In Yankunytjatjara this meaning type seems to be suggested by the following inherently reduplicated forms.

2.39. Yankunytjatjara (Goddard 1985)

kulyarkulyar	*heavy dew*
tjulpuntjulpun	*wild flowers*
puṯaputa	*sedge* [16]
minyaminya	*bits and pieces, tiny pieces*

In Arrernte we also find inherently reduplicated forms with a distributed meaning.

2.40. Arrernte (Wilkins 1984 and p.c.)

ntenye-ntenye	*dots, especially those used in traditional painting now used to describe freckles.*
mpele-mpele	*a rash, of the kind where little bumps rise up on the skin.*

I should note that while the original sources for these examples refer to these forms as distributed plurals, I would be hesitant to gloss them as such without further corroborative (textual) evidence).

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15. Source of the name for Imparja TV.

16. Grasslike plant of genus *Carex* (OED).

Aside from number marking, noun reduplication can mark a series of other types of functions. While number marking occurred in some thirty languages from the sample, these other functions occurred far less frequently. The following discussion exemplifies them.

Three languages, Bandjalang, Arrernte, and Yankuytjatjara have noun reduplication in the related function of pretence or similarity. In this case, a nominal referring to a KIND of thing is reduplicated to form a nominal referring to a KIND of thing which is similar to the referent of the base form, but not identical. Note in this respect that several languages (eg Margany, Gunya (Breen 1981a), Bidyara (Breen 1973), Gidabal (Geytenbeek 1971), Yindjibarndi (Wordick 1978)) have a suffix which is usually glossed as SEMBLATIVE (Blake 1977), sometimes used as a comparative, but more often to claim that the N1 is N2-like, as in the following example:

2.41. Margany (Breen 1981a)

duṛuɲ gudgan biḍal-gaḍi
hair long woman-SEMB
He's got long hair like a woman

The following examples illustrate noun-to-noun similarity derived by reduplication.

2.42. Bandjalang (Crowley 1978)

bulun	*kidney*
bulun-bulu:n	*cumulus cloud*
gamban	*scar*
gamban-gamba:n	*snake with stripes on its back (as though it had ritual scarring).*

2.43. Arrernte (Wilkins 1984)

werlatye	*milk, breast*

werlatyewerlatye	*medicinal plant with milky sap*
kwerrke	*the young of animals*
kwerrkekwerrke	*the small digit, little toe, little finger*
ahiye	*breath*
ahiyeahiye	*fontanelle*
atnwaye	*back of ankle*
atnwayeatnwaye	*high heels*

2.44. Yankuytjatjara (Goddard 1985:144)

kulpi	*cave*
kulpikulpi	*a small cave, a sort of cave*
ngura	*camp*
ngurangura	*a sort of camp, a temporary camp*
purtju	*rash, scabies*
purtjupurtju	*itch*
mukul	*hook on spear or spear-thrower*
mukulmukul	*a sort of hook*

Yankunytjatara also has a construction which refers to children's games as 'playing at X-X', where X refers to the activity or entity acting as a model for what the children are pretending to do or be, as in the following examples:

2.45. Yankunytjatjara (Goddard 1985:146)

malu-malu inkanyi
hunt-hunt play
playing at hunting

kungka-kungka inkanyi
woman-woman play
playing 'women'

Three languages, Diyari, Watjarri and Bandjalang, showed noun reduplication in a dimunition function [17].

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17. Note in this respect that the language of Sydney, as recorded in Dawes' manuscripts, appears to have had the following diminutive derivation. Dawes records a form gnan-ngyelle (presumably(?) ɲaa-ɲeli), see-NOMLZR *telescope*, which is the basis for a reduplication ngan-ngyelle-ngyelle, glossed as *reading glasses*. (Jakelin Troy, p.c.)

2.46. Diyari (Austin 1981)

kintha-kinthala	*little dog, puppy*

2.47. Bandjalang (Crowley 1978)

ɟa:ɟam	*child*
ɟa:ɟamɟa:ɟam	*little child* [18]

2.48. Watjarri (Douglas 1979)

munga	*night*
mungamunga	*evening*

The example in 2.48 may not be convincing on its own, but other languages seem to express the same sort of diminution with temporal nouns. Yankunytjatjara, for example (Goddard 1985:146) lists the following temporal expressions which may be reduplicated with a diminishing type semantic effect.

2.49. Yankunytjatjara (Goddard 1985)

munga	*darkness, night*
mungamunga	*very early morning, half light*
kalala	*noon*
kalalakalala	*mid-afternoon, late morning*
mungartji	*late afternoon*
mungartjimungartji	*mid-afternoon*

Harold Koch (p.c.) has suggested to me that nouns such as temporal expressions are conceptualized as referring to extreme properties such as 'night' = 'absence of light', and that such terms, when reduplicated, can only refer to 'less than'. This would account for the data from Yankunytjatjara and Watjarri.

A further function of noun reduplication is 'affectionate X', where reduplication derives an address term which has an added component of affection or intimacy towards the addressee.

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18. Note that Bandjalang also has reduplication for pluralising function.

Arrernte has reduplication expressing this emotive. affectionate function.

2.50. Arrernte (Wilkins 1984 and 1989)

arrenge	*grandfather (FF)*
arrengearrenge	*grandfather (FF) affectionate*
aperle	*grandmother (FM)*
aperleaperle	*grandmother (FM) affectionate*
ipmenhe	*grandmother (MM)*
ipmenheipmenhe	*grandmother (MM) affectionate*

Graham McKay (p.c.) notes that the term for 'child' in Rembarrnga, being the only attested productively reduplicating nominal in that language, reduplicates with a meaning which combines plurality and affection.

One further noun reduplication function is found in Ungarinyin. Ungarinyin has a reduplicative construction which seems to express an emphatic demonstrative meaning. The data here is from Coate and Oates' (1970) description; Rumsey, while discussing demonstratives in his grammar (Rumsey 1982:32), does not mention reduplication in conjunction with these forms.

2.51. Ungarinyin (Coate and Oates 1970:23)

ǧiri-jali-ǧiri	*that's the fellow*
njindi-njindi	*she's the one*
mi-mindi	*that's the place*
mindimindi-jali	*that's the place*
ǧi-ǧiri	*that's the man*
di-naŋga-di	*that's that*
di-jali-di, di-di	*that's it*
gunda-gunda	*right here*

One very common noun reduplication function derives adjectives, specifically, an adjective referring to a quality on the basis of reduplicating the noun referring to the entity which is notable

for that property. This type of derivation occurs most commonly, but not exclusively in the derivation of colour terminology, which is quite widespread in Australian languages.

The following list gives all the examples of colour derivation which I could find in the sources consulted. Fifteen languages in all yielded this type of construction. Note that some languages such as Arrernte and Warlpiri have extensive derived colour term systems. In other languages, one or two colour terms may be derived, but the rest of the colour terminology is monomorphemic. In some cases I have included the monomorphemic terms so as to give an idea of how productive the process is within the domain of colour terminology. I found three examples of colour terms which were inherently reduplicated (that is, no lexical base for the colour term could be located):

2.52. Kaytej (Koch p.c.)

rntererntere red [19]
*rntere

2.53. Nyawaygi (Dixon 1983)

guṛiguṛi *red*
*guṛi [20]

2.54. Martuthunira (Dench 1987a)

yarlwantu-yarlwantu *speckled brown-white*
*yarlwantu

In all other instances, reduplicated colour terms were derived from nominal bases. The bases which can be used to derive colour terms varied. The two occurrences of 'white' which were found

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19. *rntere* 'red' occurs in Arrernte.

20. But note that guṛi *blood* occurs in the neighbouring language, Warrgamay.

from neighbouring languages (Bidyara and Margany/Gunya) were reduplications based on the word traditionally used to refer to 'ashes', extended in post-contact times to refer to 'flour'. 'Black' was based on 'charcoal' in one case, and in the other on a word which seemed to mean 'black skin', 'darkness', or 'dirtiness'. 'Red' was often based on 'blood' (five instances), but could also be derived from the form for 'red ochre' (two instances). In one case, 'red' is derived from the word for *'fat'*, (as in animal fat). 'Red-brown' in one instance was derived from the word for fine red dust. 'Green' tended to be based on terms for vegetation of some sort. 'Brown' was based upon the word for 'ground' or 'earth'. Grey or light purple occurred in one language as derivations from words for smoke. Three other colour-type derivations occurred forming terms which are not necessarily understood as colour terms in English, but should be understood as such in the context of Australian languages since they denote qualities which are visually perceived (cf Wierzbicka 1989 ms). These are 'translucence' and 'transparency' (in Warlpiri) and 'brightness' or 'multi-colouredness' (in Kayardild). 'Translucence' (letting light through with refraction of the rays) is based on the term for 'water', while 'transparence' (no refraction) is based on the word for 'sky', as is the term for 'blue' in another language. The term 'multicoloured' is based on a term referring to a multi-coloured sandstone.

The data is reproduced here for completeness.

2.55. Arrernte (Wilkins 1984)

therrke	*general term for useless green plants~ weeds*

therrke-therrke	*green*
ulpmernte	*fine red dust*
ulpmernte-ulpmernte	*red-brown*
kwatye	*water*
kwatye-kwatye	*a clear translucent appearance*
alkere	*sky*
alkere-alkere	*a clear transparent appearance [21]*

2.56. Warlpiri (Nash 1986)

yalyu	*blood, large blood vessels*
yalyuyalyu	*red*
yurlpa	*red ochre*
yurlpayurlpa	*red*
yukiri	*green, alive, of plants, unripe green*
yukiriyukiri	*green*
wajirrki	*green grass, ripe green*
wajirrkiwajirrki	*green*
karntawarra	*yellow ochre*
karntawarrakarntawarra	*yellow*
yarringki	*blue, as of sky*
yarringkiyarringki	*blue*
walya	*ground, earth, dirt, sand*
walyawalya	*1. brown, 2. death adder (colour of earth)*
yulyurdu	*smoke*
yulyurduyulyurdu	*grey, light purple*
kunjuru	*smoke*
kunjurukunjuru	*grey*

2.57. Bidyara (Breen 1973) [22]

budha	*ashes, flour*
budhabudha	*white*

2.58. Margany and Gunya (Breen 1981a)

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21. Wilkins 1984 notes the following Anmatyerre (a related language) forms: akitekite *yellow*, melemele *brown*.

22. Note in these two examples that Bidyara and Margany/Gunya (all South-East Queensland languages) share both the lexical base budha and the derivational process of reduplication. One other colour term in Margany/Gunya is reduplicated: gudhigudhi *red*, from the form for red ochre.

budha	*ashes* (cf. Bidyara above)
budhabudha	*white*
gudhi	*red ochre*
gudhigudhi	*red*

2.59. Alyawarra (Yallop 1977)

antira	*fat (noun)* [23]
antirintira	*red/orange*
*atjika	
atjitjika	*red/brown*

Other colour terms in Alyawarra are not reduplications:

2.60. Alyawarra (Yallop 1977)

irrpula	*black, dark*
altira	*white*
arrkiyta	*yellow* [24]
athirrka	*green*
apilya	*fresh, green*
arrkaya	*matt, dull*
ilkiya	*bright, shiny*

2.61. Yindjibarndi (Wordick 1982)

marta	*blood*
martamarta	*red*

2.62. Kayardild (Evans 1985)

kandu	*blood*
kandukandu	*red*
kurndungkal-da	*multi-coloured mudstone*
kurndungkal-kurndungkal-da	*bright, multi-coloured*

2.63. Pitta Pitta (Blake 1979b)

parru	*yellow ochre*
parruparru	*yellow*
kurri	*red ochre*
kurrikurri	*red*

2.64. Yukulta (Keen 1983)

karnrtuwa	*blood*

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23. Cf. Kaytej *antere* 'fat', *rntererntere* 'red'.

24. Cf. footnote 21.

karnrtukarnrtu	*red* [25]

2.65. Kalaw Kawaw Ya (Ray 1907)

kubi	*charcoal*
kubikubi	*black*

2.66. Waga Waga

ngurru	*black, black skin, dirty, darkness*
ngurrungurru	*black, dirty*

2.67. Yankunytjatjara (Goddard 1985)

ukiṟi	*green grass*
ukiṟi-ukiṟi	*green*

By no means all colour terms in Australian languages are either reduplications based upon a nominal form, or monolexemic items. In some cases they are derived by reduplication from verbs, as in Nunggubuyu:

2.68. Nunggubuyu (Heath 1984)

du-duma-y	*black-CM*	duma	*be black*
ngal-ngalngalu-y	*white-CM*	ngalngala	*be white*

Note, finally, that in Ngiyambaa (Donaldson 1980; see above), colour terms seem to be monolexemic and reduplicate to mean "more or less X" in common with all stative predicates and active predicates in the language. The semantic principle which underlies all reduplication in this language precludes the derivation of a colour term from the base form referring to a concrete object. The semantics of *more or less* seems to be incompatible with object to quality derivation in Ngiyambaa (but not, note, in Warlpiri).

Not all object to quality derivations are colour terms, as we

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25. Presumably cognate with the Kayardild form in 2.62.

noted above. The following examples indicate different sorts of such derivations.

2.69. Kayardild (Evans 1985)

jilangan-da	*hand axe-NOM*
jilandan-jilangan-da	*sharp-NOM*

2.70. Uradhi (Crowley 1983)

apudha	*bone*
apudhaapudha	*skinny*

2.71. Arrernte (Wilkins 1984)

(Distributed feature)

iperte	*hole*
iperte-iperte	*rough of roads, holey, corrugated.*
lyeke	*thorn, prickle*
lyeke-lyeke	*thorny, prickly*

2.72. Arrernte (Wilkins 1984)

(Characterised by prominent body part)

ngkwerne	*bone*
ngkwernengkwerne	*bony, very skinny*
atnerte	*stomach*
atnerteatnerte	*pregnant*

2.73. Yindjibarndi (Wordick 1982:120)

mutyi	*hole*
mutyimutyi	*full of holes*
parli	*bend*
parliwarli	*full of bends*

2.74. Pitta Pitta (Blake 1979b)

ngapu	*water*
ngapungapu	*wet*
maka	*fire*
makamaka	*hot*

2.75. Yir Yoront (Alpher 1973)

thum	*fire*
thumthum	*hot*

2.76 Kalaw Kawaw Ya (Ray 1907)

idi	*oil*
idi-idi	*greasy*

All of these reduplicated forms are derived physical property adjectives, similar semantically to the *-having* construction found in many Australian languages (Dixon 1976). We might expect physical property adjectives to be commonly derived by reduplication given their link to concrete objects. The salient quality of a concrete object is very likely some kind of property which is perceived either through the visual or tactile medium. We might expect taste adjectives such as 'bitter' or 'spicey' [26] to occur as well, but the present corpus does not contain any such forms. Neither are aurally perceived qualities such as 'noisy' found in this sample.

3.2.2. Adjective reduplication

Having identified the types of functions which noun reduplication can mark, we will turn our attention to typical adjective reduplication constructions in Australian languages. None of these are particularly productive; most languages exhibit only a small number of instances in their lexicon. The most common function is intensification. Less commonly, adjective reduplication can express object to quality derivation, and deintensification.

Intensification of adjectives appears to be a particularly noticeable and productive function of adjectival reduplication. Several quite old sources of languages which have since ceased to

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26. The English equivalent of this type of derivation is the -y suffix in words such as 'spicey', 'grassy', and so on. For further discussion of examples like this from English, see Marchand 1969:305 and 352f.

be spoken noted that intensive adjectives were derived by reduplication. For example, the New South Wales language Wiradhuri appears to have had the following form:

2.77. Wiradhuri (Buckingham ms)

dalay-bul-bul
angry-a lot-REDUP
very very angry

Nyungar (Morphy ms.) also seems to have had adjectival reduplication [27] expressing an intensive meaning, but no examples are given in Morphy's paper.

The following examples from various grammars show the semantic scope of adjectives which may reduplicate with an intensive function. This sample includes adjectives of DIMENSION, PHYSICAL PROPERTY, SPEED, HUMAN PROPENSITY, but not those of COLOUR, AGE, and VALUE (Dixon 1982:16). We can speculate as to why this might be so. Colour terms seems to be derived in a different way (see below), according to reference to an object, while terms referring to age tend to be lexicalised as nouns which convey both age and social rank. Note that Wierzbicka writes in this connection: "even languages with large adjectival classes often possess nouns for an old person, or for an old man and for an old woman" (Wierzbicka 1988:478). Value terms may be absent from this list owing to the general tendency (at least in Pama-Nyungan languages) for comparison to be marked by a particle, or a suffix, or some type of syntactic construction (see Schweiger 1984), rather than inflection of the adjectival word (as in Yidiɲ; Dixon 1977)).

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27. Morphy refers to it as *nominal* reduplication.

2.78. Djingili (Chadwick 1975)

ŋamuḷa	*big*
ŋamamuḷa	*very big*
guṇumbura	*fast*
guṇuṇumbura	*very fast*

2.79. Yankunytjatjara (Goddard 1985)

pu̲riny	*slowly, gently*
pu̲rinypu̲riny	*very softly*

2.80. Kalkatungu (Blake 1979a)

pujur	*hot*
pujurpujur	*very hot*

2.81. Alawa (Sharpe 1972:53)

patjatja	*little*
patjapatjatja	*very little*
rukalarra	*long*
rukukalarra	*very long*

2.82. Kuku Thayorre (Hall 1969:92)

kump	*deep*
kump-ump-um	*really deep*

2.83. Diyari (Austin 1981)

waka	*little, small*
wakawaka	*tiny*
kuṇḍi	*bent*
kuṇḍikuṇḍi	*crooked*
paṭi	*silly*
paṭipaṭi	*mad, crazy*
ḍudu	*hemispherical*
ḍuduḍudu	*dumpy*

Other examples can be found in the following languages: Gundungura (Alexander ms.), Warungu (Tsunoda 1974), Djapu (Morphy 1983), Waray (Harvey 1984), and Murinypata (Walsh 1976).

Adjectival reduplication in Australian languages is by no means restricted to the intensification function. Other languages use

reduplication to express a de-intensified meaning, a meaning which may be seen as the opposite to the intensified function. The language in which this is most prominent is Ngiyambaa. While there is no other grammatical distinction between nouns and adjectives in Ngiyambaa, and hence Donaldson (1980:71) hesitates to use the labels *noun* and *adjective*, the set of reduplicating nominals closely corresponds to adjectives in other languages such as English, and the set of non-reduplicating nominals to the class of nouns. The criteria for separating the classes, is, interestingly, a semantic one. Those nominals which can reduplicate are mostly those which are compatible with the productive meaning of all reduplications in this language, that of *more or less* (see also Wierzbicka 1988:485 on this point). Dixon's categories of adjectives all appear in the Ngiyambaa list (Donaldson 1980:72ff), with the exception of AGE. The following categories are instantiated:

VALUE, DIMENSION, PHYSICAL PROPERTY, SPEED, COLOUR, NUMBER, HUMAN PROPENSITY

The absence of AGE adjectives may be due to the intimate relationship between age and status (stage of initiation) terms referring to humans in Australian Aboriginal culture, and the tendency for such terms to be lexicalised as complex nouns in many Australian languages (cf. Dyirbal above where such terms are the only ones <u>not</u> reduplicated for number in the language). Note that if derivational potential is seen as a valid criteria for distinguishing classes of words, Ngiyambaa does have a formal division between two structural classes, which, on the basis of the semantics of their core members, we would label 'noun' and 'adjective'.

Note also that the non-reduplicating nominals in Ngiyambaa fall into several groups: inanimates of the natural world, vegetation, fauna, people (according to race, sex, age, kinship, and other social relations), supernatural beings, place names and culturally defined parts of the environment, artefacts, abstract notions, and parts of any of the above.

Another language in which this de-intensification function is widespread and fairly semantically consistent across the class of 'adjectives' in the language is Yankunytjatjara. The 'more-or-less' function found in Ngiyambaa is also found here.

2.84. Yankunytjatjara (Goddard 1985)

pulka	*big*
pulkapulka	*biggish*
pika	*angry*
pikapika	*irritated, annoyed*
tartja	*shallow*
tartjatartja	*rather shallow*
rawa	*for a long time, persistently*
rawarawa	*for rather a long time, rather persistently*
wanma	*far away*
wanmawanma	*somewhat far away*
kura	*bad, useless, harmful*
kurakura	*pretty useless, not very harmful*

Note also this single example from Gumbaynggir.

2.85. Gumbaynggir (Eades 1979)

mulur	blood, red
mulurmulur	reddish brown

and this example from Warlpiri:

2.86. Warlpiri (Nash 1986)

maru	*black*

marumaru *blackish*

Only two languages had reduplication marking quality to object derivation. By 'quality to object derivation' I mean that a nominal which was used primarily to refer to a quality was reduplicated to form a nominal which referred to a KIND of thing. The languages in which this occurs are Kayardild and Bandjalang. This is apparently a restricted process in Kayardild and sporadic in Bandjalang.

2.87. Kayardild (Evans 1985)

marrkaTHa	*soft*
marrkany-marrkaTH-a	*soft swamp weed used for swaddling newborns*
balarr-a	*white*
balarr-walarr-a	*white of egg*
bardiwuru	*whiskery*
bardiwuru-bardiwuru	*old man*

2.88. Bandjalang (Crowley 1978)

deber *white* deberdebe:r *plover* [28]

Finally, note that several languages from various parts of the continent show adjectives reduplicating in a similar manner to nouns, with significant plural function. The following are examples:

2.89. Wiradhuri (Buckingham ms)

ŋunbay	*one thing*
ŋunbayŋunbay	*a few*

2.90. Warrgamay (Dixon 1981)

wurbi	*big (thing)*
wurbiwurbi	*lots of big (things)*

28. According to Crowley, so-called because the plover is mostly white and grey in colour.

2.91.Nunggubuyu (Heath 1984)

lhamungur	*short*
lhamulhamungur	*short ones (PL)*
ṟuŋgal	*big*
ṟuŋguṟuŋgal	*big ones (PL)*

2.92.Dyirbal (Dixon 1972)

midi	*little, little one*
midimidi	*lots of little ones*

2.93.Ritharngu (Heath 1980a)

yu-yuṯu	*all the small ones*

2.94.Kaytej (Koch 1984)

weye akelyakelye alarre-rapeynte-rantye
animal small-REDUP kill-while going-PROG
(a man hunting larger game) kills small animals as he goes along.

3.3. **Noun versus adjective revisited**

In examining the data on nominal reduplication in Australian languages, one is struck by the extent to which the data contains words referring to substantive entities which reduplicate to produce a different semantic effect from words referring primarily to qualities. To what extent is this distinction visible across Australian languages, and what is its significance?

Reduplication of some kind forms part of practically every Australian language which I have examined (see also Dixon 1980:267, Dixon and Blake 1979:15). However, comparing the reduplication processes in every language is just as complex as investigating, for example, ergativity (Dixon 1979) or complementation (Noonan 1985) or any other syntactic or

morphological device from a cross-linguistic perspective. In general, for most Australian languages, reduplication is not that language's most productive means for expressing the types of meaning reduplication 'typically' conveys, or for doing the same derivational work. There are some languages (eg Yir Yoront for verbal reduplication, Dyirbal for noun reduplication) where that process **is** the most productive means of marking aspect and number respectively, and might be seen as behaving more as an inflectional process than as a derivational process, but such languages are in the minority. If we are to examine structural issues such as the nature and extent of word class distinctions in Australian languages, we need to take such differences into account.

The nature of the distinction between noun and adjective in Australian languages is somewhat problematic. On the structural side, there are varying amounts of evidence in Australian languages to posit a distinction between classes of noun and adjective (more often, the two are treated as sub-classes on distributional grounds, see for example Murinypata (Walsh 1976)). On the side of semantics, Wierzbicka's semantic metalanguage definitions draw out the conceptual differences between noun and adjective. On the basis of this, Wierzbicka argues, we might expect to find structural differences present in any one language. What can reduplication as a test case show us about the status of the distinctions here?

The position in Dixon 1982, "Where have all the adjectives gone?", implies that in all cases nouns and adjectives in

Australian languages are indistinguishable from the point of view of grammar. The conceptual differences implied by the two terms seem not to have any role in the grammar of many Australian languages (See, for example, Dyirbal, Dixon 1972; Yidiɲ, Dixon 1977; Gumbaynggir, Eades 1979; Ngiyambaa, Donaldson 1980; Warlpiri, Nash 1986). Most writers on Australian languages seem to have found similar situations to that documented by Dixon.

Since this is a widely-held position (Goddard 1985 and Wilkins 1989 taking the opposite viewpoint) in Australian linguistics, the premises and data upon which it rests deserve examination. The central problem may be framed as follows. Classic structuralist method (Nida 1949, Gleason 1961, Hockett 1958) states that formal, grammatical criteria, independent of semantics, are needed to set up form classes in a language, the contents of which are unique to the language in question. If no formal mechanism hinges upon a distinction between two categories of words, one such that the core members refer to concrete entities, people, animates and inanimates, which inflect for number, case, and/or gender, the other such that the core members refer to qualities, which inflect for degree and comparison, then no **class** distinction can be made between nouns and adjectives. This type of approach, when applied strictly, has led to claims such as that made for Nootka (Swadesh 1938), where a lack of distinction between nouns and verbs is posited [29].

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29. This claim is shown to be misleading in later analysis (Dixon 1982:2 fn1).

The concomitants of this sort of analysis include an implicit claim that languages may well exist without a clear distinction between nouns and verbs (because we have found one where this might be true), and our understanding of what language is has changed because of the admission of this type of possibility. Having recognized that there is more to this theoretical stance than appears at first, we can make a theory-based decision. Does the theory necessarily want to make this kind of typological claim?

As many analysts of Australian languages have noted, there seems to be little reason in most Australian languages to place a strict structural dividing line between noun and adjective. In many languages, the two classes show similar if not identical morphological possiblities, and similar syntactic possiblities. Sometimes translation equivalents for nominals refer to either entities or qualities (as in Dyirbal, Dixon 1972) [30].

What kinds of evidence, then, are accepted as formal criteria for separate classes of words? According to structuralist methodology, criteria such as separate inflectional systems are usually considered primary. Inflection for properties such as number, case, and gender is seen as criterial for nouns; inflection for comparison, and degree as criterial for adjectives (see Hockett 1958, Gleason 1961). Derivational potential is sometimes seen as a criterion for distinction between the two classes: adjectives take inchoative and causative derivations,

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30. Note that some particular nominals in a language may refer more frequently to one or the other.

whereas nouns do not. Syntactic distribution is another possible criterion: nouns and adjectives may have different occurrence possibilities within larger syntactic units.

Let us examine each of these in turn. As we have seen, inflection for number is by no means universal in all nouns in all Australian languages. By this criterion, pronouns would be more 'noun-y' than nouns themselves, since few languages have obligatory number marking on nouns, even human nouns, but pronouns do express number obligatorily. Gender distinctions are relevant to non-Pama-Nyungan languages, but generally not to Pama-Nyungan languages (excluding Dyirbal and Bandjalang). However, a cursory examination of several grammars of non-Pama-Nyungan languages (Murinypata, Nunggubuyu, Ngandi) shows that some authors do not use noun class membership (whether inherent or inherited) as a criterion to distinguish nouns and adjectives (Merlan's grammar of Ngalakan (Merlan 1983) is an exception). This is so since noun class languages typically use different class prefixes with one lexical nominal stem, so adjectives will not be the only forms which can change overt class membership. Other criteria must then be found to distinguish two formal classes. For example, Walsh's grammar of Murinypata makes a distinction between nouns and adjectives based on adjectives co-occurring in phrases with markers of degree of several kinds. In Nunggubuyu, the distinction appears to be derivational and syntactic (occurrence in predicate nominal and inchoative constructions in the case of adjectives, and not nouns).

Another type of analysis is found in Goddard 1985, discussing Yankunytjatjara (a dialect of Western Desert). Goddard writes that nouns and adjectives are not inflectionally distinguished, since they are both marked for number and case. Neither do derivational suffixes mark any difference between the two, and, in addition, reduplication has an identical phonological, morphological, and semantic effect in both cases. The reason for Goddard's positing two sub-classes lies in their differing grammatical or distributional status. Only nouns can occur as head noun of a noun phrase, although, in common with most Australian languages, adjectives can occur as the only explicit element in a noun phrase, through ellipsis. In terms of distributional criteria, if a noun and an adjective co-occur in a noun phrase, the adjective will follow the noun. If we accept this analysis, sub-classes of noun and adjective are set up on external grounds.

Wilkins (1989), on the other hand, discussing Mparntwe Arrernte, posits the following structure for the Arrernte noun phrase:

3.1.

[Classifier noun]HD .ADJP, QUANTP, DEM. 3PNDEF - CASE

A noun phrase will contain at least one token of the types to the left of the CASE suffix, and case is the only obligatory element. The distinction between adjectives and head nouns is distributional; although there is fluid ordering between adjective phrases, quantifiers and demonstratives, adjective phrases will follow a head noun if the two co-occur. There is a only small set of words in Arrernte which can occur in both head noun and adjective positions. Wilkins gives the example of

iperte, meaning 'hole' or 'deep'. There is a minimal pair contrast between the two forms below:

3.2. Mparntwe Arrernte (Wilkins 1984)

iperte-iperte
hole-REDUP *rough (of roads), holey, corrugated*

iperte iperte
hole deep *deep hole*

Note, in addition, that reduplication serves to distinguish nouns and adjectives in this language: adjectives reduplicate to form what Wilkins calls 'adjectives of approximate quality', attenuative or '-ish' adjectives. Nouns do not reduplicate in this way. In addition, while nouns reduplicate to form adjectives of various kinds, adjectives do not reduplicate to form nouns (although they do in some other Australian languages, eg. Kayardild).

As we noted above, comparison is usually cited as a crucial inflectional property of adjectives. Schweiger 1984, in a paper entitled "Comparative: a neglected category in Australian languages?", discusses four types of comparative constructions, sub-types of which occur in Australian languages. The four types are classified according two parameters: presence or absence of a comparative suffix, and the expression of the standard of comparison within a conjoined clause or within the same clause by means of a case suffixation. One example is that found in Dyirbal, which has a suffix -bara, used "predominantly with adjectives, although it can qualify a noun" (Dixon 1972:226; cited in Schweiger 1984). The only noun example quoted is with yara 'man'. The standard of comparison may or may not be overt, and, if overt, may be marked by two different forms, one of

which, -dilu *really*, is suffixed to non-coreferential NPs; the other, anda, is a particle (not a suffix as Schweiger claims) which indicates that the comparison is being made to a previous state of the same NP. The analogous construction in Yidiɲ also occurs predominantly with adjectives, and the noun example cited in Dixon's discussion of this suffix is the word for 'person', bama. Schweiger's other examples all mark the comparative on adjectival elements, and not nominal elements, if a comparative suffix is expressed (Aranda, Ungarinyin, Diyari).

Can reduplication in any languages act as a structural differentiation for nouns and adjectives? The typical Pama-Nyungan noun reduplication involves right or left reduplication of the whole root, sometimes similar to compounding in the language. In many Non-Pama-Nyungan languages, partial left reduplication defined by syllables is more common. Morphologically, reduplicated nouns, just like monomorphemic nouns, can occur without further inflection, that is, in Absolutive case. Case and number inflections are never part of the noun reduplication. The typical verbal reduplication involves left reduplication of some subpart of the root defined either in terms of segments or syllables. In terms of morphological structure, reduplicated verbs must usually be followed by a final inflection, and if a language requires that the reduplicated segment be a certain length (e.g. disyllabic), then verbal inflections will be reduplicated when affixed to a monosyllabic root [31].

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31. Note that Wurzel 1989 makes a distinction between these two as word-inflection (nominals) versus stem-inflection (verbs).

Structurally, then, nouns and adjectives tend not to be distinct so far as reduplication is concerned. In terms of phonological structure, in about half the languages surveyed in my phonology chapter, nouns and verbs reduplicate according to different patterns phonologically, but in no case were noun and adjective distinct on this parameter. In terms of morphological structure, it was clear that in several cases, the language (such as Warlpiri (Nash 1986) and Mangarayi (Merlan 1982), Nunggubuyu (Heath 1984)) allowed verbal inflections to be part of the verbal reduplication, since a syllabicity requirement seemed to overrule the root morpheme structure. This did not apply to noun or to adjective reduplication in any of the languages surveyed. In terms of productivity and generality of reduplicative processes, noun and adjective reduplications were overall far less prevalent than verbal reduplication, but in languages with reduplication in both noun and adjective types, there was no discernible difference in productivity between them. This is a tentative conclusion, since without complete lexicons and access to native speaker intuitions, it is difficult to be sure on this point.

Adjectives, however, from the point of view of reduplication, appear to behave like nouns phonologically and morphologically. In no language in my phonological survey did nouns reduplicate in a different manner from adjectives [32]. Consider these examples from Dyirbal (Dixon 1972) where reduplication of trisyllabic roots has a different structure on nouns and verbs.

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32. In languages which had both nominal and adjectival reduplication, which is by no means all Australian languages (Ngiyambaa reduplicates only 'adjectives').

3.3. Dyirbal (Dixon 1972)

Verb:
miya-miyanda-ɲu
REDUP-laugh-TNS
laugh more than is appropriate

Noun:
guruŋgul-guruŋgul
meat hawk-REDUP
meat hawks

And now compare the effect of reduplicating a trisyllabic 'adjective':

3.4. Dyirbal (Dixon 1972)

gulgiɽi-gulgiɽi
prettily.painted-REDUP
lots of prettily painted men

Whether or not noun and verb reduplication are distinct structurally in the language, and about half of the languages examined (40 in all) had no distinction between noun and verb reduplication, adjective reduplication will never be formally distinct from noun reduplication, if the language has both.

The same comments apply to morphological structure. Reduplication in both nouns and adjectives involves the word root and not inflectional suffixes or prefixes. Suffixation and prefixation will not intrude between the base and its reduplicated segment.

One language, Ngiyambaa, has a strict distinction between reduplicating and non-reduplicating nominals, as we saw in the first part of this chapter. Donaldson argues that setting up these two classes as separate classes of noun and adjective is not a useful analysis, since this distinction has no further

implications for the grammatical organization of the language. The membership of the classes seems to be determined on semantic criteria: only the reduplicating nominals are semantically compatible with the meaning of reduplication which is 'more-or-less' (identical, incidentally, with verbs). However, if we look at this another way, it seems that Ngiyambaa has very good reasons for distinguishing nouns and adjectives, if we include potential for derivation by reduplication as a criteria for distinction. Note also that Wilkins sets up subclasses of noun and adjective for Arrernte on the basis of the morphological effects of reduplication (nouns become adjectives but not vice versa).

Hence, only in these languages can we see any structural dividing line between noun and adjective reduplication. This reflects the general tendency for Australian languages, and shows that reduplication seems to preserve the similarities and differences between nouns and adjectives in most languages. In this way, reduplication corroborates the evidence from wider structural examination of nouns and adjectives in Australian languages, and shows that reduplication of nominals has no significant structural effects on the behaviour of this class of words.

The semantics of noun versus adjective

This brings us to the consideration of the semantic side of the question. While we cannot argue for differences in structure on the basis of semantics, we can examine the question from a

semantic point of view. The semantic distinction between noun and adjective is discussed by Anna Wierzbicka in a paper "What's in a noun" (Wierzbicka 1986), revised and extended in Wierzbicka 1988 [33]. Wierzbicka's basic contention is that the semantic distinction between nouns and adjectives lies not in their referents or potential referents but in their semantic or conceptual structure. This semantic structure is suggested by the Natural Semantic Metalanguage definitions presented below, based on Wierzbicka 1988:488

3.5. Noun, adjective, verb. (from Wierzbicka 1988:488)

```
NOUN
     I am thinking of someone/something
     wanting to cause you to think of it
     I say: imagine [NOUN]
ADJECTIVE
     I am thinking of [someone/something] as [ADJ]
     wanting to cause you to think of it
          in the way I am thinking of it
     I say: imagine [ADJ NOUN]
VERB
     I want to say this about it: [VERB]
     wanting to cause you to know it
     I say: [(this ADJ NOUN) VERB]
```

The third line in the explications of noun and adjective contains a contentious primitive, imagine. Goddard (1989:52-55) explicitly rejects imagine in the context of nouns and adjectives, preferring to restrict its use to irrealis and conditional constructions. His objections to it are, first, that 'imagine', as an English word, is not always readily translatable into other languages, second, that the use of this primitive in simple adjective-noun definitions results in a complex syntax in Natural Semantic Metalanguage explications.

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33. The current discussion will refer to the later version.

If we re-word the definitions of noun and adjective above, using 'like', a tentative framework might be:

3.6. Noun, adjective, (after Goddard 1989:52-55)

NOUN
I am thinking of someone/something
wanting to cause you to think of it
I say: it is [NOUN]

ADJECTIVE
I am thinking of [someone/something] as [ADJ]
wanting to cause you to think of it
in the way I am thinking of it
I say: it is like [ADJ NOUN]

On the basis of these different conceptual structures for noun and adjective, Wierzbicka argues, we may look for (but may not find) systematic grammatical differences between the two classes in any particular language.

Consider now the semantics of reduplication with nominals versus verbs. Noun reduplication cannot express 'action in progress' or 'habituality', or 'continuative action', because this is not compatible with what nouns are semantically. Similarly, some of the nominal functions of reduplication, such as 'affectionate term of address' or 'little version of entity X' are not compatible with verbal reduplication [34].

If this is so in the case of a split between nouns and verbs, is there any justification for recognizing a finer semantic distinction between noun and adjective in reduplicative constructions? My examination of Australian languages has led me

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34. Number is a more complex issue for verb reduplication, and one which I will not explore here. For a discussion of the marking of number on verbs, see Durie 1986.

to think there might be some evidence which points in this direction.

One way to approach this question from a cross-linguistic perspective is to examine what sorts of functions co-occur in languages. The question may then be asked: do these co-occurrences provide any reason to suggest that an important semantic split is recurring in several, or, better still, the majority of languages? To do this, the functions which nominal reduplication can have in Australian languages, on the basis of fifty-one languages, were collated and tabled according to the semantic word class (in the sense of Wierzbicka 1988) of both the base forms and derived forms. These tables are given as Appendices six and seven.

The following generalisations emerge. Four languages exhibit number marking on noun-like words as well as adjective-like words. In all cases bar one, the adjectives refer to physical size, but this may be due to a data gap in the case of Kaytej. Note, however, that the only semantically adjectival exception to productive nominal reduplication in Dyirbal is the adjective translated as *big*. The examples from the previous section are repeated below for convenience.

3.7. Warrgamay: Nominal plural (Dixon 1981:35)

wurbi	*big (thing)*
wurbiwurbi	*lots of big (things)*

3.8. Dyirbal (Dixon 1972)

gulgiɽi-gulgiɽi
prettily.painted-REDUP
lots of prettily painted men

3.9. Kaytej (Koch 1984)
weye akelyakely alarre-rapeynte-rantye
animal small-REDUP kill-while going-PROG
(a man hunting larger game) kills small animals as he goes along.

3.10. Nunggubuyu (Heath 1984)

lhamungur	*short*
lhamulhamungur	*short ones (PL)*

Overall, then, nouns seem to be the prototypical forms to reduplicate with the number-marking function. Dyirbal is the only language in the sample which has a productive number-marking function on semantic adjectives.

Probably more importantly, the function of colour derivation, and more generally, object to quality derivation, a noun to adjective derivation function, never co-occurs with intensification marking on adjectives. In no languages in the sample, therefore, could one find, for example, a noun like 'blood' reduplicated to derive 'red' alongside an intensification derivation such as 'hot' to 'very hot'. Put another way, this suggests that a language can have reduplication to derive qualities from entities, or to emphasize or intensify qualities, but not both. Object-to-quality derivation is similar to the noun-to-noun 'similarity function', the only difference being that the **quality** is focussed on in the former, and another similar **entity** is focussed on in the latter. Note that Yankunytjatjara and Warlpiri have object-to-quality derivations (in the particular form of colour terms) alongside derivation for **deintensification**, another kind of similarity function, as in Yankunytjatjara X->'sort of X' for nouns and the one Warlpiri example *black -> blackish*.

Supporting the argument that noun and adjective are not distinct -- that is, that syntax reflects semantics -- is the fact that only one language, Kayardild, has both object-to-quality derivation and quality-to-object derivation. Quality-to-object derivation only occurs in two languages, while object-to-quality derivation, especially colour derivation, as we saw above, is quite common. Bandjalang makes a second exception if the object-to-object ('like') derivation is included as a variant on object-to-quality derivation. From this point of view, Australian languages more commonly exhibit derivation from object to quality, which suggests that entities are basic and qualities largely derived.

This suggests the following generalisations of noun and adjective reduplication into two basic semantic areas: number and likeness, as follows:

3.11.

MORE	LIKENESS
noun plural adjective plurals	intensification deintensification object to quality derivation quality to object derivation object to object derivation diminution

The category of MORE, which involves specification of more instances of an entity, corresponds to the semantic structure of the concept NOUN, as a KIND of thing, a thing which is countable. The category of likeness corresponds to the category of semantic adjective, the single quality which can be marked in various ways for similarity. This aligns with the use of the primitive LIKE in the definition of the class of adjective given in 3.6 above.

Consider also the definition of iconicity which was disussed in part one. We saw that in the case of nominal reduplications [35] there is reason to separate out two types of iconicity available to express the relationships between meaning and form. The following definitions were given.

(a) form and meaning resemble each other in a quantitative respect: an increase in form corresponds [to] an increase in the projected referents of the form.
(b) form and meaning resemble each other in a qualitative respect: an increase in form corresponds [to] an increase in conceptual similarity.

Moreover, (a) corresponds to the notion of NUMBER above, while (b) reflects the iconicity apparent in reduplications which are subsumed under the category of LIKENESS.

The two categories of NUMBER and LIKENESS also align with the noun/adjective distinction: kinds of things are countable, likenesses may also be modulated, but not in the same way. Thus, we may tentatively claim that Australian Aboriginal languages, through the semantics of reduplication, do provide evidence for a conceptual difference between noun and adjective [36]. On a structural level, however, these two classes do largely overlap, and so we find nearly identical structural conditions. Semantic differences may point to areas where structural differences may lie, but only structural evidence will corroborate the role of a semantic or conceptual distinction in the formal grammar of a langua

35. And there is possibly also a relationship with verbal reduplications here.

36. Note that McFarlane 1987 makes a claim for a conceptual difference between noun and adjective in her cross-linguistic discussion of compounding in Australian languages.

Chapter Four

Verbal reduplication in Australian Languages [1]

4.1. Introduction: reduplication, meaning, and non-iconicity.

The present chapter will discuss the relationships between reduplication and non-reduplicative verb morphology in Australian languages. I will examine the types of meanings which the two types of morphology encode in languages, and the significance of the split between the two according to the meanings they express.

It is recognised in the linguistic literature that reduplication is particularly commonly used to express 'iconic' meanings of various kinds. For example, the following sentence from Murinypata (Walsh 1976:241) shows reduplication expressing repeated action:

1.1. Murinypata (Walsh 1976)

ŋayi ŋa -na -wilad -nu nukunu -nu
1sgA 1sgI-3sgMASC.BEN-give much-FUT 3sgMASC-DAT
I will give much to him

ŋayi ŋa -na -wilad -ad -nu nukunu -nu
1sgA 1sgI-3sgMASC.BEN-give much-REDUP-FUT 3sgMASC-DAT
I will give much to him many times

The right reduplication of the -VC of the second syllable indicates 'do X *many times*', a construction which we can informally claim is iconic by virtue of more than one token of the verb indicating more than one token of the action [2].

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1. A summarised version of this chapter was presented at ALS 1989, Melbourne. I thank Graham McKay, Gavan Breen, and Michael Walsh for their comments at that presentation.

2. Note that two tokens of the same type are enough to express multiplicity, and not just duality. That is, there is a semantic extension on the basis of two tokens.

Iconicity is a concept which has received a great deal of attention in the linguistic literature of the last decade (notably Haiman 1980, 1985, and the conference proceedings in Haiman ed. 1985, also, within the school of Natural Morphology, Mayerthaler 1988, Dressler 1985, 1986, Wurzel 1989). In order to clarify the concept of iconicity in the context of this discussion of reduplication, I will give a working definition. The meaning of a reduplicated form I will call **strictly iconic** if and only if the meaning can be fully explicated as a reflection of the form of the word. The meaning of a reduplicated form will be less iconic if the meaning contains some (additional) component which is not an iconic reflection of the form of the word. A reduplicated form used **only** to indicate repeated action (with punctual verbs) or continuous/durative action (with process verbs) will be strictly iconic [3]. This is because the meaning of the reduplication (do X again, continue X further in time) is predictable from the multiple instantiation of the same phonological form, or part of that form. There is an iconic relationship between *do X again* and *say V again*, where X is the action referred by V, the predicate. The 'repetition' of the verb form (to use a process metaphor which I will otherwise try to avoid so as not to prejudice the case as to whether reduplication involves a process or an affix) is an icon of the repetition of the punctual action, and of the repetition of the state-of-affairs in which the process was going on. No other meaning components are needed to account for the meaning of this

3. Perhaps also if used to express 'intensification' (see below).

reduplicative construction [4]. This case obtains in the Nunggubuyu example above:

1.2. Nunggubuyu (Heath 1980c)

ŋi -yama -yama: -?
NGARA-REDUP-do that-PA2
It [mother python] kept doing that.

and in the following, also from Nunggubuyu:

1.3. Nunggubuyu (Heath 1984)

ana -marbidi, wuru -warga=wargalhiiii
CLASS-ray sp. theyA-REDUP=spear
They spear the ray repeatedly

Other types of meanings are not so 'purely' iconic. For example, consider the productive reduplicative construction of Dyirbal. This particular construction is glossed as *do V to excess* (Dixon 1972:251), where V is the lexical meaning of the unreduplicated root.

1.4. Dyirbal (Dixon 1972)

miya -miyanda-ŋu
REDUP-laugh -NONFUT
laugh more than is appropriate

This reduplicative meaning contains the semantic component of *do X more than once*. This iterative/continuative meaning is iconic, as discussed above. However, at least two additional meaning components are needed, one to express the notion of *too much, more than is necessary,* and another to express the negative meaning. The complex meaning of this form therefore contains both iconic and non-iconic components.

This raises a problem which others discussing reduplication (Moravcsik 1978, Key 1965) have noted previously. What is the

4. I will leave aside the question of formalising these meaning components, a task I would undertake from within a Natural Semantic Metalanguage framework.

significance of a reduplicative construction which presents a less clearly iconic meaning? If one recognises that reduplication expresses iconic meanings, and that this might represent a case of non-arbitrariness, or 'sound symbolism', what can be said about the less clear examples, the cases wherein linguistic arbitrariness seems to win through (that is, the cases of less iconic and complex iconic meanings)?

One could take a descriptive approach and acknowledge cases of non-iconicity simply as cases of linguistic arbitrariness. Thus, one would claim that it demonstrates that we cannot explain all of grammar through semantics, because grammar, in its all-encompassing sense [5], is essentially autonomous, and the meaning of a reduplication can vary, having both iconic and non-iconic meanings. However, this response begs the question. All it does is restate the observation, and no 'explanation' can be derived in this way.

When examining Australian languages in depth, one is struck by the extent to which non-iconic and iconic meanings co-occur in the one reduplicative construction in a single language and the extent to which certain types of meanings commonly seem to be interrelated. This leads one to hypothesize some sort of interdependence between core iconic and non-core iconic meanings. This may well be a relationship which previous cross-linguistic

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5. As in Huddleston 1984, among others.

surveys have obscured, since they have focussed mostly on a 'splitter' approach to the semantics of reduplication [6].

In this chapter I will suggest a 'lumping' approach to reduplication, iconicity, and arbitrariness. More specifically, I will propose a **grammatical** interaction between iconic and non-iconic meanings in reduplicative constructions. This interaction is not entirely unexpected, I feel, given our appreciation of the interaction between 'generality' or scope of meaning, and productivity in grammar.

Tense and aspect are the canonical grammatical categories of verbal morphology; they are often cited as structural criteria for distinguishing between a class of verbs and other word classes (prototypical verbs take such marking, prototypical nouns do not). They are distinct from other categories which are usually considered as prototypical for noun morphology such as case and number (but see Durie 1986). The distinction between tense and aspect is usually framed in terms of conceptualization of the event. Tense locates the event in time, either absolutely (in reference to the moment of speaking) or relatively (in reference to some event mentioned in discourse). Chung and Timberlake (1985:203) suggest that tense reference is made by comparing the event being marked for tense to some "privileged point of interval of time" which they call the "tense locus". In general, reduplication in Australian languages is **not** used to mark absolute tense. It does, however, mark an ongoing event in

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6. By which I mean resorting to a 'listing approach', a kind of cataloguing of the meanings found, without any attempt to relate reduplication to other areas of the grammar.

relation to a separate event, in languages in which reduplication has a particularly important role in grammar, and has a high degree of productivity [7].

Reduplication does, however, have an important role to play in the marking of verbal aspect. How then is aspect defined? Early structuralist accounts of aspect (see especially Nida 1949:167f) simply list a series of supposedly discrete meanings, with labels. In practice, however, discussing the aspectual meanings conveyed by any morphological form, be it reduplicative or non-reduplicative, is far more complicated than this labelling procedure would suggest. For instance, the aspectual meaning of reduplication is often dependent on the semantic class of verbs with which it may occur. Punctual verbs, when reduplicated, often indicate repeated discrete actions. Process and activity verbs in the same construction may express continuity and duration [8].

Rather than attempt a thorough analysis of aspect from a theoretical point of view (see Anderson 1985, Chung and Timberlake 1985, Comrie 1976, Lyons 1977:703-18), I have used my language data as a basis for identifying the set of aspectual meanings commonly expressed by reduplication. Further, I have used this set of meanings as a basis for a cross-linguistic

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7. For discussion of the concept of productivity, and of difficulties in its application to (generative) morphological theory, especially in the case of derivational morphology, see Aronoff 1976.

8. For the distinctions between these semantic classes of verbs, see Vendler 1967:97-121.

analysis of the split between reduplicative and non-reduplicative verbal morphology [9].

In describing the verbal systems of Australian languages, I have not attempted to fit the data to any particular morphological model (such as those of the generative and autosegmental schools: see Goldsmith 1979, Lieber 1983, 1987, Scalise 1984, Shaw 1987, Anderson 1988). Nor have I tried to use the data to confirm or deny any particular empirical claim made by any model. This task should be done, but my major focus here has been to describe the grammatical organization of several Australian languages by comparing reduplicative constructions and non-reduplicative morphological forms which seem to be expressing meanings in the same particular semantic domain as typical reduplications (cross-linguistically defined).

As noted, above, I have surveyed some sixty Australian languages as a database for this study. Two important considerations in typological work arose in this work. The first important precaution for any typological work is to rely on examples and especially text examples, rather than on elicited examples. Secondly, the nature and quality of the data itself varies from language to language. The only way to avoid traps in this area is not to try to speculate on what may be the case in the language, and not to try to stretch the data to fit the

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9. My precedent for comparing semantics with syntax cross-linguistically is the work of Paul Hopper and Sandra Thompson (Hopper 1979, Hopper and Thompson 1980). These studies investigate tense, aspect, mood, and other verbal morphology in relation to discourse salience and focus (Hopper 1979) and transitivity (Hopper and Thompson 1980).

hypothesis. I think I have been rigorous in this way, in that in cases where it was simply not possible to decide one way or another on any particular question (see below), that language was not used for the final counts.

The method of the investigation involved examining descriptions of sixty Australian languages. In some cases the data contained in the description was not sufficient to supply full answers to the questions I posed, and so such languages (eight in all) were not considered in the final sample. Appendix nine lists these languages.

The questions posed in the analysis were as follows:

1. Does the language in question have a process of productive verbal reduplication, regardless of its degree of productivity?
2. What other types of verbal morphology occur in the language: whether in the form of affixes, auxiliaries or pre-verbs, or clitics?
3. What meanings do all of the forms in 1 and 2 above express [10]?

The tasks above being accomplished, the next step was to examine the different 'divisions of labour' between reduplicative and non-reduplicative verb morphology. In addition, morphological interactions and co-occurrence restrictions were noted between the two types of verbal morphology. Given the prevalence of left

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10. This type of classification is the most potentially dangerous part of the investigation. The important strategy is to rely on examples rather than classifications, and to be sure just what the label given by the linguist is intended to convey.

reduplication of part of the verbal root in otherwise suffixing languages in Australia, it was clear in many cases that reduplication operated independently of canonical verbal affixation in terms of morphological structure. Non-Pama-Nyungan languages differed in this respect, as in some cases the direction of the reduplication could not be determined on phonological grounds.

Before examining the results in sections three and four, let us examine the concept of 'iconicity' a little more closely.

4.2. Reduplication and Iconicity

How can we know whether a particular productive reduplication pattern corresponds to an iconic semantic specification or not? From within the set of 'typical reduplicative meanings', which are iconic and which are not? I gathered together a set of such 'typical' reduplicative meanings from various surveys of reduplication, some within and some across language families (Moravcsik 1978, Key 1965, Ezard 1980, Gonda 1949, Bloomfield 1914, Haeberlin 1918, Reichard 1959). This list is given as Appendix eight. Most of the meanings which I found in these surveys are also attested in Australian languages, but some, such as Perfective, are not.

At this point I will suggest a principled way of deciding whether a form is iconic or not. A meaning or semantic specification will contain iconic elements if some aspect of the structure of the form corresponds directly to some aspect of the structure of the conceptualization which the form expresses.

The basic formal structure of a reduplicated word is 'more than one occurrence of V in time'. How well does this correspond to the various semantic structures which reduplication expresses? The following list suggests a principled basis for deciding whether a verbal meaning is considered iconic or not.

Aspectual Category	Meaning
Iteration	more than one occurrence of V in time
Durative/ Continuative	occurrence of V that endures in time
Intensification	V with more effort
Greater speed	V with more speed
Spatial Distrib.	More than one occurrence of V in space
Plural NP	more than one entity involved
Habitual	more than one occurrence of V in time significant past occurrences association of entity and action
Action in progress	V happens before, during, after moment referred to more than one occurrence of V in time something else happening at the same time (either moment of speaking or other time frame)
Attenuative	do V with less effort

Table 1. Aspectual categories and Iconicity.

These classifications can be constructed as a 'scale of iconiity' as follows. From left to right represents a gradation from greater to lesser iconicity, with the rightmost category representing the least iconic meanings [11].

11. cf. Botha 1988 on 'attenuation' in Afrikaans reduplication.

ICONIC---------'MORE'----------ICONIC + --------LESS ICONIC			
Iterative Continuous Durative	Spatial Distribution Plural Participants Intensification Greater speed	Action in progress Habitual	Attenuative

'More' = concept of 'more' included in semantic structure.
Iconic + = iconic plus non-iconic meanings included in semantic structure

Table 2. A Scale of Iconicity.

I will now exemplify each of these meanings with data from Australian languages. I begin with the left-hand side of the scale, which I have labelled 'iconic'. Since the double occurrence of the verb form is an icon of the repeated occurrence of the situation expressed by the predicate, and no other meaning component is needed, as explained and exemplified above at 1.3 and 1.4, the iterative and continuous/durative meanings are the most iconic for verbal reduplication.

The next part of the scale contains those typical meanings of reduplicative constructions which include the concept of 'more', although a different 'more' from the iconic meanings above. The meanings in this group are distinct from the first in that their component referring to repetition refers to other aspects of conceptualization than 'more than one occurrence of the action in time'. Spatial distribution, for example, refers to the spatial and not the temporal dimension. Similarly, plural participant marking refers to the entities involved in the action and not necessarily the action itself.

First, we have the concepts of spatial distribution and plural participants. Spatial distribution focusses on the spatial dimension of the action, and suggests that an action goes on *all over the place*, or, if the speaker's point of view is included, *all around*. The temporal dimension is somewhat suppressed or de-emphasized. The following examples show this type of meaning. Note that there is some denotational overlap here with 'plural affected objects', with example 2.2 especially showing an 'all of object' type meaning. It is also significant that, in languages with suppletive number stems, verbs take suppletive number stems to mark plural objects, but not to mark 'totally affected object' (Durie 1986) although the two do seem to overlap in some reduplicative constructions. Examples 2.1 and 2.2 show reduplicated verbs in sentences where the reduplication appears to express 'totally affected object'.

2.1. Yankunytjatjara (Goddard 1985)

puu -ra manta pata -pata -ni,
blow-SER dirt(ACC) make drop off-make drop off-PRES
waru unu, mayi-ngka ngari-nytja-la
fire ash. food-LOC lie -NOML -LOC
(You) blow on it to make the dirt come off (and) the ashes, that are on the food

2.2. Yankunytjatjara (Goddard 1985)

mayi ura -ra, kapi -ngka kulya -kulya -ra,
food gather-ra, water-LOC sprinkle-sprinkle-ra,
rungka -ra ngalku-ni
hit with stick-ra eat -PRES
After getting the food (seed), you sprinkle it all over with water, grind and eat it.

Example 2.3 shows a stative verb reduplicated with the meaning of 'distribution of plural objects'.

2.3. Kaytej (Koch 1984)

errtye-rr-errtye-rre-nye-rraneee, twepetwepe errtye-
hang-LIG-REDUP-LIG-GO-PROG-EXT, around hang-
rrane..nhartepe arrkelpwelpwe

PROG that-NOM bloodwood gall
They're hanging everywhere, they're hanging all around, those bloodwood galls

Secondly, the concept of plural participants requires that focus is shifted to the participants in the action, either acting collectively or separately [12]. Some examples follow.

2.4. Djapu (Morphy 1983)

nhina-0 *sit*
nhina-nhina-0 *be sitting for some time/ they all sat*

2.5. Bandjalang (Crowley 1978)

guna: dandaygam bala:ya-ni
this.INVIS.S old man.S die -PAST DEF
The old man has died

guna: dandaygam-bi:n bala -bala:ya-ni
this old man-PLU.S REDUP-die -PAST DEF
The old people have all died

2.6. Murinypata (Walsh 1976)

da-n-tibirl
3sg-n-light
he lit (the fire)

da-n-tirlbirl
3sg-n-light REDUP
He lit (the fires)

This interpretation of the reduplicative construction has to be independent of number marking on the NP concerned if it is not to be redundant. The use of verbal reduplication to express the idea of plural participants is not directly reflected in the reduplication of verbal forms, although it clearly would be iconic in the case of the reduplication of nominal forms. Reduplication has the form *more occurrences of V in time*; interpreting it as *more NPs doing action or affected by action* is

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12. There are some close interrelations between the NPs understood as plural participants and the case-marking morphology of the language or other factors, including transitivity. In brief, the plural participant is usually on the S/O axis, but this will not be considered in detail in this chapter.

not a straightforward iconic interpretation as there is no one-to-one correspondence here.

Intensification is another type of meaning expressed by reduplication. 'Intensification' includes such verbal meanings as *do V enthusiastically, intensely, with great effort, "really do V"* , as well as such concepts as 'thoroughness' and perhaps 'increased speed', although the latter is usually separated from 'intensification'. The reduplicative form 'say V more times' corresponds to a meaning: *do V with more effort, more participation.*

2.7. Yidiɲ (Dixon 1977:516)

bama-:n buɲa-ɡamu muri-muri-:ɡi-nu
person-GEN+ABS woman-ALL+ABS scream-REDUP-:ɡi-PAST
All the women belonging to those people really screamed and screamed

2.8. Baagandji (Hercus 1982)

waga- *to hit* waga-waga *to give someone a beating*

2.9. Kuku Yalanji (Patz 1982)

ɲaji *see* ɲaji-ɲaji *look thoroughly, examine,* also *keep looking*

Intensification may or may not imply repeated action or continuation of a single event. Most commonly, it refers to increased effort on the part of the actor in a single action.

'Action done quickly' or 'with increased speed' falls within the purview of meanings containing a component of 'more'.

2.10. Yidiɲ (Dixon 1977)

ɡuɡum buga-:ɲ
FZ eat-PAST
Auntie ate
ɡuɡum buga-buga-:ɲ
FZ REDUP-eat-PAST
Auntie ate fast

2.11. Yankunytjatjara (Goddard 1985)

nyaa-ku-n munga-munga-ni? ngura puriny-tju
what-PURP-2sg(ERG) eat-eat-PRES JUST slow-ERG
munga-nma ngalkal-ku-n, munu ilu-ku
eat-IMP.IMPF choke-FUT-2sg(ERG) ADD die-FUT
Why are you bolting your food down? Just eat slowly, (otherwise) you might choke and die.

2.12. Warlpiri (Nash 1986)

Pu-ngka-pu-ngka!
hit-IMP-hit-IMP
Hit it quickly! Attack!

Further along the scale we find meanings which express the concept of 'more occurrences of V in time', but which require further non-iconic components to fully account for their meaning. The first is 'action in progress'. As we saw above, 'action in progress' requires a second element of meaning which relates the happening to another point in time, whether that point be the moment of speaking, or another moment in past or future time, anterior or posterior to the moment of speaking. This time-location will be usually expressed by separate morphology, as for example, the past-tense inflected verb 'swallow' in 2.13 below, which establishes the time reference for the actions of dancing (expressed by a complex verb phrase marked as subordinate). The reduplication itself seems to express the incompleteness of the action at the time referred to.

2.13. Guugu Yimidhirr (Haviland 1979)

Dyaarba-anh dyuumbi gunbu dumbiilmbi-ga
snake -ERG swallow+PAST dance break+REDUP-SUB1
The snake(s) swallowed them while they were dancing

2.14. Rembarrnga (McKay 1975)

tjin?kal? ŋa -mi -ya
[stone type]+NOM 3O +1min.A-get-PAST PUNCT

ŋa -ṭitj -ṭitj -miŋ ni?tanta
1min.S-REDUP-return-PAST.PUNCT 3min.PRON

yukkan?ta o -ṛe -ṭitj -meṇ
in front 3O + 3min.A-COM TRANSVR-return-PAST CONT
I got some stone and was coming back. Meanwhile he brought [the buffalo meat] back before I got there.

Classed together with action in progress is the concept of 'habitual' or customary action. As the list above explained, habitual action requires not only the component 'more occurrences of V in time', but also a component referring to 'significant occurrences of this action, (by the one actor)' so that the actor (if there is one) and the event become 'associated' in some way. Just as the concept of 'action in progress' includes 'repetition' of some kind, the concept of a habitual action requires the iconic concept of repetition, coupled with other, non-iconic components.

2.15. Kuku Yalanji (Patz 1982)

bunda-y *sit (down)* bundanda *keep sitting, habitually sit,* thus *live at*

The concept of 'past time' is one crucial aspect here, and since 'past time' is not iconically reflected in the reduplication of verb forms, the 'habitual' use of reduplication is not as fully iconic as that of iteration/continuation.

Further down the scale we find a meaning commonly expressed by reduplication, but which does **not** seem to contain the meaning component of 'repetition' (or 'more'), attenuation. Haiman (1980: 530) notes that this type of meaning is "almost exactly the opposite of what one could expect". (Significantly, he relegates this comment to a footnote!) The following examples from Ngiyambaa and Yankunytjatjara illustrate this particular meaning type.

2.16 Ngiyambaa (Donaldson 1981:70)
yuwa -yuwa-y -ga: -dha
REDUP-lie -CONJ-A BIT-IMP
Have a nice little lie in!

2.17. Ngiyambaa (Donaldson 1981)
ŋa:gi-ŋa:gi-ɡili-ɲa =na
REDUP-look -REFL-PRES=3ABS
She's more or less looking at herself; she's stealing a look at herself in the mirror

2.18. Yankunytjatjara (Goddard 1985)
kutja-ni *put in fire, heat, boil*
kutja-kutja-ni *lightly heat in fire*

2.19. Yankunytjatjara (Goddard 1985)
pika-ngku tjuni patja-ni
pain-ERG stomach-ABS bite -NONPAST.
(My) stomach hurts

kaliwara -ngku tjaa patja-patja-ni
[plant sp]-ERG mouth+ABS bite -bite -NONPAST
Acacia olgana stings the mouth

Since it used to express concepts such as 'do X halfheartedly', 'do X more or less' 'do X a little', it is difficult to see or formulate any iconic relationship between the meaning and the reduplicated form. In the case of Ngiyambaa, the reduplication is partial, whereas in Yanykunytjatjara, full reduplication occurs. If attenuative meaning were always expressed by partial reduplication, there might be some reason to see the iconicity as being present in the relationship between the partial reduplicate and the base: the partial reduplicate is only part of the base and hence the meaning 'somewhat like X but not fully like X' could be predicted. If full reduplication is involved, however, and the two parts of the reduplication are identical, as in Yankunytjatjara, the same relation could be said to hold between the original base and the full reduplicated form.

Thus we have identified and described the above semantic distinctions, according to the scale of iconicity (bearing in

mind that attenuative meaning may well be just as iconic as the meanings in the category 'more'; see below). Having seen that reduplication can express so many different but related meanings, it remains to be seen if any independent motivation for their occurrence in particular languages can be found. For example, why would one language use reduplication on all its verb forms to express a wide range of aspectual notions, covering the whole range of Chung and Timberlake's 'Imperfect' category, and another language show a small set of idiosyncratic reduplications? Can any independent features of the language predict the role reduplication will play?

We turn now in section three to examine the types of interactions between reduplication and other parts of the verbal morphology and morpho-syntax which can occur in Australian languages.

4.3. Reduplication and the grammars of Australian languages.

1	2	3	4
No productive reduplication	peripheral reduplication	split-aspectual	highly grammaticalized

Table 3. Language types

By considering several facets of the role reduplication plays in a language, I divided my sample of Australian languages into four broad categories. The first, type 1, is the clear case of a language which has no productive reduplication of the verb. In this type of language, marking the typical reduplicative meanings

will either be performed by other 'derivational' affixes, or will be subsumed under the tense/mood inflections. Languages of Types 2 and 3 differ in the semantic generality of the reduplication, in the productivity of the reduplication, and in the structural and semantic role of non-reduplicative aspectual morphology in each language. Type 2 languages have transparent (as opposed to inherent) verbal reduplication, which is restricted in productivity and in importance in marking typical reduplicative meanings. Type 3 languages exhibit a situation I have labelled 'split-aspectual' in that both reduplicative and non-reduplicative verbal morphology are important to the verbal aspectual system, and the two types complement each other. The difference between type 2 and type 3 is not merely a matter of quantity or degree of productivity of the reduplicative constructions, but is also linked to the scope of non-reduplicative 'derivational' morphology and the amount of 'semantic space' which each type of verbal morphology, reduplicative and non-reduplicative, can be said to encompass. Type 4 languages are the clear case at the other end of the spectrum. These languages rely on reduplication to express aspectual meaning, and sometimes even tense meaning. Reduplication in these languages co-occurs with most of the inflectional morphology.

Type 1. No productive verbal reduplication found.

This group included the following languages:

Alyawarra	Djingili	Margany / Gunya	Lardil
Martuthunira	Ndjébbana	Panyjima	Tiwi

Yindjibarndi [13].

The question then arises, what morphological or morpho-syntactic methods do these languages use to express the types of meanings found in reduplicative constructions in other languages? Consider the following examples from Margany and Gunya, two dialects of the one language, in South-western Queensland (Breen 1981a:274-393). If we examine Margany, we see that the language has a verbal structure:

root + derivational suffix + inflectional suffix

in common with many Pama-Nyungan languages (Dixon 1980:378). Under the category 'derivation', in addition to the usual syntactic derivations (those affecting transitivity, causative and reflexive, here a 'reflexive/proximate'), we find several 'aspectual' derivations. A suffix which Breen suggests could be derived historically from the root **to walk**, -ba, is found in two compound suffixes which he groups together as 'extended action'. -taba is glossed as 'along', -:laba [14] as 'about'.

3.1. bula ŋandi-taba -ni
3du talk -ALONG-PRES
Those two are walking along talking

3.2. waba-:laba-ni ŋula bulu ḏala-ta
go -ABOUT-PRES 3sg food eat-CONJ
He's eating along (eating as he goes)

The distinction between these two suffixes is not made absolutely clear by the examples, but some sort of 'associated motion' (Koch 1984) seems to be involved. The closest of the 'reduplicative meanings' is some kind of 'distributed action', plus an

13. Yindjibarndi has reduplication of verbal roots only after nominalisation (Wordick 1982).

14. In common with descriptions of other Australian languages (eg. Yidiɲ, Dixon 1977), -: indicates that the suffix conditions length in the preceding vowel.

indication of plural participants. The following example shows this clearly with the -:laba suffix

3.3. ŋuda ŋuna-:laba-ni
dog lie -ABOUT-PRES
There's dogs lying around everywhere

where no number marking is found on the S NP, but the semantics of the verb seems to require plural participants in order to make sense.

A third 'extended action' suffix, according to Breen, indicates *action spread out over an area*. This suffix is restricted to verbs of motion, but the split between this suffix and the other two is not absolutely clear. Again, plural participants are required, although not expressed on the NP.

3.4. gabun wara-na -ni
child run -AROUND-PRES
There's kids running around all over the place

Margany also has a Habitual suffix which occurs only before a past-tense inflection.

3.5. bawuda ŋaya unga-nŋanda-la
kangaroo 1sg hunt-HABIT -PAST
I used to hunt kangaroos

Present habituals are subsumed under the present tense inflection in Margany.

Gunya has a set of suffixes which seem to express a slightly different meaning from those in Margany. In Gunya, the focus of these forms seems to be 'action in progress' or present continuing action. Two distinct forms, -yi and -nyina, are generally used with motion (3.6) and rest (3.7) verbs respectively.

3.6. badu -ŋga baŋga-yi -ni -ya
river-LOC cross-CONT-PRES-1sg
I'm going across the creek

3.7. ŋaya una-ɲina-ni -ya
1sg lie-CONT-PRES-1sg
I'm lying down

Some exceptions to the above generalization occur. -yi can be used with stative predicates, and in this case seems to indicate 'state occurring while the agent is going along', as in 3.8 below:

3.8. dili bamba-yi -ni
eye open -CONT-PRES
I've got my eyes open, or, I'm going along with my eyes open

As these examples have shown, Margany and Gunya have a series of suffixes which, together with nuances of the tense-marking suffixes, express aspectual differences in the verb.

On the other side of the continent, in the Ngayarda sub-group of languages in Western Australia, we find another three languages without a productive reduplicative process in verbs, Yindjibarndi, Panyjima and Martuthunira (Wordick 1982, Dench 1981, 1987a). Both Panyjima and Martuthunira have an extensive system of verbal suffixes and clitics which perform the work carried out by reduplication in other languages. For example, Panyjima has a suffix glossed as 'Processive', which derives a verb denoting an event which occurs either as a continuous process or as an iterative series of punctual actions. The distinction is according to the main verb semantics. Non-punctual, process verbs take the processive reading (3.9, 3.10), while inherently punctual, non-extendable verbs take the iterative meaning (3.11, 3.12).

3.9. witi-pi -L
play-PROC-CONJ
to play, flirt with (tr)

3.10. wangkal-pi -L
say -PROC-CONJ
to argue with someone

3.11. kulha -pi -L
squash-PROC-CONJ
to squash, crush by repeated action

3.12. kulu -pi -L
louse-PROC-CONJ
to delouse

Martuthunira and Panyjima both have a verbal suffix which is glossed as 'Collective'. In Martuthunira, it has several functions. With intransitive verbs, it indicates that the activity is performed together by the plural actors:

3.13. kulhampa-ngara puni-marri-layi tharrwa-lu
fish -PLU go -COLL -FUT enter -PURPss
thawura-la -rru
net -LOC-NOM
The fish will all swim together into the net

With transitive verbs, it indicates a reciprocal action:

3.14. wantharni-ma -rri -layi? parrungka-marri-layi wiyaa
how -CAUS*-COLL-FUT? shout -COLL -FUT maybe
What will they [husband and wife] do [to each other] next? Maybe they'll start shouting at each other.

This is similar to the reciprocal action meaning of the reduplicated form of the verb *to speak* in Diyari, yata- , where yata-yata- means **to converse** (Austin 1981:69).

Thirdly, the suffix is used to indicate that a particular kin relationship is being stressed.

3.15. ngawu, ngayu kangku-layi kartungu nhawu-yarri-waa
yes 3sgNOM take -FUT 2sgACC see -COLL -PURPs=o

nyinu -malyura-ngu
Bro.in.law-2POSS -ACC
Okay, I'll take you to see your brother-in-law.

This aspect of the use of this suffix is examined in depth in Dench 1987b.

* I follow Dench's analysis (1987:300, explanation of overlap with -ma 'CAUS' 1987:283) here.

Finally, we turn to a non-Pama-Nyungan language without productive verbal reduplication. The Tiwi verb is famous in the literature for its complexity, with fifteen orders of affixes, twelve of them prefixes and three, suffixes. Here we will note just the tense and aspect complexity. These verbal meanings are conveyed by prefixes except for the following:

3.16. (i) reflexive, reciprocal, collective, causative suffixes, which occur at the same position.

(ii) movement suffix

(iii) repetition suffix. (Osborne 1974:36-51)

Tense is marked by prefixes (past, present, future) and by variation in the subject person prefixes. There are six aspects: unmarked, durative, repetitive, moving, beginning, and inceptive. The following examples show the various marked forms.

3.17. DURative aspect, prefix -utinge-
ŋu -uting-apa
1sg-DUR -eat
I am eating

3.18. REPetitive aspect, suffix -ani [15]
ŋe -ru -untiŋ-apu-kani
1sg-PAST-DUR -eat-REP
I kept on eating

3.19. MOVing aspect, suffix -ami
ŋu -utiŋ-apu-kami
1sg-DUR -eat-MOV
I'm eating moving about

3.20. BEGinning aspect, prefix wi-
ŋu -wi -ta -apu-kami
1sg-BEG-FUT-eat-MOV
I'm just starting to eat

3.21. INCEPtive aspect, prefix i-
ŋi -i -apu-kami
1sg-INCEP-eat-MOV

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15. Like most Tiwi suffixes in Osborne's decription, this suffix has complex morphophonemics.

I'm just about to eat

Thus, in languages of both the Pama-Nyungan and non-Pama-Nyungan groups, various non-reduplicative devices are employed to express typical reduplicative, aspectual meanings.

Type 2: Languages with reduplication as a 'peripheral' process

Anguthimri Baagandji Kalkatungu
Madi Madi (Victorian) Yukulta [16].

The languages involved in this group are all Pama-Nyungan, with the exception of Yukulta, a member of the Tangkic subgroup of the heterogenous non-Pama-Nyungan languages.

The definition of type two languages is largely negative. These languages have some productive verbal reduplication, often alongside inherent verbal reduplication. The meanings of the productive reduplications are somewhat idiosyncratic and 'lexicalized', and the process is more limited in productivity than in type 3. In addition, a great deal of the aspectual marking is performed by non-reduplicative verb morphology.

Kalkatungu (Blake 1979a) has a reduplicative construction having a series of functions which seem particularly idiosyncratic at first glance.

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16. It should perhaps be noted that the available descriptions are such that we might suspect that reduplication in these languages was in pre-contact times not so 'peripheral' as it appears to be, owing to the 'salvage' nature of the description. However, my argument for increased occurrence of motivated and non-iconic meanings from type 1 to type 4 languages is not weakened by this possibility. It is still possible to observe that in some languages verbal reduplication seems to play a relatively minor role in marking the types of meanings which reduplications typically mark. That there are only six languages involved probably means we should not place too much reliance on figures involving this group.

The following examples give some idea of the range of meanings:

3.22.	tuna	*run*	tuna-tuna	*to run around*
	jakapi	*listen*	jakapi-jakapi	*to listen intently*
	ɲani	*see*	ɲani-ɲani	*stare*
	iɲci	*chop*	iɲci-λ-iɲci	*chop repeatedly*
	iŋka	*go*	iŋka-λ-iŋka	*go repeatedly, go back and forth, walk around*

These forms, when compared with the productive inflections and derivations of the language, appear to be quite marginal in the overall system.

For example, the present tense (zero realization) in Kalkatungu covers "much the same semantic range as the present in English" (Blake 1979a:54). It can be used to express 'habitual' or customary action, as in 3.23:

3.23. titiri caa watara malta kuu aṭii-ɲin-ta
centipede here emerge many water fall-PARTIC-LOC
Centipedes appear in great numbers when it rains

The form -mi, glossed as 'future', when added to a verbal stem formed with antipassive -ji, can express present activity and future continuation. 3.24 shows this type of meaning:

3.24. kuntu ŋai ŋkaṛa-a ŋantama -ji -mi
not I yam -DAT look.for-ANTIP-FUT
I'm not going to keep on looking for yams

Indication of an ongoing state or activity, either in present or past time, is generally expressed by the Imperfect inflection -manti. Some examples follow.

3.25. ŋai iŋka piɲcamu-watara-manti-ŋiina
I go sun -emerge-IMPF -ALL
I am going towards the rising sun

3.26. ɲin-ti caa tumaji-mpa -n kunka ṛaɲci-manti-kina-ka
you-ERG here break -PERF-you stick lie -IMPF -PLU -0
You've broken the sticks that were lying about everywhere

This suffix occurs "in independent clauses and ... [on] intransitive verbs in subordinate clauses which qualify nominals" (Blake 1979a:55).

Furthermore, Kalkatungu has a habitual inflection -ɲcaŋu. It is a word-final inflection, being followed only by pronominal suffixes.

3.27. wii ɲini wani-ɲcaŋu warma-a
query you play-HABIT dance-DAT
Do you dance?

3.28. malta-ŋujan maṛapai-ka iŋka-caŋu -na ŋkaṛa-a
much -times woman -o go -HABIT-they yam-DAT
Often the women used to go for yams

Certain derivational suffixes occur in Kalkatungu (derivational in the sense that they occur between the verbal root and the inflectional suffix) expressing syntactic functions such as transitivity-changing, reflexive and reciprocal. Among them is a suffix which seems to have aspectual meaning of the kind commonly found in reduplications. The semantic value of this suffix, as distinct from other suffixes such as the Imperfect, is not particularly clear from the data.

3.29. ŋa-tu ŋaŋa macumpa uli-ɲcaani-cin
I -ERG saw kangaroo die-CONT -PART
I saw the kangaroo dying

Baagandji is a language with a structure similar to Kalkatungu. Like Kalkatungu, it has a set of reduplicated verbal forms whose meanings are not easily able to be generalized into a single predictable meaning.

3.30.

waga	*to hit*	waga-waga-	*to give someone a beating*
gulba-	*to speak*	gulba-gulba	*to chatter*
bami-la	*to look*	bami-bami-la	*to look around*
wambi-la-	*to fly*	wambi-wambi-la	*to fly around*

In addition, there is a set of reduplications which reduplicate with a vowel alternation. All of these seem to have some kind of 'negative' meaning attached to them.

3.31.	nuuga-	*to cut*	nuugu-nuuga	*to cut to pieces*
	ŋuḍa-	*to teach*	ŋuḍu-ŋuḍa-	*to criticise*
	wida	*to look at*	widu-wida-	*to spy on*
	wiidja	*to drink*	wiidju-wiidja	*be a drunkard*

There are six derivational suffixes in Baagandji, three of which express 'perfectivity' of various kinds, and three of which express 'imperfectivity'. These suffixes are can be separated from the verb root by 'topicalisation' or 'definiteness' markers. Thus reduplication is positionally closer to the verb root. However, as we shall see below, many of the reduplication's potential functions are taken by the quite extensive system of derivational suffixes.

The perfective suffixes are as follows in 3.32, 3.33, and 3.34:

3.32.	-ŋga	*thoroughness, finality*		
	bari	*to go*	bari-ŋga	*to go away for good*
	bagi	*to sing*	bagi-ŋga	*to sing someone, to kill someone by magic*

3.33. -ga *do V with speed or enthusiasm*

giinda-ga -dj -ig -inana
laugh -ASP-PAST-3PLU.A-1PLU. O
They had a good laugh at us

3.34.	-ba	*reach a goal, do completely*		
	gila	*to grow*	gila-ba	*to grow up*
	dayi-	*to eat*	dayi-ba	*to eat up a meal*

In Baagandji there is also a series of suffixes which indicate continuity of various kinds. The first is -ŋana, a stem-forming suffix which emphasises duration, as in 3.35 below:

3.35 wayu -ri -ŋana ŋaba
worry-VBL-ASP 1sgNOM
I'm upset all the time

Another common continuous-marking suffix is -nja. This suffix seems to imply ability' in example 3.36:

3.36. bagi-nja-adu gina yaṇgu
sing-ASP-1sgTR this song
I can sing this song

or excessive duration in the following sentence:

3.37. gaandinja wiidja-la -nja
long time drink -TOP-ASP
(They've been) drinking for too long

Prolonged past continuation is marked by a suffix -bani. Hercus recorded this form only in the perfect tense, in mythological texts (1982:196).

3.38. ŋadji -ŋulu dayi-l' -bani-ŋgu -adulu
serpent-DL eat -TOP-ASP -PERF-3DL SUBJ
The two rainbow serpents went on and on devouring (everything)

The tense system of Baagandji seems to be straightforwardly tense-marking with no aspectual complications. Hence it appears that reduplication in this language has a fairly restricted and idiosyncratic function in the cases where it occurs, and that most of the aspectual marking is performed by derivational suffixes.

Type 3. The split-aspectual system:

The languages which exhibit a split aspectual system are the following:

Alawa	Arrernte	Bandjalang
Bardi	Diyari	Djaru
Gumbaynggir	Dyirbal	Kayardild
	Mara	Marithiyel
Maung	Murinypata	Ngangikurrunggur
Ngiyambaa	Nunggubuyu	Pitta Pitta
Rembarrnga	Ritharngu	Wankumara
Waray	Warrgamay	Yankunytjatjara
Yanyuwa		

A split-aspectual system is one in which verbal reduplication and non-reduplicative verbal morphology between them 'share the work' of marking differences in the conceptualization of the verbal action or event. This is distinct from the situation in Type four, where the marking of aspect is carried out wholly by reduplication. The split-aspectual system differs from the case of type 2 in that verbal reduplication in a type 3 language has a closely-knit set of meanings which can co-occur with most types of verbs.

Bandjalang is one such language. In Bandjalang, productive verbal reduplication involves left reduplication of the first CV- of the root, or of the first syllable and the next CV-. The second pattern is the more common. No verb in Crowley's corpus was found with both types of reduplication, which suggests there is no meaning difference between the two. The full structure of the Bandjalang verb is thus

Redup + root + derivation + tense marker

Reduplication has a variety of meanings in Bandjalang.

3.39. mani ga:**n** baramga:-la gulgan-da
kangaroo+S these+S jump -PRES road-LOC
These kangaroos are jumping on the road

3.40. mani ga:**n** bara -baramga:-la gulgan-da
kangaroo+S these+S REDUP-jump -PRES road -LOC
These kangaroos are jumping about all over the road

These two sentences show reduplication with an intransitive punctual verb, 'jump', indicating repetition and distribution of the action. The following two sentences show the effect of reduplication on a transitive punctual verb, where it indicates repetition, and also, according to Crowley, attenuation or weakening of the action, an indication of the agent's less forceful performance of the action on the object.

3.41. mali-yu buma-ni mala daba:y
that-A kill-PAST.DEF that+0 dog+0
He killed that dog

3.42. mali-yu bumabuma -ni mala daba:y
that-A hit.about-PAST.DEF that+0 dog+0
He hit that dog about (but didn't kill it)
(Crowley 1978:84)

Reduplication may also add intensity or speed to an action, as in the following contrast:

3.43. wana: gaɲbe -: mala naŋaɲ
don't swallow-IMP that+0 food+0
Don't swallow the food

3.44. wana: gaɲbe-gaɲbe -: mala naŋaɲ
don't REDUP-swallow-IMP that+0 food+0
Don't gobble your food down.

By contrast, with an intransitive verb taking an experiencer and not an agent, reduplication indicates a multiplicity of events involving multiple experiencers. Non-singular number is marked on the S NP. See the following examples in 3.45 and 3.46:

3.45. gala bigaŋ -gar ga:na-la gagi
this+S father-Ssg stand-pres here
This father is standing here.

3.46. ga:ɲ bigaŋ -gir ga -ga:na-la gagi
these+S father-Spl REDUP-stand-pres here
These fathers are standing here.

In addition to the wide range of meanings which reduplication can express in combination with different types of verbs, several suffixes in Bandjalang mark aspectual notions. -wa is a continuative or repetitive suffix found mostly with verbs indicating inherently repetitive actions, such as the forms for crawl and run. It is glossed as *all the time* in the following example:

3.47. ma:ɲ baygal ba:ya -ni munu-nu bube:-ŋu
those+S man+S emerge-PAST DEF there-ABL dust -ABL
gulung-ba -li -wa -:la
cough -O.DELOC-ANTIPASS-CONT-PRES
The men came out of the dust coughing all the time.

The form -ba is an intensification suffix in Bandjalang. It indicates increased degree in several ways which are dependent on the lexical meaning of the verb. Crowley gives the following examples:

3.48.	yaru:ma	*swim*	yaru:maba	*swim faster*	
	naba	*pelt*	nababa	*pelt harder*	[17]
	duŋga	*cry*	duŋ[ga]ba	*cry louder*	
	duwa	*dig*	duwaba	*dig faster*	

Both reduplication and verbal suffixation are capable of adding different aspectual nuances to the verb. Both processes depend on the semantics of the verb for their interpretation, and so both participate in the aspectual marking system of the language.

Diyari provides another case of a split-aspectual language. Diyari has productive verbal reduplication whose semantics depends partly on the lexical root meaning. With punctual or momentaneous verbs, reduplication has an iterative meaning, and with process verbs, a continuative or durative meaning. Reduplication involves left reduplicating the first syllable and the following CV-, the same as the more common pattern in Bandjalang. There is, in addition, an aspectual suffix **-ṯadi**, which is suffixed to a reduplicated root. It seems to add the meaning *over a long period of time*, and, like reduplication, depends on the semantics of the verb root for its precise interpretation.

3.49.	ṯanali	miṯa	ḍaka -ḍaka	-ṯadi-ṇa	waṇṯi-yi	
	3PLU A	ground+ABS	REDUP-pierce-DUR	-PART	AUX	-PRES
	They were boring the ground (drilling an artesian bore)					

---

17. Presumably reduplication of this verb (nanaba or nabanaba) would mean *sort of pelt, hit a few times not very hard, with stones etc.*

Dyirbal is another example of a language wherein reduplication interacts with other aspectual markers on the verb. Dyirbal has left reduplication of the first two syllables of the root; otherwise, the language is completely suffixing [18]. Reduplication in Dyirbal expresses *doing V to excess*, that is, repeating the action of V, in whatever manner according to the semantic nature of the verb, so many times that it is done more than is necessary. An example was given at 1.5., repeated here for convenience:

3.50. miya -miyanda-ɲu
REDUP-laugh -NONFUT
laugh more than is appropriate

In addition, Dyirbal has a set of aspectual suffixes which mark certain modifications to the verbal meaning. They include the following.

-nbal~-galiy is an aspectual suffix (the first occurs with transitive 1-conjugation stems, the other elsewhere) which marks *do V quickly*. Like the other affixes, it occurs with both transitive and intransitive roots.

3.51. bayi yaɽa bani-**gali**-ɲu
CLASS man come-ASP-TNS
man came quickly

-ganiy indicates that an action is done repeatedly. Dixon's examples (1972:248) are in the non-future tense, translated as 'past' in English:

3.52. bayi yaɽa bani-n-**gani**-ɲu
CLASS man come-CM-ASP-TNS
man has come here many times

---

18. Including nominal reduplication. Distinct patterns of reduplication according to the word class of the base form is a particular feature of Australian languages.

(A morphophonemic rule changes the conjugation marker on bani-y to /n/ before this suffix).

-yaray is a suffix which appears to mean either 'do it a bit more' or 'start to do it' or 'start to do it a bit more'. This is a combination of intensification and inceptive meanings.

3.53. bayi yaṛa yanu**yara**ɲu man went a bit further away

where yanu-l is the root 'to go'.

When we consider these three suffixes alongside verbal reduplication, we see that reduplication and the -ganiy suffix both have a repetitive meaning, while the -nbal~ganiy and -yaray suffixes add intensive meaning of various kinds. Any verbal root can be optionally reduplicated, unless it is reciprocal in which case the reduplication is obligatory. The three suffixes examined above are mutually exclusive, but all can be followed by a fourth suffix, -ɖay.

-ɖay has two different semantic values. It may either indicate distributed atelic (lacking a goal) action, or it may indicate plural object (deep S or O). It contrasts with -ganiy in that the latter indicates a long time span and -ɖay a short time span. The following complex verbal form is therefore possible:

3.54. bayi yaṛa ŋanda-ŋanda-galin-ɖa-ɲu
the man called out several times in rapid succession, more than necessary, in a short space of time.

This example and the discussion above show that reduplication plays an important role in the aspectual system of Dyirbal, and that the aspectual marking work is shared out between several

forms with fairly precise meanings, forms which can then combine to specify many different aspectual nuances.

Kayardild, a Tangkic language spoken in the Gulf of Carpentaria, is another language which can be classed as 'split-aspectual'. The verbal structure of Kayardild is quite complex, as the following diagram shows:

$$\text{root} + (\text{redup}) + (\text{derivational suffixes}) + \left\{ \begin{matrix} \text{thematic} \\ \text{t/a/m} \end{matrix} \right\}$$

Following either the thematiser or the tense/aspect/mood inflection, there may be a nominalizing suffix or a complementizing case suffix.

Verb reduplication in Kayardild indicates the multiple repetition of an action, which is manifested in several ways, as the following examples show.

3.55. maku -wala jani -jani -ja niwan-ji
women-LOT search-REDUP-ACT him -LOC
Many women searched for him.

This example shows reduplication marking multiple instances, presumably concurrent, of searching by multiple actors (marked on the NP).

3.56. dara -dara -tha raa -ja warirr
break-REDUP-ACT spear-ACT nothing
[They] speared (him) but (their spears) broke and broke again, nothing happened.

3.56 shows multiple instantiations of breaking, this time possibly one after the other.

Lastly, the following text example expresses multiple instances

of shuddering, an activity which is itself somewhat inherently multiple.

3.57. waldarra jabi -jabi -j, kurrumbu bula-a-nangka
moon(NOM) shudder-REDUP-ACT, barbed.spear pull-DT-NEGFUT
Moon shuddered and shuddered, but the spear could not be pulled out.

Other ways of marking aspectual functions in Kayardild include the following. Kayardild has the possibility of forming 'aspectual complexes' by means of postposing an inflected auxiliary verb to a verbal stem. Three particular auxiliary verbs express meanings which are commonly attributed to reduplicative constructions. They are the following:

3.58.

dii-ja	continue to do V, without change
karrngi-ja	persist with activity for too long
jirrma-ja	generously indulge in an activity

The lexical meanings of these verbs are dii-ja 'to sit, karrngi-ja 'to hold or grasp', and jirrma-ja 'pile up'. The following text examples (Evans 1985:254) illustrate the functions of these verbs as auxiliaries:

3.59. wuu-ja yurda -ya muyinkalan-ki yiiwi-ja **dii-j**,
put-ACT inside-LOC dinghy -LOC lie -ACT sit-ACT
yurda -y, warra-n-marri, barri-n-marri
inside-LOC go -N-PRIV crawl-N-PRIV
(I) put (the turtles) inside the dinghy, and (they) just stayed lying there, without moving, without crawling around

3.60. niya diya-ja **karrngi-j**
he:NOM eat -ACT grasp -ACT
He keeps eating, he's eating all the time

3.61. yan-da kurirra narrkiri-i-j, ngabaya rundurr-
now-NOM dead(NOM) bury-DT-ACT spirit(NOM) grave-
-ula-a-j nhuku-y diya-ja **jirrma-ja**
-VB.ABL-DT-ACT water-MLOC eat-ACT pile up-ACT
ngabay, ril-ung-ku warra-ju
spirit(NOM) east-ALL-PROP go-FUT
Now the dead person is buried, and his spirit leaves the grave; the spirit drinks plenty of water, for his journey eastward across the sea.

Durative aspect is marked by the postposing of the lexical verb 'be', wirdi-ja, as in the following example:

3.62. bi -rra-karrngi-ja wirdi-j
3.DU-NOM-hold -ACT be-ACT
They're guarding it

Another aspectual device is that of nominalized verbs, as in 3.59 above, repeated here as 3.63:

3.63. ... warra-n-marri, barri-n-marri
go-N-PRIV crawl-N-PRIV
without moving, without crawling around

These nominalized verbs normally indicate ongoing incomplete actions. Together with prefixed nominals, however, they indicate habitual actors or instruments.

3.64. niya dulk-inji-wungi-n-da
3sg+NOM country-?-steal-N-NOM
He's always poaching on other people's country

Kayardild therefore has an extensive set of morphological and syntactic means to mark the meanings we have identified as typical for reduplication. Since it also has a productive reduplicative process, I have classed it as a 'split-aspectual' language. Reduplication marks multiplicity of various kinds, while imperfectivity is marked by auxiliaries and nominalisations on verbs. Habituality is marked by nominalized verbs prefixed with incorporated nominals.

Marithiyel (Green 1981 and 1989) is a non-Pama-Nyungan language with a productive reduplicative process which interacts with other aspectual marking in a split-aspectual system. The complex verb stem in Marithiyel is made up of a combination of verb root, auxiliary, person/number markers and optional incorporated nominals. Reduplication of the verb root is the usual method of indicating a repeated, iterative action (one involving multiple instance of a discrete event).

3.65. muku nang gudri-iwinj **-kap** -vini-ya
woman 3msPRO 3sSnf-sit.3msGEN-call out-DL -PAST

He called out (once) for his two women

3.66. muku nang gudri-iwinj **-kakap** -vini-ya
woman 3msPRO 3sSnf-sit.3msGEN-REDUP.call out-DL -PAST
He called out (more than once) for his two women

This conceptualization of 'multiple events' can extend to 'multiple objects' [19], as in the following example where reduplication is obligatory (and number is marked by modification of the NP):

3.67. be -ngipi -wa ngubul-kum-kum-wa ganbi nglevu gan?
what-1sSF do-FUT 1sSF -REDUP -join.FUT bamboo many this
How shall I join all these pieces of bamboo?

Similarly, reciprocal actions, which require the participation of both actors, seem to prefer a reduplicated verb, although Green (1989) claims that the unreduplicated verb is not ungrammatical, only semantically odd. Compare this with the Dyirbal reciprocal in 3.69.

3.68. Marithiyel

ngumburr-inj -batbat -nim-wa
1ISF+rri-RECIP-REDUP knock down-PLU-FUT
We (inc. pl) will knock each other down

3.69. Dyirbal

balagara bayi yaŋa ɟurgay-ɟurgay-bari-ɲu
two NOM MAN man REDUP -spear -RECIP-PRES/PAST
The two men are spearing each other.

Finally, reduplication can express spatial distribution, an action dispersed over the entire area of its object, as in the following contrastive pair of sentences (cf 2.1, 2.2 above, from Yankunytjatjara).

3.70. Marithiyel (Green 1989)
watjen nginj -wa -ya tharr ganbi -gin
dog 1sSF nji-wet-PAST thing bamboo-INST
I wet the dog with the hose (in a single action)

---

19. More than two, since two pieces of bamboo, as in the following example, require only **one** act of joining.

3.71. watjen nginj -wawa -ya tharr ganbi-gin biyi
dog 1sSF nji-REDUP wet-PAST thing bamboo-INST head
yerri deben
tail up.to
I wet the dog with the hose from head to tail

These reduplicative verbal complexes co-occur with other grammatical codings of aspect. Other aspectual meanings are marked by the auxiliaries. These occur prefixed to the verb in the case of formally intransitive verbs, and serialised with the verb (occurring after the verb and forming a separate phonological entity) in the case of formally transitive verbs. The auxiliaries express notions of imperfectivity or incompleteness, as well as their lexical meanings, while reduplication, as we have seen, expresses notions of multiplicity, as was the case in Kayardild. The following four sentences illustrate the contrasts which are possible. 3.72 is a formally transitive verb, and hence takes verb serialization when combined with an auxiliary, as in 3.73. The lexical verb -bu can also be reduplicated, in 3.74, to express multiple actions of pouring, which differs from the meaning expressed in 3.71, which can be glossed as 'totally affected object'. This contrasts with the reduplicated root combined with an auxiliary (3.75).

3.72. wudi ngidi -bu -ya
water 1PRO+see-pour-PAST
I poured out the water (in a single action)

3.73. wudi ngidiN -bu gunga-ya
water 1PRO+see-pour stand-PAST
I was standing pouring out the water (in a single action)

3.74. wudi ngidin -bubu -ya
water 1PRO+see-REDUP+pour-PAST
I poured out the water (bit by bit)

3.75. wudi ngidin -bubu gunga-ya
water 1PRO+see-REDUP+pour stand-PAST
I was standing pouring out the water (bit by bit).

The imperfectivity marked by auxiliaries is in fact not simple, since there are two types of verbal auxiliaries. First, the 'static intransitive' set, which includes gunga- above as well as the verbs 'lie', 'sit', and 'be hanging'. These forms are used to signal duration of the action and to give information of the position and posture of the entity referred to by the subject NP. Such forms contrast with the 'motional' auxiliaries, glossed as 'go' which mark the following aspectual nuances: motional, multi-locational, renewed/continuative, persistent, and customary/ habitual (in the latter case, with a reduplicated verb root). The following examples show such a contrast on a formally intransitive verb:

3.76. ngin -vi -ya
1PRO+go-smoke-PAST
I was having a smoke (while going along)
**I used to smoke*

3.77. ngin -vivi -ya
1PRO+go-REDUP+smoke-PAST
I smoked repetitively while going along
I used to smoke

Finally, we may note that Marithiyel also makes extensive use of 'narrative repetition' (as defined in section 1 above) in narrative texts. This narrative repetition has a more specific function than reduplication, and is in fact highly iconic, since two repetitions of a full verb are taken literally to mean two instances of a certain action, while reduplication expresses multiplicity in a broader sense.

3.78. diyerr bederr ngin -batj -a/
teeth river 1PRO+go-lie down-PAST /
ngin -batj -a
1PRO+go-lie down-PAST
I spent two nights (lay down twice) at the river bank

3.79. diyerr bederr ngin -batjbatj -a
teeth river 1PRO+go-REDUP+lie down-PAST

I camped repetitively/used to camp at the river bank

Marithiyel displays a very typical split-aspectual system: the case of reduplication interacting in various ways with other morphological and syntactic forms and constructions to divide the available semantic space.

Another language with an interesting split-aspectual system is Ngiyambaa (Donaldson 1980). Ngiyambaa has a remarkable process of reduplication for Australian languages: reduplication has a consistent well-defined function across the two major word classes in which it occurs. This meaning is *more or less X*, a function making the action 'vaguer' by reducing the specificity of its reference, where X can be either a verb or a 'reduplicating nominal' (in essence, an adjective) [20]. Since adjectives express meanings which can be thought of as 'stative predicates', the rule in Ngiyambaa seems to be that all predicates can reduplicate, but arguments cannot, and the motivation for this is semantic. The following examples (from 2.17, 2.18) illustrate this:

3.80. yuw -yuwa-y -ga: -dha
REDUP-lie -CONJ-A BIT-IMP
Have a nice little lie in!

3.81. ŋa:gi-ŋa:gi-ɡili-ɲa =na
REDUP-look -REFL-PRES=3ABS
She's more or less looking at herself; she's stealing a look at herself in the mirror

Reduplication interacts with other morphological and syntactic forms which express typical reduplicative meanings. Note that

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20. Ability to reduplicate is the only morphological distinction between 'adjectives' and 'nouns' in Ngiyambaa. For this reason, Donaldson chooses to regard the noun/adjective distinction as not relevant to the language (but see Chapter three).

'attenuation', the 'more-or-less' meaning, is a less iconic meaning for reduplications. This meaning was found in only two other languages (Yankunytjatjara and Bandjalang) where it was not nearly as productive as in Ngiyambaa. This makes Ngiyambaa truly unique among the languages in my sample [21].

Attenuation, as we noted above, is consistently marked by reduplication. Its opposite, intensification, is marked by the use of adverbs, or by the repetition of entire verb forms.

3.82. yuruŋ-gu ŋiɡiyi ŋiɡiyi
rain -ERG rain+PAST rain+PAST
It rained and rained

In addition, Ngiyambaa has a series of aspectual suffixes which express various imperfective meanings. waga:-l is a Durative suffix, expressing action continuing over a period of time, either in the past or in the present. In the latter case it is usually translated with a habitual nuance, as 'all the time'.

3.83. gali... wamba-wa:ga-ɾa
water +ABS be up-DUR -PRES
There is always water...

walinjdja-l -wa:ga-ɾa
lonely -CONJ-DUR -PRES
(They) are homesick all the time

Action in progress or protraction of the action without end is expressed by -ga-l. Note that this form is homophonous with ga-l 'to be'.

3.84. winaŋa-l -ga -ɾa =lu =gal
listen-CM-PROG-PRES=3ERG=PLU
They are eavesdropping

Repetition of the event indicated by the lexical main verb is indicated by the suffixation of -a:li-y.

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21. Another interesting feature of Ngiyambaa reduplication is its strict phonological specification; see chapter two.

3.85. miŋga =dhu baga-l -a:li -nji
burrow +ABS=1NOM dig -CONJ-AGAIN-PAST
I dug burrows again

Emphasis on the participation of a group in the particular action is marked by the suffix -DHunma-y.

3.86. guɽu -nhi =naŋgal ŋadhi -la: /ŋawu -ga -galay /
enter-PAST=3ABS there+CIRC-EST night-LOC-ONLY
waga -dhunma-giri-gu
dance-GROUP -PURP-DAT
They went inside that windbreak, at night only, to corroboree together

The suffix -wa-y has slightly different interpretations according to the class of predicates with which it occurs. Suffixed to a non-stative predicate, it expresses 'associated motion' (Koch 1984):

3.87. dha-l -wa -y -guwa-nhi
eat-CM-MOVING-CM-PITY-PAST
(You) ate while travelling along, poor thing!

Suffixed to a stative predicate, it indicates 'inchoative'.

3.88. girambi-l -wa -nha
sick -CM-GETTING-PRES
(She) is getting sick

Continued action together with a certain degree of commitment by the entity referred to by the S or A NP is expressed by the suffix -ŋila-y.

3.89. gara: =ndu -bula: buma-la -dha /
PROHIB=2NOM-DU hit -RECIP-IMP
minja -ŋinda-wa: =ndu -bula: buma-la -ŋila-nha
what+ABS-CARIT-EXCLAM=2NOM-DU hit -RECIP-CONT-PRES
Don't fight, you two! What have you got to start fighting over?

This suffix is not normally added to stative predicates, and has ironic overtones if it is.

3.90. winar girambi-l -ŋila-nha
woman +ABS sick -CM-CONT-PRES
The woman is **always** *sick (ie. a malingerer)*

Thus Ngiyambaa's split-aspectual system shows a series of affixes

which act quite independently of verbal reduplication. together with productive verbal reduplication.

Lastly, we will consider Rembarrnga. This language has a very general process of verbal reduplication which expresses continuation/duration with process and activity verbs, and iteration with punctual, event verbs [22]. It can also express emphatic or intensive meaning, as well as 'action in progress' (which McKay glosses as "connective while"). Rembarrnga is a non-Pama-Nyungan language with complex verbal morphology.

The phonological process involved in reduplication in Rembarrnga is left-reduplication of the first two syllables of the verbal root, unless the root is monosyllabic, in which case the whole root is repeated. If the verb is a derived or compound root, only the root morpheme is reduplicated, and not the stem-forming affix or second verb. Several phonological simplifications apply to these basic rules, but they will not be discussed here. In addition, some verbs take irregular reduplicated forms, but in general the reduplicative pattern of the verb is predictable from its conjugation membership. The fact of its generality and its sporadic irregularity lead us to suspect that the process is quite general in the language. In fact, in text counts its incidence varies from text to text, normally occurring with less than ten percent of verbs.

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22. Interestingly, the only attested nominal reduplication in Rembarrnga is the word for *child*, which reduplicates to form an affectionate plural term (Graham McKay, p.c.)

The functions of reduplication, according to McKay, are not clearly distinct, and quite a good deal of overlap occurs. Durative aspect seems to be the major function of the reduplicative construction, although McKay claims that REDUP seems to serve the same purpose as a PROGR suffix with the form -yu (1975:206). The latter however seems to be restricted to 'action in progress, possibly with the proviso of 'different subject':

3.91. ŋa -kur?war-miɲ lit-yi?
3MIN.O + 1MIN.A-shoot -PAST PUNCT lead-INSTR
waŋkiɲ o -kuwan -yuṭ-miɲ
one 3.MIN.S-afraid-run-PAST PUNCT
ŋa -kur?war-kur?war-yumaɲ
3min.O + 1MIN.A-REDUP -shoot -PROG + PAST PUNCT
I shot [the buffalo] once with a lead and it ran away.
I shot it several more times as it went.

In this example, the reduplicated verb 'shoot' seems to indicate *many times*, and the PROGR to mark *as it went*. Rembarrnga does have a morpheme warkka (a free form) which indicates "new subject", but that form is not used here.

Reduplication, on the other hand, seems to refer to same subject across the clause boundary in 'action in progress' contexts:

3.92. ŋa -poṭop-poṭop -miɲ
1MIN.S-REDUP-cross (river)-PAST PUNCT
ŋa -peṭetj-ṭuŋ?-miɲ
1MIN.S-almost-fall-PAST PUNCT
While I was crossing the river I almost fell over.

The following examples give an indication of the functional scope of reduplication in Rembarrnga.

3.93. Duration:

yara -yappa?-niyi[:]
1AUG.S-UAUGM -sit+PAST PUNCT
yara -yappa?-ɲawk -ɲawk-mi[:]ɲ
1AUG.S-UAUGM -REDUP-talk-PAST PUNCT
taŋuɲ-o yar -yappa?-ŋetji-ŋetji-ya[:]
story-NOM 3O + 1AUG.A-UAUGM -REDUP-tell -PAST PUNCT

We sat there [all evening] talking and telling stories.

3.94. Action in progress:

yaran -pak -yappa?-waŋ? -waŋ?-miɲ
1AUG.IMPL+ 3MIN.SG-IMPL-UAUGM -REDUP-wait-PAST PUNCT
(he fired a shot in the air as a signal) he was waiting for us.

3.95. Iterative (also 3.90):

ŋattu-o yar -miya -mi -ya
cycad nuts-NOM 3.O + 1aug.A-REDUP-get-PAST PUNCT
We collected cycad nuts.

3.96. Emphatic:

kuwa ŋa -maɳiɲ?-me lit-o
PURP 3.O + 1MIN.A-make -PAST CF lead-NOM
ŋa -kur?war-me
3MIN.O + 1MIN.A-shoot -PAST CF
ŋa -tumpa-tumpal? -miɲ tin-kan
1MIN.S-REDUP-be at a loss-PAST PUNCT tin-DAT
I wanted to make a 'lead' and I would have shot a [buffalo] but I simply couldn't do anything at all on account of [my lack of] a tobacco tin (in which to melt the lead pellets).

Rembarrnga also has a set of aspectual prefixes which mark some meanings commonly found as reduplications. The following list gives some of these:

3.97.

peṭetj	*almost, just about, begin to without success, begin to, before being prevented*
pene	*manage to, happen to* (With verbs of perception this form means *catch sight of*)
tjira?	*just, already in the process of*
kakku	*genuinely, authentically, really*
la?pe	*just as, at the same time, as soon as*
waŋa	*still, continuously*

This quite complex set of prefixes can combine with most tense inflections, as can reduplication. The aspectual system of Rembarrnga is further complicated by a grammaticalized aspectual distinction in the past tense of Continuous versus Punctiliar. The Progressive aspectual suffix which we noted above is yet another means of signalling aspectual function. Thus, although reduplication in Rembarrnga is fairly well installed in the

grammatical system (as we noted its generality and complex interaction with the phonology of the language), it is by no means the only resource that the language has to express aspectual distinctions.

Type 4. Languages with highly grammaticalized reduplication as part of their inner verbal system.

Guugu Yimidhirr	Kuku Thayorre	Kuku Yalanji
Kuuku Ya?u/ Umpila	Ngandi	Ngawun
Nyigina	Warlpiri	Warndarang
Yidiɲ	Yir Yoront	

In type 4 languages all of the aspectual marking is performed by reduplication. In all cases, the meanings of the reduplicative structures are very general, and are certainly not restricted to core iconic meanings.

An interesting areal conglomeration of grammaticalized reduplication occurs in the Cape York Peninsula. Eight out of the twelve languages in the sample are Cape York languages: Guugu Yimidhirr, Kuku Thayorre, Kuku Yalanji, Kuuku Ya?u, Umpila, Yir Yoront, and at the edge of this area, Ngawun and Yidiɲ. Other Cape York languages such as Gugu Badhun have not been examined, but it would be interesting to know the status of such a coincidence of languages showing this feature, given the problems with using the classical comparative method on reduplication (Dunkel 1981).

For example, in Yir Yoront, reduplication is an integral part of the aspectual marking system. There are several phonological patterns of reduplication of verbal stems. Stems are aspect-marked by reduplication, and then tense-marked by suffixation.

Alpher labels this aspectual marking the 'continuative'. This label covers several distinct types of meaning: that the action is carried out continuously over a period of time (with process or activity verbs), or that it is repeated over a period of time (with punctual verbs, or verbs denoting events), or (in combination with the aorist tense) that the action is habitually performed by the actor. The continuative can combine with all voices and 'tense/aspect' [23] inflections, with the exception of the past tense.

If we compare the continuative with the 'tense/aspect' markers, several interesting interactions occur. Alpher notes (1973:241) that

> the non-past tense indicates that a reasonably short, bounded action is taking place in the present or will predictably take place in the near future. A continuing action can be described by repeating the verb in the non-past tense. If the action consists of repeated discrete [momentaneous] parts, each repetition of the verb is taken to indicate a repetition of the action.

Thus, a 'narrative repetition' as we have seen above in section 1 also occurs in Yir Yoront:

3.98. olo payal+unen, payel, payel,
he eat.NPAST+it eat.NPAST, eat.NPAST
He eats it, eats, eats (one handful after another).

The normally atelic process, eat, is made telic by the addition of an object (handful of food), and the verbal repetition as a result is interpreted as a series of discrete, repeated actions. Interestingly enough for our argument that non-iconic meanings are more frequent in languages with highly grammaticalized

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23. Although Alpher calls these inflections markers of 'tense/aspect', these inflections mainly convey tense and mood: past, non-past, aorist, and desiderative, purposive and irrealis.

reduplication, if the emphasis is on an action in progress at the moment of speaking, it is usual to use the non-past tense in combination with the reduplicative continuative.

In the Past tense, the interaction between continuative reduplication and verbal repetition is parallel. If the verb represents a series of discrete but identical or similar actions which go together to form a process, repetition of the verbal form will be the usual construction. Alpher gives an example of the verb <u>to swim</u> repeated with past tense marking, *swam and swam and swam*, in which the conceptualization focusses on the constituent repeated action, *one stroke after another*. By contrast, if the action denoted by the verb is not a process, but an activity (Lyons 1977:483), the repetition of the verb indicates duration. The continuative aspect is not recorded in combination with the past tense.

The following are further text examples (Alpher 1973:268)

3.99. ŋart yelyeliy
fish cut+CONT+NPAST+I
I am cutting up fish

3.100. olo wern walwaŋeleng
he boomerang throw+CONT+AOR
He used to throw boomerangs

3.101. <u>n</u>an?n+olo powelowerreŋ
thee+he hit+CONT+IRR
He would (still) be hitting you

3.102. <u>t</u>um pontiyriy
wood chop+CONT+IMP
Keep on chopping firewood

3.103. pilin keren
they+PLU see+CONT+PASS.NPAST
They are visible

The phonological form of verb reduplication in Yir Yoront is largely predictable from the verb root's conjugation membership. All verbs have a reduplicated form, except for one verb in the language which has a suppletive continuative: waga- *to go*, continuative wangaɽiy. Preposed compounding elements are not reduplicated:

3.104. poḷ-mow *boil*

which is a combination of the root mow *to jump* and a compounding element, reduplicates as

3.105. poḷ-mow-l-ow *is boiling*

which is parallel to the continuative of *jump*:

3.106. mow-l-ow *is jumping*

Other forms are given below:

3.107.

underlying form	continuative nonpast
lorm *accumulate, intr*	lororm
waɽ *block, tr*	waɽaɽ/waɽaɽiy
woɽŋ *smell, tr*	woɽoɽn
yult *grow, intr*	yulult
wernyen *dance, intr*	werernyen

Alpher lists thirteen different reduplication patterns which differ are conditioned by conjugation membership and phonological character of some root-initial and root-final consonants. See Alpher 1973:260-270 for details of these thirteen patterns and their interaction with conjugation membership.

The combination of its grammatical generality, its ability to co-occur with a wide range of tense inflections, and its phonological generality lead one to decide that the reduplicative 'continuative' in Yir Yoront is a rather strongly grammaticalized process in the language. Together with verbal repetition it carries all of the major aspectual marking in the language.

Another language which has reduplication as a major part of its inflectional system is Guugu Yimidhirr. The following examples of sentences illustrate some of the grammatical and semantic generality of reduplication in Guugu Yimidhirr.

3.108. Dhana ngalan-bi dhadaara-yga minha-angu mula-angu
3pl+NOM sun-LOC go+REDUP-PERF meat-PURP honey-PURP
dhadaara-yga, gadaara-yga ngulgu=ngulgu, mayi
go+REDUP-PERF come+REDUP-PERF afternoon food+ABS
baawa-ayga
cook-PERF
They would go out after meat in the day, go out after honey, then come [back] in the afternoon, and cook the food. (A mythical account of a large ceremonial party long ago.)

3.109. nyulu gaangga nhaa-dhi dhudaan-bi wunaarrna-yga
3sg+NOM yam+ABS see-PAST road-LOC lie+REDUP-SUB1
He saw a yam lying on the road.

3.110. nyulu-ugu nhaa-dhaaldha-ya gilaadha-wi
3sg+NOM-gu look-REDUP-REF+NPAST glass-LOC
He is looking at himself in the glass.

3.111. dhana galga-wi dhaaba=ngadhaaldha-dhi
3pl+NOM spear-DAT ask+REDUP-REFL+PAST
They were asking each other for spears.

The phonological pattern of reduplication is quite complex, according to Haviland (1979:87-91). The major complications arise with monosyllabic verb roots since the overwhelming tendency in the language is for right reduplication of the last two syllables of the root. Monosyllabic verbs therefore reduplicate both root and suffix.

The interaction of reduplication and tense inflection is quite clear. Non-past simple forms, for example, indicate a future meaning ('bye and bye'), while the reduplicated non-past suggests an action in progress , an action happening in the present. Generally, reduplicated forms indicate repeated or continuous actions (highly iconic), as well as actions in progress (motivated) and actions done to excess (also motivated).

Haviland uses the English progressive to gloss most reduplicated forms.

4.4. Iconicity and grammaticalization: some implications.

A summary of meaning types by language is given in the following chart. Table 2 in this chapter explains the column headings for the groupings here.

	Iconic	'More'	Iconic plus	Less iconic
Type 2				
Anguthimri	x			
Baagandji		x		
Kalkatungu	x	x		
Madi Madi (Vic)	x			
Watjarri	x			
Yukulta	x	x		
Type 3				
Alawa	x			
Arrernte	x			
Bandjalang		x		x
Bardi		x		
Diyari	x			
Djaru	x	x		
Dyirbal		x		
Gumbaynggir		x		
Kayardild	x	x		
Mara	x			
Marithiyel	x			
Maung	x			
Murinypata	x	x		
Ngiyambaa				x
Nunggubuyu	x			
Pitta Pitta	x			
Rembarrnga	x	x	x	
Ritharngu	x			
Wankumara		x		
Waray	x			
Warrgamay	x			
Yankunytjara	x	x		x
Yanyuwa	x	x		
Nkurrunggur	x			
Type 4				
G Yimidhirr	x		x	
K Thayorre	x		x	
K Yalanji	x	x	x	x
K Ya?u	x		x	
Ngandi	x	x		
Ngawun	x		x	

Nyigina	x		x
Warlpiri	x	x	
Warndarang	x	x	
Yidiɲ	x	x	
Yir Yoront	x		x

Table 4. Meaning types expressed by reduplication in individual languages. (Meanings listed in full in Appendix ten)

By counting the languages in each column, we obtain the following table:

	Iconic	'More'	Iconic plus	Noniconic
Type 2	8	3	0	0
Type 3	23	12	1	3
Type 4	16	9	9	0

Table 5. Instances of meaning by language type.

The pattern suggested is as follows. In the progression from languages with marginal reduplication to languages with highly grammaticalized reduplication, there is also a progression from fewer to more instances of meanings represented in the columns labelled 'More' and 'Iconic plus'. These latter meanings involve the iconic iterative/continuative meaning plus other non-iconic meaning components. In all three language types 2, 3 and 4, the occurrence of iconic meanings remain high. That is, reduplication, no matter what its productivity and role in the grammar, has a high tendency to express iconic meaning. The occurrence of less strictly iconic meanings, however, varies as a function of the productivity and structural importance in the grammar. The more productive and central to the grammar the reduplicative construction is, the more likely it is to express **less** iconic functions.

The 'Less iconic' column is interesting in this respect. Only three occurrences of this type of meaning (attenuation) were found: in Bandjalang, Ngiyambaa, and Yankunytjatjara. If we include it together with the 'Iconic plus' column (as Botha 1988 would do), giving '4' instead of '1', it more clearly shows a gradual increase in the occurrence of non-iconic and not-strictly iconic functions as reduplication becomes more grammaticalised, more embedded in the grammatical system.

However, it may well be the case that this meaning type is quite distinct and idiosyncratic in relation to other types of meanings commonly found in reduplications. Note that Ngiyambaa has verbal repetition ('narrative repetition') expressing intensification and reduplication expressing attenuation. Bandjalang has reduplication able to express **both** attenuation and intensification. Yankunytjatjara does not have reduplication expressing intensification. Some kind of interaction may well exist between these two types of meanings, but no generalization is possible over only these three quite distinct cases.

The results reported here could not be obtained by examination of any single language, no matter how complex or simple its reduplication pattern or patterns. The semantics of reduplication in any particular language are, at least partly, accidental. It is only by examining a sample of languages and comparing semantics with syntax and morphology that patterns such as the ones discussed here can emerge.

Summary and Conclusion

The three previous chapters have set out in detail the findings of this survey of reduplication in Australian languages. The current chapter will present these findings in summary and relate the issue of reduplication to wider theoretical perspectives.

In the introduction, we examined the wider structural nature of certain morphological processes in Australian languages. It is clear that reduplication has a distinctive character which merits its discussion separate from other morphological processes.

Chapter two presented a typology of reduplicative phonological structures in Australian languages and argued on this basis that there are clear differences in phonological and morphological structure between nominal and verbal reduplication. It was shown that, for several languages at least, multiple patterns of reduplication within the one word class were possible. Although there was a great deal of variation across Australian languages generally, typical profiles of nominal and verbal reduplication could still be identified. A significant finding was the fact that no language in the sample exhibited nominal reduplication involving inflectional morphology within the reduplicate. This has interesting structural correlates with other features of Australian languages. In general, in some languages, all words have at least two syllables, but some roots may be monosyllabic. Such roots tend to be verbs rather than nouns. This fact, compared with the generalization that many languages had verbal reduplication which could involve inflectional morphology if the

syllabicity condition on reduplication required it, pointed to significant differences between the word classes in phonological and morphological structure. This finding is of course independently corroborated by the fact that nominals in Australian languages commonly occur with zero inflection, that is, they exhibit word-inflection (for absolutive case in the majority of languages), while verbs generally exhibit stem inflection, the verbal word never occurring without one or more inflections. In this way, the study identified clear structural differences between the two major word classes which can be reduplicated (and noted in passing the existence in some languages of reduplication of closed class items and derivational affixes).

The next chapter presented an in-depth analysis of nominal reduplication. Nominal reduplication seems to occur, with varying amounts of productivity in practically every language examined. Its typical meanings include number marking, the productivity of which has interesting semantic restrictions in many Australian languages, intensification marking, and de-intensification marking, as well as colour term formation, and 'likeness' derivation. The non-number marking derivations were classified into a category of 'LIKE' derivations, a term which expressed the fact that all of the types of meaning which it encompassed could be seen as pointing to similarities, between two objects, between an object and a quality, and between a quality and an object. The relations between form and meaning here may certainly be seen as iconic. Together with inherent nominal reduplication, which is probably more widespread in

Australian languages than productive nominal reduplication, interesting generalizations on iconicity may emerge. This, however, is a matter for later study.

Therefore, the reduplicative meanings which nominal reduplication may have in individual languages seem to point strongly to a major class distinction between those words which refer primarily to 'kinds of things', as opposed to those words which refer to qualities. This situation is most clearly expressed in Ngiyampaa, where a clear semantic distinction between reduplicating and non-reduplicating nominals points up a clear adjective/ noun distinction. If we allow reduplication as a structural criterion for establishing separate word classes, some Australian languages clearly merit a word class distinction, or perhaps a sub-class distinction, between noun and adjective, one corroborated by a clear semantic split.

The methodology of chapter three rested upon comparing reduplication with other areas of the grammar of a language, in order to determine the structural role played by reduplication in the grammar of a language. Chapter four is another example of this type of study. This chapter focussed on verbal reduplications, initially on their meanings, and secondly on the productivity and importance of verbal reduplication in the grammar of a langauge. By examining both these facets, and, in the case of the second, comparing reduplication with other means of marking 'typical reduplicative meanings' in the individual language, we were able to identify a motivation for the types of reduplicative meaning any one language will instantiate. In

summary, reduplication may mark one of several types of iconic meanings, which can be arranged into groups on a scale according to their closeness to 'core iconic' meanings, best expressed as 'iteration'. If a language has a very marginal reduplicative pattern, found only on a few verbs, the meanings expressed by reduplication will tend to cluster at the core iconic end of the scale of iconicity. Languages which display a 'split-aspectual system', where the work of marking aspectual types is split between reduplication and some other type of verbal morphology or morpho-syntax, reduplication will tend to spread further along the iconicity scale, and encompass meanings which, while being iconic, are less clearly iconic than the core iconic meanings. Finally, if reduplication is the only morphological device used to mark aspect in the language, the meaning of that reduplication may spread across the iconicity scale to encompass meanings which are further still from the core iconic meanings. If the general structural role of reduplication vis-à-vis other verbal morphology is not examined, the meanings exhibited by reduplication in any one language appear to be random and arbitrary. When one considers reduplication as part of a wider system of morphology, such apparent randomness disappears.

Thus, reduplication is a clearly identifiable and distinctive word-formation process of some generality and productivity in the majority of Australian languages. In addition, however, it is part of the morphological system of the language, and treating it separately from that system may fail to do justice to the facts of the language. The study of reduplication qua reduplication, and not qua quasi affixation, reveals a complex and interesting

phonological, morphological, and semantic phenomenon.

Appendix one.
This list includes all Australian languages examined for data on reduplication. The codes show what type of data was found, and where it was used in the present study. This list may not be complete for all languages, since not all possible sources were used. Therefore, the absence of any code does not indicate that the language has/had no reduplication, simply that the accessible sources gave no information.

PHO	Phonological survey
NOM	Nominal Morphology survey
VM	Verbal morphology survey
SF	Semantic functions survey: Appendices four (nouns), and eight (verbs).

Adnyamathana			VM	
Alawa	PHO	NM	VM	SF
Alyawarra	PHO		VM	
Arrernte	PHO	NM	VM	SF
Awabakal				
Baagandji	PHO		VM	SF
Bajiri				
Bandjalang	PHO	NM	VM	SF
Bardi			VM	
Bidjarra		NM		
Bigambil				
Biri				
Bungandidj				
Burarra	PHO			
Dharuk		NM		
Diyari	PHO	NM	VM	SF
Djabugay				
Djaminjung				
Djapu	PHO	NM	VM	SF
Djaru	PHO		VM	SF
Djinang			VM	
Djingili	PHO	NM	VM	SF
Djiwarli				
Dyangati				
Dyirbal	PHO	NM	VM	SF
Gabi Gabi				
Galali				
Gamilray				
Garawa				
Gumbaynggir	PHO	NM	VM	SF
Gunbarlang				
Gundungura		NM		
Gunwinggu				
Guugu Yimidhirr			VM	SF
Kalaaku				
Kalaw Kawaw Ya		NM		SF
Kalkatungu		NM	VM	SF
Kattang				
Kawurna				
Kayardild	PHO	NM	VM	SF
Kaytej		NM		
Keramin				
Kitja				

Kriol	PHO			
Kukada				
Kuku Tahypan		NM	VM	
Kuku Thaypan				SF
Kuku Yalanji	PHO	NM	VM	SF
Kuku Ya'u				
Lardil		NM	VM	SF
Luritja				
Malak Malak			VM	
Mangarayi	PHO	NM	VM	SF
Mara	PHO	NM	VM	SF
Maranungku	PHO		VM	SF
Margany and Gunya	PHO		VM	SF
Marithiyel			VM	SF
Martuthunira	PHO		VM	SF
Maung	PHO		VM	SF
Miriwung				
Mpakwithi			VM	SF
Muk Thang				
Murawari				
Murinpata	PHO	NM	VM	SF
Narrindjeri				
Ngalakan		NM		SF
Ngandi		NM		SF
Ngangikurrunggur	PHO		VM	SF
Ngarigu				
Ngawun	PHO	NM	VM	SF
Ngayawung				SF
Ngiyambaa	PHO	NM	VM	SF
Nunggubuyu	PHO	NM	VM	SF
Nyawaygi		NM	VM	SF
Nyigina	PHO		VM	SF
Nyungar				SF
Panyjima			VM	
Pintupi				
Pitjantjatjara				SF
Pitta Pitta	PHO		VM	SF
Rembarrnga	PHO	NM	VM	SF
Ritharngu	PHO	NM	VM	SF
Tiwi	PHO	NM	VM	SF
Umpila			VM	
Ungarinyin	PHO	NM		SF
Uradhi	PHO	NM	VM	SF
Victorian	PHO	NM	VM	SF
Waga Waga		NM		SF
Wagaya				
Walmatjarri			VM	SF
Wankumara			VM	
Waray	PHO		VM	
Warrgamay		NM	VM	SF
Warlpiri	PHO	NM	VM	SF
Warluwarra				SF
Warndarang			VM	SF
Warungu				SF
Wathawurung				
Watjarri	PHO	NM	VM	SF
Wiradhuri		NM		SF
Wulguru				

Wuywurung				
Yabala Yabala				
Yandruwandha				
Yankunytjatjara	PHO	NM	VM	SF
Yanyuwa	PHO		VM	SF
Yaralde				
Yaygir				
Yidiɲ	PHO	NM	VM	SF
Yindjibarndi	PHO	NM	VM	SF
Yir Yoront	PHO	NM	VM	SF
Yitha Yitha				
Yota Yota				
Yukulta	PHO	NM	VM	SF

Appendix two.

Coding Parameters and values

n--- word class
1 noun
2 verb
3 adjective
4 verbal auxiliary/ particle/ preverb
5 pronoun
6 nominal
7 noun marker
8 adverb

-n-- place of reduplicated portion
0 initial
1 final
2 medial
3 symmetrical

--n- length of reduplication
0 one syllable
1 two syllables
2 one syllable plus following CV (syllable onset plus peak)
3 VC(C)
5 root (or stem, if complex)
7 full root plus morphemes
8 CV

---n phonological word boundary

0 yes
1 no
9 not clear

Appendix three.

LANGUAGE	WORD	PLACE	LENGTH	±BOUNDARY
Alawa	noun	initial	1$CV	-boundary
	noun	final	root	+boundary
	v.part	initial	1$CV	-boundary
	v.part	medial	1 syll	-boundary
Alya-	nominal	final	root	-boundary
warra	nominal	final	2 sylls	-boundary
Arrernte	noun	symmetrical	root	-boundary
	noun	final	2 sylls	-boundary
Baagandji	verb	symmetrical	root	-boundary
Bandja-	noun	final	root	+boundary
lang	verb	initial	CV,mora	-boundary
	verb	initial	1$CV	-boundary
	noun marker	initial	CV	-boundary
	noun marker	initial	root	-boundary
Burarra	noun	final	root	-boundary
	verb	final	root	-boundary
	adjective	final	root	-boundary
	adverb	final	root	-boundary
Diyari	noun	initial	1$CV	+boundary
	verb	initial	1$CV	+boundary
Djapu	nominal	initial	2 sylls	-boundary
	verb	initial	1$CV	-boundary
	verb	initial	1 syll	-boundary
Djaru	noun	symmetrical	root	-boundary
	verb	initial	R+Mm/ 2 sylls	-boundary
	preverb	initial	root	-boundary
	adverb	initial	root	-boundary
Djingili	nominal	medial	VC(C)	-boundary
Dyirbal	nominal	symmetrical	root	+boundary
	noun marker	symmetrical	root	+boundary
	verb	initial	1$CV	-boundary
Gumbay- nggir	noun	symmetrical	2 sylls	not clear
Kayardild	noun	symmetrical	root	-boundary
	verb	symmetrical	root	-boundary
Kriol	noun	initial	root	-boundary
	noun	initial	2 sylls	-boundary
	noun	initial	VC(C)	-boundary
	verb	final	verb word /R+Mm	-boundary
	adverb	final	root+Mm	-boundary

LANGUAGE	WORD	PLACE	LENGTH	BOUNDARY
Kuku	noun	symmetrical	root	-boundary
Yalanji	verb	symmetrical	root	-boundary
Mangarayi	verb	final	2 sylls (R+Mm)	-boundary
	verb part	final	root	-boundary
	noun	medial	1 syll	+boundary
Mara	verb	initial	1 syll	-boundary
	verb part	initial	2 sylls	-boundary
	noun	initial	1 syll	-boundary
	noun	initial	2 sylls	-boundary
	adverb	initial	1 syll	-boundary
Mara-nungku	verb	symmetrical	root	-boundary
Margany	noun	symmetrical	root	-boundary
Martu-thunira	?nominal	symmetrical	root	-boundary
	?nominal	symmetrical	root	+boundary (2$C or longer)
Maung	verb	symmetrical	root	not clear
	noun	initial	1 syll	-boundary
	or noun	initial	VC(C)	-boundary
Murinpata	noun	initial	root	+boundary
	verb	final	1 syll	-boundary
Ngangi-kurrungur	verb	initial	1 syll	-boundary
Ngawun	verb	symmetrical	root	-boundary
Ngiyambaa	adjective	initial	1$CV	-boundary
	verb	initial	1$CV	-boundary
Nunggu-buyu	noun	initial	1 syll	-boundary
	noun	initial	1$CV	-boundary
	verb	initial	1 syll	-boundary
	verb	initial	1$CV	-boundary
Nyigina	verb	final	1 syll	not clear
	verb	initial	2 sylls	not clear
	verb	symmetrical	root	not clear
Pitta Pitta	noun	symmetrical	root	-boundary
Rem-barrnga	verb	initial	2 sylls	-boundary
Ritharngu	noun	initial	2 sylls	-boundary

LANGUAGE	WORD	PLACE	LENGTH	BOUNDARY
	noun	initial	1 syll	-boundary
	verb	initial	2 sylls	-boundary
Tiwi	noun	initial	CV	-boundary
Unga-rinyin	noun	symmetrical	root	-boundary
	noun	initial	1 syll	-boundary
Uradhi	adjective	medial	CV	-boundary
Victoria	noun	symmetrical	root	+boundary
	noun	symmetrical	root	-boundary
	verb	final	2 sylls	-boundary
Waray	verb	initial	root	+boundary
	verb	initial	1$CV	+boundary
	noun	initial	root	+boundary
	noun	initial	1$CV	+boundary
	adjective	initial	root	+boundary
	adjective	initial	1$CV	+boundary
Warlpiri	noun	symmetrical	root	-boundary
	verb	initial	root	-boundary
	preverb	initial	1 mora	-boundary
Watjarri	noun	symmetrical	root	-boundary
	noun	symmetrical	2 sylls	-boundary
	verb	symmetrical	root	-boundary
	verb	symmetrical	2 sylls	-boundary
Yankuny-tjatjara	adjective	symmetrical	root	-boundary
	noun	symmetrical	root	-boundary
	verb	symmetrical	root	-boundary
Yanyuwa	verb	initial	2 sylls	-boundary
	verb	initial	1 syll	-boundary
	nominal	initial	2 sylls	+boundary
Yidiɲ	verb	initial	2 sylls	+boundary
	noun	initial	2 sylls	+boundary
Yindji-barndi	nominal	final	2 sylls	-boundary
Yir Yoront	verb	medial	VC(C)	-boundary
	noun	initial	root	-boundary
	noun	initial	1 syll	-boundary
	noun	initial	VC(C)	-boundary
	noun	final	root	-boundary
	noun	final	1 syll	-boundary
	noun	final	VC(C)	-boundary
Yukulta	noun	symmetrical	root	-boundary
	verb	initial	2 sylls	-boundary
	pronoun	symmetrical	root	-boundary

Appendix four.
Nominal reduplication in Australian languages.

Languages with noun reduplication marking *significant plural* function:

* = Language has a set of noun classes

Alawa	*
Arrernte	
Bandjalang	*
Djapu	*
Djingili	*
Dyirbal	*
Gumbaynggir	
Kalkatungu	
Kayardild	
Kuku Yalanji	
Lardil	
Madi Madi	
Mangarayi	*
Mara	*
Murinypata	*
Ngalakan	*
Ngandi	*
Ngawun	
Nunggubuyu	*
Nyawaygi	
Ritharngu	
Tiwi	*
Warrgamay	
Warlpiri	
Warndarang	*
Wemba Wemba	
Werɣaia/ Djadjala	
Yidiɲ	
Yindjibarndi	

Languages with noun reduplication marking *distributive plural*:

Arrernte	(inherent forms)
Yankunytjatjara	(inherent forms)

Languages with noun reduplication marking a *small or diminutive token of X*:

Bandjalang
Diyari
Watjarri
Yankuytjatjara (temporal)

Languages with noun reduplication marking emphatic demonstrative:

Ungarinyin

Languages with noun reduplication marking an affectionate term for X:

Arrernte

Languages with noun reduplication forming another noun similar to it:

Arrernte
Bandjalang
Yankunytjatjara

Languages with reduplication of nouns to form salient quality of object adjectives (including colour terms):

Alyawarra
Arrernte
Bidyara
Kalaw Kawaw Ya
Kayardild
Margany/Gunya
Ngayawung
Pitta Pitta
Uradhi
Waga Waga
Warlpiri
Warungu
Watjarri
Yankunytjatjara
Yindjibarndi
Yir Yoront
Yukulta

Languages with adjectival reduplication marking intensification:

Alawa
Diyari
Djapu
Djingili
Gudungura
Kalkatungu
Kuku Thayorre
Murinypata
Nyungar
Waray
Warungu
Wiradhuri

Languages with adjectival reduplication marking de-intensification of adjectives:

Arrernte
Gumbaynggir
Ngiyambaa
Warlpiri
Yankunytjatjara

Languages with adjective reduplication marking the entity with a certain quality:

Bandjalang
Kayardild

Languages with reduplication on language names:

Gabi Gabi
Goreng Goreng
Madi Madi
Pitta Pitta
Waga Waga
Wemba Wemba
Yabala Yabala
Yota Yota

Appendix five.

The functions of nominal reduplication in non-Australian languages.

Major word class reduplications

Nouns:

Significant plural:

Pacoh
Yoruba
Tagalog
Mandarin
Tzeltal
Japanese
Aztec
Tonkawa
Aymara

General plural:

Papago
Samoan
Salish
Northern Paiute
Amuzgo
Comanche
Tonkawa
Bushman
Malay
Sumerian

Diminution, a 'little X':

Agta
Nez Perce
Thompson
Acooli (not clear if on nouns only)
Chrau
Tagalog
Salish (young of X)

Distribution of objects (plural):

Malay
Quileute
Turkish
Sierra Aztec
Twi
Yoruba
Mitla Zapotec
Daga
Dakota
Eastern Pomo
Kaingang
Madurese

Shuswap
Squamish
Amuzgo

Adjectives:

Deintensification, 'vagueifier', a 'sort of X', 'more-or-less X', 'like X but not X':

Malay
Thai
Turkish

Derogatory X:

Hungarian
Ewe
Yiddish

Possession:

Mundurucu
Paressi
Chinanteco

Appendix six.
BASE FORMS: SEMANTIC WORD CLASS STATUS

	NOUN	ADJECTIVE
Alawa	PL	INTENSE
Alyawarra	COLOUR	
Arrernte	'LIKE', COLOUR, OBJ->QUAL	
Bandjalang	'LIKE', QUAL->OBJ	
Bidyara	COLOUR	
Diyari	DIMINUTION	INTENSE
Djapu	PL	INTENSE
Djingili	PL	INTENSE
Dyirbal	PL + NUM ADJ	
Gumbaynggir	PL	DE-INTENSE
Gundungura		INTENSE
Kalaw Kawaw Ya	COLOUR, OBJ->QUAL	
Kalkatungu	PL	INTENSE
Kayardild	QUAL->OBJ	
Kaytej	+ NUM ADJ	
Kuku Thayorre	PL	INTENSE
Kuku Yalanji	PL	
Lardil	PL	
Mangarayi	PL	
Mara	PL	
Margany/ Gunya	COLOUR	
Martithunira	COLOUR	
Murinypata	PL	INTENSE
Ngalakan	PL	
Ngandi	PL	
Ngawun	PL	
Ngiyambaa		DE-INTENSE
Nunggubuyu	PL + NUM ADJ	
Nyawaygi	COLOUR, PL	
Nyungar		INTENSE
Pitta Pitta	COLOUR, OBJ->QUAL	
Ritharngu	PL	
Tiwi	PL	
Ungarinyin	EMPHATIC	
Uradhi	OBJ->QUAL	
Victoria	PL	
Waga Waga	COLOUR	
Waray		INTENSE
Warrgamay	PL + NUM ADJ	
Warlpiri	PL + NUM ADJ COLOUR	DE-INTENSE
Warndarang	PL	
Warungu		INTENSE
Watjarri	DIMINUTION, COLOUR	
Wiradhuri		INTENSE
Yankunytjatjara	'LIKE',COLOUR	DE-INTENSE
Yidiɲ	PL	
Yindjibarndi	PL, COLOUR	
Yir Yoront	OBJ->QUAL	
Yukulta	COLOUR	

Codes:

PL	Significant plural function
QUAL->OBJ	Deriving a noun from an adjective
OBJ->QUAL	Deriving an adjective from a noun
COLOUR	Deriving a colour adjective from a noun
DIMINUTION	'little X'
INTENSE	Intensification
DE-INTENSE	De-intensification or attenuation
'LIKE'	deriving a noun 'similar to' the base noun
NUM ADJ	adjective reduplicated for significant plural function
EMPHATIC	Emphatic or focus demonstrative function

Appendix seven.

DERIVED FORMS: SEMANTIC WORD CLASS STATUS

	NOUN	ADJECTIVE
Alawa	PL	INTENSE
Alyawarra		COLOUR
Arrernte	'LIKE'	COLOUR, OBJ->QUAL
Bandjalang	'LIKE', QUAL->OBJ	
Bidyara		COLOUR
Diyari	DIMINUTION	INTENSE
Djapu	PL	INTENSE
Djingili	PL	INTENSE
Dyirbal	PL + NUM ADJ	
Gumbaynggir	PL	DE-INTENSE
Gundungura		INTENSE
Kalaw Kawaw Ya		COLOUR, OBJ->QUAL
Kalkatungu	PL	INTENSE
Kayardild	QUAL->OBJ	
Kaytej	+ NUM ADJ	
Kuku Thayorre	PL	INTENSE
Kuku Yalanji	PL	
Lardil	PL	
Mangarayi	PL	
Mara	PL	
Margany/ Gunya		COLOUR
Martithunira		COLOUR
Murinypata	PL	INTENSE
Ngalakan	PL	
Ngandi	PL	
Ngawun	PL	
Ngiyambaa		DE-INTENSE
Nunggubuyu	PL + NUM ADJ	
Nyawaygi		COLOUR, PL
Nyungar		INTENSE
Pitta Pitta		COLOUR, OBJ->QUAL
Ritharngu	PL	
Tiwi	PL	
Ungarinyin	EMPHATIC	
Uradhi		OBJ->QUAL
Victoria	PL	
Waga Waga		COLOUR
Waray		INTENSE
Warrgamay	PL + NUM ADJ	
Warlpiri	PL + NUM ADJ	COLOUR, ATTENUATION
Warndarang	PL	
Warungu		INTENSE
Watjarri	DIMINUTION	COLOUR
Wiradhuri		INTENSE
Yankunytjatjara	PL 'LIKE'	DE-INTENSE, COLOUR
Yidiɲ	PL	
Yindjibarndi	PL	COLOUR
Yir Yoront		OBJ->QUAL
Yukulta		COLOUR

note: codes as for appendix six.

Appendix eight.
The functions of verbal reduplication in Australian languages and other language families.

Continuative, action continuous:

Australian
- Guugu Yimidhirr
- Warndarang
- Yir Yoront
- Ngalakan
- Mpakwithi/Anguthimri
- Uradhi
- Ngawun
- Wik Mungkan
- Nyigina
- Mara
- Ngandi
- Madi Madi
- Alawa
- Kuku Thayorre
- Wiradhuri

Non-Australian
- Yokuts
- Siriono
- Hopi
- Trique
- Cayuvava
- Comanche
- Aztec
- Chontal
- Ilocano
- Pacaas Novas

Iterative (repeated action):

Australian
- Mara
- Kayardild
- Nyawaygi
- Guugu Yimidhirr
- Pitta Pitta
- Mpakwithi/Anguthimri
- Kuku Yalanji
- Warndarang
- Yankunytjatjara
- Marithiyel
- Ngangikurrunggur
- Murinypata
- Ngalakan
- Warrgamay
- Kalkatungu
- Watjarri
- Ngandi
- Ritharngu
- Nunggubuyu
- Umpila / Kuuku Ya?u

Non-Australian
Cree
Diegueño
Dyolof
Hausa
Nahuatl
Lahu
Swahili
Tarascan
Tonkawa
Tunica
Yokuts
Aztec
Yuma
Siriono
Chol
Sierra Popoluca

Iterative/Durative (punctual versus durative verbs):

Australian
Djapu
Yidiɲ
Diyari
Ngangiwumirri
Rembarrnga

Iterative/Continuous (same participants):

Non-Australian
Tzeltal
Thai
Quileute
Sundanese
Twi
Ewe
Rotuman (also habitual)

Iterative/ Continuous, reciprocal:

Non-Australian
Yami
Tzeltal
Pacoh

Australian
Dyirbal

Progressive, action in progress (separate from tense but favouring present tense):

Australian
Guugu Yimidhirr
Diyari
Rembarrnga
Nyigina

Durative, action over a period of time:

Australian
- Yidiɲ
- Kuku Thaypan
- Diyari
- Ngawun
- Mangarayi
- Djapu

Action done to a significant degree:

Australian
- Yidiɲ
- Gumbaynggir

Action done quickly:

Australian
- Yidiɲ
- Yankunytjatjara

Habitual, action done habitually or customarily:

Australian
- Kuku Yalanji
- Maung
- Ngawun
- Kuuku Ya?u / Umpila

Non-Australian
- Tunica
- Terena

Distributive, action distributed over space:

Australian
- Warndarang
- Yankunytjatjara
- Ngalakan
- Ngandi
- Warluwarra
- Warlpiri

Non-Australian
- Aztec
- Kru

Attenuation, action done with lack of intensity:

Australian
- Mpakwithi
- Bandjalang
- Ngiyambaa
- Yankunytjatjara

Non-Australian

Quileute
Swahili
Thai
Mandarin
Tagalog
Siriono

Intensification, action done with increased intensity:

Australian
Dyirbal (Additional negative connotation)

Non-Australian
Turkish
Sundanese
Agta
Telugu
Thai
Ewe
Tagalog

Plural Actors:

Australian
Bandjalang
Kayardild
Djapu
Yanyuwa

Non-Australian
Twi
Samoan
Quileute
Somali
Tsimshian
Syrian Arabic
(or plural action:)
Guarani "
Zapotec "
Tonkawa "
Chinanteco

Plural Objects (Have X > have lots of X):

Australian
Maranungku
Murinypata

Non-Australian
Yuma

Pretend to V:

Non-Australian
Pacoh
Sundanese

Perfective:

Non-Australian
Indo-European (Sanskrit, Greek, Gothic, Latin)

Inceptive (come to do X):

Non-Australian
Coeur d'Alene

Inchoative (become X):

Non-Australian
Salish

Appendix nine.

Languages not included in final count of verbal reduplication for lack of data:

Adnyamathanha
Arrernte
Bardi
Malak Malak
Maranungku
Nyawaygi
Uradhi
Yaygir

Appendix ten.

Meanings of productive verbal reduplication in detail

Abbreviations:

I	iconic
M	'more' involved in meaning
I+	iconic meanings plus non-iconic components.
N	non-iconic

Type 2.

Anguthimri	iterative (I) continuative (I)
Baagandji	increased intensity (M), frequentative (M), distributive (M)
Kalkatungu	repeated action (I), increased intensity (M)
Madi Madi	continuative / frequentative (I)
Watjarri	repeated action (I)
Yukulta	intensification (M), iterative (I) continuative (I)

Type 3.

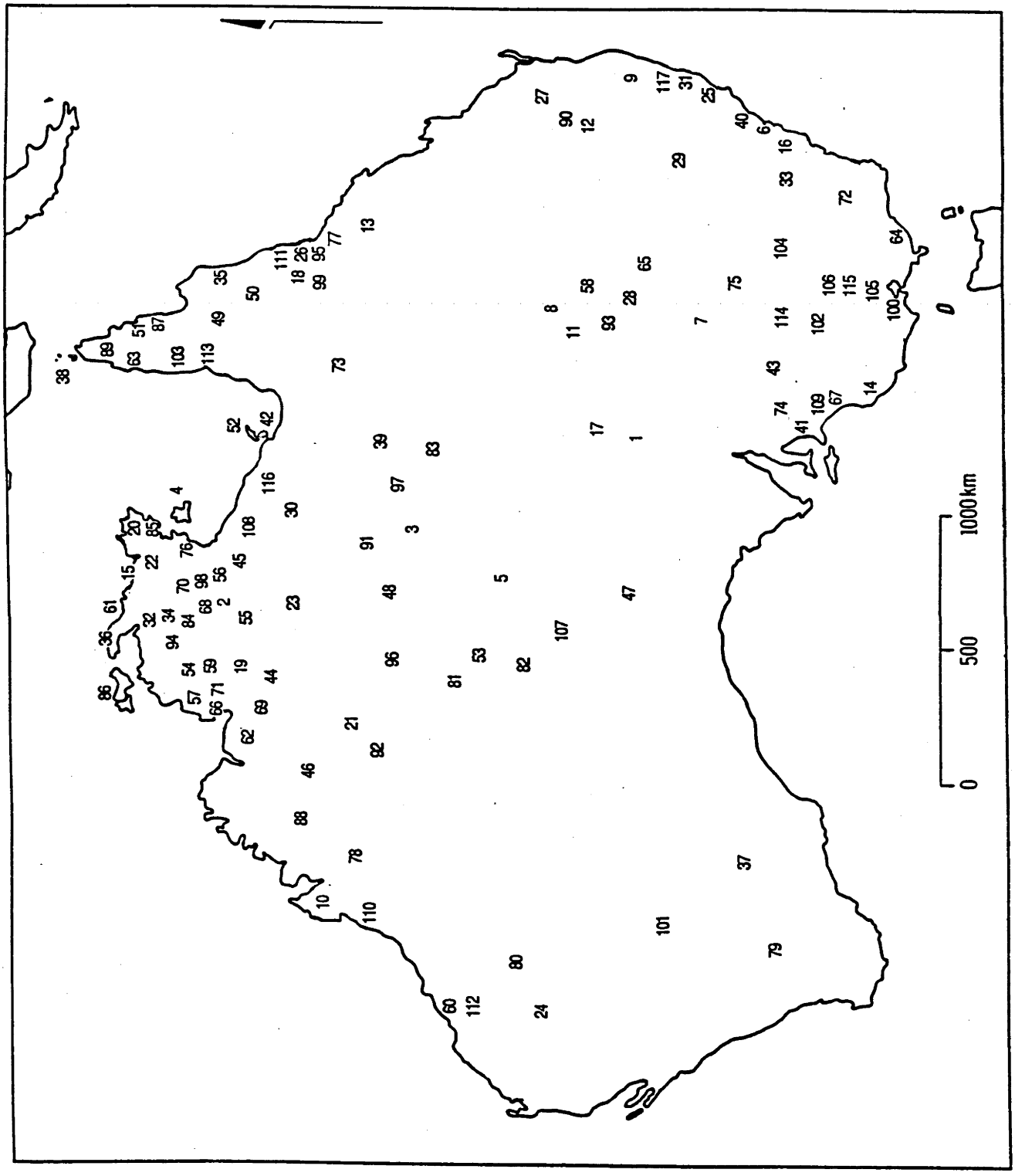
Alawa	continuous/durative (I)
Arrernte	iterative (I)
Bandjalang	attenuation (N), intensification (M),
Bardi	increased intensity (M)
Diyari	iterative (I) continuative (I)
Djaru	plural participants (M), continuative (I)
Gumbaynggir	intensification (M)
Dyirbal	do to excess (M)
Kayardild	iterative (I), plural participants on inherently multiple actions (M).
Mara	continuative/durative (I), iterative (I)
Marithiyel	multiple events, repeated actions (I)
Maung	continuative/durative (I), iterative (I)
Murinypata	iterative (I), plural object (M)
N'kurrunggur	iterative (I), continuative/durative (I)
Ngiyambaa	attenuation (N)
Nunggubuyu	iterative (I)
Pitta Pitta	iterative (I)
Ritharngu	iterative (I)
Wankumara	distributed (M)
Waray	iterative (I), continuative durative (I)
Warrgamay	iterative (I), continuous durative (I)
Yankunytjatjara	iterative (I), attenuation (N), done quickly (M), spatial distribution (M)
Yanyuwa	durative (I), plural participants (M)
Rembarrnga	iterative (I), action in progress (I+), durative (I), intensification (M)

Type 4.

Guugu Yimidhirr	iterative (I) continuative (I), action in progress (I+)
Kuku Thayorre	iterative (I) continuative (I), action in progress (I+)

Kuku Yalanji	iterative (I), habitual (I+), intensification (M), stative truth (N)
Kuuku Ya?u	iterative (I), habitual (I+), action in progress (I+)
Ngandi	iterative (I), spatial distribution (M)
Ngawun	continuative/durative (I), habitual (I+)
Nyigina	continuative (I), action in progress (I+)
Rembarrnga	iterative (I), action in progress (I+), durative (I), intensification (M)
Warlpiri	action done quickly (M), spatial distribution (M), iterative (I), plural participants (M)
Warndarang	continuative (I), iterative (I), spatial distribution (M), intensification (M)
Yidiɲ	iterative (I), intensification (M), action done quickly (M), durative (I)
Yir Yiront	continuative (I), action in progress (I+)

Appendix Eleven: Map.
Adapted from Dixon 1980:xviii



Key to Map (Approximate Location)

1. Adnyamathana (SA)
2. Alawa (NT)
3. Alyawarra (NT)
4. Anindilyagwa (NT)
5. Arrernte (NT)
6. Awabakal (NSW)
7. Baagandji (NSW)
8. Bajiri (QLD)
9. Bandjalang (NSW/QLD)
10. Bardi (WA)
11. Bidjarra (QLD)
12. Bigambil (QLD)
13. Biri (QLD)
14. Bungandidj (VIC/SA)
15. Burarra (NT)
16. Dharuk (NSW)
17. Diyari (SA)
18. Djabugay (QLD)
19. Djaminjung (NT)
20. Djapu (NT)
21. Djaru (WA)
22. Djinang (NT)
23. Djingili (NT)
24. Djiwarli (WA)
25. Dyangati (NSW)
26. Dyirbal (QLD)
27. Gabi Gabi (QLD)
28. Galali (QLD)
29. Gamilray (NSW)
30. Garawa (QLD/NT)
31. Gumbaynggir (NSW)
32. Gunbarlang (NT)
33. Gundungura (NSW)
34. Gunwinggu (NT)
35. Guugu Yimidhirr (QLD)
36. Iwaidja (NT)
37. Kalaaku (WA)
38. Kalaw Kawaw Ya (QLD)
39. Kalkatungu (QLD)
40. Kattang (NSW)
41. Kawurna (SA)
42. Kayardild (QLD)
43. Keramin (VIC/SA)
44. Kitja (NT)
45. Kriol (NT)
46. Kuniyanti (WA)
47. Kukada (SA)
48. Kaytej (NT)
49. Kuku Thaypan (QLD)
50. Kuku Yalanji (QLD)
51. Kuku Ya'u (QLD)
52. Lardil (QLD)
53. Luritja (NT)
54. Malak Malak (NT)
55. Mangarayi (NT)
56. Mara (NT)
57. Maranungku (NT)
58. Margany/ Gunya (QLD)
59. Marithiyel (NT)
60. Martuthunira (WA)
61. Maung (NT)
62. Miriwung (WA)
63. Mpakwithi/Anguthimri (QLD)
64. Muk Thaŋg (VIC)
65. Murawari (NSW)
66. Murinypata (NT)
67. Narrindjeri (SA)
68. Ngalakan (NT)
69. Ngaliwurru (WA)
70. Ngandi (NT)
71. Ngangikurrunggur (NT)
72. Ngarigu (VIC)
73. Ngawun (QLD)
74. Ngayawung (SA)
75. Ngiyambaa (NSW)
76. Nunggubuyu (NT)
77. Nyawaygi (QLD)
78. Nyigina (WA)
79. Nyungar (WA)
80. Panyjima (WA)
81. Pintupi (NT)
82. Pitjantjatjara (SA/NT)
83. Pitta Pitta (QLD)
84. Rembarrnga (NT)
85. Ritharngu (NT)
86. Tiwi (NT)
87. Umpila (QLD)
88. Ungarinyin (WA)
89. Uradhi (QLD)
90. Waga Waga (QLD)
91. Wagaya (NT)
92. Walmatjarri (NT/WA)
93. Wankumara (QLD)
94. Waray (NT)
95. Warrgamay (QLD)
96. Warlpiri (NT)
97. Warluwarra (NT/QLD)
98. Warndarang (NT)
99. Warungu (QLD)
100. Wathawurung (VIC)
101. Watjarri (WA)
102. Wemba Wemba, Madi Madi (VIC/NSW)
103. Wik Mungkan (QLD)
104. Wiradhuri (NSW)
105. Wuywurung (VIC)
106. Yabala Yabala (VIC/NSW)
107. Yankunytjatjara (SA)
108. Yanyuwa (QLD/NT)
109. Yaralde (SA)
110. Yawuru (WA)
111. Yidiŋ (QLD)
112. Yindjibarndi (WA)

113. Yir Yoront (QLD)
114. Yitha Yitha (NSW)
115. Yota Yota (VIC)
116. Yukulta (QLD)
117. Yaygir (NSW)

Bibliography

Abbreviations:

A.I.A.S.	Australian Institute of Aboriginal Studies
A.N.U.	Australian National University
BLS	Berkeley Linguistics Society (Proceedings)
CLS	Chicago Linguistics Society (Proceedings)
I.A.D	Institute for Aboriginal Development
IJAL	International Journal of American Linguistics
IULC	Indiana University Linguistics Club
Lang.Soc.	Language in Society
LCA	Language in Central Australia
LI	Linguistic Inquiry
MIT	Massachusetts Institute of Technology
PL	Pacific Linguistics
SIL-AAB	Summer Institute of Linguistics, Australian Aborigines Branch
SUNY	State University of New York

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