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INITIAL *ng- IN PAMA-NYUNGAN

by

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Abstract

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An important question in Australian historical linguistics is whether or not the Pama-Nyungan languages form a family. In order to determine the genetic status of Pama-Nyungan, it is necessary to compare the syntactic, lexical, morphological, and phonological systems of both Pama-Nyungan and non-Pama-Nyungan languages. The presence of regular correspondences in the lexicon and phonology of the Pama-Nyungan languages, and their absence in the non-Pama-Nyungan languages, would indicate a period of common development for the Pama-Nyungan languages.

This thesis represents another step towards answering the question of the history of the Pama-Nyungan languages. Through the comparison of the lexicons of twenty Pama-Nyungan languages, 168 cognate sets, all of which are believed to reflect proto-forms with initial ***ng-**, have been collected. In many cases, the meanings of the words in a set illustrate important aspects of semantic change found in Australian languages. In addition, the phonological matchings seen in the sets provide evidence needed for the eventual establishment of regular sound correspondences.

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Contents

List of Tables

List of Maps

List of Abbreviations

BAA	Bāgandji
BAY	Bayungu
BGU	Bidyara-Gungabula
DIY	Diyari
DYI	Dyirbal
GAW	Gawurna
GID	Gidabal
GUP	Gupapuyngu
GYA	Gugu-Yalanji
NYA	Nyangumarta
	-W Wallal dialect
	-S Strelley dialect
NYU	Nyungar
PIN	Pintupi
PIT	Pitta-Pitta
UMP	Umpila
WEM	Wemba-Wemba
WJK	Wadjuk
WLB	Warlpiri
WMK	Wik-Mungkan
YDN	Yidiny
YIM	Guugu-Yimidhirr

pA	Proto-Australian
PEPN	Proto-Eastern-Pama-Nyungan
PMP	Proto-Middle-Pamic
PN	Pama-Nyungan
PNY	Proto-Nyungic
PNYY	Proto-Nyungo-Yuulngic
PP	Proto-Pamic
PPN	Proto-Pama-Nyungan

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Dedication

To my husband, Kevin Cattell, whose patience, encouragement, and computer help have been invaluable during the writing of this thesis.

Chapter 1

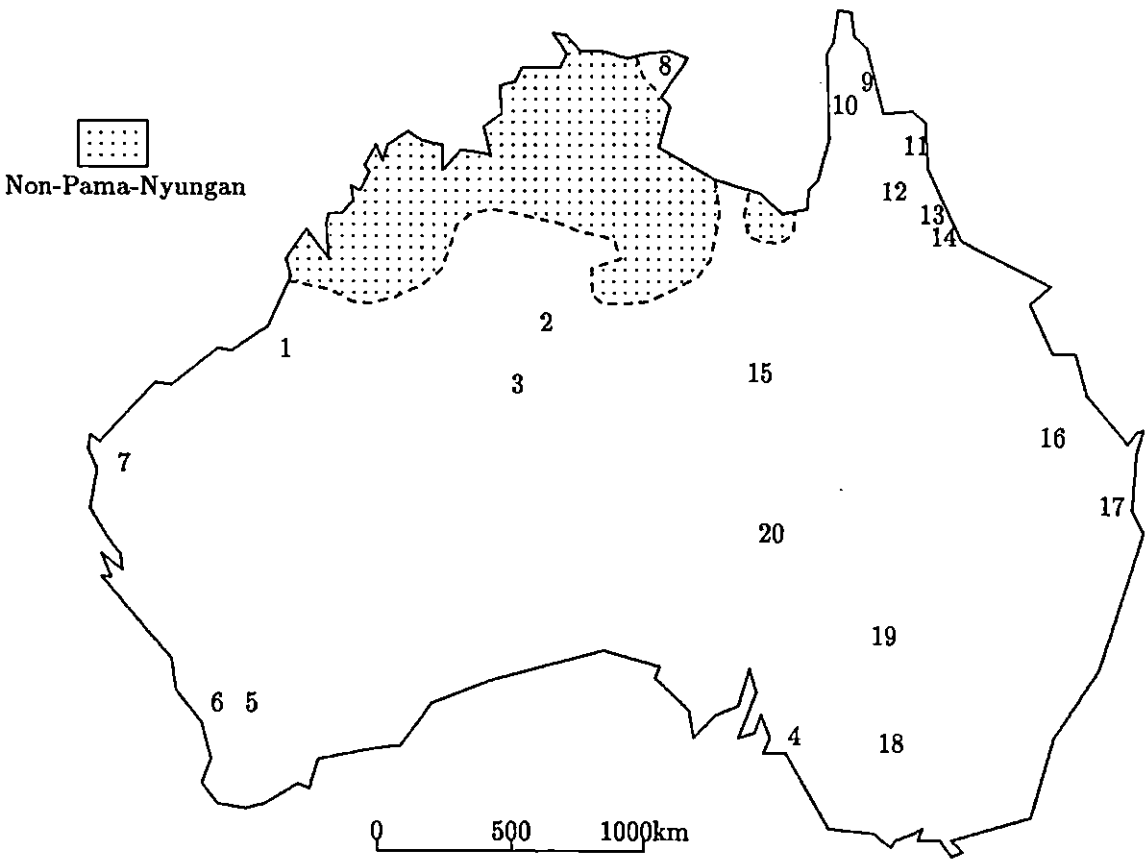
Introduction

The name Pama-Nyungan (PN), which is made up of common words for *(aboriginal) person* in north-eastern and south-western languages, respectively, is used to refer to a large group of languages which are spread over most of Australia (see Map 1.1). There is debate over the genetic status of PN; Hale, O'Grady, and others believe that PN is the largest language family in Australia, but Dixon (1980:226) feels "that the division between PN and nonPN languages is a typological (and areal) one," and that PN is not a genetic entity.

Dixon (1980:222) states that "no attempt has been made to PROVE a genetic connection" between the PN languages (his emphasis). To do this, we must

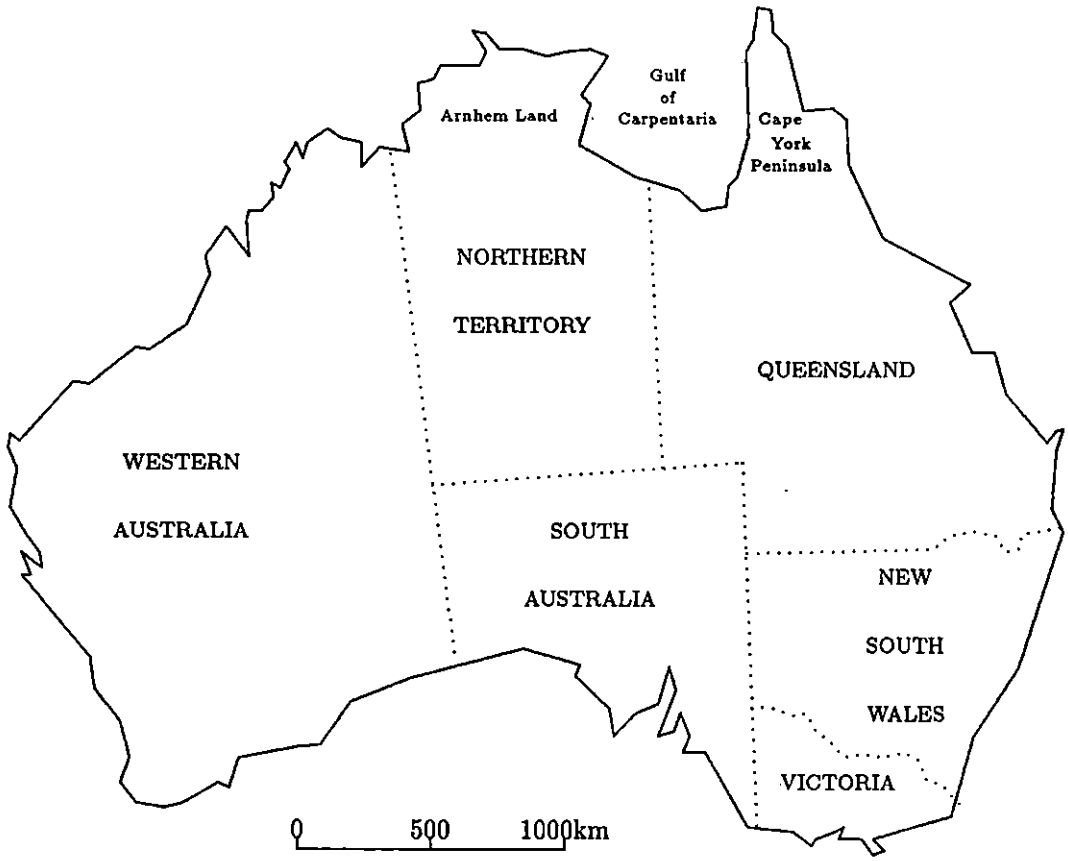
> undertake systematic comparison of their phonological, grammatical, and lexical systems; ... put forward - on the basis of this comparison - a hypothesis about some of the forms and structures that can be assigned to their putative common ancestor; and then ... detail the regular changes by which each modern language has developed from the proto-system (Dixon 1980:221).

Map 1.1: Approximate locations of languages in the study



Bāgandji	19	Nyangumarta	1
Bayungu	7	Nyungar	5
Bidyara-Gungabula	16	Pintupi	3
Diyari	20	Pitta-Pitta	15
Dyirbal	14	Umpila	9
Gawurna	4	Wadjuk	6
Gidabal	17	Warlpiri	2
Gugu-Yalanji	12	Wemba-Wemba	18
Gupapuyngu	8	Wik-Mungkan	10
Guugu-Yimidhirr	11	Yidiny	13

Map 1.2: Continental Australia



First of all, we cannot prove (in the mathematical sense) a genetic relationship; we can only collect evidence in order to determine which hypothesis best fits the facts. Secondly, this work must progress in stages, and we are still at a very early stage. For example, before we can detail how words in the modern languages have developed from those in the proto-language, we must establish regular sound correspondences, and before we can do this, we must collect a large number of putative cognate sets. Although a great deal of work has already been done, it is just a small fraction of what there is left to do.

Dixon feels that it is likely that all Australian languages are related and have descended from Proto-Australian (pA). However, he does not feel that there is any evidence for positing Proto-Pama-Nyungan (PPN) as a node on the Australian family tree. But the pA and PPN hypotheses are not incompatible; it could be that PPN was a descendent of pA. Given the time depths involved, it is unlikely that we will be able to reconstruct a large number of pA elements, but O'Grady (1990a:xvi) estimates that approximately 2000 PPN elements are reconstructable.

This thesis is written under the assumption that PN is a language family, and it is a "first pass" through the lexicons of twenty languages in the search for cognates going back to roots with initial ***ng-**. The resulting 168 cognate sets, given in chapter 4, do not constitute direct evidence for the existence of PPN. In order to obtain such evidence, we must search through the lexicons of non-PN languages and fail to turn up a significant number of cognates; no attempt to do this has been made here.

1.1 The Languages in the Study

This study involves the following twenty PN languages: Nyangumarta, Warlpiri, Pintupi, Gawurna, Nyungar, Wadjuk, Bayungu, Gupapuyngu, Umpila, Wik-Mungkan,

Guugu-Yimidhirr, Gugu-Yalanji, Yidiny, Dyirbal, Pitta-Pitta, Bidyara-Gungabula, Gidabal, Wemba-Wemba, Bāgandji, and Diyari. Two Nyangumarta dialects, Wallal and Strelley, are used. Map 1.1 shows the approximate locations of these languages, while 1.2 shows the modern political boundaries of continental Australia.

These languages were chosen because they are fairly widely scattered across the continent. They are also relatively conservative in terms of phonological change; that is, none of them have regularly undergone processes such as initial-dropping (in which the first consonant or syllable of words is lost). Three of the languages appear to retain ancestral vowel length, while one is believed to retain final nasals (see chapter 2).

Table 1.1 presents the genetic grouping and subgrouping of the languages in this study (based on Oates and Oates (1970)). In the reconstructions in chapter 4, the term Proto-Desert-Nyungic is used to refer to the immediate common ancestor of NYA, WLB, PIN, and GAW, while Proto-Pamic is used for that of the Middle-, Eastern-, and Atherton-Pama subgroups. Since Yulngu languages are believed to be most closely related to Nyungic languages, Proto-Nyungo-Yuulngic is used to refer to their immediate common ancestor.

1.2 The Method Used in the Study

The comparative method is based on the assumption that sound change is regular. If a putative cognate exhibits an irregular sound change which cannot be explained as a case of analogy or borrowing, then that word is not considered to be an actual cognate. However, before regular and fine-tuned sound correspondences can be established with any degree of confidence, a large number of putative cognate sets must be collected. These sets will *necessarily* exhibit seemingly irregular sound changes, as at this stage we do not yet know which changes are "regular." As Antilla (1972:335)

Table 1.1: Grouping of the Twenty Languages

Nyungic Group	
Marngu subgroup	NYA
Ngarga subgroup	WLB
Wati subgroup	PIN
Yura subgroup	GAW
Nyungar subgroup	NYA and WJK
Kanyara subgroup	BAY
Murngic Group	
Yuulngu subgroup	GUP
Pama-Maric Group	
Middle-Pama subgroup	UMP and WMK
Eastern-Pama subgroup	YIM and GYA
Atherton-Pama subgroup	YDN
Yara subgroup	DYI
Mari subgroup	BGU
Pittapittic Group	PIT
Bandjalangic Group	GID
Kulinic Group	WEM
North Darling Group	BAA
Dieric Group	DIY

says, "[i]n the beginning everything is very provisional, because borrowings, analogical creations, conditioning environments, and so on, can be detected gradually." He therefore recognizes two types of sound correspondences, true correspondences and matchings. The former are those correspondences which are regular and for which we can determine the environment of change, while the latter are tentative correspondences which occur in more than one putative cognate set but for which we have not yet worked out the details of change (Anttila 1972:335-336).

Prenasalization in Nyungic languages illustrates the importance of recognizing matchings. O'Grady (1990e) presents numerous putative cognate sets; some contain a matching between prenasalized stops in PIN and plain stops in other languages,

while in others all of the languages involved, including PIN, have plain stops. Other Nyungic languages exhibit similar behaviour, although in a given cognate set, one Nyungic language may have a prenasalized stop where another does not. It is not yet possible to determine which languages regularly underwent prenasalization, the environment in which it occurred, or how much borrowing has taken place among the Nyungic languages. However, the fact that we cannot yet find an explanation for the matchings between prenasalized and plain stops does not mean that such an explanation does not exist. By excluding forms which have undergone prenasalization, we may be throwing away valuable evidence for a true correspondence.

In constructing each of the cognate sets for this thesis, I originally included any forms which showed plausible sound correspondences. I then examined the sets in order to determine whether a given language showed a given correspondence in more than one set. For example, although WMK often has a plain stop corresponding to plain stops in other languages, my data contain eight putative cases of WMK prenasalization. If a certain correspondence occurs in at least two sets, then it is classified as a matching and forms showing the matching are kept in the sets.

The next step was to examine the semantic associations seen in each set. In some cases, the meanings of the forms in a given set clearly seem to be relatable, but it is important to remember that a seemingly obvious semantic connection may not be valid in another language or culture. Hence, I have tried, whenever possible, to present corroborating evidence for the associations found in my sets. This aspect of constructing cognate sets is discussed in more detail in chapter 3.

For each of the 168 putative cognate sets presented in this thesis, a phonological reconstruction at the appropriate level is provided. However, because work on the PN language family is at such an early stage and we have not yet established many true correspondences, the reconstructions are extremely tentative. They are meant to

provide an idea of what the proto-forms were, based on our current state of knowledge; further work will almost certainly lead to their revision.

The discussion of many sets also includes a section entitled "residue." This contains forms which, on either phonological or semantic grounds, I hesitate to include in the cognate set, but which are plausible enough to merit mention. For example, consider the case of PPN ***ngarran** (4.83), whose reflexes have the meanings *fire* and *brightness*. When first constructing this set, GUP **ŋat-ŋat-thu-n** *shine, flame* seemed to be a plausible member, as a change from ***-rr-** to **-t-** is found in other languages. However, GUP does not exhibit this change in any other set in my data, nor does the literature provide any further attestation. On one hand, a matching between ***-rr-** and GUP **-t-** may not exist, but on the other hand, it may simply be the case that the cognate searches done so far have not turned up any evidence for such a matching. The residue section is therefore used to keep track of those forms which may be of value in future work.

Chapter 2

Phonology

In this chapter, I present the phoneme inventories of the twenty languages in this study. I then compare two versions of the proto-language's phoneme inventory. Finally, I discuss four questions concerning phonological change which are brought up by the cognate sets in chapter 4.

2.1 Phoneme Inventories of the Twenty Languages

The phoneme inventories of the twenty languages in this study are given in Tables 2.1 and 2.2. Stops and nasals are presented in the following order: bilabial, dental, palatal, alveolar, retroflex, and velar. The inventories of GUP, UMP, and WMK also include a glottal stop. Dentals and palatals are often referred to as laminals, alveolars and retroflexes as apicals, and bilabials and velars as peripherals. Laterals are given in the same order, except that there are no peripheral laterals. The symbol **rr** represents an alveolar flap/trill, while **r** denotes a retroflex glide.

With three exceptions, the transcription systems used to record the languages

Table 2.1: Phoneme Inventories (part 1)

Lang.	Stops	Nasals	Laterals	Rhotics	Glides	Vowels
NYA	p j t rt k	m ny n rn ng	ly l rl	rr r	y w	i a u ii aa uu
WLB	p j t rt k	m ny n rn ng	ly l rl	rr rd r	y w	i a u ii aa uu
PIN	p j t rt k	m ny n rn ng	ly l rl	rr r	y w	i a u ii aa uu
GAW	P T TY T RT K PP TT TT KK B D G	M N NY N RN NG MM NN NN DN	L LY L RL LL LL DL	R R RR RR	Y W I U	I E A O U
NYU	p j t rt k	m ny n rn ng	ly l rl	rr r	y w	i e a o u
WJK	P TD TJ T RT K PP DT T-Y TT RD KK B DJ D RTD G BB D-J DD GG B-B D-Y	M N-Y N NG MM NN	L-Y L LL	R R RR RR RH-R	Y W	I E A O U
BAY	p th j t rt k	m nh ny n rn ng	lh ly l rl	rr r	y w	i a u ii aa uu
GUP	p th tj t ṭ k ' b dh dj d ḍ g	m nh ny n ɳ ŋ	l ɭ	rr r	y w	i a u e ă o
UMP	p th j t k ?	m nh ny n ng	l	rr	y w	i a u ii aa uu
WMK	p th j t k ?	m nh ny n ng	l	rr	y w	i e a o u ii ee aa oo uu

Table 2.2: Phoneme Inventories (part 2)

Lang.	Stops	Nasals	Laterals	Rhotics	Glides	Vowels
YIM	p th j t k	m nh ny n ng	l	rr r	y w	i a u ii aa uu
GYA	p j t k	m ny n ng	l	rr r	y w	i a u
YDN	p j t k	m ny n ng	l	rr r	y w	i a u ii aa uu
DYI	p j t k	m ny n ng	l	rr r	y w	i a u
PIT	p th j t rt k	m nh ny n rn ng	lh ly l rl	rr rrr r	y w	i a u
BGU	p th j t rt k	m nh ny n ng	l	rr r	y w	i a u aa
GID	p j t k	m ny n ng	l	rr	y w	i e a u ii ee aa uu
WEM	p th j t rt k	m ny n rn ng	l	rr r	y w	i e ɔ a o u ii ee aa oo uu
BAA	p th j t rt k	m nh ny n rn ng	lh ly l rl	rr r	y w	i a u ii aa uu
DIY	p th j t rt k d rd	m nh ny n rn ng	lh ly l rl	rr rrr r	y w	i a u

have been standarised using the p-t-k system of practical orthography. Since GAW and WJK were recorded before the development of standard transcription systems, we cannot be completely confident in the regularity of transcription or in the correspondence of the original orthography to practical orthography. Therefore, the original orthography has been left unchanged, and words from these languages are presented in small capital letters to remind the reader that they are not in practical orthography.

In addition, GUP has a well-established orthography in which a large amount of material has been published. This system has not been modified, as its correspondence to practical orthography is fairly clear. Note, however, that an apostrophe is used to represent a glottal stop, <**e**> represents **ii**, <**ä**> represents **aa**, and <**o**> represents **uu**.

Most of the Nyungic languages have a single laminal series (**j**, **ny**, **ly**), while most eastern languages have just one apical series (**t**, **n**, **l**). GUP is the only language in this study which has clearly developed a tense:lax distinction for stops. Although symbols for both tense and lax stops are used in the GAW and WJK orthographies, we cannot be certain that there was a distinction in these languages.

Many languages have a lateral corresponding in place of articulation to each non-peripheral stop and nasal. GUP, however, has no laminal laterals although it does have laminal stops and nasals, and most of the eastern languages have just a single lateral. In UMP, WMK, and GID, the two PPN rhotics (see section 2.2) have merged; the single rhotic in these languages is represented by **rr**. WLB, PIT, and DIY have each developed a third distinctive rhotic; **rd** denotes an apico-postalveolar flap, while **rrr** represents an apico-alveolar flap.

The majority of the languages in this study have a three-vowel system, which is typical of Australian languages (Dixon 1980:131). WMK, GID, and WEM have

developed further vocalic distinctions. The symbols <E> and <O> used in WJK and GAW probably represent allophones of the other three vowels (O'Grady 1990f:2, Hendrie 1984:40). Over half of the languages distinguish between long and short vowels.

2.2 Proto-Pama-Nyungan Phonology

Dixon (1980:158) posits the inventory of consonants seen in Table 2.3 for pA. He

Table 2.3: Dixon's pA Consonant Inventory

	apical	laminal	dorsal	labial
stop	t	j	k	p
nasal	n	ny	ng	m
lateral	l	(ly)		
rhotic	rr,r			
semi-vowel		y	w	

also states that pA probably had a three-vowel system, with a distinction between long and short vowels in the first syllable of a word (Dixon 1980:131-132). O'Grady (1990a:xxi), on the other hand, proposes the PPN consonant inventory seen in Table 2.4. He also posits a three-vowel system (i, a, u) in which length is distinctive.

Table 2.4: O'Grady's PPN Consonant Inventory

	alveolar	retroflex	alveopalatal	labial	velar
stop	t	rt	j	p	k
nasal	n	rn	ny	m	ng
lateral	l	rl	ly		
rhotic	rr,r				
semi-vowel			y	w	

The two inventories differ in two ways. Dixon does not believe that the phonemic

system of the proto-language included retroflexes, nor is he certain of the presence of a laminal lateral. O'Grady, however, includes both a retroflex series and a laminal lateral in his PPN inventory. Dixon and O'Grady agree that there was a single laminal series in the proto-language.

2.2.1 Laminal Stops and Nasals

As can be seen in Tables 2.1 and 2.2, some languages have two laminal series of stops and nasals (**j**, **ny** and **th**, **nh**), while others have just one, for which it is customary to use the symbols **j** and **ny** (Dixon 1970:80). There are two possible answers to the question of how many laminal series were present in PPN: there may have been two laminal series, the distinction between which was lost in "single-laminal" languages; or PPN may have had a single laminal series, with a distinction between the dental and palatal allophones developing in "double-laminal" languages (Dixon 1970:85).

Dixon (1970) presents strong evidence in favour of the second answer, that the proto-language had one laminal series.[1] By examining putative cognate sets involving laminal stops and nasals, Dixon found the following two types of correspondences:

(2.1)

	single-laminal	double-laminal	label
a.	**j**	**j**	J
	ny	**ny**	NY
b.	**j**	**th**	TH
	ny	**nh**	NH

In the first type, single-laminal languages have **j** and **ny** corresponding to **j** and **ny** in double-laminal languages. Dixon refers to these correspondences by using the symbols J and NY, respectively. In the second type, **j** and **ny** in single-laminal languages correspond to **th** and **nh** in double-laminal languages; these correspondences are labelled TH and NH, respectively (Dixon 1970:86).

[1] Dixon's analysis involves both Pama-Nyungan and non-Pama-Nyungan languages, and his results are stated in terms of proto-Australian. However, his analysis also holds for PPN.

Dixon found that, in general, the TH and NH correspondences are found before the vowels **-a** and **-u**, while the J and NY correspondences occur before **-i**. He therefore concludes that pA had just a single laminal series, with the allophones ***j*** and ***ny*** occurring before ***-i**, and ***th*** and ***nh*** occurring before ***-a*** and ***-u*** (Dixon 1970:92).

2.2.2 Laminal Lateral

Recall that most eastern languages have only a single lateral. Dixon (1980:158) gives two possible solutions to the question of whether or not the proto-language contained ***ly*** in its inventory. On one hand, the proto-language may have had ***ly***, which was lost in the eastern languages. On the other hand, the presence of **ly** in western languages may be due to phonological innovation. Dixon (1980:157) feels that it is likely that pA (or, in terms of this study, PPN) did have both a laminal and an alveolar lateral. He hypothesizes that, in the eastern languages, ***ly*** may have changed to **j** or **l** intervocalically and to **ny** or **l** before a consonant.

A brief survey of more recent work on PPN reveals the following cognate sets, each of which contain a reflex from a language with **ly** and at least one from a single-lateral language:

(2.2)

a. PNYY ***tilyi*** > PIN **tilyi-pu-ngu** *to slap a goanna against a tree* ... and GUP **tiy** ... *interjection with* ... *'to hit'* (Hendrie 1984:65).

b. PPN ***ralyang*** > NYA-S **ralya** *light, not heavy ...;* YIM **talil** *light weight;* and GID **yalal** *light, fragile* (Hendrie 1984:122).

c. PNYY ***rilypa*** > PIN **rilypa** *seepage water* ... and GUP **raypiny** *fresh water* (Hendrie 1984:133).

d. PPN ***milya*$_2$** > NYA-W **milya-milya** *wrist* and UMP **mija** *wrist* (O'Grady 1990c:84).

e. PPN ***milyju*** > PIN **milyji** *toe- or fingernail* and YIM **mithi-thirr** *pointed* (O'Grady 1990c:84).

f. PPN ***palya$_1$** > WLB **palya** *wax;* GUP **boy** *yellow, fatty part of crab;* UMP **paja** *grass;* and YDN **paja** *grass* (O'Grady 1990d:231).

g. PPN ***palyja** > PIN **palyja.l-pa** *numb from cold* and GUP **baltja.m'.thu-N** *make fire* (O'Grady 1990d:231).

Further, my data contain the following relevant sets:

(2.3) a. PPN ***ngalya$_1$** > PIN **ngalya** and GID **ngayi.rr**;

b. PPN ***ngAlya** > PIN **ngalya.rl-pa** and BAA **ngaatha**;

c. PEPN ***ngalyja** > PIT **ngalyja** and BAA **ngalja**;

d. PPN ***ngalyV** > DIY **ngalyu.rrru** and GID **ngayil**;

e. PPN ***ngAlyV** > WLB **ngalya.kari** and BGU **ngayi.la**.

An examination of this data leads to the following tentative matchings:

(2.4)

	Intervocalic	Preconsontantal
Lgs. with **ly**	ly	ly
GUP	y	l
UMP	j	
YIM	l	∅
YDN	j	l
BGU	y	
GID	y,l	
BAA	th	l

Although the few examples given here are certainly not enough from which to draw any firm conclusions, they do point to the presence of ***ly** in PPN. GUP invariably shows **-y-** corresponding to intervocalic **-ly-**, as does GID (with one exception). The examples involving UMP, YIM, YDN, and BAA support Dixon's hypothesis that intervocalic ***-ly-** may have changed to **-j-** or **-l-** in some languages, while those from GUP, YDN, and BAA show Dixon's proposed change from ***-ly-** to **-l-** before a consonant. Although much more work is yet to be done before we can conclusively determine the presence or absence of ***ly** in PPN, the evidence seen so far suggests that ***ly** was indeed part of the PPN consonant inventory. I therefore use ***ly** in my reconstructions.

2.2.3 Retroflexes

As with laminal stops and nasals, some Pama-Nyungan languages have a single apical series (**t**, **n**, **l**), while others have two such series (**t**, **n**, **l** and **rt**, **rn**, **rl**). Dixon (1980:155) argues that there was just one apical series in the proto-language.[2] He first presents seven pairs of cognates, each of which includes one form from a single-apical language and one form from a double-apical language. He then identifies the following two types of correspondences:

(2.5)

	single-apical	double-apical	label
a.	**t**	**t**	T
	n	**n**	N
b.	**t**	**rt**	RT
	n	**rn**	RN

In the first type of correspondence, the double-apical languages have alveolar **t** and **n** corresponding to **t** and **n** in the single-apical languages; Dixon labels these correspondences T and N, respectively. In the second type, the retroflexes **rt** and **rn** in the double-apical languages correspond to single-apical **t** and **n**; these correspondences are labelled RT and RN.

Dixon states that the RT and RN correspondences "occur almost exclusively following /u/," while the T and N correspondences "occur almost exclusively following /a/, /i/" (1980:155). He makes the same generalization concerning the correspondences between **l** and **rl** (Dixon 1980:157). These generalizations fit Dixon's data perfectly; however, my data contain the following pairs of cognates:

(2.6) a. NYA-W **ngarta-rna-** and GID **waanta-** (< PPN ***ngaarta**)

b. PIT **ngarta.rta** and GID **ngatang** (< PPN ***ngartang**)

c. BAA **ngarti-** and WMK **weent-an** (< PPN ***nga(r)tV**)

[2]The data which he uses for this analysis are taken from Pama-Nyungan languages only.

d. PIN **ngula** and UMP **ngula** (< PPN ***ngulang**)

e. GAW **NGUNTA** and GYA **nguntu** (< PPN ***nguntV**).

The pairs in (a)-(c) show RT correspondences occurring after ***a-**, while those in (d) and (e) show T-type correspondences following ***u-**. In addition, further counterexamples to Dixon's generalizations are found in Hendrie (1984), O'Grady (1990b, c, d, and e), and O'Grady and Tryon (1990a). Therefore, in the reconstructions seen in chapter 4, retroflex symbols are used when it seems likely that the proto-form contained a retroflex, and ***(r)t**, ***(r)n**, and ***(r)l** are used when a number of reflexes have a retroflex but it is unclear whether or not the proto-form contained a retroflex.

2.3 Phonological Change

Although we encounter many interesting types of phonological change in Australian historical linguistics, a discussion of all of them is beyond the scope of this thesis. In this section, I discuss four aspects of phonological change: the weakening of initial ***ng-** to **w-**; the question of which languages retain ancestral final consonants; the retention of long vowels in V_1 position; and the problems encountered in reconstructing V_2.

2.3.1 Consonants

Throughout the data presented in chapter 4, we see a matching between PPN initial ***ng-** and initial **w-** in some eastern languages. This change cannot be classified as a true correspondence, since these languages sometimes reflect ***ng-** as **ng-**. Table 2.5 shows, for each language in question, the number of reflexes with initial **ng-** and with initial **w-** before each vowel. In WMK, BGU, and WEM, the change from ***ng-** to **w-** occurs before all vowels. In the other languages, the lack of examples showing

Table 2.5: Number of Reflexes with Initial **ng-** and Initial **w-**

	Preceding *A		Preceding *I		Preceding *U	
	*ng->ng-	*ng->w-	*ng->ng-	*ng->w-	*ng->ng-	*ng->w-
UMP	19	7	1	0	5	4
WMK	18	16	4	1	5	5
YIM	22	1	2	0	3	6
GYA	25	9	3	0	7	2
YDN	9	4	0	0	4	2
DYI	7	3	0	0	1	3
BGU	11	2	0	1	4	3
GID	20	6	3	0	3	1
WEM	9	7	0	4	1	1

this change before *I- may be the result of both the relative rarity of proto-forms beginning with *ngI- and of the tendency of *ng- to become ny- through assimilation to I-. All of the languages in Table 2.5 show *ng- becoming w- before both *A- and *U-.

As of yet, we cannot determine the environment in which *ng- > w-. However, this does not mean that this change has occurred in a random fashion in these languages. It may be the case that *ng- regularly became w- in some environment in just a few languages. These languages may have then borrowed words from languages which did not undergo the change. In addition, languages which did not weaken initial *ng- may have borrowed words from languages which did. Borrowing between the two groups of languages would obscure the facts regarding the environment and the languages in which the change occurred.

It is also important to note that the present study deals only with roots believed to begin with *ng-; it does not examine *k-initial forms. It is very likely that some of the cognate sets in chapter 4 actually go back to roots with initial *k-. A fuller examination of PPN velars may help to clarify the environment in which weakening

occurred.

As for final consonants, O'Grady (p.c.) believes that YIM preserves final *-l (that is, *-l following $*V_2$). He has also taken GYA (1990e:463) and GID (1990c:80) to be diagnostic of final *-l. However, an examination of my data with respect to final -l in these languages yields the matchings seen in Table 2.6. If YIM does preserve final

Table 2.6: Final -l in YIM, GYA, and GID

YIM	GYA	GID	Example
l	r	y	(4.20)
l	r		(4.47)
l	l		(4.63)
l	∅	y	(4.77)
rr	l		(4.142)

*-l, then these matchings indicate that GYA and GID do not. In three cases, YIM reflexes contain -l while those in GYA have either -r or -∅. In one example, the GYA reflex has final -l while the YIM reflex has final -rr. The two examples involving YIM and GID point to a possible matching between YIM -l and GID -y. However, more cognate sets are needed to determine if this matching is valid.

In addition, O'Grady has taken UMP (1990e:458), YIM (1990e:454) and YDN (1990e:454, 1990c:102) to be diagnostic of final *-n. Table 2.7 shows the relevant matchings found in my data. GID has been included in this table because it is considered to retain final nasals (O'Grady 1990b:125). In the first line of the table, UMP has -n where YIM has -l and GID has -y. This suggests that the final consonant of the proto-form was *-l rather than *-n. A similar example is found in the last line, in which YDN has -n but YIM has -l. In both examples involving GYA and GID, the languages disagree as to the final nasal of the proto-form.

The matchings presented in Tables 2.6 and 2.7 indicate that not all of the lan-

Table 2.7: Final -**n** in UMP, YIM, GYA, YDN, and GID

UMP	YIM	GYA	YDN	GID	Examples
n	l	∅		y	(4.20)
∅	n				(4.2)
	n	∅			(4.25)
	n	n			(4.55), (4.151)
	∅~ n	∅			(4.7)
∅		n			(4.30)
		n		m	(4.22)
		∅		n	(4.19)
	l		n		(4.155)

guages in question can be used as diagnostic of final ***-l** or ***-n**. It must also be noted that the fact that a language retains final ***-l** or ***-n** does not necessarily imply that *all* instances of -l or -**n** are ancestral. That is, we cannot, at least at this point in our research, say that YIM has an -l if and only if PPN had an ***-l**. An -l following V_2 could possibly be the result of the fusing of a suffix onto a vowel-final stem, or of stem accretion. The facts regarding final consonants in PPN may also be obscured by borrowing between languages which retain these consonants and those which do not.

In the reconstructions given in chapter 4, GID is assumed to retain final nasals, and YIM is taken to be diagnostic of final ***-l**. If a given proto-form has reflexes in UMP, GYA, or YDN with -l or -**n** following V_2, or in YIM with -**n** in this position, then this consonant is enclosed within parentheses in the reconstruction. This is meant to indicate that the proto-form may have contained this consonant but further work needs to be done before we can include it in the reconstruction with confidence.

2.3.2 Vowels

In previous work in Australian historical linguistics, there has been some inconsistency of opinion on which languages retain ancestral vowel length in V_1 position. Dixon (1980:406) states that GID, YIM, and other languages not included in the present study preserve long vowels. Hendrie's study on initial apicals uses data from nine languages: NYA, WLB, PIN, GAW, BAY, GUP, UMP, YIM, and GID; he works under the assumption that UMP, YIM, and GID retain long vowels (Hendrie 1984:35). O'Grady (1990b:125) uses GUP, UMP, YIM, and GID as diagnostic in the reconstruction of vowel length. However, O'Grady and Tryon appear to take neither GUP nor UMP as diagnostic; that is, the ancestral form of UMP **ngaalun** is reconstructed as ***ngAlu**, while that of GUP **yaakarrma-** (<**yäkarrma-**>) is reconstructed as ***jAku-**, where the use of **A** indicates that the length of the vowel cannot be determined (O'Grady and Tryon 1990a:112).

Assuming that YIM and GID preserve ancestral vowel length, since Dixon, Hendrie, and O'Grady all agree on this point, an examination of the data in this thesis yields the matchings between UMP, YIM, and GID shown in Table 2.8. In all of the

Table 2.8: Matchings in V_1 Position: UMP, YIM, and GID

UMP	YIM	GID	Examples
a-	a-		(4.2), (4.7), (4.43), (4.45), (4.48)
a-		a-	(4.23), (4.52), (4.78)
a-	a-	a-	(4.77), (4.116)
aa-		aa-	(4.49)
ii-		ii-	(4.120)
u-	u-		(4.147), (4.148)
u-		u-	(4.143)

15 sets which contain a reflex from UMP and one from either YIM or GID, UMP

agrees with YIM or GID with respect to the length of the first vowel. It therefore seems reasonable to assume that UMP also retains long vowels.

Turning now to GUP, my data reveal the matchings between GUP, UMP, YIM, and GID shown in Table 2.9. Of the 19 sets involving a GUP reflex and a reflex from

Table 2.9: Matchings in V_1 Position: GUP, UMP, YIM, and GID

GUP	UMP	YIM	GID	Examples
a-	a-			(4.14)
a-		a-		(4.25)
a-			a-	(4.66)
a-	a-	a-		(4.7), (4.43), (4.45 (4.48)
a-		a-	a-	(4.26)
aa-	a-			(4.46)
aa-	aa-			(4.8), (4.34)
a-			aa-	(4.88)
aa-			a-	(4.96)
a-	aa-		aa-	(4.49)
i-			i-	(4.133)
i-			ii-	(4.126)
u-	u-			(4.160)
u-	uu-			(4.138)
u-			uu-	(4.162)

at least one of UMP, YIM, and GID, there are two cases in which GUP disagrees with UMP, four in which GUP disagrees with GID, and one in which GUP disagrees with both UMP and GID regarding V_1 length. Thus, when reconstructing roots for the cognate sets, I do not take GUP to be diagnostic for vowel length in the $*V_1$ position.

A glance through the reconstructions in chapter 4 shows that, for many roots, the second vowel is reconstructed as ***V**, indicating that the quality of the vowel cannot be determined from the reflexes of that root. Problems in the reconstruction of the first vowel are rarely encountered, because in most Australian languages the first

syllable carries primary stress (Dixon 1980:197); *V_1 is therefore less vulnerable than *V_2 to assimilation, reduction, or deletion.

Vowels in the second syllable may undergo either lag or anticipatory assimilation (O'Grady 1990b:148). That is, V_2 may assimilate to V_1 or to a suffix or accretion vowel. Assimilation of V_2 to V_1 is quite common; Dixon reports that the number of words which have the same vowels in both positions is much higher than would be expected if the distribution of vowels was random (Dixon 1980:179). In addition, vowels in V_2 position may also assimilate to adjacent consonants.

Due to all of the processes which can affect vowels in the second syllable, it is often impossible to decide which vowel should be posited in the reconstruction. For example, the reflexes of (4.13) ***ngaajV**$_2$ are WLB **nganju.rrngu** and UMP **ngaaji**. On one hand, we could reconstruct *V_2 as ***-i**, and explain the **-u** in WLB as assimilation to V_3. On the other hand, we could reconstruct *V_2 as ***-u**, and explain UMP **-i** as the result of assimilation to the preceding palatal. Although at this point in our work we are often forced to reconstruct ***V**, further work on phonological change in V_2 position and the addition of cognates from other languages will likely aid us in the reconstruction of these vowels.

Chapter 3

Semantics

In this chapter, I describe the role of semantics in evaluating putative cognate sets. Given that different cultures view the world in different ways, semantic associations which are valid in one language may not be so in another. I therefore describe types of semantic relationships which appear to be important in Australian languages. In addition, I discuss both linguistic and non-linguistic sources of evidence for semantic associations.

3.1 The Role of Semantics

When first constructing a putative cognate set, we must let phonology alone be our guide. In some cases, the meanings of the proposed reflexes are so close that they give us no cause for hesitation. For example, PPN ***jinang** has reflexes with the meaning *foot* in all parts of the PN area (O'Grady 1990c:91). However, plausible cognates often have widely divergent meanings, and in these cases, we should not make a preliminary judgement based primarily on semantics. This is especially important when working on languages from cultures vastly different from our own such as those in Australia, because semantic relationships which are valid in one culture may not be

valid in another. Only after we have gathered together words that are phonologically plausible cognates, should we look for evidence that the meanings of the words are related.

There are two cases in which semantics can help us in comparative work. The first is a situation in which the sound correspondences between words in a putative cognate set are at least matchings, but the meanings of the words involve a semantic leap which is not obviously justifiable to someone from a different culture, or even to the speakers themselves. Here, we are faced with the problem of deciding whether the forms have descended from homonyms or are in fact related. Evidence for relatedness may be found by looking at synchronic semantic relationships and at other cognate sets. Finding a similar leap elsewhere, or a form which can bridge the gap between the meanings, increases the probability that the forms are indeed cognates.

The second case in which semantics can be valuable is that in which a member of a putative cognate set shows an irregular sound correspondence, but its meaning provides evidence that it is a cognate. Although cognate sets are first constructed on the basis of phonology, we must exercise a degree of flexibility and not automatically dismiss possible members which show a seemingly irregular correspondence.

As mentioned in chapter 2, this thesis contains numerous examples of initial ***ng-*** weakening to **w-** in some languages of northern Queensland. However, there are also many cases in which initial ***ng-*** is retained in these languages. Some relevant examples are given in (3.1)[1]:

(3.1) a.

PPN	***ng ak vl**	
WLB	**ng ak u .lyka**	*armpit*
YIM	**ngaakuul**	*arm...*
GYA	**w ak u .mpa**	*...upper arm*

[1]For a more complete discussion of each of these sets, see chapter 4.

b. PPN *ngampa(n)
YDN ngampin *belly down*
PIT ngampa *belly (external)*

c. PPN *ngun a-Y-
WLB ngun a- *to be lying down*
YIM wunaa- *lie down, sleep...*
YDN wun a-n *lie down, sleep...*

d. PPN *ngamun
WLB ngama .rdi *mother*
YIM ngamu *mother*
GYA ngamu *mother*

GYA has initial **w-** in (a), but initial **ng-** in (d), and YDN has initial **ng-** in (b), but initial **w-** in (c). In (a) and (d), YIM has initial **ng-**, but in (c) it has initial **w-**.

In cases where sound correspondences are not completely regular, but are instead matchings, semantics can help us decide whether the members of the set should be considered cognates. In the above examples, the semantics agree completely or show a relationship which is undisputably valid. In comparative work, "the final explanation is rarely (or never) apparent at the beginning" (Anttila 1972:336), and by dismissing these putative cognates, we may be throwing away valuable evidence for as yet undetermined sound correspondences.

3.2 Evaluating Semantic Relationships

Once we have collected a list of words which are plausible cognates from a phonological point of view, we must look for evidence which will help us to decide which words are reflexes of a single root. When trying to verify a given semantic change, finding the same association elsewhere is the best evidence in favour of that change. However, if this is not possible, finding a similar type of relationship can increase our confidence in the putative shift.

3.2.1 Sources of Evidence

When doing comparative work on languages from oral cultures, we do not have the benefit of written documents, which sometimes show how the meaning of a given word has shifted over time. For example, the fact that "[t]he King James translation of the Bible (1611) says, of the herbs and the trees (*Genesis* 1, 29) *to you they shall be for meat*" indicates that *meat* at one time meant *food* (Bloomfield 1933:425). Working on Australian languages, our main source of data and evidence for semantic shift is the modern languages themselves. It is therefore very important to look at the ranges of meaning shown by words in the modern languages in order to find evidence for a proposed shift. A word which has both meanings involved in the shift helps to establish that there may be a semantic connection between the concepts. For example, the putative reflexes of PPN ***ngaalu(n)** include NYA-W **ngala.la** *running water* and PIN **ngala.rra** *wind.* Now, *wind* can be thought of as *running air,* but we must look for evidence of a relationship between *running water* and *running air.*. The two meanings of the DIY verb **ngaka-**, *flow (of liquid),* and *blow (of wind),* provide such supportive evidence.

Evidence for a given shift may also be found in the semantic changes involved in other cognate sets. For example, the reflexes of PPN ***ngAkV-$_1$** suggest a relationship between the concepts of *gathering* and *stealing.* Since *gathering* and *stealing* are both methods of *getting,* an association between them is at least plausible. However, further evidence will increase our confidence in the validity of this semantic relationship. The fact that the reflexes of PPN ***ngukV(l)** include words meaning *gather* and *steal* is a piece of evidence in favour of this association.

Another source of evidence for semantic relatedness is provided by special vocabularies. In many languages, there is, in addition to the regular vocabulary, a special vocabulary which is used during initiation rituals or in the presence of certain taboo

relatives. For example, in DYI, Dyalnguy the "mother-in-law" or avoidance vocabulary, is used in the presence of a parent-in-law, child-in-law, or cross-cousin of the opposite sex, and Guwal, the everyday vocabulary, is used in all other situations. The size of the special vocabulary is, in general, much smaller than that of the everyday vocabulary, but it is usually possible to say anything in the special vocabulary that can be said in the everyday vocabulary. Dyalnguy and Guwal have no lexical items in common, although they share the same phonology and grammar. However, Dyalnguy has only about one-quarter the number of lexical items that Guwal has (Dixon 1972:32-33). Since anything which can be expressed in Guwal can also be expressed in Dyalnguy, there are often many-to-one correspondences between the two vocabularies; one Dyalnguy item can express the meaning of many Guwal items, as in example (3.2) (Dixon 1972:294):

(3.2) Dyirbal
Dyalnguy: **nyuriman**
Guwal:

puran	*look at, see*
wapan	*look up at*
rukan	*watch [someone] going*
ngarnyjanyu	*stare*
kintan	*look with the aid of light*
wamin	*take a sneaky look*

In Dyalnguy, **nyuriman** is used to express any of the meanings of these six Guwal verbs, as in avoidance relationships it is considered proper to be as vague as possible. If the speaker needs to specify a certain meaning, he or she adds some kind of qualifier to the Dyalnguy verb, as in (3.3) (Dixon 1972:295):

(3.3)

	Guwal	Dyalnguy
a.	**puran**	**nyuriman**
b.	**wapan**	**yalukalampan nyuriman**
c.	**rukan**	**nyuriman yalukalumpan pawalpingu**
d.	**ngarnyjanyu**	**junkurruku nyuriman**
e.	**kintan**	**ngarkanaku nyuriman**
f.	**wamin**	**kilarri jupunyju nyuriman**

The Guwal verb **puran**, in (a), is the "core equivalent" of Dyalnguy **nyuriman** and thus requires no modification. Effectively, then, the Dyalnguy verb means *look at, see.* Since there is no Dyalnguy verb which means *stare,* if a speaker wants to specify the action of staring, he or she uses the phrase in (d), which means *look hard.* Likewise, the phrase in (e) meaning *look with light* and that in (f) *look quietly, with stealth,* are used to express the specific meanings of **kintan** and **wamin**, respectively (Dixon 1972:295-96).

Another example of a many-to-one correspondence between Guwal and Dyalnguy is seen in (3.4) (Dixon 1971:437):

(3.4) Dyirbal
Dyalnguy: **jamuy**
Guwal:

jampun	*long wood grub*
pukulum	*small round bark grub*
mantija	*milky pine grub*
kija	*candlenut tree grub*
kapan	*acacia tree grub*

Guwal does not have a generic term for *grub,* while Dyalnguy has just one term which is used to refer to any kind of grub. Again, a qualifying phrase can be added to the Dyalnguy term in order to specify a certain type of grub, much as we do in English.

As can be seen from the above examples, the set of Guwal items which are all covered by one Dyalnguy item is not arbitrary; there is some kind of semantic relationship between the Guwal items. Sometimes, the relationship is not immediately obvious, as in (3.5) (Schmidt 1985:188).

(3.5)

Dyalnguy:	**mulwan**	
Guwal:	**mangkan**	*pick up*
	nangkinyu	*scrape about picking up crumbs*
	jalnginyu	*imitate a person's voice or words*

Here, we have the Guwal verb for *imitate* corresponding to the same Dyalnguy verb as the Guwal verb for *pick up,* because imitating a person's speech is seen as *picking*

up language.

Although Dyalnguy is the most extensive special vocabulary known in Australia, many of the avoidance and initiation vocabularies of other languages operate according to the same principle. These vocabularies, then, show a second, more abstract level of semantic organization than is normally seen. Through them we can gain insight as to how concepts are grouped together based on perceived semantic relationships. If the two meanings involved in a putative semantic shift both correspond to a single item in a special vocabulary, then we have valuable evidence in favour of the shift and against homophony.

In Warlpiri, there is also a secret initiation language process called **jiliwirri**, which is similar to a language game. **Jiliwirri** and sign languages play an important part in determining particular important types of semantic relationships, while cultural information often explains associations which cannot be easily classified. The role of these three sources in evaluating semantic relationships is discussed in the following section.

3.2.2 Types of Semantic Relationships

It is customary to label given examples of semantic relationships according to some kind of classification system. Bloomfield lists nine traditional categories of semantic shift: narrowing, widening, metaphor, metonymy, in which "the meanings are near each other in space or time," synecdoche, in which "the meanings are related as whole and part," hyperbole (from a stronger to a weaker meaning), litotes (from a weaker to a stronger meaning), degeneration, and elevation (Bloomfield 1933:426-27). Pama-Nyungan cognate sets illustrating the first five types are seen in example (3.6) (the set in (b) is from O'Grady (1979:120)):

(3.6) a. Narrowing or widening

PPN	* **ng A l p a**	
WJK	**NG A L B Ă .RDA**	*flat*
WMK	**ng a l p**	*flat wide woomera*

b. Metaphor

Ngarluma	**yalhuru**	*tongue*
Adnyamathana	**yalhu**	*flame*

c. Metonymy

PPN	***ngalya**$_1$	
PIN	**ngalya**	*forehead*
PIT	**ngalya**	*cheek*
DIY	**ngalha**	*cheek*

d. Synecdoche

PPN	***ngUmpa(r)**	
NYA-W	**ngumpa**	*face*
DYI	**wumpu**	*head*

In (a), the meaning of the WJK form is wider than that of the WMK form. Because it is often difficult to know which of the meanings seen in a cognate set was the original meaning, we are often unable to tell if we are dealing with a case of widening or narrowing. Example (b) shows a metaphoric relationship which is also found in the English phrase *tongues of flame* (O'Grady, p.c.). In (c), *cheek* and *forehead* are located near each other in space, and *face* in (d) is part of *head.*

I have as yet been unable to find examples which clearly illustrate the last four types. Examples of hyperbole and litotes may be found in the relationship of "potential" versus "actual" meanings; this will be discussed below. Bloomfield's examples of degeneration and elevation both involve nouns describing social rank (Bloomfield 1933:427). It may be that semantic shifts of this type are relatively rare in Pama-Nyungan languages, because it seems that rank is not as important in Australian societies as it is in some other cultures. The reflexes of PPN ***ngupa(l)**, which relate *fully trained boy* and *newborn baby,* may provide an example of either degeneration or elevation.

Aside from the traditional classification, there are a few types of semantic relationships which seem to be particularly important in Australia. The first is the relationship between body parts and other areas of the lexicon. Metaphoric relationships between body parts and natural phenomena, such as geographical features and parts of plants, are common in many languages, both in Australia and elsewhere. English examples include *arm of a river, mouth of a river,* and *cliff face.* Analogous examples from two Pama-Nyungan languages are seen in (3.7) (the Yolngu forms are from Schebeck (1978)):

(3.7) a. Yolngu **parka** *arm, small river, creek*
thurrwara *mouth, mouth of river*
puku *(fore-)head, face, hill, peak*

b. DYI **karrkal** *upper arm, creek*
pungku *knee, bend in the river, wave*
pinta *shoulder, waterfall*

All of the words in these examples have meanings which include both a body part and a geographical feature. Dyirbal shows two semantic connections not found in English, namely the relationship between *knee, bend in the river,* and *wave,* and that between *shoulder* and *waterfall.*

Example (3.8) contains two putative cognate sets which show a shift in meaning between body parts and geographical features:

(3.8) a.

PPN	***nga k V l**	
WLB	**nga k u .lyka**	*armpit*
	nga w a .rra	*running water, flood*
YIM	**ngaak uul**	*arm, esp. upper arm*
GYA	**wa k u .mpa**	*spreading branches, upper arm*
	wa w u .paja	*river*
GID	**nga wka .y**	*upper reaches of creek*
DIY	**nga k a-**	*flow (of liquid)...*

b. PPN *nga ly a_1
PIN nga ly a *forehead*
PIT nga ly a *cheek*
GID nga y i .rr *cliff*
DIY nga lh a *cheek*

Although the relationship between body parts and geographical features may seem obvious, because we engage in the same kind of process in English, that does not necessarily mean that it is obvious to speakers of Australian languages. The Yolngu form **parka** and the Dyirbal form **karrkal** in (3.7) give us more confidence in the relationship seen in (3.8a), and provide a semantic link between the words having something to do with arms and those having something to do with flowing water. Likewise, Yolngu **puku** is evidence for the validity of the semantic shift seen in (3.8b).

O'Grady (1990b:121) discusses the relationship between body parts and verbs of position or locomotion. However, my data indicate that the relationship is actually more general: a body part term may be related to a verb whose meaning involves the use of that body part. Some possible cognate sets illustrating this are seen in (3.9):

(3.9) a. PPN *ngAmpa(n)
NYA-S ngampa .rl-ngampa.rl *sleeping face down...*
YDN ngampin *belly down*
PIT ngampa *belly (external)*

b. PPN *ngurntV
NYA ngurnti *shoulder*
NYU ngurnti .ny *lying down*
BAY ngurnta -yi- *lie down, sleep, camp*

c. PPN * ngu na -Y-
WLB ngu na- *to be lying down*
PIN ngu na .n-pa *arm, branch of tree*
NYU ngu rni .ny *lying, lying down*
WMK wu na- *lie down...*
YIM wuu naa- *lie down, sleep...*
YDN wu na -n *lie down, sleep...*
DIY ngu na- *arm, wing, branch (of tree)*

Other examples of this type of relationship are found in the reflexes of PPN ***ngArtu,*** which relate *chest* and *to pant,* of PPN ***ngata(l),*** which show an association between *mouth* and *to call out,* and of PPN ***ngUka,*** which connect *throat* and *to swallow.*

One of the most important types of semantic relationships involving body parts is that between kinship terms and body part terms; evidence of this is found in many aspects of Australian language. Sometimes the semantic relationship seen is an instance of simple metaphoric extension. Examples of this from WJK are given in (3.10):

(3.10) WJK **NGOBERN** *The eldest son or forefinger*
NGANGANBRU *Mother, great toe, thumb*

The eldest son is the first son, and the forefinger can be thought of as the first finger. The connection between *mother* and *thumb* or *big toe* is found all over Australia, because the thumb is seen as the mother of the fingers, and the big toe as the mother of the other toes (Dixon 1980:110).

At other times, however, the relationships are due to a deeper connection between kinship and body parts. In Australia, there is a "widespread tendency to conceive of kin relations in terms of how social interaction, within a given relationship, is mediated by way of the body. The body part that is thought of as the focal point of the interaction most characteristic of the relationship becomes symbolic of that relationship" (Kendon 1988:330). An obvious example of this is seen in the reflexes of PPN ***ngamun,*** whose meanings include *mother* and *breast.* One of the most characteristic interactions between a mother and her child is that of breast-feeding. Thus, there is a connection between the concepts of *breast* and *mother.*

Sign languages may provide clues about relationships between body parts and kin terms which are not as clear as the one just seen. For example, in WLB, body part terms may sometimes be used instead of regular kinship terms when directly addressing kin. In some cases, the body part which is referred to corresponds to that

which is used to indicate the kin relation in WLB sign language. Some examples are shown in (3.11):

(3.11) WLB
Mo or MoBr can call Ego **miyalu-warnu** *stomach-belong.*
Ego can call Mo **lampurnu** *breast.*
Ego can call HuSi **kakarda** *back of neck.*

The WLB sign for child, niece, or nephew involves touching the stomach, that for mother involves touching the breast, and that for husband's sister involves touching the back of the neck (Kendon 1988:353).

In Australia, every member of a tribe stands in some kind of kin relationship, whether actual or classificatory, to every other member. Therefore, a person may have, in addition to his or her biological mother, a number of women who are classified as mothers. In Dhuwal, a language of the Yuulngu group, a body part term can be added to a kin term in order to distinguish an actual relation from a classificatory one. Some examples are seen in (3.12) (Kendon 1988:354):

(3.12) Dhuwal

father:	**muun-buy**	*of the shoulder*
sibling:	**rapari-puy**	*of the calf, of the leg*
wife's mother:	**bun gumu-wuy**	*of the knee*

Thus, if a person wanted to refer to his actual father, as opposed to a classificatory father, he can add *of the shoulder* to the word for *father.* For these particular examples, the same body parts are used to indicate the kin relations in the sign language of GUP, which is related to Dhuwal (Kendon 1988:354). Further, there is a widespread belief that the twitching of a certain body part indicates something about certain kin. The association between *sibling* and *calf* seen above is also reflected in the fact that speakers of the Warburton Ranges dialect believe that if a person feels a twinge in his calf, it means his elder sibling is thinking of him (Douglas nd:5).

In all of the examples seen above, the sign languages and spoken languages agree in the connection between body parts and kinship terms. However, this is not always

true, and different languages may show different relationships between kin and body parts. We must remember that the fact that a semantic relationship between two concepts exists in one Pama-Nyungan language does not necessarily mean that the relationship holds in all Pama-Nyungan languages. This is why phonology is the most important aspect of comparative work. Regular sound correspondences are the best indication that forms are cognate. If a cognate set involves a semantic leap, then finding a similar semantic association elsewhere provides some evidence that the forms did not descend from old homonyms, especially since the cultures of the linguistic groups in the Pama-Nyungan area are relatively homogeneous. However, evidence for cognation is not proof of cognation.

A second type of semantic relationship important in Australia is that of antonymy. Examples of cognate sets showing antonymic shifts in meaning are seen in (3.13) ((a) is from O'Grady (1990e:472) and (b) is from O'Grady (1990e:462)):

(3.13)

a.	YDN	**k u rr a n**	*long, tall*
	Miriny	**k u rr a. rtu**	*short*
	WJK	**G O R A. D**	*short, stunted*
	GUP	**g u rr i. ri**	*short*
b.	WJK	**D A NJ A. L**	*shallow*
	UMP	**a j a**	*shallow (water)*
	GYA	**t a j a. li**	*deep water*
c.	PP	***ngan ja**	
	WMK	**wanth**	*really good (smell), nice looking*
	GYA	**ngan ja .y**	*no good, wilted, bad smell*

All of the words in (3.13) express polar concepts, and the antonymic relationships are therefore clear. However, antonymic change is also found in words which do not express polar concepts. **Jiliwirri**, a linguistic process used in Warlpiri initiation rituals, provides insight into how antonyms of non-polar concepts are determined. In **jiliwirri**, ordinary Warlpiri is turned 'upside-down;' each noun, pronoun, and verb is replaced by its antonym. For example, if the speaker wants to express the meaning of the sentence in (3.14a), he would use the sentence in (3.14b) (Hale 1971:473):

(3.14) WLB Jiliwirri

a. **ngaju** **ka-rna** **walya-ngka** **nyina-mi.**
I PRES-I ground-LOC sit-NONPAST
I am sitting on the ground.

b. **kari** **ka-0** **nguru-ngka** **karri-mi.**
other PRES-he sky-LOC stand-NONPAST
He is standing on the sky.

The general principle of **jiliwirri** is that antonyms are minimally distinct; that is, they differ in the value of only one semantic feature. This is true for polar concepts as well as non-polar ones. For example, *deep* and *shallow* are both measurements of depth; they differ only in whatever feature is used to represent the quantity of depth.

The **jiliwirri** principle is illustrated in the following example, which shows the antonymic oppositions between "lexical items whose semantic interrelationships are typically taxonomic" (Hale 1971:475-76):

(3.15)

wawirri	*kangaroo*	/	**kanyala**	*euro*
ngapiri	*red-gum*	/	**wapurnungku**	*white-gum*
manyja	*mulga bush*	/	**ngalkirti**	*witchetty bush*

To express the meaning of *kangaroo* in **jiliwirri**, one uses the word for *euro*; kangaroos and euros are opposed because they are both large marsupials. Likewise, *red-gum* is the antonym of *white-gum* because they are two types of eucalyptus trees which differ only in colour.

It may seem that **jiliwirri** simply involves the memorization of antonymic pairs. However, novices learn to speak and understand novel **jiliwirri** sentences in a period of just two to four weeks (Hale 1971:475). In addition, the treatment of polysemous words and true- and near-synonyms clearly shows that there is a semantic principle at work here. Consider the **jiliwirri** oppositions in (3.16) (Hale 1971:477):

(3.16)

a.	**pirrjirti**	*heavy*	/	**rampaku**	*light*
		hard	/	**manya**	*soft*

b. **yu-** *to feed* / **jaja-** *to eat off someone*
to give / **purumarta** *to withhold*

Words with more than one meaning have a separate antonym for each meaning. If the meaning *heavy* is intended, the **jiliwirri** speaker uses the word **rampaku**, while if he wants to convey the meaning of *hard,* he uses **manya**. True synonyms share antonyms, as seen in (3.17) (Hale 1971:477):

(3.17)

wawirri, marlu	*kangaroo*	/	**kanyala**	*euro*
ngarnangarna, juwarri	*natural waterhole*	/	**mulju**	*dug well*
mangulpa, wurrumpuru	*lance*	/	**kurlata**	*spear*

Many pairs of near-synonyms also share a single antonym (Hale 1971:478):

(3.18)

a. **ngapa** *water, rain,*
ngawarra *running water* / **warlu** *fire*

b. **minyminy-ma-** *to wet, moisten,*
mapa- *to paint, anoint* / **partuna-ma-** *to dry*

c. **ngaka** *after, a short time hence,*
nyurru *before, a short time ago* / **jalangu** *now*

If there was not a general semantic principle operating in **jiliwirri**, and lexical items as wholes were being opposed, we would expect polysemous words to have only one antonym, and synonyms to have separate antonyms. The case of near-synonyms is especially illustrative, as it clearly shows that one particular feature, which the synonyms share, is being used to determine the antonym.

We might not expect to find a single word which has two meanings which are antonymic. However, Sommer has found two such words in Oykangand, a language of Cape York Peninsula. As seen in example (3.19), in compounds, **el** *eye* can refer either to a *sharp terminal protrusion* as in (a) or to a *recessed cavity* as in (b) (Sommer 1976:170):

(3.19) Oykangand

a. **alk el** *spear point* (lit. *spear eye*)
afum el *nipple of breast* (lit. *breast eye*)
uk el *peg, stake, bullet* (lit. *wood eye*)

b. **el onmon ilg** *dice* (lit. *eye egg with*)
el aRdan *sulky* (lit. *eye deep*)
inh el *hole, as occupied by snake, goanna, etc.* (lit. *meat eye*)

Also, **alγar** has a range of meaning extending from *bad* to *in great abundance.* Oykangand speakers use the English phrase *no good* with the same range of meaning, so when they are talking about an area abundant with food, they will say that it is *no good* (Sommer 1978:180).

Given a proto-form, we may not be able to predict what its antonym will be, because different languages may use different features to determine antonyms. But given the **jiliwirri** principle, we may be able to recognize an antonymic shift in a putative cognate set. Two sets with such a shift are seen in (3.20):

(3.20)

a.

PPN	*ngu	kV		
NYA-W	ngu	ki	-nyi	*to steal...,abduct*
NYA-S	ngu	ka	-ny	*abduct*
DYI	wu	ka	-l	*give*
WEM	wu	ka	-	*to give*
DIY	nguuka		-	*to give*

b.

PPN	*ngaa	ji-	
BAY	nga	thi-	*cry*
GUP	ngaa	thi-	*cry* <ŋäthi->
UMP	ngaa	ji-	*laugh*

Giving and *stealing* are similar concepts, except that in the first case, the person who loses the object does so willingly, while in the second he does not. *Crying* and *laughing* are also similar actions, although each usually involves a different emotion.

The third type of semantic relationship of particular importance in Australia is that between "potential" and "actual" meanings, which is seen in both nouns and verbs. With nouns, the same lexeme is often used for some kind of natural object and for something that can be made from or obtained from that object (Dixon 1980:102), as the examples in (3.21a) show:

(3.21) Nouns

PIN	**ngalypa**	*tree type and sandals made from bark of this tree*
GUP	**ŋänitj**	*bee, and honey made by it*
WLB	**ngalkirti**	*Witchety bush, and edible grub found in this bush*
NYA	**nguyumpara**	*fire, firewood*

The source of a cultural object or food is seen as potentially being that object or food. The association between *firewood,* which could potentially be fire, and actual *fire* is found in most Australian languages (O'Grady 1960:338). Evidence of a relationship between potential and actual meanings is also found in YIM's avoidance vocabulary, as seen in (3.22):

(3.22) YIM

avoidance:	**yalmpurr**	
everyday:	**punytya**	*night-owl*
	tunguuyngka	*duck*
	minha	*meat, animal*

where the avoidance term corresponds to all three everyday terms and reflects the fact that these birds are potentially meat.

Dixon (1980:103) reports that "Australian languages do not as a rule distinguish lexically between an activity that POTENTIALLY COULD and one that ACTUALLY DOES have a certain result" (his emphasis). Two examples of verbs showing the association between potential and actual meanings are seen in (3.23):

(3.23) Verbs

GUP	**ŋorra**	*lie down, sleep...*
DYI	**palka-l**	*hit with a long rigid implement..., kill*

Lying down is potentially sleeping, and hitting is potentially killing. A cognate set showing an actual-potential relationship is in (3.24):

(3.24)

PPN	*ng	U	k	V		
NYU	ng	u	k			*honey*
BGU	ng	u	w	a	.l	*swarm of bees*

As confirmed by GUP **ŋänitj** in (3.21), *bees* are seen as potentially being *honey.*

3.2.3 Unclassifiable Relationships

It has often been said, by Bloomfield and others, that being able to classify types of semantic changes does not tell us how a word's meaning will change; it only tells us how the meanings of known cognates have changed (Bloomfield 1933:430). Given a proto-form, we cannot predict what meanings its descendent forms will have. If a putative semantic shift can be put into some well-documented class, then we can have more confidence in the justification of the shift than we would otherwise. However, this does not mean that only classifiable shifts are valid. In Australia, and all over the world, words show changes in meaning which do not seem to fit into a classification system. This may simply be because we do not understand the culture well enough to see a metaphoric relationship between the meanings. It may also be because a chain of semantic shifts has occurred for which we are missing some crucial link.

However, an unclassifiable change can be justified by evidence, from linguistic and other cultural sources, that the semantic relationship is a valid one. For example, consider the set in (3.25a):

(3.25) a. PPN *ng A ng kV
GAW NG A NG KI *female...*
WJK NG A NG A *sun*

b. NYU ng a ng k *sun, mother, female*

At first glance, it seems that these forms may have descended from homonyms, because there is no obvious connection between the two meanings. However, knowing that the sun is seen as female by the aboriginal people (Dixon 1980:104) gives us greater confidence in the relatedness of these two words. In addition, the NYU word in (3.25b) is not only another member of this cognate set, but it also provides a semantic link between the WJK and GAW forms.

A further example of this type is seen in (3.26a):

(3.26)	a.	PPN	* **ngA**	**ka(l)**		
		NYA-W	**nga**	**ku**	**.mpa**	*ignorant, unaware*
		BAY	**nga**	**ngka**	**.rnu**	*ignorant, not knowledgeable*
		GYA	**nga**	**ngkal**		*ignorant of something*
		YDN	**nga**	**ngka**		*deaf*
		WEM	**wa**	**ka**	**.tang**	*determined, obstinate*
	b.	NYA-S	**nga**	**ku**	**.mpa**	*deaf, ignorant*

We may perceive of a relationship between *deaf* and *ignorant* but it is perhaps one in which we would not feel very confident. However, the aboriginal people believe the ear to be the seat of intelligence (Dixon 1980:112); knowing this, the relationship is perfectly clear. In (b) we see a form which has both meanings and is, in this case again, another member of the cognate set. Further evidence for this set is provided by YIM (Dixon 1980:112):

(3.27) YIM

milga	*ear*
milga-mul	*deaf, stupid, inattentive* (lit. *ear-without*)
milga-dhirr	*obedient* (lit. *ear-having*)

where the words for *deaf, stupid* and *obedient* are derived from the stem for *ear*. This also helps to clarify the relationship between *deaf* and *obstinate*; a stubborn or obstinate person will usually not listen to the advice of others and thus is *without ears*.

The cognate set in (3.28a) (O'Grady 1990e:468), shows a semantic relationship between *dead, spirit,* and *white man*.

(3.28a)	NYU	**n**	**o**	**j**		*dead*
	WJK	**N**	**O**	**YT**		*the spirit; the soul*
	BAY	**ny**	**u**	**j**	**a**	*white man*

Evidence for this semantic association is found in the knowledge that when the aboriginal people first saw white people, they believed the whites to be the spirits of their dead ancestors (Dixon 1980:124). Further evidence is provided by the avoidance vocabularies of both YIM and DYI:

(3.29) a. YIM

avoidance:	**maaluul**	
everyday:	**wangarr**	*white man*
	yiki	*ghost*

(3.30) b. DYI

avoidance:	**palan mukuyngkun**	
everyday:	**palan mijiji**	*white woman*
	palan kuyngkan	*spirit of a dead woman*

In (3.28a) we see that the YIM avoidance term **maaluul** means both *white man* and *ghost*. Likewise, in (3.28b), DYI's avoidance word corresponds to both *white woman* and *spirit of a dead woman* in the everyday vocabulary.

The example in (3.31) (O'Grady 1990e:456) shows the value of semantic changes seen in other cognates sets in providing evidence for a given shift.

(3.31)

PPN	*nga pu		
NYA	nga pa		*water, rain*
WLB	nga pa		*water, water source, rain*
	ngi pi. ri		*egg*
	ngi pi		*sugarbag larvae*
PIN	ngampu		*egg; testes*
BAY	nga pu.	rra-yi-	*swim, take a bath*
GYA	nga pa-	l	*soak, leach*
YDN	nga pa-	n	*bathe*
DIY	nga pa		*water*
	nga pu.	nga-	*swim*

The semantic association between *egg, water,* and *brain* is neither obvious nor classifiable, and we may be tempted to say that there is more than one proto-root involved here. However, at least ten other proposed proto-roots show the same semantic association, including PPN ***nguku*** (O'Grady 1990e:457):

(3.32)

PPN	*ngu ku		
WLB	ngu ku	.ny.pa	*brain*
GAW	NGUKO		*owl species (< "eye"< "egg")*
BAA	ngu ku		*water*

The probability that eleven separate cognate sets, which are each plausible on phonological grounds, would accidently show the same semantic relationships must be very small. We can therefore have a great deal of confidence that the semantic associations seen in (3.31) are valid.

When trying to evaluate putative semantic changes, it is important to remember that the fact that a semantic relationship seems obvious to us does not mean that it is obvious to speakers of other languages. For example, an Australian aboriginal linguist doing comparative work on Indo-European languages should not jump to the conclusion that two phonologically similar words are cognate because one is a kinship term and the other is a body part term. For the same reason, we should not *unquestioningly* accept that a relationship between *arm* and *river* is valid for Pama-Nyungan languages. Different cultures look at the world in different ways, and thus certain types of semantic relationships may be more important in one language family than they are in another.

There is no mathematically rigorous way to prove that two forms are cognate. All that we can do is gather as much evidence as possible, in order to whittle down the probability that similarities between the forms are due to chance. Sound correspondences are the primary source of such evidence. In addition, semantics can provide valuable evidence that forms showing irregular correspondences should be considered cognates, or that forms showing a semantic leap have not descended from homonyms. If two forms are phonologically plausible cognates but involve a seemingly unjustifiable semantic leap, finding a similar semantic relationship elsewhere gives the putative cognate set more validity than it would otherwise have.

Chapter 4

Cognate Sets

This chapter contains the 168 cognate sets which resulted from the study. For each set, a tentative reconstruction is given; most of these are for the PPN level, but some are for lower levels in the family tree. The reflexes are given next, followed by a discussion of the phonological and semantic developments seen in the set. A hyphen is used to represent a productive morpheme boundary, while a period denotes a dead morpheme boundary. Finally, the discussion of some sets includes a section entitled "residue;" this contains forms which are conceivably cognate, but which, for either phonological or semantic reasons, I hesitate to include in the list of cognates.

(4.1) PPN ***nga-L-**

NYA-W **nga-rna-** *eat;* NYA-S **nga-(rn)** *eat,* **nga.ni-nga.ni-(ny)** *feeding around,* **nga.nu.ngu** *food;* WLB **nga-** *to eat it; drink it,* **nga.nyu.ku** *surfeit, stuffed - after eating; gorged;* PIN **nga.la-ngu** *to eat,* **nga.lku-rnu** *to eat;* GAW **NGA.RKO-NDI** *to eat; drink; enjoy,* **NGA.RKO-NGA.RKU.NYA** *edible;* NYU **nga.ni.ny** *drinking, eating, sucking;* WJK **NGA.NNA-GA** *ate, swallowed,* **NGA.NNO-W** *to eat; to swallow;* BAY **nga.nu.nguli** *hungry;* GUP **ŋa.na.k** *flesh, meat;* WMK **nga.lk-nga.lk.an** *excited about food and really*

wanting it; BAA **nga.nyu-** *to eat.*

Both O'Grady (1966:111) and Dixon (1980:405) reconstruct this root as ***nga-L-**, with **-L-** indicating the verb class to which it belongs. Many of the languages in this set illustrate the tendency of Pama-Nyungan languages to reanalyse a monosyllabic root plus inflectional morpheme as a disyllabic root (Dixon 1980:415). For example, NYA-S **nga.ni-nga.ni-** and the NYU, WJK and GUP forms contain an old past marker ***-na**. Similarly, the Purposive marker ***-lku** (Alpher 1990:161) has been fused onto the PPN monosyllabic root in PIN **nga.lku-rnu** and the GAW and WMK forms (with ***l** > **R** in GAW). Imperative ***-la** has been reanalysed as belonging to the root in PIN **nga.la-ngu** (compare NYA-W imperative form **nga-la** *eat it!*). The **-nyu** seen in WLB **nga.nyu.ku** and the BAA form is most likely a reflex of the PPN past tense marker ***-nyu** (for a discussion of verbal inflections in PPN, see Alpher (1990)).

(4.2) PEPN ***ngaja(n)**

UMP **ngaja-mu** *husband's mother, husband's father, son's wife, son-in-law,* **ngaja-mu-ngu** *daughter's husband;* WMK **wanj-aathan** *son-in-law;* YIM **ngathiina** *man's father-in-law.*

Prenasalization in WMK is also seen in (4.12), (4.11), (4.15), (4.90), (4.101), (4.111), and (4.155). YIM and UMP indicate that the first vowel in the proto-form was short. All of these words denote in-law relations one generation level from ego, although the particular in-law referred to varies. Note that three further roots beginning with ***ngaj-** or ***ngAj-** ((4.4), (4.5), and (4.7)) have kinship term meanings. However, a deeper understanding of Australian kinship systems than I have is needed to determine if some of these roots are actually related.

Residue: PIT **nganyja.kutha** *woman's father-in-law.*

This is the only form in my data which suggests prenasalization in PIT. It is possible that PIT may have borrowed this word from a language which has a regular process of prenasalization, although further research is needed to determine if this is true.

(4.3) PPN ***ngAja$_1$**

NYA-W **ngaji** *sugar;* NYA-S **ngaja-(rn)** *getting full;* PIN **nganyja** *food or meat that is carried in the mouth of animals ...;* BAY **ngaja.ru** *(vegetable) food;* GUP **ŋatha** *vegetable food,* **ŋadha.ŋay'** *vegetable food;* DIY **nganhthi** *meat, edible animal.*

In NYA-W, the second vowel has assimilated to the preceding palatal consonant. Compare this with the NYA-W forms in (4.125), (4.145), and (4.166), in which **-a** does not assimilate to a preceding palatal; in each of these forms, the morphemes following the root prevent assimilation. NYA-S does not seem to undergo assimilation of the second vowel (see also (4.145)). This could be due to NYA-S lacking the assimilation rule found in NYA-W, or to the fact that the NYA-S forms here and in (4.145) are verbs, whose suffixes may prevent assimilation. Further examples of prenasalization in PIN are found in (4.16), (4.61), (4.134), and (4.137). Prenasalization in Nyungic languages such as PIN is discussed in O'Grady 1990e. DIY does not usually show assimilation of V_2 to a preceding palatal consonant. For example, compare the above form with those in (4.6), and (4.38). Prenasalization in DIY is also seen in the sets in (4.6), (4.11), (4.59), (4.78) and (4.96).

All of the meanings in this set involve food. The NYA-S verb may have been derived from a noun which was subsequently lost. The original meaning

of ***ngAja$_1$** is not clear; it may have been a very general noun meaning *food,* with narrowing taking place in all of the languages of this set.

(4.4) PPN ***ngAja$_2$**

BAY **ngatha.l** *parallel cousin;* YDN **nganyja.kuman** *brother;* DIY **ngatha.ta** *younger sibling.*

Prenasalization in YDN is also found in (4.21), (4.153), and (4.155). The relationship between *sibling* and *cousin* is borne out by the multiple meanings of WLB **ngalapi** *son, daughter ..., brother's child* (which are from a different ego's point of view), and of GID **ngatang** *... brother or male cousin of any grandparent.*

(4.5) PPN ***ngAja$_3$**

BAY **ngaja.rri** *daughter;* WMK **ngeej.am** *first-born;* PIT **ngatha** *little boy,* **ngatha.piyaka** *offspring (man speaking),* **ngatha.ri** *offspring (woman speaking);* WEM **wathi.p** *son;* DIY **ngatha.muda** *offspring of opposite moiety,* **ngatha.ni** *offspring of same moiety.*

There is reason to believe that the Proto-Middle-Pamic (PMP) descendent of ***ngAja** had ***i** as its second vowel. Hale states that in WMK, ***aa-** in V_1 position was fronted to **ee-** when V_2 was ***-i** (Hale 1976:53). Further, PMP ***-j-** was retained in WMK before ***-i,** but became **-th-** before ***-u** or ***-a** (Hale 1976:51). Since "*V_2 was lost invariably" in WMK, the **-a** seen here is not ancestral (Hale 1976:54). It is not clear why WEM has **-i** as its second vowel; in (4.6) we see PPN ***-a** > WEM **-a** in the same environment. It is possible that *V_2 in the PPN above root should actually be reconstructed as ***-i,** with assimilation of V_2 to V_1 taking place in BAY, PIT, and DIY. All of the words in this set denote offspring; either widening or narrowing has taken place.

(4.6) PPN ***ngAja$_4$***

WEM **ngatha** *my word! really!;* DIY **nganyja.lu** *good job!.*

Prenasalization in DIY is seen in many sets in this thesis. See (4.3) for a list of such sets. Both of these words are exclamations, and their phonological regularities make it seem likely that they are related.

(4.7) PPN ***ngaji***

GUP **ŋathi** *mother's father,* **ŋathi-walkur** *mother's mother's mother's brother's son, mother-in-law's uncle;* UMP **ngaji-ju** *son's son, daughter's son, daughter's daughter,* **ngaji-mu** *mother's father;* WMK **ngaj(-wuut)** *mother's father,* **ngaj(-wayaw)** *father's mother;* YIM **ngathi** *mother's father,* **ngathi.nil** *other side grandchild;* GYA **ngaji** *mother's father;* PIT **ngatha.nha** *father's mother;* BGU **ngathi ~ ngathi.njila** *mother's father, daughter's son.*

The abundance of forms with **-i** as V_2 indicate that the second vowel of the proto-form was ***-i**, with PIT showing assimilation to the first vowel. Hale (1976:57) reconstructs PMP ***ngaji*** as the ancestor of the UMP and WMK forms.

Residue: WMK **ngejanjin** *father's mother, mother's father,* **ngejiyang** *grandchild;*

Although the meanings of these forms agree with those above, the **e-** in V_1 position poses a phonological problem. If these forms are descendents of a proto-form with ***a-** as the first vowel, then they have undergone umlaut, contrary to Hale's analysis (see (4.9) and the discussion of Hale's analysis in (4.11)).

(4.8) PPN ***ngaaji-***

BAY **ngathi-** *cry;* GUP **ŋäthi-** *cry;* UMP **ngaaji-** *laugh.*

Although O'Grady (1966:112) reconstructed this root as ***ngathi-**, the long first vowel in UMP indicates that the first vowel of the proto-form was also long. The two western languages represented here have the meaning *cry,* while that from the east has *laugh.* The original meaning could have been either *laugh* or *cry,* with antonymic shift occurring. The proto-form could also have had a more general meaning such as *make noise,* in which case narrowing took place in all of the above languages. A shift involving *laugh* and *cry* is also seen in (4.19).

Residue: BGU **yathi-** *laugh.*

This form is very likely related to those above, but the matching of PPN ***ng-*** and BGU **y-** is not seen elsewhere in my data. A possible explanation for BGU initial **y-** is that PPN ***ng-*** was deleted, and **y-** was added later. O'Grady suggests that PIN is in the process of becoming an initial-dropping language, and is thus beginning to lose initial consonants. However, since PIN still has a restriction against vowel-initial words, **y-** or **l-** is added to the stem (O'Grady 1981:155-156). It is plausible that BGU is undergoing a similar process, although detailed work on BGU needs to be done to determine if this is true.

(4.9) PPN ***ngAji***

GUP **ŋathi.li** *just,* **ŋäthi.li** *first, before, previously;* WMK **ngaaj** *still a long way to go; still a fair while in doing something.*

Both GUP **-i** and WMK **-j-** indicate that the second vowel of the proto-form was ***-i** (see (4.5) for a discussion of WMK **-j-**). WMK **-aa-**, although long, suggests that PMP, at least, had a short first vowel. Hale states that PMP short ***a-** was fronted to WMK **e-** in two environments: immediately preceding a sequence of a single non-laminal consonant plus ***-i** and immediately preceding a sequence of any type of consonant cluster plus ***-i**. Long ***aa-**, on the other hand, was fronted whenever $*V_2$ was ***-i** (Hale 1976:53). The fact that WMK does *not* have a fronted first vowel indicates that this vowel was at one time short. It is not clear why WMK now has a long vowel; the cognate sets in (4.22), (4.93), and (4.142) all provide examples in which WMK contains a long vowel while languages such as GID and YIM, which are generally accepted as retaining ancestral vowel length (see chapter 2), have short vowels.

As for semantics, the GUP form refers to a past action, while the WMK form refers to an ongoing action. This may be an example of antonymic shift in meaning.

Residue: YDN **ngaja** *tomorrow.*

This form fits in well with the above set in terms of phonology, if the final **-a** is taken to be the result of assimilation to the first vowel. However, its meaning causes me to hesitate in including it as a cognate.

(4.10) PPN ***ngajV$_1$**

GAW **NGAITYA** *weak, faint,* **NGAITYA.NNA** *weak, faint, feeble, tired;* UMP **ngaju** *slowly;* GYA **wayi.mpul** *slowly.*

The root in (4.137) is only one other root in my data with intervocalic ***-j-** and a GYA reflex, and it shows ***-j-** > GYA **-j-**. However, PPN ***-k-** > GYA **-w-** in (4.20), while (4.47) shows intervocalic weakening of ***-m-** to GYA

-w-. Since someone who is *weak* or *tired* is likely to move *slowly,* the putative semantic association seen here is plausible.

(4.11) PPN ***ngajV$_2$***

WLB **ngaya.rrka** *pregnant; greedy, voracious;* PIN **nganyu-nganyu** *desire for any type of food or meat;* GUP **ŋäy** *desirous of, want, like,* **ŋaya.rrka.ma** *ask;* UMP **wathi** *rat, small species, which enters houses;* WMK **weenth** *fond of;* BAA **nganyi-** ~ **ngaanja-** *to ask for something;* DIY **ngaji-** *to ask repetitively for, to pray,* **nganyja-** *want, like, love.*

The sets in (4.20) and (4.60) provide further examples of intervocalic stops weakening to glides in WLB, while GUP shows lenition in (4.18), (4.73), and (4.76). In PIN, the stop of the proto-form has weakened to a nasal. This is also seen in (4.142) and (4.153). Although my data contain no further examples of lenition in BAA, prenasalization is found in (4.86), (4.132), and (4.138). My data also contain numerous examples of prenasalization in DIY; see (4.3) for a complete list.

WMK **weenth** seems to be an exception to Hale's (1976) analysis discussed in (4.5) and (4.9). Recall that PMP medial ***-j-*** was retained in WMK when followed by ***-i***; it became WMK **-th-** when *V_2 was ***-a*** or ***-u***. However, if **weenth** is a descendent of PPN ***ngajV***, then the presence of **-ee-** in WMK suggests that the PMP second vowel was ***-i***, which triggered fronting. So WMK **-th-** suggests that the PMP *V_2 was ***-a*** or ***-u***, while **-ee-** indicates that *V_2 was ***-i***. There are at least four possible explanations for this apparent contradiction, the first two of which assume that WMK **weenth** belongs in this set, and the last two of which assume that it does not. The first is that perhaps Hale's analysis, which accounts for his data extremely well, needs to be reexamined in light of the large amount of data in the recently published WMK

dictionary (Kilham et al. 1986). The second is that **weenth** did descend from PPN ***ngajV**, but is for some reason an exception to Hale's rules. Thirdly, this form may have been borrowed from a language such as Kuuk Thaayore, which appears to have regularly changed PMP ***-j-** to **-th-** (Hale 1976:54-60). In this case, **weenth** should not be included in this set as a WMK reflex, but may represent a genuine reflex of ***ngajV** in a neighbouring language. Finally, the PMP ancestor of **weenth** may have contained ***-i(i)-** as $*V_2$; the sets in (4.121), (4.122), and (4.132) provide examples of WMK **-ee-** apparently descending from PPN ***-i(i)**. Hale does not discuss a change from PMP ***-i(i)** to WMK **-ee-**, saying instead that WMK retained both long and short ***-i-** (Hale 1976:53). A list of the sets in my data illustrating WMK prenasalization is found in (4.2).

Although this set does not seem very strong, there is a plausible connection between *like, want, ask,* and *greedy.* The multiple meanings of GUP **ŋäy** and DIY **ngaji-** above indicate a relationship between *want* and *like,* while the set in (4.142) shows an association between *greedy, ask, want,* and *rat.*

(4.12) PPN ***ngaajV**$_1$

NYA-W **ngaji-** *to excrete, to lay (an egg);* WLB **ngaja-** *to eliminate it - bodily waste; to give birth to it; to lay it - egg;* UMP **waaji-** *be born, turn;* WMK **wanj** *woman;* YIM **ngaanhthu** *woman, adult woman;* BGU **ngantha** *to give birth, to have (a baby), to lay (an egg).*

WMK prenasalization is seen in many sets in this thesis; see (4.2) for a complete list of such sets. A further example of prenasalization in YIM can be found in (4.123). Although prenasalization does not seem to be a common process in BGU, I include **ngantha** in this set because its meaning is so close to that of WLB, and its form suggests that it is cognate with WMK and YIM. Further work may reveal that the reconstruction of this root should actually be

***nganja**, with WLB and UMP deleting the nasal. I have not seen any other example relating *woman* and *give birth;* however, it does seem to be a plausible semantic association.

Residue: NYA-W **ngalyun** *woman;* GYA **nganjan** *father, father's brother.*

Including this NYA-W form in the above set would suggest a matching between ***-j-** and NYA-W **-ly-**, which is not attested elsewhere in my data. The GYA form agrees well phonologically with the above cognate set. The meaning of this form may be an example of antonymic change, although it seems that more than one shift in meaning is involved: *woman* > *man* through antonymy, and *man* > *father* through narrowing.

(4.13) PPN ***ngaajv$_2$**

WLB **nganju.rrngu** *mud;* UMP **ngaaji** *earth, ground, country, place, world, area.*

For a further example of prenasalization in WLB, see (4.97). A semantic association between *mud* and *earth* is attested in Proto-Ngayarda ***nharnu** *ground* (O'Grady 1966:100) and WJK **NANO** *mud*, and in WLB **walya** *earth, dirt* and DYI **waja** *mud* (Dixon 1980:485).

(4.14) PPN ***ngaka-**

NYA-W **ngaka-rna-** *to send, despatch; to hunt away, chase away;* NYA-S **ngaka-(rn)** *send;* PIN **ngawu.rl.warra-rnu** *to speedily depart;* WJK **NGAGĂ.DJA**, occurring in **NGAGĂ.DJA MURRIJO** *to proceed as the messenger, or herald of news, whether good or bad* (**MURRIJO** *to move; to go; to walk*); BAY **ngangka-Y-** *brush away (flies);* GUP **ŋaŋ'-ŋaŋ-dhu-n** *chase away;* UMP **ngangka-** *give, try;* WMK **wak-an** *chase, follow hard after ....*

Further examples of PPN ***-k-** weakening to **-w-** in PIN can be found in (4.18) and (4.23). UMP preserves original long vowels, so the short first vowel in the UMP form indicates that the first vowel of the proto-form was also short. GUP appears to have undergone prenasalization and to have replaced PPN ***-k-** with a glottal stop. A prenasalized GUP reflex is also found in (4.96), and the GUP form in (4.32) shows the apparent replacement of a ***-p-** with a glottal stop. Prenasalization has also occurred in BAY (see also (4.15) and (4.101)) and in UMP (see also (4.90) and (4.138)).

The meanings of all of these forms can be related to that of NYA-W. A *messenger* (WJK) is someone who is *sent,* and is likely to *speedily depart* (PIN). *Brushing away* flies (BAY) achieves the same result as *chasing away* other undesirable beings. Although *give* and *try* (UMP) may not be obviously related to *send,* the same association is seen in PPN ***jAya** > Gurindji **jaya-** *give* and Ngarluma **thaya-L-** *send* (O'Grady, p.c.). Further, in Dyalnguy, the avoidance vocabulary of DYI, the verb **jayman** corresponds to both of the everyday words **pilan** *take over to, send* and **wukan** *give* (Dixon 1982:118).

Residue: WEM **wawa-** *to follow.*

The regular WEM reflex of PPN intervocalic ***-k-** seems to be **-k-**, as can be seen in (4.15), (4.24), (4.122), and (4.142). None of my cognate sets show a PPN intervocalic stop weakening to a glide in WEM. However, further research may turn up more examples of a matching between PPN ***-k-** and WEM **-w-**. Note that WEM **wawa-** is also included as residue in (4.56).

(4.15) PPN ***ngAka(l)**

NYA-W **ngaku.mpa ~ ngaku.mpu** *ignorant, unaware;* NYA-S **ngaku.mpa** *deaf, ignorant;* BAY **ngangka.rnu** *ignorant, not knowledgable;* WMK **ngengk.an** *silly, stupid, does not know very much, not very bright;* GYA

ngangkal *ignorant of something; surprised or unexpected,* **ngangka-y** *surprise;* YDN **ngangka** *deaf,* **ngangka-n** *forget;* WEM **waka.tang** *determined, obstinate.*

There are two possible reconstructions for the *C_2 position. Firstly, the root could be reconstructed as ***ngAkal**, under the assumption that prenasalization has occurred in BAY, WMK, GYA, and YDN. Secondly, we could reconstruct the root as ***ngAngkal**, with NYA and WEM having lost the nasal. However, since further examples of prenasalization can be found in my data for each of the four languages mentioned above, and none can be found in which NYA loses a nasal, I have reconstructed medial *-k-. The presence of -e- in WMK suggests that the Proto-Middle-Pamic *V_2 was ***-i**, but since languages from both the west and the east have **-a** as V_2, PPN ***-a** is reconstructed (see (4.11) for a discussion of WMK).

The association between *deaf* and *ignorant* is widespread in Australia, as previously noted, because the aboriginal people believe the ear to be the seat of intelligence (Dixon 1980:112). The NYA-S and YDN forms above, which are from opposite sides of the continent, provide synchronic evidence of this relationship, and further evidence is found in YIM **milka** *ear,* **milka-mul** *deaf, stupid, inattentive* (literally *ear-without*), and **milka-thirr** *obedient* (literally *ear-having*). Additional corroboration is provided by the set in (4.112). The connection between *ear* and *obedient* in YIM helps to clarify the relationship between the WEM word for *obstinate* and the other forms above, since an obstinate person or child might be seen as being *disobedient* or *without ears.*

Note that O'Grady (p.c.) speculates that this root may be ultimately related to that in (4.23), ***ngakVm**, whose reflexes have meanings involving the concept *dog.* If the PPN locative suffix ***-pa** is added to ***ngakVm**, the result could be ***ngakumpa**, which is the same shape as the NYA reflexes above. It is

conceivable that a person who disobeys or is ignorant of social rules could be seen as being "like a dog." A search for other cognates sets showing a relationship between *deaf, ignorant,* and *dog* is needed to verify or refute this theory.

Residue: GAW **NGAINGKO** *an adept; judge, connoisseur; a person knowing anything well;* GID **wangal** *disobedient.*

The meaning of the GAW form and the fact that my data include no other examples of GAW prenasalization cause me to hesitate to include it in the above set. However, the difference in meaning may be due to antonymic shift. The GID form agrees semantically with those above, but is missing **-k-**. O'Grady (p.c.) has come across a number of GID forms which suggest that metathesis of C_1 and C_2 sometimes occurs in GID. For example, compare GID **kung** *water* with PPN ***nguku** (seen in (4.140)), some of whose putative reflexes have meanings involving *water.* It is possible that ***ngAkVl** > ***ngAwVl** through intervocalic weakening, and then became **wangal** through metathesis. If this form does belong in the above set, then it indicates that the first vowel was short.

(4.16) PDNY ***ngakarlV**

NYA-W **ngangkarli** *one of the places where rain is made, according to mythology; a thunder cloud;* NYA-S **ngangkarli** *big clouds;* PIN **ngangkarli** *rain cloud type;* GAW **NGAKALLA.MURRO** *one of the maghellanic clouds.*

There is a possibility that borrowing has taken place between NYA and PIN because they are relatively close geographically. The possibility is strengthened by the complete phonological agreement between the NYA and PIN forms. The sets in (4.19), (4.61), and (4.111) also show NYA-W prenasalization, while further examples of PIN prenasalization are found in (4.3), (4.61), (4.134), and

(4.137). It is not clear whether GAW changed PDNY ***-rl-** to **-l-**, or whether this form did contain a retroflex which was misheard. As GAW is spoken quite far away from NYA and PIN, the chances that GAW borrowed this form are slim.

(4.17) PPN ***ngaki(n)**

GAW **NGAIKI.NDA** *the little toe;* YIM **ngakin** *little finger, toe.*

These forms agree extremely well in terms of both phonology and semantics. There is no chance of borrowing having taken place, as GAW was spoken on the south coast and YIM is located in the north-east. Note that this root may be a doublet of that in (4.50), and if so, it shows an antonymic change in meaning.

(4.18) PPN ***ngAkV-$_1$**

PIN **ngawu-rnu** *to gather; used of gathering food or berries, etc.;* WJK **NGAGY.L-YA** *to steal;* GUP **ŋawa.t-thu-n** *take, get;* GYA **ngaki-l** *hide; steal.*

The cognate sets in (4.14) and (4.23) also show PPN ***-k-** weakening to PIN **-w-** between vowels, and those in (4.11), (4.73), and (4.76) show stops weakening to glides in GUP. The **-Y** in WJK and **-i** in GYA suggest that PPN *V_2 may have been ***-i.** If so, GUP shows assimilation of its second vowel to its first vowel, and the **-u** in PIN may be the result of assimilation to the preceding **-w-** or to the following **-u.** As for semantics, both *gathering* and *stealing* are methods of *getting,* so narrowing may be involved. The set in (4.142) also relates *gather* and *steal.*

Residue: DYI **wawu-l** *go (from here) to fetch someone (from there to here).*

Although *fetch* can be connected to *get,* there are no other cognate sets in my data suggesting a matching between PPN ***-k-** and DYI **-w-**.

(4.19) PPN ***ngAkV-$_2$**

NYA-W **ngangku.li-rni-** *to cry (over something), to mourn for,* **ngangku.lu** *crying;* NYA-S **ngangku.rl-ji-(n)** *cry;* WEM **weka-** *to laugh;* BAA **ngaka** *tears.*

Further examples of NYA-W prenasalization are found in (4.16), (4.61), and (4.111). WEM appears to show an antonymic semantic shift, while BAA has a nominal meaning which is clearly relatable to *cry.* A shift between *laugh* and *cry* is also found in (4.8).

(4.20) PPN ***ngAkVl**

WLB **ngaku.ly.ka** *armpit,* **ngawa.rra** *running water, flood;* WMK **ngak** *water;* YIM **ngaakuul** *arm, especially upper arm;* GYA **waku.mpa** *spreading branches of tree; biceps or upper arm,* **wangku.r** *up, upriver,* **wawu.paja** *river;* DYI **ngaka** *leg;* GID **ngawka.y** *upper reaches of creek;* DIY **ngaka-** *flow (of liquid), blow (of wind).*

Lenition from a PPN stop to a WLB glide occurs in the cognate sets in (4.11) and (4.60). Prenasalization in GYA is also seen in the sets in (4.23), (4.69), (4.76), (4.109), and (4.123), and intervocalic weakening is found in (4.10) and (4.47). One problem with this set is that YIM and GID, which both retain long vowels in V_1 position, disagree regarding ancestral vowel length. Perhaps the PPN vowel was long, and GID has unexpectedly shortened it due to the **-w-** which occurs after it. It is not clear whether ***-a** or ***-u** should be reconstructed as *V_2, since **-a** could be the result of assimilation to the first vowel, while assimilation to the backness of the preceding velar could produce **-u**.

This set is an example of the relationship between body parts and natural features. It seems likely that the original meaning was *arm,* which was extended to *branch* and *river.* Corroboration for these associations is provided by the multiple meanings of DYI **karrkal** *upper arm (where it joins the body), creek (where it joins a major river)* (Dixon 1980:110), and by Maung **i-mawurr** *a man's arm,* **u-mawurr** *arm of a river,* and **ma-mawurr** *arm of a tree, branch* (Capell and Hinch 1970:47). The WLB doublet provides a link between the nouns meaning *arm* and the DIY verb *flow.* DYI shows antonymic shift from *arm* to *leg.*

(4.21) PPN ***ngAkV(l)**

NYA-W **ngaka.lya.lya** *white cockatoo;* NYA-S **ngaka.lya.lya** *sulphur crested cockatoo;* GAW **NGAKALL.A** *a species of paroquet (blue mountain);* YDN **wangkul.ay** *white cockatoo.*

The PDNY form was probably ***ngakalya.** YDN prenasalization is also found in (4.4), (4.153), and (4.155). Warburton Ranges has a form **kakalyalya** *white cockatoo* which may be cognate with the above forms. Either PPN ***ng-** has strengthened to **k-** in Warburton Ranges, or the above forms are actually reflexes of a root with initial *k- which have undergone weakening. The finding of additional cognates from languages not included in this study may clarify the history of this set.

(4.22) PPN ***ngakVm$_1$**

WMK **waak** *white gum or apple gum (Eucalytus [sic] clavigera);* GYA **ngaku.n** *flame tree;* GID **ngakam-ngakam** *small species of oak with yellow flowers (family Casuarina).*

GID retains final nasals; thus ***-m** is reconstructed. The short first vowel of the GID form is also ancestral. Although this set looks very plausible from a phonological point of view, we need further information on the types of trees involved before we can have a high degree of confidence in it. From the glosses, it does not seem that these trees have much in common, but further research may reveal an explanation which will validate this semantic relationship.

(4.23) PPN ***ngakVm**$_2$

PIN **ngawu.rr-pa** *growling; used of growling camels, snoring by pigs, dogs, ...to make a growling noise;* UMP **ngakam.u** *dingo;* WMK **wak-an** *growl at someone;* GYA **ngangku.rr** *bark, as of dog;* GID **ngakam** *dog.*

The second vowel of the proto-form was likely ***-u**, since PIN and GYA, which are very far apart geographically, both show **-u**. In that case, GID and UMP show assimilation of the second vowel to the first vowel. Medial ***-k-** has weakened to **-w-** in PIN; this is also seen in the PIN forms in (4.14) and (4.18). My data contain numerous examples of GYA prenasalization; see (4.20) for a list of such examples. The semantic relationship between *dog* and *growl* is also seen in (4.162). Note that this root is conceivably related to that in (4.15).

(4.24) PEPN ***ngakVn***

DYI **waka.wa** *blue scrub pigeon;* GID **wakun** *brush turkey;* WEM **ngakə.k** *pied goose.*

This is not a particularly strong cognate set because of the meanings of the terms involved. The birds to which these words refer may possibly all provide food; research into the traditional diet of the aboriginal people is needed to confirm this. If it is true, then there is a plausible semantic connection between these forms. Note that this set may be ultimately related to that in (4.114).

(4.25) PPN ***ngala(n)**

GUP **ŋala.p-thu-n** *shine, burn brightly, flame;* YIM **ngalan** *sun, day;* GYA **ngala-ngala** *red,* **ngalu.ri** *flames.*

This set poses no phonological nor semantic problems. Both *sun* and *red* can be related to *flame.* The relationship between *fire* and *red* is also attested in (4.28). The PPN form was likely a nominal, from which the GUP verb and GYA adjective were derived.

(4.26) PPN ***nga.li**

NYA-W **nga.li** *we (dual inclusive),* **nga.la.yi** *we (dual exclusive);* NYA-S **nga.li** *you and me (second person dual) [sic],*[1] **nga.la.ya** *me and him (first person dual inclusive) [sic];*[2] PIN **nga.li** *first person dual subject;* GAW **NGA.DLI** *we two;* NYU **nga.rl-** *first person dual and plural stem;* WJK **NGA.LLI** *we two; brother and sister; or two friends,* **NGA.LA** *we two,* **NGA.LA.TA** *we; any number more than two;* BAY **nga.li** *we two (inclusive or exclusive);* GUP **ŋa.li** *we (dual inclusive);* UMP **nga.li** *we dual inclusive;* WMK **nga.l** *you and I, we (two) (first person dual inclusive subject);* YIM **nga.li** *first person dual;* GYA **nga.li** *we two inclusive,* **nga.li.n** *we two exclusive;* YDN **nga.li** *first person dual pronoun;* BGU **nga.li** *we two;* GID **nga.li** *we (first person dual);* WEM **nga.li-uk** *belonging to both of us;* BAA **nga.li** *we two.*

This pronoun is reconstructed as ***nga** plus Agentive suffix ***-li** by Capell (1956:16), while Dixon (1980:336) reconstructs it as ***ngali** and states that there is no evidence that it can be analysed as a stem plus a suffix. However,

[1]It seems that this gloss should read *first person dual inclusive.*
[2]The meaning *me and him* is usually labelled *first person dual exclusive.*

O'Grady (1981:166) believes that this pronoun is actually a compound consisting of pronominal ***nga-*** plus a conjoining element ***li***. Languages from all over the continent contain the complete compound because the two elements had already become fused together "at the time when Proto-Pama-Nyungan had hardly begun to differentiate" (O'Grady 1981:169). Note that NYU shows unexpected retroflexion of *-l-. The sequence **-DL-** in GAW may actually represent a retroflex. Hale (1976:56) reconstructs the PMP reflex as ***ngali***.

(4.27) PPN ***ngalkV***

WLB **ngalki-L-** *prevent, stop,* **walku** *empty;* UMP **walki-L-** *prevent, stop.*

The relationship between these words was noted by O'Grady (1990e:472). The set in (4.43) shows an association between *stop* and *negative,* and since something which is *empty* contains *nothing,* a further association between *stop* and *empty* is certainly plausible.

(4.28) PEPN ***ngAlkV$_1$***

GYA **ngalku** *bushfire;* BAA **ngalki.na ~ ngalki.rrka** *red.*

The final vowel of the proto-form is reconstructed as ***-V***, as there is no conclusive evidence for reconstructing either ***-u*** or ***-i***. The set in (4.25) shows an association between *burn, flame,* and *red,* so the connection here between *bushfire* and *red* is seen as plausible.

(4.29) PPN ***ngAlkV$_2$***

NYA-W **ngalku-ngalku** *cheek;* WJK **NGALUK** *the cheek;* BGU **ngalki** *cheek;* DIY **ngalki** *temple, side of jaw.*

WJK has metathesised the second member of the heterorganic consonant cluster and V_2. Further examples of metathesis involving NYU, another Nyungar dialect, are found in (4.70) and (4.75). The meaning of the DIY form is essentially the same as that of the other forms.

Residue: BAA **ngarli** *cheek.*

Although this form expresses the same concept as those above, we would have to explain the retroflexion of the liquid and the loss of *-k- in order to include it as a cognate.

(4.30) PP ***ngAlkV(n)***

UMP **walki** *stingray barb;* WMK **walk** *spear type; long barb, stingray barb or nail from any big stingray;* GYA **walkan** *diamond fish, devil ray;* DYI **ngalka-l** *poke with stick.*

The multiple meanings of the WMK form provide a link between the GYA and DYI meanings. GYA *ray* is clearly relatable to WMK and UMP *stingray barb.* Since *spearing* is an intensive method of *poking with a stick,* the DYI meaning can also be related to that of WMK.

(4.31) PPN ***ngAlpa***

WJK **NGALBĂ.RDA** *flat;* WMK **ngalp** *flat wide woomera ...;* DIY **ngalpa** *lap.*

This set poses no phonological problems. WMK has lost its second vowel, as usual (see (4.5)). The semantic relationship between the WJK and WMK forms is one of either widening or narrowing. DIY's meaning, *lap,* can easily be related to *flat,* since *flatness* is an important characteristic of a *lap.*

(4.32) PNYY ***ngAlpV-***

NYA-W **ngalpi-nyi-** *to go down or underneath; sink; to set (of sun, moon),* **ngalpa-ji-ni-** *put underneath; put in; put through;* NYA-S **ngalpa-(ny)** *enter, go down, go in,* **ngalpa-ji-(n)** *put into something;* GAW **NGATPA-NDI** *to go down; walk in; sink; to put into;* GUP **ŋal'-yu-n** *climb, ascend, go up, be against, stand against,* **ŋal'-mara-ma** *put it up.*

O'Grady (p.c.) suggests that a change of ***-l-** to GAW **-T-** occurred before ***-p-**. Evidence for this shift is found in the place name **Nuriootpa.** Since the cluster **-tp-** did not occur in PPN, the **-TP-** seen above must be an innovation. GUP appears to have replaced PPN *-p- with a glottal stop. A similar matching between PPN *-k- and GUP **-ʔ-** (<'>) is seen in (4.14). It is impossible to decide on the second vowel of the proto-form based on the data in this set. The cognate set in (4.104) shows the same antonymic association between *go down* and *go up* seen here.

(4.33) PPN ***ngalu ~ *ngalpu***

NYA-W **ngalpu.ra** *fog;* WJK **NGALLA.NANG** *evening, twilight,* **NGALLA.RAR,** occurring in **NGALLA.RAR DJINNONG** *to see obscurely, as through a veil or other like obstruction* (**DJINNĂNG** *to see*); GID **ngaluu** *darkness, night;* DIY **ngalpu.du** *darkness.*

It is possible that this set should be divided into two sets, one with NYA-W and DIY and the other with WJK and GID. In either case, WJK has assimilated the second vowel to either the first or third vowel. The meanings of all of these words involve the notion of *obscured vision,* with the WJK forms providing a link between *fog* and *darkness.*

(4.34) PPN ***ngaalu(n)**

NYA-W **ngala.la** *running water;* PIN **ngala.rra** *wind;* GUP **ŋäl** *spittal, white of egg, fluid which lubricates joint;* UMP **ngaalun** *waves, swell.*

O'Grady and Tryon (1990a:112) have reconstructed this root as ***ngAlu**, and they believe it is possibly a very old Austronesian loan. *Wind* can be thought of as *running air,* and corroboration for a relationship between *running water* and *wind* is found in DIY **ngaka-** *flow (of liquid), blow (of wind),* and in the set in (4.132). The GUP form shares the notion of *fluid* with the other forms. The association between *water* and *egg* is also seen in the reflexes of many other roots, including ***ngApu** (see (4.61) and (O'Grady 1990e:457)).

Residue: PIT **ngarlpa** *water bag.*

The meaning of this form includes the notion of *water.* The **-p-** is possibly an instance of stem incretion.

(4.35) PPN ***ngalya$_1$**

PIN **ngalya** *forehead, also directive 'toward the speaker;'* PIT **ngalya** *cheek;* GID **ngayi.rr** *cliff;* DIY **ngalha** *cheek.*

A correspondence between PPN ***-ly-** and GID **-y-** is also seen in (4.40), which is the only other cognate set in this data involving a PPN root with medial ***-ly-** and a GID reflex. GID appears to have assimilated the second vowel to the preceding palatal. PIT and DIY both have the meaning *cheek,* and *forehead* could be related to *cheek* through metonymy. GUP **buku** *forehead, ... cliff, face* provides evidence for the connection between the meanings of the PIN and GID forms.

Residue: NYA-W **ngalyi** *neck.*

If we assume that the **-i** of this form is the result of assimilation to the preceding palatal (see (4.3)), then this form is a good candidate for membership in the above set on phonological grounds. I have not included this form because I have found no further evidence of an association between *cheek* and *neck.* However, this could be another case of metonymy.

(4.36) PNY ***ngalya**$_2$

PIN **ngaya.ny-pa** *underarm hair;* NYU **ngaly** *axilla, underarm;* WJK **NGAL-YA** *the arm-pit.*

Although I have no further examples of PPN ***-ly-** > PIN **-y-**, the sets in (4.14), (4.18), and (4.23) show an original intervocalic stop weakening to a glide in PIN. The change from ***-ly-** to PIN **-y-** may also be the result of dissimilation from **-ny-**. The association of *underarm* to *underarm hair* is likely one of synecdoche.

Residue: UMP **waatha** *armpit.*

If this form is actually a member of the above set, then it points to the existence of a PPN root with a long first vowel. Although my data contain no cases of PPN ***-ly-** > UMP **-th-**, the change is a plausible one (see O'Grady (1990e:470) for examples of this change in other languages).

(4.37) PPN ***ngAlya**

PIN **ngalya.rl-pa** *insufficient, short of the mark;* BAA **ngaatha** *no, nothing.*

BAA shows ***-ly-** going to **-th-**. A similar correspondence in seen in PPN ***puulyal** > PIN **mulya** *nose; one who steals* and BAA **puja.la** *sharp, pointed* (O'Grady 1990e:470). Although these forms do not completely agree semantically, they both express negative concepts, differing in the degree of negativeness.

(4.38) PEPN **ngAlyja**

PIT **ngalyja** *saliva;* BAA **ngalja** *spit, phlegm;* DIY **ngalyja** *saliva.*

There is a slight chance that borrowing has taken place among the members of this set. It is not clear whether the proto-form had ***-l-** as the first member of the medial cluster, with PIT and DIY undergoing assimilation, or whether the liquid was ***-ly-**, and BAA has undergone dissimilation. Therefore, ***-l(y)-** is reconstructed.

(4.39) PPN ***ngAlyja-**

PIN **ngalyja.pu-ngu** *to choose from a number; to divide a number of objects with the intention of distributing evenly;* YDN **walnja-l** *select best of anything.*

Since PIN is spoken in the west and YDN in the east, borrowing is not likely to be a factor in the evaluation of this set. YDN does not have a palatal lateral, so a matching between ***-ly-** and YDN **-l-** is not unexpected. The **-n-** seen in YDN likely results from prenasalization. Either alveolar **-n-** was misheard for palatal **-ny-**, or the presence of the alveolar liquid prevented full assimilation of the nasal to the stop. Since *to select* something is *to choose* it, the semantic association seen here presents no problems.

(4.40) PPN ***ngalyV**

GID **ngayil** *clay;* DIY **ngalyu.rrru** *clay.*

For the change PPN ***-ly-** > GID **-y-**, see the set in (4.35). The short first vowel in GID indicates that PPN $*V_1$ was also short. It is impossible to determine what the original second vowel was, since GID **-i** could be the result of assimilation to the preceding palatal, while DIY **-u** could have been produced by assimilation to V_3.

(4.41) PPN ***ngAlyV**

WLB **ngalya.kari** *some, several of;* BGU **ngayi.la** *any;* DIY **ngalyi** *a little.*

This is the only set in my data with both PPN medial ***-ly-** and a BGU reflex. However, the set in (4.141) provides an example of an intervocalic stop weakening to a glide, and that in (4.142) shows lenition of a stop to a nasal. Thus, although we have no direct evidence of a ***-ly-:-y-** correspondence, lenition is not unattested in BGU. The set in (4.52) shows a connection between *some* and *a few* and thus provides evidence for a relationship between the WLB and DIY meanings. Evidence for the association between *some* and *any* is provided by the set in (4.148), in which a word for *somewhere* is related to one meaning *anywhere.* Further corroboration is found in NYA-W **nganipa** and UMP **ngaani,** both meaning *anything, something.*

(4.42) PNY ***ngamari**

NYU **ngamari** *native tobacco, cigarettes, tobacco;* BAY **ngamari** *tobacco.*

NYU and BAY are fairly far apart geographically, and many languages are located between them, so it is unlikely that this set represents a direct borrowing. However, given the complete phonological agreement between the above forms, it is still possible that lexical diffusion is involved here.

(4.43) PPN ***ngampa**

NYA-W **ngampa.pi-ni-** *to prevent, stop, block;* GUP **ŋamu.ma** *not recognize;* UMP **ngampa** *no, not;* YIM **ngampa** *unawares, secretly;* GYA **ngampa** *not seeing or noticing or recognising;* BAA **ngampa-** *to finish, stop.*

The above set and root are proposed by O'Grady (1990e:451-52). To this set we can add the following:

WEM **wempa** *no;* BAA **ngampa-ngampa-ka-** *to be happy and noisy, to rejoice, to celebrate.*

As noted by O'Grady (1990e:472), evidence for the semantic relationship between *stop* and *negative* is provided by the set in (4.27). Evidence for the association of *be happy and noisy* and *stop* is provided by the fact that BAA **ngampa-ngampa-ka-** is derived from **ngampa-**. A connection between *play* and *negative* is seen in the sets in (4.76) and (4.137); since *playing* usually involves *being happy and noisy,* a relationship between BAA **ngampa-ngampa-ka-** and forms with a negative meaning is certainly plausible.

(4.44) PPN ***ngAmpa(n)**

NYA-S **ngampa.rl-ngampa.rl** *sleeping face down and at full length;* YDN **ngampin** *belly down;* PIT **ngampa** *belly (external).*

It is not clear why YDN has **-i** in V_2 position. However, the presence of **-a** in both NYA-S and PIT suggests that $*V_2$ was ***-a**. This is an example of a body part being related to a verb of position. Evidence for the validity of this particular relationship is provided by NYA-S pair **ngarlu** *stomach,* **ngarlu.pu** *sleep face down.*

(4.45) PPN ***ngamun**

NYA **ngama** *breast, milk;* WLB **ngama** *female;* GAW **NGAMMI** *female breast;* WJK **NGAMA.R** *hole or pool - in rock* GUP **ŋama.'** *mother,* **ŋami.ni** *breast, milk;* UMP **ngami** *mother's brother's son;* YIM **ngamu** *mother;* BAA **ngama** *breast, milk,* **ngama.ka** *mother, female of an animal.*

The above set and PPN root are proposed by O'Grady (1990e:454). His set also includes the possible member PIN **mangu.ri** *head pad,* showing metathesis of C_1 and C_2. Capell (1956:87) reconstructs this root as ***ngamang.** To O'Grady's set we can add the following:

NYA-W **ngama-ngama** *small succulent plant with purple skins, flowers and milky sap;* WLB **ngama.rdi** *mother,* **ngami.rni** *mother's brother;* PIN **ngama** *the barb of a spear thrower only;* **ngama.ny-pa** *head;* NYU **ngama.r** *water hole; a small rock-hole catchment;* GUP **ŋamun.'kurr** *milk, breast;* GYA **ngamu** *mother, mother's sisters, great grand-daughters;* PIT **ngama.ri** *mother, mother's sister,* **ngama.nya** *breast, milk;* BGU **ngamun** *breast;* BAA **ngama.lu** *white of egg,* **ngama.ka-mara** *thumb* (literally *mother of hand*); DIY **ngama** *breast, milk,* **ngama-ngama** *milkweed.*

NYA-W **ngama-ngama** *succulent plant* and DIY **ngama-ngama** *milkweed* are reduplications based on NYA and DIY **ngama** *breast, milk,* and share the notion of *milk* with those forms meaning *mother, breast,* and *milk.* WLB **ngami.rni** and PIN **ngama.ny-pa** suggest a connection between *mother's brother* and *head,* evidence for which is provided by comparing Wirangu and Pangkala **kaka** and Nukuna **kakarti,** all meaning *head,* with Ngarluma and Kariera **kaka**, both meaning *mother's brother* (O'Grady 1966:96 and 104). The presence of PIN **ngama.ny-pa** gives us more confidence in PIN **mangu.ri** *head pad* being a member of this set. WLB **ngapurlu** *breast, milk; spear-barbs; bulge*

provides evidence for the validity of the relationship between PIN **ngama** *barb of spear thrower* and forms meaning *mother/breast.* The common semantic feature is probably *protrusion;* note also the Oykangand compounds **alk el** *spear point* (literally *spear eye*) and **afum el** *nipple* (literally *breast eye*) (Sommer 1978:179). BAA **ngama.lu** *white of egg* may be related to *milk* by the shared feature of *whiteness.*

Residue: NYA-W **ngama** *a very small flathead;* WJK **NGAMILER** *species of mullet fish.*

Although the basis for a relationship between *mother, breast* and *fish* is not at all obvious, note that in YIM, the avoidance vocabulary item **munyiil** is the equivalent of the everyday words **kuyuu** *breast* and **kuuju ~ kuyu** *fish (generic).* It is not clear whether the everyday terms for these two concepts are homonyms or whether they are actually related. If they are simply homonyms, then the fact that they share an avoidance vocabulary correspondent may be due to their phonological similarity rather than to any underlying semantic association. Further research may determine the answer to this riddle.

(4.46) PPN ***ngamV-***

GUP **ŋäma-** *hear, listen;* UMP **ngami-** *hear; be born.*

Hale reconstructs the PMP ancestor of this UMP form as ***ngami-*** (1976:57). The UMP form indicates that $*V_1$ was short, but it is not possible to determine the quality of $*V_2$.

Residue: DYI **ngampal** *hear, listen to.*

This form shows **-mp-** where we would expect just **-m-**. It is possible that the **-p-** is a semantically null infix.

(4.47) PPN ***ngamvl**

YIM **ngamal** *greedy;* GYA **ngawu.r** *always coming for food;* DYI **ngami.r** *hungry;* PIT **ngamaly.ja(la)** *hungry.*

The sets in (4.10) and (4.20) show an intervocalic stop weakening to a glide in GYA, although I have no other examples of lenition of an intervocalic nasal. However, since GYA does sometimes exhibit weakening of initial nasals, and since the meaning of the GYA forms can easily be related to *hungry,* I have included it as a putative cognate. The **-ly-** seen in the PIT form may be a reflex of ***-l** which has been assimilated to the following palatal. The WLB form **ngayarrka** ... *greedy, voracious* provides a link between *greedy* and *hungry,* an association which is also found in (4.122).

(4.48) PPN ***ngana**

NYA-W **ngana.rna** *we (plural exclusive);* NYA-S **ngana.rna** *we (first person plural inclusive) [sic];* PIN **ngana.rna** *first person plural subject;* WJK **NGANNI.L** *we; us;* GUP **ŋana.purru** *we plural exclusive;* UMP **ngana** *we non-singular exclusive;* WMK **ngan** *first person dual/plural exclusive;* YIM **ngana** *first person plural;* GYA **ngana** *we plural exclusive;* BGU **ngana** *we (plural).*

Dixon reconstructs this pronoun as ***ngana** (Dixon 1980:336), and Hale reconstructs the PMP reflex as ***ngana** (Hale 1976:57). It is not clear why WJK has changed ***-a** to **-i** in V_2 position.

(4.49) PPN ***ngaana**

NYA-W **ngani** *what?,* **nganu.rtu** *who?,* **ngani.pa** *anything, something;* NYA-S **ngani** *what?,* **nganu.rtu** *who?,* **ngani-ja** *how, what?,* **ngani-ku** *what*

for; PIN **ngana.nya** *who, which;* GAW **NGANNA** *who? what?;* WJK **NGANNI** *who,* **NGANNO.NG** *whose;* BAY **ngana** *who;* GUP **ngani** *an interrogative, an expression of enquiry ... = "is that right?";* UMP **ngaani** *something, anything, whatever,* **ngaani-ku** *why?;* **ngaani-ngaani** *how many?;* WMK **ngeen** *what?,* **ngeen.ak** *why? what for?;* BGU **ngani** *what?,* **ngani.mu ~ ngani.muku** *why?;* GID **ngeen** *who?.*

This root is reconstructed by O'Grady (1979:126). The PMP vowel was also long, as indicated by Hale's reconstruction of PMP ***ngaani*** (Hale 1976:57). Both WMK and GID have undergone umlaut. Note that this root may be ultimately related to that in (4.52).

Residue: YIM **nganaa** *what, which.*

This form is an interrogative and thus agrees semantically with the above set. However, since YIM retains ancestral vowel length, we would expect its reflex of ***ngaana*** to have a long first vowel.

(4.50) PPN ***ngAngkV***

NYA-W **ngangku** *thumb;* GAW **NGANGKI** *female generally,* **NGANGKI.TTA** *mother,* **NGANGKI.MUNTO** *stomach,* NYU **ngangk** *sun, mother, female, mother's sister,* **ngangka.rn** *thumb* (literally *mother one*); WJK **NGANGA** *sun,* **NGANGA.NBRU** *mother; the great toe; the thumb;* **NGANGA.R** *stars*; WMK **ngangk** *heart and stomach area; soul.*

There is no conclusive evidence in this data as to which vowel should be reconstructed for the PPN second vowel. O'Grady (1966:107) reconstructs PNY ***ngangka***, with evidence for the final ***-a*** coming from languages outside of this study. Note that WJK does not have a **-k-**, and that set in (4.75) shows

WJK **NGANGA** *beard* corresponding to NYU **ngarnak** *beard* (< **ngarnka**, by metathesis). We therefore cannot assume that the WJK form above represents **ngangka**. However, it is possible that this form is a mistranscription, and the otherwise strong phonological and semantic correspondences with the other forms indicate that WJK **NGANGA** should indeed be included in this set.

This set shows a wide variety of meanings. *Mother* is related to *thumb* because the thumb is seen as the mother of the other fingers (Dixon 1980:110). This association is also illustrated by BAA **ngama.ka-mara** *thumb* (literally *mother of hand*). In addition, there is a widespread belief that the sun is a female (Dixon 1980:104). According to Moore, "[t]he sun is a female, and the moon is male" (Moore 1884:65), and one of Douglas' informants states that "[t]he sun is called **ngangk** because it is like the mother of us all" (Douglas 1976:69). The GAW pair **NGANGKI** *female* and **NGANGKI.MUNTO** *stomach* provides evidence for the inclusion of the WMK form. The association between *mother* and *stomach* is likely one of a kin relation and body part which is considered to be characteristic of that relation (see chapter 3). Perhaps *stomach* is seen as characteristic of *mother* due to the swelling of the abdomen during pregnancy.

Residue: YDN **wakal** *wife;* DYI **ngaki(nyja)** *mother's father (and reciprocal).*

If these two words belong in the above cognate set, then the proto-form most likely had medial **-k-**, with prenasalization in PNY and WMK. Although *wife* seems relatable to *mother,* I have no further examples of such an association. Note that the set in (4.45) shows a connection between *mother* and certain mother's kin, but a specific association between *mother* and *mother's father* is not seen elsewhere.

(4.51) PP ***ngAnja**

WMK **wanth** *really good (smell), nice looking (used to describe things - flowers, butterflies, etc.);* GYA **nganja.y** *no good, wilted; bad smell.*

WMK **-th-** indicates that the PMP second vowel was either ***-a** or ***-u** (see (4.5)). Given GYA **-a**, I have reconstructed PP $*V_2$ as ***-a**. These forms provide a good example of antonymic shift in meaning.

(4.52) PPN ***ngantu**

GAW **NGANDO** *who, the agent;* WJK **NGANDO** *who, as the agent;* UMP **wantu** *where;* WMK **want.tak** *how? what?,* **want.tin** *where?,* **want-want.tak** *what(ever);* PIT **ngarnta.rta** *a few;* GID **ngantu.rr** *some, others.*

Dixon believes that these forms are ultimately related to those in (4.49) and are the result of the fusion of Ergative **-tu** onto the root ***ngaan-** (Dixon 1980:373). In fact, it is possible that the GAW and WJK forms do not represent frozen forms, especially as their glosses specify *agent;* that is, they may actually be **NGAN-DO**. However, GID poses a problem for Dixon's analysis. Recall that GID is one of the languages which is considered to retain ancestral vowel length, and note that the set in (4.49) includes GID **ngeen** *who.* If GID **nganturr** and **ngeen** are both reflexes of ***ngaan-**, we would expect both to have long vowels. A possible explanation is that the vowel of the PPN root was shortened when a suffix was added. For the purposes of this thesis, I reconstruct two roots ***ngantu** and ***ngaana** ~ ***ngaani**, but further research may conclusively show that they are in fact related. Hale (1976:59) reconstructs the PMP descendent of ***ngantu** as ***wantu**, suggesting that ***ng-** had already weakened to ***w-** by the PMP stage.

The relationship between *some* and *a few* is strengthened by the associations seen in (4.41). Also, there is often no distinction between interrogative and indefinite pronouns (Holmer nd:22). Thus the proposed relationship between the interrogative and indefinite concepts above is plausible.

(4.53) PPN ***ngAnV**

WLB **ngarna** *groin; entrance hole, opening; base, trunk of plant, tree;* WMK **waan.am-an** *emerge, come out, go out;* PIT **nganu.pa** *insert,* **nganu.pa-li** *enter.*

Hale reports that there is dialect variation in WLB with respect to retroflexion; that is, one dialect may have a retroflex (**rt**, **rn**, **rl**) where another dialect has an alveolar (**t**, **n**, l) (O'Grady, p.c.). Given this, and the fact that the PIT form contains an alveolar, I have reconstructed PPN medial ***-n-***. However, further work on the correspondences between alveolars and retroflexes may indicate that this root should be reconstructed with a retroflex. Corroboration for a relationship between *hole* and *enter* is found in (4.99). WMK appears to have undergone antonymic semantic shift.

(4.54) PEPN ***ngan(y)ja(r)**

WMK **nganhth** *tongue;* YIM **nganhthaa.r** *tongue;* GYA **nganja** *voice of one's spirit left behind;* DYI **wanja-y** *call name [of];* DIY **nganyja-** *call by a kinship term.*

It is not clear whether the proto-form should be reconstructed as ***nganja(r)** or as ***nganyja(r)**. If the proto-form was ***nganja(r)**, then WMK, YIM, and DIY have assimilated the nasal to the following stop. If, on the other hand, it was ***nganyja(r)**, then GYA and DYI have undergone dissimilation. The set in (4.109) shows a relationship between *mouth* and *call out.* Since *tongue* can

be related to *mouth* through synecdoche, the association between *tongue* and *call* in this set is seen as plausible. In addition, *voice* can possibly be related to *call.*

(4.55) PPN ***nganyjV(n)**

NYA-W **nganju.rru** *we (plural inclusive);* YIM **nganhthaan** *first person plural;* GYA **nganjin** *we plural exclusive;* YDN **nganyji** *first person non-singular pronoun.*

Dixon does not discuss the history of this pronoun. It is plausible that the second vowel of the proto-form was ***-a** (as seen in YIM), and that NYA-W has assimilated V_2 to V_3, while GYA has assimilated V_2 to the preceding palatal.

Residue: BAY **nganhurra ~ nganhurru** *we all.*

Although this form is a first person plural pronoun, it does not contain the medial **-j-** seen in those above. BAY does not have a deletion rule which would explain this.

(4.56) PPN ***ngapa**

NYA-S **ngapa.rr** *went past, beyond, overflowed;* WLB **ngapa.rr-pu-** *to pass one another going in opposite directions;* PIN **ngapa.rri** *in return; used of a return journey; ... to be returning,* **ngapa.rr.ka** *across; the crossing of two persons coming from opposite directions;* BAY **ngapa.rr.ari** *outside, to here,* **ngapa.rr.ari-yi-** *come,* **ngapa.rr.iri-yi-** *return;* UMP **wa?a** *let's go;* WMK **ngap-an** *to leave;* GID **ngapi** *off you go!;* BAA **ngapa-la-** *to drive out.*

The presence of **-rr** in all of the Nyungic languages here points to a PNY reconstruction of ***ngaparr.** A further example of ***-p-** > UMP **-?-** is provided by UMP **pa?i** *father's mother* (< PPN ***papi**) (O'Grady 1990d:242).

The two PIN forms relate the meanings of the NYA-S and WLB forms with BAY **ngaparr.iri-yi-** *return.* The WMK form seems to be in an antonymic relationship with that of BAY, while the GID meaning is a way of telling someone *to leave.* The meaning of the BAA form, *to drive out,* can be seen as *causing to leave.*

Residue: WEM **wawa-** *to follow.*

This form poses phonological problems, as the only other cognate set in my data involving PPN intervocalic ***-p-*** and a WEM reflex shows WEM retaining **-p-**. Note that this form is also included as residue in (4.14).

(4.57) PPN ***ngApa(r)l***

BAY **ngaparl.i** *skipjack;* BGU **wapal.kan** *codfish.*

Since a *skipjack* is a type of tuna, I do not have a great deal of confidence in the semantic association seen in this set. A deeper knowledge of marine classification may reveal a connection between these two types of fish.

(4.58) PPN ***ngaparr***

NYA-W **paparr** *hurry, haste;* PIN **pamparr-ngara-∅-** *be hurrying;* GID **ngaparr** *quick, fast.*

This root is proposed by O'Grady (1990e:456), who posits a rule of anticipatory assimilation in NYA-W and PIN. This root may be ultimately related to that in (4.56).

(4.59) PPN ***ngApi**

NYA-W **ngapi ~ ngapa.rtu** *approximately the English expression "what's its name;"* NYA-S **ngapi** *like, similar to, like this, whatsaname;* DIY **ngampi.ya** *what's it called.*

Given that NYA-S and DIY both have the second vowel **-i**, and one of the NYA-W variants also has **-i**, PPN ***-i** is reconstructed. A list of further examples of prenasalization in DIY is found in (4.3).

(4.60) PPN ***ngapuny**

WLB **ngawu.rru** *younger sister;* GID **wapuuny** *female ego's younger sister, great grand-daughter.*

Further examples of intervocalic weakening of a stop to a glide in WLB are found in (4.11) and (4.20). GID shows both a wider and a narrower meaning than does WLB. The GID term specifies *female ego's younger sister,* which is narrower than WLB's *younger sister,* but it also refers to *great grand-daughter,* while the WLB term does not.

(4.61) PPN ***ngApu**

NYA **ngapa** *water, rain;* WLB **ngapa** *water, water source, rain,* **ngipi** *sugarbag larvae,* **ngipi.ri** *egg;* PIN **ngampu** *egg; testes;* BAY **ngapu.rra-yi-** *swim, take a bath;* GYA **ngapa-l** *soak, leach;* YDN **ngapa-n** *bathe;* DIY **ngapa** *water,* **ngapu.nga-** *swim.*

This is another set proposed by O'Grady (1990e:456). The semantic associations seen above are also found in the reflexes of at least ten other roots,

including ***nguku*** (see (4.140)) (O'Grady 1990e:457). So, although the relationship between *egg, water,* and *testicle* may not be obvious to non-Pama-Nyungan speakers, the probability that eleven roots would coincidentally show the same semantic associations must be very small.

To O'Grady's set we can add the following:

NYA-W **ngampu** *testicle;* NYA-S **ngampu** *egg;* PIN **ngampu.ly.ka** *lump which develops from infection;* GUP **ŋapa** *back, top, surface, cover;* DYI **ngapa-y** *bathe,* **ngapa-l** *immerse in water, soak;* PIT **ngapu** *water.*

NYA-W prenasalization is also seen in (4.16), (4.19), and (4.111), while further examples of prenasalization in PIN are found in (4.3), (4.16), (4.134) and (4.137). PIN **ngampu.lyka** can be related to *egg* and *testicle* by shape. The proposed semantic relationship between *water* and GUP **ŋapa** *surface* is strengthened by the PIN word **ngapa** *surface or rain water.* As this PIN form is believed to be a borrowing from WLB (Hansen and Hansen 1974:109), it is not included in the above set.

(4.62) PPN ***ngApV***

GAW **NGAPA.PPI** *grandmother on father's side,* **NGAPI.TYA** *grandchild of* **NGAPA.PPI;** BAY **ngapa.ri** *father's mother, son's child;* WEM **ngapa** *maternal grandfather,* **ngapu.ntek** *grandchild of* **ngapa;**

The fact that each language in this set has a form with **-a** as V_2 suggests that the second vowel of the proto-form may have been ***-a**. The **-I** in GAW **NGAPI.TYA** can be explained as assimilation to the following palatal, but the reason for the change ***-a** > **-u** in WEM **ngapu.ntek** is not clear. Cognates taken from languages outside of this study may give us a better idea of how $*V_2$ should be reconstructed.

Residue: PIN **ngapuju** *when addressing one's father, his wife should be termed* **ngapuju**; DIY **ngapiri** *father, father's brother.*

All of the forms in the above set refer to grandkin, two generation levels from ego, while these forms both involve kin one generation level from ego. Further work on semantic change among kinship terms may provide evidence for the inclusion of these two words in the above set.

(4.63) PPN ***ngapVl***

WLB **ngapil.kiri** *crested pigeon;* YIM **wapul** *Torres Strait pigeon;* GYA **wapul** *Torres Strait Island pigeon.*

Since YIM is believed to retain final ***-l***, PPN ***-l*** is reconstructed. It is possible that the **-l** in WLB is also ancestral; if **-kiri** was added before ***-l*** was deleted, then ***-l*** may have been protected. Although there is a chance that the complete agreement between the YIM and GYA forms is due to borrowing, there is very little chance that WLB borrowed this word from either YIM or GYA. So although borrowing may be involved here, this remains a valid cognate set, linking a language from central Australia with at least one language from Cape York Peninsula.

(4.64) PPN ***ngaara-***

PIN **ngara-ngu** *to stand, wait; to be,* **ngara.ju-nu** *to place upright;* YIM **ngaara-l** *spread out (in sun to dry, warm);* GYA **ngara-l** *build; spread.*

This set shows no phonological irregularities. The YIM form indicates that the first vowel of the proto-form was long, while the presence of V_2 **-a** in all three languages points to PPN ***-a***. The multiple meanings of the GYA form provide a link between PIN *stand, place upright* and YIM *spread out.* This root may be related to that in (4.105) (O'Grady 1987:520).

(4.65) PPN ***ngAra**

WLB **ngara.kurra** *high, light;* GAW **NGAIERA** *air, sky;* WEM **ngara.k** *whirlwind.*

The above GAW transcription may represent **ngayiRa**. For a discussion of the change from ***-r-** to **-y-**, see (4.68). In the WLB data, **kankarlu** *above, high up, upward* is given as a synonym for **ngara.kurra**; *sky* could plausibly be related to *high*. A semantic connection between *air* and *whirlwind* is plausible, but not attested elsewhere in my data.

(4.66) PPN ***ngaram**

GUP **ŋaram.biya** *hand;* GID **warram** *left hand side or direction;* WEM **warə.ngin** *(your) left hand.*

Because GID has only one rhotic, there is a possibility that the GID form above is a reflex of a proto-form with ***-rr-**. However, the semantics indicate that it is related to at least the WEM form. There is also a possibility that the GID and WEM forms are reflexes of ***wArra** *bad* (O'Grady, p.c.). Further research needs to be done to confirm or refute the validity of this set.

Residue: WLB **ngalikirri** *grinding stone - the portion held in the hand.*

A change from ***-r-** to **-l-** is attested in WLB (compare NYA-W **kara** *west* and WLB **karla** *west*). Thus, from a phonological point of view, this form is a plausible member of the above set. The semantic connection between this form and those above may be similar to that seen in the English pair *hand* and *handle.*

(4.67) PPN ***ngaarany**

PIN **ngaa.ny-pa** *panting; to make a panting noise;* GUP **ŋar'-yu-n ~ ŋir'-yu-n** *breathe;* GID **ngaany.pi.rr** *yawn;* DIY **ngara** *heart, breath.*

The above set and root are proposed by O'Grady (1987:525). To this set, we can add the following:

WLB **ngaa.ny-kiji-** *to breathe, take a breath;* PIN **ngaa.nyju-nu** *to breathe heavily in sleep;* BAY **ngaa.ny** *chest,* **ngaa.nyka-Y-** *breathe;* GUP **ŋir'** *breath,* **ŋar'-ŋar-yu-n** *thirsty,* **ŋar'-yu-n-mirri** *have a rest;* GYA **wari.maji** *yawn;* PIT **ngari-** *breathe,* **ngari-ngari-** *pant;* DIY **ngara ngama-** *take a rest* (**ngama-** *sit*).

The three Nyungic forms above suggest a PNY reconstruction of ***ngaany**, with PPN ***-r-** > PNY ***∅**, compensatory lengthening of *V_1, and ***-ny** added to the stem. A similar process in WLB is seen in (4.108) and (4.133), although in the latter case the rhotic which was deleted was ***-rr-**. The second vowel of the proto-form may have been ***-i**, in which case DIY exhibits assimilation of V_2 to V_1. A change from ***a-** to ***i-** adjacent to ***-r-** in GUP is also seen in **-miri.w** *Privative (with nouns), Negative command (with verbs)* (< PPN ***mAra**) (O'Grady 1987:520). The GUP reflexes in (4.73), (4.126), and (4.133) also show an apparently epenthetic glottal stop. The semantic association between *chest* and *to pant* is also found in (4.97).

Residue: NYA-W **ranga-ranga-pi-li** *to pant - as a dog;* YIM **waarngkan-mal** *relax;* GYA **ngaru** *husky or squeaky voice.*

The NYA-W form could be the result of metathesis of C_1 and C_2. The possibility that this form may be cognate with those above was noted by O'Grady

(1987:525). Semantically, the YIM form can be related to *rest.* The prenasalized **-k-** may be an instance of stem incretion. The GYA from agrees phonologically with those above, and its meaning could possibly be associated with *thirsty.*

(4.68) PPN ***ngArarri**

NYA-W **ngarirri** *hair-belt;* NYA-S **ngarirri** *belt of human hair;* GYA **wayarri** *hair belt.*

Although I have no further examples of a matching of PPN ***-r-** and GYA **-y-**, note that in NYA-W **kukurnjari ~ kukurnjayi** (from English "cooking Jerry") and WLB **ngangkari ~ ngangkayi**, **-r-** alternates with **-y-** between **a-** and **-i.** In addition, the change ***-r-** > **-y-** is found in other languages, as shown in WLB **tiyi-tiyi** *mudlark, magpie lark* and GID **tiyung** *Grey Shrike Thrush,* both reflexes of ***tiril** (Hendrie 1984:67-68). Since NYA is spoken on the west coast and GYA on Cape York Peninsula, neither borrowing nor lexical diffusion are likely to be factors in this set.

(4.69) PPN ***ngArku(l)**

GUP **ŋarkula** *water;* GYA **ngarngkul** *splash.*

There is very little chance of direct borrowing between GUP and GYA, although diffusion across the Gulf of Carpentaria is possible. Since both forms contain **-l**, final ***-l** is reconstructed. A list of further examples of prenasalization in GYA is found in (4.20). The set in (4.61) shows a semantic association between *water* and *bathe,* while that in (4.145) connects *wash* and *splash.* Since *to bathe* is *to wash oneself,* the meanings *bathe* and *wash* provide a link between *water* and *splash.*

(4.70) PNYY ***ngA(r)lka**

NYU **ngarlak** *teeth;* GUP **ŋalka** *tooth*

It is not clear whether NYU has changed an alveolar ***-l-** to a retroflex **-rl-**, or whether the proto-form contained ***-rl-** which became **-l-** in GUP. NYU has undergone metathesis of the second member of the heterorganic consonant cluster and V_2, a process which is also seen in (4.75).

Residue: WJK **NALGO** *teeth.*

This form agrees with those above, except for the place of articulation of the first consonant. It is possible that **ng-** was misheard as **n-**.

(4.71) PNY ***ngarlirr**

NYA-S **ngarlirr** *pronged fork at end of spear;* BAY **ngarlirr** *hook (for fishing).*

Because of the complete phonological agreement between these forms, it is possible that borrowing has taken place. The BAY phrase **ngarlirr kurrjarta** *barb of spear* (in which **kurrjarta** means *spear*) provides evidence for the validity of the association seen here.

(4.72) PNY ***nga(r)lpari**

PIN **ngarlpiri** *shoulder;* NYU **ngalpar** *clavicle, collarbone*:

These forms agree well phonologically, and there is little chance of direct borrowing between PIN and NYU. PIN has assimilated V_2 to V_3, while NYU has undergone apocope. The relationship between *shoulder* and *collarbone* is one of metonymy.

Residue: GID **walakan** *shoulder.*

I hesitate to include this form because it does not have a medial **-p-**. It is possible that there is a PPN root of the form ***ngala,** and that the **-p-** seen in the Nyungic languages above is an instance of stem accretion.

(4.73) PPN ***ngArlpV**

NYA-S **ngarlpu-pi-(n)** *prancing steps when groups approach dancing;* PIN **ngarlpu** *play, a joke, a non-serious situation; to play, joke;* GUP **ŋa̲lwa'-yu-n** *play;* BAA **ngarlpa-ngarlpa-** *to swing, to fool about.*

Weakening of a stop to a glide in GUP is also found in (4.11), (4.18), and (4.76), while an apparently epenthetic glottal stop appears in the GUP reflexes in (4.67), (4.126), and (4.133). The set in (4.164) also shows a relationship between *play, dance,* and *swing.*

(4.74) PEPN ***ngarlu**

PIT **ngarlu** *man's father-in-law, mother's brother;* BAA **ngarlu ~ ngarlu.ja** *mother-in-law (woman speaking), father's oldest sister.*

These forms show an antonymic relationship based on the feature of sex. *Man's father-in-law* in PIT is *woman's mother-in-law* in BAA, while PIT *mother's brother* relates to the slightly narrower BAA *father's oldest sister.*

(4.75) PPN ***ngA(r)nka**

NYA-W **ngarnka** *beard,* **ngarnnga.rn** *jaw, chin* (may be mistranscription for **ngarnnga.ny** (O'Grady, p.c.)); NYA-S **ngarnka** *beard,* **ngarnnga.ny** *chin;* WLB **ngarnka** *big hill, mountain,* **ngarnki.rri** *steep wall-like river bank;*

eyebrow; PIN **ngarnka.lirri** *side of a perpendicular rock surface,* **ngarnku.rr-pa** *beard, whiskers;* NYU **ngarnak** *whiskers, beard;* WJK **NGANGA** *the beard; the chin; roots of trees or plants;* BAY **ngarnka** *beard,* **ngarnnga.ny** *jaw;* PIT **nganka** *chin, beard;* BGU **nganka.rt** *beard;* DIY **nganka** *beard, moustache, chin,* **nganka.nhthi** *catfish.*

This root was first reconstructed as ***ngarnka** by O'Grady (1966:111). However, as no languages which are diagnostic of ancestral vowel length are present in this set, I have reconstructed PPN ***A-**. In addition, it is not clear whether the proto-form had a retroflex nasal, which became an alveolar in the non-Nyungic languages, or whether the nasal in the proto-form was an alveolar which became a retroflex in PNY. NYA-W **ngarnnga.rn** (perhaps **ngarnnga.ny**) and NYA-S and BGU **ngarnnga.ny** show weakening of ***-k-** to **-ng-**. A further example of ***-k-** weakening to **-ng-** following a nasal in NYA-W is seen in (4.128). It is possible that borrowing between NYA and BAY has occurred. The WJK form in this set is presumably **nganka** or **ngarnka**; however, see the discussion of WJK in (4.50). A further example of NYU metathesis involving a heterorganic consonant cluster is found in (4.70).

The WLB and PIN forms suggest a relationship between *hill, steep bank, eyebrow,* and *beard, jaw. Eyebrow* may be associated with *beard* by metonymy, and the set in (4.35) shows a connection between *forehead, cheek,* and *cliff,* so the association seen here is plausible. The relationship between DIY **nganka** and **nganka.nthi** is probably due to the fact that catfish have whiskers.

Residue: GAW **NGARKEARRU** *whiskers.*

This form agrees semantically with those above. The **-RK-** may be a mistranscription for **-rnk-**, in which case this form should be included in the above set.

(4.76) PPN ***ngArpa**

GAW **NGARPA.RPA** *stammering;* GUP **ŋarwa.k-thu-n** *play;* WMK **ngarp.anang** *(do something) by mistake;* GYA **warmpi-l** *doubt, not believe,* **warmpi-ji** *to lie to defend oneself when accused.*

Further examples of stops weakening to glides in GUP are found in (4.11), (4.18), and (4.73). See (4.20) for a list of examples of GYA prenasalization. The GAW and WMK forms refer to negative concepts; corroboration for the association between *negative* and *play* is found in (4.43) and (4.137). GYA **warmpi-l** refers to *lying*; a further example of an association between *play* and *lie* are found in (4.105), while (4.137) relates *negative, play,* and *lie.* The common notion between the latter two concepts is *unreality.*

(4.77) PPN ***ngarra$_1$**

NYA-W **ngarra** *but; as well; also; moreover,* **ngarra.npili** *just,* **ngarra.ny** *yet; still,* **ngarra.kuny** *always, everyday, for all time;* NYA-S **ngarra.ny** *yet, kept doing,* **ngarra.kuny** *for always, in the same way;* PIN **ngarru.ny.ju** *continually active;* GAW **NGARRA.RLU.KKO** *many times; often;* UMP **nga?a.nngama** *always;* YIM **ngarraa.l.ku**, occurring in **nhili-ngarraa.l.ku** *even now, still today* (**nhila** *now, today*); GYA **ngarra** *also;* GID **warraa.y** *long time.*

The second vowel of the proto-form definitely seems to have been ***-a.** The **-u** seen in the PIN form can be explained as assimilation to the suffix vowel. The change PPN ***-rr-** > UMP **-?-** is also seen in (4.78) and (4.160). The meaning of the PIN form can be related to *always,* as someone who is *continually active* is *always active.* The set in (4.111) relates the meanings *more, continue* and *long time.*

(4.78) PPN ***ngarra**$_2$

NYA-W **ngarnta-rna** *to block, stop, head back (sheep or cattle); to stand in the way of;* NYA-S **nganta-(rn)** *be prevented;* UMP **nga?a.malu** *end, that's the finish, that's all;* WMK **want-an** *stop (an activity), leave (something or someone);* GID **warru-warru** *fence, boundary;* DIY **ngarnda.rra** *end, finish,* **nganda.walka** *close, stop.*

In (4.86), PPN ***-rr-** > NYA-W **-nt-**. The reason for retroflexion in the above form is not clear. Evidence for a matching between ***-rr-** and NYA-S **-nt-** is also found in (4.83). Further examples of a matching between PPN ***-rr-** and UMP **-?** are found in (4.77) and (4.160). WMK **-nt-** also appears as a reflex of ***-rr-** in (4.90). DIY shows **-rd-** as a reflex of ***-rr-** in (4.86) and **-d-** as a reflex of ***-rr-** in (4.87) and (4.89). The above DIY forms show prenasalization; a list of further examples of DIY prenasalization is found in (4.3).

The words in this set refer to three concepts: *stop* (or *be stopped*), *end,* and *fence. Stop* and *end* can be related, since at the *end* of an activity, one *stops.* Likewise, a *fence* serves to *stop* or *block,* and marks the *end* of a certain area.

(4.79) PDNY ***ngarra**$_3$

PIN **ngata.l-pa** *insufficient;* GAW **NGARRA.WAADLI** *not full; half full.*

In (4.86), PPN ***-rr-** > PIN **-nt-**, so a change from PDNY ***-rr-** to **-t-** is plausible. The meanings seen here share the concept of *incomplete.*

Residue: WJK **NGARRAN** *to stick halfway ...;* GUP **ngaḍi** *discontented, dissatisfied.*

The WJK form poses no phonological problems, and its meaning does share the notion of *half* with the GAW form above. However, the meanings are divergent enough to cause me to hesitate to include this form. There is a plausible semantic association between the GUP and PIN forms, as something which is *insufficient* may cause *dissatisfaction.* However, **-rd-** (<d̲>) is not the normal GUP reflex of ***-rr-**.

(4.80) PPN ***ngArra**

BAY **ngarra.ri** *camp;* YDN **warra-n** *shift camp.*

These forms agree well both phonologically and semantically. YDN may have narrowed the meaning of this verb from a more general meaning such as *to camp.*

Residue: NYA-S **ngartayi** *returned first to camp.*

Although this form shares the notion of *camp* with those above, the semantic shift involved is great enough that I have not included this form in the above set. Also, my data contain no examples which suggest a matching between ***-rr-** and NYA-S **-rt-**.

(4.81) PPN ***ngarral**

NYA-W **ngarra.l** *dry (of throat), hoarse;* YIM **ngarral** *brittle, easily cracked.*

This set poses problems because of the complete phonological agreement between the forms. While YIM retains final ***-l**, NYA-W does not. However, the **-l** in the NYA-W form may be due to stem accretion. These words share the concept of *dry.*

(4.82) PPN ***ngarram**

WJK **NGARRA.NG** *to be in motion;* YIM **ngarra-** *chase away, hunt away;* GYA **ngarra-yilpa-l** *to win over, beat; to pass* (**yilpa-l** *to throw*); GID **ngarram miyi-** *to depart, never to return* (**miyi-** *to continue*).

Since GID retains final nasals, ***-m** is reconstructed. As all of the above forms have **a** in both V_1 and V_2 position, both vowels in the proto-form are reconstructed as ***a**. The WJK form has the most general meaning, to which all of the other meanings can plausibly be related.

(4.83) PPN ***ngarran**

NYA-S **nganta-nganta** *very big fire;* GID **ngarraan** *bright glow, brightness.*

The **-nt-** seen in the NYA-S form could have resulted from prenasalization of ***-rr-**. A further example of this matching is provided by NYA **jinti.rr.jinti.rr** *Willy Wagtail* < PPN ***jirri.jirri** (O'Grady 1990e:459), and by the set in (4.78).

Residue: GUP **ŋat-ŋat-thu-n** *shine, burn brightly, flame;* DYI-Dyalnguy **ngarrkana** *light, flame;*

Both of these forms agree with those above in terms of meaning. However, the change from PPN ***-rr-** to GUP **-t-** is unattested elsewhere; ***-rr-** is normally retained in GUP (see, for example, (4.85), (4.88), (4.160), and (4.161)). The DYI form is from the avoidance vocabulary and is thus almost certainly a borrowing. The **-k-** may be an example of stem incretion.

(4.84) PEPN ***ngarrim**

YIM **ngarri** *calf, shin;* GYA **ngarri** *lower legs;* GID **ngarrim** *shin.*

The GID form indicates that the proto-form had a final ***-m**. Note that this root may ultimately be related to that in (4.90), through the association of a body part and a stance verb (see chapter 3).

(4.85) PPN ***ngArrku**

GUP **ŋarrku** *wallaby (collective term);* PIT **ngarrrku.nu** *wallaroo;* BGU **ngarrku** *grey kangaroo.*

Although PIT has three rhotics, **r**, **rr**, and **rrr**, this is the only example I have of PPN ***-rr-** > PIT **-rrr-** (compare the above form with those in (4.89), (4.133), and (4.158), where PPN ***-rr-** is retained in PIT). It is also, however, the only example involving a medial consonant cluster, so perhaps the choice of rhotics in PIT is determined by the presence or absence of a following consonant. All three of these words refer to marsupials, and the differences in their meanings may be due to antonymic shift (recall from chapter 3 that in WLB **Jiliwirri**, the antonym of *kangaroo* is *euro,* another large marsupial).

(4.86) PPN ***ngarrV(n)**

NYA-W **nganti** *bone;* PIN **ngarnti** *behind, after,* **ngantu.lurru** *upper spinal column,* **ngarntu.lurru** *lower spine section;* GAW **NGARA.TTA** *spine;*[3] WJK **NGARRA** *the back;* YIM **ngarran** *spike, spine, nails, fish spine;* DYI **-ngarru** *behind;* WEM **warrə.m** *back, of person or animal.* BAA **nganta.rra** *behind, later;* DIY **ngarda** *then, next, behind.*

The set in (4.78) shows NYA-W **-rnt-** corresponding to PPN ***-rr-**. The three PIN forms above demonstrate the unclear relationship between alveolars,

[3]I take this to be a typographical error for **NGARRATTA,** since this word is preceded by **NGARRARLUKKO** and followed by **NGARRAWADLI** in the dictionary. It does not appear in the section of words with **-R-**.

retroflexes, and PPN ***-rr-**, as a form with an alveolar cluster and two with a retroflex cluster appear to be reflexes of the same root. The only BAA reflex of ***-rr-** seen in my data is **-nt-** (see also (4.132)). Further examples of BAA prenasalization are found in (4.11), (4.132), and (4.138). The set in (4.78) shows PPN ***-rr-** becoming **-rnd-** in DIY. *Spine* and *back* can be related through synecdoche, while *bone* and *spine* show a narrowing or widening shift. A relationship between *back* and *behind* is also found in (4.161).

Residue: PIT **ngarrka** *follow.*

The **-k-** seen in this form may be an example of stem incretion. Since *following* implies being *behind,* the meaning of this form can be related to those above.

(4.87) PPN ***ngarrV**

GAW **NGARRA-NGARRA-NDI** *to wait for somebody; to hide; conceal,* **NGARRA.RAKKA** *unawares, hidden, treacherously:* DIY **ngadu.parra-** *be surprised.*

A further example of DIY **-d-** corresponding to PPN ***-rr-** is found in (4.89). The second vowel of the proto-form may have been ***-u**, with GAW undergoing assimilation of V_2 to V_1. *Surprised* can plausibly be related to *unawares.*

(4.88) PPN ***ngaarrV$_1$**

NYA-W **ngarru.rtu-karri-nyi-** *to be infuriated;* WLB **ngarri-** *to tell him to ...; to call it such-and-such; to scold him;* PIN **ngarru** *a state of contentment with life; feeling of well being;* GUP **ŋarr-tju-n** *scold, rebuke, speak angrily;* WMK **waaʔ-an** *tell, blame, talk about abusively.* GID **waarraka-** *to make a hubbub (especially of birds).*

My data contain several examples of loss of V_2 in GUP (see, for example, (4.104) and (4.129)). Although the change of PPN ***-rr-** to WMK **-ʔ-** is not found elsewhere in my data, UMP, another Middle-Pamic language, does exhibit this change (see (4.77), (4.78), and (4.160)). According to Hale (1976:51), PMP ***-t-** > **-ʔ-** in the Wik languages. This suggests that in the above case, PPN ***-rr-** > PMP ***-t-** > WMK **-ʔ-**. Note that there is a possibility that the GID form is a reflex of a proto-root with medial ***-r-**. As for semantics, *to be infuriated* and *to scold* share the notion of *anger.* PIN seems to exhibit an antonymic meaning.

(4.89) PEPN ***ngaarrV$_2$**

PIT **ngarra.ru** *flood,* **ngarri.manhtha** *flood;* GID **ngaarr** *splash, "plop;"* DIY **ngadi.matha** *flood.*

A matching between ***-rr-** and DIY **-d-** is also suggested by the set in (4.87). The high degree of phonological similarity between PIT **ngarri.manhtha** and DIY **ngadi.matha** suggests that diffusion may be involved in the history of this set. All of these forms share the notion of *water.*

Residue: WEM **ngarrəli** *water-weed.*

This form agrees well with those above in terms of phonology, and its meaning does include the concept of *water.* However, its meaning is different enough from those above to cause me to hesitate to include it as a putative cognate.

(4.90) PPN ***ngaarrV-**

PIN **ngarri-ngu** *to lie or sleep; euphemism for copulation;* UMP **ngaanta** *sleep;* WMK **ngaant,** occurring in **ngaant pukam-an** *go to sleep* (**pukam-an** *sit, stay, lie down*) and **waarkan ngaant** *sleepy* (**waarkan** *eye*); DYI **wati-l** *swive (have sexual intercourse with).*

Further examples of prenasalization in UMP can be found in (4.14) and (4.138), while a list of sets which contain a prenasalized WMK reflex is seen in (4.2). The fact that both WMK and UMP have **-nt-** suggests that the change from ***-rr-** to **-nt-** occurred during the PMP stage. An additional example of ***-rr-** > DYI **-t-** is seen in (4.160). The set in (4.126) also points to a relationship between *lie down* and *copulate.*

Residue: GID **waarrki** *to lie on one side.*

This form contains **-k-**, which is not found in the proto-form. Again, this may be due to stem incretion.

(4.91) PPN ***ngArrV$_1$**

NYA-S **ngarru.rta** *trembling from fear;* BAY **ngarra.pa-L-** *shiver;* DIY **ngarrra-** *to shake, shiver.*

A further example of PPN ***-rr-** > DIY **-rrr-** is found in (4.159). The second vowel of the proto-form may have been ***-u**, with BAY and DIY assimilating V_2 to V_1. NYA-S appears to have undergone semantic narrowing in this set.

(4.92) PPN ***ngArrV$_2$**

GAW **NGARRU** *any white substance; as white ochre, chalk, lime, etc;* BAY **ngarri** *white clay, ashes used in chewing tobacco;* DYI-Dyalnguy **warru.ny** *sand, sugar.*

Although the GAW form seems to be a clear member of this set, it may instead be related to NYA-W **ngaru** *white sand; beach.* Because GAW was recorded before the advent of a standard transcription system, we cannot be sure if Teichelmann and Schürmann consistently used **-RR-** to denote **-rr-**. The

DYI word in this set is from the avoidance vocabulary, and is therefore probably a borrowing. However, even if **warru.ny** was borrowed from a neighbouring language, this set still shows words from Nyungic languages being possibly related to a word from a Pamic language.

(4.93) PPN ***ngarrVng**

WJK **NGARRA.K-NGARRA.K** *from side to side;* **NGARRĂ.L** *the ribs; the sides;* WMK **ngaat** *side (of person's body or house, etc.), corner;* GID **ngarring** *across, on the other side.*

The second vowel of the proto-form may have been ***-i**, with WJK showing assimilation of V_1 to V_2. A further example of PPN ***-rr-** > WMK **-t-** is seen in (4.132).

Residue: NYA-S **ngarti-ngarti** *river bank, edge, side of something;* WEM **-watan** *across.*

The strong semantic agreement between these two forms and those above suggest that these forms should be included in the above set. However, my data contain no further examples of ***-rr-** changing to NYA-S **-rt-** or to WEM **-t-**. Future cognate sets may well provide the evidence needed to include these forms as cognates.

(4.94) PPN ***ngaarta**

NYA-W **ngarta-rna-** *to break, smash;* NYA-S **ngarta-(rn)** *break off;* WLB **ngardi-ngardi-ma-** *to talk him into hitting another;* WJK **NGATTA.NG** *to wound;* GID **waanta-** *to punch.*

It is not clear whether PPN had a retroflex or alveolar stop in this root. *To break, smash* can easily be related to *to punch,* which is potentially *to wound.* WLB has developed a very narrow meaning, which shares the notion of *hit* with the other meanings.

(4.95) PEPN ***ngartang**

PIT **ngarta.rta** *father's father;* GID **ngatang** *grandfather, brother or male cousin of any grandparent; male ego's grandchild;* DIY **ngarda.rda** *mother's father.*

Again, we do not have enough evidence to determine if the proto-form contained a retroflex or an alveolar medial stop. Three is a possibility that lexical diffusion is responsible for the high degree of phonological agreement between the PIT and DIY forms.

(4.96) PPN ***ngA(r)ting**

WLB **ngati** *mother;* GUP **ŋändi** *mother;* GID **watung** *mother, mother's sister.* DIY **ngandi** *mother, mother's sister;*

A list of further examples of prenasalization in DIY is found in (4.3), while GUP prenasalization is also seen in (4.14). The **-u** seen in V_2 position in GID may be the result of assimilation to the following velar consonant.

(4.97) PPN ***ngArtu**

WLB **ngarntu.rlurru** *solar plexis;* NYU **ngarnt ~ ngurnt** *chest;* WJK **NGANDO** *the breast-bone;* BAA **ngart-ngartngmala-** *to race, to pant, to beat heavily [sic][4].*

[4]I assume that this form contains a typographical error. Note that in the sentence **purlu ngart-ngart-malaana** *(my) heart is racing (through strain),* there is no **-ng-** between the second occurrence of **ngart** and **-mala.** The cluster **-rtngm-** is highly unlikely to occur in Australian languages.

WJK **-ND-** may be a mistranscription for **-rnt-**, in which case a PNY reconstruction of ***ngarntu** is likely. However, evidence from languages outside of this study is needed to determine the second vowel of the PPN root, since both NYU and BAA have undergone apocope. The association between *chest* and *pant* is also seen in (4.67).

(4.98) PPN ***nga(r)tV**

NYA-W **ngatu** *at rest, stationary;* NYA-S **ngatu** *stopped there;* PIN **ngarta.rr-pa** *sitting position, with legs crossed near ankles;* BAA **ngarta-** *to stay in one's own place.*

Since NYA does have a retroflex series, it is not clear whether the proto-form had an alveolar or retroflex stop in $*C_2$ position. The **-u** seen in the NYA forms may reflect the quality of the PPN second vowel, with PIN and BAA showing assimilation of V_2 to V_1. The meanings of all these forms share the concept of *not moving.*

Residue: WMK **ngent-an** *marry.*

Dixon reports that in some languages, the verb for *to marry* is derived from that meaning *to sit down.* For example, in DYI "*marry* is literally *sit down with* or *settle down with*" (Dixon 1980:111). This WMK form is not a derived form, but further work may reveal that the association between *sit* and *marry* is also found among roots.

(4.99) PPN ***ngartV**

PIN **ngarti** *hole; used of holes either in the ground or some object,* **ngarti-rnu** *to deepen, e.g. a hole by digging;* NYU **ngarta** *downwards, down;* WJK **NGARDĂ.K** *downwards;* BAY **ngarti.ju** *down, inside,* **ngarti.juwurla-L-**

lower (as into well); UMP **nga?a-** *enter, go down into, wear (clothes);* WMK **nge?.anath-an** *hide (something or yourself); put inside (something);* BGU **warta** *to fall down, be born,* **warta.lma ~ warta.ma** *to drop, to knock over.*

Hale reconstructs the PMP ancestor of the above UMP form as ***ngarra** (Hale 1976:57). The presence of a retroflex stop in each language which has a retroflex series suggests that the second consonant of the PPN form was ***-rt-**. Corroboration for the association between *hole* and *go down* is found in (4.104), while (4.53) relates *hole* and *enter.* The BAY form above shows a relationship between *down* and *inside,* thus providing evidence for the connection between UMP *go down* and WMK *put inside.*

(4.100) PNYY ***ngA(r)tV**

NYU **ngati.rrak** *clavicle, collarbone;* GUP **ŋaḏa-ŋaṯ** *collarbone.*

A further example of the possible change from ***-t-** to GUP **-rd-** (<**ḏ**>) is found in (4.96). However, it is also possible that the proto-form contained a retroflex medial consonant, which became an alveolar in NYU.

(4.101) PPN***ngA(r)tV-**

WLB **ngarda.ly-(w)anti-** *to turn over* (**wanti-** *to fall*), **ngarda.ly-kiji-** *to turn it over; to transform it, permute it;* BAY **ngarnti.rni-L-** *to roll it up (as swag);* WMK **weent-an** *turn (either in physical direction or to another way of life),* **weent.ath-an** *stir, turn around, turn over;* BAA **ngarti-** *to turn, to turn over.*

Prenasalization in BAY is also seen in (4.14) and (4.15), while a list of sets in which WMK has prenasalized reflexes is found in (4.2). Since WMK does not have a retroflex series, a change from PPN ***-rt-** to WMK **-t-** is reasonable. As

rolling involves *turning over,* the meaning of the BAY form is clearly relatable to those of the other forms.

(4.102) PPN ***ngArtV**

WJK **NGARDĂ.NG** *to creep, to steal up on anything;* GUP **ŋaḏup** *spying, secret activities.*

The second vowel of this root may have been ***-u**, with WJK assimilating V_2 to V_1. *Creeping* and *spying* share the notion of being *secretive.*

(4.103) PEPN ***ngaru(n)**

GYA **waru.rrijiniji** *pacing the floor, thinking things over;* GID **ngarrun.pa-** *to wonder, to puzzle over.*

As GID has only one rhotic, it is possible that this form is the reflex of a proto-form with ***-rr-**. However, since these forms agree well in terms of semantics, there is at least a possibility that they are related.

(4.104) PPN ***ngarV**

GUP **ngar.ngga** *hole;* WMK **war,** occurring in **war mat-an** *go up* (**mat-an** *go up, climb up*);2 BGU **ngaraku** *on top, upstream;* WEM **ngarə.ngka ~ ngar.ngka** *to drown;* DIY **ngari-** *go down(hill).*

WEM seems to be undergoing syncope of V_2 (see also (4.105)). The relationship between *hole* and *go down* is also found in (4.99), while that between *go up* and *go down* is seen in (4.32). Since *drowning* involves *going down* under water, an association between these two concepts is plausible.

(4.105) PPN ***ngaarV-**

WJK **NGERA** *to lie;* GID **ngaarri-** *to play*: WEM **ngarə.mangala** *to tell lies,* **ngar.nga** *to copy someone in order to make fun of him,* **ngar.ngila** *to pretend, to tell lies.*

The relatedness of the WJK form and WEM **ngarə.mangala** was first noted by O'Grady (1987:520). WEM shows an alternation between **-ə** and **-∅** in V_2 position. This is also seen in (4.104). The association between *lie* and *play* is also found in (4.76) and (4.137). The multiple meanings of WEM **ngar.ngila** illustrate the connection between these concepts, as both *playing* and *telling lies* involve *pretending.* This root may be related to that in (4.64) (O'Grady 1987:520).

(4.106) PPN ***ngArV-$_1$**

GUP **ŋara.wayirri** *wriggle;* YDN **ngaru-** *shake-a-leg dance style; between legs;* WEM **wari.pa** *to dance.*

There is no conclusive evidence among the members of this set as to the quality of the second vowel of the proto-form. *Wriggle* is easily relatable to *dance.*

(4.107) PPN ***ngArV-$_2$**

BAY **ngara.ja-L-** *taste, to echo;* DIY **ngaru-** *voice, to echo.*

Based on these forms, it is not possible to determine the length of $*V_1$ or the quality of $*V_2$. These forms share the meaning *to echo.*

(4.108) PPN ***ngArV**

WLB **ngaarr-ma-** *to croak - of frog;* BAY **ngara.nkura** *small frog (in pools);* BAA **ngaru.ka** *frog* (Hyla caerulea), *the large green frog.*

The long vowel in WLB is likely the result of compensatory lengthening after the loss of ***-r-**; further examples of this process in WLB are seen in (4.67) and (4.133). It is not possible to decide on the quality of the second vowel of the proto-form based on the data in this set. The sets in (4.23) and (4.162) both show an association between an animal and the noise which it makes. Thus, a relationship between *croak* and *frog* is certainly plausible.

(4.109) PPN ***ngAta(l)**

WLB **ngati.ngki-ma-** *to announce oneself ... to warn him, let him know about a danger or threat;* PIN **ngata.ltu waja-rnu** *to foretell, prophesy a forthcoming event* (**waja-rnu** *say, tell, speak*); GYA **ngantal** *mouth;* DYI **nganta-y** *call out.*

A list of further examples of prenasalization in GYA is found in (4.20). My data contain no other examples of prenasalization in DYI. The above form may be a borrowing from a language which undergoes more frequent prenasalization. An association between *mouth* and *talking* is seen in the GYA compound **ngantal-parin** *nuisance, always telling someone to do something* (**pari** *chin, jaws*). Further, NYA-W has the form **nyarru** *laughter,* which descended from ***nyarrang** *mouth* (O'Grady, p.c.), and the set in (4.54) relates *tongue* and *call.* Therefore, the association between *mouth* and the meanings of the above verbs is plausible. The meanings of the WLB and PIN forms can be related because they both involve telling about an event before it happens.

Residue: UMP **waanta** *story, news, newspaper.*

This form does not present any phonological problems, and if it does belong in the above set, it points to a long vowel in *V_1 position. *Story* could possibly related to *tell.*

(4.110) PPN ***ngAti$_1$***

NYU **ngat** *true;* WMK **wet** *bad;* BAA **ngati** *something wrong, against the rules.*

Both the **-i** in BAA and the fronted vowel in WMK indicate that the second vowel of the proto-form was ***-i**. The sets in (4.51) and (4.120) also show an antonymic shift between positive and negative concepts.

Residue: BAY **ngaNTaLi** *very good;* YIM **ngantal** *refuse, deny.*

Semantically, the BAY form fits in well with those above; however, I hesitate to include this form in the above set since it is not clear what **-NT-** and **-L-** are meant to represent. Although the YIM form appears to be a plausible cognate from a phonological point of view, I have no evidence of a relationship between *bad* and *refuse.*

(4.111) PPN ***ngAti$_2$***

NYA-W **nganti.ngi** *extra, in addition;* WJK **NGATTI** *more, go on, continue;* WMK **want.anam** *very many;* GYA **ngati** *a long time,* **ngati.ku** *a long time ago;* WEM **ngata.na** *already.*

Further examples of prenasalization in NYA-W are found in (4.16), (4.19), and (4.61), while a list of examples of WMK prenasalization is seen in (4.2). WEM has assimilated V_2 to either V_1 or V_3. The set in (4.77) shows a connection between *also* and *long time,* so the association seen here between the

NYA-W, WJK, and GYA forms is plausible. The WMK and GYA forms share the meaning of *large quantity,* and the GYA and WEM forms can be related by the fact that something which took place *a long time ago* has *already* happened.

(4.112) PPN ***ngAwu**

NYA-W **ngawu** *mad, crazy, stupid;* NYA-S **ngawu** *deaf; mad; term of friendly endearment;* WLB **ngawu** *bad, evil;* GUP **wawu** *ignorant, unaware, off guard;* BAA **ngawa-la** *to be in a bad state, to deteriorate;* DIY **ngawu.rrru** *sad, aggrieved.*

BAA appears to have assimilated V_2 to either V_1 or V_3. See (4.15) for abundant evidence for the relationship between *deaf* and *ignorant.* The NYA-S form shows a connection between *deaf* and *mad.* Somebody who is *mad* or *aggrieved* can be seen as *being in a bad state.*

(4.113) PNYY ***ngAwV**

GAW **NGAUWA.KKA** *burning charcoal;* GUP **ŋaw-marama** *burn fiercely,* **ŋawu.lul** *smoke,* **ŋawu.rrku** *smoke, tobacco.*

The **-U-** in GAW may represent a transition from [-round] **A-** to [+round] **-W-**. The GAW form and GUP **ngaw-marama** share the concept of *burn.* Corroboration for the association of *burn* and *smoke* is provided by NYA-W **luntu.luntu** *dense pall of smoke* and UMP **unta-L-** *to burn,* both of which are reflexes of PPN ***lunta** (O'Grady 1990e:463). A relationship between *smoke* and *charcoal* is also seen in (4.152).

Residue: NYA-W **ngaku** *charcoal.*

If NYA-W were included in the above set, it would imply that intervocalic strengthening had taken place, and I have no further examples of this process. However, cognates from languages outside of this study may reveal that the above forms are actually reflexes of a root with medial ***-k-** which have undergone intervocalic weakening. In that case, NYA-W would be a plausible member of the set.

(4.114) PPN ***ngAwV(n)**

NYU **ngaw** *mallee hen;* BAY **ngawu.rarra** *duck;* GUP **ŋawa.rramu** *species of duck;* YDN **wawun** *scrub turkey.*

This root may be related to that in (4.24), ***ngakV**, although this would involve weakening of medial ***-k-** to **-w-**. Such weakening is found elsewhere in GUP (see (4.11), (4.18), (4.73), and (4.76)), but no similar examples can be found in my data for NYU, BAY, or YDN.

(4.115) PP ***ngawVya**

YIM **ngawiya ~ ngawuya** *green-backed sea turtle;* GYA **ngawiya** *sea turtle;* YDN **ngawuyu** *salt-water turtle.*

It is not possible to determine the quality of the second vowel of the proto-form. It could possibly have been **-i**, with YDN and one YIM variant showing assimilation to a preceding labial. Equally, it could have been **-u**, with the Eastern Pamic languages (YIM and GYA) showing assimilation to a following palatal. YDN **-u** in V_3 position is likely the result of assimilation to V_2. There is a possibility that borrowing has occurred among the members of this set, as they are all spoken in the eastern part of Cape York Peninsula.

(4.116) PPN ***ngay**

NYA-W **nga.ju** *I, me;* NYA-S **nga.ju** *I (first person singular);* WLB **nga.ju** . *first person singular transitive subject;* PIN **ngayu.lu, ngayu.nya** *first person singular subject;* GAW **NGAI** *I, me;* NYU (Norseman district) **nga.ju.may** *first person singular,* (North dialect) **nge.j** *first person singular,* **nga.ny** *first person singular;* WJK **NGA.D-JO** *I,* **NGA.N-YA** *me;* BAY **nga.tha** *I;* UMP **ngayu** *me,* **nga.tha-** *I, oblique;* **nga.nyi** *me,* WMK **ngay** *first person singular subject,* **nga.th** *first person singular referent pronoun,* **nga.nyang** *me;* YIM **ngayu** *first person singular;* GYA **ngayu** *first person singular,* **nga.nya** *me;* YDN **ngayu** *first person singular,* **nga.ju-** *first person singular pronoun oblique root;* BGU **nga.ju** *my.* GID **ngay-** *first person singular.*

The members of this cognate set can be broken into two groups: those reflecting ***ngay** plus underlying ***-tu** and those reflecting ***ngay** plus ***-nya.** According to Dixon, the PPN first person singular pronoun was ***ngay**, which took the Ergative suffix ***-tu** and the Accusative suffix ***-nya.**[5] Ergative ***-tu** assimilates to the preceding palatal, resulting in ***-ju.** In those languages with forms of the shape **ngaj-** or **ngath-**, ***-ju** has become fused to the root, and similarly the shape **nganya-** is a frozen form based on ***ngay** + ***-nya.** PPN ***y** has been deleted in those forms with a frozen suffix because very few languages allow the clusters **-yj-** and **-yny-**; in some forms based on ***ngay** + ***-ju**, ***j** has weakened, resulting in ***ngayu** (Dixon 1980:340-344). Hale (1976:57) reconstructs the PMP reflexes of ***ngay** as ***ngayu** and ***ngaju** ~ ***ngaja.**

Capell's analysis is similar to that of Dixon. Capell reconstructs ***nga** as the first person singular root, with ***-yu** ~ ***-ju** as the Agent case suffix (Capell

[5]Although Dixon (1980) rejects Pama-Nyungan as a genetic entity, this analysis of proto-Australian pronouns is based solely on languages which are considered by O'Grady and others to be members of the Pama-Nyungan family. It is therefore valid to substitute *Proto-Pama-Nyungan* for Dixon's *proto-Australian.*

1956:23-24). He does not discuss those forms which contain ***-nya.**

(4.117) PNYY ***ngAyang**

WJK **NGAY-ANG** *elbow;* GUP **ŋayaŋ.buwa** *species of snake.*

The common feature of the concepts *elbow* and *snake* is likely that of *bent.* Corroboration of this association is provided by the following reflexes of PPN ***jurrung**: NYA-W **jurru** *snake ...,* GYA **jurru** *corner, elbow,* GID **jurru.y** *bend in creek or gully* (O'Grady 1990c:98).

(4.118) PPN ***ngayi**

NYA-W **ngayi** *yes;* UMP **way** *interjection used to attract attention from afar;* YIM **ngay** *you don't mean it! really! is that so?;* DYI **nga** *yes;* WEM **ngai** *exclamation usually translated as 'crikey;'* BAA **ngayi** *hey, hello! exclamation used to greet someone or to demand attention.*

The loss of ***-i** in YIM and UMP and of ***-y-** in WEM may be the result of the similarity between **i** and **y**. DYI appears to have lost the second syllable of the proto-form. All of these forms are exclamations; YIM's meaning seems to be most closely related to that of WEM, while NYA-W and DYI share the meaning *yes*, and the UMP and BAA forms are both used to attract attention.

(4.119) PPN ***ngAyV**

NYA-W **ngayi.rr-ngayi.rr-pi-ni-** *to shuffle the feet;* NYA-S **ngayi.rr-ngayi.rr-pi-(n)** *fight, box using hands and feet;* GUP **ŋaya.k-thu-n** *to promise, threaten to fight;* GYA **wayi-jana-y** *jumping around because he's happy; good dancer* (**jana-y** *stand; to come to a stop*).

The NYA forms above demonstrate how much meaning can change even among dialects of a single language; NYA-S *box using hands and feet* is narrower than NYA-W *shuffle feet.* The meanings of the NYA-W and GYA forms share the concept of *movement involving the feet.* The NYA-W, NYA-S, and GUP meanings form a semantic chain of *move feet, fight with feet,* and *fight.*

Residue: PIN **nganyirri** *savage ... one who always wants to fight;* DIY **nganya-nganya** *to bugger around, move about.*

PIN shares the notion of *fight* with NYA-S and GUP, while GYA and DIY both involve the notion of *move about.* The **-ny-** seen in PIN and DIY may be due to nasalization of ***-y-**, but I have no further examples suggesting such a matching.

(4.120) PEPN ***ngii**

UMP **ngii** *yes;* WMK **ngee** *don't know;* GID **ngee** *yes; and;* BAA **ngii ~ ngim** *yes.*

BAA does not usually retain ancestral vowel length; the long vowel seen in the first BAA variant may have been retained because the form is monosyllabic, or it may be the result of secondary lengthening. BAA **ngim** is an emphatic form of **ngii** (Hercus 1982:15); the **-m** may have caused shortening of the vowel. The WMK form shows an antonymic shift in meaning. Similar shifts between positive and negative concepts are seen in (4.51) and (4.110).

(4.121) PEPN ***ngija(n)**

WMK **ngeej.ang** *for a change;* YIM **nhijin** *always, regularly;* BGU **witha.ny** *stranger;* BAA **ngija** *one.*

The meanings of the WMK and BGU forms share the notion of *different.* GID **nganturr** *some, others* provides an example of the association between *one* and *another*, although the GID meanings are plural rather than singular; additional corroboration is found in WMK **winy** *another* and **winy.am** *one.* A further relationship between *another* and *stranger* can be based on the concept of *different.* The YIM form shows an antonymic shift in meaning, and assimilation of the initial consonant to the following vowel.

(4.122) PPN ***ngɪka**

WMK **ngeek.an** *greedy person who finishes up all the food,* **ngeek.an.ang** *grab something quickly ...;* WEM **wika** *to be hungry, to starve, to die.*

Since the meaning of WMK **ngeek.an** refers specifically to *food,* the semantic association seen above seems plausible. Further supportive evidence is found in the multiple meanings of WLB **ngayarrka** ... *greedy, voracious* and in the set in (4.47).

(4.123) PPN ***ngikv**

NYA-W **ngiki.n-kirri-mi-ni-** *to grunt;* WLB **ngika.rnturr-parti-** *hiccup;* YIM **ngingki.rr** *snore, snoring;* GYA **ngingki.rr** *grunt.*

A further example of YIM prenasalization is found in (4.12). See (4.20) for a list of sets in which GYA has prenasalized reflexes. If the second vowel of the proto-form was ***-a**, then NYA-W, YIM, and GYA have undergone assimilation. If it was ***-i**, however, then WLB shows an unexpected change from ***-i** to ***-a**. The YIM and GYA forms demonstrate the association between *snore* and *grunt,* which is also found in the connection between *snore* and *pigs' noise* in (4.162). Since the sound of a *hiccup* is similar to that of a *grunt,* the meaning of the WLB form fits into this set.

(4.124) PPN ***ngɪli**

GUP **ŋili.lik** *white cockatoo with feather on head;* PIT **ngili.nyja** *galah;* WEM **wilə.k-wilək** *galah.*

The **-ə** seen in WEM is likely the result of vowel reduction in an unstressed syllable. According to the *Concise Oxford Dictionary* a galah is "a small rose-breasted grey-backed cockatoo." This set may be an example of antonymic shift based on the feature of colour (see chapter 3).

(4.125) PDNY ***ngilya**

NYA-W **ngilya.n-ngilya.n** *hubbub, commotion (as from everyone talking at once);* NYA-S **ngilya.rn-ngilya.rn** *noise of people talking;* PIN **ngilyi-ngilyi-rnu** *to make a jabbering talking noise.*

Given the high degree of phonological agreement among these forms, and the fact that NYA and PIN are spoken in relatively close areas, it is possible that borrowing is involved in this set. Note that in NYA-W, **-a** has not assimilated to the preceding palatal consonant, as it did in (4.3). In NYA-W, a vowel does not undergo assimilation if the following vowel is high (O'Grady, p.c.). In this case, therefore, reduplication has blocked any assimilation. PIN has assimilated V_2 to V_1.

(4.126) PPN ***ngiima-**

BAY **nyiima-L-** *copulate with;* GUP **nyim'-nyim-dhu-n** *poke or pierce a number of times;* GID **ngiima-** *to squeeze;* BAA **ngima-** *to lie down.*

This set is proposed by O'Grady (1990e:454-455). GUP contains what appears to be an epenthetic glottal stop; this is also seen in (4.73), (4.67), and

(4.133). Both BAY and GUP have assimilated initial ***ng-** to the following vowel. This is also found in the GUP reflex in (4.129). The relationship between *lie down* and *copulate* is also seen in (4.90). Evidence for an association between *copulate* and *squeeze* is provided by PPN ***yɪka**, with reflexes NYA-W **yika-R-** *copulate with* and DIY **yɪka-** *squeeze* (O'Grady 1990e:455).

(4.127) PPN ***ngɪnjV**

NYA-W **nginy-karra-ma-na-** *to grunt (as a substitute for speaking);* GYA **nginja** *grunt,* **nyinja** *grunt.*

Since NYA-W is spoken on the west coast, and GYA on Cape York Peninsula, there is very little chance of borrowing or diffusion being a factor in this set. The NYA-W form shows an unexpected loss of the medial stop; however, the otherwise high degree of phonological and semantic agreement between these forms makes it highly probable that they are indeed cognates. GYA appears to be in the process of assimilating C_1 to V_1 (see also (4.128)).

(4.128) PPN ***nginki**

NYA-W **nginngi.rr** *cheeks;* PIN **nyirnngi** *skin; bark of all types of trees.* YIM **nginka** *eyebrows;* GYA **nginki** *flirt, eyes all over the place,* **nyinki** *corner of the eye.*

NYA-W weakening of a stop to a nasal following a nasal is also found in (4.75). Further examples of PPN ***ng-** > **ny-** in PIN are seen in (4.134) and (4.135), while the alternation of **ng-** and **ny-** in GYA is found in (4.127). All three of the YIM and GYA forms involve *eye,* and *cheek* could possibly be related to *eye* through metonymy. The association between *cheek* and *skin* may be one of synecdoche.

(4.129) PPN ***ngInV**

BAY **ngini-ngini** *pan crab;* GUP **nyin-nyin** *small claws of crab.*

A further example of PPN ***ng-** > GUP **ny-** before **i-** is found in (4.126). The original meaning of this form may have been *crab,* with narrowing taking place in both of the above languages.

(4.130) PEPN ***ngInya**

WMK **winy** *another,* **winy.am** *one;* WEM **nyinya** *this one,* **winya.tuk** *which one?;* BAA **nginha** *this one,* **nginha.ra** *here.*

Although I have no further examples of ***ng-** > WEM **ny-**, WEM **nyinya** and the BAA form clearly appear to be related. WEM may have undergone assimilation of C_1 to V_1 or to C_2 in this form.

(4.131) PPN ***ngI(r)li**

NYA-W **ngili** *sharp edge (as of axe, jam tin, etc.);* NYA-S **ngili** *edge;* NYU **ngirl** *shoulder blade, scapula;* BAA **ngirli-pirnha** *shoulder blade* (**pirnha** *bone*).

Both vowels of the proto-form seem to have been ***i**, but again it is not clear whether PPN had a retroflex or alveolar medial consonant. The association between *sharp edge* and *scapula* is seen in the English term *shoulder blade.* Although we cannot assume that Australian aboriginal people would make the same association, the English term shows that the connection is at least plausible.

(4.132) PPN ***ngɪrra**

PIN **ngirri.tily-pu-ngu** *to flow; used of water running along a channel before dripping off an object;* WMK **ngeet-an** *hurry, walk quickly;* WEM **wirra** *to run, to flow,* **wirrə.ka** *to hurry, to run;* BAA **ngiinta-** *to let loose, to untie, to blow wildly (wind).*

PIN appears to have assimilated V_2 to either V_1 or V_3. A further example of PPN ***-rr-** > WMK **-t-** is found in (4.93), while BAA prenasalization is seen in (4.11), (4.86), and (4.138). The two WEM forms illustrate the association between *run, flow,* and *hurry.* The first two meanings of the BAA form can be interpreted as *allow to run,* while the connection between *flow* and *blow* is also attested in (4.34) and in the DIY verb **ngaka-** *flow (of liquid), blow (of wind).*

(4.133) PPN ***ngirriny**

NYA-W **ngirri-** *to bare/show (the teeth),* **ngirri** *toothache;* WLB **ngii.ny-karri-** *to grin, leer, smile with teeth showing,* **ngirrily-ngirrily-(w)angka** *to speak in a baiting or sarcastic manner* (**wangka-** *to speak*); GUP **ŋirr'-yu-n,** occurring in **lirra ŋirr'-yu-n** *smile* (**lirra** *tooth*); PIT **nyirri-nyirri** *angry;* GID **ngirriny** *angry.*

In WLB **ngii.ny-karri-**, PPN ***-rr-** > **-∅-**, resulting in a long vowel. See (4.67) and (4.108) for similar examples involving Nyungic languages and the rhotic ***-r-**. An apparently epenthetic glottal stop is also found in the GUP forms in (4.73), (4.67), and (4.126). Although I have no further examples of a change from PPN ***ng-** to PIT **ny-**, it seems very likely that the PIT and GID forms above are related. The NYA-W and GUP forms and WLB **ngii.ny-karri-** all involve *teeth,* while WLB **ngirri.ly-ngirri.ly-(w)angka** and the PIT and GID forms involve *anger.* These two concepts are linked by NYA-W **ngirri-** *to*

bare/show (the teeth), since an animal, such as a dog, is likely to *bare its teeth* when it is *angry.*

(4.134) PDNY ***ngi(r)tV**

NYA-W **ngirt-ngirt** *rheumatic (as of the back);* NYA-S **ngirt-ngirt** *ache, pain;* PIN **nyintu.ti-ngu** *to limp; as caused by spear wound;* GAW **NGIRTE-NDI** *to halt, hobble, go lame.*

Again, it is not clear whether the proto-form had an alveolar or retroflex medial consonant. Further examples of initial ***ng-** changing to **ny-** in PIN can be found in (4.128) and (4.135), while PIN prenasalization is seen in (4.3) (4.16), (4.61), and (4.137). The meanings of the above forms can be related by the fact that someone who is *rheumatic* is likely to *limp* or *hobble.*

(4.135) PNY ***ngiru**

NYA-W **ngiri.n-kirri-mi-** *to grunt;* PIN **nyiru.ny-pa** ... *a low growling sound once used as a name for cars.*

The second vowel of the proto-form was likely ***-u**, with NYA-W assimilating V_2 to V_3. Additional examples of PIN assimilation of initial ***ng-** to ***i-** are found in (4.128) and (4.134). The set in (4.162) relates *growl* to *pigs' noise,* thus providing evidence for the association seen above.

(4.136) PPN ***ngujang**

NYA-S **nguja.rna** *fine grass with edible seed;* WMK **wuth** *grass type;* BGU **wuthu.n** *grass;* GID **wutang** *grass (generic).*

The contrast between apicals and laminals in medial position is neutralised in GID (Dixon 1980:185), thus producing the change from ***-j-** to **-t-** seen

above. The same change is seen in PPN ***larrjam*** > GID **warrtam** (Hendrie 1984:105). The presence of **-a** in V_2 position in both NYA-S and GID suggests that PPN *V_2 was ***-a**, and that the second vowel of the BGU form has assimilated to the first vowel.

(4.137) PPN ***ngujV***

PIN **ngunyji** *a picture or situation which is not real; a make-believe situation; a visit with no definite purpose; a temporary absence; a lie or untruth,* **ngunyji.lyi-nu** *to lie, tell untruth;* YIM **nguthu** *play, fun;* GYA **nguju** *fun,* **nguju.ri-** *to play,* **nguju.ngu** *for fun or in fun, pretend;* YDN **nguju** *not, no.*

Further examples of PIN prenasalization are found in (4.3), (4.16), (4.61), and (4.134). *Play* and *lie* share the meaning of *not real* or *pretend.* The association between *play* and *lie* seen above is also found in (4.76) and (4.105). Corroboration for the relationship between *lie* and *no* is provided by BAY, in which *lie* and *liar* are derived from *not:* BAY **ngulha** *not, don't know,* **ngulha-ngku wangka-yi-** *lie, tell falsehood* (**wangka-** *speak, say, tell*), **ngulha-ngku-marta** *liar,* and by the sets in (4.43) and (4.76).

Residue: GAW **NGUNYA** *joy, pleasure,* **NGUNYA-WAI-ENDI** *to play;*

The only reason for not including this form in the above set is that I have no further examples of a stop weakening to a glide in GAW. It is highly probable that these forms belong in the above set; Teichelmann and Schürmann may have misheard **-NY-** for **-nyj-**, or further work may reveal more examples of a matching between ***-j-** and GAW **-NY-**.

(4.138) PPN ***nguujV(l)***

GUP **ŋudhul-ŋudhul** *make a noise, hum, far voices;* UMP **nguunjil** *snoring;* BAA **ngunja-ngunja** *to make a whining noise.*

The second vowel of the proto-form may very well have been ***-a**, with UMP showing assimilation to a preceding palatal and GUP showing assimilation to the first vowel. Further examples of prenasalization in UMP are found in (4.14) and (4.90), while BAA prenasalization is seen in (4.11), (4.86), and (4.132). The relationship between *humming* and *snoring* is also attested in (4.162).

(4.139) PPN ***ngUka**

WLB **nguka.rnu** *throat;* PIN **nguka-rnu** *to swallow. Used of water, foods, and meat;* WMK **wuka.l** *neck.*

The reconstruction of this root is straightforward. The length of the first vowel cannot be determined from this data, but the second vowel clearly appears to have been ***-a**. Evidence for the semantic association between *neck* and *throat* is provided by the WMK compound **wukal ngaat** *throat,* in which **wukal** means *neck* and **ngaat** means *side (of person's body, or house, etc.), corner.*

(4.140) PPN ***nguku**

WLB **nguku.ny.pa** *brain;* PIN **nguku** *bloated cheeks ... water,* **nguku.rta** *testes;* GAW **NGUKO** *owl species* (<"eye" <"egg"); GID **kung** *water* (with metathesis); BAA **nguku** *water.*

This cognate set and reconstruction are proposed by O'Grady (1990e:457). The semantic associations which it exhibits can be found in the reflexes of many other roots, including **ngApu** (4.61). To this set we can add the following:

WMK **nguk** *all owls;* WEM **wuk-wuk** *boobook owl.*

As GAW and WEM are spoken in southern Australia, and WMK is spoken on Cape York Peninsula, the possibility of borrowing having taken place between WMK and GAW or WEM is very slim.

(4.141) PPN ***ngUkV**

NYA-W **nguku.juli-juli** *tiny, white, inedible eggs in native honey;* NYU **nguk** *honey;* BGU **nguwa.l** *swarm of bees,* **nguwa.nthi wirrpal** *sweet.*

The second vowel of the proto-form may have been ***-a**, with V_2 assimilating to V_3 in NYA-W. Intervocalic lenition in BGU is found in (4.41) and (4.142). The relationship between *bees* and *honey* is an example of the association between potential and actual meanings.

Residue: WMK **nguw** *milk from* **may po?al** ... *It is really sweet* (**may po?al** *yellowfruit*).

Although this form shares the notion of *sweet* with those above, I have no other examples of lenition in WMK.

(4.142) PPN ***ngukV(l)**

NYA-W **nguki-nyi-** *to steal (eg. a woman), abduct;* NYA-S **nguka-ny** *abduct;* WLB **nguku.nju** *greedy;* PIN **ngungu.rri-ngu** *to desire, to care for unnecessary belongings;* GUP **ŋuki.nygarra** *rat;* WMK **ngook** *jealous;* YIM **wuku.rr** *follow, chase; sew, plait, gather;* GYA **nguka.l** *the asking for things;* DYI **wuka-l** *give,* **wuki.ja** *generous;* BGU **wunga** *to chase;* WEM **wuka** *to give;* BAA **nguuka** *to give.*

Further examples of intervocalic lenition from a stop to a nasal in PIN are found in (4.11) and (4.153). While my data contain no specific examples of a PPN stop becoming a nasal in BGU, lenition of ***-ly-** to **-y-** is seen in (4.41), and of ***-k-** to **-w-** in (4.141). The second vowel of the proto-form may very well have been ***-a**. In this case, the second vowel in the NYA-W form and

in DYI **wuki.ja** have assimilated to a following palatal consonant, and WLB, PIN, and YIM show the second vowel assimilating to the first vowel.

As for semantics, *stealing* (NYA) and *gathering* (YIM) are both methods of *taking* things; the same association is seen in (4.18). The meanings of the WLB, PIN, WMK, and GYA forms all involve the notion of *wanting* something. The set in (4.11) shows a connection between *greedy, ask, want,* and *rat.* The BGU meaning is the same as one of the meanings of the YIM form. Finally, DYI, WEM, and BAA all refer to *giving.* This can be seen as an antonymic shift from the meanings involving *taking.*

(4.143) PPN ***ngulang**

PIN **ngula** *by and by, later;* WJK **NGO-LANG-A** *after, behind;* UMP **ngula** *by-and-bye, later on;* WMK **ngul** *later on; planning to; predict; then; so then, well then;* GID **ngulung** *in front, ahead;* **ngulung-taang** *straight away, right now.*

Final PPN ***-ng** is reconstructed because GID retains final nasals. The second vowel clearly seems to have been ***-a**, with GID showing assimilation to the first vowel. Hale reconstructs PMP ***ngula** (Hale 1976:57). As for semantics, the WJK form can be related to those meaning *later* by the fact that if an event A occurs *after* an event B, then A is *later* than B. The meaning of the GID form seems to be an example of antonymic shift.

Residue: NYA **kula** *by and bye.*

Semantically, this form fits in perfectly with those seen above. Only the first consonant causes any phonological problems, as it seems to have strengthened from ***ng-** to **k-**.

(4.144) PPN ***nguulV***

NYA-W **ngula.rra** *snoring, inhalation;* NYA-S **ngula.rra-pi-(n)** *snore;* BAY **ngulu.ra** *pigface (plant);* UMP **wuula** *lungs,* **wuul.punthi** *pant.*

The second vowel of the proto-form may have been ***-a**, with V_2 to V_1 assimilation occurring in BAY. On the other hand, $*V_2$ may have been ***-u**, with V_2 assimilating to V_3 in NYA. Although a semantic connection between *pigface* and *snore* may seem obscure, note that a relationship between *pig* and *snore* is found in the set in (4.162) (as is a connection between *breathe heavily* and *snore*), and in PIN **ngawurr-pa** *growling; used of growling camels, snoring by pigs.* The English name of the pigface plant suggests some kind of visual similarity between the plant and a pig.

(4.145) PPN ***ngUlya***

NYA-W **ngulya-rna-** *to wash;* NYA-S **ngulya-(rn)** *splash, throw water, pour water;* BAA **ngulya-** *to wash.*

It appears that the **-a** in NYA-W has not assimilated to the preceding palatal because of the influence of the vowels in the suffixes (see also (4.3) and (4.166)). In this set, NYA, a language of the west coast, has a word which is clearly cognate with a word from BAA, in the east.

(4.146) PPN ***ngUmpa(r)***

NYA-W **ngumpa** *face;* NYA-S **ngumpa** *face, section, skin group;* YDN **ngumpar** *face;* DYI **wumpu** *head.*

Given that NYA in the west and YDN in the east both have **-a** in V_2 position, the second vowel of the proto-form is reconstructed as ***-a**. DYI has thus assimilated V_2 to V_1. The semantic relationship between *face* and *head* is likely one of synecdoche.

Residue: WMK **wuup** *nose.*

This form may possibly be related to those above, although it does not contain a medial nasal. The semantic relationship would then be one of synecdoche.

(4.147) PPN ***nguna-Y-**

WLB **nguna-** *to lie, be lying down; to extend horizontally;* PIN **nguna.rn-pa** *arm, branch of tree;* NYU **ngurni.ny** *lying, be lying down;* UMP **wuna-** *to be lying down;* WMK **wun-an** *lie down, live, stay; ... to be;* YIM **wunaa-** *lie down, sleep, exist;* GYA **wuna-y** *to lie down; to sleep; to have;* YDN **wuna-n** *lie down, sleep, exist;* DIY **nguna** *arm, wing, branch of tree.*

This root is reconstructed as ***nguna-Y-**, with **-Y-** indicating verb class, by O'Grady (1981:157). Its reconstructed reflexes include PMP ***wuna-** (Hale 1976:59).

Dixon believes that this root can be reanalysed as ***ngu-** plus the Imperative suffix ***-na**. According to his research, the regular WLB reflex of intervocalic ***-n-** following ***u-** is **-rn-**, but he states that this change does not occur across morpheme boundaries. Therefore, he says, if the ancestral root had been ***nguna-**, we would expect WLB's reflex to be ***ngurna-**. Thus, there must have been a morpheme boundary between ***u-** and ***-na** (Dixon 1980:156).

However, Dixon does not discuss the regular NYU reflex of ***-n-**, and it is not clear whether the presence of a retroflex nasal in NYU poses a problem for Dixon's analysis. Further, recall from the discussion in (4.53) that Hale has encountered dialect variation involving retroflexion in WLB. A great deal of work needs to be done on the question of retroflexes in PPN and its descendents before we can posit strict rules. Given problems such as dialect variation and borrowing, which may obscure the changes which actually occurred, it is possible

that we may never find a neo-grammarian rule for which there are no exceptions. For the purposes of this thesis, I am following O'Grady's PPN reconstruction.

The association between *lie down* and *arm* seen above is probably one of a stance verb and a body part discussed in chapter 3. A similar relationship is seen in the reflexes of the root in (4.157), to which this root may be ultimately related.

(4.148) PPN ***nguntV**

GAW **NGUNTA** *there,* **NGUNTYA** *thither;* UMP **nguntu.ʔu** *anywhere;* YIM **nguntu** *this way, hither, towards us;* GYA **nguntu** *this side, nearby;* DYI **-ngunta** *somewhere.*

The second vowel of the proto-form may have been possibly ***-a** with the Middle and Eastern Pamic languages showing assimilation to the first vowel. The putative shift between the meaning of the GAW form on one hand and those of YIM and GYA on the other is antonymic. Evidence for the association of *anywhere* and *somewhere* is found in (4.41), which shows a relationship between *any* and *some.*

(4.149) PPN ***ngUntV$_1$**

BAY **nguntu.n-ka-yi-** *cough,* **nguntu.n-wartu** *suffering from a cold;* BAA **ngunti.nya** *dirt from nose, snot.*

Both ***-u** and ***-i** are plausible reconstructions of *V_2. If ***u** is reconstructed, then BAA shows assimilation to a following palatal, while if ***i** is reconstructed, BAY shows assimilation to the first vowel. This set may be ultimately related to that in (4.160) through prenasalization.

(4.150) PPN ***ngUntV$_2$***

NYU **ngunt** *elder brother;* GAW **NGONDO** *an elder brother;* BAA **ngunta.ja** *brother-in-law.*

If the final vowel of the proto-form was ***-u**, then BAA has assimilated V_2 to V_3. If it was ***-a**, then GAW has assimilated V_2 to V_1. All of these words involve the concept of *brother.*

(4.151) PEPN ***ngunyi(n)***

YIM **ngunyin** *small dilly bag;* GYA **ngunyin** *dilly bag; the tree used to make into strips and weave fishing nets and dilly bags; spider web; placenta;* WEM **ngunyi** *a bag.*

The complete phonological agreement between the YIM and GYA forms may be due to direct borrowing. However, it is unlikely that WEM has borrowed this word from either YIM or GYA, as WEM is spoken in the southeast while YIM and GYA are spoken in the northeast of the continent.

(4.152) PPN ***nguun(y)jV(l)***

NYA-W **ngunji.rr** *smoke;* GYA **ngunjil** *charcoal, hot coals or hot ashes;* YDN **wunyju** *smoke;* GID **nguuny** *soot.*

It is not clear whether the consonant cluster of the proto-form was ***-nj-**, with assimilation occurring in YDN, or ***-nyj-**, with NYA-W and GYA undergoing dissimilation. Given the fact that NYA-W and GYA are spoken on opposite sides of the continent, ***-nj-** is perhaps more likely to be the correct reconstruction of the cluster. O'Grady (1987:523) has noticed that in some eastern languages, original disyllabic roots of the shape CVCCV may become

monosyllabic through the loss of the second consonant of the medial cluster and the second vowel. The GID form above illustrates this process; a further example is provided by members of the GID doublet **junka.rr** *penis* and **jun** *tail* ..., which are both reflexes of PPN ***jurnka** (O'Grady 1987:523). An association between *smoke* and *charcoal* is also found in (4.113).

(4.153) PPN ***ngupa(l)**

PIN **ngumula** *male child from walking stage to initiation;* WJK **NGOBE.RN** *the eldest son or first son; also the forefinger;* UMP **wupu.y** *young, as of birds,* **wupu.yu** *child, brother's son;* WMK **ngoomp.ang** *navel umbilicus; umbilical cord; name given to child ... at time of delivery of afterbirth;* GYA **ngumpal** *fully trained boy;* YDN **ngumpu.pu** *new-born baby;* GID **ngupuu-ya** *ignorant, "greenhorn";* DIY **ngupa.ra** *first, first child.*

Lenition from a stop to a nasal in PIN is also seen in (4.11) and (4.142). UMP, YDN and GID show assimilation of V_2 to the first vowel. The immediate common ancestor of WMK, GYA, and YDN appears to have undergone prenasalization of the second consonant. The WJK and DIY forms share the notion of *first child,* while the UMP **wupu.yu** and PIN, WJK, and GYA forms all refer to *male child.* The WMK and YDN forms involve the concept of *baby.* The semantic association between *fully trained boy* and *baby* may be one of antonymy, or one of degeneration or elevation, depending on the direction of change. Although the GID form does not refer to a *child,* it it plausible that there is an association between *baby* and *ignorant, greenhorn.*

(4.154) PPN ***ngupV**

NYU **ngup** *blood;* WJK **NGU-BU** *blood,* **NGUBU.L-YA** *red, blood-coloured;* YIM **wupa** *red ochre used for cave paintings.*

Because there is no overwhelming evidence among the members of this set for either final *-u or *-a, ***V** is reconstructed. Note, however, that Nhanda and Malgana, both located on the west coast, have the form **ngupa** *blood.* The fact that two western languages and one eastern language all have -a would suggest that the final vowel should be reconstructed as ***-a.** The WJK form **NGUBUL-YA** *blood-coloured* provides a semantic link between the concepts of *blood* and *red ochre.* This association is attested elsewhere, as in the Ngarluma pair **marta** *blood* and **marta-rr** *red ochre* (O'Grady 1966:93 and 100).

Residue: WMK **wu?** *brown or red ochre.*

My data contain no examples of ***-p-** > WMK **-?-**, nor does Hale (1976) discuss such a change. However, given the semantic agreement between this form and those above, it is very likely that **wu?** is a further reflex of the above PPN root.

(4.155) PPN ***ngupVl**

WJK **NGOBA.R** *open downs near the sea; sand-hills of the coast;* WMK **wump** *hump-backed, heaped;* YIM **wupuul** *heap, large bunch, pile;* YDN **ngumpu.n** *heaps of soft sand.*

Again we have no conclusive evidence as to the second vowel of the PPN root. A list of examples of prenasalization in WMK can be found in (4.2). See (4.4), (4.21), and (4.153) for further examples of prenasalization in YDN. Semantically, this set may be an example either of widening, with a shift in meaning from *heap of sand* to *heap* in WMK and YIM, or of narrowing, with *heap* changing to *heap of sand* in WJK and YDN.

(4.156) PDNY ***ngu(r)ntirri**

NYA-W **nguntirri** *even-sounding, running smoothly (as of an engine);* NYA-S **ngurntirri** *sound of engine;* WLB **ngurntirri-** *to growl at, scold.*

It is possible that borrowing is involved in the history of the above forms. The set in (4.162) relates *even sounds,* such as *purr* and *hum,* with *growl.*

(4.157) PNY ***ngurntV**

NYA **ngurnti** *shoulder;* NYU **ngurnti.ny** *lying, lying down;* WJK **NGWUNDO-W** *to lie down;* BAY **ngurnta-yi-** *lie down, sleep, camp.*

The first **-W-** seen in WJK may represent a transition from **NG-** to the roundness of **-U-**. It is not clear whether WJK had an alveolar consonant cluster, or whether **-ND-** represents retroflex **-rnt-**. The set in (4.147), to which this set may be ultimately related, shows a semantic association similar to that seen here.

(4.158) PPN ***ngUrra**

NYA-W **ngurra** *camp;* NYA-S **ngurra** *camp site;* WLB **ngurra** *camp, home, place; a day, a night - in sense of measure of time;* PIN **ngurra** *camp, dwelling, dwelling area;* PIT **ngurra** *camp;* DIY **ngurra** *camp, domestic, belonging to camp.*

This form was reconstructed as ***ngurra** by O'Grady (1966:112). However, as none of the languages in my study which are diagnostic of initial vowel length are included in this set, I have reconstructed the first vowel as ***U**.

Residue: GID **ngurraam** *sleep.*

Phonologically, this form could well be included in the above set, with some reservation. Because GID has only one rhotic, it is possible that **ngurraam** descended from a root with ***-r-**. If this form is cognate with the forms above, then the reconstruction should include a short first vowel and final ***-m**, as GID retains both vowel length and final nasals. Since a *camp* is a place where one *sleeps*, there is a possible semantic connection between this form and those in the above set.

(4.159) PPN ***ngUrrkV**

PIN **ngurrka.nta-nu** *to recognize some person or object that you know after looking a while;* BGU **ngurrku.rr.ma** *to show (how);* DIY **ngurrrku-** *to know, think.*

A further example of ***-rr-** > DIY **-rrr-** is found in (4.91). Evidence for the association between *know* and *show* is found in GAW **NŎ-NDI** *to point with the hand, to show, etc.* and GID **nuuma** *to know, understand,* which are both putative reflexes of PPN ***nuu-** (Hendrie 1984:94-95). The meaning of the PIN form can be related to that of DIY because *recognizing* entails *knowing.*

(4.160) PPN ***ngurru**

NYA-W **ngutu** *blocked, stuffed up (of nose);* WJK **NGO-RO** *the mucus of the nose;* GUP **ŋurru** *nose, point, cape; nasal discharge;* UMP **wuti** *fingernail, toenail, claw,* **uuʔu** *forehead;* DYI **wutu** *nose.*

Although the WJK form here is transcribed with **-R-** instead of **-RR-**, the semantic agreement between it and the other forms makes it seem likely that **NGO-RO** is a mistranscription for **ngurru**. This root is reconstructed by O'Grady, who suggests the inclusion of the UMP forms as reflexes. His hypothesis is that, at some point in time, both UMP forms had the shape ***wutu**,

with ***w-** > **u-** by assimilation in that meaning *forehead* (O'Grady 1981:157). Evidence for a matching between PPN ***-rr-** and UMP **-ʔ-** is also found in (4.77) and (4.78). A further example of ***-rr-** > DYI **-t-** is seen in (4.90).

Nose and *forehead* can be related through metonymy. Corroboration for the association between *nose, forehead,* and *nail* is provided by at least three other roots: ***piku(-ny)** has reflexes meaning *eyebrow, forehead, face,* and *finger- or toe-nail;* the meanings of the reflexes of ***pɪrri(-rn)** include *nail* and *forehead;* and ***miilpa(-ny)** has reflexes meaning *eye, face,* and *fingernail, toenail* (O'Grady 1981:156-157). This root may be related to those in (4.149) and (4.161).

(4.161) PPN ***ngUrru**

GAW **NGURRO** *back, backside;* GUP **ŋurru.gu** *out of sight, behind.*

The semantic association between *back* and *behind* is strengthened by the GAW phrase **WODLI NGURRU-NGGA** *at the back of the house,* in which **WODLI** means *hut; house.* Further, the set in (4.86) also relates *back* and *behind.* It is possible that this root is related to that in (4.160).

Residue: WJK **NGARRA** *the back.*

I hesitate slightly to include this form with the GAW and GUP forms above, because of the quality of the first vowel. However, the phonological and semantic similarities make it very probable that the WJK form is also a cognate.

(4.162) PPN ***nguurrV**

NYA-W **ngurr** *sound made to attract a cat,* **ngurr-ngurr** *pig,* **ngurr-kurru-mu-nu-** *to purr, of a cat,* **ngurru-ji-ni-** *to render "sweetly" (a song),* **ngurr-ngurr-kurru** *thunder;* NYA-S **ngurr-ngurr** *pig, catfish;* WLB

nguurr.pa *larynx, throat,* **nguurr-ma** *to gulp, breathe heavily,* **nguurr-pirlti-pirlti** *snorer;* PIN **nguurr-pa** *a growl of dogs about to bite; snoring; used of camels, dogs, pigs, etc.,* **nguurr.warltu-warltu-rnu** *to snore;* BAY **ngurru.rru.karri-yi-** *snore;* GUP **ŋurru-waŋa** *hum, moan, croon,* **ŋorr'-yu-n** *hum a tune, moan or cry softly;* WMK **ngur-ngur** *pigs' noise;* BGU **ngurra ~ ngurra.n** *dog;* GID **nguurr** *growl (of dogs).*

One striking feature of the phonology of this set is the fact that WLB and PIN, which do not usually preserve vowel length, both have a long first vowel in their words above. The onomatopoeic nature of these words may have led to secondary lengthening. NYA and WMK show a relationship of *pig* to *pigs' noise,* while PIN **nguurr-pa,** and the BGU and GID forms demonstrate a similar relationship between *dog* and *growl.* PIN **nguurr-pa** provides a link between *growl* and *snore.* The set in (4.23) also relates *growling, barking, snoring, pig,* and *dog,* while that in (4.123) shows an association between *grunt* and *snore.* One WLB form has a body-part meaning, *throat,* which can be associated with *humming* and *growling.*

(4.163) PPN ***ngUru**

PIT **nguru.ru** *one,* **nguru-warlka** *yesterday, tomorrow* (**warlka** *sun, day*); DIY **nguru** *one day beyond.*

Neither PIT nor DIY is diagnostic for length in V_1 position, so ***U** must be reconstructed. There is complete semantic agreement between PIT *yesterday, tomorrow* and DIY *one day beyond.*

(4.164) PPN ***nguurV**

BAY **ngura.tharri-yi-** *stage a corroboree, dance;* WMK **wur.ʔath-an** *lead astray;* YIM **wuuri-l ~ wuurii-** *play, dance;* GYA **wuri** *dance, swing;* BGU **wura.li** *to play.*

Again, there is no conclusive evidence for the quality of the second vowel in the proto-form. A semantic association between *play* and *tell a lie* is attested in (4.76), (4.105), and (4.137). A further association between *tell a lie* and *lead astray* is not implausible. A relationship between *play, dance,* and *swing* is also seen in (4.73).

(4.165) PPN ***nguya**

WJK **NGU-YA.NG** *the distant misty appearance of approaching rain;* YIM **wuya.rr** *dim, indistinct, unclear (sight or sound).*

Since YIM is diagnostic of initial vowel length, we can posit PPN ***u**. The semantic relationship involved is one of either widening (from *misty rain* to *unclear*) or narrowing (from *unclear* to *misty rain*).

(4.166) PPN ***ngUya**

NYA-W **nguya.l-ma-na** *to fail to reach (far enough);* GYA **nguya.rr-mani-l** *plan to do, but unable to; to want something but can't get it* (**mani-l** *get*).

Recall that in (4.3), NYA-W **-a** assimilates to a preceding palatal consonant. Here, as in (4.145), the suffixes containing **-a** appear to prevent such assimilation. The meanings of the words involve a clear relationship: *to be unable to do* as one has planned, or *to be unable to get* something one wants is *to fail to reach a goal.*

Residue: YDN **nguyarr-kata-n** *think about.*

Phonologically, this form seems a likely member of the above set. There could be a connection between the meanings *plan* and *think about,* but unlike the above words, the YDN form does not specify a lack of success.

(4.167) PPN ***nguya(l)**

BAY **nguyu** *raw (of fruit);* UMP **nguy?ul.u** *raw (of meat);* WMK **ngoyal** *raw.*

BAY and UMP have assimilated V_2 to V_1. Semantically, it seems likely that the proto-form meant *raw,* with narrowing taking place in BAY and UMP.

(4.168) PNY ***nguyu**

NYA-S **nguyu.mpa.ra** *fire, firewood;* WLB **nguyu** *blacking from charcoal - especially from burnt corkwood;* GAW **NGUYO-NDI** *to warm, to make warm.*

The dual meanings of the NYA-S form illustrate the potential versus actual relationship, as *firewood* is potentially *fire.* A second level of potential versus actual association also seems to be involved in this set. Since *blacking* and *warmth* are two results of *fire, fire* is potentially *blacking* and potentially *warmth.*

Chapter 5

Conclusions

This thesis is not an attempt to determine whether or not PN is a language family. An enormous amount of work remains to be done before we can confidently state that this is the case. The fact that this thesis was written under the assumption that PPN did at one time exist does not decrease the validity of the cognate sets. If it turns out that Dixon is right in believing that PN is not a family, the sets would still provide evidence that the languages in this study are related; the reconstructions, however, would have to be re-evaluated.

The main purpose of this thesis is to present a collection of cognate sets reflecting ***ng**-initial roots. As seen in chapter 2, it is not yet possible to determine the environment or the languages in which PPN initial ***ng-** weakens to **w-**. A great deal of borrowing has taken place among the languages which exhibit the ***ng:w** matching, and has obscured the facts surrounding the change. It may be the case that we will never be able to establish a rule for which there are no exceptions. In addition, an examination of **k**-initial forms is very important, as it is possible that some of these sets reflect ***k**-initial roots.

However, the data in this thesis does indicate that, among the twenty languages,

only UMP, YIM, and GID should be considered diagnostic for PPN vowel length in the $*V_1$ position. The data also point to the presence of both a retroflex series and a laminal lateral in the PPN consonant inventory. But further detailed work needs to be done before we can draw any firm conclusions.

These cognates contribute to the growing mass of evidence which suggests that the PN languages are related. They do not, however, provide evidence for the existence of PPN. A thorough comparison of these sets with data from non-PN languages is needed. The failure to find a significant number of cognates in non-PN languages would indicate that the PN languages underwent a period of common development, separate from the non-PN languages.

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Appendix 1

Data from the twenty languages in this study are taken from the following sources:

Bāgandji	Hercus 1982
Bayungu	O'Grady field notes
Bidyara-Gungabula	Breen 1973
Diyari	Austin 1981 and Austin field notes
Dyirbal	Dixon 1972
Gawurna	Teichelmann and Schürmann 1879
Gidabal	Geytenbeek and Geytenbeek 1971
Gugu-Yalanji	Hershberger and Hershberger 1982
Gupapuyngu	Lawton and Lowe nd
Guugu-Yimidhirr	Haviland 1979
Nyangumarta-S	Hale *et al.* 1980
Nyangumarta-W	O'Grady field notes
Nyungar	Douglas 1968 and Douglas 1976
Pintupi	Hansen and Hansen 1974
Pitta-Pitta	Blake 1979
Umpila	O'Grady computer printout
Wadjuk	Moore 1884
Warlpiri	Hale 1974
Wembawemba	Hercus 1969
Wik-Mungkan	Kilham *et al.* 1986
Yidiny	Dixon 1977

Index of Languages

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