

INITIAL APICALS IN NUCLEAR PAMA-NYUNGAN

by

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ABSTRACT

Although the question has been discussed for at least 150 years, the deeper genetic relationships among Australia's two hundred indigenous languages have not been proved. Evidence has been proposed in favour of either a Pama-Nyungan Family that covers all but the northern central part of the continent, or an all-inclusive Australian Family. To establish conclusively either grouping of languages as a family, it is necessary to reconstruct for the theoretical proto-language a substantial amount of grammar, phonology and lexicon.

Through comparison of the vocabularies of nine Australian languages this study has produced ninety-six reconstructed word roots, and also shown that the apical consonants *t, *n, *l and *r contrasted in word-initial position, in Proto-Nuclear-Pama-Nyungan. Reconstruction of the roots involved searching the vocabularies for forms showing plausible phonetic similarity; finding support for the apparent sound correspondences and processes in other cognates or in the literature; and assessing the semantic relationships by reference to parallels in languages from Australia and other continents. In all, 157 proto-forms are presented (some 17 for a shallower level than Proto-Nuclear-Pama-Nyungan), and the reconstruction of each is demonstrated by analysis of each cognate and the regular phonological and semantic processes and correspondences involved in the development of each of the languages in question.

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for the support they have given
throughout my education.

ABBREVIATIONS

AHD	American Heritage Dictionary
BAY	Bayungu
COD	Concise Oxford Dictionary
GAW	Gawurna
GID	Gidabal
GUP	Gupapuyngu
NMA	Ngarluma
NYA S	Nyangumarda (Strelley)
NYA W	Nyangumarda (Wallal)
PA	Proto-Australian
PAN	Proto-Austronesian
PDNY	Proto-Desert Nyungic
PEPN	Proto-Eastern Pama-Nyungan
PIE	Proto-Indo-European
PIN	Pintupi
PK	Proto-Kanyara
PM	Proto-Mantharda
PN	Pama-Nyungan
PNG	Proto-Ngayarda
PNP	Proto-Northern Paman
PNPN	Proto-Nuclear Pama-Nyungan
PNY	Proto-Nyungic
PNYY	Proto-Nyungo-Yuulngic
PP	Proto-Paman
UMP	Umpila
WLB	Walpiri
YIM	Guugu-Yimidhirr

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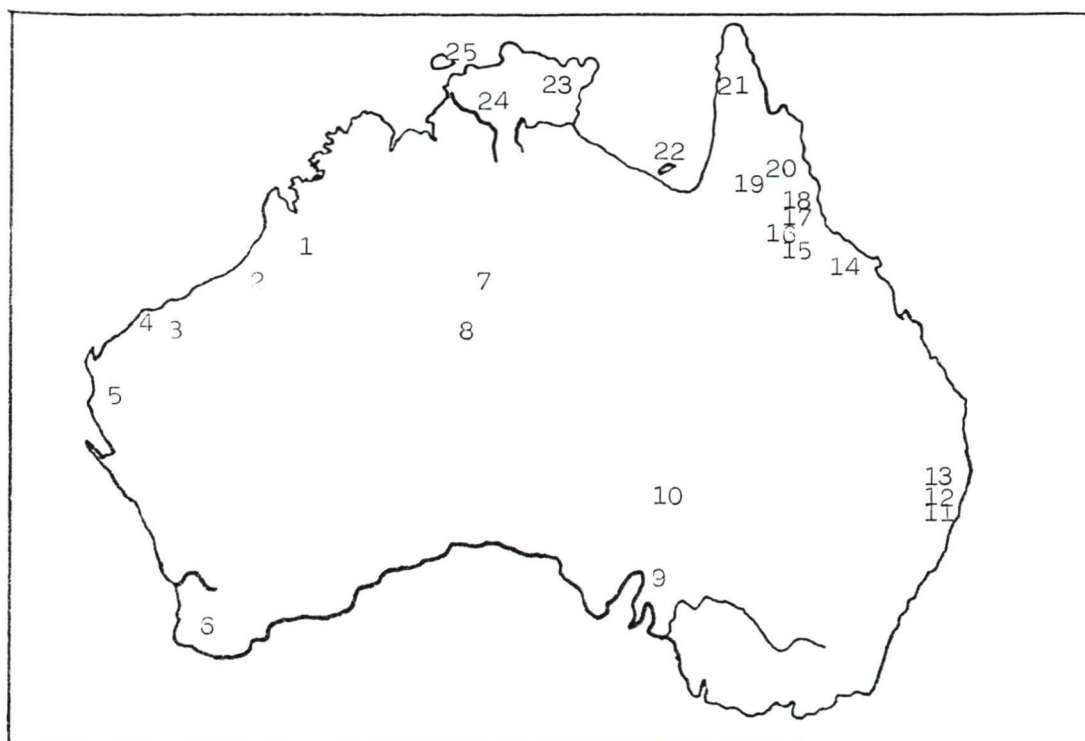
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MAP 1. Locations referred to.



MAP 2. Approximate locations of languages referred to.

Adnyamathanha 10	Nyawaygi 14
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Dyirbal 17	Umpila 21
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Gidabal 13	Wagaman 19
Gunwinygu 24	Walbiri 7
Gupapuyngu 23	Warrgamay 15
Guugu Yimithirr 20	Warungu 16
Lardil 22	Yaygir 11
Mangarla 1	Yidiny 18
Ngarluma 4	Yindjibarndi 3
Nyangumarda 2	

1. INTRODUCTION

In Australian comparative linguistics two questions are at issue: a. What is the genetic status of the Pama-Nyungan grouping of languages? b. Which apical phonemes contrasted in initial position in proto-Pama-Nyungan? While there is wide acceptance of the term 'Pama-Nyungan languages', and much evidence has been amassed in its support, the necessary proof comprising the systematic demonstration of phonological and morphological correspondences, as well as an outline of the structural features of the proto-language, is far from complete. Yet a considerable amount of reconstruction has been done involving sub-groupings within PN, comparison of case systems, reconstruction of conjugational markers, and so on. On the one hand, O'Grady (1979) has asserted that it is obvious that the PN languages constitute a genetic family and that reconstruction of a proto-language including perhaps 1400 stems, analogous to that postulated for proto-Indo-European, is an attainable goal. On the other hand, Dixon (1980:226) has said that "it should not be inferred that PN is in any sense a genetic unity". Clearly, the status of Pama-Nyungan will not be settled until a cohesive body of material, including reconstructed lexical forms, has been amassed, and the reconstructions shown, generally speaking, not to offer possibilities of mapping on to forms in Hale's (1964) other twenty-eight Australian language families.

The term Pama-Nyungan (PN) — derived from recurrent forms for

'(aboriginal) person' in languages of the north-east and south-west of Australia, respectively — refers to the large related group of about 160 languages that covers all of the continent except for the Kimberleys and Arnhem Land in the north. In view of the greater difficulty involved in reconstructing the proto-language which would represent every PN language, a few of which are more distantly related to the rest, the slightly more restrictive term Proto-Nuclear-Pama-Nyungan (PNPN) is used. This was proposed by O'Grady (1979) and is adopted in this study, which is based on just nine PN languages. PNPN, dating perhaps from 3,500 B.P.E., excludes Lardil and languages of the southeast, including Gippsland, which, while also considered as related languages, appear to have split off from the mainstream of the PN family perhaps 1,000 years earlier, and are sufficiently divergent to justify exclusion from the present work.

The question as to which apical consonants contrasted in initial position in PNPN has not been thoroughly addressed. As can be seen in Table IV, the number of words in a typical modern language that begin with an apical is quite small, and indeed in many languages initial apicals are proscribed. Hale's reconstruction of Proto-Paman (PP) reveals a single non-nasal apical initial *T. Among the 475 roots reconstructed for Proto-Kanyara and Proto-Mantharda (Austin 1981) no initial apicals occur, and a similar situation holds for Proto-Nyayarda. For PA, Dixon (1980:174)

states that there were probably just a few syllable-initial occurrences of *t and *r and possibly some of *n. He goes on to suggest that *t and *l might have been allophones of a single phoneme, with the stop being realized initially and after a consonant, and the lateral word-finally and after a vowel. As evidence to support his claim, he points to the free variation between [t] and [l] initially in Yaygir, the PA ergative case inflection *-tu ~ *-lu, and the common root 'to cry, weep', cited by him as /lu-/ in western languages but /tu-/ in the east. As it appears that PNPN *l- and *r- have merged with *t- and other consonants in many eastern languages, the value of this last example is uncertain.

Because many Cape York languages allow only one of /t l r/ word-initially, it has been possible, as indicated above, to reconstruct only initial *T for PP. If, as Alpher has suggested (1976: 91), Pama-Nyungan comparative work shows, e.g., Warlpiri (WLB) taku 'hole in the earth' to be cognate with PP *Taakurr 'ground', and lirra 'mouth' with PP *Tirra 'tooth', then the indications are that the opposition of PNPN stem-initial non-nasal apicals had neutralized to *T in PP. Thus a demonstration of the apical consonants which occurred in PNPN will contribute to the sub-grouping of Pama-Nyungan languages.

In the present work, an attempt is made to add new material in the drive to establish the genetic relationships among Australian languages. More particularly, it adds weight to the argument

that Pama-Nyungan languages do constitute a genetic grouping distinct, at least in terms of the length of the period of separate development, from the other language families of Australia. This work is incomplete in that no systematic attempt is made to find cognates between PN and other Australian languages (though preliminary study suggests that such cognates are few in number); the presentation of all accumulated material should, however, facilitate more comprehensive comparative study.

2. HISTORY OF IDEAS CONCERNING THE RELATIONSHIPS AMONG AUSTRALIAN LANGUAGES

Since the first recording of the Australian word kangaroo at the Endeavour River in 1770 (Cook 1770:578), a variety of theories have been put forth concerning the provenance of Australian languages. At their first intercourse with the natives of Botany Bay, members of Cook's crew (ibid.,p.443) were naively surprised that they could not understand a single word of what was being said.

Languages being of great importance "to the learned ... in their researches into the origin of the various nations ..." (ibid., p.645), Cook found it desirable to gather a specimen of the speech of the natives on the Endeavour River, when a grounding on a coral head forced him to beach his ship for repairs there. The specimen consisted of native equivalents for about four dozen common vocabulary items, mostly common nouns, elicited in citation. Cook was interested enough to compare his vocabulary with that of a language spoken near New Britain, and concluded that the languages were not the same. He reasoned that if the languages of New Britain and Australia were the same, that would indicate a common origin of the peoples of both places.

In this particular case, the linguistic information seemed to indicate that the Australian language was not related to the New Britain language, despite their relative geographic proximity.

There are errors, to be sure, in Cook's word list -- mistakes resulting from lack of experience in discerning sounds foreign to English, and mistakes involving the referents of words -- but on the whole the list is surprisingly correct (Haviland 1974). This is of interest since, for all the deficiencies in the pre-scientific vocabulary lists, the comments on language relationships made by the early investigators cannot be wholly dismissed because of unacceptable data. The language of Cook's Endeavour River wordlist was identified by investigators nearly two centuries later as Guugu Yimidhirr.

In 1821 the explorer Captain Phillip King landed at King George the Third's Sound in the south-west corner of Australia, encountered the natives there, and collected a vocabulary of 59 items in which he immediately noticed a word similar to one in a vocabulary collected earlier near Sydney on the east coast (King 1827:144). King compiled a comparative table containing basic vocabulary items in languages from eight places around Australia and Tasmania. His intention was to show the great differences that existed among the languages of Australia; he points out that of the thirty-three names of objects in his comparative list there is similarity among the terms for only one, the eye. The terms for eye show similarity in all of the languages except Tasmanian. This is indeed impressive, but he overlooks other similarities existing between only two or three languages; for instance, there

is a clear similarity in terms for teeth in three languages and for foot in two languages.

It seems that while seeking a relationship among all the languages he overlooked the possibilities of genetic sub-groupings of Australian languages, and of the random survival of an old root in a subset of the languages examined. Nevertheless, despite the great dissimilarity among the languages that was apparent from the comparative word list, he was astute enough to conclude, even in the face of contemporary 'expert' opinion that the Australians derived their origin from New Guinea, that the source (and hence the genealogy) of the Australian languages could not be established until much more data had been collected (King 1827: 637). Even though he overlooked some cognates in the word lists, King deserves credit for conceding that the relationships of the languages must be proved "by a general resemblance of the words, and not merely by a few examples of coincidence, which can only be considered accidental" (ibid., p.636). The comparative philology of the period took vocabulary as its subject matter and did not deal with other aspects of language -- hence the complete lack of any mention of grammar as a criterion in the classification of languages.

The expansion of colonization in Australia in the nineteenth century led to the collection of many small vocabulary lists in aboriginal languages (as well as a few longer lexicons), particu-

larly by missionaries. The major contribution of George Grey, explorer and later Governor of South Australia, was to counter the general opinion of the time that the Australian languages were "radically distinct" and consequently that the aboriginal peoples "originated from several separate races" (Grey 1841:207).

As proof that all the Australian 'dialects' have a common root, Grey offers three observations about them: first, there is a similarity of sounds and word structures in different parts of Australia; second, words recur which are similar in sound and meaning; third, certain personal names appear in localities far apart. A comparative table containing native equivalents for 28 common vocabulary items like water, smoke, hand, eye, to see and to go clearly shows cognates in four languages near Perth, Adelaide and Sydney. Grey also claims that cognates from languages at Shark's Bay and Victoria may be added to his evidence. That the languages mentioned by Grey are genetically related is now undisputed (Wurm 1972), but his evidence is stretched beyond reason when he concludes, "Having thus traced the entire of the coastline of the continent of Australia, it appears that a language the same in root is spoken throughout this vast extent of country" (ibid., p.216). While it is true that the languages he cites cover a huge geographical area, large regions of the continent are not represented in his sample, and in particular, no language from the north is included.

On the positive side again, Grey offers some perceptive comments on the nature of language spread: if the continent was populated by immigrations from one area, then populations reaching new ecological regions would likely have coined new words for the unknown flora, fauna, etc. that they encountered there. Consequently, there would be many words for which there were no cognates in other parts of the country. On the other hand, the migrating tribes would not have had the same reason to coin new words for basic vocabulary (body parts, common actions, etc.) since those things would have always existed in their minds and languages. This is a very plausible explanation for the large proportion of cognates in Grey's comparative table. Grey's language samples were very small, however, and consisted almost exclusively of basic vocabulary, so it cannot be ruled out that there are cognates existing for less basic items. On the contrary, many such cognates have been unearthed; for example, Umpila aami 'at rest' is probably cognate with Dyirbal yama 'gently, slowly, too slowly/gently, softly' (O'Grady 1981b:273,275), and yet such a pair is hardly likely to appear in lists of only a few dozen words.

The contribution of the missionary George Taplin to comparative Australian linguistics is significant as the first attempt to subgroup the Australian languages. Had language study been his main focus he might have made some more revealing discoveries, since his perceptiveness about languages is apparent, but like so

many other authors of the time, he was only interested in language in so far as it might have some bearing on where the natives stood on the scale of humanity. Taplin circulated a questionnaire involving, among non-linguistic matters, items pertaining to the phonology, grammar and lexicon of Australian languages. The replies to the questionnaire are printed, but most of the questions on grammar elicited no response, as they were based on traditional grammarians' notions of noun declension and verb conjugation which do not capture the genius of Australian languages. Of great interest, however, is his comparative Table containing equivalents for 71 vocabulary items in 43 aboriginal languages (Taplin 1879: 143).

Drawing from the evidence in this table, he concludes that Australia was populated by several streams of immigration from different sources, and probably at different times (*ibid.*, p154). His evidence suggests a further complication -- that the continent was probably occupied by unknown first comers before the successive later immigrations occurred. He even proposes routes of penetration and dispersion for the latter. Although Taplin does not present very good evidence or argument, his opinions are not seriously at odds with our present-day understanding of the historical development (cf. Tindale 1974, for example). He reasons that resemblances of language indicate affinities between tribes and that "... where we find them using the same words it gives a

strong possibility of unity of origin" (ibid., p.154). On the basis of lexical similarity his 43 languages are grouped as those of the upper Murray River area, those south of the Murray, those in the area from Adelaide to Perth, those of the coast of Arnhem Land, those of northern South Australia, and so on. These groupings do bear some correspondence with the O'Grady, Wurm and Hale (1966) classification, but it is obviously incomplete and deficient by reason of the small sample of language collected. His statement (ibid., p.13) that "... where either lexical or grammatical similarity exists it points to a connection between the races at some past time" suggests that he has not allowed for the possibility of diffusion and borrowing. Clearly, non-accidental similarity of language is indicative of a past connection, but it does not necessarily mean that the languages in question are genetically related. Japanese has many words similar to English, e.g., besuto (an English loan, best), yet we do not deduce a common origin on such a basis. But Taplin does say that language is not an infallible guide to a tribe's origin and even points out the ease with which the natives drop their own language and use English - adding that this may have happened in the past at the time of new immigrations. Perhaps he was the first to note something that later scholars have often repeated and forgotten: "the comparison of the grammatical structure of different languages is ... the surest guide to the real relationships of languages

and nations" (ibid., p. 177).

Compared to the linguistics work of people like Taplin, there were other contributions to the body of knowledge which were less meritorious. One cannot but be appalled at the attitude, and its consequent effect on their method and insight, of authors like Carl Lumholtz, an adventurer and reportedly something of a dilettante, who declares of the aborigines that "...-- if indeed they can be said to have any culture whatever -- it must be characterised as the lowest to be found among the whole genus homo sapiens" (Lumholtz 1889: viii). It has been in large part due to the ignorance perpetuated in publications like Lumholtz's Among Cannibals that many Australian tribes, and their languages along with them, have died out.

Lumholtz does have some interesting observations about Australian languages, but most of it is based on others' research or on his own scanty evidence. The statement, "The language, not being written, is constantly undergoing change, and there is even a difference between the speech of the old people and the children", (ibid., p. 304) strains our credulity, assuming that he means a great difference, but at the same time, considering the discovery of 'mother-in-law' and various secret languages (e.g., Dixon 1971), there may have been some truth in it. He repeats the prevailing opinion that despite the apparent differences among Australian languages, they are all from a common root because "... it is a

fact that many words are the same in very large districts, even in places so far apart that they cannot possibly have influenced each other by communication" (ibid., p. 304). This last point is notable, since it plays a part in the argument for Pama-Nyungan languages as a genetic grouping. Pushing his thesis of a common origin for all the Australian languages, he continues, "A natural affinity between the languages can with certainty be pointed out. Some words are almost identical throughout the continent. An excellent illustration of this is found in the word for eye. In Caledon Bay, on the Gulf of Carpentaria, it is mail, Endeavour River, ... meul, ... Port Jackson (Sydney) mi, ... Victoria, mi, King George Sound, mi, ...". He points to the widespread recurrences of other words which are indeed good evidence of common origin but, like those of so many other investigators, his sample is not taken from languages throughout the continent. All of the languages he includes in his comparative table are Pama-Nyungan (as defined by proponents of such a classification, e.g., Wurm 1972). In citing Curr (1886), Lumholtz adopts what seems to have been a typical concern of many would-be comparative philologists of the period by straining to find a connection with languages from outside of Australia. The latter claims, "... while the Papuan and Australian languages are almost totally different, still many of the words used by the Australian blacks are almost identical with those employed by the negroes of Africa" (ibid.,

p.308) . Up to the present there has been no clear demonstration of genetic relatedness between Australian and any other languages, and it is generally held that any evidence of such a connection would have been effaced through time.

3. NON-LINGUISTIC EVIDENCE OF THE PREHISTORY OF AUSTRALIAN LANGUAGES

Given the inconsistencies in the linguistic evidence on which to draw a genealogical tree of the languages of Australia, it would be helpful to turn to other areas of research which might shed light on the history of the Australian people. It comes as no surprise to anyone engaged in the study of one or another aspect of man that the evidence that anthropology has to offer on the linguistic situation is also inconclusive. On the positive side, physical anthropological evidence does suggest some limits to the dating of events concerning language and to the nature of migrations.

Tindale (1974:89) discusses the distribution of racial types in Australasia. According to the evidence available to him, the first humans to reach the Australian continent were of a negrito type of small stature, with a distinctive kind of hair, named Barrinean (as they occur in Australia). To varying degrees, the features of the Barrinean type still survive in some parts of Australia: namely, in Tasmania, Melville Island (off the northwestern coast of Arnhem Land), the rain forest of coastal Queensland, the southeast of New South Wales and Victoria, and in the southwestern corner of Western Australia. This marginal distribution is taken to indicate that this population had spread widely over the continent before the coming of another racial type named the Murrayian, which the earliest physical evidence dates from 25,500 B.P.E. The Murrayians are the most common type in southeastern Australia and in the coastal regions of

southern and western Australia. A mixed racial type, characterized by blond hair, is found in the tribes of the western desert. Tindale (ibid., p. 93) adds that, according to the observations of J.B. Birdsell, the centre of distribution of the blond hair characteristic is the Warburton Ranges near the common boundary of Western Australia, South Australia and the Northern Territory -- at the heart of the area in which the Western Desert linguistic subgroup (Wati) is represented. The northernmost limit of the blond hair characteristic is marked by the territory of Mangarla speakers, which lies east of Broome and, coincidentally, also represents the extreme northern limits of Pama-Nyungan in that part of the continent.

The Carpentarian racial type represented the third wave of migration into Australia. These people are thought to have entered from the north before the raising of the sea level at the end of the last glaciation, which greatly increased the sea distance from Indonesia more than ten thousand years ago. This type spread throughout the Northern Territory, westwards from there to the Kimberleys and eastwards to the western part of Queensland.

All this is relevant to the linguist insofar as it suggests a mixed history. Since even the Murrayians were established in Australia twenty-five thousand years ago, any relatively recent migrations within the continent, say five or ten thousand years ago, would have intruded upon people already established in an area.

If the newcomers had annihilated the earlier inhabitants, all trace of their language could have disappeared with them. Yet the distribution of racial types indicates that at least some of the indigents of an area remained, and so it is reasonable to assume that there was some language contact. Whether it was proto-Australian or proto-Pama-Nyungan that spread over the continent, it is plain that the carriers of the new language would have encountered speakers of many different languages in the various regions, and if the latter exerted any influence at all -- a likely eventuality -- then the results would be different depending on the circumstances of the contacts between populations and on the nature of the earlier language. That the nature of the languages in contact affects the language that results is shown, for example, by the difference between Melanesian Pidgin and the Creole English of the West Indies, both of which have English as a base. (The intention here is not to suggest that the contact situations between Australian languages were in any way similar to that of these examples, but rather to merely point out the extent of the differences that can result.)

While the Carpentarian type is not exactly coextensive with the 'prefixing' languages of northern Australia, it is tempting to speculate about the immigration of the Carpentarians and the recurrence of certain features among the languages of the area which they occupied. The occurrence of the Western Desert racial type over the territory of the speakers of the Western Desert lan-

guage and Warnman (i.e., the Wati subgroup) simply suggests that generally the speakers of those languages are from a common stock. Further, it makes it appear unlikely that earlier members of the stock who spoke the language ancestral to Western Desert and Warnman, thought to be the most conservative of Pama-Nyungan languages, were the bearers of a spreading proto-Pama-Nyungan, otherwise one would expect the features of this racial type to be more widespread. It is also interesting to note that the speakers of Tiwi on Melville Island, a short distance off the northwestern coast of Arnhem Land, are racially of the earliest Barrinean type, and that their language cannot be shown to be genetically related to any other Australian language.

Archaeology reveals another milestone that may be pertinent to the unravelling of the genealogy of Australian languages. Tindale (1974:118) asserts that there is no archaeological evidence of the dingo, the wild dog of Australia, from before 6750 B.P.E., while there is evidence of man throughout Australia from 30,000 years ago. It is thought that the dingo would have spread throughout the continent in about a hundred years, a rate much faster than the movements of the tribes who already populated its new range. This being the case, the tribes would have had to find a word for the dingo as it appeared in their territory without always being able to borrow a word from a neighboring tribe. It could be primarily because of the speed of its spread that there appear to be no com-

mon words for the dingo appearing in geographically separated regions of the country. Yet there are recurring forms for animals as well as for inanimate objects whose existence on the continent, one could reasonably assume, has not been so brief. (For example, on the east coast Umpila has jarra 'seagull', and on the west coast Nyangumarda has tarra 'seagull', reflecting ancestral *tarra.)

The absence of common forms for dingo, and the widespread recurrence of other word roots among the Pama-Nyungan languages, strongly indicate that the spread of those languages predates the introduction of the dingo to the Australian continent. Dixon (1980:19) surmises that the invaders who introduced the dingo could have been speakers of a proto-Australian language, but if this were so one would expect more widespread words for the animal.

4. THE MODERN PERIOD OF RESEARCH

Work on the classification of Australian languages in the present century began with Schmidt (1919), who divided the languages into 'southern' and 'northern' groups. This was followed much later by Capell's A New Approach to Australian Linguistics (1956), in which he proposed 'common Australian' grammatical markers and pronouns, as well as 48 lexical roots. The latter, while drawn largely from the cognates found in Pama-Nyungan languages, do seem to provide some justification for postulating a common ancestor for almost all languages of the continent. In particular, Capell's monosyllabic verbal elements, with modifications and additions, continue as the main evidence that virtually all Australian languages are related as one family (Dixon 1980:428).

Capell's division of Australian languages into prefixing and non-prefixing types, coinciding approximately as it does with the later non-PN/PN genetic grouping, remains a significant and useful categorization. This typological classification, as Capell showed, is not absolute. The 'prefixing' label refers to the system of cross-referencing noun phrases by means of prefixes to the verb, yet there is considerable diversity of systems within the class (Blake 1977). On the other hand, there is no homogeneity of cross-referencing systems within the PN, non-prefixing, group either. Blake (op. cit., p.6) notes six different systems, in fact.

The next major step in the genetic classification of Austro-

lian languages was the demonstration by Hale (1964) that the Paman languages of Cape York Peninsula were related rather closely to one another. He further claimed that "the area as a whole articulates intimately with the mesh of close relationships extending over the southern bulk of Australia" (p. 250), despite the unusual appearance of those Paman languages which had lost initial consonants and undergone a number of other drastic but recent innovations.

From the other side of the continent, O'Grady (1966) reconstructed roots and phonology for Proto-Ngayarda and also proposed correspondences that indicated that Ngayarda languages constituted a subgroup within the Nyungic group of Pama-Nyungan. In the same year O'Grady, Voegelin and Voegelin (1966) published work based on lexicostatistics and grammatical features in which the genetic classification of the Pama-Nyungan family, encompassing most of the continent, was proposed. Despite various criticisms of this classification it remains widely accepted, although reconstruction of the phonology, structure and roots of Proto-Pama-Nyungan has yet to come. A number of other works dealing with reconstruction of protolanguages for various groups within the PN family have appeared in recent years, e.g., Proto-Paman (Sutton 1976), Proto-Northern New South Wales (Crowley 1976), Proto Norman Pama (Black 1980) and Proto-Kanyara and Proto-Mantharta (Austin 1981). Only Dixon (1980) has attempted to relate all the languages of Australia under the rubric of Proto-Australian (PA).

5. EVIDENCE FOR THE GENETIC UNITY OF PAMA-NYUNGAN LANGUAGES

If there were not ample evidence aside from common vocabulary that Pama-Nyungan languages are genetically related, then the status of reconstructed roots would indeed be questionable. Perceived similarities in form and meaning might be attributable to borrowing, or possibly to chance. But the grammatical evidence in support of the hypothesis of common descent is overwhelming. Leaving aside for the moment the question of whether or not PN constitutes a family separate from other Australian languages, one can point to earlier research which shows that many grammatical items are common over large areas of the continent.

Capell listed case suffixes found in most parts of Australia (1956:53), a verbal affix (ibid,p.55) and several other recurrent morphemes. Blake (1977) compared case markers in still greater detail. Dixon (1980:402 ff.) proposes a set of PA verb conjugations with, very significantly, common class markers. As it happens, not only do these items of evidence support the notion that PN languages are genetically related, but since the reconstructions and paradigms are based essentially on PN languages alone, they argue for PN as a family distinct from the Proto-Australian or Common Australian groupings intended by Dixon and Capell. Even so, the question of the status of PPN as opposed to PA has not been finally resolved. What is certain is that PN languages are genetically related, consequently, any common items of vocabulary

-- especially those shared by languages geographically remote from one another -- may be considered as true cognates and not, on the whole, borrowings.

There is further evidence that PN languages do indeed constitute a family. Blake (1977) reveals that not only do almost all PN languages use an ergative system of marking syntactic relations in contrast to non-PN languages (which almost exclusively have an accusative system), but also that a preponderant number of those PN languages use the ergative marker /+lu/ along with comparable allomorphs in many cases. In addition, O'Grady (1981a) has demonstrated that widespread PN forms for 'first person dual inclusive pronoun' descended from PNPN *ngali, which has no obvious reflexes among the non-PN languages. With such ample evidence of a family relationship to hand, the task of reconstructing the PNPN lexicon may proceed on a sound footing.

6. PHONOLOGICAL CHANGE

The array of phonological changes that can be traced in the development of Australian languages is far-reaching. Most such innovations are common to many language types around the world, and only a few will be touched on here as they have been thoroughly discussed in the literature. Vowel harmony, most prevalent in the morphophonemics of suffixation, is seen to have occurred in roots also. Dixon, in his discussion of this process (1980:179), offers several instances of the phenomenon, e.g., *juki > Wagaman juku 'tree, stick'. A less direct way of inferring vowel harmony in the history of a particular language is noted for YIM (Haviland 1979: 39). Table I shows the percentage frequency of occurrence of the vowels in each syllable of a YIM root.

Table I. Frequency of Vowel Occurrence by
Syllable in YIM

A.	First Syllable	Second Syllable
/a/	45	49
/u/	37	29
/i/	18	22
B.	In both First and Second Syllables	
/a/	56	
/u/	41	
/i/	29	

The frequencies indicated constitute statistical evidence for

vowel harmony having operated. Otherwise, one would expect percentages in part B similar to those in the second syllable column in part A, i.e., if there were no 'vowel harmony' correlation. When /u/ occurs in the first syllable, /u/ should occur in the second in only 29% of items, not 41% as shown in part B of the table.

Assimilation of consonants to vowels (and vice versa) is also widespread. Dixon (1980:344) claims that the second person singular pronoun *ngin at one stage became *nyin through assimilation of the initial velar nasal, a [+ peripheral] segment, to the [-bk] vowel /i/. There seem to be numerous instances, particularly in western languages, where the adding of ancestral suffixes to the root has led to assimilation of certain phonological features. In a number of cases, however, it is not possible to invoke assimilation as a process: NYA piyurrpiyurr 'galah' descends from *piya+ 'to grind', the original [-hi] segment *a having raised to [+hi] /u/ despite the [+lo] feature specification of the suffix /+rr/ (O'Grady p.c.).

One phenomenon that obtrudes only slightly in the present work is that of initial-dropping. This is evident particularly among languages of Cape York and has been well documented (e.g., Sutton, ed. 1976). It occurs occasionally in UMP (Alpher 1976, O'Grady 1976), and sporadically in some western languages (O'Grady

1979:155). Apparently, PIN is beginning to lose initial consonants (especially *p and *k), which during the transition period when the phonotactic rules continue to prohibit vowel-initial words, are replaced by /y/ or /l/, hence PIN yiku 'face area' < *piku(+ny).

A more problematic phenomenon of phonological change is metathesis. Here, the order of some segments is exchanged, e.g., *puka₂ > GID kupani+ 'to do first' (O'Grady 1981b:275fn.). The difficulty is that it does not occur regularly, so that unless the supporting evidence is very strong, the cognation of a putative metathesized form is suspect. Even though metathesis occurs throughout languages of the world, it is difficult to invoke it as an explanation for a sound correspondence unless it is known to be a well-attested process in the history of the language in question.

7. SEMANTIC CHANGE

Comparative reconstruction in Australian languages entails recognition of the usual array of types of semantic change seen throughout the various linguistic families of the world. From Bloomfield's list of nine categories of semantic shift -- narrowing, widening, metaphor, metonymy, synecdoche, hyperbole, litotes, degeneration and elevation -- it is not difficult to find instances of each among Australian languages. Leaving aside, for the sake of illustration, the often difficult question of the direction of an apparent shift, typical examples are: wakuny Warrgamay 'sea, saltwater', Nyawaygi 'mangrove' (metonymy) (Dixon 1980:119), walu UMP 'cheek', WLB 'head' (synecdoche), Ngarluma yalhuru 'tongue', Adnyamathanha yalhu 'flame' (metaphor) (O'Grady 1979:120). At the same time, it is not unusual for the semantic relationship between cognates to elude categorization of even a satisfying attempt at rationalization. Consider, for example, UMP taway 'moon', Yindjibarndi jawurta 'beard', which are almost certainly cognate (based on independent phonological and semantic evidence) but which at first view defy explanation of the divergence of meaning (O'Grady, *idem*).

Although the labelling of different types of semantic shift is of interest -- revealing, as it does, that there is some 'logic' in the displacement of meanings and that Australian Aborigines' use of language and view of the world was every bit as imaginative

and sophisticated as any other human's -- it is of little use in comparative work. If the relationship between the meanings of two tentative cognates falls into a category, then confidence in the cognation of the forms is strengthened, but there is no predictive power in these categorizations. While there may be tendencies, such as the common shift of meaning from a body part to some plant part or geographical feature (Dixon 1980:116), it is impossible to say with any consistency what will be the semantic relationship existing between two cognate words in different languages.

In addition to the traditional types of semantic change, two others seem to be unique to Australian languages. O'Grady (1960, 1979) discusses the POTENTIAL ACTUAL semantic relationship illustrated by the cognate pair UMP minya 'animal, meat', NYA minyɪ 'stench', wherein the MEAT might be regarded as the potential source of the actual STENCH. The same relationship, which appears often among Australian cognates, is seen in the two meanings of Yindjibarndi thama 'firewood', 'fire'.

A most remarkable type of semantic change in Australian languages is that of antonymy. It is not clear by what process a form will come to have a meaning opposite to that of related forms, nor is it universally predictable what the 'opposite' will be, but the answer may lie in the use of a particular ceremonial 'upside-down' language. In 'A note on a Walbiri Tradition of Antonymy', Hale explains the principles by which each item in an utterance is re-

placed by its opposite. In Tjiliwiri speech the intention 'Give me water' is expressed as 'I withhold fire from him', ngurrju 'good' as maju 'bad', wawirri 'kangaroo' as kanyala 'euro', and so on (1971:474-5). The insight gained by an understanding of the notion of antonymy as it functions in Tjiliwiri has led to the discovery of numerous cognates with opposite meanings; thus: ngarluma thama 'fire': Wadjuk DJAM 'water', BAY kawari 'west': UMP kaaway 'east', BAY yinha 'this': WLB yinya 'that beyond', etc. (O'Grady 1979:121). O'Grady (ibid.,p.122) demonstrates cognation between NYA jungka 'ground, earth' and Wadjuk TONGA 'ear', and suggests that one of the meanings has been derived by a process such as antonymy. In view of such apparent vagaries, the researcher must evidently be prepared to pursue virtually every semantic trail in Pama-Nyungan which is suggested by the isolating of sets of forms with phonologically congruent shapes.

8. PROCEDURE FOR ASSEMBLING COGNATES AND RECONSTRUCTING ANCESTRAL ROOTS

While exhaustiveness was not the aim of the study, the procedure for assembling the cognates was made as thorough and as systematic as possible. In the search for reflexes of forms with initial *t, *n, *l or *r, it was simplest to start with a language in which there has been the least change in the way of splits and mergers of initial consonants. Thus the first word in the /t-/ section of the Pintupi dictionary was taken as a point of departure and a search made in the dictionaries of the other eight languages for any forms, no matter what their meaning, that could conceivably bear a phonological correspondence to the Pintupi form. Depending on the language, these forms might have an initial apical or laminal stop, a glide, or Ø, etc. Of course, use was made of correspondences established by other scholars, but for the sake of thoroughness the search was extended to areas of the dictionary not always predicted by already attested correspondence patterns. Often, no plausibly cognate forms could be found in a particular language; often, on the other hand, there were several such forms. For example, one preliminary list was as follows: NYA taki 'nape of neck', WLB rraku 'hole in the ground ...', PIN taku 'a trench', GAW TAKANNA 'wide, broad', YAKKI 'depth, valley', YAPPA 'hole', GUP tagardagayun 'make fire', YIM tuukal 'bury, enter', GID jakun 'ground, country, territory', with no plausible cognates appearing in BAY or UMP.

Only after the initial search and the preliminary lists were completed did the detailed investigation for cognates begin. Evidence is needed to substantiate both the phonological and semantic correspondences before the cognation of any two forms can be asserted. On the phonological side, the work of other Australianists, general principles of sound change, or non-Australian historical linguistic insights may furnish the necessary supporting evidence. However, the most important support for the initial hypothesis of cognation is provided by the plurality of cognates witnessing the same correspondence(s).

The investigator resorts to similar sources for corroboration of the semantic correspondence between the putative cognates, though here less reliance is placed on rules. More attention is paid to similar semantic correspondences evidenced in cognate sets found, ideally, in closely related languages. Such languages are usually matched in similarity by the respective cultures of the speakers, and in these circumstances one can be more sure of a shared Weltanschauung, as it pertains to semantic shift, than where vastly different cultures are involved. To illustrate, one might reject as cognate GUP buku 'forehead ...' and Yidiny pikuny 'fingernail ...' (O'Grady 1981a.156-7) if the only supporting evidence of such an unlikely-looking semantic association came from, say, English, but when that same association is found in another Pama-Nyungan language (viz., NYA), one is forced to accept this as cor-

roboration. Nevertheless, the abundance of cases where semantic associations in Australian languages are paralleled elsewhere in the world is indicative of shared perspectives or experiences, thus if 'jaw' and 'shark' are associated in English, then this fact may be taken as corroborating evidence for claiming cognation between GID nukal 'jaw' and BAY nhuka 'shark'. This shared experience of people of different cultures is seen in an example provided by Dixon (1980:118): the form walngka in Nyawaygi means 'thirsty', and in Warungu 'eager, fond, wanting', thus paralleling the extension of meaning observed in the English sentence 'he is thirsty for knowledge'.

As each form in the preliminary list was examined for possible cognation with any others, it was either rejected or accepted as cognate, depending on the strength of the overall available evidence. In this way, the list cited above was reduced to that found at T2 in the cognate sets.

Once a set of cognates attributed to a single etymon has been compiled, the task is to reconstruct the form of that ancestral root. The specific argumentation which results in the offering of a proto-form is to be found along with its reflexes in the attestation section. As far as possible each proposal of a particular phonological development is supported by pertinent documentation. While every attempt was made to find corroborating evidence for the semantic correspondences, in view of the lesser regularity and

vagaries of meaning change it was necessary to claim plausibility as evidence, though this was considered sufficient only when the phonological evidence for cognation was strong.

The reconstructed root must conform to the phonological and phonotactic patterns of the proto-language, although clearly the definition of those patterns is affected by the evidence of cognates in the daughter languages. With regard to the consonant system of the proto-language, there is general agreement that it comprised fourteen distinctive segments. The inventories proposed for PNP (O'Grady 1979:132) and for proto-Australian (Dixon 1980:158) coincide, leaving aside Dixon's uncertainty about *ly and O'Grady's suggestion (p.c.) that retroflex *ṭ, *ṇ, and *ḷ, herein interpreted as rhotic glide-apical clusters *rt, *rn, *rl, may ultimately need to be posited for PNP as well.

There is similar agreement on the vowel system of the proto-language: just three vowels contrasted, with the addition of distinctive length in the first syllable of a root. As in modern languages, there was probably considerable allophonic variation to be heard, depending on the phonetic context. The PNP inventory of distinctive sound segments is set out in Table II.

Table II. The phoneme inventory of PNPN

Consonants

	apical	laminal	dorsal	labial
stop	t	j	k	p
nasal	n	ny	ng	m
lateral	l	ly		
flap	rr			
glide	r	y		w

Vowels

	front	back
high	i, ii	u, uu
low		a, aa

With the exception of a few monosyllables, the canonical shape of roots in PNPN was almost exclusively disyllabic, involving a single initial consonant, one to three medial consonants and an optional final, i.e., *CV(:)C(C(C))V(C). Among modern languages, there are those whose words must end in a vowel, and those where a final consonant is permitted. Of the first type is PIN, which adds /+pa/ (variously called a 'juncture syllable', a 'phonological stem augment', etc.) in certain contexts, specifically where an underlyingly

consonant-final stem stands uninflected (Hansen and Hansen 1969:160).

Capell's (1956) reconstructed roots included several with final *ng. Those roots, representing Common Australian -- thought by that author to be ancestral to what O'Grady later termed PNP -- concur with Dixon's (1980:244) observation that historically words could end in /ng/ or /m/ in most, if not all, Australian languages, but that that phenomenon has now disappeared over most of the continent. Of the nine languages compared in this work, GID stands alone in maintaining the ancestral final peripheral nasal, and is thus diagnostic for the attributing of *-ng or *-m to the proto-form. Therefore, when a cognate set lacks a form from GID there is no evidence for the presence or absence of that final nasal in the proto-language, and the specification 'PNP root (not in GID)' signifies that uncertainty. Similarly, UMP, YIM and GID are alone among the nine languages in retaining ancestral long vowels of the first syllable with some consistency, V_1 of a reconstruction for PNP based on a cognate set lacking a form from one of these three languages cannot, therefore, properly be assigned a length value.

There exists a number of cognate sets where some Nyungic (i.e., western) languages have an apico-postalveolar (retroflex) segment [t̠ n̠ l̠] /rt rn rl/ corresponding to a plain apico-alveolar /t, n, l/ in eastern PN languages, e.g., NYA W tarl.pa+ 'to make a sudden loud noise ..', GID talal.pa+ 'to clatter, to rattle',

NYA, PIN, BAY parnti+ v.tr 'to smell, sniff', GID panti+ 'to sniff'.

Dixon has argued (1980:155ff), largely via the claim that the preponderance of retroflex reflexes of the apicals follow /u/, that the ancestor of the languages in question had a single series of apical consonants and that /rt/, /rn/, /rl/ are the results of phonological split arising out of allophonic variation.

O'Grady, on the other hand, has evidence such as the above (p.c.) that the absence of retroflex apicals in eastern languages is the result of merger of those articulations with the plain apico-alveolars. He takes their presence in the west to be ancestral -- at least insofar as PNP is concerned.

In face of these conflicting claims, this writer has reconstructed whichever of the plain apico-alveolar or retroflex consonants seemed most justified by the evidence of the cognates present. As the question of contrast arises only in medial position, the value of the proto-forms presented here as evidence for the existence of apicals in initial position is not affected.

9. NOTES ON THE NINE LANGUAGES

The phoneme inventory of each language is to be found in Table III, where the consonants are presented in the order apico-alveolar, apico-postalveolar (retroflex), lamino-interdental, lamino-palatal, velar, labial/labio-velar and glottal. In the interest of greater clarity for the present purpose only, the diverse orthographies have to a large extent been standardized. In particular, the representation of oral stops in languages having only one distinctive series of these sounds has been changed from marked /d r d h d y/d j g b/ to unmarked /t r t h j k p/ respectively. Perhaps the standardized transcription of a given phoneme is not as accurately representative of the actual sound in the language as is the original transcription, but this should not materially affect this comparative study.

Unless stated otherwise below, the dictionaries are assumed to be accurate and transcribed according to modern linguistic practice. Unfortunately, however, most of the dictionaries are of limited size, containing only a fraction of the vocabulary of a particular language. Since it has been estimated that the working vocabulary of the average citizen around the world comprises about ten thousand lexemes, and since there is every reason to believe that an Aboriginal Australian has a similarly large store of words at his disposal (Dixon 1980:2), it can only be assumed that many more cognates would be unearthed if more complete dictionaries were available. Were the dictionaries to be as extensive as, say, a

Table III. The phoneme inventories of the nine languages of the comparative study

	PLOSIVLS	NASALS	LATERALS	RHOTICS	SEMI VOWELS	VOWELS
Nyangumarda	t rt j k p	n rn ny ng m	l rl ly	rr r	y w	i a u ii aa uu
Warlpiri	t rt j k p	n rn ny ng m	l rl ly	-rr- rr- r -rd-	y w	i a u ii aa uu
Pintupi	t rt j k p	n rn ny ng m	l rl ly	rr r	y w	i a u ii aa uu
Gawurna	T RT T TY K P TT TI KK PP D G B	N RN N NY NG M NN NN MM DN	L RL L LY LL LL DL	R R RR RR	Y W J U	I E A O U
Bayungu	t rt th j k p	n rn nh ny ng m	l rl lh ly	rr r	y w	i a u ii aa uu
Gupapuyngu	t rt th tj k p ' d rd dh dj g b	n rn nh ny ng m	l rl	rr r	y w	i a u ii aa uu
Umpila	t th j k p '	n nh ny ng m	l	rr	y w	i a u ii aa uu
Guugu-Yimidhirr	t th j k p	n nh ny ng m	l	rr r	y w	i a u ii aa uu
Cidabal	t j k p	n ny ng m	l	rr	y w	i e a u ii ee aa uu

dictionary of English, with its store of archaic, poetic, specialist and slang items, then the chance of finding cognate forms would undoubtedly be greater. Consider, for example, the English word holt 'wood, copse', cognate with German Holz 'wood', which though archaic still lingers in some British dialects and which would definitely not appear in a small dictionary of a few thousand words. Thus it can be inferred that the cognate sets offered here constitute only a fraction of what access to larger vocabularies would produce.

A few remarks are in order concerning recurring conventions or assumptions adopted in the exposition of the cognate sets. Generally no mention is made of the reflex patterns for initials of the proto-language in the attestation section, as they are all presented in Table V.

Forms from Nyangumarda (Marrngu subgroup, Nyungic group of Pama-Nyungan) are either of the Strelley dialect (NYA S) or the Wallal dialect (NYA W). Though alveolars and postalveolars do not contrast in initial position in this language, all four apical consonants other than /rr/ may occur word-initially. Similar comments apply to the distribution of apicals in Pintupi (PIN), a member of the Wati subgroup of Nyungic. Warlpiri (WLB, Ngarrka subgroup of Nyungic) also permits /t, n, l, r/ as initials, yet it must be noted that *l- and *r- have merged to /l/- in this language, and that those forms in initial /r/ have heretofore been considered

as loans from neighboring languages. Warlpiri <rr> is the usual representation of the alveolar flap in medial position, but initially stands for a retroflex flap; the latter sound appears medially as <rd>.

Dating from the mid nineteenth century, the source of the data for Gawurna (GAW, Yura subgroup of Nyungic) is pre-scientific and consequently the fidelity of the transcriptions is less reliable. Hence the retention, in capitalization, of the original symbols whose correlation with modern phonemic representations is in some cases uncertain. In particular, it seems that <E> and <O> may not represent independent phonemes, but rather allophones of /i/ and /u/ respectively. Permissible apical initials are suggested by T and N, though there are indications in modern Yura data that these symbols do not always represent -- and indeed may never represent -- an apical articulation.

One Bayungu (BAY, Kanyara subgroup of Nyungil) form from a different source (Davidson 1928-32) is written in capital letters to indicate the uncertainty of the phonemes represented. Apical consonants do not occur in initial position in this language.

Occurrent initial apicals in Gupapuyngu (GUP, Yuulngu/Murngic group) are /t, n, l, rr, r/. This language is alone among the nine in systematically contrasting fortis (voiceless) with lenis (voiced) stops word-medially.

Umpila (UMP, Middle Pama subgroup of Pamic) has words beginning

in the apicals /t, n, l/, although the latter two are very rare as initials. The process of initial-dropping has obscured some reflexes, but reconstruction is aided by other comparative work on Pamic languages -- especially on those discussed in Languages of Cape York (Sutton, ed., 1976).

Both Guugu Yimidhirr (YIM, Yalandjic group) and Gidabal (GID, Bandjalangic group) permit only the apicals /t, n/ in initial position. Table IV, after Haviland (1979:38) is offered to give a general idea of the frequency of roots with initial apical consonants. The YIM dictionary size of about 1000 roots is also typical of the smaller lexicons in the sample of nine languages, those of NYA, WLB, PIN, GAW and GUP are somewhat larger.

Table IV. Percentage of words by initials in YIM

Initial	Percent	Initial	Percent
k	17	t	7.5
p	17	y	7
m	12	j	5
w	12	nh	2.6
th	9	n	1.4
ng	9	ny	0.5

10. REFLEXES OF INITIAL APICALS

Reflexes of *t-, *n-, *l- and *r- in the nine languages under study are detailed in Table V. It should be noted that the status of the reconstructed root is not always PNPN, see Appendix A.

Table V. Reflexes of Initial Apicals in Nine Languages

a. Reflexes of *t-

NYA	WLB	PIN	GAW	BAY	GUP	UMP	YIM	GID
t- 2,3,4, 6,7,9, 10,11, 13,15, 16,17, 18,21, 22,25, 32,33, 34,35, 36,37, 41,42, 45,51, 53,58, 59,60, 61,62, 63,64, 65	rr- 1,2, 12,20, 32,35, 38,39, 46,50, 54,65 t- 7,15, 16,17, 22,32, 36,37, 38,60	t- 2,3,6, 11,15, 16,17, 18,19, 20,21, 22,23, 24,25, 26,27, 28,31, 32,33, 34,35, 38,39, 40,41, 42,43, 44,45, 46,47, 48,51, 52,53, 55,56, 57,59, 60 l- 49	T- 1,2,5, 12,14, 15,19, 21,22, 23,24, 31,32, 36,41, 43 y- 2,6, 17,18, 19,62 T- 1	j- 13,17, 27,32, 36,48, 64 th- 7,21, 57,61 y- 57 T- 1	t- 2,4,6, 7,16, 17,21, 24,25, 27,29, 30,33, 35,36, 40,41, 44,49, 50,52, 56,58, 63,65 j- 17,18, 27 th- 3,13, 17 r- 54	th- 8,9, 15,17, 26,36, 46 t- 15,29, 49,50, 64 y- 1,2, 10,43 ø- 11,36, 38,55 j- 6,18, 48	t- 8,11, 17,19, 27,36, 39,47, 49,54 th- 14,17, 21 j- 6,30	t- 1,5, 15,16, 20,28, 32,35, 36,38, 49,54, 62,64 j- 2

b. Reflexes of *n-

NYA	WLB	PIN	GAW	BAY	GUP	UMP	YIM	GID
$\frac{n-}{9, 14, 15}$	$\frac{n-}{4, 6}$	$\frac{n-}{4, 5, 6, 7, 8, 11, 12}$	$\frac{N-}{1, 12, 13, 14, 15}$	$\frac{ny-}{1, 3, 4, 10}$ $\frac{nh-}{12, 13}$	$\frac{n-}{3, 5, 8, 10, 11, 15}$ $\frac{l-}{13}$ $\frac{l-}{13}$	$\frac{nh-}{13}$ $\frac{l-}{13}$ $\frac{\emptyset-}{1}$	$\frac{n-}{2, 7, 8,}$	$\frac{n-}{1, 2, 5, 7, 8, 9, 11, 12, 13}$

c. Reflexes of *l-

NYA	WLB	PIN	GAW	BAY	GUP	UMP	YIM	GID
$\frac{l-}{1, 2, 6, 8, 9, 10, 14, 16, 19, 20, 21, 23, 24, 25, 26, 27, 29, 32, 33, 34, 35, 36, 37, 38, 40}$	$\frac{l-}{1, 2, 7, 9, 18, 22, 23, 27, 29, 30, 32, 35, 40}$	$\frac{l-}{1, 4, 9, 10, 11, 12, 13, 16, 17, 19, 21, 23, 24, 25, 26, 28, 29, 31, 35, 36}$	$\frac{T-}{8, 9, 13, 24, 28, 37}$ $\frac{\emptyset-}{24}$	$\frac{y-}{13, 28, 35}$ $\frac{j-}{29}$	$\frac{l-}{3, 5, 7, 8, 9, 10, 12, 14, 15, 16, 17, 23, 25, 29, 30, 31, 33, 38, 39}$	$\frac{\emptyset-}{15, 33, 36}$ $\frac{l-}{4}$ $\frac{th-}{29}$	$\frac{t-}{1, 8, 24, 34}$ $\frac{y-}{11, 14, 22, 30}$ $\frac{th-}{6, 18, 37}$	$\frac{t-}{2, 7, 17, 28}$ $\frac{j-}{5, 25, 31, 39}$ $\frac{y-}{3, 12, 20}$ $\frac{w-}{10}$

d. Reflexes of *r-

NYA	WLB	PIN	GAW	BAY	GUP	UMP	YIM	GID
r- 2,3, 4,5, 6,8, 9,10, 13,15, 18,20, 21,26, 27,28, 29,31, 34,35, 37,38 1- 26	1- 6,20, 21,27, 28,34, 37 r- 2,6, 7,10, 13,35	r- 1,2, 4,5, 7,11, 13,14, 15,17, 18,20, 22,24, 25,33, 35,36, 37,38 y- 27	T- 2,8, 12,20, 24,27, 28 Y- 13,18 W- 32,36	th- 7,10, 17,20, 26 y- 26,27, 28,36 j- 30	r- 7,10, 12,16, 18,19, 20,23, 25,30, 32,33, 35,38 t- 2,3, 7,13, 17,22, 28,35 1- 1,27, 37	Ø- 12,20, 27,31 th- 20,23, 9,20, 29 t- 12,22, 24 w- 13,23, 38	t- 2,4, 19,20, 24 th- 9,30 y- 20 4,20, 26,27, 28,31, 33,35	t- 2,4, 11,14, 16,20, 27,31, 35,37 y- 4,20, 26,27, 28,31, 33,35

11. ATTESTATION

T1 *takan PNP root

WLB rraka 1. 'hand, fingers' 2. 'forefoot', GAW
TAKANNA 'wide, broad, open [plain]', BAY TAGULU 'short', UMP
yakama+ 'to crawl', GID tangkan 'hand'.

The semantic association of the WLB form meaning 'hand' and the GAW 'wide, broad' is attested in the Indo-European language family by English palm, which among its meanings expresses 'the inner surface of the hand', 'a unit of length equal to the width of the hand' (AHD), wherein the salient feature of a hand — its flatness and breadth — is evident. It is the notion of MEASUREMENT or EXTENT that perhaps links the BAY form to the first two. Despite the unaccountable prenasalization of the *k, the GID form agrees well in meaning and sound. The likelihood that the UMP form 'to crawl' is a true reflex of *takan is enhanced by the semantic evidence from PIN mara 'hand, finger' vs. reduplicated maramara 'crawling child' and marat 'to crawl', all of which reflect PNP *marang 'hand'.

There is good evidence that PIN kati+ 'to bring, take, carry', and GAW KATTE+NDI 'to carry, fetch' are to be included among these cognates, viz., there is a Ngarluma form thaka+ 'to grab' cited in O'Grady (1966:116) as a cognate of WLB rraka above which largely agrees in referent range with the forms in question, metathesis (to judge from surface appearances at least) is a well attested process in a number of Pama-Nyungan languages.

T2 *taakun PNPN root.

NYA taki 'nape', WLB rraku 1. 'hole in the ground' 2. 'deep' 3. 'flesh wound resembling a hole', PIN taku 'trench', GAW doublet TAU 'evening, dusk, hole', YAKKI 'deep, low, depth, valley', GUP tagardagayun ~ tawardawayun 'to make fire', UMP yaakamu 'phosphorescence', GID jakun 'ground, country, territory'.

PIN taku 'a trench' and the verbal form taku+rrnu(la) 'to make a long trench or groove: to scoop out a cooking hole' reveal the semantic relation with GUP tagardagayu+n 'make fire', a suffixed reduplicated form. Because much cooking was done in a hole in the ground, the close association of the latter with making a fire for cooking could well have led to the metonymical shift MAKE A TRENCH → MAKE A FIRE. The final *u is reflected as /a/ as in T6. WLB rraku 'hole in the ground, deep, flesh wound' has initial /rr/ reflecting ancestral *t. NYA taki 'nape of neck' may be related since the nape may appear as a shallow trench. The gloss of Dyirbal rudu 'top of vertical depression at nape of neck...' seems to support this claim with its mention of 'depression'. Ancestral *t is apparently reflected as /y/ in GAW YAKKI 'depth, valley', while the *u:i correspondence is not attested elsewhere. Because of phonological difficulties and the tenuous semantic relationship, the inclusion of this GAW word in this set is less certain.

The absence of /-k-/ in the first GAW form may be the result of $*k > *w > \emptyset$, the plausibility of which is suggested by the alternation of /g/ and /w/ in the GUP forms. As UMP generally retains Proto-Paman long vowels (O'Grady 1976:61), yaakamu indicates such for the reconstruction. If the meaning of the proto-form were 'fire', then the development to 'fire trench', etc., on the one hand, and 'phosphorescence' on the other, seems plausible. The PP root $*Taakurr$ 'ground', noted by Alpher (1976:91) (and in slightly different forms by Hale (1976c:58) and Rigsby (1976:73)), may have already constituted a doublet with the ancestor of the UMP form. The final nasal of the root is reconstructed on the strength of the GID form, in which language ancestral final nasals are retained (Dixon 1980:244).

T3 $*tala_1$ PNYY root.

NYA W tala in (jawa)tala '(mouth) with some teeth missing'; PIN tarlarla 'a crack in a rock'; GUP thala 'vagina'.

The PIN gloss 'a crack in a rock' is semantically close to NYA 'mouth with some teeth missing' since such a mouth would appear to have gaps or cracks in it. If the PPN language had a single apical series (cf. Dixon 1980:158 for Proto-Australian), then the retroflex /rl/ of Pintupi is apparently a later development, as it is where it occurs elsewhere in NYA.

Possibly the GUP form is to be considered cognate, as the semantic correspondence is attested elsewhere (see at L34), although the equation GUP th- NYA, PIN t- is not part of a major correspondence pattern.

T4 *tala₂ PNY root.

NYA S tarlakarra 'hard, solid, firm', W talakarra 'hard, rigid, strong, tight - of string, clouded over - of sky', GUP taal 'strong, hard, steady, firm'.

The NYA forms show a clear semantic and phonological correspondence with the GUP form. The long vowel in the latter is not taken to be ancestral, and the deletion of the final vowel is attested elsewhere (e.g., T16, T25, T33).

T5 *tana PNPN root.

GAW TINNINYA 'rib', GID tanarr 'rib, side'.

The GID form has the final /rr/, possibly an old root extension (cf. O'Grady 1966:95ff.) that occurs frequently in that language, as well as in others. The GAW form shows a +NYA augment which induced assimilation of the root vowels to the [+hi, -bk] features of the alveo-palatal nasal (cf. N 5).

T6 *tanku+ PNPN root (not in GID).

NYA W tanku+karri+ 'to hang - as fruit on tree', PIN tinki+ 'to attach, connect, couple, join', GAW YERNKA+NDI 'to

hang down, on, to join, impart, infect, depend', GUP tan-gapa 'sp. fruit juice used for medicine', UMP jinka 'flying squirrel [flying phalanger]', YIM jinkal 'single root or vine'.

The GAW form, apparently /yarnka+/, shows the occasionally attested development *t- > y-. Whether -RN- descends from the proto-language as the result of innovatory split of the apical *-n- or is a mistranscription of /n/ remains in debate (Dixon 1980:155 ff., O'Grady, forthcoming). If the /i/ vowels of the UMP and YIM forms are the result of assimilation to the laminal initial consonants which are the major reflexes of PNPN *t-, then all of the forms in this set agree very closely in sound, excepting only the unaccountable vowels of the PIN form. Clearly, the semantic feature HANG is potentially present in all the glosses, including UMP 'flying squirrel' which hangs from its prehensile tail.¹ The GUP form 'sp. fruit juice...' can only be plausibly included as a cognate if the associations HANG > HANGING FRUIT > FRUIT JUICE can be substantiated. UMP thanka 'tree sp. pandanus', "...characterized by stiltlike aerial roots..." (Funk & Wagnall's Standard Dictionary), conceivably forms a doublet with jinka.

¹Barrett (n.d.) p. 41 gives 'flying squirrel' as a 'phalanger' and explains the latter have "...prehensile tails...by which they hang".

T7 *tantu PNY root.

1. NYA W tarntarn 'tight, taut, faultless (enunciation)';
BAY tharntarn 'firm (breasted)'; GUP tanatju+n 'be stiff, taut,
tight'.

2. *tuntu PDNY root. NYA W turntururru 'firm - of
breasts'; WLB turnturnpa 'incipient breasts'; PIN tuntturn+pa
'breast nipple of a girl at the yukarra stage'.

The latter three forms are clearly reflexes of a relatively recent outcome showing anticipatory vocalic assimilation, which could owe their present distribution at least in part to borrowing. Whether or not the PDNY reconstruction or the PNY root preceding should have a retroflex /-rn-/ is problematic, as discussed earlier. The GUP form shows good phonological agreement, given regular simplification of a homorganic nasal + stop cluster to a simple nasal (from correspondences noted by Heath 1981:336), and given that root-final /a/ is known to reflect *u (as, for example, in R13). Hale has noted (1976c:58) PP *jarran > Kuk Tayore tharrn 'hard', etc., which is probably related.

T8 *tangka PEPN root (not in GID).

UMP thungku 'dark - of night, black'; YIM tangkay 'night-time, at night'.

An apical initial is reconstructed since even though the

initial laminal of UMP may reflect an ancestral laminal or an apical, YIM maintains a productive distinction between the two. UMP shows a changed vocalism, possibly due to assimilation to the [+hi, +bk] features of the consonant cluster. Hale (1976c:59) has reconstructed PP *jungku 'black'.

T9 *tangka+ PNP root (not in GID).

NYA S tungku rr pi+ 'pull off', PIN tangkapu+ngu 'to break sprouts off the main shaft of a tree...', UMP thangka+ 'pull it (person's ear); tweak'.

The PIN form, showing a verb formative suffix on the root, corresponds perfectly with the UMP form which has the normal laminal reflex of the initial apical of the proto-form. The NYA S form includes an old suffix /rr/ which (possibly together with assimilation to the features of /-ngk-/), may be the cause of the raising of V₂ from /a/ to /u/ by *tangkarr > *tangkurr > tungkurr. Alternatively the verbalizing suffix may have triggered the change, as in *nyarra 'mouth' > pre-NYA *nyarra+pu+ 'to laugh' > *nyarru+pu+ > NYA nyarru+pi+ 'to laugh' (O'Grady, p.c.).

T10 *tangku PNP root (not in GID).

NYA W tangku 'chin, jaw', UMP yangku+Y+ 'to eat'.

While *t- > UMP /y-/ is not part of a major correspondence pattern, *t- is typically reflected by a laminal segment in that language, and the semantic connection is supported by the existence

of the association CHEW JAW in other languages of the world
(Wilkins 1981:85).

T11 *taapa+ PNP root (not in GID).

NYA S tapa+ny 'move quickly'; PIN tapu+ju+nu 'to run,
escape, depart quickly'; UMP apaa+ ~ apa+ 'creep up, sneak up';
YIM taapal 'wade about, move in water'.

The /u/ of the PIN root is probably the product of
assimilation to the vowel of the verb formative +ju+. UMP,
which manifests occasional initial-dropping (compare UMP uungku
'long' with PP *Cuungku and PIN tungku 'short' < PNP *tuungku
'long'), has a cognate in apaa+ although *t is more often reflected
conservatively or as a laminal stop. All forms are verbs of
motion: creeping up on an animal would be closely associated
with the final lunge during hunting, in water as well as on land.

T12 *tapu₁ PNY root.

WLB rrapu 'solid, not hollow'; GAW TABUTTIBUTTI 'full'.

GAW has an extended derivative form (compare PARNATTI
'autumn' from PARNA 'a star'), whose meaning is related to the
WLB form by the fact that FULL entails NOT HOLLOW.

T13 *tapu₂ PNY root.

NYA W tapurrji 'moustache'; BAY japurta 'beard'; GUP
thawarrak 'beard, facial hair'.

The NYA form has a /rr/ extension that may be related to that often seen in PIN. Lacking apical consonants in initial position, BAY shows a laminal /j/ reflex of *t. *t- > GUP /th-/ constitutes a minor pattern of reflection, while the intervocalic /w/ may well have developed from *p, as this alternation is attested synchronically in GUP, e.g., taba'yun ~ tawa'yun 'look over one's shoulder'.

T14 *TapV PNPN root (not in GID)

GAW TAPPO 'fly' n, YIM thapaka 'fly' n.

Because some GAW words in initial T are from proto-forms with a laminal initial, and it is possible that some YIM forms with an interdental initial are from an apical, the question of whether the proto-form began with a laminal or apical stop, or liquid (*l- or *r-), remains open.

T15 *tari PNPN root

NYA S tari 'heel', WLB tari 'ankle', PIN tari 'inside ankle bone', GAW TAINGA 'muscle, sinew, footstep, track', UMP doublet tali 'lower leg', tha'u 'foot, track, footprint', GID tarrikan 'bone'.

The latter UMP form reflects PP *jaru 'foot', where the /-u/ may be analogically based on a frequently occurring ergative form *jaru+ngku from *jari+ngku by anticipatory assimilation, and /'/ is a regular reflex of intervocalic *r. For another

instance of lenition of an intervocalic rhotic in GAW, see R27. The cognation of tali, with its /l/ for *r, is less sure. The NYA, PIN and WLB forms are obviously cognate, the NYA meaning 'heel' being related by straightforward metonymy to 'ankle'. The same semantic argument applies to the UMP 'lower leg' and GAW 'muscle...' forms (in addition to the clear similarity of the latter to the UMP 'foot; track, footprint' form), while the same BONE.LEG semantic association that links the GID form is also found in T19.

T16 *tarl PNP root.

NYA tarl+pa+R+ S 'to burst, blast', W 'to make a sudden loud noise, erupt suddenly, to go off - of a gun, to pop out - of eyes', NYA W tarl 'bang', WLB taarl+ma+N+ 'to cluck, make a loud clicking noise, the palatal click', PIN taa+L+ 'to burst, explode, pop', GUP tal 'interjection with wutthun ['to hit'], GID talalpa+ 'to clatter, rattle', talalpa+y ~ tululpa+y 'clatter, rattle, echoes from a rifle shot'.

The assignment of retroflex /rl/, as opposed to /l/, to the reconstruction is problematic, as has been discussed earlier, and cannot be certain based on these cognates alone.

T17 *tarlku ~ *taku PNP root (not in GID)

NYA tarlku W 'spear with hook to fit spear-thrower', S 'hook on thrower', S tarlkutarlku 'clavicle', WLB tarlkutarlku

'crooked', PIN takurl+ju+ 'to insert...to hook up a spear thrower with the back of the spear', tawu 'the type of spear which is thrown with a spear thrower...', GAW YOKUNNA 'crooked, curled, bad', BAY jalku (sic) 'hook of spearthrower', jarlku 'fishing hook', GUP jaarlki 'snake', tharwa 'hip bone', taaku 'bent', taak 'hip, hipbone', takarr 'spearthrower', takul 'axe', UMP thaku 'left hand', YIM taku 'thing, tool', thaku 'left hand'.

Whether the two reconstructions can be regarded as two separate roots, or whether one is a variant of the other, cannot be shown on the evidence available. The great similarity and overlap of the meanings, however, clearly suggest that the forms with /-(r)l-/ occurred as variants within the proto-language.

The PIN and GUP forms with /-w-/ are the result of lenition such as is seen elsewhere in both these languages (see T13). The initials of all the forms above are major or minor reflexes of *t-, and there is remarkable consistency in the vowels, save V₁ of the GAW form, though here it must be borne in mind that there is uncertainty both about the sounds intended by the orthography and about the accuracy of the transcription. Thus the cognation of this GAW form is less certain. The absence of a reflex of V₂ in GUP taak is not unusual (cf. T4, T16).

One explanation of the semantic divergence is as follows. If the main meaning of the proto-form were 'bent', then a shift to 'crooked' and 'hook' would be very plausible. One has only to

look at the English word crooked which is derived from crook 'something bent or curved, a hook' from Old Norse krōkr 'a hook', from PIE *ger+ 'curving, crooked', from which descends also French crochet 'a hook' (AHD), to see that similar change of meaning has occurred elsewhere in the world. If one doubts the universal nature of semantic associations that allows reference to non-Australian languages to substantiate proposed cognates among Australian languages, consider the parallel extension of GAW 'crooked' to 'bad' and English 'crooked' to 'bad' in the sense of 'dishonest' as in GAW YOKUNNA WARRA 'untrue or false statement'. Because the reduplicated NYA form meaning 'clavicle' is so clearly related to the NYA 'hook' form, it seems almost superfluous to point out the parallel development of English clavicle from PIE *klēu+ 'hook, peg' (AHD). A suggestion of the semantic association of the GUP 'hip bone' form lies in the Pintupi dictionary entry lankuru+tjarra 'mature emu: literally "one with a woomera (=spearthrower)"'. Spearthrowers are devices which hook onto a spear to assist in propelling it. The dialectal forms of NYA tarlku meaning 'spear...' or 'hook...' illustrate the process by which the referent of a word may shift from one tool to another related item: this is perhaps the explanation that admits GUP 'axe' as a cognate. The semantic evidence of the apparently cognate .set NYA jurru 'snake' and GID jurrung 'leech', jurruy 'bend in a creek or gully' (*jurrung),

with their association of BEND and SNAKE, supports the inclusion of the GUP 'snake' form.

From the proposed ancestral 'bent' the step is made to 'left hand' in the eastern languages UMP and YIM via perhaps BAD or AWKWARD. Such a semantic association is supported by the pairs of related forms PP *warra 'bad', Gumbaynggir warrawiny 'left hand' and PIN panyja 'bad... ', Kala Lagau Ya boeuhay 'left hand'. Note also the changes in meaning involved in English sinister < Latin 'left', and in French gauche 'left' < Old French 'walk clumsily'. The YIM form 'tool' perhaps comes through the idea of a tool being an extension of the hands, or through the HOOK < SPEAR THROWER shift seen among the western languages. Conceivably, BAY tharlura 'winding' is related to the others but no explanation for the absence of a reflex of *-k- is apparent.

T18 *tarra PNP root (not in GID).

NYA W tarra 'seagull'; PIN tarrarra 'youthful speed. Used of dashing speed associated only with young animals or children', GAW YARRO 'whirlwind'; GUP jarra 'large white seagull'; UMP jarra 'seagull'.

NYA and PIN reflect the proto-form conservatively. Since the PIN word is used primarily of animals, assuming that the seagulls

were seen as fast, the meaning could well have changed from SEAGULL → SPEED in the Western Desert territory of the Pintupi. The same element of SPEED is evident in GAW 'whirlwind', in which form the initial Y < *t reflects a minor correspondence pattern. The GUP form, with an apparent final /k/ extension², has an infrequent reflex of *t in /j/, but, barring mere coincidence of form and meaning, it is clearly cognate with the other forms in this set.

T19 *taarrka PNP root (not in GID).

PIN tarrka 'bone', GAW doublet TARKA 'eggshell', YERKO 'leg', YIM taarrkaay 'thin'.

Because of the shared feature of CALCAREOUS, the PIN 'bone' and GAW 'eggshell' forms are taken as cognate. Possibly also cognate is the second GAW form, since Y < *t reflects a minor correspondence pattern, and Wilkins (1981:79) states that the semantic change BONE → LEG, attested in the Indo-European language family, is a natural one. YIM 'thin' is semantically related to the other forms in the same way that English thin and boney are related.

T20 *tarrum PNP root.

WLB rrarrunka 'insect gall on mulga', PIN tarrulka 'Mulga

²See O'Grady (1966 93-8)- especially +ka on pp. 95 and 98.

berry'; GID tarruum 'wild orange'.

The PIN ending /-lka/ occurs on a small number of words — suggesting that either it is simply a part of the root, or, since CV(C)CV(C) is the preferred root shape in the proto-language, that it may be a suffix or other extension (perhaps that noted by O'Grady (1966:98)). Accepting the latter, the form appears cognate with the other two forms, the final /m/ of GID being ancestral. It is proposed that the spherical galls denoted by the WLB gloss would be associated with the fruit referred to by the other two forms.

T21 *tarta PNP root (not in GID).

NYA S tarta 'heel'; PIN tarta 'surface of foot at the heel', GAW TATTO+NDI 'to kick'; BAY thartara+ 'to trip somebody'; GUP tardakarr'yu+n 'make a noise by scraping, moving feet, etc.', YIM thataa+ 'to walk, go'.

All forms make reference to FOOT, although the case for the inclusion of the GUP form as cognate is weaker since that may not be the primary aspect of its meaning. Similar comments apply to GAW, BAY and YIM here, yet in these cases the foot is necessarily involved in the action denoted. The phonological and semantic similarities suggest that these cognates may be historically related to those listed as reflexes of T15 *tari.

T22 *tartu PNY root.

NYA S tartatarta 'moon', WLB tartu 'spherical, bald', PIN tartu 'a small developing pod found on the trees kurrkapi and tjuta', GAW TUTTURTO 'circle, compass, wheel'.

Wilkins (1981:151) claims that "it is a natural tendency for something perceived as largish, roundish and hollow to take on the meaning HEAD", and similarly for SKULL. Further (p. 86), he notes that there is an attested semantic association in the Indo-European language family of BALD:SKULL. Thus there is a chain of semantic associations linking the PIN form with the WLB, viz. ROUND POD:SKULL BALD or, more directly, ROUND POD:SPHERICAL. The semantic feature of ROUNDNESS leads to the inclusion of the GAW form for which 'circle' is certainly the primary gloss. The final RTO of the GAW reflex represents a suffix, and assimilation of V₁ *a to V₂ /u/ is attested in T17 also. The apparently reduplicated NYA form is included on the strength of the semantic parallel attested in the cognate pair represented by PIN taputapu ~ japujapu 'a ball or round object', UMP taway 'moon'.

T23 *tati+ PNY root.

PIN tati+runu 'to climb, mount a horse, get into a vehicle', GAW TATTE 'to climb'.

The E in the GAW form is taken as a front vowel, probably

a phonemic /i/. PIN agrees well in form and meaning, and the reconstruction is simple.

T24 *tawa PNYY root.

PIN tawarra 'tall, long', GAW TOWINNA 'long', TAUATA 'many, much', TAUARA 'large, great, much, very', GUP tawardatj 'unequal size or length'.

The GUP form is semantically related to the other 'long' forms in that one might, for example, refer to one of two trees of unequal size, as 'the tall one'. GAW TAUATA and TAUARA, which share the semantic feature of LARGE SIZE with the preceding forms, reflect *-v- with apparently equivalent U. The last two GAW forms, the PIN and the GUP have a similar third syllable which possibly reflects an ancestral *-ta, but the uncertainty as to which sounds are represented by the GAW transcriptions discourages reconstruction of such.

T25 *tiji PNYY root.

NYA W tijirtiji 'quick rattling together of two boomerangs or sticks in corioboree/song at end', PIN tiji 'a fast tapping noise, the sound made by tapping two boomerangs together...', GUP tiitj 'grasshopper'.

All three forms have to do with the PRODUCTION OF STACCATO SOUND SEQUENCE, assuming that the chirping of the grasshopper is the relevant aspect of the meaning of the GUP form, and that the

type(s) of grasshopper in question produce the typical rapid chirping sound.

T26 *tika PNP root (not in GID).

PIN tingka 'small thin bone in lower leg muscle', UMP thika 'piece'.

UMP /th-/ is a high-frequency reflex of ancestral *t-. The appearance of /-ng-/ in the PIN form is the result of prenasalization of the velar stop. Such prenasalization occurs sporadically in PIN, eg., NYA paparr 'haste', PIN pamparr+ 'hurrying', UMP maji+ 'grab, hold', PIN manji+ 'get'.

T27 *tiika+ PNP root (not in GID).

PIN tikal+paka+rnu 'to climb or to ascend', BAY jikajikara 'yellow canary', doublet in GUP tikarr 'flying fish, aeroplane', jikay 'col[lective] term [for] small birds', YIM tiika+ 'to send'.

It is the notion of ASCENDING which links all these forms. The second element of the compound form in PIN is from paka+rnu 'arise'. The GUP form, with its /-rr/ that is suggestive of an ancestral agent marker (cf. T43), the 'yellow canary' form of BAY, and the other 'bird' form refer to creatures that rise up, while the YIM form shares the element of MOTION.

T28 *tik₁ PNP root.

PIN tikirlpa 'dry used of clothes and wool', GID tikirr 'bitter'.

The /-rl/ extension of PIN is seen elsewhere (e.g., T20), as is the /-rr/ of GID which may be related to the similar /-rr/ extension occasionally seen in GUP (e.g., T17, T27). A parallel for the semantic association DRY:BITTER is found in English 'dry wine', and in the American Heritage Dictionary's dry '...not sweet...'.
 .

T29 *tik₁₂ PNPN root (not in GID).

GUP tikardika 'curly', UMP tiki 'fire drill'.

The high vowel at V₂ is lowered to the unmarked /a/ in the reduplicated GUP reflex (cf. T2, T6, T17). These cognates share the notion of TWISTING in their referents.

T30 *tiku PNPN root (not in GID).

GUP tiku 'unripe, raw', YIM jika 'new, fresh, young, unripe'.

The YIM initial reflects a minor pattern of sound change, motivated perhaps by the following [+hi, +front] vowel (cf. T6).

T31 *tilti PNY root.

PIN tiltirr+pa n. 'tremble, shiver - caused by fear or cold', GAW TILTYALAE+NDI 'to shake; disengage one's self by force...'.
 .

The PIN form manifests the common /-rr/ extension plus the phonologically conditioned augment /+pa/. The development of the GAW form would have been *tilti+ LAE+NDI (a verbalizing suffix)

with an excrescent /a/ between root and suffix, and palatalization of *t to TY before the [+hi, +front] vowel. The semantic association of the first meanings is clear, the secondary meanings are developments from the first. These cognates are possibly related to those of T41.

T32 *tilting PNP root

NYA tili S 'flame', W 'firelight', WLB rrili 'flame', PIN tili 'light, flame', GAW TILTI 'cherry', GID tilingkirr 'sparks'.

Nyungic variant *tiri in WLB tiri+tiri 'red', PIN tii 'spark', BAY jirtirti 'spark'.

All of the forms in this set, save that of GAW, have the element of FIRE in their meanings and so present no semantic problems. The cognation of the GAW 'cherry' form, based on the suggestion that a cherry might be seen as similar to red embers, is less sure.

Cluster simplification reduced *-lt- to /-l-/ in the GID form (such a cluster is permissible but rare), where the medial /-ng-/ is ancestral (cf. GID tirrang < *rirrang), and /-kirr/ is a suffix (cf. GID jarrang 'leg', jarrangkirr '...one unsteady on legs'). PIN tii is the result of lenition of the rhotic of the Nyungic variant of the proto-form --- Proto-Ngayarda intervocalic *r > /y/ is well attested (O'Grady 1966:89) and *tiyi > tii would be simply one more step in the process of lenition (cf. GAW

TIA from *rirrang 'tooth' via, presumably, *riya > *tiya).

Although the ancestral form is reconstructed with *-lt- on the GAW evidence, the fact that the majority of reflexes contain just /-l-/ suggests an alternative reconstruction *tiling, with the GAW form showing an intrusive /-t-/. WLB tiri+tiri 'red' reflects the Nyungic variant *tiri, while the reduplication is paralleled in WLB yalyu 'blood', yalyu+yalyu 'red'. The reflection of *t- as /j/ is manifest in BAY jirtirti, which is possibly derived from the proto-form via an extended form *tiri+rti in which fortition of the intervocalic /r/ to /rt/ occurred, through the pressure of assimilation.

Since /r/ and /l/ are very similar in terms of distinctive and articulatory features (e.g., Dixon 1980:189, Hyman 1975) and alternation between the two is well attested (e.g., NYA marlu 'many', Yindjibarndi maru 'many'), the question remains as to whether the forms reflecting *-r- harken back to an alternation in the earliest proto-form, or are later innovations.

T33 *tilyi PNY root.

NYA W tily 'ideophone of gentle snapping of twigs'; PIN tilyi+pu+ngu 'to slap a goanna against a tree to break its neck'; GUP tiy [apparently interjection with wutthu+n 'to hit'].

Both NYA and GUP have CVC ideophones related to CVCV verbs, e.g., NYA jup (said when an engine quits) against jupi+Y 'to abate;

to stop — as engine', and see also T16. O'Grady (p.c.) has collected several instances of ancestral *-lyV reflected in GUP as /-y/, e.g., *jAlya 'saliva...' > djuuy 'sap...'. Although the GUP gloss is not specific, it appears that the shared semantic feature is the SNAPPING NOISE.

T34 *timpil PDNY root.

NYA W timpilytimpily 'time beating (to music) with slow single beats', S timpirl+pi+ 'to make music', PIN timpil+pa 'clicking noise made by tapping two boomerangs together'.

The relationship between laminal /ly/ and apical /l/ and /rl/ is examined at T37. Because of the likelihood of this cultural feature of 'time beating' having been borrowed, this cognate set is of less etymological value.

T35 *tipa PNPN root.

NYA tipiny 'rib', WLB rripa 'face, person, people', rripi+ 'to meet him, to come up together — people, clouds', PIN tipiny+pa 'skewer', GUP tap 'meeting together (e.g., people)', GID tipa+ 'to sew', tipaal 'team, group'.

The /-ny/ extension of the NYA and PIN forms appears elsewhere (e.g., T11, and possibly as -NYA in GAW in T5), and is likely the cause of the raising of *-a to /-i/. The reason for the altered vocalism in GUP may be as follows: (1) *tipa > *tapa (by anticipatory assimilation); (2) *tapa > tap (by final

vowel deletion: see at T33).

As the second GID form 'team' is listed as a sub-entry of the verb 'to sew' the implication is that a team is a connected group of people who are 'sewn' or 'knitted' together: hence the semantic connection with WLB 'to meet him, to come up together — people, clouds' and GUP 'meeting together' is clear. Since the small, sharpened ribs of animals were sometimes used for sewing and skewering, the PIN and NYA forms are associated with the others by the chain RIB: SKEWER: SEW: GROUP. The other WLB cognate meaning 'face, person, people' clinches the validity of the suggested semantic associations because on the one hand the link FACE: CHEST/RIB is substantiated by the cognates Ngaluma ngarrka 'face', PIN ngarrka 'chest' along with the association in Dravidian languages (Wilkins 1981:83) of RIBS and CHEST, while on the other hand the link FACE: PEOPLE (as in a 'group of people') is substantiated by the cognates Northern Mangarla ngarrungu 'person, Pankarla NGARRI 'sight, face' (which are conceivably cognate with the previous set); and the triangle is closed by the evidence of the semantic association CHEST/RIB: PERSON in the pair NYA marrngu 'person', Northern Mangarla marrngamarrnga 'chest'.

T36 *tiril PNPN root.

NYA S tiwirłtiwirł 'peewee, mud lark, magpie'; WLB tiyi+tiyi

'mudlark, magpie lark', GAW TIRITPA 'a species of lark', TIWU 'black cockatoo', BAY jilinpiri 'mudlark', GUP tiilili 'peewee, mudlark', UMP iilinyu 'Galah, bird species', iilinyumu 'Red Cheeked Parrot', thiikuthiiku 'Redbill, a seabird', YIM tiwaan 'wild turkey', GID tiin tin 'Magpie Lark (*Grallina cyanoleuca*)', tiyung 'Grey Shrike Thrush (*Colluricincla harmonica*)'.

Without the knowledge of an ornithologist or an understanding of the Aborigines' perception and classification of the birds, some of the semantic associations made here, and consequently the cognation of the words involved, must remain tentative. At the same time it is surely significant that many of the words in this set have in their gloss 'lark'. As an illustration of how the referent of a 'bird' term changes with disregard for a scientist's taxonomy, consider the fact that in North America the bird designated by the name 'Robin', one of the genus *Turdus*, differs greatly from the European 'Robin', genus *Erithacus*. The only resemblance of the New World 'Robin' to the European lies in some similarity in the colour of the breast.

Lenition of *r > /y/ (> ø) is known to occur and explains the forms with /-y-/ in WLB and GID, and those with a long vowel (sometimes shortened) in BAY, GUP, UMP and GID. The proposal that *-r- > /-w-/ in the NYA, GAW and YIM forms is supported by the similar change in *rapu > UMP wapu 'light', and by the evidently natural deformation of the initial of English rabbit

to /w/ in child language. The claim that the UMP forms, with initials /th/ and $\emptyset$, come from a single proto-form is substantiated by the development PP *jipa > UMP yipa, thi'a 'liver' and by examples of initial /y/ alternating with $\emptyset$ in some UMP forms. GAW has a rule whereby *l > T before *p (cf. *ngalpa+ 'to enter' > NYA ngalpi+, GAW NGATPA+) so that the T at C₃ of the GAW form TIRITPA may reflect the *l of the proto-form, as do the laterals of the NYA, BAY, GUP and the first two UMP forms. YIM has a final (paragodic?) /n/ (or perhaps it is a variation of the common word-closing /ng/ that is known to appear as /n/ in Inland Yuwinj (Capell 1979c:592)) and may reflect the same ancestral word-final nasal as those in the GID forms. The unmarked vowel of YIM tiwaan instead of /i/ is not without a parallel, viz. YIM pinta 'stick', NYA pinti 'sticks...'.

Despite their obvious similarities with the others of this set, it must be pointed out that the case for cognation of the second GAW form, all three UMP forms and the YIM form is weakened by the absence of information which relates the birds referred to with those whose designation includes the specification 'lark'.

T37 *tirl₁ PNPN root (not in GID).

NYA S tirlpatirlpa 'top of nose between the eyes', tirltirl 'new born or very small', WLB tirl+pardi+ 'to open — as of eye',

PP *jili 'eye' (Sutton 1976).

Although no reflex of PP *jili has been identified in UMP, a Paman language, this reconstructed form is included in order to document the PNP status of the Nyungic forms. The first NYA form results from the addition of the stem augment +pa to the root, followed by reduplication: the second NYA form is a reduplication of the bare root. While the first NYA form focusses on the EYES themselves, the second is seen to be connected by the close association of the opening of eyes with new-born babies. WLB mulpa 'eye' and Adnyamathanha milpirri 'forehead' attest to the association made in Australian languages of the referent of the first NYA form with the other EYE forms. See T38.

T38 *tirl₂ PNP root.

WLB tirlpi+ 'to chip or flake it by percussion — as in making stone implements', rrilyki 'broken, a broken piece, fragment'; PIN til+pa 'stone knife, a sliver of sharp rock', tirl+pu+ngu 'to break off pieces: especially to break off a stone sliver... then used as a knife used of a chicken breaking its way out of an egg'; UMP til+ngi+ 'get free, get loose', GID tilany 'outside'.

The synchronic variation of WLB turlka+ with tulyka- 'to pinch him' illustrates the plausibility of the second WLB form

with /-ly-/ being phonologically related to the other forms with an apical lateral. The /-ki/ of WLB is an inorganic extension, while /+pa/ of the PIN form is the empty stem augment. Since the expected reflex of *t- is /rr-/ in WLB, the first form, with /t-/ , may be a borrowing. UMP does not commonly reflect PP *t- with $\emptyset$, but if the PP reflex of the PNP root had *j-, then lenition may have reduced the stop as follows: *t > *j > *y > $\emptyset$, with compensatory vowel lengthening. If the central feature of the meaning is BREAK, then the chain of association BREAK OUT > GET FREE > OUTSIDE suggests the GID form as a true cognate, and further, that the etymon represented here may be ultimately one and the same as T37 *tir₁, which refers to new-born creatures that 'break into the world' as in the second PIN form above.

T39 *tirnka PNP root (not in GID).

WLB rringki 'gap in mountain range', PIN tinyki 'thin, a low saddle in a sand hill or mountain range', tirnkatirnka 'a skinny person', YIM tingka 'hungry'.

The instability of the nasal is illustrated in the putatively related PIN pair. This alternation between apical and laminal nasals is matched by a similar alternation of laterals in T34 and T38, while /-ng-/ corresponding to /-rn-/ in a western language is seen in the cognate pair UMP mangku 'three/four', PIN marnkurr+pa 'a few, three,...'. The meaning GAP IN MOUNTAIN

RANGE is shared by the first PIN form and the WLB, whereas YIM 'hungry' is semantically related by the association HUNGRY:THIN, where the two meanings are in a POTENTIAL:ACTUAL relationship in that HUNGRY is potentially THIN. It is possible that the forms of this set are related to those of T26.

T40 *tirr PNY root.

PIN tiirr+pa 'the trill noise made by a spear flying through the air', tiirr+wangka+ngu 'to make a trill noise', GUP tirr'+yu+n 'pass air with noise'.

Since PIN does not retain ancestral vowel length, the long vowels in these cognates may be attributable to lingering sound symbolism or to innovation. GUP /'/ at the end of the root occurs often and is apparently epenthetic, reflecting the intense contact situation (Heath 1978) in the eastern Arnhem Land Sprachbund.

T41 *titi PNY root.

NYA W tirtirti+ruwi+ 'to twist', PIN titirr+pa 'tight, secure', GAW TITTA 'anything joining one thing to another — string, knot...', TITTA+PPE+NDI 'to bind, fasten, tie, fetter, hang', GUP tirdi'+marama 'tie up, bandage'.

The second *t of the root descends conservatively in the extended PIN form and in GAW. The final /rti/ of the NYA form is an increment probably related to the one of the same shape

noted in the Ngayaraa subgroup (O'Grady 1966:98) and in a BAY form in T32. Again, the /-rt-/ or /-rd-/ seen here in the NYA and GUP forms may reflect an ancestral retroflex consonant, but the (apparently) plain apico-alveolar stops of PIN and GAW make reconstruction of this segment uncertain. The common semantic feature connecting all these forms is TIE TIGHTLY (indeed, English tie and taut are descended from the same etymon (AHD)), and the NYA form is associated by the tightness which results from twisting, as in the making of native rope.

NYA S tira 'tightly' may conceivably be related to the forms in this set but is dubious on account of the rhotic's not being known to interchange with /t/ (i.e., /rr/ has more features in common with /t/ than does /r/).

T42 *tititi PDNY root

NYA W tititi+pi+ 'to tremble, shake', PIN tititi+nu 'to shake with cold'.

Quite possibly these forms are related to those of T31 *tilti because their meanings have to do with SHAKE, and because there is evidence that NYA /-rt-/ may correspond to /-rlt-/, viz. NYA jarti 'bat', Narangga (a direct neighbour of GAW) tharlti 'ear'. If this is the case, then PDNY *tilti had an extended form *tiltiti > *tititi, resulting in a NYA/PIN/GAW cognate set with a doublet in PIN.

T43 *tiwa PNP root (not in GID).

PIN tiwirr+pa 'Honey Ant', GAW TIWA 'native honey', UMP yiwan 'kidney fat'.

The root extension /-rr/ seen in this PIN form seems often to raise vowels, in this case to /i/ from *tiwarr+pa. Various stages of lenition of *t- are represented in UMP, and *t > /y-/ is occasionally seen. The semantic relationship between the PIN and GAW forms may be seen as the POTENTIAL:ACTUAL one recurrent in Australian languages (e.g., O'Grady 1981:159, Dixon 1980:103), as, for example, in UMP juuju (< *tuuju) which may mean either 'breast' or 'milk'. Honey, a delicacy, was collected from bee nests or from ants, depending on availability, and it is the fact that kidney fat is considered a delicacy that justifies inclusion of the UMP form here.

T44 *tiwirr PNY root.

PIN tiwirr+pa 'a crack in an egg or thin object', GUP tiwirrk+thu+n 'break (used with plural)'.

The /-k-/ of GUP is obscure but clearly not part of the root. The pair are semantically related by the similarity of CRACK and BREAK. In view of the closeness in form and meaning of these cognates with those of T45, they may well be related, whether or not this is the case, the PNY antiquity of the /-rr/ extension seems to be established.

T45 *tiwu PDNY root.

NYA W tiyu 'ideophone of snapping or breaking — as of a branch', PIN tiiwulypa 'crackling noise, cracking or breaking noise of trees creaking in the wind'.

The similarity of meanings would seem to confirm cognation despite the unusual reflex of *w as /y/ in NYA. There are, however, other instances of a /y/ : /w/ correspondence among Australian languages (e.g., Warnman wimi, WLB yimi 'language') and even of *w > /y/ (O'Grady 1966:105, no. 350). In fact, *tiyu would be a plausible reconstruction. As PIN does not maintain ancestral long vowels, /ii/ here must be considered an innovation. These forms are possibly related to those of T44.

T46 *tiyi PNP root (not in GID).

PIN tiiitiirrt+pa 'overheating of the body from sickness or from being near the fire, or from the sun'; UMP thiyinka 'sweat'.

The stem of the pre-PIN form, without /-rr/, would have been a reduplicated *tiyitiyi, in which the intervocalic /y/'s were dropped through lenition (possibly even before reduplication occurred) — leaving the long vowels (cf. UMP ingka+ 'call out' which alternates with iyingka+, although here the resulting vowel seems to be short).³ Sweat, of course, is closely associated with

³Bakanha (south-west of UMP) confirms the plausibility of *-y- > ∅ with thinka 'sweat'.

overheating of the body, so the semantic connection is clear.

T47 *tuu PNP root (not in GID).

PIN tuu 'fire coals', YIM tuuliir 'hot coals'.

T48 *tuuju PNP root (not in GID).

WLB rruju 'woman', PIN tuju 'woman — one married with one or more children', BAY juju ~ julyu 'breast', UMP juuju 'breast, milk'.

All the phonetic correspondences seen here are common and require no comment, except for the retention of the long vowel in UMP and its typical loss in the western languages. The semantic association BREAST MOTHER is attested in NYA pipi 'mother', Gugu-Yalandji pipi 'breast' (< *piipa), and elsewhere in the east (Dixon 1980:117). Since MOTHER and WOMAN are intimately related, as implied in the PIN gloss above, all members of this set are semantically close. Wilkins (1981:132) gives Proto-Austronesian *t'ut'u 'female breast' which is possibly the source for this cognate set (if indeed there were PAN loans in Proto Pama-Nyungan).

T49 *tuku₁ PNP root.

PIN lukurr+pa 'head', GUP tuuku ~ tuuwu 'waves (of sea)', UMP tukulu 'turtle, tortoise', ukulmpuy 'brain', YIM tukul 'fresh water turtle', GID tukul 'wasp', tukun 'mountain'.

The sound correspondences having clear precedents, with the

exception of PIN, it is the semantic relationships which must be supported in order to establish cognation of the forms in this set. The aberrant /l-/ for *t- in PIN is not without parallel (see N13), yet if it were not for the initial /t/ in GUP, which commonly reflects *l- conservatively, *luku would be suggested. The interactive association between PIN 'head' and UMP 'brain' is supported by the changes noted in Bantu, Tibeto-Burman and Indo-European (Wilkins 1981:86) of HEAD > SKULL and SKULL > BRAIN, while the same source's (p. 127) discussion of association through meaning changes in several language families of HEAD, TOP and SUMMIT draws together PIN 'head' with GID 'mountain'. The two UMP forms meaning 'turtle' and 'brain' lend force to the claim that the head emerging from the shell would be a prominent feature of a turtle, although the same argument applies less convincingly to a wasp (GID). However, the claimed association WASP HEAD is buttressed by the Indo-European evidence (AHD) where NE hornet, a type of wasp, is descended from PIE *ker+ 'horn, head', which, incidentally, is also the source of Greek kranion 'skull' and Latin cerebrum 'brain'. As for GUP 'waves', if the focal point of a wave is its crest or top, then the semantic relation with PIN 'head' and GID 'mountain' is clearly seen.

T50 *tuku₂ PNPN root (not in GID).

WLB rruku+rruku 'chest'; GUP tuktuk 'desirous', tuktuk+thu+n

'palpitate', UMP tungkupa+ 'beat — of heart.'

The phenomenon of irregular prenasalization of stops, as in this UMP form, is known elsewhere among Australian languages, for example, as a common phonetic process in Tiwi (Osborne 1974:24), and in R2, T26. If the ancestral meaning is taken as 'heart', then the semantic shifts are easily recognized. The shift HEART > CHEST is attested in the Dravidian language family (Wilkins 1981:83), and it is proposed here that the shift HEART > BEAT is plausible. Other Australian languages provide evidence that the inclusion of the GUP forms is justified: Nyungar kurt 'heart, the human heart, spouse, sweetheart, marriageable girl' (Douglas 1968:72); Wadjuk GURDU 'the heart...', GURDU+BAKKA+N+YUGO+W 'to want' (BAKKA+N 'bite, ache, pain', YUGO+W 'to be, to stand, to exist') (Moore 1884:33). The meanings of kurt, and the presence of GURDU 'the heart' in a compound meaning 'to want', establish the credibility of the HEART DESIROUS association.

T51 *tukul PDNY root.

NYA W tuku 'care', S tungkul+ka+ 'to carry, e.g., a bag of small objects in such a way that nothing will fall out', PIN tukultu kati+ngu 'to carry carefully'.

Other examples of sporadic prenasalization, as seen in the second NYA form, may be found at T50. The PIN form may derive from an earlier ERGATIVE/INSTRUMENTAL form *tukul+tu, while the

process by which the first NYA form lost final *l may be that which accounts for *kangkul > UMP kangkul 'elbow', Nyamal (a neighbour of NYA) kangku 'knee', namely total assimilation of the lateral to the phonologically similar /u/. These forms may be related to those of T50, since in carrying an object carefully one often holds it against the chest.

T52 *tulki PNY root.

PIN turlkiturlki 'crooked' used of crooked branches, tracks or spears'; GUP tulki 'bad (of food)'.

That BAD and CROOKED are closely associated notions is attested by the GAW word YOKUNNA 'crooked, curled, bad', and it may be reasonably assumed that a crooked spear would be a bad one. Similarity of form and meaning suggests the relatedness of these forms with those of T17.

T53 *tulyku PDNY root.

NYA tulyku 'soft, loose sand'; PIN tulyku 'dampness, wet'.

As damp sand is known to be soft, these forms are obviously cognate. It is just conceivable that the phonologically divergent YIM thuukar 'sand' is cognate with the western words, though O'Grady (p.c.) has attempted to relate it to PNY *jungka 'earth, ground'.

T54 *tumu PNP root.

WLB rrumunpa 'high ground near a creek', rrumurrumu+karri+ 'heart beats', rrupulparri 'prominent hillock in otherwise level or nearly level country', GUP ruum 'law, custom, habit, way of life', YIM tumu 'chest', GID tumuny 'blunt'.

The doublet in Pankarla comprising MUNO 'blunt', MUNA 'chest' supports the validity of the semantic association between the pair YIM tumu 'chest', GID tumuny 'blunt', an extended form of the root. Loss of the final vowel (cf. T33) results in the GUP form. Although *t > /t/ is expected in GUP, an apparent alternation between /t-/ and /r-/ in GUP turruyu+n 'get up (pl.)', rur'yu+n 'get up, rise' corroborates *t > /r/ here. O'Grady (p.c.) reports that there is a word in NYA S (viz. yunpa) meaning 'a person's style' which has cognates meaning 'chest' and 'face'. As a 'person's style' is to some extent synonymous with his 'way of life', the semantic connection between the YIM and GUP forms is demonstrated. Moreover, one might speak of the 'face' or 'front' or appearance of a society or individual as a reflection of its customs, etc. Once again it is necessary to look outside of Australian to the Dravidian language family (Wilkins 1981:83), where the semantic association HEART:CHEST is attested, for corroboration of the relationship of the YIM form with the second, reduplicated, WLB form 'heart beats'. (That HEART > HEARTBEAT is a believable shift is shown by Gardudjarra (co-dialect with PIN)

kurturtu 'heart, heartbeat'). Although the relating of the WLB HILL forms with the CHEST, etc., forms may look unlikely, it is instructive to consider the semantic association noted by Wilkins (p. 83) PROTUBERANCE BREAST and how, in an otherwise level landscape, a hill is a protuberance.

Bearing in mind O'Grady's examples (1979:128) of Ngarluma and Yulbaridja ngarrka 'face' and 'chest' respectively, and of Yulbaridja ngalya 'face' and WLB ngalyarrpa 'sandhill', the inclusion of the two WLB words in question in this cognate set next to the eastern word for 'chest' appears justified. Though not strictly speaking in the set of languages being compared here, Yulbaridja (a co-dialect with PIN) tumu 'blunt point' is undoubtedly to be included as a further cognate.

T55 *tuungku PNP root (not in GID).

PIN tungku 'short', UMP uungku 'long' (< PP *Cuungku 'long').

As PIN /t-/ is typically a reflex of *t-, an initial *t- is reconstructed despite the absence of any information in Paman languages. The process by which LONG > SHORT (or vice versa) may be similar to that discussed at T24, or more probably in this case is simple antonymy.

T56 *tungu PNY root.

PIN tunguntungun+pa 'one who resists, rebellious, pigheaded, and continually disobeys', GUP tungdung 'lazy'.

As in T50, the root-final vowel of the GUP reflex is lost before reduplication. The /n/ at C₃ of PIN is likely the result of assimilation to the other nasal consonants. As for the semantics, one who 'continually disobeys' directives to perform some task is commonly considered 'lazy' among the peoples of the world, and it is presumed here that such would have been the case in Aboriginal society.

T57 *tupa PNY root.

PIN tupitupirr+pa 'one who has just had his feet burnt by hot ground', BAY thupayu 'hot', yuparnu 'hot'.

Since there is some evidence that the extension of a pre-PIN root by the addition of /-rr/ can result in vowel raising, the development of the PIN form is plausibly *tupa > *tupa+rr > *tupi+rr(tupi+rr) > tupitupirr+pa. Predictable laminal initials reflecting *t are seen in the BAY forms, both of which share the semantic feature HOT with PIN.

T58 *tuptup PNY root.

NYA tuptup 'loud flapping of wings, sound of wings hitting the ground'; GUP tuptup 'emu'.

Since both NYA and GUP are known to drop final vowels on words with sound symbolic value (see at T33), a proto-form *tupV is suggested as the ancestor of the immediately obvious reconstruction above. Though the emu is normally a silent bird,

the claim that these forms have a common origin is shown to be justified by Barrett's (n.d. 99) explanation that during the breeding season, the male produces a loud booming sound.⁴

T59 *turlparra PDNY root.

NYA turlparra 'season after rain'; PIN tuulparra 'springtime when the goanna comes out of hibernation'.

Since the last two syllables look like suffixes, especially in light of the sub-entry under the PIN word mulya tuulkarra, the proto-form as reconstructed here cannot be considered very old.

T60 *turlu PDNY root.

NYA S tulu+pi 'break the joint of animals'; WLB turluny+(y)irra 'to bend it double — as tongue'; PIN tuurla+rnu 'to tear: used of rotten clothes or weak paper'.

For evidence that /-ny/ (as in WLB) is an extension rather than part of the root, see at T35. The actions of TEAR, BEND and BREAK are united by the force of tension involved in all three.

T61 *turna PNY root.

NYA turniri 'ornamentally carved shield'; BAY thurna 'fighting stick, waddy'.

⁴The sound is produced "by the violent expulsion of air from an inflatable sac just beneath the skin where the windpipe is pierced by a narrow slit".

The root-final vowel of NYA has assimilated to that of the /-ri/ which may be related to the stem increment of the same shape in Ngayarda languages (O'Grady 1966:97). The referents of the two forms here, both in the domain of weapons, may have diverged by gradual expansion and change of meaning, or at once through antonymy.

T62 *turrkang PNP root.

NYA tirrka S 'desert animal, bandicoot', W 'small wallaby sp. — makes a "hide" in spinifex', GAW YERKI 'a small animal burrowing in the earth', GID turrang 'Barred Bandicoot'.

These proposed cognates are very close in meaning (a bandicoot burrows in the earth), yet obtrude difficulties in the phonological explanation. Y is an uncommon reflex in GAW of *t (but see T6, T17), yet since both NYA and GID maintain the distinction between apical /t/ and /y/ in word-initial position, the presence of /t/ in the forms from both of these languages seems to guarantee *t as the first segment of the proto-form. E is presented as if it were an independent phoneme in the grammar of GAW (p. 3), but is then shown to alternate with — that is, is an allophone of — /i/, as in PURLAITYE, PURLAITYI+DLA. If the E in YERKI does represent /i/, then the GAW form is phonologically similar to the NYA, particularly since final I in GAW against final /a/ in other Nyungic languages is attested (e.g., GAW

WODLI 'house', PIN warla 'house' (Gregson 1981), and see R24, N15 where GAW -KI < *-ka). While the absence of /-k-/ in the GID form suggests an alternate reconstruction without the velar stop, the final /-ng/ must be related to the very old segment discussed by Dixon (1980:211). Conceivably, the /-u-/ of the proposed proto-form could have shifted to the /i/ of GAW and NYA by fronting of the already high back vowel before /-rr/ (see T57), but this is speculation.

T63 *turru₁ PNY root.

NYA W turrurru+karri+ 'to arise and start off in one mob — as sheep', GUP turr+yu+n 'get up'.

The /+yu+n/ of GUP is a verb formative, and since that language occasionally drops a root final vowel (e.g., T4, T35, T54), the reconstruction is straightforward.

T64 *turru₂ PNP root.

NYA turru S 'Singing Honeyeater', W 'Yellow Oriole', BAY jarrurru 'kookaburra', jurrap 'Varied Honeyeater', PN *jaru 'kookaburra', UMP tuutuntuy 'kingfisher', GID turriyang 'Channelbill Cuckoo'.

The form is presented here in both dialects of NYA in order to demonstrate how easily the meaning of a word may change even among closely related speech communities. Similarly, BAY offers what appears to be a doublet from the same etymon. In the

geographically close Ngayarda group, several languages have reflexes of PN *jaru with a stem augment /rru/ or /rtu/ (O'Grady 1966:99), which may be related (along with the root) to the third syllable of the first BAY form. Since BAY merged initial apical consonants with laminals (as did Proto-Ngayarda), there is no problem in asserting that an ancestral *t- descends as /j-/ in that language. The /a/ of BAY jarruru, rather than a /u/, may be attributable to an influence from neighbouring Ngayarda languages. In the GID form the suffixal material is unexplained but the root answers very well to the reconstructed proto-form. In the light of the attested reflex of /t/ from PNP *rr (O'Grady 1981a:157), the UMP form tuutuntuy is clearly cognate in spite of the obscure extensions on the root. Without the knowledge of an ornithologist, it is difficult to comment specifically on the semantic closeness of the birds designated by the Aboriginal words, except to point out that a kookaburra is a type of kingfisher, and that there is some overlap of the bird types named in the languages here. Although not one of the languages of the set, Yuibaridja (a co-dialect with PIN) has turru 'bird'.

T65 *tuwa ~ tuya PNY root.

NYA W tuwi ~ tuyi 'smoke (seen near at hand)'; WLB rruyu+karri+ 'to rise — of dust, smoke'; GUP tuwarr 'steam, smoke'.

As seen elsewhere (e.g., T17, T27, T44), the final /rr/ of GUP is an extension to the root. Though not a commonly attested fluctuation in Australian languages, /y/ ~ /w/ is certainly indicated, either as a variation in the proto-language, or as a development within the daughter languages (cf. T45). The natural tendency to fluctuate between the semi-vowels, and the difficulty of perception of their differences are particularly evident in a word such as the NYA tuyi. Independent evidence of vowel harmony in WLB supports the proposed *-a > /-u/, while other instances of final vowel raising in NYA corroborate *-a > /-i/ here. These vowel correspondences are paralleled in the cognate set NYA kuyi 'meat', WLB kuyu 'meat', GUP kuya 'fish'.

N1 *nam(p)a PNP root.

GAW NAMMA+NDI 'to carry', BAY nyama 'knee', nyampayi 'coolamin', UMP aampa 'lap', aampi+ 'take it out', GID nama 'to hold, to touch, to grab'.

The forms above provide a case for positing a nominal and a transitive verb root. The forms in UMP are considered cognate despite the troubling absence of an initial nasal. Initial apical /n/ is marginal in UMP, but since there are a few dozen forms with an initial laminal nasal perhaps the development is *nampa > PP *nyampa > pre-UMP *yampa > UMP aampa.⁵

Since a coolamin is a container for carrying water or food, the similarity among the meanings of the cognates is plain except for those glossed as 'knee' and 'lap'. Wilkins (1981:121) asserts that "it is a natural tendency for the term for a verbal action involving the use of a person part to come to cover that person part". Such a tendency elucidates the semantic shift CARRY > LAP > KNEE, since the lap is a common place for 'carrying' or 'holding' a child. For the step LAP > KNEE, compare the synonymy in English of the two body part terms in 'she sat on his knee/lap'.

⁵A further cognate is Tjapukay nampi+ 'to hold'. Note also that Black (1980) has demonstrated the rationale for alternation of homorganic nasal + stop sequences with nasal (e.g., /mp/~m/, /nt~/n/).

It is conceivable that *nam(p)a is a metathesized variant of *maa(+na) 'take', also of PNP age, and itself a reflex of Capell's (1956) *ma+, Dixon's (1980) *maa+n which the latter counts as evidence for a proto-Australian family.

N2 *nampul PEPN root.

YIM nampal 'stone, money', GID nampuul 'Bora Ring'.

Progressive assimilation is likely the explanation for the /a/ at V₂ of the YIM form. The common reference is in the stones which outline the Bora Ring.

N3 *namu PNY root.

BAY nyamarra 'pearlshell', GUP namura 'oyster species'.

While both languages distinguish two rhotics, the difference in the form of the third syllables does not necessarily affect judgement of cognation, since they may each represent stem extensions of different origins. The /a/ of V₂ of BAY may be the result of influence of *a of the flanking syllables.

N4 *napa PNY root.

WLB nama 'ant', PIN nama 'ant. Generic', BAY nyaparra 'black ant'.

The possibility of borrowing between PIN and WLB clouds the picture — these two languages superficially appear to share a rule whereby a stop in C₂ assimilates to a nasal in C₁. *n > BAY ny- is regular — (cf. N1 and N3).

N5 *napu PNPN root.

PIN napiny+pa 'navel', GUP napungga 'between, middle',
GID napurr 'narrow'.

The dummy syllable /pa/ serves to end any PIN word that would otherwise end in a consonant. Historically, /ny/ is also a suffix (cf. PIN ratanyju 'one who is stubborn', rata 'one who resists either good or wrong') whose [-bk] specification accounts for the fronting of the preceding vowel, i.e., *napu+ny+ > napiny+. As there seems to be only one other reconstructible root of the shape *napV in PNPN, namely N4, these three forms are taken as cognate despite the apparently large differences in meaning. Moreover, since the semantic association NAVEL-BELLY is attested in the Dravidian language family (Wilkins 1981:82), and the 'waist' — associated with the 'belly' — is partly defined as 'the middle section or part of an object, especially when narrower than the rest' (AHD), a plausible semantic connection can be seen among 'navel', 'between, middle', and 'narrow'.

N6 *narnggu PDNY root.

WLB narnggu 'hook, barb — on woomera, spear'⁶, PIN narnggu
'barb: the hook of a spear thrower'.

⁶The spelling narngu in Hale's dictionary is taken as a typographical error for narnggu.

These forms may represent a nasalized counterpart of *tarlku, as the phenomenon of nasalization is well attested — e.g., BAY jakulyarri+, Thargari nyakurri+ 'to play'.

N7 *narra PNP root.

PIN narrunarru 'the feeling of hunger', YIM narra 'gristle, hard meat to chew', GID naarr 'sinew'.

Because GID has very few nouns that end in a vowel it is reasonable to reconstruct a disyllabic root and assume deletion of the second vowel in the development of naarr. In turn, the deletion of V₂ may have caused compensatory lengthening of V₁. The /u/ < *a in the reduplicated PIN form cannot be explained by any obvious phonetic environment but is not without parallel (e.g., Tll). While it may be that the semantic connection between the PIN and the eastern forms may be the tenuous one of the common domain of EATING by the hunter, it may have to do with the condition of the hunted animal. If the condition of a kangaroo has worsened in time of severe drought, the food animal would be at one and the same time 'sinewy' and 'hungry'. NYA wiji 'sinew', wijiny 'narrow' seem to support this proposal, but the semantic relationship between the latter forms is not fully understood by the present writer.

N8 *nawa PNP root.

PIN nawulu 'deep sleep', GUP nawulka 'blanket, sheet', YIM

nampuurr 'blanket, bed'; GID nawa+ 'to lie upon, to collapse upon', nawalii+kupii 'pillow'.

This root shape is highly marked twice over, in that not only does the initial /n/ account for a very small part of a dictionary of a Pama-Nyungan language (usually one percent or less), but intervocalic /w/ is also uncommon. For example, initial /n/ accounts for about one fortieth of the GID dictionary, while among the two dozen entries with this initial only one has /w/ as the second consonant. All of this means that chance is an unlikely explanation for the forms in this cognate set having similar meanings. The /u/ following /w/ in both the PIN and GUP forms may be attributable to assimilation of /a/ to the [+hi] specification of the /w/ (cf. PN *ngawarn corresponding to NYA ngawu 'heedless' (O'Grady 1966:115)). O'Grady (1966:93) discusses stem augmentation in languages of the Ngayarda subgroup, showing that suffixes, whose meanings are no longer transparent, were commonly fixed by reanalysis onto the original root. Such augments may be involved here in the PIN and GUP forms.

Probably to be included is YIM nampuurr, where prenasalization and fortition of the [+labial] semi-vowel /w/ to the [+labial] stop /p/ are in evidence in *nawa > *nawu > *namwu > *nampu(u(rr)). Corroboration of such a phonetic correspondence comes in PNPN *ruwa+ > PIN rungka+rnu, where */w/ descends as a nasal plus stop, in PP *jipa+ > UMP impa+, in the alternation nyupalu ~ nyumpalu in

Ngayarda languages (O'Grady 1966:113); and in alternations such as GUP taba'y_u+n ~ tawa'y_u+n 'look over one's shoulder'. Parallels to the semantic associations existing among these cognates are found in English bed '...any place or surface upon which one may rest', to bed '...to put to bed...', and bedding 'bedclothes' (AHD).

N9 *ning PNP root.

NYA niny 'motionless', GID ning 'silent'.

Since it is probable that these two languages have developed independently for several millenia, the meanings of the two forms remain remarkably similar. Final *ng has assimilated to the [-back] feature specification of the preceding vowel in NYA. Dixon (1980:179) gives an example *ngin > nyin 'you SING', showing a different environment but the same process, and gives ample illustration of similar processes.

N10 *ninya PNY root.

BAY nyinyarn 'chin', GUP ninyjak ~ nanyjak 'nose, face', nanyja 'pelican'.

It is the alternation of vocalism seen in the first GUP form that makes it clear that the second, meaning 'pelican' — a bird with a very prominent 'beak' or 'nose' — is related. The /-j-/ of the GUP forms may be part of a historical suffix or may reflect a process where a homorganic stop is inserted after a

nasal, in the same way as in the putative cognate set NYA wangal, GUP wanggalkal 'wind', and in English peasant corresponding to French paysan. The BAY form also shows unexplained paragogic segments but is related semantically by simple metonymy. Wilkins (1981:84) compiles many examples of such metonymic shifts in Dravidian, Austronesian, Polynesian, and other language groups. Possibly BAY nyingkulu 'nose' should be included along with similar forms from Western Australia and Queensland presented by O'Grady (1966:115), although the medial consonantism /-ngk-/ is not obviously derivable from *-ny-.

N11 *nirrim Possible PNP root.

PIN nirrinirri 'Beetle type', GUP nirriwan 'species of small sharp oyster', GID nirrim 'scab, any scaly patch on skin'.

All three glosses have in common the notion HARD COVERING. The COD includes, in its definition of beetle, the specification that the insect has hard wing cases. The AHD definition of scab begins 'the crustlike exudate...' while, according to the same work, oyster comes from PIE *osth- 'bone', of which an important characteristic is its hardness. Thus the items in English share a semantic feature and suggest, if the same is true in the Australian Aboriginal view, that the forms are cognate.

N12 *nuu+ PNP root.

PIN ninti 'understanding, first-hand knowledge', GAW NŌ+NDI

'to point with the hand, to show, etc.', NUMMA 'right, correct, skillful, well', BAY nhukurarri+ 'believe, teach, learn', GID nuuma 'to know, understand'.

Ancestral vowel length, which has been lost in most Pama-Nyungan languages, is reflected in this GID form, where /-ma/ is likely the verbalizing suffix (Dixon 1980:435) descended from *ma (also noted by Capell 1956) which has other reflexes meaning 'hand', 'do', etc. The second syllable of GAW NUMMA may well be attributable to the same etymon. Though GAW is not normally thought to retain vowel length, the long ō (interpreted as /uu/) and the -MM- raise the suspicion that these two reflexes manifest an exception to the rule. The laminal reflex of *n in BAY is predictable while the material following the first syllable is counted as verbal suffixes. Dixon's discussion (1980:415) of how early monosyllabic roots were extended by reanalysis, which left various case endings or conjugation markers frozen as part of the new root, facilitates understanding of /-ma/, above, and the /-ku-/ of BAY nhukurarri+, which may be related to the -KKO+ of GAW NAKKO+NDI 'to see, etc.' from *nhaa+ng 'to see' (O'Grady 1966:113, Dixon 1980:400). PIN /-nti-/ is known to be a verb stem formative, and the /i/ at V₁ of ninti is probably the result of assimilation to its vocalism.

N13 *nuka+ PNP root.

GAW NAKUDLA 'shark', NOKUNNA 'assassin', BAY nhuka 'shark', nhuka+L+ 'spear, poke (as in the eye)', GUP luka 'eat, drink, take', UMP nhukuy 'penis', luku 'fish species, possibly a shark species', GID nukal 'jaw'.

This root appears to have occurred in two forms, 1. *nuka+L vb., and 2. *nukal n. The *+L suffix of the verb is the conjugation marker explained by Dixon (1980:403) and is repeated in a frozen form as the final segment of the nominal. Waalubal, a neighbouring sister dialect of GID, shows nukal 'cheek, face', an example of simple metonymic shift, and nukal+talaan 'turtle with white jaw' (talaan 'white'). This compound form suggests one possible path for the JAW > SHARK change evident in this cognate set, wherein the creature is first named for an obvious feature of its anatomy and later the primary meaning becomes obsolete.

As occurs commonly in GAW, NAKUDLA shows an obligatory final vowel and a prestopped liquid (cf. GAW TADLANYA 'tongue'; BAY thalany 'tongue'). The vocalism of this form may be explained by metathesis (or some other process with similar results), whereby $C_1V_1C_2V_2 > C_1V_2C_2V_1$. While -NNA is seen as fairly common but unanalyzable suffixal material, the o of NOKUNNA 'assassin' is thought to represent an allophone of /u/, thus this word may be taken as a reflex of *nuka+ if the meaning

can be explained adequately. If a shark were seen as a killer, the form might well take on the meaning 'assassin'. Corroboration for the association EAT PENIS, which allows inclusion of the UMP form meaning 'penis', is found in WLB nga+ 1. 'to eat' 2. 'to copulate with', YIM mulu 'tooth: euphemism for female sexual organs', and YIM murrangkal 'bullet, spear, penis', all of which clearly show a connection between 'eat', 'tooth', 'cutting instrument' and 'sexual functions' in the minds of some, if not all, Australian cultural groups. UMP luku has a surprising initial, yet such a reflex is not without a parallel: Lithuanian has lizdas, from PIE *nizdos 'nest' (Lockwood 1977:180). The GUP form must be included in the set since the semantic connection is clear.⁷ That the initial /l/ is a reflex of *n is corroborated not only by the UMP example but also by GUP luku 'foot', related to YIM nukal 'ankle', PN *nhuku 'ankle', PNP *nyukal 'foot', which constitute strong evidence for the lateral reflex of the nasal initial.

N14 *nurlu PNY root.

NYA nurlu 'shelter on e.g., ledge of rock, or under car',
GAW NURLO 'curvature, corner'.

There is good evidence (Dixon 1980:157) that the higher-

⁷Consider also Gugu Yalanji nuka 'eat, drink'.

level proto-language (Dixon's proto-Australian) had a single apical lateral and that its split into an apico-alveolar /l/ and a retroflex /rl/ occurred in western languages predominantly after /u/. However, since retroflex consonants are found throughout languages of the Nyungic group, there is no reason to reconstruct a plain *-l- for PNY. The semantic connection is tenuous: a corner of rock, perhaps an overhang, might provide some shelter from the sun. The two meanings are also seen to be connected by the feature of NARROWNESS which they have in common and share with the putative cognate Wadjuk NULO 'narrow' (as a 'ledge of rock' is almost by definition narrow) and English corner < Latin cornu 'extremity...', which is suggestive of narrowness.

N15 *nurrku PNY root.

NYA W nurrkul 'red ochre', GAW NIRKINYA 'eggs of lice: nits', GUP nurrku 'brains'.

Since the -NYA of the GAW form is taken to be a suffix (cf. GAW WORNE+NDI 'to fall...', WORNI+WORNI+NYA 'falling'), the vocalism of the stem is explained as a result of anticipatory assimilation to the [-bk] feature specification of the palatal nasal NY, as seen also in T5. The semantic relationship between the GUP and GAW forms is corroborated by GAW MUKA 'egg' and its reduplicated form MUKA+MUKA 'brain', and also by the BOILED RICE: BRAIN, MARROW: BRAIN, and CURDS: BRAIN associations tabulated by

Wilkins (1981:86) for six language families (assuming, of course, that there is an obvious similarity between eggs of lice and curds). In light of the evidence of PNP **miju* with reflexes meaning 'blood', 'egg', 'maggots', 'nits' and 'brains', the NYA 'red ochre' form is seen to be included here, since RED is known to be associated with BLOOD (see T32), and as in the example of **miju*, BLOOD is associated with the meanings of the GUP and GAW forms here.

L1 *lakang PNP root

NYA S laka 'corroboree', lakanpi 'flat', WLB lakarnpari 'flaked, peeling, as of bark, dried mud', PIN lakarrrakarr+pa 'very hard ground', YIM taka+l 'sit down, stay, get down', GID katang 'tough, hard'.

Though the members of this putative cognate set have divergent meanings, with the exception of GID they reflect the sounds of the proto-form in a straightforward way. The PIN reflex is simply a reduplicated form of the root plus the augment /-rr/, and the usual /+pa/. The initial /t/ of the YIM form is the major reflex of *l-, while /+l/, the conjugation marker, makes it a verbal form. With evidence of metathesis having occurred in GID (O'Grady, p. c.) katang is a strong candidate as a member of this set⁸, and its final peripheral nasal, absent in the other cognates, is taken to be ancestral (see T62). /t-/ is the common reflex of *l-.

Because hard ground is very often flat, especially when the hardness is caused by the drying up of surface water, the NYA 'flat' form is seen to be related to the PIN form meaning 'very hard ground'. The other NYA form meaning 'corroboree' is included in light of the meanings of the words in a Pama-Nyungan 'corroboree'/'to clear the ground (for a camp)' cognate set (O'Grady 1981:158). The notions of FLAT and HARD recur - at least by implication - in the WLB and GID

⁸O'Grady has numerous examples of the reflection of *tVkV as kVtV in Pama-Nyungan languages, and has noted a comparable development in verbs of tickling in Germanic (p.c.).

cognates. The semantic association of the YIM form with the others lies in the idea of people 'staying' at the 'flat' site of a 'corroboree'. There is some support for the plausibility of these semantic associations in Indo-European; AHD shows English flat, in the topological as well as the 'apartment' sense, and Polish pol 'broad flat land, field' as coming from a single root *pelə₁.

L2 *lalka₁ PNP root

NYA W lalka 'dry, dead, withered - of plant, tree', WLB lalka 'dry, desiccated - of vegetation', GID talkay 'dry'.

Ancestral non-nasal apical initials are reflected as /t/ in GID, so *l > /t/ is expected here. The final /y/ is apparently a contentless suffix - it appears in other GID nouns and adjectives (e.g., wakaay 'spirit of a living person', apparently related to wakal 'flavour, taste, person's accent or distinctive quality of voice').

L3 *lalka₂ PNP root

GUP lalkal 'greedy', GID yalka+ 'to swarm around (e.g., flies to a light)'.

The semantic association seen here is corroborated in YIM thingkan (noun) 'green ants' and thingkan (adj.) 'greedy ...', since it is probably the same image of insects swarming to food, etc. that leads to association with 'greedy'.

It is just conceivable that NYA S lirrjal 'greedy' is a reflex of *lalka. The initial /l/ agrees; C₂ /rr/ is a liquid, and lateral.

rhotic correspondences are found elsewhere (e.g., T32), V_2 agrees, an instance of /k/ : /j/ is found in the apparent cognate set comprising NYA W marrja 'energetically, con brio', GUP maarr 'spiritual power, strength', UMP marrkuntha 'strong'. Obviously this NYA form is not entirely derivable by straightforward phonological rules, and further research is needed before its cognation can be established.

L4 *lama PNP root (not in GID)

PIN lamaly+pa 'small pieces of rock only', UMP lama 'dry sand'.

The PIN form bears the augment /+pa/ and a suffix /-ly/ of indeterminate semantic value (cf. T45, R11). Since the UMP dictionary contains only two entries with initial /l/, the possibility of chance accounting for the similarity of form and meaning of these words is remote.

L5 *lampa PNP root

GUP lambirri 'long, tall', GID jampa 'long'.

The GUP form reflects the ancestral stem plus what appears to be a contentless suffix /-rri/ (cf. GUP lungarri, lungu 'harpoon thrower'), with assimilation of V_2 to that of the suffix. The reflection of *l- as /j-/ in GID constitutes a minor correspondence pattern.

L6 *lanta PNPN root (not in GID)

NYA S lanta 'dirty (utensils, nose, eyes)'; YIM thantha 'droppings, excrement'.

Since YIM clearly has a number of words with an initial apical stop descended from apical *t (e.g., T17, T47), one would expect an apical stop as a reflex of *l since this language, while not permitting /l/ as an initial, does have apical /t/, as well as /th/, as initials. There are, however, other examples of /th/ corresponding with /l/, viz. L18, L37. An explanation is still needed for the lamino-interdental articulation of the YIM nasal-plus-stop cluster. That progressive assimilation to the lamino-interdental cluster is a likely process appears to be supported by the putative cognate pair YIM thinhtsi 'flat stone used for grinding', GID jintiin 'end, point', where the absence of a laminal articulation of the cluster in GID indicates that such an articulation is an innovation in the YIM form.

L7 *lapa PNPN root

WLB lapaji 'Port Lincoln Parrot'; GUP laparr 'pigeon'; GID tapetaperr 'Spurwinged Plover'.

WLB has what appears to be a suffix, /-ji/, of which the meaning here and in other instances is obscure. GUP likewise has a suffix, /-rr/ (cf. T65, R7), and so does GID (cf. N5, T5, T32; and see comments at R2). No explanation is apparent for the discrepant V₂ of the GID form. While the three birds designated by the members

of the proposed cognate set are clearly distinct species, there may be some common factor unknown to the writer which would link these referents. Some discussion concerning bird names is offered at T36.

L8 *laapV PNP root (not in GID)

NYA W lapilapi 'cut [p.p.] into narrow strips for quick cooking - of meat', GAW TABARE+NDI 'to become open, as a sore or ulcer', GUP laplap 'open', YIM taapalin 'in the open, in the clear, in public'.

As ancestral long vowels are retained in YIM (Dixon 1980:406), a long vowel is indicated for the reconstruction. The reduplicated GUP form has dropped the root-final vowel (see T33, cf. T16, T50, T56) and this, along with the variation of final vowels in the other forms, makes it impracticable to assign a particular vowel to the reconstruction. Since neither GAW nor YIM permit /l/ in initial position, these languages answer to *l- with the stops T-, /t-/ respectively. The common semantic thread is that of OPEN UP, while, interestingly, NYA and GAW specify OPEN FLESH.

L9 *larra PNY root

NYA larr 'crack', WLB larra 'crack, split', PIN larra+pu+ngu 'to split wood along the grain with an axe', GAW TARALYE 'chip, splinter, board, timber', GUP larraymin 'stone axe'.

While the suffixes on the root in the PIN form are identified as verbal formatives, those of GAW and GUP are of uncertain origin.

The common semantic feature is obviously SPLIT, which in the GUP word is the function of the instrument 'axe', and in GAW it is the action which produces the manufactured 'board', etc. These cognates and those of L39 give some indication of being related.

L10 *larrjam PNPN root

NYA S larrja 'snake (sp. black head, yellow body, poisonous)'; PIN larrja 'edible snake type'; GUP latjin 'mangrove worm(s)'; GID warrtam 1. 'eel', 2. 'the spirit being that dwells in water (rivers or swamps)'.

Not only does WAA warrjam 'serpent in the sea', from a dialect closely related to GID, establish a stronger semantic relationship between the GID form and the others in this set, it also serves to illustrate that *t and *j are neutralized in medial position in GID. This is evident from the dictionary and is also noted by Dixon (1980:185). The final nasal of the GID form is taken to be ancestral and so is included in the reconstruction. Though there is no apparent reason why *rr should not be overtly reflected in the GUP form, GUP larrtha 'mangroves' (apparently related to the foregoing) indicates a pre-GUP *larrjin. GID/WAA's /w-/ is an unusual reflex of *l- but does have a parallel in R13, where UMP has /w-/ answering to the liquid *r-. The common semantic feature appears to be SNAKE, and the reference to 'swamps' in GID strengthens the comparison with 'mangrove worm'.

L11 *larrka PNP root (not in GID)

PIN larrkarlarrka 'plain country'; YIM yarkurr 'plain, flatlands, low country'.

Though the reflex in YIM of /-r-/ < *-rr- is uncommon, these two forms are clearly similar in meaning and in form since *l- > /y-/ is attested elsewhere, as is the ending /-rr/ (cf. R2 and other examples in the dictionary, e.g., thipaarr 'south', thipaalu 'to the south'). Possibly the changes in YIM, though not necessarily in this order, were *larrka > *yarrka > *yarrkarr > *yarrkurr (raising of /a/ to /u/ under the influence of following /rr/) > yarkurr (dissimilation of the first rhotic from the second).

L12 *laarrum PNP root

PIN larrpa 'camp'; GUP larrpan 'falling star, name of boat'; GID yaarrum 'meteor'.

Ancestral final nasals and long vowels are preserved in GID and *l > /y-/ is attested in other cognates. The proposal that the /p/ of the PIN and GUP forms is an infix is supported by the following evidence: PNP *malung 'shade', which putatively has reflection in PIN malpu 'spirit ...'; PIN ngarri+, Wirangu ngarrpi+ 'to lie, be supine'. The relationship in meaning between 'camp' and 'star' is seen to lie in cosmology, as many stars are believed to be campfires of ancestral culture heroes or beings.

L13 *lawu PNY root

PIN lawu 'a hollow', GAW TAU 'hole, evening, dusk', BAY yawarnu 'windbreak'.

BAY initial /y/ from *l is attested elsewhere, and since a hollow in the ground could serve as a windbreak, there is a semantic connection with the PIN form. Many examples of final /+rnu/ in the BAY dictionary suggest that it was a suffix historically. The first meaning of the GAW form agrees well with that of the PIN word, while the diphthong AU could plausibly have developed from /-awu/ (or it could be a mistranscription of the same).

Possibly also to be included as a cognate is the unlikely looking GID jarrpuuny 'windbreak'. Not only is there some evidence that /-rr-/ is an infix (see L28), but it is also clear that /p/ may alternate with /w/, as in GID jiparram ~ jiiwarrwarr 'Squirrel Glider', and GUP taba?yu+n ~ tawa?yu+n 'look over one's shoulder'.

L14 *lawu+ PNP root (not in GID)

NYA W lawurr 'venomous black snake with yellow underside', GUP lawu+ma 'bite', YIM yawu 'small shark sp.'.

The cognates in set N13 exemplify a relationship among the notions SHARK, EAT, TOOTH etc., which reappears here. The /+rr/ suffix of NYA is explained at R2.

L15 *lija+ PNP root (not in GID)

GUP litha+n 'get dry, get warm', UMP iji+ 'get dry, bask'.

As the proto-language apparently had a single laminal stop (Dixon 1970), a *j is written in the reconstruction despite the indeterminacy of the exact quality of that segment when based on these two forms. The different quality of the second vowel in the UMP form may be due to assimilation to the [+hi, -bk] feature specification of either or both of the preceding segments. Obviously, one cannot be certain of the original initial of the UMP word - especially without comparative evidence from within Pamic itself - yet other examples of putative cognates having dropped ancestral *l- are found in L33, L36. So it is not entirely on the basis of shared meanings that these two words are proposed as cognates.

L16 *likarra PNY root

NYA S likarra 'piece of bark', PIN likarra 'bark', GUP likarri 'paint, tar, oil, fat, petrol, small amount of any liquid'.

If these forms descend from a PPN root, then in conformity with the normal two-syllable root pattern its shape would be *lika. As for the resolution of the differences of meaning, the connection between 'bark' and 'tar' etc., is revealed by the fact that resin, for which there were many uses, is found in the bark of trees, some varieties of which are extraordinarily rich in this commodity.

L17 *lili PNPN root

PIN lili+nu 'to rustle. Used of leaves rustling in the wind', GUP lirrigirr?yu+n 'make a rattling noise', GID tilil pa+ 'to make

a scratching noise'.

These cognates are very similar in form and in the types of sounds they refer to. Tl6 includes a similar GID form, also referring to a sound, which may be related to this cognate set.

L18 *Lili PNPN root (not in GID)

WLB lirli+nya+ 'to look after him, care for him'; YIM thiliin 'in return, paying back, reciprocating'.

Since initial /l/ in WLB may come from *l or *r, and YIM /th/ may be from *l, *r or *t, it cannot be determined from these two putative cognates alone whether the initial of the proto-form is a lateral or a rhotic.

L19 *lilyirr PDNY root

NYA W lilyirr 'clattering, clanking'; PIN lilyirr+pa 'sound or a spear or bullet hitting the knee bone of a kangaroo or some hard object'.

Both forms refer to similar sounds which, along with a similarity of form, suggests that they may be related to those of L17. /-rr/ is a root extension in both forms (O'Grady 1966).

L20 *lingka PNPN root

NYA W lingka 1. 'tail of dog raised in anger' 2. 'tail of scorpion', GID yingkan 'cross, angry'.

The descent of GID /y/ from *l- is attested in other cognate

sets, as is the suffix /-n/ (cf. T49, and other examples in the dictionary). The meanings are related in that they both contain the idea of ANGER.

L21 *linmarr PDNY root

NYA S linmarr 'grey snake', PIN linmarra 'snake type (edible)'.

Since /rr/ is historically a root extension (as noted at R2), if these forms are of PPN provenance the root would probably be *linma.

L22 *linpa PNPN root (not in GID)

WLB linpajurrku+wangu 'good to the taste', YIM yinpa 'sour, bitter, makes mouth itch, larrikin, mischievous, woman hungry'.

At least three other instances of YIM /y/ reflecting initial *l obviate discussion of the phonetic similarity of the roots involved here. The meaning of WLB linpa-, at least in an earlier stage of the language, was evidently comparable to that of YIM yinpa: jurrku in WLB is 'same, same place, place' and +wangu is the 'PRIVATIVE, not having' nominal suffix.

L23 *lirr+₁ PNY root

NYA W lirr 'low tide', WLB lirrjiri 'dry treeless country', PIN lirrnya 'a dry soakage', GUP liirr+yu+n 'sweep, uncover, push lily roots aside'.

Absence of other occurrences of /-nya/ in PIN makes difficult its establishment as a suffix separate from the root in the proposed

cognate here. While the territory of the Nyangumarda is near the western coast, that of the Pintupi is well inland in the desert, so that the people would have had more need for a word referring to receding water levels in a well rather than to the tides. The WLB form refers to country where water is clearly absent, while the meaning of the GUP form is connected directly to the NYA and PIN by the shared reference to the notion UNCOVER.

L24 *lirr+₂ PNPN root (not in GID)

NYA S lirrpalirrpapɪ+(n) 'stun'; PIN lirrpalirrpapɪ 'one who is very upset to the point of fighting'; GAW IRA 'fight, battle', TIRRA+MANGKO+NDI 'to interfere at a fight, which is done by throwing the arms around the waist ...', YIM tirrpaa+ 'abduct, run off with, take away'.

While the source of the /-pa/ of the NYA and PIN forms may derive from the common stem increment of the latter language, it is more difficult to explain for the YIM form. Its occurrence, however, in a number of verb forms indicates that historically it may have been a separate morpheme. What differences, if any, are reflected by R and RR in the GAW forms is unclear, and though /Ø/ reflex of initial *l- is not as yet attested in other GAW cognates, it is quite plausible for that language. In the NYA and PIN forms the common semantic element is a strong emotional effect, which may also be a factor of causality in the meaning of the YIM form, while in both GAW forms the emotional aspect is present in FIGHT, also seen in PIN.

L25 *lirri PNP root

NYA W lurr+pa+R+ 'put meat in hot sand for cooking', PIN
lurrngu 'hot coals - the stage when cooking is done', GUP lirrma?+
yu+n 'cook in ashes', GID jirri 'fine dust, powder'.

GID has the most conservative form, reflecting *l- with /j/ as attested elsewhere, and the suffixed GUP form also retains the ancestral vowel *i. The /u/ of NYA and PIN (i.e., PDNY *u) would conceivably result from the [+bk] feature specification of the *rr, while the /-ngu/ of the PIN form is a root extension (e.g., PNG *maya 'right hand' > Gariyarra mayangu (O'Grady 1966:106)). The similarity in the meaning of the NYA, PIN and GUP forms is clear, and the presence in the GUP dictionary of two other suffixed forms that suggest that the meaning of the root was 'ashes' clarifies the connection of GID's 'fine dust, powder' with the meanings in the three other languages.

L26 *lirru PDNY root

NYA S lirru 'snake (sp. poisonous)', PIN lirru 'snake type'.

Diffusion may be the reason for the identity in form here. This set may be related to that of R27, 'tooth', or it may count as evidence for a separate PPN etymon *lirrV which is distinct from and accounts for some of the 'snake' forms attributed to *rirrang.

L27 *liwu PDNY root

NYA lurn S 'laughing kookaburra', W 'bush kingfisher',

NYA W liwurn 'kookaburra', WLB lurnpa (also luurnpa) 'kingfisher'.

Although of lesser etymological value, this is a very interesting set in that it seems to provide solid proof of some historical processes whose application in other etymologies may be more tentative. The /-pa/ of WLB, of similar provenance to the common stem augment of PIN, is now frozen as part of the root, while the long vowel of the alternate form is likely a remnant of the former two-syllable *-iwu-. The contention that lurn is a reflex of *liwu is borne out by NYA W liwurn, which has the same referent. Perhaps the historical sound changes were *liwu > *luwu (by assimilation of V₁ to the following segments) > *luu > *lu-. It is unclear at which point /-rn/, presumably a root extension⁹, was added, though obviously it precedes WLB's accretion of /-pa/. As a kookaburra is a kingfisher, it is quite certain that all of these forms are from a single etymon.

L28 *luka PNPN root

PIN luka 'watery mud', BAY yukarta 'ashes for painting, white paint', GAW TOKA 'mud, dirt, mortar', GID turrkal 'dirty'.

Since ashes, mud and clay are used for painting in many aboriginal cultures, the meanings of the forms in this set show a strong relationship. BAY's /y-/ from *l- is attested elsewhere, as is the root extension /-rta/ (cf. T13), and the final /l/ of the GID form is seen as a historical suffix (cf. T35, T49, N13).

⁹/-rn/ may be related to PNG *-rna, a root extension found on other forms referring to birds (O'Grady 1966:98).

Although the cognation of the last form remains open to question because of the /-rr-/, it is bolstered by the presence of the same apparent infix, /-rr-/, in GID jarrpuuny (see L13), and by a pair of GID roots that are seemingly related: wapa+ 'to peer, to peep, to spy on', and waarrpa+ 'to pry into others' affairs'.

L29 *luku PNP root (not in GID)

NYA luku S 'ankle', W 'metatarsus', WLB luku 'heel', PIN luku 'outside ankle bone', BAY jukarra 'foot', GUP luku 'foot, footprint, wheel', UMP thukɪ+ 'track him'.

Though essentially reflecting striking conservatism in view of the probable time depth involved, the fascinating variety of meanings here illustrates quite clearly how a word's meaning may alter over time. While *l- > UMP /th-/ is not directly attested in other cognate sets, there are several examples of *r- > UMP /th-/, the development which is posited therefore appears quite plausible. Moreover, this reflex is seen in the western language Ngaluma in thumpu 'anus' < *lumpu (see L34), and in the eastern language YIM (cf. L6). BAY /j-/ from *l- is unusual too, yet /j/ is phonetically similar to the more common reflex /y/, and *l- > /j/ is attested in GID. Despite these phonetic difficulties, these forms clearly all reflect *luku.

L30 *lulu PNP root (not in GID)

WLB lurlurl+pu+ 'to shake it out - as flour from bag, to

shake it - as tree to remove seeds', GUP lurlup+thu+n 'peel, shed, scale off', YIM yulany 'skin'.

The final syllables of both the WLB and GUP forms are verb-deriving suffixes, while the /-p/ of the latter is a root extension, as is the /-ny/ of YIM (cf. T35). As noted earlier, there is some debate over the historical status of the retroflex consonants, yet *-l- is proposed here rather than *-rl-. Since the skin of reptiles and the bark of trees are both shed, there is a clear semantic connection between the GUP and YIM forms. Though less obvious, the connection with the WLB form lies perhaps in the shared notion REMOVE, particularly where it concerns trees.

L31 *luL+ PNP root

PIN lulyp1+rnu 'to scoop up water from a soakage with a container', GUP lurlnyin 'depression in ground, deep hole', GID julung n. 'drink'.

A number of phonetic problems render reconstruction of this root difficult. In other circumstances the GID form would be taken as very conservative with its V_2 and final peripheral nasal /ng/ being considered ancestral. Yet while it is known that both PIN and GUP occasionally lack a reflex of ancestral V_2 , there is no trace of it here except in the GID form. As for the lateral at C_2 , Dixon (1980 158) suggests two possibilities. that his proto-Australian did have the phoneme /ly/ which merged with /l/ in eastern languages, here GID, or that there was a single lateral, and that /ly/ was a

later development in the west, here PIN. It is not clear why GUP should have /r1/ as the second consonant, though the variation in WLB of turlka+ ~ tulyka+ 'to pinch him' further suggests a general variability among the laterals. The semantic thread linking the forms is perhaps something like SOAKAGE HOLE: SCOOP WATER: DRINK, though, again, it is not clear whether the proto-form was a verb or a nominal.

L32 *luma₁ PDNY root

NYA S luma, WLB luma 'blue-tongued lizard'.

L33 *luma₂ PNP root (not in GID)

NYA S lumamu+j1+(n) 'wash, pan'; GUP lumurr?+yu+n 'splash'; UMP umuthi 'oyster, big - grows on rocks'.

Though UMP does retain a few initial /l/'s (two in the available data base), this set provides one of at least three fairly sure *l- forms whose initial merges with phonological zero. The /-thi/ of UMP is apparently a root extension, as is the /-rr/ of GUP. The /u/ at V₂ of GUP and UMP reflect an *a modified by the rounding influence of the *m, further triggered by being in the [-stress] position of V₂. Despite the seemingly unrelated meanings, there is evidence that 'splash' and 'oyster' are connected: NYA W janga means 1. 'saliva, foam' and 2. 'oyster, barnacle', perhaps because of the trait of some mollusks to squirt water. The meaning of the NYA word of this set is relatable in that splashing and

washing are similar, or possibly because of the fact that large shells were used as water containers, even far inland.

L34 *lumpu PNP root (not in GID)

NYA W lumpu 'cavity, recess', YIM tumpu 'vagina'.

This etymon is represented as PNG *thumpu (O'Grady 1966:108), where its reflexes are glossed as 'anus', note also the Wadjuk doublet DUMBU 'womb', DUMBUN 'cave'. If the semantic connection appears speculative, consider English vagina from the Latin meaning 'sheath', a type of cavity.

L35 *lungka PNY root

NYA lungkurta 'blue-tongued lizard', WLB lungkarta 'blue-tongued lizard', PIN lungkarta 'lizard type - blue tongue', BAY yungkurrji 'race-horse (yellow) goanna'.

It is just conceivable that UMP aangkay 'small grey lizard sp.' is related; Alpher (1976), however, has proposed PP *paangkarra as its source.

L36 *lunta PNP root (not in GID)

NYA W luntuluntu 'dense pall of smoke - as from bushfire', PIN lunta 'blackened country after fire', UMP unta+ 'to burn'.

The meanings of these forms share the notion FIRE. Considering the great time depth of separation of UMP and PIN, their /a/ at V₂ is taken as original and the /u/ of NYA is attributed to assimilation of vowel quality, a common process in the history of that language.

O'Grady (p.c.) has recognized a *wunta root as the source of NYA W wunta 'country recently burnt' and counted PIN lunta as an aberrant but basically cognate form. Thus it is evident that further research is needed to achieve certainty on the initial of this root.

L37 *lupu PNPN root (not in GID)

NYA W lupa 'thick', GAW TOPA 'all, the whole, so that nothing is left', YIM thupu 'narrow'.

GAW -A < *-u is probably the result of lenition to the unmarked vowel in the [-stress] position, as in R13, for example. Certainly there are differences among the meanings, yet all forms do share the notion SIZE. The apparently opposite meaning of the YIM form 'narrow' could be attributable to the different perceptions of the giver and the receiver of the size of, say, a piece of meat. Or, thupu could be simply showing the phenomenon of antonymy.

L38 *lurr PNY root

NYA S lurr+karra 'running blood', GUP lurr+yu+n 'flow, run (of liquids)'.

In NYA, /+karra/ is a live suffix, not forming verbs in itself, but forming an adverbial-type structure from which verbs are typically derived by the further suffix /+ma+/ (see also +kurru in L40). The GUP form also bears a verb formative, suggesting that the essential meaning of the root is LIQUID.

L39 *luurra PNPN root

GUP lurr+thu+n 'split, cave in', BNJ juurr+a 'split, crack open'.

Bandjalang (BNJ), a sister dialect to GID, is similar enough in phonology to allow inclusion of a form from this dialect when a reflex cannot be found in the GID dictionary. Since GID (BNJ) is thought to be diagnostic for PNPN vowel length, a long vowel is reconstructed here. The initials of both these forms are well attested reflexes of *l. The expected root shape is CVCV, hence a final *-a, despite the obscurity of its reflexes. Cross reference is here made with L9 *larra, as the meanings are connected and, with the exception of the vocalism, the forms are similar.

L40 *lutu PDNY root

NYA W lurturu+kurru+mu+ 'to jump, start - as from bite by ant, or unexpected poke in the ribs', WLB lutu 1. 'tick', 2. 'weevil'.

Since the verb formative (i.e., +mu+, underlyingly /+ma+/) of NYA is one that commonly expresses performance or motion, it seems that its root is likely to have to do with the cause of the motion, viz. the biting insect.

R1 *raju PNY root

PIN raatjal+ka+ngu 'to speedily dry up: used of rain clouds speedily disappearing', GUP latjuwarr?+yu+n 'scatter, disperse'.

Although GUP /r-/ normally corresponds to PIN /r-/, there are other instances of the above correspondence (cf. R27) and of other peculiar correspondences (e.g., N16). Most likely *-u has gone to /-a/ in PIN through assimilation to V₁, especially if it were word final in a non-suffixed form.

R2 *raka ~ *rangka PNPN root

NYA S rangkarr 'blurry', WLB rangkarr+ka+ 'to pre-dawn', PIN rakarra 'moonlight, predawn, post-sunset light', GAU TANGKUINYA 'dream', GUP tangga 'calm, fine', YIM takarr 'grow, swell, grow up ...', GID tangkaal+pu 'dawn, before sunrise', takam 'fog'.

Quite possibly these two root shapes represent different etyma, yet because of the cohesiveness of the meanings of the words in this set and because the alternation of a nasal or a stop versus a nasal plus homorganic stop is quite common, it is most likely that a single etymon is involved here.

Prenasalization of stops is fairly common among Australian languages: there is optional prenasalization of stops in Tiwi, e.g. jərəkəpai → jərəŋkəpai 'crocodile' (Osborne 1974:24); O'Grady reports (p.c.) that there is a diachronic rule in GUP whereby ancestral clusters of nasal plus homorganic stop reduce to a simple

nasal, e.g., GUP lungarri ~ lunggu 'harpoon thrower', see also at T26 for further comment and examples.

WLB has the same /-rr/ suffix as in NYA, both of which probably reflect the *-d (i.e., *-rr in the orthography used here) suffix discussed by O'Grady (1979:119). Since WLB regularly reflects *r- with /l-/, borrowing is suspected here. Though GAW's -UI- at V₂ seems to be an aberrant reflex of *-a, it is probably a manifestation of the phonetic on-glide to the [-bk, +h₁] articulation of the NY of the following suffix (cf. N15) of /tangku+nya/. The /-l/ of the first GID form is a suffix (cf. T35, T49), while the /-m/ of the second may be ancestral, suggesting PNPN *rakam.

It is the gloss 'dawn' that shows the semantic relationship between the first GID and the PIN and WLB forms. The related GID form tangkaal+ma+ 'to reveal, make plain' clarifies the relationship of GUP 'calm, fine', as it is the clearing of the clouds and revealing of the sun that precedes the fine weather. (GUP thangga ~ tangga 'the rain having stopped' supports this contention). As the idea of GROWING LIGHT is apparently present in NYA kaka+rni raa 'first light, dawn' (kaka+rni 'from the east', raa 'expanding'), the semantic relationship of the YIM form 'grow' with those referring to DAWN is made plain. Evidently it is the pooriness of light entailed in DAWN that connects the meaning of the NYA form 'blurry' and its related form rangka+lu+maninyi '[there is a] mirage, [one can] hardly see', which is included here to strengthen the claim

that the GID 'fog' form is semantically related to all the others. Finally, the impaired perception associated with 'fog' or a 'mirage' links the meaning of the GAW form 'dream' with the other cognates since some details of a dream are often thought of as unclear.

R3 *ralpa PNY root

NYA W ralpurr 'itchiness'; GUP ralpa 'active, energetic, frisky'.

The semantic association between these two forms is also attested in English by one of the meanings of itch - 'a restless desire or craving for something' (AHD). This set is interesting in that it provides yet another example of a → u/ __rr# (be it diachronic or synchronic), as seen also in T9 and in NYA piya+ 'to grind', piyu+rr+piyu+rr (< *piya+) 'galah' (a bird which grinds its food in its bill).

R4 *ralyang PNP root

NYA S ralya 'light, not heavy, a bit sad'; PIN ralya 'without care, unconcerned'; YIM talil 'light weight'; GID talngang 'calm, peaceful', yalal 'light, fragile', yalapung 'free, without any commitments'.

Next to the remarkable conservatism in the descent of such an abstract meaning, the most noteworthy semantic detail is the gloss of the NYA form 'a bit sad' which suggests the first step in a grad-

ual process of antonymy. It has been suggested that 1. the proto-language had *l and *ly, merging to /l/ in eastern languages, or 2. a single lateral *l split into /l/ and /ly/ in some western languages. Either hypothesis would account for the reflection of the laterals in this cognate set. However, because Dixon (1980:157) postulates ancestral *l and *ly (partly on considerations of symmetry in the phoneme inventory) and further because a putative split in western languages would most probably have occurred in the environment of other [+hi, -bk] segments (the /a/'s of ralya are [-hi, +bk]), *-ly- is reconstructed here. All the initials of these cognates are well attested reflexes of *r-, and there is good evidence that the final /l/'s of the YIM and GID forms are old suffixes. The /i/ at V₂ of the YIM form may result from assimilation to *ly (though see R19) and the medial /ng/ of the first GID form conceivably evolved through stages in which PNPN *ralyang > *ralang (*ly > *l) > *talang (*r > *t) > *talkang (*k-infix) > GID talngang (assimilation of *k to the velar nasal). This cognate set may be related to R5.

R5 *ralyu PDNY root

NYA S ralyu 'lungs', PIN ralyuralyu 'a small internal organ'.

Although the resemblance of meanings may seem rather vague, there is justification for asserting cognation on the basis of identical sound correspondence and in view of the well attested fact that words designating internal body parts undergo many changes in

meaning in numerous languages of the world (Wilkins 1981:86-88). Certainly this is true for Australia, note, e.g., Ngkot pya 'stomach', Mbiywom pe 'liver', reflecting PP *jipa (Hale 1976a:27). In light of the following evidence, it may well be that this set should be subsumed under the root R4 *ralyang: the semantic association LIGHT:LUNGS is seen in Indo-European (Wilkins 1981:88) and in the cognates Wadjuk BARGAR 'light, thin, as a covering', NYA etc. parrka 'leaf' in conjunction with the LEAF:LUNGS association noted by O'Grady for PNG *walharn (1966:108, 1979:118). The latter, in turn, may be related to *ralyu, compare, e.g., R13, where *r- descends in UMP as /w/.

R6 *rama PDNY root

NYA W raminy 'rib'; WLB lama 'thin, emaciated', ramarra 1 'rib', 2 'edge'.

For evidence that the final nasal of NYA is a suffix see T35. The preceding /i/ answering to *a is taken to be the result of assimilation to the palatal nasal. Because /r/ is thought to have merged with /l/ in initial position in WLB, ramarra is probably to be counted as a loan, while lama is a direct descendant of the proto-form. The semantic association lies in the prominence of the ribs of an emaciated person.

R7 *ramang PNPN root

WLB rama 'blurred vision, partial vision, partial hearing';

PIN rama 'one who is angry or emotionally upset: used of disobedient children'; BAY thamany 'tired', GUP raman 'down (of birds), cotton', tamarrdamarr+dharra 'flare up in anger, tell someone off, stand up and answer back', GID marraang 'tired'.

Interestingly, the forms in this cognate set seem to reflect a set of semantic developments similar to those from a particular Proto-Indo-European root. PIE *dheu₁ is thought to have meant, among other things, 'defective perception or wits'. By various paths this root and derivations have come into English as dizzy, deaf, dusk, dumb, down (AHD). In light of the knowledge that such diverse words do have a common semantic element, the relationships among the Australian words above become clearer.

Again, because of the initial /r/ rather than the expected /l/, WLB rama is to be seen as a loan, unless the prospect of homonymy with WLB lama (< *rama) inhibited the lateralization of *r in *ramang. Metathesis, known to have occurred in GID as well as other languages (and see T1) appears to be the explanation for the divergent GID reflex.

R8 *rangki PNY root

NYA W rangkirangki 'toadstool sp.', GAW TANGKAIIRA 'a species of fungus'.

Because there are other instances of final A in GAW reflecting *-i (e.g., R28, T41) there is some justification for specifying root-final *-i, although there are also indications that NYA occasionally

reflects *-a with /-i/.

R9 *rangkV PNP root (not in GID)

NYA W rangkurr+karra 'noise of surf'; UMP thangki+ 'break intr., disintegrate; break - of wave'; YIM thangkaarr 'half, in half; waist, midriff'.

The 'breaking of waves' implicit in 'noise of surf' makes the semantic connection between the NYA and UMP forms. The YIM form 'half' is semantically related to the UMP 'break' form in the same way that English half is believed to descend from PIE *skel₁ 'to cut' (AHD) by the route CUT:DIVIDED:HALF. This instance of /-rr/ may well bespeak reflection of the PNP *+rr 'AGENT' suffix, cf. NYA lawurr 'snake', GUP lawu+ma 'bite'; UMP nhukuy 'penis' < *nuka+ (where /-y/ is known to reflect *-rr (O'Grady 1976)) is quite probably < "the one that eats/copulates". If NYA's /-rr/ is this suffix, then rangkurr+karra would be literally 'a break-er'.

R10 *ranyja PNY root

NYA W ranyji 'old man or woman'; WLB linji 'dry, dessicated - of plant'; BAY thantha 'bark (of tree), chip of wood', GUP ranhdhak 'dry'.

Both vowels of the WLB form and the second of the NYA form may owe their quality to assimilation to the [+hi, -bk] articulatory features of the homorganic cluster *nyj. The final /k/ of the GUP form is paragogic as elsewhere (cf. R20, R38, T18, etc.). It is

proposed here that the NYA word evokes the wizened, i.e. dried-out quality of the skin of the old - the plain resemblance between the WLB and GUP meanings seems to guarantee the referent 'dry' as ancestral. The BAY form is semantically associated with DRY because the materials used as tinder, i.e., bark and wood chips, are necessarily dry.

R11 *rapang PNP root

PIN rapuly+pa 'thud: sound caused by a spear hitting the stomach of a kangaroo'; GID tapaang 'sharp sound'.

The /ly/ segment of the PIN form is of undetermined value, though it is worth noting that in three cases where it occurs as an accretion to a stem in PIN and NYA (T33, T34, T45), it is in words which denote sounds. The final /ng/ of GID is taken to be ancestral (see T62).

R12 *rapu PNP root (not in GID)

GAW TAPURRO 'the skin of an opossum stuffed, and used at play as a drum'; GUP rupu 'possum'; UMP ampuyu 'possum species', tupi 'rat'.

The similarity of the meanings of these cognates requires no comment. In UMP there are many words ending in /uyu/ which in some cases alternates with /uy/, e.g., wupuyu ~ wupuy 'child'; a large proportion of them refer to fauna and flora. As UMP has many words which have lost the ancestral initial, and it also has a tendency

to prenasalize intervocalic stops (cf. T50), the first UMP form is included as being cognate.

R13 *rapu ~ *rampu PNPN root (not in GID)

NYA W rapa 'light, not heavy', rapurapu 'swollen, inflated';
WLB rampaku 'light in weight, weak, faint - as from hunger', PIN
rampaku '(become) empty, (become) thin, fragile', GAW YAPPA 'hole',
GUP tamba 'light in weight', UMP wapu 'light'.

If something is 'swollen' or hollow (and likely 'light', 'thin' and 'fragile') it may be seen to have a 'hole' in it. Thus the GAW form is here considered to be semantically associated with the others, though the weight of the evidence for cognation of that form remains largely in the phonological resemblance. Pre-nasalization of intervocalic stops, such as O'Grady reports for PIN (p c), may account for the two shapes of the reconstruction. UMP wapu has an unusual reflex of *r in /w/ which may have, as one possible explanation, its origins in child language, as in English where children often pronounce rabbit with an initial /w/. The WLB form, with initial /r/ in place of the expected /l/, is evidently a loan from PIN.

R14 *raapV+ PNPN root

PIN rapi+rnu 'to make room', GID taapa+ 'to stretch one's muscles'.

GID is diagnostic for vowel length. The forms are semantically

related in that 'making room' and 'stretching one's muscles' would be associated activities around a camp fire, for example.

R15 *rara PDNY root

NYA W raa 'expanding' (as in kaka+rni raa 'first light, dawn' where the first word is 'east + ELATIVE'); PIN rara 'swollen', rarr+pa 'moonlight, predawn, post sunset light'.

The proposed development of the second PIN form is *rara > *rara+rr (stem accretion) > *raa+rr (r-deletion) > ra(a)rr+pa (stem augment triggered by final consonant). Other instances of r-deletion, as seen also in the NYA form raa, are found in T32, T46.

R16 *rarram PNPN root

GUP rarranhdharr 'late in dry season when it is hot'. GID tarram 'dry'.

The dryness associated with the season denoted by the GUP form provides the semantic evidence that these words derive from the same etymon. GID maintains ancestral final peripheral nasals (see T62).

R17 *rarrV₁ PNY root

PIN rarru 'an offended person; angry', BAY tharralkati+ 'flare up (flame)', GUP taarr+yu+n 'be or become angry'.

In Australian aboriginal cultures HEAT and ANGER are seen as related, as well as COOL and CALM/COLLECTED. English flame '... a violent or intense passion ...' (AHD) also attests to the association

of FLAME with ANGER.

R18 *rarrV₂ PNY root

NYA W raarr 'roar - as of surf', raarr+raarr 'rustling sound - as of snake', PIN rarr+pa 'a tearing noise: used when tearing off strips of canvas', GAW YARRURE+NDI 'to break, tear, separate violently', GUP rar?rar+yun 'sound of leaves rattling in the jungle'.

The absence of a reflex of the second vowel in all but the GAW form is attributed to the same process that results in CVC forms for ideophones in NYA (see T33). The glottal stop in the reduplicated GUP form is epenthetic and may be a factor in the development of the rhotic glide /-r-/ from the flap *-rr-. The common semantic link is in the type of sound involved.

R19 *raarrV PNP root (not in GID)

GUP raarratha 'crab species', YIM taarril 'food with crust or shell'.

The meanings agree in that a 'crab' is 'food with a shell', while the initials correspond in that YIM /t-/ < *r- is well attested.

R20 *rawa₁ PNP root

NYA W rawarri 'dead', rawin 'calm, windless', WLB lawa 'negative, absent', PIN rawa 'continually, still', GAW TOWILLA 'soul, spirit, ghost', TAWO 'breath', BAY thawarlu 'shade', GUP rakuny 'dead', raawak 'dry, dried up, burnt, stale, overcooked', ruwuk 'old, stale (eggs, footprints)', UMP aw1 'bald', YIM tawaayku

'some years ago', yawuu 'still, immobile', GID tawarrkan 'ghost of a dead aboriginal woman', yawun 'afternoon, evening'.

This cognate set is largely a duplication of that presented by O'Grady (1979b). Though the semantic connections may appear tortuous, the sound correspondences are straightforward. The first NYA form, though a loan from Garadjjarri, is included as it helps complete the semantic picture. GAW TOWILLA, with a derivational suffix (Teichelmann and Schürmann 1840:4), apparently has rounded the first vowel to the [+rnd] articulatory feature of the W, while in TAWO it is the second vowel that has undergone assimilation. Despite its /k/ GUP rakuny is included in view of the diachronic or synchronic alternation of /k/ ~ /w/ witnessed, for example, in tagardagayun, tawardawayun 'make fire'. GUP ruwuk is obviously a variant of raawak, and the /-k/ is paragogic. The UMP form has lost the initial *as* as is frequently the case in that language. YIM yawuu appears to be related though no other instances of /y-/ < *r- in that language have been discovered so far.

Without delineating all of the possible connections among the meanings of the forms here, it may be observed that the notion of ABSENCE, be it of movement, life, daylight, can be found in the referents of most of the cognates. Persuasive support for the plausibility of words with such diverse meanings having developed from a single etymon is found again in the Indo-European language family. Among others, the following words are developments from

PIE *dheu+ : Russian dux 'breath, spirit', Greek thuos 'burnt sacrifice, incense', English dust, dusk, doldrums and dull. Further support is found in reflexes of Nuclear Pama-Nyungan roots - 'not', 'devil, spirit' from *yakam, and 'nothing', 'bald' from *puru

R21 *rawa₂ PNP root (not in GID)

NYA S rawal 'small goanna', WLB liwirringki 'lizard species', UMP thawa 'frilled lizard'.

Though not specific, the glosses of these forms are sufficiently similar as to require no comment. WLB has the same /i/ < *a reflex as is found in R10. Further evidence that this is a real correspondence lies in the pair GAW KARKANYA 'hawk species', PIN kirrkin+pa 'a hawk'.

R22 *rawa₃ PNP root (not in GID)

PIN raa+ya+nu 'to fire up: used to describe departing rain', GUP taawalayirri 'get better', UMP taw?a 'fine weather'.

The PIN form has a long vowel resulting from the loss of the intervocalic sonorant (cf. T32, T46, R14): GUP's long vowel is non-etymological. That the glottal stop of UMP is epenthetic is supported by the pair of forms UMP aalkanji 'high tide', al?akat 'come in, rise - of tide'.

R23 *rika₁ PNP root (not in GID)

GUP riwarrtja 'person who doesn't tell the truth', UMP wika+ma+ 'to lie, deceive'.

GUP /w/ is known to have *k as one of its sources, while /-rr/ is well attested as both a contentless root augment and as an AGENTIVE suffix (cf. R9). Though /w/ is an unusual reflex of initial *r in UMP, it is attested in another cognate (R13). The suffix /+ma/ is a well attested verb formative, the root /wika+/ evidently has the UNTRUTH, clearly shared by GUP.

R24 *rika₂ PNPN root (not in GID)

PIN rikirr+pa 'sound of spear hitting rib area of kangaroo', GAW TIKI 'the region of the ribs, side', UMP tika 'side - as of river', YIM tikarra 'defender, man who in early days would deflect spears thrown at a condemned man'.

From the root meaning of RIB or SIDE, the meaning of the UMP form has developed in a way parallel to that of English coast from Latin costa 'rib, side'. The 'defender' of the YIM gloss is one who would stand at the 'side' of the condemned man and 'take sides' with him.

R25 *rilypa PNYI root

PIN rilypa 'seepage water in a creek bed or stoney ground', GUP raypiny 'fresh water'.

Here the /-pa/ of the PIN form is actually part of the root, as it is in GUP where its vocation has, however, assimilated to the [+h₁, -bk] feature specification of the following palatal nasal. O'Grady (p.c.) has offered the following evidence in support of the

correspondence /ly/ : /y/ : 1. *jAlya 'saliva, foam, sap ...' > GUP tjuuy? 'sap ...'; 2. *pAlya 'fat, good' > GUP puuy 'yellow fatty part of crab'; 3. *ngaalya 'forehead ...' > GUP nguuy '... innermost feeling'.

R26 *rirra PNP root

NYA S rirrapirtan 'palm cockatoo', W lirrapirtan 'red-tailed black cockatoo', BAY thirranti 'red-crested cockatoo', yirraparlu 'white cockatoo', GID yirrirriiny 'bird (generic)'.

These forms may well belong in the following cognate set (R27), where perhaps the TOOTH meaning extends to include 'beak'. In the NYA compound forms +pirtan means 'limestone', and BAY +parlu is etymologically 'stone'; thus a beak is conceivably viewed as a '(lime)stone tooth'.

R27 *rirrang PNP root

NYA W rirra ~ yirra 1. 'tooth' 2. 'edge - as of axe' 3. 'point of spear', WLB lirra 'mouth', PIN yirra 'tooth', GAW TIA 'tooth, edge', BAY yirra 'tooth', GUP lirra 'tooth', UMP irra 'snake (generic)', GID tirrang 'tooth', yirran 'Green Tree Snake'.

This etymon has been noted by Capell (1956) as Common Australian *lirang 'tooth', and by O'Grady (1966) as proto-Ngayarda *yirra 'tooth'. Though the initial of the GUP form is /l/, *r- is reconstructed largely on the NYA evidence of a (presumably) retained /r-/. The /y-/ variant of NYA is thought to be a recent innovation, as in

the PIN form. The SNAKE TOOTH relationship probably stems from the fangs being a salient feature of some snakes (cf. L26). Otherwise the retention of the same meaning and form throughout the continent is remarkable¹⁰, though matched in stability to a considerable degree in PIE *dent+.

R28 *rirri PNP root

NYA rirririri S 'side of hill, river, rock', W 'glans penis', W rirrji+pi+L+ 'to heap up sandbars - as river flow does', WLB lirri+ 'to swell', GAW TIRRA 'obstacle, hindrance', BAY yirrapirti 'river bank', GUP tirritirri 'thorns', GID yirra 'opposite direction'.

The phonological correspondences in these forms are all quite clear, though it might equally well be argued that V_2 of the reconstruction should be *-a. The apparently deviant /-j-/ in NYA W rirrji+pi+L+ is probably the result of infixation, since other related forms in both dialects strongly point to its being from the root *rirri. The meaning of the WLB 'to swell' is seen to be directly related to the NYA 'penis' form, and less directly to the NYA form for 'to heap up ...', i.e., there may exist a SWELL:HEAP UP association, or the relationship may lie in the topological similarity of a steep river bank and an erect penis. The association of GUP 'thorns' with the other cognates is attested in YIM thumuul 'stick, twig, thorn, splinter, penis' and in other languages of the

¹⁰ Dyirbal tirra 'tooth' is surely cognate too.

world by the changes THORN > PENIS, SWELLING > PENIS (Wilkins 1981:88). As for the meanings of the GAW and GID forms, it may be that they are related to the others in that the 'opposite' or wrong direction (GID) is one that leads to 'obstacles' (GAW) of river banks and steep slopes.

R29 *rirrpirirrpī PNPN root (not in GID)

NYA W rirrpirirrpī 'having parallel ridges', UMP thirr[?]ithirr[?]i 'wrinkle'.

Since /th/ is an attested reflex of *r, and /[?]/ is known to reflect *p, in the respective phonetic contexts, the UMP form shows expectable correspondence vis-à-vis the NYA form. 'Wrinkles' often take the form of 'parallel ridges', and aerial photographs of parallel sand ridges in Western Australia give the impression of a 'wrinkled' landscape.

R30 *rirru PNPN root (not in GID)

BAY jirrijirri 'bitter', GUP rirri[?]rirri 'hard, harsh, harshly, sternly', YIM thirru 'bitter, sour, strong tasting'.

These cognates possibly all belong with *rirrang 'tooth' (R27) because of the phonetic similarities and the semantic association TOOTH BITING BITTER which is also attested in English. The GUP form is a reduplication with epenthetic /[?]/ (cf. R1, R18, R33). Despite the absence of other instances of *r- > /j/ in BAY, since *r- has reflexes in the laminals /th-/ and /y-/, it is very plausible that

/j/, also a laminal, may be another reflex. Final *u is reconstructed because the western languages and GUP show plenty of evidence of one vowel of a disyllabic root assimilating to the other.

R31 *runga+ ~ *runka+ PNP root

NYA W runga+ji+ 'to howl, whine - of dog or dingo', UMP ungka+ 'cry, meow', GID tunga 'to cry', yung 'bark (of dog, dingo)'

Both GID reflexes of *r- are well attested, as is the initial dropping in UMP. The UMP form is noted by Hale (1976c:58), who proposes proto-Middle Paman *runka+.

R32 *rurra PNY root

GAW WORRA 'sand', GUP rurrur 'sandy or earthy area'

Parallel developments in other cognate sets (e.g., R3, R9, N8) suggest that *-a raised to /u/ under the influence of the following rhotic in the extended GUP form. GAW's reflex of *r- in W is unusual though not without equal (cf. R13, R23, R35).

R33 *rurri+ PNP root

NYA W rurru+rurri+ 'to move slightly', WLB rurrung+pardi+ 'to fall off, come loose and fall off', PIN rurruly+pa 'the sound made by a snake - rustling in the grass, wind through leaves, paper, etc.', PIN rurriny+pu+ngu 'to remove - used of taking off a headband, shirt', GUP rurr?rurr+yu+n 'to shake', rur?+yu+n 'to get up, rise', GID yuuti+ 'to move (oneself)', yurruwa+ 'to go away', turra+ 'to shiver'.

The loss of the root-final vowel in GUP is not unusual (cf. T33). The GID reflexes /y-/ and /t-/ , from initial *r, are both well attested, as are the r-'s of the GUP doublet. As *r- is thought to be regularly reflected as /l-/ in WLB, the possibility of diffusion arises here. Once again, the /-ly+/ of PIN is associated with the name of a sound (cf. R11). Despite the unexpected form of GUP rur[?]+yu+n (with medial /r/), it must be included on the weight of the semantic similarity. The semantic element of MOVEMENT is present in the glosses of all the proposed cognates. Compare R34.

R34 *rurru+ PDNY root

NYA S rurru+rurru+pi+ 'dodge, avoid, shape to hit someone but don't, WLB lurru wanti+ 'to duck down - to conceal oneself'.

With its major reflex of *r- in /l-/ , the WLB and the reduplicated NYA form are perfectly congruent. It is the notion of AVOID which unites these two forms and separates them from R33.

R35 *rurrV PNY root

PIN ruru+pu+ngu 'to rub the point of a wooden instrument on a flat stone surface to grind it sharp'; GAW WORRI 'the extreme point of anything'; BAY yurra+ 'to scratch'.

Some doubt is cast upon cognation by the /r/ glide, rather than the flap /rr/, as C₂ of the PIN form. As in R32, the o of the GAW form is thought to represent an allophone of /u/.

Though the semantic correspondences are not perfect, there is an underlying shared notion of SHARP.

R36 *ruwa+ ~ *runka+ PNPN root

NYA S ruwa+, W ruwi+ 'hit (with missile)'; WLB luwa+ 'to strike it with a missile thrown'; PIN runka+ 'to throw, grind seed, saw, rub'; GUP lunggu, lungarri 'harpoon thrower'; GID tuwa+ 'to dig'.

It is significant that in the 'throw' forms a missile, probably a spear, is involved. The spear element is present in the GUP forms meaning 'harpoon thrower' and the connection of GID form 'to dig' may be explained by the fact in some cultures some spears, i.e., tools for hitting, are used for digging. The two GUP forms evidence the reduction of the stop of nasal-plus-stop clusters as described by Heath (1981). A similar variation in the medial consonation of the proto-form is seen in R2 and R13.

R37 *ruwV PNPN root (not in GID)

NYA W ruwinyjiruwinjji+jj+ 'to wash away, scrub out, erode'; PIN ruwa 'partly obliterated - used of footprints'; GUP ruwuk 'old, stale (eggs, footprints)'; UMP wu?u+nga+ 'smooth it out, erase - as marks in sand'.

Cognates posited on the presumed operation of metathesis as a phonological process are sometimes uncertain. Because of the close similarity of its meaning to that of the other cognates, however,

the UMP form must surely be a reflex of *ruwV. Since /ʔ/ is a common reflex of intervocalic *r in this language (O'Grady 1976:61), the development of the UMP form likely approximates *ruwV > *ruwu > *wuru (metathesis) > wuʔu. NYA W ruwi+ (R36) appears in an apparently metathesized variant yuri+, lending added strength to the claim that the UMP form is to be derived via metathesis from *ruwu. While the V₂, /i/, of the NYA form is probably derived by assimilation of a back vowel to the following palatal consonants, there is not enough evidence in these cognates to be sure of the quality of V₂, though *-u is likely. The final /k/ of GUP is merely paragogic (cf. T18, R10, R20).

12. RESULTS AND CONCLUSIONS

Ancestral initial apicals are contrasted in the sets provided in Table VI.

Ideally the forms in the minimal sets of Table VI would differ by one segment only -- the initial -- yet even so the evidence that PNPn made use of four contrasting apical consonants in initial position is strong. The case for PNPn initial *n is virtually unsailable. On the other hand the patterns of reflexes of the other apicals in the eastern languages produce no really clear explanation of the historical development. Why YIM does not consistently reflect *t- with /t-/, for example, remains a valid question. Of course, if PP collapsed PNPn *t, *l, *r under a single phoneme *T (Alpher 1976:91), then the subsequent development of such initials might not have been constrained by earlier phonetic values. Moreover, there is no discernible pattern of an underlying complementary distribution suggesting that the various initials in any given language result from conditioned allophonic variation of a single ancestral non-nasal apical.

Despite his good supporting material and argument, Dixon's surmisal (1980:175) that /t/ and /l/ might have been allophones of a single phoneme is not borne out in the material presented here. (While it must not be forgotten that Dixon is talking of PA, not PNPn, the contention here is that when PA reconstructions are based primarily on material in putative PN languages, as is the case

Table VI. Minimal sets contrasting ancestral apicals in initial position.

T24	*tawa	PNYY root
N8	*nawa	PNPN root
L14	*lawu+	PNPN root
R20	*rawa ₁	PNPN root
T20	*tarrum	PNPN root
N7	*narra	PNPN root
L12	*laarrum	PNPN root
R16	*rarram	PNPN root
T26	*tika	PNPN root
N13	*nuka+	PNPN root
L16	*lika(rra)	PNYY root
R24	*rika ₂	PNPN root
T49	*tuku ₁	PNPN root
N13	*nuka+	PNPN root
L28	*luka	PNPN root
R37	*ruwa ~ runka+	PNPN root

here, then PA and PNPN are equivalent.) No conditioning environment for *t versus *l is apparent. For instance, there is no significant correlation between *t or *l and the following vowel, the frequency in the reconstructions of each vowel following *t is, *a 37%, *i 34%, *u 29%, and following *l, *a 35%, *i 32%, *u 32%. Nor does the second consonant of the root seem to be a factor.

Notwithstanding the inconsistencies mentioned above, it is observable in the data that *t tends to be reflected in a stop, and that *r and *l tend to be reflected in a continuant consonant among the three eastern languages, while the reflex patterns in the other languages indicate, on the whole, quite clearly that *t, *l, *r occurred word initially in the ancestral language. In sum, irrespective of the situation in PA which presumably predated PNPN, the most probable interpretation of the material gathered here is that PNPN distinguished the apicals *t, *n, *l, *r in initial positions.

In so far as the proposed reconstructions are derived from true cognates they do in fact constitute evidence for the genetic unity of Pama-Nyungan languages. Although not yet fully analysed, the repetition of reflexes that occurs in a given language in itself constitutes evidence of cognation. If observational similarities in form and meaning were due to chance, no particular correspondences would be favoured, and there would be no patterns.

Moreover, the low frequency of initial apicals in those languages where they do occur markedly reduces the likelihood of similarities arising through mere chance.

On the whole, the reconstructions here concur with the notion that PNPN ancestral roots were mostly disyllabic, with only one or two consonants medially. Further work may require adjustment of some segments of these reconstructions, particularly of the second vowel in a given root, since this was unstressed and seems to have been particularly prone to the pressures of assimilation. As presented here, these reconstructions, which may be refuted or validated as further information comes to light, are the largest assemblage of PNPN roots to appear to date. Non-PN languages were not systematically included in this study, but occasional searches in their dictionaries revealed no plausible cognates. For PNPN to be adequately differentiated from PA, many more Australian languages must be integrated into the comparative search which as yet, however, has found very little material to justify the hypothesis of an Australian family. As long as no true cognates from non-PN languages can be found, the ninety-six roots attributed to PNPN here do indeed constitute proof of the Pama-Nyungan language family.

Appendix A

Reconstructed proto-forms

T1	*takan	PNPN
T2	*taakun	PNPN
T3	*tala ₁	PNYY
T4	*tala ₂	PNYY
T5	*tana	PNPN
T6	*tanku	PNPN (not in GID)
T7	*tantu	PNYY
T8	*tangka	PEPN (not in GID)
T9	*tangka+	PNPN (not in GID)
T10	*tangku	PNPN (not in GID)
T11	*taapa+	PNPN (not in GID)
T12	*tapu ₁	PNY
T13	*tapu ₂	PNY
T14	*TapV	PNPN (not in GID)
T15	*tar ₁	PNPN
T16	*tar ₁	PNPN
T17	*tarlku ~ *taku	PNPN (not in GID)
T18	*tarra	PNPN (not in GID)
T19	*tarrka	PNPN (not in GID)
T20	*tarrum	PNPN
T21	*tarta	PNPN (not in GID)
T22	*tartu	PNY

T23	*tat1+	PNY
T24	*tawa	PNYY
T25	*ti _j i	PNYY
T26	*tika	PNPN (not in GID)
T27	*tiika+	PNPN (not in GID)
T28	*tiki ₁	PNPN
T29	*tiki ₂	PNPN (not in GID)
T30	*tiku	PNPN (not in GID)
T31	*tilti	PNY
T32	*tilting	PNPN
T33	*tilyi	PNYY
T34	*timpil	PDNY
T35	*tipa	PNPN
T36	*tiril	PNPN
T37	*tir ₁	PNPN (not in GID)
T38	*tir ₂	PNPN
T39	*tirnka	PNPN (not in GID)
T40	*tirr	PNYY
T41	*titi	PNYY
T42	*tititi	PDNY
T43	*tiwa	PNPN (not in GID)
T44	*tiwirr	PNYY
T45	*tiwu	PDNY
T46	*tiyi	PNPN (not in GID)

T47	*tuu	PNPN (not in GID)
T48	*tuuju	PNPN (not in GID)
T49	*tuku ₁	PNPN
T50	*tuku ₂	PNPN (not in GID)
T51	*tukul	PDNY
T52	*tulki	PNYY
T53	*tulyku	PDNY
T54	*tumu	PNPN
T55	*tuungku	PNPN (not in GID)
T56	*tungu	PNYY
T57	*tupa	PNY
T58	*tuptup	PNYY
T59	*turlparra	PDYY
T60	*turlu	PDNY
T61	*turna	PNY
T62	*turrkang	PNPN
T63	*turru ₁	PNYY
T64	*turru ₂	PNPN
T65	*tuwa ~ *tuya	PNYY

N1	*nam(p) a	PNPN
N2	*nampul	PEPN
N3	*namu	PNYY
N4	*napa	PNY
N5	*napu	PNPN
N6	*narnngu	PDNY
N7	*narra	PNPN
N8	*nawa	PNPN
N9	*ning	PNPN
N10	*ninya	PNYY
N11	*nirrim	possible PNP
N12	*nuu	PNPN
N13	*nuka+	PNPN
N14	*nurlu	PNY
N15	*nurrku	PNYY

L1	*laka	PNPN
L2	*lalka ₁	PNPN
L3	*lalka ₂	PNPN
L4	*lama	PNPN (not in GID)
L5	*lampa	PNPN
L6	*lanta	PNPN (not in GID)
L7	*lapa	PNPN
L8	*laapV	PNPN (not in GID)
L9	*larra	PNYY
L10	*larrjam	PNPN
L11	*larrka	PNPN (not in GID)
L12	*laarrum	PNPN
L13	*lawu	PNY
L14	*lawu+	PNPN (not in GID)
L15	*lija	PNPN (not in GID)
L16	*likarra	PNYY
L17	*lili	PNPN
L18	*Lili	PNPN (not in GID)
L19	*lilyirr	PDNY
L20	*lingka	PNPN
L21	*linmarr	PDNY
L22	*linpa	PNPN (not in GID)
L23	*lirr ₁	PNYY
L24	*lirr ₂	PNPN (not in GID)

L25	*lirri	PNPN
L26	*lirru	PDNY
L27	*liwu	PDNY
L28	*luka	PNPN
L29	*luku	PNPN (not in GID)
L30	*lulu	PNPN (not in GID)
L31	*luL+	PNPN
L32	*luma ₁	PDNY
L33	*luma ₂	PNPN (not in GID)
L34	*lumpu	PNPN (not in GID)
L35	*lungka	PNY
L36	*lunta	PNPN (not in GID)
L37	*lupu	PNPN (not in GID)
L38	*lurr	PNYY
L39	*luurra	PNPN
L40	*lutu	PDNY

R1	*raju	PNYY
R2	*raka ~ *rangka	PNPN
R3	*ralpa	PNYY
R4	*ralyang	PNPN
R5	*ralyu	PDNY
R6	*rama	PDNY
R7	*ramang	PNPN
R8	*rangki	PNY
R9	*rangkV	PNPN (not in GID)
R10	*ranyja	PNYY
R11	*rapang	PNPN
R12	*rapu	PNPN (not in GID)
R13	*rapu ~ *rampu	PNPN (not in GID)
R14	*raapV+	PNPN
R15	*rara	PDNY
R16	*rarram	PNPN
R17	*rarrV ₁	PNYY
R18	*rarrV ₂	PNYY
R19	*raarrV	PNPN (not in GID)
R20	*rawa ₁	PNPN
R21	*rawa ₂	PNPN (not in GID)
R22	*rawa ₃	PNPN (not in GID)
R23	*rika ₁	PNPN (not in GID)
R24	*rika ₂	PNPN (not in GID)

R25	*rilypa	PNYY
R26	*rirra	PNPN
R27	*rirrang	PNPN
R28	*rirri	PNPN
R29	*rirrpirirrp1	PNPN (not in GID)
R30	*rirru	PNPN (not in GID)
R31	*runga+ ~ *runka+	PNPN
R32	*urra	PNYY
R33	*urri+	PNPN
R34	*urru+ ₁	PDNY
R35	*urru+ ₂	PNPN
R36	*urrV	PNY
R37	*urrV	PNY
R38	*ruwa+ ~ *runka+	PNPN
R39	*ruwV	PNPN (not in GID)

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INITIAL APICALS IN NUCLEAR PAMA-NYUNGAN

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