

INITIAL APICALS IN NUCLEAR PAMA-NYUNGAN

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Introduction

Two questions in Australian comparative linguistics are at issue herein: 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 PMN, comparison of case systems, reconstruction of conjugational markers, and so on. On the one hand, O'Grady (1979b) has asserted that it is obvious that the PMN languages constitute a genetic grouping and that the reconstruction of a proto-language including perhaps 1400 starred forms, analogous to those 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 PMN 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' – 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 PMN language, a few of which appear to be only distantly related to the rest, the slightly more restrictive term 'Proto-Nuclear Pama-Nyungan' (PNPN) is used. This was proposed by O'Grady (1979b) and is adopted in this study, which is based on just nine PMN languages. PNPN, dating perhaps from 3,500 BP, excludes Lardil and other Tangkic languages and languages of the south-east (including Gippsland) which, while also considered as related languages, appear to have split off from the mainstream of the PMN 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-Pamic (PP) – his 'Proto-Paman' – reveals a single

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non-nasal apical initial, *T. Among the 475 roots reconstructed for Proto-Kanyara and Proto-Mantharda (Austin 1981b) no initial apicals occur, and a similar situation holds for Proto-Ngayarda. For Proto-Australian (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 occurring 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 PNP *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 and r word initially, it has been possible, as indicated above, to reconstruct only initial *T for PP. If, as Alpher has suggested (1976b:91), Warlpiri (WLB) *rraku hole in the earth* is cognate with PP *Taakurr *ground*, and *lirra mouth* with PP *Tirra *tooth*, for example, then the opposition of PNP stem-initial non-nasal apicals would appear to have neutralised to *T in PP. Thus a demonstration of the apical contrasts which occurred in PNP 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, my research 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 putative language families of Australia. This work is incomplete in that no systematic attempt is made to find putative cognates between PMN 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.

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, in Evans 1969), a variety of theories have been put forth concerning the provenance of Australian languages. At their first interaction with the natives of Botany Bay, members of Cook's crew (*ibid.*, p. 493) 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 or so 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 indicated that the Australian language was apparently unrelated 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 word list 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, *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 to the effect 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 colonisation 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), particularly 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 [length] 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" (Grey 1841:216). 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, he reasoned, 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. In point of fact, 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.

Besides the explorer George Grey, a nineteenth-century adventurer named Carl Lumholtz made some interesting observations about Australian languages, although most of it is based on others' research or on his own scanty evidence (Lumholtz 1889). 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 words used by the Australian blacks are almost identical with those employed by the negroes of Africa" (Lumholtz, 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.

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 north-western coast of Arnhem Land), the rain forest of coastal Queensland, the south-east of New South Wales and Victoria, and in the south-western 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 BP. The Murrayians are the most common type in south-eastern Australia and in the coastal regions of southern and western Australia. A mixed racial type, characterised 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 indigenes 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 merely to 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 language 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 north-western 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 BP, 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 neighbouring tribe. It could be primarily because of the speed of its spread that there appear to be no common 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 Nyangumarta 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.

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 ultimately related (Dixon 1980:428).

Capell's division of Australian languages into prefixing and non-prefixing types, coinciding approximately as it does with the later non-PMN/PMN genetic grouping, remains a significant and useful categorisation. 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 PMN, non-prefixing, group either: Blake (*ibid.*, p.6) notes six different systems, in fact.

The next major step in the genetic classification of Australian languages was the demonstration by Hale (1964) that the Pamic 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 Pamic 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 the Ngayarda languages constitute a subgroup within the Nyungic group of Pama-Nyungan. 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 detailed reconstruction of the phonology, structure and roots of Proto-Pama-Nyungan has yet to come. A number of other works dealing with the reconstruction of proto-languages for various groups within the PMN family have appeared in recent years, e.g., Proto-Pamic (Sutton 1976), Proto-Northern New South Wales (Crowley 1976), Proto-Norman Pama (Black 1980) and Proto-Kanyara and Proto-Mantharta (Austin 1981b). Only Dixon (1980) has attempted to relate all the languages of Australia under the rubric of Proto-Australian.

Evidence for the genetic unity of Pama-Nyungan languages

If there were not ample evidence aside from common vocabulary that the 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 PMN constitutes a family separate from other Australian languages, one can point to earlier research which shows that many grammatical features are shared over large areas of the continent.

Capell listed case suffixes found in most parts of Australia (1956:53), a verbal suffix (*ibid.*, p. 55) and several other recurrent morphemes. Blake (1977) compared case markers in still greater detail. Dixon (1980:402 ff.) proposed 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 PMN languages are genetically related, but since the reconstructions and paradigms are based essentially on PMN languages alone, they argue for PMN 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 Proto-Pama-Nyungan as opposed to PA has not been finally resolved. What is certain is that PMN languages are genetically related; consequently, any items of vocabulary held in common – 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 PMN languages do indeed constitute a family. Blake (1977) reveals that not only do almost all PMN languages use an ergative system of marking syntactic relations in contrast to non-PMN languages, but also that a preponderant number of those PMN languages share the shape /+lu/ as one of the allomorphs of ergative. In addition, Blake (1981) and O'Grady (1981a) have demonstrated that in most PMN languages the first person dual inclusive pronoun is a reflex of PNP *ngali, which has no obvious reflexes among the non-PMN languages. With such ample evidence of a family relationship to hand, the task of reconstructing the PNP lexicon may proceed on a sound footing.

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 1979a: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 piyurriyurr *galah* descends from *piya+ *to grind*, the original [-hi] segment *a having raised to /u/ despite the [+lo] feature specification of the /+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., in Sutton, ed., 1976). It occurs occasionally in UMP (Alpher 1976b, O'Grady 1976), and sporadically in some western languages (O'Grady 1981a: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 /i/; hence PIN yiku *face area* < *pikuny.

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 metathesised 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.

Semantic change

Comparative reconstruction in Australian languages entails recognition of the usual array of types of semantic change seen throughout the various language families of the world. For each of Bloomfield's nine categories of semantic shift – narrowing, widening, metaphor, metonymy, synecdoche, hyperbole, litotes, degeneration and elevation – it is not difficult to find instances 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, salt water*, Nyawaygi *mangrove* (metonymy) (Dixon 1980:119); walu UMP *cheek*, WLB *head* (synecdoche); Ngarluma yalhuru *tongue*, Adnyamathanha yalhu *flame* (metaphor) (O'Grady 1979b:120). At the same time, it is not unusual for the semantic relationship between cognates to elude categorisation or even a satisfying attempt at rationalisation. 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 Aboriginal people's use of language and view of the world is every bit as imaginative and sophisticated as any other humans' – 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 categorisations. 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, 1979b) discusses the POTENTIAL:ACTUAL semantic relationship illustrated by the cognate pair UMP *minya animal, meat*, NYA *minyi 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 replaced by its opposite. In Warlpiri 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 (1971:474-475). 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 1979b: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.

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 Hansens' 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; grown-up girl*, YAKKI *depth, valley*, YAPPA *hole*, GUP dagardagayun *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:156-157) 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 corroboration. 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 given 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. 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 1979b: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 [**t, *n, *l*], 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 PNP

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

Capell's (1956) reconstructed roots included several with final *ng. Those roots, representing his 'Common Australian', are in accord 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 alone maintains ancestral final peripheral nasals, 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; V₁ of a reconstruction 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 [ɽ ɳ ʀ] /rt rn rl/ corresponding to a plain apico-alveolar /t, n, l/ in eastern PMN languages, e.g., NYA W tarl.pa+ *to make a sudden loud noise*. . ., GID talal.pa+ *to clatter, rattle*; NYA, PIN, BAY parnti+ *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 merging 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 the 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.

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 interests of greater clarity, the diverse orthographies have to a large extent been standardised. In particular, the representation of oral stops in languages having only one distinctive series of these sounds has been changed from marked /d rd dh dy/dj g b/ to unmarked /t rt th j k p/ respectively. Perhaps the standardised 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 dictionary of English, with its store of archaic, poetic, specialist and slang items, then the chance of finding cognate forms would undoubtedly be far greater. Consider, for example, the English word *holt wood, copse*, cognate with German *Holz wood*, which though archaic still lingers in some English 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 Nyangumarta (Marrngu subgroup, Nyungic group of Pama-Nyungan) are either from 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 neighbouring 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'. Consequently the fidelity of the transcriptions is less reliable; hence the retention, in capitalisation, 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 Nyungic) 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/Murungic 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.

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

	PLOSIVES	NASALS	LATERALS	RHOTICS	SEMIVOWELS	VOWELS
Nyangumarta	t rt j k p	n rn ny ng m	l rl ly	rr r	y w	i ii a aa u uu
Waripi	t rt j k p	n rn ny ng m	l rl ly	-rr- rr - r -rd-	y w	i ii a aa u uu
Pintupi	t rt j k p	n rn ny ng m	l rl ly	rr r	y w	i ii a aa u uu
Gawurna	T RT T TY K P TT TT KK PP D G B	N RN N NY NG M NN NN MM DN	L RL L LY LL LL DL	R RR R RR	Y W I 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 ii a aa u 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 ii a aa u uu
Umpila	t th j k p	n nh ny ng m	l	rr r	y w	i ii a aa u uu
Guugu-Yimathirr	t th j k p	n nh ny ng m	l	rr r	y w	i ii a aa u uu
Gidabal	t j k p	n ny ng m	l	rr	y w	i ii e ee a aa u uu

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 Yimidhurr (YIM, Yalandjic group) and Gidabal (GID, Bandjalangic group) permit only the apicals /t, n/ in initial position. Table IV, after Haviland (1979a: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	17.0	t	7.5
p	17.0	y	7.0
m	12.0	j	5.0
w	12.0	nh	2.5
th	9.0	n	1.5
ng	9.0	ny	0.5

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 PNP; see Appendix.

Attestation

T1 *takan PNP root:

WLB *rraka* 1. *hand, fingers* 2. *forefoot*; GAW TAKANNA *wide; broad; open (plain)*; BAY TAGULU *short*; UMP *yaka+ma+ 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 prenasalisation 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 *mara+ to crawl*, all of which reflect PNP *marang *hand*.

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 48, 50 54, 65 t- 7, 15 16, 17 22, 32 36, 37 38, 60	t- 2, 3, 6 7, 9 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, 15 19, 21 22, 23 24, 31 32, 36 41, 43 Y- 2, 6 17, 18 19, 62	j- 13, 17 27, 32 36, 48 64 th- 7, 21 57, 61 T- 1	d- 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 dj- 17, 18 27 dh- 3, 13, 17 r- 54	th- 8, 9 15, 17 26, 36 46 t- 15, 29 49, 50 64 Ø- 11, 36 38, 49 55 y- 1, 2 10, 43 j- 6, 18 48	t- 8, 11 17, 19 27, 36 39, 47 49, 54 th- 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
n- 9, 14 15	n- 4, 6	n- 4, 5 6, 7, 8, 11 12	N- 1, 12 13, 14 15	ny- 1, 3, 4 10 nh- 12, 13	n- 3, 5 8, 10 11, 15 l- 13	nh- 13 l- 13 Ø- 1	n- 2, 7, 8	n- 1, 2, 5 7, 8, 9 11, 12 13

c. Reflexes of *l-

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

There is good evidence that PIN *kati+* *to bring, take, carry* and GAW *KATTE+* *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, moreover, is a well-attested process in a number of Pama-Nyungan languages.

T2 *taakun PNP 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 *dagardaga+yu+n ~ dawardawa+yu+n to make fire*; UMP *yaakamu phosphorescence*; GID *jakun ground, country, territory*.

PIN *taku a trench* and the verbal form *taku+* *to make a long trench or groove; to scoop out a cooking hole* reveal the semantic relation with GUP *dagardaga+yu+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 metonymic 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 *rutu 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*; the *u:i relation 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 > ∅, the plausibility of which is attested in PNP *puka *rotten* > GAW *PUA*. 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 (1976b: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 *tala₁ PNYY root:

NYA *W tala* in (jawa) *tala (mouth) with some teeth missing*; PIN *tarlarla a crack in a rock*; GUP *dhala 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. The GUP form is to be considered cognate, as the semantic correspondence is attested elsewhere (see at L34), and GUP *dh-* as a reflex of *t- appears also in T13 and T17.

T4 *tala₂ PNY Y root:

NYA S tarlakarra *hard, solid, firm*, W talakarra *hard, rigid, strong; tight – of string; clouded over – of sky*; GUP daal *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 PNP N 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] feature specification of the alveo-palatal nasal (cf N5, N15).

T6 *tanku+ PNP N root (not in GID):

NYA W tanku+karri+ *to hang – as fruit on tree*; PIN tinki+ *to attach, connect, couple, join*; GAW YERNKA+ *to hang down, on; to join, impart; infect; depend*; GUP dan-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.). If the /i/ vowels of the UMP and YIM forms are the result of assimilation to the initial laminal consonants (which are the major reflexes of PNP N *t-), then all of the forms in this set agree very closely in sound, excepting only the unaccountable vowels of the PIN form (but cf. PIN jiki+ *drink* < PNP N *juka+). Clearly, the sense *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*, "characterised by stilt-like aerial roots. . ." (Funk & Wagnall's Standard dictionary), conceivably forms a doublet with *jinka*.

T7 *tantu PNY Y root:

1. NYA W tarntarn *tight, taut; faultless (enunciation)*; BAY tharntarn *firm (-breasted)*; GUP dana+tju+n *be stiff, taut, tight*.

2. *tuntu PDN root. NYA W turntururu *firm (of breasts)*; WLB turnturnpa *incipient breasts*; PIN tturn+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; they could owe their present distribution at least in part to borrowing.

¹Barrett (1950:41) gives *flying squirrel* as a *phalanger* and explains that the latter have "... prehensile tails ... by which they hang".

Whether or not the PDN reconstruction or the PNY Y one 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 (correspondence 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 > Thaayorre 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 YIM maintains a productive distinction between initial apicals and laminals. UMP shows a changed vocalism, possibly due to assimilation to the [+hi, +bk] features of the consonant cluster. Hale (1976c:59) reconstructed PP *jungku *black*.

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

NYA S tungkurr+pi+ *pull off*; PIN tangka+pu+ *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 verbalising 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+ *to eat*.

Apical *t- > UMP /y-/ is not part of a major correspondence pattern (but see T1, T2 and T43); 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+ *move quickly*; PIN tapu+ju+ *to run, escape, depart quickly*; UMP apaa ~ apa+ *creep up, sneak up*; YIM taapa+l *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 manifests occasional initial-dropping; compare UMP uungku *long* with PP *Cuungku and PIN tungku *short* < PNP *tuungku *long*. 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* with PARNA *a star*), whose meaning is related to the WLB form by the fact that *FULL* entails *NOT HOLLOW*.

T13 *tapu₂ PNYY root:

NYA W tapurriji *moustache*; BAY japurta *beard*; GUP dhawarrak *beard, facial hair*.
See *taparr in O'Grady and Tryon, *infra*.

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 /dh-/ 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. daba'+yu+n ~ dawa'+yu+n *look over one's shoulder*.

T14 *TapV PNP 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 *taru PNP root. (See T21):

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*; /ʔ/ is the regular UMP reflex of intervocalic *r. For another instance of lenition of an intervocalic rhotic in GAW, see R27. The cognation of tali, with /l/ for *r, is less sure. The NYA, WLB and PIN 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 *BONE:LEG* semantic association that links the GID form is also found in T19.

T16 *tarl PNP root:

NYA W tarl *bang!*; NYA tarl+pa+ S *to burst, blast, W to make a sudden loud noise, erupt suddenly; to go off - of a gun; to pop out - of eyes*; WLB taarl+ma+ *to cluck, make a loud clicking noise; the palatal click*; PIN taa+ *to burst, explode, pop*; GUP dal *interjection with wut+thu+n [to hit]*; GID talal+pa+ *to clatter, rattle, talal+pa+y ~ tulul+pa+y clatter, rattle, echoes from a rifle shot*.

The assignment of retroflex /r/, as opposed to /l/, to the reconstruction is problematic, as has been discussed earlier.

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 spear-thrower*, jarlku *fishing hook*; GUP sestuplet djaarlki *snake*, dharwa *hip bone*, daaku *bent*, daak *hip*, *hipbone*, dakarr *spear-thrower*, dakul *axe*; UMP thaku *left hand*; YIM taku *thing, tool*, thaku *left hand* (cf PP *jaku).

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 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 daak 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 consider 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* via Latin *clavicula* (AHD). A suggestion of the semantic association of the GUP *hip bone* form lies in the Pintupi dictionary entry *lankuru+jarra mature emu: literally, 'one with a woomera (=spear-thrower)'*. Spear-throwers 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 *juru 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 language UMP and YIM via perhaps *BAD* or *AWKWARD*. Such a semantic association is supported by PP *warra *bad* vs. Gumbaynggir *warrawiny left hand* and PIN *panyja bad. . .* vs. Kala Lagau Ya *boedhay 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 other forms, but no explanation for the absence of a reflex of *-k- is apparent.

The above forms may be related to those of T52.

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 *djarrak 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 undergone the innovation *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 /-k/ accretion¹, has /dj-/ occurring as an occasional reflex of *t-. Barring mere coincidence of form and meaning, it is clearly cognate with the other forms in this set.

T19 *taarra PNP root (not in GID):

PIN *tarrka bone*; GAW doublet TARKA *eggshell*, YERKO *leg*; YIM *taarraay 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 *bony* are related.

T20 *tarrum PNP root:

WLB *rrarrunka insect gall on mulga*; PIN *tarrulka mulga 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(C(C))V(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)). If we accept 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+ *to kick*; BAY *thartara+ to trip somebody*; GUP *dardakarr'yu+n ~ durdukurr'yu+n make a noise by scraping, moving feet, etc.*; YIM *thataa+ to walk, go*.

¹See O'Grady (1966:93-98), especially +ka on pp. 95 and 98.

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. The phonological and semantic similarities suggest that these forms may be historically related to those listed as reflexes of T15 *taru.

T22 *tartu PNY root:

NYA S tartatarta, W tartarta *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*. 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+ PDN root:

PIN tati+ *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 /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 dawardatj *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, presumably have <u> for /w/. The last GAW form and the PIN have a similar third syllable which possibly reflects ancestral *-rra, 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 corroboree/song at end*; PIN tiji *a fast tapping noise; the sound made by tapping two boomerangs together. . .*; GUP detj *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 prenasalisation of the velar stop. Such prenasalisation occurs sporadically in PIN, e.g., NYA paparr *haste*, PIN pamparr+ *hurrying*; UMP maji+ *grab, hold*, PIN manji+ *get*.

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

PIN tikal+paka+ *to climb or to ascend*; BAY jikajikara *yellow canary*; GUP doublet dikarr *flying fish, aeroplane, djikay col[lective] term [for] small birds*; YIM tiika+ *to send*.

It is the notion of *ASCENDING* which links all these forms except the last. The second element of the compound form in PIN is paka+ *arise*. The first GUP form, with its /-rr/ that is suggestive of an ancestral agent marker, 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 *tiki₁ PNP root:

PIN tikirpa *dry: used of clothes and wool*; GID tikirr *bitter*.

The /-(r)/ 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 *tiki₂ PNP root (not in GID):

GUP dikardika *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 PNP root (not in GID):

GUP diku *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 PDN root:

PIN tiltirr+pa n. *tremble, shiver – caused by fear or cold*; GAW TILTYALAE+ *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+ (a verbalising suffix) with an excrescent /a/ between root and suffix, and palatalisation 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 forms are possibly related to those of T42.

T32 *tilting PNPN root:

NYA tili *S flame*, W *firelight*; WLB rriili *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 matching 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 PNYY root:

NYA W tily *ideophone of gentle snapping of twigs*; PIN tilyi+pu+ *to slap a goanna against a tree to break its neck*; GUP diy [apparently interjection with wut+thu+ *to hit*].

Both NYA and GUP have CVC ideophones related to CVCV verbs, e.g., NYA W jup (said when an engine stops) against jupi+ *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....* > djoy' *sap....* Although the GUP gloss is not specific, it appears that the shared semantic feature is the *SNAPPING NOISE*.

T34 *timpil PDN root:

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

The relationship between laminal /ly/ and apical /l/ and /r/ is examined at T38. 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 dap *meeting together (e.g., people)*; GID tipa+ *to sew*, tipaal *team, group*.

The /-ny/ extension of the NYA and PIN forms possibly appears 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 > dap (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 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: on the one hand the link *FACE:CHEST/RIB* is substantiated in NMA ngarrka *face*, PIN ngarrka *chest* together with the association in Dravidian languages (Wilkins 1981:83) of *RIBS and CHEST*. On the other hand, the link *FACE:PEOPLE* (as in a *group of people*) is substantiated in MNN ngarrungu *person*, PNK 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 NYA marrngu *person*, MNN marrngamarrnga *chest*.

T36 *tiril PNPN root:

NYA S tiwirltiwirl *peewee, mudlark, magpie*; WLB tiyi+tiyi *mudlark, magpie lark*; GAW TIRITPA *a species of lark*, TIWU *black cockatoo*; BAY jilipiri *mudlark*; GUP delili *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 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 *lark* in their gloss. As an illustration of how the referent of a *bird* term changes without regard 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 to /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 consonant initials /th/ and ø, 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 ø 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 (paragogic?) /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.

Despite their obvious similarities with the other members 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*, tirtirl *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 Pamic language, this reconstructed form is included in order to document the PNPN 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 focuses 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 milpa *eye* and ADN milpirri *forehead* attest to the association made in Australian languages between the referent of the first NYA form and the other *EYE* forms. See T38.

T38 *tirl₂ PNPN root:

WLB tirl+pi+ *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+ *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 iilngi+ *get free, get loose*; GID tilany *outside*.

The synchronic variation of WLB turlka+ with tulyka+ *to pinch him* illustrates the plausibility of the claim that the second WLB form (with /-ly-/) is phonologically related to the 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 ø, but if the PP reflex of the PNPN root had *j-, then lenition may have reduced the stop as follows: *t > *j > *y > ø, 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 PNPN root (not in GID):

WLB rringki *gap in mountain range*; PIN tinyki *thin; a low saddle in a sandhill 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-/ in Cape York 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 PNYY root:

PIN tiirr+pa *the trill noise made by a spear flying through the air*, tiirr+wangka+ *to make a trill noise*; GUP dirr'+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 1978a) in the eastern Arnhem Land *Sprachbund*.

T41 *titi PNYY root:

NYA W tirtirti+ruwi+ *to twist*; PIN titirr+pa *tight, secure*; GAW TITTA *anything joining one thing to another – string, knot. ...*, TITTA+PPE+ *to bind, fasten, tie, fetter, hang*; GUP dirdi'+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 Ngayarda 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 glide's not being known to correspond with /t/ (i.e., /rr/ has more features in common with /t/ than does /r/).

T42 *tititi PDN root:

NYA W tititi+pi+ *to tremble, shake*; PIN tititi+ *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 PIN/GAW /-rlt-/, viz. NYA jarti *bat*, Narangga (a direct neighbour of GAW) tharlti *ear*. If this is the case, then PDN *tilti had an extended form *tiltiti > *tititi, resulting in a NYA/PIN/GAW cognate set with a doublet in PIN.

T43 *tiwan PNPN 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/ (*tiwarr+pa > tiwirr+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 1981a: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 PNYY root:

PIN tiwirr+pa *a crack in an egg or thin object*; GUP diwirrk+thu+n *break (used with plural)*.

The /-k-/ of GUP is obscure but clearly not part of the root. The two forms 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 PNYY antiquity of the /-rr/ extension seems to be established.

T45 *tiwu PDN root:

NYA W tiyu *ideophone of snapping or breaking – as of a branch*; PIN tiwulypa *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, #350). 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 PNPN root (not in GID):

PIN tiitiirr+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 iingka+ *call out*, which alternates with iyingka+).¹ Sweat, of course, is closely associated with overheating of the body, so the semantic connection is clear.

T47 *tuu PNPN root (not in GID):

PIN tuu *fire coals*; YIM tuuliir *hot coals*.

T48 *tuuju PNPN 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 reduction in the western languages. The semantic association *BREAST:MOTHER* is attested in NYA pipi *mother*, GYA 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 PNPN root:

PIN lukurr+pa *head*; GUP dogu ~ dowu *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 /d/ 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 duktuk *desirous*, duktuk+thu+n *palpitate*; UMP tungku+pa+ *beat – of heart*.

¹Bakanha (south-west of UMP) confirms the plausibility of *-y- > ∅ with thinka *sweat*.

The phenomenon of irregular prenasalisation 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 recognised. 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: NYU kurt *heart, the human heart, spouse, sweetheart, marriageable girl* (Douglas 1968:72); WJK GURDU *the heart*. . ., GURDU+BAKKA+N+YUGO+ *to want* (BAKKA+ *bite, ache, pain*, YUGA+ ~ YUGO+ *to be; to stand; to exist* – Moore 1884:33). The meanings of NYU kurt, and the presence of WJK GURDU *the heart* in a compound meaning *to want*, establish the credibility of the *HEART:DESIROUS* association.

T51 *tukul PDN root:

NYA W tuku *care, tungkul+ka+ to carry, e.g., a bag of small objects in such a way that nothing will fall out*; PIN tukul+tu kati+ *to carry carefully*.

Other examples of sporadic prenasalisation, 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*, NYL (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 turkiturki *crooked: used of crooked branches, tracks or spears*; GUP dulki *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 PDN 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 *tumuny PNPN root:

WLB rrumunpa *high ground near a creek*, rrumurumu+karrri+ *heart beats*, rrupulparri *prominent hillock in otherwise level or nearly level country*; GUP rom *law, custom, habit, way of life*; YIM tumu *chest*; GID tumuny *blunt*.

The doublet in PNK comprising MUNNO *blunt*, MUNNA *chest* supports the validity of the semantic association between YIM *tumu chest* and GID *tumuny blunt*. Loss of the final vowel (cf T33) results in the GUP form. Although *t- > /d/ is expected in GUP, an apparent alternation between /d-/ and /r-/ in GUP *durr+yu+n get up (pl)* and *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 GRD (co-dialect with PIN) *kurturtu heart, heartbeat*.) Although the possibility of relating the WLB HILL forms to CHEST, etc., may seem 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 (1979b:128) of NMA and YUL *ngarrka face* and *chest* respectively, and of YUL *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 strictly speaking not from the set of communalects being compared here, YUL (a co-dialect with PIN) *tumu blunt point* is undoubtedly to be included as a further cognate.

T55 *tuungku PNPN 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. 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 *tungtungun+pa one who resists, rebellious, pigheaded, and continually disobeys*; GUP *dungdung lazy*.

As in T50, the root-final vowel of the GUP reflex is lost before reduplication. 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 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 W tuptup *loud flapping of wings, sound of wings hitting the ground*; GUP duptup *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 (1950:99) explanation that during the breeding season, the male produces a loud booming sound.¹

T59 *turlparra PDN root:

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

Since the final syllables of the forms appear to be accretions (especially in light of the sub-entry under PIN mulya tuulkarra), the proto-form as reconstructed here cannot be considered very old.

T60 *turla PDN root:

NYA S tulu+pi+ *break the joint of animals*; WLB turluny+(y)irra+ *to bend it double (as tongue)*; PIN tuurla+ *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 W turniri *ornamentally carved shield*; BAY thurna *fighting stick, waddy*.

The root-final vowel of NYA has assimilated to that of the /-ri/, which is probably 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 tirkka S *desert animal, bandicoot*, W *small wallaby species – 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 difficulties obtrude 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 these languages seems to guarantee

¹The 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".

*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 be 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 l in GAW against final /a/ in other Nyungic languages is attested (e.g., GAW WODLI *hut; house*, PIN *waarla house*, and see R24, where GAW -KI < *-ka). While the absence of /-k-/ in the GID form suggests an alternative 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 high back vowel before /-rr/ (see T57), but this is speculation.

T63 *turru₁ PNY Y root:

NYA W *turruru+karri+ to arise and start off in one mob – as sheep*; GUP *durr+yu+n get up (pl)*.

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 *jarruru kookaburra, jurrapi varied honeyeater*; PNG **jarru. 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 subgroup, several languages have reflexes of PNG **jarru* 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 an /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 from one of the languages of the set, YUL *turru bird* should be noted in passing.

T65 *tuwa ~ tuya PNY Y root:

NYA W *tuwi ~ tui smoke (seen near at hand)*; WLB *rruyu+karri+ to rise – of dust, smoke*; GUP *duwarr 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 NYA *tuyi*. Independent evidence of vowel harmony in WLB supports the proposed *-a > -u shift, while other instances of final vowel raising in NYA corroborate *-a > /-i/ here. These vowel correspondences are paralleled in the cognate set represented by NYA *kuyi meat*, WLB *kuyu meat* and GUP *guya fish*.

N1 *nam(p)a PNP root:

GAW *NAMMA+ to carry*; BAY *nyama knee, nyampayi coolamon*; UMP *aampa lap, aampi+ take it out*; GID *nama+ to hold, touch, 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*.¹

Since a *coolamon* 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 kneellap*.

It is conceivable that *nam(p)a is a metathesised variant of *maa(+n) *take*, also of PNP age, and itself a reflex of Capell's (1956) CA *ma+, Dixon's (1980) *maa+n, which the latter counts as evidence for an 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.²

N3 *namu PNYY 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 accretions of different origins. The /a/ of V₂ of BAY is taken to be the result of influence of *a of the flanking syllables.

¹A 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/).

²A sacred piece of ground where certain initiation ceremonies are performed by the Aboriginal people.

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 where a stop in C₂ assimilates to a nasal in C₁. *n- > BAY ny- is regular – cf N1 and N3.

N5 *napu PNP 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 an accretion (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 PNP, 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 PDN root:

WLB narnggu *hook, barb – on woomera, spear*¹; PIN narnggu *barb: the hook of a spear thrower*.

These forms may represent a nasalised counterpart of *tarlku, as the phenomenon of nasalisation is well attested – e.g., BAY jakulya+rri+, THR nyaku+rri+ *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., T11). 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 animal would be at one and the same time *sinewy* and *hungry*. NYA W wiji *sinew*, wijiny *narrow* seem to support this proposal, but the semantic relationship between the latter forms is not fully understood.

¹The spelling narngu in Hale's dictionary is taken as a typographical error for narnggu.

N8 *nawa PNP root:

PIN *nawulu* *deep sleep*; GUP *nawulga* *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 the lexicon of a Pama-Nyungan language (often 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 BLG *ngawarn.pa* 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.

In YIM *nampuurr*, prenasalisation and fortition of the [+lab] semi-vowel /w/ to /p/ are in evidence in *nawa > *nawu > *namwu > *nampu(u(rr)). Corroboration of such a phonetic correspondence comes in PNP *ruwa+ > PIN *rungka+*, where */w/ descends as a velar 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 in GUP *daba'+yun* ~ *dawa'+yu+n* *look over one's shoulder*.

Parallels to the semantic associations existing among the above 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 W *niny* *motionless*; GID *ning* *silent*.

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

N10 *ninya PNYY root:

BAY *nyinyarn* *chin*; GUP *ninydjak* ~ *nanydjak* *nose, face*, *nanydja* *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 /-dj-/ of the GUP forms may reflect a process whereby a homorganic stop is inserted after a nasal, in the same way as in the putative cognate set NYA *wangal*, GUP *wanggalkal* *wind* (< *wangal), and in English *peasant* vs. French *paysan*. The BAY form also shows an unexplained accretion, but is related semantically by simple metonymy. Wilkins (1981:84) compiles many examples of such metonymic shifts in Dravidian, Austronesian and other language families.

N11 *nirrim Possible PNPN 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+ PNPN root:

PIN *ninti understanding, first-hand knowledge*; GAW $\bar{n}\bar{o}+$ *to point with the hand; to show, etc.*, NUMMA *right; correct; skillful; well*; BAY *nhukura knowledgable, clever*; GID *nuu+ma to know, understand*.

Ancestral vowel length, which has been lost in most Pama-Nyungan languages, survives in the GID reflex, which shares a /+ma+/ element with the second GAW form. Though GAW is not normally thought to retain vowel length, the long \bar{o} (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 consists of verbal suffixes. Dixon's discussion (1980:415) of how early monosyllabic roots were extended by reanalysis facilitates understanding of /+ma+/, above, and of the /-ku-/ of BAY *nhukura*, which may be related to the -KKO+ of GAW *NAKKO+ 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. See T6.

N13 *nuka+ PNPN root:

GAW *NAKUDLA shark*, *NOKUNNA assassin*; BAY *nhuka+ shark, nhuka+ spear, poke (as in the eye)*; GUP *luka eat, drink, take*; UMP *nhukuy penis, luku fish species, possibly shark*; 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* vs. BAY *thalany tongue*). The vocalism of this form may be explained by metathesis, whereby *C₁V₁C₂V₂ > C₁V₂C₂V₁. GAW -NNA is seen as fairly common but unanalysable suffixial 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 muliir *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*. 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.¹ 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*, PNG *nhuku *ankle*, PNP *nyukal *foot*, which constitute strong evidence for the lateral reflex of the nasal initial.

N14 *nurlu PNY root:

NYA W 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-level proto-language (Dixon's Proto-Australian) had a single apical lateral and that its split into an apico-alveolar /l/ and a retroflex /r/ occurred in western languages predominantly after /u/. However, since retroflex consonants are found throughout the 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 elements. The two meanings are also seen to be connected by the feature of *NARROWNESS* which they have in common and share with the putative Wadjuk cognate NULU *narrow* (as a *ledge of rock* is almost by definition narrow) and English *corner* < Latin *cornū extremity...*, which is suggestive of narrowness.

N15 *nurrku PNYY 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+ *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 and N5. 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 *miiju 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 *miiju, *BLOOD* is associated with the meanings of the GUP and GAW forms here.

L1 *lakang PNP root:

NYA S laka *corroboree, lakan+pi+ to peel*; WLB lakarnpari *flaked, peeling, as of bark, dried mud*; PIN lakarrlakarr+pa *very hard ground*; YIM taka+l *sit down, stay, get down*; GID katang *tough, hard*.

¹Consider also Gugu Yalanji nuka+l *eat, drink*.

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 set¹, and its final peripheral nasal, absent in the other cognates, is taken to be ancestral (see T62). /t-/ is the common GID reflex of *l-.

Because hardness of the ground and the peeling of dried mud are often caused by the drying up of surface water, the WLB form is seen to be related to the PIN, as well as to NYA S *to peel*. The other NYA S form meaning *corroboree* is included in light of the meanings of the words in a Pama-Nyungan *corroboreelto clear the ground (for a camp)* cognate set (O'Grady 1981a:158). The notion of HARD recurs in the GID cognate. The semantic association of the YIM form with the others lies in the idea of people *congregating/staying* at the *cleared* site of a *corroboree*.

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*). A further cognate is attested in Ngarluma (NMA) *yalka+ma+ to dry, let dry – as clothes* (Hale 1982a:24).

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 *lirrijal 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); V₂ 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*. Further research is needed before the cognation of NYA *lirrijal* 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.

¹O'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.).

L5 *lampa PNP root:

GUP lambirri *long, tall*; BNJ jampa *long*.

The GUP form reflects the ancestral stem plus what appears to be a contentless suffix /-rri/ (cf GUP lungarri, lunggu *harpoon thrower*), with assimilation of V₂ to the vowel of the suffix. The reflection of *l- as /j-/ in GID/BNJ is attested also in L25, L31 and L39.

L6 *lanta PNP 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-dental articulation of the YIM nasal-plus-stop cluster. That progressive assimilation to the lamino-dental initial is a likely process appears to be supported by the putative cognate pair YIM thinhthi *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 PNP root:

WLB lapaji *Port Lincoln parrot*; GUP laparr *pigeon*; GID tapetapeerr *spur-winged 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+ *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 permits /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+ *to split wood along the grain with an axe*; GAW TARALYE *chip; splinter; board; timber*; GUP larraymin *stone axe*.

While the suffix on the root in the PIN form is identified as a verbal formative, 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 PNP root:

NYA S larrja *snake (species with black head, yellow body, poisonous)*; PIN larrja *edible snake type*; GUP latjin *mangrove worm*; 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 the set, it also serves to illustrate that *t and *j are neutralised 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 (CRS) *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 *evening; dusk; hole*; 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 third 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 ~ jiwarrwarr *squirrel glider*, and GUP daba'+yu+n ~ dawa'+yu+n *look over one's shoulder*.

L14 *lawu+ PNPN root (not in GID):

NYA W lawurr *venomous black snake with yellow underside*; GUP laawu+ma ~ lawu+ma *bite*; YIM yawu *small shark species*.

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+ PNPN 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 PNYY root:

NYA S likarra *piece of bark*; WLB lika *gum, sap, resin*; 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 PNP root:

PIN lili+ *to rustle (of leaves rustling in the wind)*; GUP lirligirr'+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. T16 includes a similar GID form, also referring to a sound, which may be related to this cognate set.

L18 *Lili PNP 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, *t (or *j), 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 PDN root:

NYA W lilyirr *clattering, clanking*; PIN lilyirr+pa *sound of 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. The /-rr/ is a root extension in both forms (O'Grady 1966).

L20 *lingka PNP 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 PDN root:

NYA S linmarr *grey snake*; PIN linmara *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 PNP root (not in GID):

WLB linpa+jurrku+wangu *good to the taste*; YIM (Coastal) yinpa *sour, bitter, makes mouth itch*; *larrikin, mischievous, woman hungry*.

At least three other instances of YIM /y/ reflecting initial *l obviate the need for further phonological discussion 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 Y root:

NYA W lirr *low tide*; WLB lirrjiri *dry treeless country*; PIN lirrnya *a dry soakage*; GUP lerr'+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 Nyangumarta 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 PNP N root (not in GID):

NYA S lirrpalirrrpa+pi+ *stun*; PIN lirrpalirrrpa *one who is very upset to the point of fighting*; GAW IRA *fight, battle*, TIRRA+MANGKO+ *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 /-pa/ of the NYA and PIN forms may be the final consonant masking element seen elsewhere, 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 N root:

NYA W lurr+pa+ *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., PDN *u) would conceivably result from the [+bk] feature specification of the *rr, while the /-ngu/ of the PIN form is a root extension (as in 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 PDN root:

NYA S lirru *snake (poisonous species)*; 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 PDN 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 extension¹, 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 PNP 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). 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 thuki+ *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 Ngarluma 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*; GID yulany *skin*.

¹/-rn/ may be related to PNG *-rna, a root extension found on other forms referring to birds (O'Grady 1966:98).

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 GID (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 GID 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 lulypi+ *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 V₂ and final peripheral nasal /ng/ being considered ancestral. Yet while it is known that both PIN and GUP occasionally lack a reflex of ancestral V₂, there is no trace of it here except in the GID form. As for the lateral at C₂, 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 /rl/ 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 PDN root:

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

L33 *luma₂ PNP root (not in GID):

NYA S lumamu+ji+ *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 molluscs 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 *racehorse (yellow) goanna*.

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 recognised 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 PNP root (not in GID):

NYA W lupu *thick*; GAW TOPA *all; the whole, so that nothing is left*; YIM thupu *narrow*.

GAW -A < *-u is probably the result of lowering 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 productive suffix 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 PNP root:

GUP lurr+thu+n *split, cave in*; BNJ juurra+ V_{tr} *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 taken as being diagnostic for PNP 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 PDN 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+, underlying /+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 raajal+ka+ *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., N13). 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 PNP root:

NYA S rangkarr *blurry*; WLB rangkarr+ka+ *to pre-dawn*; PIN rakarra *moonlight, pre-dawn, post-sunset light*; GAW TANGKUINYA *dream*; GUP dangga *calm, fine* (cf GUP dhangga below); 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.

Prenasalisation of stops is fairly common among Australian languages: there is optional prenasalisation of stops in Tiwi, e.g., yərrəkəpai > yərrəngkəpai *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 lunggu ~ lungarri *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 (1979b: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, +hi] 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 PNP *rakam, rather.

It is the gloss *dawn* that shows the semantic relationship between the first GID form and those in WLB and PIN. The related GID form *tangkaal+ma+* *to reveal, make plain* clarifies the relationship of GUP *dangga* *calm, fine*, as it is the clearing of the clouds and revealing of the sun that precedes the fine weather. (A GUP variant, *dhangga* *the rain having stopped*, supports this contention). As the idea of *GROWING LIGHT* is apparently present in NYA W *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 poorness of light entailed in *DAWN* that connects the meaning of the NYA S *blurry* form and the related *rangka+lu ma+ninyi* [*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 *dream* form with the other cognates, since some details of a dream are often thought of as unclear.

R3 *ralpa PNY Y root:

NYA W *ralpurr* *itchiness*; GUP *ralpa* ~ *ralpatja* *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 PNPN root:

NYA S *ralya* *light, not heavy; a bit sad*; PIN *ralya* *without care, unconcerned*; YIM (Coastal) *talil* *light weight*; GID *talngang* *calm, peaceful, motionless, 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 *a bit sad* part of the gloss of the NYA form, which suggests the first step in a gradual process of antonymy. It has been suggested by Dixon 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 PDN 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., Ngkoth pya *stomach*, Mbiywom pe *liver*, reflecting PP *jipa (Hale 1976b:27). In light of the following evidence, it may well be that this set should be subsumed under 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, 1979b:118).

R6 *rama PDN root:

NYA 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 reflex of the proto-form. The semantic association lies in the prominence of the ribs of an emaciated person.

R7 *ramang PNP 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*, damarrdamarr+dharr *flare up in anger, tell someone off, stand up and answer back*; GID marraang *tired, enervated*.

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 *d^heu+₁ 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 meanings can 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 lateralisation of *r in *ramang. Metathesis, known to have occurred in GID as well as in other languages (see T1), appears to be the explanation for the divergent GID reflex.

R8 *rangki PNY root:

NYA W rangkirangki *toadstool species*; GAW TANGKAIIRA *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 thangka+ Vintr *break, 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 gloss *half* is semantically related to the UMP *break* form in the same way that English *half* is believed to descend from PIE *skel+₁ *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+ *bite* (L14); 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* (+ ADV.).

R10 *ranyja PNY root:

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

Both vowels of the WLB form and the second vowel of the NYA form 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, R37, 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: a 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 two cases where it occurs as an accretion to a stem in PIN and NYA (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*.

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

R13 *rapu ~ *rampu PNP 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 *empty; thin, fragile*; GAW YAPPA *hole*; GUP damba *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. Prenasalisation 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+ PNP root:

PIN rapi+ *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 PDN root:

NYA W raa *expanding* (as in kaka+rni raa *first light, dawn* where the first word is *east+ELAT*); PIN rara *swollen, rarr+pa moonlight; pre-dawn, 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). Another instance of r-deletion, as seen also in the NYA form raa, is found in T32.

R16 *rarram PNP 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 represent 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 daarr+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 PNYY 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+ *to break; tear; separate violently*; possibly GUP rar'rar+yu+n *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 raarradha *crab species*; YIM taarriil *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 raawak *dry, dried up, burnt, stale, overcooked*, ruwuk *old, stale (eggs, footprints)*; UMP awi *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 (1979a). Though the semantic connections may appear tortuous, the sound correspondences are straightforward. The first NYA form, though a loan from Garadjarrri, is included as it helps complete the semantic picture. GAW TOWILLA, with a derivational suffix (Teichelmann and Schürmann 1840:4), shows phonetic rounding of the first vowel to the [+rnd] articulatory feature of the W, while in TAWO it is the second vowel that has undergone assimilation. GUP ruwuk is possibly a variant of raawak (but see R37); the /-k/ is paragogic. The UMP form has lost the initial, 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 the semantic correspondences in the above is found again in the Indo-European language family. Among others, the following words are developments from PIE *d^heu+₁: Russian дyx dukh *breath, spirit*; Greek thu+os *burnt sacrifice, incense*; English dust, dusk, doldrums and dull. Further support is found in the semantic evolution of other Nuclear Pama-Nyungan roots – *not, devil, spirit* from *yakam, and *nothing, bald* from *purun.

R21 *rawa₂ PNP root (not in GID):

NYA rawal *goanna species*; 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 possible correspondence lies in GAW KARKANYA *hawk species*, PIN kirrkin+pa *a hawk*.

R22 *rawa₃ PNPN root (not in GID):

PIN raa+ya+ *to fine up: used to describe departing rain*; GUP daawalayirri *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, R15); GUP's long vowel is non-etymological. That the glottal stop of UMP is epenthetic is supported by UMP aalkanji *high tide*, al'aka+ *come in, rise – of tide*.

R23 *rika₁ PNPN 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 /+ma+/ is a well attested verb formative; the root /wika+/ evidently refers to *UNTRUTH*, clearly shared by the GUP form.

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 PNY Y root:

PIN rilypa *seepage water in a creek bed or stony 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 vowel has, however, assimilated to the [+hi, -bk] feature specification of the following palatal nasal. O'Grady (p.c.) has offered the following evidence in support of the correspondence /y/ : /y/ : 1. *jAlya *saliva, foam, sap*. . . > GUP djoy' *sap*. . .; 2. *pAlya *fat, good* > GUP boy *yellow fatty part of crab*; 3. *ngaalya *forehead*. . . > GUP ngoy. . . *innermost feeling*; 4. *malyan *dirt* > GUP moy' *dirt*.

R26 *rirra PNPN 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 (our *lirrang) *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 W 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 remarkable¹, though matched in stability to a considerable degree in PIE *dent+.

R28 *rirri PNP root:

NYA rirrirri *S side of hill, river, rock, W glans penis, W rirri+pi+ to heap up sandbars – as river flow does*; WLB lirri+ *to swell*; GAW TIRRA *obstacle, hindrance*; BAY yirrapirti *river bank*; GUP dirrirtirri *thorns*; GID yirraa *opposite direction*.

The phonological correspondences in these forms are all quite clear, though it might equally well be argued that V₂ of the reconstruction should be *-a. The apparently deviant /-j-/ in NYA W rirri+pi+ 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 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 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 *rirpirirri PNP root (not in GID):

NYA W rirpirirri *having parallel ridges*; UMP thirr'ithirr'i *wrinkle*.

Since /th/ is an attested reflex of *r in UMP, 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.

¹Dyirbal tirra *tooth, name* is surely cognate too.

R30 *rirru PNP 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 /r/ (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+jj+ *to howl, whine – of dog or dingo*; UMP unka+ *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 rurrurr *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 precedent (cf R13, R23, R35).

R33 *rurri+ PNP root:

NYA W rurru+rurri+ *to move slightly*; WLB rurruny+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+ *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. 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+ PDN root:

NYA S rurru+rurru+pi+ *dodge; avoid; shape to hit someone but don't (sic)*; 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+ *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 taken to represent an allophone of /u/. Though the semantic correspondences are not perfect, there is an underlying shared notion of *SHARP*.

R36 *ruwa+ ~ *runka+ PNP 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 the GID form may be explained by the fact that 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 consonantism of the proto-form is seen in R2 and R13.

R37 *ruwV PNP root (not in GID):

NYA W ruwinyjiruwiniji+ji+ *to wash away, scour out, erode*; PIN ruwa *partly obliterated – 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 /'/ is commonly a reflex of intervocalic *r in this language (O'Grady 1976:61), the development of the UMP form was probably *ruwV > *ruwu > *wuru (metathesis) > wu'u. NYA W ruwi+ (R36) appears in an apparently metathesised 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 *wash away*. . . 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 paragogic (cf T18, R10, R20).

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 PNP made use of four contrasting apical consonants in initial

position is strong. The case for PNP initial *n is virtually unassailable. 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 PNP *t, *l, *r under a single phoneme *T (Alpher 1976b:91), then the subsequent development of such initials would not have been constrained by earlier phonetic values. Moreover, there is no discernible pattern of an underlying complementarity which would suggest that the various initials in any given language result from conditioned allophonic variation of a single ancestral non-nasal apical.

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

T24 N8 L14 R20	*tawa *nawa *lawu+ *rawa ₁	PNYY root PNPN root PNPN root PNPN root
T20 N7 L12 R16	*tarrum *narra *laarrum *rarram	PNPN root PNPN root PNPN root PNPN root
T26 N13 L16 R24	*tika *nuka+ *lika(rra) *rika ₂	PNPN root PNPN root PNYY root PNPN root
T49 N13 L28 R36	*tuku ₁ *nuka+ *luka *ruwa+ ~ runka+	PNPN root PNPN root PNPN root PNPN root

Despite his good supporting material and argument, Dixon's surmise (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 PNP, the contention here is that when PA reconstructions are based primarily on material in putative PMN languages, as is the case here, then PA and PNP 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 32.5%, *u 32.5%. 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 PNP, the most probable interpretation of the material gathered here is that PNP distinguished the apicals *t, *n, *l, *r in initial position.

Insofar 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 bear out the claim that PNP 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 PNP roots to appear to date. Non-PMN languages were not systematically included in this study, but occasional searches in their dictionaries revealed no plausible cognates. For PNP 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 to justify the hypothesis of an Australian family. As long as almost no true cognates from non-PMN languages can be found, the ninety-six roots attributed to PNP here do indeed constitute proof of the existence of a Pama-Nyungan language family.

Appendix

Reconstructed proto-forms:

T1	*takan	PNPN	T16	*tarl	PNPN
T2	*taakun	PNPN	T17	*tarlku ~ *taku	PNPN (not in GID)
T3	*tala ₁	PNYY	T18	*tarra	PNPN (not in GID)
T4	*tala ₂	PNYY	T19	*taarrka	PNPN (not in GID)
T5	*Tana	PNPN	T20	*tarrum	PNPN
T6	*tanku+	PNPN (not in GID)	T21	*tarta	PNPN (not in GID)
T7	*tantu	PNYY	T22	*tartu	PNY
T8	*Tangka	PEPN (not in GID)	T23	*tati+	PDN
T9	*tangka+	PNPN (not in GID)	T24	*tawa	PNYY
T10	*tangku	PNPN (not in GID)	T25	*tiji	PNYY
T11	*taapa+	PNPN (not in GID)	T26	*tika	PNPN (not in GID)
T12	*tapu ₁	PNY	T27	*tiika+	PNPN (not in GID)
T13	*tapu ₂	PNYY	T28	*tiki ₁	PNPN
T14	*TapV	PNPN (not in GID)	T29	*tiki ₂	PNPN (not in GID)
T15	*taru	PNPN	T30	*tiku	PNPN (not in GID)

T31	*tilti	PDN	N11	*nirrim	possible PNP
T32	*tilting	PNPN	N12	*nuu+	PNPN
T33	*tilyi	PNYY	N13	*nuka+	PNPN
T34	*timpil	PDN	N14	*nurlu	PNY
T35	*tipa	PNPN	N15	*nurrku	PNYY
T36	*tiril	PNPN			
T37	*tir ₁	PNPN (not in GID)	L1	*lakang	PNPN
T38	*tir ₂	PNPN	L2	*laka ₁	PNPN
T39	*tirnka	PNPN (not in GID)	L3	*laka ₂	PNPN
T40	*tirr	PNYY	L4	*lama	PNPN (not in GID)
T41	*titi	PNYY	L5	*lampa	PNPN
T42	*tititi	PDN	L6	*lanta	PNPN (not in GID)
T43	*tiwan	PNPN (not in GID)	L7	*lapa	PNPN
T44	*tiwirr	PNYY	L8	*laapV	PNPN (not in GID)
T45	*tiwu	PDN	L9	*larra	PNYY
T46	*tiyi	PNPN (not in GID)	L10	*larrjam	PNPN
T47	*tuu	PNPN (not in GID)	L11	*larrka	PNPN (not in GID)
T48	*tuuju	PNPN (not in GID)	L12	*laarrum	PNPN
T49	*tuku ₁	PNPN	L13	*lawu	PNY
T50	*tuku ₂	PNPN (not in GID)	L14	*lawu+	PNPN (not in GID)
T51	*tukul	PDN	L15	*lija+	PNPN (not in GID)
T52	*tulki	PNYY	L16	*likarra	PNYY
T53	*tulyku	PDN	L17	*lili	PNPN
T54	*tumuny	PNPN	L18	*Lili	PNPN (not in GID)
T55	*tuungku	PNPN (not in GID)	L19	*lilyirr	PDN
T56	*tungu	PNYY	L20	*lingka	PNPN
T57	*tupa	PNY	L21	*linmarr	PDN
T58	*tuptup	PNYY	L22	*Linpa	PNPN (not in GID)
T59	*turlparra	PDN	L23	*lirr ₊₁	PNYY
T60	*turla	PDN	L24	*lirr ₊₂	PNPN (not in GID)
T61	*turna	PNY	L25	*lirri	PNPN
T62	*turkang	PNPN	L26	*lirru	PDN
T63	*turru ₁	PNYY	L27	*liwu	PDN
T64	*turru ₂	PNPN	L28	*luka	PNPN
T65	*tuwa ~ *tuya	PNYY	L29	*luku	PNPN (not in GID)
			L30	*lulu	PNPN (not in GID)
N1	*nam(p)a	PNPN	L31	*luL+	PNPN
N2	*nampul	PEPN	L32	*luma ₁	PDN
N3	*namu	PNYY	L33	*luma ₂	PNPN (not in GID)
N4	*napa	PNY	L34	*lumpu	PNPN (not in GID)
N5	*napu	PNPN	L35	*lungka	PNY
N6	*narnngu	PDN	L36	*lunta	PNPN (not in GID)
N7	*narra	PNPN	L37	*lupu	PNPN (not in GID)
N8	*nawa	PNPN	L38	*lurr	PNYY
N9	*ning	PNPN	L39	*luurra	PNPN
N10	*ninya	PNYY	L40	*lutu	PDN

R1	*raju	PNYY	R20	*rawa ₁	PNPN
R2	*raka ~ *rangka	PNPN	R21	*rawa ₂	PNPN (not in GID)
R3	*ralpa	PNYY	R22	*rawa ₃	PNPN (not in GID)
R4	*ralyang	PNPN	R23	*rika ₁	PNPN (not in GID)
R5	*ralyu	PDN	R24	*rika ₂	PNPN (not in GID)
R6	*rama	PDN	R25	*rilypa	PNYY
R7	*ramang	PNPN	R26	*rirra	PNPN
R8	*rangki	PNY	R27	*rirrang	PNPN
R9	*rangkV	PNPN (not in GID)	R28	*rirri	PNPN
R10	*ranyja	PNYY	R29	*rirrpirirpi	PNPN (not in GID)
R11	*rapang	PNPN	R30	*rirru	PNPN (not in GID)
R12	*rapu	PNPN (not in GID)	R31	*runga+ ~ *runka+	PNPN
R13	*rapu ~ *rampu	PNPN (not in GID)	R32	*urra	PNYY
R14	*raapV+	PNPN	R33	*urri+	PNPN
R15	*rara	PDN	R34	*urru+	PDN
R16	*rarram	PNPN	R35	*urrV	PNY
R17	*rarrV ₁	PNYY	R36	*ruwa+ ~ *runka+	PNPN
R18	*rarrV ₂	PNYY	R37	*ruwV	PNPN (not in GID)
R19	*raarrV	PNPN (not in GID)			

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