

Boundary rider
essays in honour of Geoffrey O'Grady

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GEOFFREY O'GRADY

Language Literacy Workshop, Dawson City, Yukon, 1990

**BOUNDARY RIDER
ESSAYS IN HONOUR OF
GEOFFREY O'GRADY**

edited by
Darrell Tryon and Michael Walsh



Pacific Linguistics

Research School of Pacific and Asian Studies
The Australian National University
Canberra

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GEOFFREY O'GRADY: PIONEER OF AUSTRALIAN LINGUISTICS

DARRELL TRYON AND MICHAEL WALSH

Geoff O'Grady ranks as one of the pioneers in the field of Australian linguistics, his formidable reputation built largely on his comparative work in the vast Pama-Nyungan family of languages, a fact attested by many of the contributors to this volume. In the 1940s and 1950s the number of people working on Australian languages could be numbered on one or maybe two hands—depending on how liberal one's judgement. By the mid-fifties O'Grady had already gained a reputation for his study of Nyangumarta as this early, somewhat colourful, report (Snedden 1955:52) indicates:

Much invaluable work has been done by and assistance given Dr. Petrie [sic] and his aide by Geoff O'Grady of Wallal Downs Station. Geoff has been closely studying and learning the native language for the past five years. Some idea of the scope and magnitude of this work can be realised by the fact that an educated native would have a vocabulary of thirty-five thousand words in comparison to the white's six thousand.

Apart from simply being early on the scene Geoff O'Grady has pioneered a number of very significant directions for research into Australian languages. One of the more significant is his foreshadowing of the Pama-Nyungan group in his BA thesis at the University of Sydney (1959, supervised by A. Capell and S.A. Wurm). In that thesis he was able to show that geographically quite distant languages like Thalanyji from the Pilbara area of Western Australia and the YolNu bloc of north-east Arnhem Land present striking similarities. Moreover, these similarities are much closer than those between Thalanyji and its neighbours to the east. This interest in language relationships was followed up by his proposal of Proto Nuclear Pama-Nyungan (1979) and his major work on comparative Pama-Nyungan (1990a, b, c, d, e, f).

In 1960, after a research trip to Western Australia with Ken Hale, O'Grady moved to Indiana University where he produced his doctoral dissertation, the well-known grammar of Nyungumarta, in 1963, under the supervision of C.F. and F.M. Voegelin (see O'Grady 1964). This association resulted in a rather ambitious project to outline the relationships among all of the Aboriginal languages of Australia (O'Grady, Voegelin & Voegelin 1966). As Black (this volume) comments:

One aspect of this [comparative] work about which he must surely have developed mixed feelings was his role in a large-scale attempt to classify all Australian languages on the basis of the wretched data available some thirty years ago...The classification was a major step forward, but at the same time it was full and explicit enough that it could soon be challenged by others able to gather better data or even just able to subject the early records of one particular area or another to more careful scrutiny.

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Dixon (1980:263) observes that, while the 1966 classification had shortcomings—especially in terms of the quality of the data used:

For northern and western languages the sources appear in many cases to have been field notes of Hale and O'Grady, and the classification here is useful.

This comment raises two issues which represent constant, closely related themes which characterise O'Grady's work: a strict attention to the quality of linguistic data and a critical interest in the methodology of comparative linguistics. We can be confident that O'Grady was aware that the quality of the linguistic data which underpinned the large-scale comparative project was quite varied. It was when he could mainly rely on his own data that an enduring contribution such as his 'Proto-Ngayarda phonology' (O'Grady 1966) could be ensured. We can also be sure that he was pondering the applicability and validity of analytic tools in comparative linguistics.

In the 1966 project much use had been made of the lexicostatistical method. Earlier O'Grady had questioned the content of the comparative wordlist (1960a) and later described some of the difficulties associated with the method (O'Grady & Klokeid 1969). His awareness of the shortcomings of linguistic data is borne out by a masterful survey of the state of Australian lexicography (1971; see also Goddard and Thieberger, this volume). The lexicographical survey reflects O'Grady's strong interest in lexical semantics. O'Grady's maxim has been that one must first pay strict attention to phonological correspondences and then consider the possibility of relationship no matter how seemingly unlikely the semantic connection might be. This has led to intriguing hypotheses about semantic connections between such pairs as 'egg' and 'brain' (O'Grady 1990d; Evans, this volume), and 'mother' and 'sun' (Wilkins, this volume). O'Grady is the first to emphasise that there is a simultaneous need for caution and boldness in this kind of approach: the caution is reflected in the title of one of his papers 'Wadjuk and Umpila: a long-shot approach to Pama-Nyungan' (O'Grady 1990f) while the boldness is reflected in his attempt to draw out possible Austronesian connections (O'Grady & Tryon 1990) and in some of the scenarios he has proposed for the migrations and peopling of ancient Australia (O'Grady 1979; see also Walsh, this volume). McConvell (this volume) very aptly sums up this approach:

Yet it seems to me that progress depends on scholars, if not exactly 'throwing caution to the winds', sometimes at least conveniently setting aside caution for a later date, and producing hypotheses both challenging and likely to be challenged. O'Grady has been a master of this approach, and it is in the fascination engendered by his ideas that important currents in contemporary Australian historical linguistics and linguistic prehistory have had their beginnings.

In this and a number of other ways O'Grady has been a trigger for further research. Breen (this volume) acknowledges that his interest in the nature of rhotics was triggered (at least in part) by O'Grady's work. Similarly Sharpe's study of Bandjalang (this volume) was inspired by conversations with O'Grady, while Evans (this volume) records his debt to O'Grady for his work on diachronic semantics and its contribution to our understanding of Australian prehistory. Even more direct fostering of further research by others is reflected in the work of O'Grady's students (Fitzgerald, this volume) and in his unselfish provision of data acknowledged by, for instance, Austin (this volume) and Wurm (this volume).

One other area that should not be neglected is O'Grady's keen interest in the speakers of Australian languages. This is reflected in such works as his brief account of a 'secret language' (1956), in the acquisition of loan words (1960b) and in teasing out the

sociocultural correlates of linguistic traits (1959). In his excellent description of Nyangumarta (1964) there is an early (perhaps the first) graphic display of Australian dialectology (Map 2). In 1974 he participated in a consideration of bilingual education in the Northern Territory (O'Grady & Hale 1974) and here as elsewhere (1976:66) he was insistent that native speakers should occupy a more central role:

We can only stand appalled at many linguists' (including O'Grady's) failure in their past research on Australian languages to involve the interested native speaker and there are many, as fully and meaningfully as possible.

Finally it should be said of Geoff O'Grady that one of his greatest contributions to other practitioners in the field is his unique blend of humility and enthusiasm. This is a combination which is endearing, infectious and all too rare.

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GEOFF O'GRADY: A PERSONAL APPRECIATION

S.A. WURM

In the mid 1950s I was assisting Dr A. Capell who was in charge of the Linguistics section in the Department of Anthropology at the University of Sydney. One morning a letter arrived from a well-educated young jackaroo¹ from Wallal Downs, a lonely sheep station at the edge of the desert in the Eighty Mile Beach area of north-western Western Australia. The writer gave his name as Geoff O'Grady, originally from South Australia, and said that he had an interest in languages, and having lived in close contact with Nyangumarda-speaking Aborigines at Wallal Downs, he had learned to speak the language quite well, with the Aborigines gladly teaching him and appreciating his interest in the language. He was now writing to Dr Capell asking for advice on how to further his study of it. He enclosed materials which he had collected in the language and which clearly demonstrated that he had an excellent natural gift and talent for language work. Dr Capell wrote back to him giving him hints and advice, and what Geoff O'Grady sent back a short time later was so good that it was felt that he should come to the University of Sydney to study for a Bachelor of Arts degree in linguistics. This he did gladly and appeared there a short time later. It was immediately evident that he had a far-reaching knowledge of the Nyangumarda language, and was able to pronounce it perfectly without much previous phonetic training—no mean feat for a ‘white fellow’. In Sydney, he also began to study Hungarian and his ability to pronounce it correctly, which even phonetically well-trained English speakers find very difficult, was astonishing. He progressed well with his studies and became highly competent in linguistics in general and in Australian Aboriginal linguistics in particular.

He had a colourful personality, with the far outback which had been his home and life for years, often becoming noticeable as a backdrop to his personality. I recall one incident when we were all in the corridor outside the offices, and the phone rang in Dr Capell's office which was then unoccupied. Geoff yelled “Run for your lives!” and started running towards the room with the phone, not away from it!

I moved to Canberra to the Australian National University while Geoff was completing his Arts degree. He then decided that he wanted to further his studies overseas, and followed an invitation to undertake PhD studies in linguistics at Indiana University in Bloomington under Professor Carl Voegelin. This gave him an introduction to a new linguistic world, the American Indian, in which he also showed remarkable talent. I had the opportunity to meet him there repeatedly again, collaborate with him and to enjoy his friendship and colourful and unusual personality. When, after a teaching year at Northwestern University at Evanston, I moved around the USA I was invited to spend a period at Flagstaff, Arizona, by Carl Voegelin who regularly went there to work in Amerindian languages. Geoff was also there,

¹ Hence the ‘boundary rider’ of the volume’s title.

and accommodation was provided for me and my wife, Helen, in a small western-style blockhouse in a blockhouse area in the forest where other scholars were also spending some time. Geoff met us when we rolled up in our old Chevrolet, showed us to our blockhouse and explained the facilities of it and around it, pointing out also the waste-dump not far away which was a rolled-in dump of about five metres square. We were to throw refuse in there. What he forgot to mention was that this refuse-dumping area was a favourite haunt of a considerable number of skunks, especially after dark, and when somebody threw something in there and accidentally hit a foraging skunk, it was a matter of how fast one could run to reach the door of one's house before the enraged skunks had a chance to take action...

Work was carried out in Amerindian languages there, especially in Hopi and also Navaho, but there was time for pleasure and entertainment. One evening there was a great powwow, an Indian feast with participants from many tribes, with speakers in their languages and lots of dancing in their colourful garbs and ornaments. Large fires were built from logs standing in the shape of Indian tepees, with the flames rising high and illuminating the whole area. The Indians danced around the fires, and Geoff got very excited—he loves large camp fires, and he jumped up and joined the dancing Indians...

In spite of his engagement in Amerindian studies, he always kept up his connection with his first linguistic love, Australian Aboriginal languages, even after he had taken his PhD and moved first to Edmonton in Canada, and then to the University of Victoria on Vancouver Island, British Columbia. His association with Ken Hale, who had worked for a long time in Aboriginal linguistics in Australia, proved very fruitful, and Geoff came back to Australia repeatedly to carry on his work in Aboriginal languages in conjunction with Ken Hale. On one of these field trips in Western Australia, while heading north towards Geoff's old stamping grounds in the Eighty Mile Beach and Wallal Downs area, they were camping not far from the road in a southern area where Aboriginal cultural manifestations such as songs had not been heard for quite some time. At their camp site, they started singing Aboriginal songs and clapping sticks Aboriginal-style, much to the consternation of passers-by who were wondering how Aborigines had appeared again in the area!

Geoff was disinclined to write long letters and was not a good correspondent. When Thomas Sebeok, the editor of the large serial publication *Current Trends in Linguistics* asked Geoff O'Grady to be the Assistant Editor of volume 8 of the series (i.e. *Linguistics in Oceania* which was published by Mouton in 1971), Geoff preferred to conduct assistant editorial business on the telephone rather than in writing. I was one of the Associate Editors of the volume, and I remember having long telephone conversations with him, with me in the eastern part of the USA and Geoff in Victoria, Canada.

Geoff has always been a very friendly person, fiercely loyal, always ready to help and give advice from his great store of linguistic knowledge, Aboriginal languages and Amerindian studies. His loyalty to the cause has found its crowning piece of work in his study of comparative Pama-Nyungan, the largest family of Australian Aboriginal languages, in the volume he co-edited with Darrell Tryon (published in 1990 by *Pacific Linguistics*).

Much good has been written about Geoff O'Grady as a linguist and his valuable contributions to Australian and Amerindian linguistics. May this little yarn from one of his oldest friends depict him as a person and human being, set into some little anecdotes remembered from the long ago.

GEOFFREY N. O'GRADY: A PERSONAL BIBLIOGRAPHY

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FLUCTUATING FINAL *n* IN NOUN-STEMS IN CAPE YORK LANGUAGES

BARRY ALPHER

1. THE PROBLEM¹

'Eye' is *ku'u* in Kaanytju but *ku'un* in its sister dialects Umpila and Kuuku-Ya'u; these nouns are obviously cognate, corresponding in all segments except the last. So also with a number of putative cognate sets in modern Cape York languages, in which, frequently, one language will have *n*² and another nothing, or a different nasal, or *y*, or *l*. Phonological conditioning as a way to account for the discrepancies in final sounds can be ruled out, and it appears that morphological factors have been at work. There is apparently no single factor that has produced all the phenomena in question. This paper is a preliminary sorting out of the various factors, together with a conjectural solution to the problem of the origin of final *n* of one type.

2. SOME DATA

Cognate sets in which stem-final *n* corresponds to zero include the following:

- ¹ Much of this material was presented to a meeting of the Linguistic Circle of Rum Jungle at Batchelor, Northern Territory, in July 1977. I thank Paul Black, Nicholas Evans, Kenneth Hale, Patrick McConvell, David Nash, Geoff O'Grady, Kristina Sands and Peter Sutton for sharing data and for comments and suggestions pertaining to one or other aspect of this problem. The original stimulus to confront these data was of course Geoff O'Grady's work, especially as evidenced in his 1966 paper, in which non-corresponding final consonants are set off in transcription with a preceding full stop. Sources for languages mentioned in this paper: Aghu-Laya, Rigsby (1976); Bidjara, Breen (1973); Bundjalung, Crowley (1978) and Sharpe (1992); Djingili, Chadwick (1975); Dyirbal, Dixon (1972); Gugu-Badhun, Sutton (1973); Guugu-Yimidhirr, Haviland (1972, 1979); Kaanytju, Hale (1976e); Kala Lagaw Ya, Bani (1987) and Bani and Klokeid (1972); Kayardild, Evans (1992); Kok-Kaper (Koko-Bera), my own fieldnotes; Kuuk-Thaayorre, Foote and Hall (1983) and my own fieldnotes; Kuuku-Ya'u, Thompson (1976); Luthigh, Hale (1976c); Manjiljarra, McConvell (1979); Muruwari, Oates (1988); Ngarluma, Hale (1982); Nunggubuyu, Heath (1984); Nyawaygi, Dixon (1983); Palm Island, Peter Sutton (pers. comm.); Pintupi, Hansen and Hansen (1977); Tjaapukay, Hale (1976d), Patz (1991) and my own fieldnotes; Umpila, O'Grady (n.d.); Uradhi, Hale (1976b); Uw-Oykangand, Sommer (1972) and my own fieldnotes; Warlpiri, Hale (1974), Laughren (1982) and Nash (1992); Warrungu, Tsunoda (1974); Western Desert language, Douglas (1964, 1988); Wik languages, Hale (1976e); Yidiny, Dixon (1977, 1991); Yirrk-Thangalkl (Yirr-Thangedl), my own fieldnotes; and Yir-Yoront, Alpher (1973, 1991) and my own fieldnotes.
- ² Where no established transcription system exists for a particular language (as in a published dictionary or body of vernacular literature), the following transcription conventions obtain for consonants: labials *p*, *b*, *m*, *w*; lamino-dentals *th*, *dh*, *nh*, *lh*; apico-alveolars *t*, *d*, *n*, *l*; apico-postalveolars (retroflexes) *rt*, *rd*, *rn*, *rl*, *r*; lamino-alveopalatals *tj*, *dj*, *ny*, *ly*, *y*; dorso-velars *k*, *g*, *ng*, *gh*; glottal catch ' (q in Yir-Yoront). Tense (prestressed) nasals, as in Uw-Oykangand, are written *bm*, *dnh*, *dn*, *rdn*, *jny*, *gng*. The mid-to-high central vowel schwa is transcribed *v* in languages in which it is of relevance. The Proto Paman phonological inventory is assumed to be as suggested by Hale (1964).

- (1) Kaanytju *ku'u* and Umpila and Kuuku-Ya'u *ku'un* 'eye', as mentioned above; with these compare also the Western Desert languages *kuru* 'eye', Warlpiri *kurlu* 'pupil, iris of eye' and Proto Ngayarda **kuru*. Note that Kaantju, Umpila, and Kuuku-Ya'u all have *katjin* 'yamstick' with final *n* continuing a putative Proto Paman **katjin*.
- (2) Proto Paman **punga* continues in Wik-Muminh *punga* 'sun' and in at least 14 other Paman (Cape York) languages, but Tjaapukay and Yidiny have *bungan* 'sun'.
- (3) Tjaapukay and Kuku-Yalanji have *jarruka* 'guinea hen, jungle fowl', but Dyirbal has *jarrugan* and Yir-Yoront *thurrqn*³ in the same meaning.
- (4) Kuuk-Thaayorre and Yir-Yoront and its sister dialect Yirrk-Thangalkl have *kay* 'axe', but Koko-Bera has *kayán* and Kuk-Narr *kayan* 'axe'.
- (5) Yir-Yoront has *thorrqn* 'smoke' and Wik-Mungkan has *thok*⁴ in the same meaning. Note that both Yir-Yoront and Wik-Mungkan have *kathn* 'yamstick', continuing putative **katjin*.
- (6) Yir-Yoront has *pulqa* 'older brother' (proper noun form, used in address), and Kuuk-Thaayorre has *pork* 'big' (compare, from Central Australia, Western Desert *purlka* 'big', Warlpiri *purlka* 'old man', Guurrindji *purlka* 'white hair; old man; mother's brother'), but Dyirbal has *bulgan* 'big'.

The only phonological regularity to emerge is that Dyirbal has final *n* if any of them does, but I suspect this is a matter of not knowing enough cognates.

Here are a couple of same-language examples:

- (7) Guugu-Yimidhirr *galga* 'spear', *galgan* 'porcupine (echidna) quill'. In myth, these quills come from/are spears.
- (8) Contemporary Yir-Yoront *karra*, archaic Yir-Yoront *karrangkan* 'white ibis' (from a song; see Alpher 1976:80). A hypothetical **karrangka* would have become modern *karra* by regular phonological developments.

3. THE ORIGIN OF FINAL *n* FROM A LAMINAL CONSONANT

A number of disparate facts become intelligible if it is assumed that final *n* in some words continues an earlier **nh* or **ny*. Pertinent at this point in the discussion is Hale's (1976a) scenario for the development of ergative and locative suffixial alternants in the contemporary Pama-Nyungan languages, in which a typical scheme for ergative inflection is *-lu* after a noun of more than two syllables⁵ (all of which end in vowels), *-ngku* after a disyllable ending in a vowel, *-tu* after *n* or *l*, *-tju* after *ny* (or *ly* or *y* if these occur stem finally). If any other nasals occur stem finally, the ergative suffix will be the homorganic stop followed by

³ I take this as obviously cognate, although my present understanding of the historical phonology of Yir-Yoront would lead me to expect **thurrunkan* from **tjarrukan*.

⁴ For the loss of preconsonantal liquids in Wik-Mungkan, compare also Yir-Yoront *purrq* and Wik-Mungkan *puk* 'bandicoot', Yir-Yoront *warrq* and Wik-Mungkan *wak* 'grass', Yir-Yoront *kalq* and Wik-Mungkan *kek* 'spear'.

⁵ Approximating to this prototype in one regard or another are Western Desert (Douglas 1964:58), Warlpiri (Hale 1974:11) and Muruwari (Oates 1988:56). For some languages the mora is the relevant unit instead of the syllable, and there are various complications in a number of languages that are of interest here.

u. Hale hypothesised the following sequence of events to account for this distribution of alternants:

- (i) Disyllabic stems ending in a vowel acquired a final **ng*. Hence a protoform like **tjina* ‘foot’ became **tjinang*. Phenomena attested in modern languages that resemble this one include Yir-Yoront’s addition of a lenis velar nasal intonation finally after a vowel (Alpher 1973:16–17, 1991:17); a related phenomenon is the behaviour of final *ng* in Yidiny (Dixon 1977:103–105).
- (ii) The original ergative suffix was *-*lu*. When attached to a noun ending in a consonant, this suffix developed a stop-initial alternant homorganic with the preceding consonant.⁶ Before the process described in (i), the absolute and ergative of ‘foot’ were **tjina*, **tjinalu*, respectively. After (i), these became **tjinang*, **tjinangku*.
- (iii) In most daughter languages, **ng* and **m* in absolute word-final position were lost. Hence **tjinang* ‘foot’ reverted to the form **tjina*, and the analysis of its ergative case-form **tjinangku* changed from **tjinang+ku* to **tjina+ngku* (cf. Dyirbal *jina* ‘foot’, ergative-instrumental *jinanggu*; Muruwari *thina*, *thinangku*). Languages that did not lose final **ng*, such as Bundjalung,⁷ attest forms like **tjinang* to this day.
- (iv) There is an implicational hierarchy of permissibility for final consonants: if the laminals (**ny*, **nh*; these are also coronal) are permitted, then the apicals (**n*) also are; if the non-coronals (**m*, **ng*) are permitted, then the coronals (**ny*, **nh*, **n*) also are. In other words, if any final consonants at all are permitted, they will be apical; if only apicals are permitted, final laminals from a previous stage of the language have either been merged with them or dropped. A vowel-final canon emerges from any of these stages either by dropping all final consonants or by some device such as adding *pa* to all consonant-final stems, such as is attested in the history of the Western Desert language and of Warlpiri.

Contemporary *n*-stems that, in the light of the above reasoning, can be seen to attest earlier *nh*-stems include the following:

- (9) Uradhi *lalan*, Luthigh (*a*)*lan* ‘tongue’; Kaanytju *yalan* ‘mouth’ would seem to attest a protoform **tjalan*, but Southern Paman and Maric cognates like Warrungu *tjalany*, Palm Island *thalany*, and Gugu-Badhun *dhalay*, along with Centralian cognates like Warlpiri *jalanypa* (with -*pa* to prevent *ny* falling in final position) ‘tongue’, show a final laminal and suggest **tjalany* as the protoform.
- (10) Yir-Yoront *thonhthn* and Aghu-Laya (Kuku-Thaypan) *nyjun* ‘scorpion’ would seem to suggest a protoform **tjunytjun*, but the form can be seen as a complete reduplication if

⁶ The only kind of consonant that can follow a consonant of any other type in a typical Australian system is the stop. For this reason it is at least economical, if not ‘natural’, for */*I* to change to a stop if it changes to anything at all. A different scenario is that proposed by Kristina Sands (pers. comm.), according to which the original suffix was **ju*, not **lu*. The question of **ju* versus **lu* has little bearing on the subject of this paper, however; both scenarios are compatible with the line of speculation pursued here. See also fn.12.

⁷ Bundjalung has *jinang* ‘foot’. What complicates the picture in Bundjalung and other languages of the final-*ng*-retaining type, and what leads some researchers to reconstruct the final **ng* as original, is the presence of vowel-final forms with equally wide attestation, like Bundjalung *gami* ‘father’s mother’, *bula* ‘two’, as against (usually a larger number of) forms in *ng*, like *dirang* ‘foot’, *binang* ‘ear’, etc. While I assume that the original form was vowel-final in all cases and that the irregularities are due to borrowing or other factors, the issue is a peripheral one from the point of view of the present paper.

either the first nasal was originally apical, or the second was originally laminal. The facts taken together (see especially the next observation) strongly suggest the latter interpretation.

A number of Cape York languages inflect some or most *n*-stem nouns for ergative case by adding *-tj(V)* or *-th(V)* and changing the *n* to *ny* or *nh* (the laminal that is homorganic with the following stop); for example: Uw-Oykangand *achin* ‘yamstick’, ergative *achinhdh*. If the stem-final nasal is assumed to have been laminal at one time, the choice of the laminal-initial alternant of the ergative suffix can be seen to conform with the allomorphy outlined at the beginning of this section and in (ii) above. Yir-Yoront attests numerous examples of this,⁸ and some of these support hypotheses made on other grounds: *thonhthn* ‘scorpion’, ergative *thonhtholh* (see example 10). Other examples include *thorrqn* ‘smoke’, ergative *thorrqolh*, and also (absolutive form listed first, ergative second) *pothn*, *potholh* ‘prawn’ (cf. Uw-Oykangand *ochen* ‘prawn’); *kunhthn*, *kunhthalh* ‘pandanus’ (cf. Wik-Mungkan *kunychn* ‘pandanus’); *kawn*, *kowolh* ‘water’ (cf. Yirrk-Thangalkl *kawn*, *kowóth*); *kumn*, *kumalh* ‘thigh’ (the numerous Paman cognates of the absolutive form, such as Kaanytju *kuman*, all suggest the protoform **kuman*); *lalpm*, *lalpalh* ‘wallaby’; *lipn*, *lipalh* ‘termite mound’; *yelpm*, *yulpulh* ‘catfish spine’; *waln*, *wallh* ‘tick’; *murrn*, *murrlh* ‘club’.

The behaviour of *n*-stems of this type with derivational suffixes also suggest that the final nasal was formerly a laminal; for example: Yir-Yoront *kawn* ‘water’, *kawnhrr* ‘wet’ (note also *kachl* ‘urine’, *kachlhrr* ‘needing to urinate’). Umpila and Kuuku-Ya'u, with *ku'un* ‘eye’, add a suffix *-tji* to get *ku'unyji* ‘blind’. And, with regard to Yir-Yoront *thorrqn* ‘smoke’, consider Yir-Yoront *thathorrnh* ~ *thathorrnyr* ‘whale’, with *tha* ‘mouth’. That the *-thorrny-* part is ‘smoke’, presumably the vapour the whale spouts, is guaranteed by a comparison with the neighbouring language Kuuk-Thayorre, with non-cognate *thomp* ‘smoke’ and partially cognate *thathomp* ‘whale’.

Note also the following *n*-stems that do not inflect in this way, forming their ergative instead with manipulation of the thematic vowel alone, or with the suffix *-vl*, and probably continuing forms with final apical nasals: *lern*, *lernvnl* ‘child’; *thayn*, *thaynvnl* ‘breast’; *ngunyan*, *ngunyn* ‘wave’; *nhapn*, *nhapnvl* ‘egg’ (dative *nhipin*; cf. also Wik-Mungkan *nhepn* ‘egg’).⁹

Some forms evidently continue ergatives of the *-*tju* form but have no final *n* in the absolutive form. Some, at least, of these seem to have lost an earlier *n* or *ny*:

⁸ In Yir-Yoront this pattern takes the form of *lh* replacing the final *n*: homorganic nasal-stop clusters in Yir-Yoront regularly lost the nasal (hence **n nth* > **th*), and **th* in this position became *lh*. The last vowel in a word (i.e. the vowel of the suffix, or the second vowel of an uninflected disyllable) was lost; hence the contemporary uninflected stem (if from an old disyllable) acquires a vowel, the thematic vowel (usually the reflex of the vowel of the ancestral second syllable), when *lh* or any of various other suffixes is added.

⁹ Pre-Yir-Yoront **nhapin*, inflecting for ergative with the normal homorganic-stop-initial suffix, would give **nhapintu*, which would continue as **nhipit* > **nhipir*, absolute *nhapn*. This is by no means an absurd result, given the general typology of Yir-Yoront case-inflection, but there are in fact very few stems that apparently contain an etymological *n* to support it in the modern language, and only a couple of etymologically vowel-stem disyllables, like *warrch* ‘bad’ (protoform **warrtji*), with an ergative in *-r*, *wirtchir*.

- (11) Yir-Yoront has *kalq* ‘spear’, ergative *kalqalh* ~ *kalqa*; Uw-Oykangand has *alk*, *alkanhdh* in the same meaning.¹⁰ Given Guugu-Yimidhirr *galgan* ‘porcupine quill’, a lost nasal (lost all over Cape York Peninsula, except in this one Guugu-Yimidhirr form) might be supposed.
- (12) Yir-Yoront *kay* ‘axe’, ergative *kayalh*; Kok-Kaper *kayán* ‘axe’ evidences a final nasal.

But for Yir-Yoront nouns of the following type, there is no evidence for final nasals (cited absolutive first, ergative second): *thil*, *thilalh* ‘hole’, *pil*, *pilalh* ‘cabbage tree’, *wil*, *wilalh* ~ *wila* ‘sour, bitter’, *yirrq*, *yirrqalh* ‘speech’ (Proto Paman **yirrka-*, a verb), *yirrp*, *yirrpalh* ~ *yirrp* ‘cloud, rain’ (cf. Kok-Kaper *yirrmp* ‘cloud’), *kol*, *kililh* ‘soldier’ (Proto Paman **kuli*; cognates in Paman and elsewhere in Pama-Nyungan usually meaning ‘anger’), *ki*, *kilh* ‘baler shell’, *lult*, *lultalh* ‘cave’, *kunh*, *kunhalh* ‘yam bag’, *thol*, *thililh* ‘spearthrower’ (Proto Paman **tjuli*), *then*, *thenelh* ‘penis’, *yalq*, *yalqalh* ‘road, track’.¹¹ Although evidence for stem-final laminal consonants in forms ancestral to some of the above could turn up, it is virtually certain that at least some of them always ended in a vowel. Once the *-*tju* alternative of the ergative case ending stopped being chosen to follow a homorganic consonant (i.e. once final **ny* had become **n*) and once the type *kalq*, *kalqalh* ‘spear’ became established, the *-*tju* alternant would have been free to extend to vowel stems, where it originally didn’t belong.¹²

At least one of the final *ns* mentioned in §2 evidently continues an earlier **m*. This is in Tjaapukay *bungan* ‘sun’ (example 2), whose ergative *bungandu* is of the usual homorganic type, but which is matched by Kok-Kaper *pung*, *pungémp* and Uw-Oykangand *ugng*, *ugngamp* (and see Sommer (1976:148) for cognates in other languages). Under the assumption of an original **pungam*, whose **m* became *n* in Tjaapukay and became *n* and dropped (or simply dropped) in all the other languages of the area, the situation begins to look orderly.

There is no direct evidence (at present) for stem-final **ng* in this area becoming *n*, but this possibility cannot be ruled out for, at least, **tjarrukan* ‘jungle fowl’ (example 3), pre-Yir-Yoront **karrangkan* ‘white ibis’ (example 8), and **pulkan* ‘big’ (example 6) because the known reflexes of these forms present no evidence for anything else. With regard to the bird terms, however, it is perhaps relevant to the hypothesis presented below that *n* continues a gender marker that most terms for birds are feminine in Dyirbal.

¹⁰ A number of other languages of the region behave similarly. In an earlier paper (Alpher 1972:81) I argued that the exceptional nature of the ‘spear’ forms was a strong argument for a genetic subgroup, “Southwest Pama”. Sommer (1976:147), however, showed that ergative marking of a reflex of **kalka* ‘spear’ with an ending of the *-*nytju* type occurred in many more languages than I thought, some of them clearly not, in my opinion, Southwest Paman. The facts cited above indicate that the inflection of ‘spear’ is a retention in these languages and so, however striking the ‘exceptionality’, is not evidence for any subgrouping.

¹¹ Yir-Yoront *yalq*, Warrungu *yalka*, Ngadjan *yaaga* and Kok-Kaper *yalk* quite possibly continue a form in final **y*, to judge from Dyirbal *yalgay*. If so, the Yir-Yoront *-lh* ergative is the expected one, and the *-y* of the Kok-Kaper ergative *yalkvymp* can possibly be accounted for in this way as well.

¹² Other ergative alternants that have extended their ground in modern Yir-Yoront include *-*ngku* (which continues as the addition of a thematic vowel to the one-syllable reflexes of old disyllables (*kalq+a* ‘spear [ergative]’) and, most productively, *-*lu* (in the form *-vl*), which can be used with most noun stems. In a different interpretation of the data (Kristina Sands, pers. comm.; see fn. 6), Yir-Yoront ergatives in *-lh* on nouns whose only attestation as stems in this and other languages is vowel-final are simply leftovers from a time when *-*tju* was the ergative suffix for all nouns. The difference in scenarios is not relevant to the issue of consonant-final stems.

In sum, stem-final **m*, **n*, **ny* and possibly **ng* occurred in this area and all were either conflated as **n* or dropped (sporadically or regularly) before any conflation had taken place. In view of the closeness of relationship of many of these languages (Kaanytju, Umpila and Kuuku-Ya'u; Yir-Yoront and Kok-Kaper), these changes all took place quite recently, after genetic split had occurred. The conflation to **n* was phonological in nature, but the dropping of **n* in the languages of this area, in view of the evidence for the retention of some final **n*, cannot have been a phonological process; the **n* must have been taken to have some morphological value. The remainder of this paper is concerned with what its nature might have been.

4. POSSIBLE MORPHOLOGICAL SOURCES

In a number of languages of the area in question, an -*n*- occurs in the dative case suffix or in some other suffixed form of some, but not all, nominals. Consider the following paradigms:

TABLE 1: KUKU-YALANJI NOUN STEMS OF ONE OR TWO SYLLABLES

	Animate	Inanimate
Dative	- <i>nka</i>	- <i>ka</i>
'having'	- <i>ntji</i>	- <i>tji</i>

TABLE 2: DATIVE CASE OF WARRUNGU NOMINALS

Proper nouns, pronouns, <i>wanyu</i> 'who'	Common nouns, <i>ngani</i> 'what'
- <i>nku</i>	- <i>ku</i> ~ - <i>wu</i>

TABLE 3: PURPOSIVE CASE IN YIDINY (TJAAPUKAY IS SIMILAR)

Nouns, 'this' (inanimate)	Pronouns, 'this' (human)
Uninflected <i>bunya</i> 'woman'	<i>ngali</i> 'we two'
Purposive <i>bunyaagu</i>	<i>ngaliin.gu</i>

It is apparent that -*n*- occurs in the paradigms of nominals that are 'higher' in the animacy hierarchy proposed by Silverstein (1976:122), if this hierarchy is understood as encompassing more distinctions than originally presented: proper nouns have to be understood as 'high' in relation to common nouns.¹³ This -*n*- is evidently to be associated with the accusative *-*n*- or the Nunggubuyu 'inverse' marker -*N*- discussed by Heath (1987, 1984:362–363), and it would appear to have an ancient pedigree as **n* and not **ny*, whatever its ultimate origin (the distinction survives in the Yir-Yoront second and third person singular pronouns, accusative *nhanqanh* 'you' and *nhanganh* 'him/her' versus dative *nhanqan* and *nhangan*—suggesting that these continue suffixes that had final vowels, **nha* and **na*,

¹³ To the dimension proper versus common must also be added that of generic versus non-generic (to account for the conditioning of the Yir-Yoront ergative case suffix -*l*, which occurs in generic nouns and in *wanh*, *wohol* 'who' versus *ngan*, *nginirr* 'what'; see Alpher 1991:33) and that of long (in morae) versus short (to account for the conditioning of the ergative suffix -*lu* in languages in which this attaches only to nouns of three or more morae, like Warlpiri, while in closely related languages, like Ooldea Western Desert (Douglas 1964:58), -*lu* attaches to proper as opposed to common nouns).

respectively). Furthermore, the nouns (for instance, those in examples 1–10) containing the *n* in question in this paper constitute a diverse collection from the standpoint of animacy or any other trait conferring ‘highness’ in the hierarchy of nouns. Consider, however, the following paradigms:

TABLE 4: DATIVE INFLECTION IN KALA LAGAW YA

	Common nouns	Masculine proper nouns	Feminine proper nouns
Absolutive	<i>sarka</i> ‘river’	<i>Kame</i>	<i>Ii</i>
Dative	<i>sarkaka</i>	<i>Kamenka</i>	<i>Inaka</i>

Here the *-n-* of the masculine proper noun paradigm is perhaps to be identified with the ‘inverse’ or accusative *-n-* discussed above. But the *-na-* of the feminine proper noun paradigm clearly has a different origin and resembles nothing in Kala Lagaw Ya so much as the feminine third person pronoun base *na*. This latter is cognate with the pronoun ‘she’ in a number of languages to the south, with forms that evidently continue **nya(a)* (see Alpher 1987:173–175). Can this **nya(a)* be identified with the disappearing final *n* in Cape York languages discussed above? I sketch below the assumptions and scenarios necessary to support a ‘yes’ answer.

It is likely that Proto Pama-Nyungan, and probably Proto Paman, had a system of at least two grammatical genders, masculine and feminine, and that the third person singular pronoun roots for these genders were **nyu* and **nya(a)*, respectively (Alpher 1987:174–175). Suppose that this protolanguage was of the general morphological gender-marking type of contemporary Bundjalung (Crowley 1978:43–48) and Djingili (Chadwick 1975:16–19), that is, gender is registered in concord with adjectives and cross-referencing pronouns and is marked with suffixes on nouns, but not all nouns of a given gender have the same gender suffix and many have no suffix at all. Suppose further that one of the feminine gender suffixes was a cliticised form of the pronoun **nya(a)*, namely **ny*.¹⁴

¹⁴ If the protoform of the root of the feminine pronoun contained a final **n* (as **nyan*), as Kristina Sands (pers. comm.) holds, there are difficulties for the hypothesis of a cliticised pronoun as a source for final **ny*. Another possible candidate for the hypothetical **ny* for which an account is sought is the widespread accusative suffix **-nya*. Note however that in a language like Yir-Yoront, protolanguage case-endings of the form **-CV* have left a trace on protolanguage disyllabic stems in the modern language, yielding disyllabic inflected forms; hence the absolute **pama > pam* ‘person’ and the ergative **pamalu > pamal*, but the absolute **tjamal > thaml* ‘foot’. Synchronously speaking, suffixes like *-l* (ergative) can be said to lack a final vowel and to condition the appearance of the thematic vowel of the stem to which they are attached. But clitic pronouns, having also lost their final vowels in a historical process, do not condition the appearance of thematic vowels on words to which they are cliticised; hence **nyulu > nholo* ‘s/he’, clitic *l/vl*, as in *pamvl* ‘the person, s/he’). Because the Yir-Yoront nouns with the *n* (<**ny*) in question that continue original disyllables have lost their second vowels (hence *kathn* ‘yamstick’ < **katjin(y)*), it seems unlikely that this *n* continues an earlier accusative (inflectional) suffix. (Derivational suffixes, like clitics, do not condition the appearance of thematic vowels in contemporary Yir-Yoront, so the distinction between clitic and derivational suffix does not seem to be phonologically crucial with regard to the scenario being developed here. See, however, fn.16 concerning the Yir-Yoront form *pirtilt* ‘grasshopper’.) As a second example of final *n* from a putative clitic, consider the following kinship terms: Kuuk-Thaayorre (in address) *thu(u)wn* ‘woman’s child’, Gugu-Badhun *thuwana* ‘nephew’, Bidjara *dhuwana* ‘son’. Compare these with, on the one hand, Guugu-Yimidhirr *dhuway* ‘woman’s child’, Kuku-Yalanji *dhuway* ‘sister’s son’, and Yuulngu *dhuway* ‘MoBrCh’, and on the other hand, Wik-Mungkan *thuw*, Yir-Yoront (in address, as a variant of *thuwa*) *thuw* ‘woman’s child’, and Ngarluma *thuwa* ‘father’s sister’ (the variation in glosses here is in part a function of the haphazard nature of vocabulary collection but in part also a matter of systematic semantic change, with regard to which see Alpher (1982:25, 30)). The Queensland languages vary as to whether the form ends in *n(a)*, *y* or nothing in a way that cannot be accounted for by phonological conditioning. Languages that attest *thuwana* also

The question then arises, were the nouns of examples (1)–(12) feminine, and if so, which other ones were? Comparison with nouns of the same meanings in Dyirbal, Bundjalung and Djingili yields no correlation worth mentioning.¹⁵ If the protolanguage in question had a two-gender system, however, it is possible that that system was of the semantic type of modern Kala Lagaw Ya, in which virtually all nouns are feminine unless they refer to male beings (Bani 1987; Alpher 1987:173–174). If so, the loss of the putative feminine marker *ny from those nouns that carried it would seem plausible under conditions of change to a system in which all nouns are masculine unless they refer to female beings or to a system with no grammatical gender. The retention of putative *ny in reflexes of *katjin then becomes intelligible in consideration of the prototypical association of yamsticks with women, to the point where reflexes of *katjin, like Dyirbal *gadyin* ‘girl’, can have ‘female’ as a primary component of the meaning; *ny is not lost in this form because it retains its feminine meaning until the entire system has changed to one without grammatical gender.

Dyirbal is only distantly related to the Paman languages, but it is worth asking to what, if any, extent it has participated in the putative historical developments postulated above. Dyirbal nouns in final ny are relatively more rare than those in final n, and those in ny do not appear to have widespread cognates (but see remarks on ‘grasshopper’ in §5). It is plausible, therefore, to suppose that Dyirbal underwent a conflation of final *ny and *n as n, and that the -n paradigmatic constant in the absolute case-forms of the feminine gender-marked demonstratives (*bala-n* ‘there’, *yala-n* ‘here’, etc.; see Dixon 1972:254) continues an earlier *ny. A Dyirbal form that is problematic for the hypothesis that final n from a putative *ny is a vestigial marker of feminine gender is the adjectival *bulgan* ‘big’ (example 6). It is problematic because it is not to be expected that adjectives will carry inherent gender marking.

In some instances in which cognate sets from Cape York languages uniformly have n, the n is lacking in cognates from languages outside the area. For example, as against Yir-Yoront *lipn*, Uw-Oykangand *ifan*, Kok-Kaper *rrvpen* ‘termite mound’, compare Pintupi *tiipa*, Manjiljarra *tipa* ‘termite mound’. Compare also the Cape York *katjin ‘yamstick’ forms with *kathirra* (citation form, *kathirr*) ‘digging stick’ in Kayardild, a language only distantly related. The hypothesis that Cape York n continues a gender marker is consistent with the

attest other kinship terms in na, as for example Gugu-Badhun *kami(na)* ‘MoMo’, *papina* (< **papi*) ‘FaMo’, and *pimu(na)* (< **piimu(r)*, **pima*) ‘FaSi’, and Warlpiri attaches -na (‘my’) to certain of its kinship terms (Nash 1992:126; Laughren 1982:74). The n (pronounced with a transitional schwa, [vn]) of the Kuuk-Thaayorre form does not have the phonological effect that a monosyllabic inflectional suffix would be expected to have, namely to preserve the second vowel of **tjuwa*; in its loss of the vowel of the last syllable, Kuuk-Thaayorre has undergone exactly the same process as Yir-Yoront: absolute *pam* ‘person’, ergative *pamat*; absolute *thamr* [thamvr] ‘foot’. Hence, it is plausible to suppose that this kinship n continues a clitic for the same historical-phonological reason that it is plausible to suppose that the n of *kathn* ‘yamstick’ does. The kinship clitic, na, presumably continues a form meaning ‘my’, to judge from the Warlpiri evidence and its attestation in Queensland in terms of address. Does it continue as well the widespread first person singular subject clitic form -rna? Against this supposition are the facts that -na and -rna are phonologically distinct in Warlpiri and other languages of its area and that *-rna as a subject clitic (‘I’) does not seem to be attested in Cape York. In its favour is the fact that a nominative first person pronoun in a language like Yir-Yoront and Kuuk-Thaayorre is used in certain contexts in a way that invites an English rendition as ‘my’. These contexts are the statement ‘I [call A] B’ (*Ngoyo Thuwa* ‘I [call him] son’, ‘He is my son’) and the practice, presumably based on the preceding, of crying out in mourning (*Ngoy Thuweee#My son!*; Kuuk-Thaayorre *Ngay Thuwn uuuuy#My son!*).

¹⁵ Comparison of consonant-final nouns in Guugu-Yimidhirr and in Bidjara (which, with *djalany* ‘tongue’ appears not to have conflated final *ny and *n) with nouns of the same meaning in Dyirbal yields no apparent correlation of final consonant with gender in Dyirbal.

existence of such examples. On the other hand, forms like **tjalany* ('tongue'), whose reflexes seem everywhere to retain *ny* or its successor *n*, would appear to require a separate account.

5. CONCLUDING REMARKS

The claim that fluctuating final *n* in nouns in the languages of Cape York Peninsula continues an **ny* that was a marker of feminine gender is highly conjectural. Before any such claims can be made convincing, there is a necessity for further detailed study of the semantics of gender in the region and of semantic constants among nouns ending in the same consonants in the various languages. And the discussion needs to be widened to take in non-correspondences in other than *n* versus zero. Such, for example, are Tjaapukay and Yidiny *bundim*, Guugu-Yimidhirr *bundiil*, Dyirbal *bundiny* (feminine), Nyawaygi *bunding*, Uw-Oykangand *urdndl* and Yir-Yoront *pirtilt*,¹⁶ all 'grasshopper'; Yir-Yoront *thawl*, Dyirbal *dyawun* (masculine), both 'dillybag'; etc. Is the discrepant *n* in the widely attested *ngamun* 'breast' or 'mother', *ngama* 'mother' an example of the *n* under consideration above? These facts await further investigation.

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¹⁶ With regard to the discrepancies in the final consonants of the 'grasshopper' words and in similar cognate sets, see also Sutton (1973:39). Yir-Yoront *pirtilt* 'grasshopper' evidently continues a trisyllable of the form **puntiltV* or **puntir.tV*, in which the *-*ltV* or *-*r.tV* presumably was a derivational suffix. So it appears that derivational suffixes of the form *-CV did at one time prevent elision of the vowel of the preceding syllable, just as inflectional suffixes did.

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PROTO CENTRAL NEW SOUTH WALES PHONOLOGY

PETER AUSTIN

1. INTRODUCTION¹

I have great pleasure in offering this paper for G.N. O'Grady. I first met Geoff in May 1974 when I was at a post-conference party hosted by Bob Dixon following the international symposium on grammatical categories in Australian languages held by the (then) Australian Institute of Aboriginal Studies. I and the other undergraduate students in attendance were held spellbound as Geoff and Ken Hale regaled us with stories of their 1960s fieldwork that established the basis for modern linguistic classification in Australia.

My first real conversation with Geoff took place at the 1978 Linguistic Society of America annual meeting in Boston. Geoff had heard that I had just spent a year in Western Australia during which I carried out fieldwork on a number of the Gascoyne–Ashburton languages that he had recorded in 1958, 1960 and 1967, and so the conversation began with Geoff speaking in Purduna (*Wathaartingii?* ‘Where are you from?’ was his opening gambit, as I recall). Like me, he had been struck by the phonologically unusual nature of this language (with its contrastive voiced stops, stop-stop consonant clusters, lack of any nasal-stop clusters, and ubiquitous long vowels—compare the corresponding Thalanyji question *Wanthaparnti nyinta?*). We agreed to share our data on Gascoyne–Ashburton languages, and following the LSA meeting Geoff supplied me with copies of his 1967 comparative wordlists. In the summer of 1979 my wife and I visited Geoff and Alix in Victoria, B.C., where we again swapped data and cognates—a deal of this freely-given material I incorporated into my report entitled ‘Proto-Kanyara and Proto-Mantharta historical phonology’ (Austin 1981), a paper that owes much to Geoff’s seminal work on Proto Ngayarta historical phonology (O’Grady 1966).

Over the years, I have benefited hugely from continued contact with Geoff and his uninhibited generosity with data and ideas. I hope that this paper on the historical phonology of a group of languages from the opposite side of the continent will stand as a small token of my gratitude and respect for Geoff O’Grady.

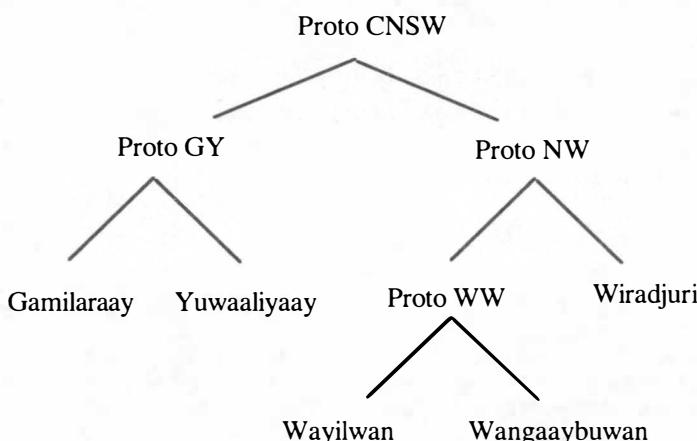
¹ The bulk of this paper was written while I was Visiting Associate Professor at Stanford University on sabbatical leave from La Trobe University. I am grateful to La Trobe University and Stanford University Linguistics Department for financial and logistic support which made this possible. Thanks are also due to Bob Dixon, Tamsin Donaldson, Lynette Oates, the late Norman Tindale and S.A. Wurm for making unpublished data on New South Wales languages available for study. Tamsin Donaldson read an earlier draft and made a number of suggestions for improvement. I owe a great debt to speakers of Gamilaraay, who shared their knowledge of the language with me, especially the late Bill Reid.

2. CENTRAL NEW SOUTH WALES LANGUAGES

The centre of what is now New South Wales was traditionally occupied by speakers of several Aboriginal languages that were spoken over a vast geographical area. In the north were the Gamilaraay (commonly spelled Kamilaroi) whose traditional home covers much of what is now referred to as the north-west slopes and plains. It extended from as far south as Murrurundi on the Great Dividing Range, to Boggabilla, Mungindi, Walgett and Gunnedah. North-west of the Gamilaraay were the Yuwaaliyaay (or Euahlayi) and Yuwaalaraay who occupied a smaller territory from Walgett to Goodooga, including around Lightning Ridge. Their southern neighbours, between the Darling and the Lachlan Rivers, were the Wayilwan and Wangaaypuwan (or Wongaibon) who spoke the Ngiyampaa language. East of the Wangaaypuwan and south of Gamilaraay were the Wiradjuri, whose country extended east to the Great Dividing Range and south almost to what is now the Victorian border.

Material on the languages traditionally spoken in central New South Wales (henceforth CNSW) has been collected by Europeans for over 160 years, beginning in February 1832 with the explorer Major Thomas Mitchell. However, phonetically reliable data only became available with the research of N.B. Tindale in 1938 (see Austin & Tindale 1986) and S.A. Wurm in 1955 (on Gamilaraay, Wayilwan and Wangaaypuwan). This was followed by in-depth studies carried out by Donaldson (1980) on Ngiyampaa, and Williams (1980) on Yuwaaliyaay. Recently, works by Austin (1992, 1993) on Gamilaraay, and Hosking and McNicol (1994) on Wiradjuri, have attempted to reconstitute data on these languages based primarily on nineteenth century sources supplemented by the sparse modern materials (cf. Austin & Crowley 1995, Austin 1986). We are now in a good position to explore the comparative relationships of these languages in some detail.

A preliminary classification of CNSW languages was proposed by Austin, Williams and Wurm (1980—actually written in 1978), using the information then available. We suggested that all the languages were related, with a primary subgroup division between Gamilaraay–Yuwaaliyaay (GY) and Ngiyampaa–Wiradjuri (NW), as follows:



Building on the research completed since 1980 it is now possible to propose an up-dated and expanded reconstruction of the ancestors of these languages, and further detail their historical phonology. Reliable lexical information on neighbouring languages is also now available: on Muruwari by Oates (1988), Gumbaynggirr by Eades (1979), and Bandjalang by Sharpe

(1992). The present paper incorporates this material to revise the preliminary classification and reconstructions of Austin, Williams and Wurm (1980), retaining the major points of the classification proposed there.

3. PROTO CNSW SOUND SYSTEM

The reconstructed Proto CNSW vowels and consonants are set out in the following table:

	Front		Central		Back	
	Short	Long	Short	Long	Short	Long
High	*i	*ii			*u	*uu
Low			*a	*aa		
	Bilabial		Lamino-dental	Apico-alveolar	Lamino-Palatal	Dorso-velar
Stops	*b		*dh	*d	*dj	*g
Nasals	*m		*nh	*n	*ny	*ng
Lateral				*l		
Flap				*r		
Glides	*w				*y	

In this table, consonants reconstructed as occurring in word-initial position are enclosed in solid lines; word-final consonants are shaded. Each of the daughter languages except Wiradjuri now prohibits word-final nasals apart from the apico-alveolar *n*. In Wangaaypuwan and Wayilwan morpheme-final non-apical nasals surface when suffixes are added to elements which historically ended in a non-apical nasal (see below for further details). All Proto CNSW consonants occur word medially.

Proto CNSW words began with one, and only one, consonant and minimally contained a (short or long) vowel. All monosyllabic words can be reconstructed as ending in a consonant: the consonants *n* and *l* followed short vowels, as in **dhun* ‘penis, tail’ and **mil* ‘eye’, while *ny* followed long vowels, as in **dhaany* ‘this way’, **dhiiny* ‘meat’, **ngaany* ‘mouth’ and **ngiiny* ‘anus’ (there are some open monosyllabic verb roots that are reconstructable, such as **dhu-* ‘to pierce’, **nga-* ‘to see’ and **yu-* ‘to cry’, but these would always have taken a suffix when used as verb words). The majority of forms that are reconstructable for Proto CNSW are disyllabic, beginning with a single consonant, and containing at most two consonants medially. The canonical word shape for disyllables is thus: CV(V)(C)CV(V)(C). Reconstructed word-medial consonant clusters include:

1. homorganic nasal-stop: *mb*, *ngg*, *nd*, *ndh*, *ndj*;²
2. apical nasal plus peripheral stop: *nb* and *n.g* (the latter attested in Proto GY only);

² The *ndj* cluster is only attested in one cognate set for PGY, suggesting that it may have been missing in PCNSW.

3. apical liquid plus peripheral stop: *rrb*, *rrg* and *lb*, *lg*;
4. one instance each of the following in Proto GY only: *yg*, *rrm*, *ldh*.

Vowels do not occur in word-initial position in Proto CNSW or any daughter language. Long vowels are reconstructable in all syllables.

4. PHONOLOGICAL DEVELOPMENTS IN DAUGHTER LANGUAGES

4.1 DEVELOPMENTS FROM PROTO CNSW

There have been several sound shifts affecting the descent of final nasals between Proto CNSW and all the daughter languages except Wiradjuri. All other daughter languages have prohibited word-final nasals except apico-alveolar *n*; in PGY final *ng was deleted, and final *ny shifted to *y* after *a (merging with *y* arising from *y), and was deleted after *i. In PWW word-final nasals *ng and *ny were similarly shifted, however nasals surface in suffixed forms as a nasal segment that is homorganic with the consonant that begins the suffix. Donaldson (1980) analyses such forms as ending in a nasal archiphoneme *N* in her grammar of Wangaaypuwan. The following are the relevant sound changes:

- (a) word-final *ng in PCNSW descends as zero in PGY and as *N* in PWW. Examples (see §5 for full attestation) are: *-baang ‘domain’, *biring ‘chest’, *burralgang ‘brolga’, *-dhalibaang ‘privative’, *dhaarang ‘drunk’, *dharrang ‘thigh’, *dhinang ‘foot’, *dhurung ‘brown snake’, *galgaang ‘plural’, *galing ‘water’, *ganang ‘liver’, *gilaang ‘galah’, *gunang ‘faeces’, *gunanggalang ‘sky’, *guruung ‘bandicoot’, *guwang ‘fog, mist’, *marrang ‘good’, *minyang ‘what’, *murung ‘nose’, *ngamung ‘breast’, *ngarrabaang ‘alas!’, *ngulung ‘forehead’, *ngurrung ‘night’, *wandang ‘ghost’, *yirang ‘tooth’, *yurung ‘cloud’. We can summarise these changes as follows:

PCNSW	*ng	—→	PGY	Ø	/	__#
PCNSW	*ng	—→	PWW	<i>N</i>	/	__#

Note that vowel-final roots must be reconstructed for PCNSW and it is not the case that PNW added *ng*. This is shown by such reconstructed forms as *bundi ‘club’, *burru ‘testicles’, *buyu ‘shin’, *dhanga ‘heel’, *guya ‘fish’, *mara ‘hand’, and *yulu ‘fingernail’;

- (b) word-final *ny in PCNSW descends as *y* in PGY and as *yN* in PWW following *a, as in: *birrany ‘uninitiated youth’, *dhaany ‘this way’, *dhalany ‘tongue’, *galamaany ‘younger brother’, *guwany ‘blood’, *muraany ‘white cockatoo’, *ngaany ‘mouth’, *wurrumany ‘son’, *yarrany ‘beard’ and *yulany ‘skin’. There is one reconstruction showing PCNSW *ny descending as *yN* in PWW following *u, namely *guuny ‘ghost’ (GY cognates are missing). Thus, the change is:

PCNSW	*ny	—→	PGY	<i>y</i>	/	<i>a</i> __#
PCNSW	*ny	—→	PWW	<i>N</i>	/	<i>a, u</i> __#

In PGY there was a merger between final *ny and final *y; contrast the forms listed above with those reconstructed as ending in *y, namely: *barraay ‘fast’, *buluuy ‘black’, *ganaay ‘digging stick’, *garay ‘sand’, *gulay ‘string bag’, *migay ‘girl’, and *yagaay ‘hey!';

- (c) word-final *ny in PCNSW descends as zero in PGY and as *yN* in PWW following *i, as in: *buurriiny ‘older sister’, *dhiiny ‘meat’, *dhuliiny ‘sand goanna’, *giiliny ‘urine’,

**giiny* ‘heart’, **mayiny* ‘Aboriginal person’, **ngiiny* ‘anus’, **wiiny* ‘fire’, and **yulubirrginy* ‘rainbow’. This change can be summarised as:

PCNSW	*ny	→	PGY	Ø	/ i__#
PCNSW	*ny	→	PPW	yN	/ i__#

Final **n*, **l* and **rr* descend unchanged in all daughter languages.

Initial and medial consonants are generally unaffected in PNW, except that there has been a merger of medial *rr* and *r* (see §4.2). Also, initial **y* merges with **w* before **i* in PPW, and Wayilwan has shifted initial **b*—see §4.2 for details. There are a number of medial consonant shifts in PGY, detailed in §4.3. Vowels are reflected unchanged in all daughter languages (apart from some apparent shifts in vowel length that do not follow a regular pattern—some of these irregularities may be due to errors in the sources).

4.2 DEVELOPMENTS IN WAYILWAN AND WANGAAYBUWAN

There are some interesting correspondences in the reflexes in PPW of the two reconstructed PCNSW ‘r-sounds’ **rr* and **r*. We find that there are three correlations in intervocalic position between forms in the two main branches of CNSW:³

1. WW has *rr* where GY also has *rr*. This is seen in **barra-y* ‘to fly’, **barraay* ‘fast’, **birrany* ‘uninitiated boy’, **burralgang* ‘brolga’, **burrii* ‘brigalow’, **buurriiiny* ‘older sister’, **dharraang* ‘drunk’, **dhaarang* ‘thigh’, **dhaararr* ‘rib’, **dhirridhirri* ‘willie wagtail’, **warra-* ‘to stand’, and **yarrany* ‘beard’;
2. WW has *rr* where GY has *r*. This correspondence holds in **biring* ‘chest’, **burungga* ‘bull ant’, **guraarr* ‘long’, **guruung* ‘bandicoot’, **murung* ‘nose’, **wuru* ‘throat’, **yirang* ‘tooth’, and **yurung* ‘cloud’;
3. WW has *r* where GY also has *r*.⁴ This is seen in **baara-y* ‘to jump’, **mara* ‘hand’ and **ngaru-* ‘to drink’.

Correspondences 1 and 2 hold in almost complementary environments: the *rr=r* correspondence always holds between identical high back vowels (i.e. *u__u*, there are four instances of this), and never holds between two low vowels (*a__a*, as shown by seven instances of *rr=rr* and two of *r=r* in this environment). However, the following sets of cognates show that the two correspondences do occur in identical phonological environments:

<i>rr=rr i__i</i>	WB <i>jirrijirti</i>	GA <i>dhirridhirri</i>	YY <i>dhirriirri</i>	‘willie wagtail’
<i>rr=r i__i</i>	WB <i>birriN</i>	GA <i>biri</i>	YY <i>bii</i>	‘chest’
<i>rr=rr i,u__a</i>	WB <i>birray</i>	GA <i>birray</i>	YY <i>birray</i>	‘uninitiated boy’
	WB <i>burralgaaN</i>	GA <i>burralgaa</i>	YY <i>burralga</i>	‘brolga’
<i>rr=r i,u__a</i>	WB <i>wirra</i>	GA <i>yira</i>	YY <i>yiya</i>	‘tooth’
	WB <i>gurraarr</i>	GA <i>guraarr</i>	YY <i>guyaarr</i>	‘long’

³ Unfortunately almost all the data on Wiradjuri is reconstituted and it is difficult if not impossible to be certain of the distinction between *rr* and *r* in the source materials.

⁴ In Yuwaaliyaay and Yuwaalaraay medial PGY **r* has shifted to *y* or been deleted—see below.

These examples show that there has been a shift of PCNSW *r to rr in PWW except between low vowels, resulting in a merger in all other environments of *r and *rr as rr in this branch of CNSW.

A further change affecting these languages is that word-initial PCNSW *y becomes w in PWW when the following vowel is *i, as in *yinarr and *yirang, but not in *yulu and *yulubirrginy. This sound change represents dissimilation of the initial glide away from the place of articulation of the following vowel.

There is one sound change which has affected Wayilwan alone among the Ngiyampaawiradjuri languages, namely: word-initial PNW *b becomes w in Wayilwan when the following vowel is *a, as in *bagin ‘sore’ and *balang ‘head’ (but not in *buga ‘rotten’ and *buthu ‘smoke’). There has also been a sporadic shift of initial PCNSW *b to g in Wayilwan, as in *buma-l ‘to hit’ descending as guma-l. Donaldson (1980:1, 18) also reports some slight differences between northern and southern dialects of Wangaaypuwan (what the speakers call ‘Trida’ and ‘Keewong’ dialects) affecting initial nasals m and ng, and a few other forms.

4.3 DEVELOPMENTS IN GAMILARAAY AND YUWAALIYAAY

Apart from the sound shifts between PCNSW and PGY affecting the descent of final nasals detailed in §4.1, there have been a number of other developments in PGY, including consonant mergers and simplification of medial consonant clusters. In addition, Yuwaaliyaay and Yuwaalaraay have eliminated medial *r through a shift to y or by deletion. The following are the sound changes which have affected GY languages:

- (a) medial PCNSW *g descends as PGY w adjacent to *a and *u, and as y adjacent to *i, as shown by: *bagin ‘sore’, *dhagun ‘ground’, *gabugaa ‘head’, and *migay ‘girl’ (but cf. *waagaan ‘crow’ where medial *g is unaffected, perhaps because of initial *w). Medial PCNSW *b descends as w in PGY when followed by *i, as in: *gibirr ‘man’ and *yulubirrginy ‘rainbow’. Note that medial *w and *y descend unchanged in PGY, as in: *buyu ‘shin’, *dhinawan ‘emu’, *galiyaay ‘to climb’, *giyal ‘afraid’, *giyan ‘centipede’, *guwang ‘fog, mist’, *guwany ‘blood’, *guya ‘fish’, and *maliyan ‘eaglehawk’. We thus see several mergers in medial position in PGY: the reflexes of *b, *g and *w merge as w, and *g and *y merge as y. The sound changes can be abbreviated as:

PCNSW	*g	—>	PGY	w	/	a, u
PCNSW	*g	—>	PGY	y	/	i
PCNSW	*b	—>	PGY	y	/	—i

- (b) medial PCNSW consonant cluster *rg descends as rr in PGY. This is seen in: *barrgan ‘boomerang’ and *yulubirrginy ‘rainbow’. There are a few other apparent cluster simplifications: PCNSW *mb descends as PGY b in *buumbi-l ‘to blow’ and *gumbi-y ‘to swim’ (resulting in a merger with b arising from PCNSW *b), and PCNSW *ngg descends as PGY g in *burungga ‘bull ant’ and *gunanggalang ‘sky’ (but cf. *yinggil ‘lazy’ where *ngg descends unchanged). Other clusters and medial consonants are unaffected. The cluster simplifications are:

PCNSW	* <i>rrg</i>	—→	PGY	<i>rr</i>
PCNSW	* <i>mb</i>	—→	PGY	<i>b</i>
PCNSW	* <i>nbg</i>	—→	PGY	<i>g</i>

In the descent from PGY, Yuwaaliyaay and Yuwaalaraay have undergone a number of changes in the reflection of PGY **r*, including deletion and shift to *y* (resulting in a merger with *y* deriving from **y*). Deletion of **r* occurs in two environments:

- (a) between identical vowels in disyllables, as in: **baara-y* ‘jump’, **biring* ‘chest’, **garay* ‘word’, **mara* ‘hand’, **yurung* ‘cloud’, **nguru* ‘he’, and **yaraay* ‘sun’. Four items are exceptions to this change, namely **garay* ‘sand’ (where **ara* descends as *aya*), and **murung* ‘nose’, **thurung* ‘brown snake’, **wuru* ‘throat’ (where **uru* descends as *uyu* rather than the expected *uu*). There seems to be no phonological explanation to these exceptions—perhaps they reflect the fact that the shift to *y* and its later deletion were changes in progress not yet completed when Yuwaaliyaay and Yuwaalaraay were recorded;
- (b) in polysyllables that contain a **y* later in the word, as in: **barayamal* ‘black swan’, **dhuryaal* ‘right hand’, **marayin* ‘wild dog’ and **wuruyan* ‘curlew’. This is an instance of dissimilation since in other environments **r* shifts to *y*.

In all other environments Yuwaaliyaay and Yuwaalaraay reflect PCNSW and PGY **r* as *y*, that is:

- (c) in disyllables where the preceding and following vowels differ in **quality**, as in: **guraar* ‘long’, **muraany* ‘white cockatoo’, **yirang* ‘tooth’, **biruu* ‘far’, **bura* ‘bone’, and **dhuraay* ‘flame, light’. There are two examples showing this development when the vowels differ in **quantity**, namely **garaay* ‘nits of louse’, and **guruung* ‘bandicoot’ (but, cf. in (a) above **baraa-y* ‘to jump’ and **yaraay* ‘sun’ where **r* is deleted);
- (d) in polysyllables that do not contain a **y* later in the word, as in: **burungga* ‘bull ant’, **burabura* ‘thin’, **buruma* ‘dog’, **dhigaraa* ‘bird’, **waragaal* ‘left hand’, **waramba* ‘turtle’, and **warawara* ‘crooked’.

We can summarise these changes in Yuwaaliyaay and Yuwaalaraay as follows:

* <i>r</i>	—→	Ø	/	CV ₁ —V ₁ (C)
* <i>r</i>	—→	Ø	/	CV—V...y...
* <i>r</i>	—→	<i>y</i>		elsewhere

Cognates attesting all these sound changes are given in the following section.

5. PROTO CNSW RECONSTRUCTIONS AND ATTESTATIONS

The following sections list the reconstructions and reflexes that support the changes presented above. I have also given cognates in neighbouring languages where these can be found.

Abbreviations used in these listings are:

1. language names—BJ Bandjalang, GA Gamilaraay, GU Gumbaynggir, MW Muruwari, WB Wangaaybuwan, WJ Wiradjuri, WA Wayilwan, YY Yuwaaliyaay
2. sources—H&M: Hosking and McNichol (1994), O: Oates (1988)

Forms that are reconstructed for an ancestor language are preceded by *, and forms that are reconstituted on the basis of pre-modern materials are preceded by % (see the Appendix for presentation of the pre-modern sources for these forms). Reflexes are given in groups separated by semi-colons in the order: PNW reflexes (WJ, WB, WA), PGY reflexes (GA, YY), and non-PCNSW reflexes (BJ, GU, MW). I have adjusted the spelling of the Wiradjuri and Muruwari materials since Hosking and McNichol (1994) and Oates (1988) use different spelling systems than that adopted here—in all such instances the original source is given in quotation.

5.1 RECONSTRUCTIONS WITH REFLEXES IN BOTH GAMILARAAY–YUWAALIYAAY AND NGIYAMPAA–WIRADJURI SUBGROUPS

1. *-baang ‘domain’ WJ -baang, WB -baaN; GA %-baa, YY -baa
2. *baara-y ‘to jump’ WB baaraN-y; GA %bara-y, YY baa-y
3. *babaa ‘father’ WJ babiin (H&M: “babeen”), WB baabaaN; GA babaa, YY bubaa; GU baaba
4. *bagin ‘sore’ WB bagin, WA wagin; GA, YY bayin
5. *balu-ŋg ‘to die’ WJ balu-ŋg, WB baluN-y; GA, YY balu-ŋg; BJ balaana- ‘die’
6. *banaga-y ‘to run’ WB banaga-y; GA, YY banaga-y
7. *bandaarr ‘grey kangaroo’ WJ bandaarr (H&M: “bandharr”), WB bandarr; GA, YY bandaarr
8. *barraay ‘fast’ WB barraay; GA, YY barraay
9. *barra-y ‘to fly’ WJ barra- (H&M: “barra-”), WB barra-y; GA, YY barra-y
10. *barrgan ‘boomerang’ WJ barrgan, WB balgaaN; GA, YY barran
11. *bilaarr ‘belah tree, spear’ WJ bilaarr (H&M: “bilarr – swamp or river oak”), WA, WB bilaarr; GA, YY bilaarr, BJ bilahr
12. *biliirr black cockatoo WJ biliirr (H&M: “bilir”); GA, YY biliirr
13. *birging ‘chest’ WJ birring, WB birriN; GA biri, YY bii
14. *birrany ‘uninitiated boy’ WJ birrany (H&M: “birrayn”), WB birray; GA %birray, YY birray
15. *buluuy ‘black’ WB buluy; GA, YY buluuy
16. *buma-l ‘to hit’ WJ buma-l, WB buma-l, WA guma-l; GA, YY buma-l; BJ bumili- ‘fight, kill’, GU bu(m) ‘hit, kill’
17. *bundi ‘club’ WJ bundi (H&M: “bundhi”), WB, WA bundi; GA, YY bundi; MW bundi (O: “punti”)

18. **burralgang* ‘brolga’ WJ *burralgang*, WB *burraalgaaN*; GA, YY *burralgæ*, MW *burraalga* (O: “purraaka”)
19. **burrii* ‘brigalow’ WJ *burrii* (H&M: “buurree”); GA %*burrii*, YY *burrii*
20. **burru* ‘testicles’ WJ *burru* (H&M: “buurruu”), WB *buru*; GA, YY *burru*
21. **burungga* ‘bull ant’ WB *burruunggaa*; GA %*burudha*, YY *buyuga*
22. **buumbi-l* ‘to blow’ WB *buumbi-l*; GA, YY *buubi-l*; MW *bumbi-* (O: “pumpi-”), BJ *buumbi-* ‘blow (of wind)’, GU *buumbi* ‘smoke, break’
23. **buurriiny* ‘older sister’ WB *buurriiN*; GA %*buurrii*
24. **buyu* ‘shin’ WB, WA *buyu*; GA, YY *buyu*; MW *buyu* (O: “puyu”)
25. **dhaany* ‘this way’ WJ *dhaany* (H&M: “dhaayn”), WB *dhaayN*; GA, YY *dhaay*
26. **dhaa-rr* ‘to copulate’ WJ *dhaarri* (H&M: “dharri”), WB *dhaa-rr*, GA *dhaa-n*; MW *dhaa-*
27. **dhagun* ‘ground’ WJ *dhagun* (H&M: “dhagun”), WB, WA *dhagun*; GA *dhawun*; BJ *jagun* ‘ground, country’, GU *jagun* ‘homeground, territory’
28. **dhalany* ‘tongue’ WJ *dhalany* (H&M: “dhalayn”), WB *dhalayN*, WA *dhalay*; GA, YY *dhalay*; MW *dhalany* (O: “thalanj”), BJ *yalany*, *jalany* ‘throat’, GU *jalaany* ‘mouth’
29. *-*dhalibaang* ‘privative’ WJ -*dhalabaang*, WB -*dhalabaaN*; GA %-*dhalibaa*, YY -*dhalibaa*
30. **dhanga* ‘heel’ WB *dhanga*; GA, YY *dhanga*
31. **dharmaang* ‘drunk’ WB *dharmaaN*; GA *dharmaa*, MW *dharmaa*, BJ *jarang*
32. **dharrang* ‘thigh’ WJ *dharrang* (H&M: “dharrang”), WB *dharmaN*, WA *dharma*; GA *dharma*; MW *dharma*, BJ *jarang*, GU *jaara*
33. **dharrarr* ‘rib’ WJ *dharrarr* (H&M: “darrarr”); GA %*dharrarr*
34. **dha-l* ‘to eat’ WJ *dha-l* (H&M: “dha-l”), WB *dha-l*; GA, YY *dha-l*; MW *dha-*
35. **dhiiny* ‘meat’ WJ *dhiiny* (H&M: “dhiyn”), WB *dhinggaaN*; GA *dhiii*
36. **dhinang* ‘foot’ WJ *dhinang* (H&M: “dhinang”), WB *dhinaN*, WA *dhina*; GA, YY *dhina*; MW *dhina*, BJ *jinang*, GU *jiina*
37. **dhinawan* ‘emu’ WJ *dhinawan* (H&M: “dinawan”); GA, YY *dhinawan*
38. **dhirridhirri* ‘willie wagtail’ WJ *dhirridhirri* (H&M: “dhirridhirri”), WB *djirridjirri*; GA *dhirridhirri*, YY *dhiriirri*; MW *djididjindi* (O: “tjinti-tjinti”)
39. **dhuliiny* ‘sand goanna’ WJ *dhuliiny* (H&M: “dhuuliyn, dhuuleeyn”), WB *dhuliiN*, WA *dhuli*; GA *dhuli*
40. **dhun* ‘penis, tail’ WJ *dhun* (H&M: “dhuun”), WB *dhun*; GA *dhun*; MW *dhun*, BJ *jun*, GU *juun*
41. **dhurung* ‘brown snake’ WJ *dhurrung* (H&M: “dhuurruung”), WB *dhurruN*, WA *dhurru*; YY *dhuyu*
42. **dhu-rr* ‘to pierce’ WB *dhu-rr*; GA *dhu-ng*, YY *dhu-rr*
43. *-*dhuul* ‘diminutive’ WB -*dhuul*; GA, YY -*dhuul*

44. **gaa-ng* ‘to carry’ WJ *gaa-ng*, WB *gaaN-y*; GA, YY *gaa-ng*; MW *gaa-* (O: “kaa-”), BJ *gaanga-*
45. **gabugaa* ‘egg’ WJ *gabugaa* (H&M: “gabuga”), WB *gabugaaN*, WA *gabu*; GA *gawugaa*; MW *gabuny* (O: “kapunj”), BJ *gabuny*
46. **galamaany* ‘younger brother’ WJ *galamaany* (H&M: “galmayn”), WB *galbamay*, WA *galumaay*; GA, YY *galamaay*
47. **-galgaang* ‘plural’ WB *-galgaaN*; GA %-*galgaa*, YY *-galgaa*
48. **galing* ‘water’ WJ *galing*, *galiny* (H&M: “galing, galiyn”), WB *galiN*, WA *gali*; GA *gali*
49. **galiyaa-y* ‘to climb’ WB *galiyaa-*; GA *galiyaa-y*, YY *galiyaa-y*
50. **gama-l* ‘to break’ WB *gama-l*; GA %-*gama-l*, YY *gama-l*
51. **ganaay* ‘digging stick, yamstick’ WJ *ganaay*, WB *ganay*; GA, YY *ganaay*; MW *ganay* (O: “kanay”), BJ *ganay*, GU *ganay*
52. **ganang* ‘liver’ WJ *ganang*, WA *gana*; GA, YY *gana*; MW *garna* (O: “kama”), GU *ganaanggirr*
53. **garay* ‘sand’ WJ *garaay* (H&M: “garraay”); GA *garay*, YY *gayay*
54. **gibirr* ‘Aboriginal man’ WJ *gibirr*, GA %-*giwirr*, BJ *giibar* ‘fully-initiated man’
55. **gidjirrigaa* ‘budgerigar’ WB *gidjirrigaa*; GA, YY *gidjirrigaa*
56. **giiliny* ‘urine’ WJ *giil* (H&M: “geel”), WB *giiliN*; GA *giili*, YY *giiliy*
57. **giiny* ‘heart’ WJ *giiny* (H&M: “geeyn”), WB *giiN*, WA *gii*; GA, YY *gii*
58. **gilaang* ‘galah’ WB *gilaaN*, WA *gilaa*; GA, YY *gilaa*; MW *gila* (O: “kila”)
59. **ginda-y* ‘to laugh’ WJ *ginda-*, WB *ginda-y*; GA, YY *gindama-y*; MW *ginda-* (O: “kinta-”)
60. **giyal* ‘afraid’ WJ *giyal*; GA, YY *giyal*
61. **giyan* ‘centipede’ WJ *giyan*; GA %-*giyan*, YY *giyan*; GU *giya*
62. **gulay* ‘string bag’ WJ *gulay* (H&M: “guulaay”), WB *gulay*; GA, YY *gulay*; MW *gulay* (O: “kulay”)
63. **gulbirt* ‘some’ WB *gulbirt*, GA %-*gulbirt*, YY *gulbirt*
64. **gumbi-y* ‘to swim’ WJ *gumbi-*, WB *gumbi-y*; GA, YY *gubi-y*
65. **gunang* ‘faeces’ WJ *gunang*, WB *gunaN*; GA, YY *guna*; MW *guna* (O: “kuna”), BJ *gunang*, GU *guuna*
66. **gunanggalang* ‘sky’ WJ *gunanggalang*, WA *gunagala*; GA %-*gunagala*, YY *gunagala*
67. **gundhi* ‘house’ WJ *gundji* (H&M: “guunji”), WB *gundji*; GA, YY *gundhi*; MW *gundhi* (O: “kunthi”)
68. **guraarr* ‘long’ WB *gurraarr*; GA *guraarr*, YY *guyaarr*; BJ *guraar*
69. **guruung* ‘bandicoot’ WB *gurruuN*; GA %-*guru*, YY *guyu*
70. **guuma-y* ‘to hide’ WB *guuma-y*; YY *guumaa-y*
71. **guwang* ‘fog, mist’ WJ *guwang* (H&M: “guuwang”), WB *guwaN*; GA %-*guwa*, YY *guwa*; BJ *guwang* ‘rain’, GU *guwa* ‘fog, mist, snow’

72. **guwany* ‘blood’ WJ *guwany* (H&M: “guwayn”), WB *guwayN*, WA *guway*; GA, YY *guway*; MW *guwany* (O: “kuwanj”)
73. **guya* ‘fish’ WJ *guya* (H&M: “guuya”), WB, WA *guya*; GA *guya*; MW *guya* (O: “kuya”), BJ *guyang* ‘species of mullet’
74. **maliyan* ‘eaglehawk’ WJ *maliyan* (H&M: “malyan”), WB, WA *maliyan*; GA, YY *maliyan*; MW *maliyan*
75. **mara* ‘hand’ WJ *mara* (H&M: “marra”), WB, WA *mara*; GA *mara*, YY *maa*; MW *mara*, GU *maala*
76. **marrang* ‘good’ WJ *marrang*; GA %*mairtabaa*
77. **mayiny* ‘Aboriginal person’ WJ *mayiny* (H&M: “mayiyn”), WB *mayiN*, WA *mayi*; GA *mari*; MW *mayiny* (O: “mayinj”)
78. **migay* ‘girl’ WJ *migay*; GA *miyay*, YY *miyay*
79. **mil* ‘eye’ WJ *mil*, WB, WA *mil*; GA, YY *mil*; MW *miil*, BJ *miyi*, GU *miil*
80. **minyang* ‘what’ WJ *minyang*, WB *minyaN*; GA, YY *minya*; MW *minyan* (O: “minjan”)
81. **munhi* ‘louse’ WJ *munha*; GA *munyi*, YY *munhi*; GU *muunyu*
82. **muraany* ‘white cockatoo’ WJ *muraany* (H&M: “muurrany”); GA *muraay*, YY *muyaay*
83. **murrun* ‘alive’ WJ *murrun* (H&M: “muurruun”), WB *muun*; GA %*murrun*, YY *murrun*
84. **murung* ‘nose’ WJ *murtung* (H&M: “muurruung”), WB *murrudhaaN*, WA *murtugaa*; GA *muru*, YY *muyu*; MW *nguru*, BJ *muru*
85. **ngaany* ‘mouth’ WJ *ngaany* (H&M: “ngayn”); GA, YY *ngaay*
86. **ngali* ‘we two’ WJ *ngali*, WB *ngali*; GA, YY *ngali*; MW *ngali*
87. **ngamung* ‘breast’ WJ *ngamung* (H&M: “ngamuung”), WB *ngamuN*, WA *ngamu*; GA *ngamu*, YY *ngama*; MW *ngama*
88. **ngamurr* ‘daughter’ WJ *ngamurr*, GA *ngamurr*
89. **ngamu-* ‘to suck’ WB *ngamu-y*; GA %*ngamu-ng*, YY *ngamu-ng*
90. **ngandabaa* ‘red-bellied black snake’ WB, WA *ngandabaa*; GA, YY *ngandabaa*
91. **ngarrabaang* ‘alas!’ WJ *ngarrabaang* (H&M: “ngaarraabang”), WB *ngarrabaa*; GA *ngarragaa*, YY *ngarragaa*
92. **ngaru-* ‘to drink’ WB *ngaaruN-y*; GA *ngaru-ng*, YY *ngawu-ng*
93. **nga-* ‘to see’ WJ *nga-*, WB *ngaa-y*; GA *ngami-l*
94. **ngiiny* ‘anus’ WB *ngiiN*; GA *ngii*, MW *ngii*, BJ *nyiim*, GU *nyiim*
95. *-*nginda* ‘wanting’ WJ -*nginda*, WB -*nginda*; GA -*ngin*, YY -*nginda*
96. **ngiyani* ‘we all’ WJ, WB *ngiyani*; GA %*ngiyani*, YY *ngiyani*
97. **ngulung* ‘face, forehead’ WJ *ngulung* (H&M: “nguuuluung”), WB *nguluN*, WA *ngulu*; GA, YY *ngulu*; MW *ngulu*, BJ *ngulung* ‘in front, ahead’
98. **ngurrung* ‘night’ WJ *ngurrung* (H&M: “nguurruung”); GA *ngurru*
99. **nhima-l* ‘to pinch’ WB *nhima-l*; GA, YY *nhima-l*; BJ *ngiima-* ‘squeeze’

100. **waagaan* ‘crow’ WJ *waagaan* (H&M: “waagan”), WB *waagaan*; GA *waagaan*, YY *waan*; MW *wagan* (O: “wakan”), BJ *wagaan*, GU *waagan*
101. **waaruu* ‘crow’ WB *waaru*; GA *waruu*
102. **wamu* ‘fat’ WJ *wamu* (H&M: “wamuu”); GA, YY *wamu*
103. **wandang* ‘ghost’ WJ *wandang*, WB *wandaN*; GA, YY *wanda*
104. **warra-* ‘to stand’ WJ *warra-*, WB *wara-y*; GA, YY *warra-y*
105. **wiiny* ‘fire’ WJ *wiiny* (H&M: “weeyn”), WB *wiiN*, WA *wii*; GA, YY *wii*; MW *wii*, GU *wiigun* ‘hot, warm’, *wijum* ‘fine weather’
106. **winanga-l* ‘to hear’ WJ *winanga-l* (H&M: “winangga-l”), WB, WA *winanga-l*; GA *winanga-l*
107. **wirringan* ‘doctor’ WB, WA *wirringan*; GA *wirringan*, YY *wirringin*
108. **wurrumany* ‘son’ WJ *wurrumany* (H&M: “wurrumayn”); GA *wurrumay*
109. **wuru* ‘throat’ WJ *wurru* (H&M: “wuurruu”), WB *wurru* ‘back of neck, nape’; GA %*wuru*, YY *wuyu*; BJ *wuru* ‘neck’, GU *wuuru* ‘throat, neck, windpipe’
110. **yabaa* ‘carpet snake’ WJ *yabaa* (H&M: “yaba”), WB, WA *yabaa*; GA, YY *yabaa*; BJ *yambaa*
111. **yagaay* ‘hey!’ WB *yagaay*; GA %*yagaay*, YY *yagaay*
112. **yana-y* ‘to go’ WJ *yana-y*, WB, WA *yana-y*; GA *yanaa-y*, YY *yinaa-y*; MW *ya-*, GU *ya(a)(n)*
113. **yarrany* ‘beard’ WJ *yarrany* (H&M: “yarrayn”), WB *yarrayN*; GA, YY *yarray*; MW *yarrany* (O: “yarranj”), BJ *yarany*
114. **yinarr* ‘woman’ WJ *yinarr*, WB, WA *winarr*; GA *yinarr*
115. **yinggil* ‘tired, lazy’ WJ *yinggil* ‘sick, ill’; GA, YY *yinggil*
116. **yirang* ‘tooth’ WJ *yirrang*, WB *wittaN*, WA *wirra*; GA *yira*, YY *yiya*; MW *dhirra*, BJ *dirang*
117. **yulany* ‘skin’ WJ *yulany* (H&M: “yuulayn”), WB *yulayN*; GA, YY *yulay*; MW *yurany* (O: “yuranj”), BJ *yulany*, GU *gulaam*
118. **yulu* ‘fingernail’ WJ *yulu* (H&M: “yuuluu”), WB, WA *yulu*; GA %*yulu*, YY *yulu*
119. **yulubirrginy* ‘rainbow’ WJ *yulubirrginy* (H&M: “yuuluubirrgiyin”), WB, WA *yulubirrgi*; GA %*yuluwirri*, YY *yuluwirri*
120. **yurung* ‘cloud’ WJ *yurrung* (H&M: “yuurruung”), WB *yurruN* ‘rain’; GA *yuru*, YY *yuu* ‘dust’
121. **yu-ŋg* ‘to cry’ WJ *yungga-y*, WB *yunga-y*; GA, YY *yu-ŋg*; BJ *dunga-*, GU *duu(ŋg)*

5.2 RECONSTRUCTIONS WITH REFLEXES IN GAMILARAAY–YUWAALIYAAY SUBGROUP ONLY

122. **baabi-l* ‘to sleep’ GA, YY *baabi-l*

123. **baaldharradharra* ‘plover’ GA %*baaldharradharra*, YY *baaldharradharra*
124. **baan* ‘mistletoe’ GA, YY *baan*
125. **baarrayi-l* ‘to split’ GA %*baarrayi-l*, YY *baarrayi-l*
126. **baaya-l* ‘to chop’ GA %*baaya-l*, YY *baaya-l*
127. **baayama* ‘Baime’ GA, YY *baayama*
128. **badha* ‘bitter’ GA %*badha*, YY *badha*
129. **bagala* ‘leopardwood tree’ GA, YY *bagala*
130. **bagu* ‘flying squirrel’ GA %*bagu*, YY *bagu*
131. **balabalaa* ‘butterfly’ GA %*balabalaa*, YY *balabalaa*
132. **balal* ‘dry’ GA, YY *balal*
133. **balamba* ‘milk thistle’ GA, YY *balamba*; MW *balamba* (O: “palampa”)
134. **bamba* ‘hard’ GA, YY *bamba*
135. **bambul* ‘native orange tree’ GA, YY *bambul*
136. *-*baraay* ‘comitative’ GA -*baraay*, YY -*biyaay*
137. **barayamal* ‘black swan’ GA %*barayamal*, YY *baayamal*; MW *barrima* (O: “parrima”)
138. **barriindjiin* ‘peewee’ GA, YY *barriindjiin*
139. **bawa* ‘back’ GA %*bawa*, YY *bawa*
140. **bawa* ‘older sister’ GA, YY *bawa*
141. **bawi-l* ‘to sing’ GA, YY *bawi-l*
142. **bawurra* ‘red kangaroo’ GA %*bawurra*, YY *bawurra*
143. **bibil* ‘white box tree’ GA, YY *bibil*
144. **bigibila* ‘echidna’ GA, YY *bigibila*; MW *bigibila* (O: “pikipila”)
145. **bina* ‘ear’ GA, YY *bina*; MW *bina* (O: “pina”); BJ *binang*
146. **bindayaa* ‘burr’ GA, YY *bindayaa*
147. **birraa* ‘type of grub’ GA, YY *birraa*
148. **biruu* ‘far’ GA *biruu*, YY *biyuu*
149. **biruu* ‘hole’ GA *biruu*, YY *biyuu*
150. **budha* ‘women’s marriage division’ GA, YY *budha*; MW *budha* (O: “putha; puthaa”)
151. **bulaarr* ‘two’ GA, YY *bulaarr*; BJ *bula*; GU *bularri*
152. **bululuy* ‘evening’ GA %*bululuy*, YY *bululuy*
153. **bunbun* ‘grasshopper’ GA %*bunbun*, YY *bunbun*
154. **bundaa-ng* ‘to fall’ GA, YY *bundaa-ng*
155. **bungun* ‘arm’ GA, YY *bungun*
156. **bura* ‘bone’ GA *bura*, YY *buya*

157. **burabura* ‘thin’ GA *burabura*, YY *buyabuya*
158. **burriin* ‘shield’ GA, YY *burriin*
159. **burrugarrbu* ‘magpie’ GA *burrugaabu*, YY *burrugarrbu*
160. **burrul* ‘big’ GA, YY *burrul*
161. **burrulaa* ‘many’ GA, YY *burrulaa*
162. **buruma* ‘dog’ GA *buruma*, YY *buyuma*
163. **buulii* ‘whirlwind’ GA, YY *buulii*
164. **buurr* ‘string, hair-string belt’ GA %*buurr*, YY *buurr*, BJ *bugur* ‘rope, string’
165. **buurra* ‘initiation ceremony’ GA *buurru*, YY *buurra*; MW *buwuRa* (O: “puwuRa”)
166. **buurraan* ‘vein’ GA %*buurraan*, YY *buwarraan*
167. **buwadjarr* ‘father’ GA, YY *buwadjarr*
168. **buwi-y* ‘to smell’ GA %*buwi-y*, YY *buwi-y*
169. **dhaadhaa* ‘mother’s father’ GA, YY *dhaadhaa*
170. **dhaadhiir* ‘kingfisher’ GA %*dhaadhiir*, YY *dhaadhiir*
171. **dhaal* ‘cheek’ GA %*dhaal*, YY *dhaal*
172. **dhadha-l* ‘to taste’ GA %*dhadha-l*, YY *dhadha-l*
173. **dhagaay* ‘yellow belly fish’ GA, YY *dhagaay*
174. **dhagan* ‘younger brother’ GA, YY *dhagan*
175. **dhamma-l* ‘to feel’ GA, YY *dhamma-l*
176. **dhamarr* ‘bronzewing pigeon’ GA %*dhamarr*, YY *dhamarr*
177. **dhan.gurr* ‘lame’ GA, YY *dhan.gurr*
178. **dhandarr* ‘frost’ GA %*dhandarr*, YY *dhandarr*
179. **dhanggal* ‘large mussel’ GA, YY *dhanggal*; MW *dhanggarl* (O: “tangkarl”)
180. **dharayan* ‘hail’ GA %*dharayan*, YY *dhaayan*
181. **dhawuma-l* ‘to cook in ashes’ GA, YY *dhawuma-l*
182. **-dhi* ‘my’ GA, YY *-dhi*; MW *-dhi*
183. **dhibaayu* ‘whistling duck’ GA %*dhibaayu*, YY *dhibaayu*
184. **dhigaraa* ‘bird’ GA *dhigaraa*, YY *dhigayaa*; GU *jiibiny*
185. **dhiinaa* ‘honeycomb’ GA, YY *dhiinaa*
186. **dhiinbin* ‘diving duck’ GA, YY *dhiinbin*
187. **dhiinyaay* ‘ironbark tree’ GA %*dhiinyaay*, YY *dhiinyaay*
188. **dhinbirr* ‘knee’ GA, YY *dhinbirr*
189. **dhiyama-l* ‘to pick up’ GA, YY *dhiyama-l*
190. **dhubi-l* ‘to spit’ GA %*dhubi-l*, YY *dhubi-l*

191. **dhulumaay* ‘thunder’ GA *dhulumaay*, YY *dhuluma-y*
192. **dhurra-l* ‘to make’ GA, YY *dhurra-l*
193. **dhurri-l* ‘to come up’ GA *dhurri-l*, YY *dhurru-l*
194. **dhurrun* ‘fur of animal’ GA %*dhurrun*, YY *dhurrun*
195. **dhuruyaal* ‘right hand’ GA %*dhuruyaal*, YY *dhuuyaal*
196. **dhuu* ‘smoke’ GA, YY *dhuu*; GU *juum*
197. **dhuu-rr* ‘to crawl’ GA %*dhuu-n*, YY *dhu-rr*
198. **dhuraay* ‘flame, light’ GA %*dhuraay*, YY *dhuuyaay*
199. **dhuwarr* ‘bread’ GA, YY *dhuwarr*
200. **dhuyul* ‘hill’ GA %*dhuyul*, YY *dhuyul*
201. **gaarra-y* ‘to paint’ GA %*gaarra-y*, YY *gaarra-y*
202. **gaawi-l* ‘to vomit’ GA, YY *gaawi-l* (but cf. WB *gaabi-l*)
203. **gaawul* ‘lagoon, creek’ GA %*gaawul*, YY *gaawul*
204. **gaba* ‘good’ GA, YY *gaba*
205. **gabanbaa* ‘light (in weight)’ GA %*gabanbaa*, YY *gabanbaa*
206. **gabi* ‘men’s marriage division’ GA, YY *gabi*; MW *gabii* (O: “kapiy”)
207. **gabudha* ‘women’s marriage division’ GA, YY *gabudha*; MW *gabidha* (O: “kapitha; kapithaa”)
208. **gaga-l* ‘to call out’ GA, YY *gaga-l*; BJ *gangga-*; GU *ganggaali* ‘call out, bark’
209. **gagil* ‘bad’ GA, YY *gagil*
210. **galariin* ‘acacia blossums’ GA %*galariin*, YY *galariin*
211. **gambaal* ‘black bream fish’ GA, YY *gambaal*
212. **gambu* ‘men’s marriage division’ GA, YY *gambu*; MW *gambu* (O: “kampu”), GU *wambuung*
213. **ganaay* ‘shallow’ GA %*ganaay*, YY *ganaay*
214. **garaay* ‘nits of louse’ GA *garaay*, YY *gayaay*
215. **garay* ‘word’ GA *garay*, YY *gaay*⁵
216. **garra-l* ‘to cut’ GA, YY *garra-l*
217. **garrangay* ‘black duck’ GA, YY *garrangay*
218. **garril* ‘leaf’ GA %*garril*, YY *garril*
219. **garrugii* ‘uncle’ GA %*garrugii*, YY *garrugii*
220. **gawarrawarr* ‘green’ GA %*gawarrawarr*, YY *gawarrawarr*
221. **gaygay* ‘catfish’ GA, YY *gaygay*

5 Wangaaybuwan *garrii* ‘truth’ may be cognate.

222. **giidjaa* ‘black ant’ GA, YY *giidjaa*; MW *giidjaa* (O: “kiitjaa”)
223. **giinbal* ‘scale of fish’ GA %*giinbal*, YY *giinbal*
224. **giirr* ‘truly’ GA *giirr*, YY *giirru*
225. **gimubi-l* ‘to make’ GA %*gimubi-l*, YY *gimbi-l*
226. **ginyi* ‘to be’ GA, YY *ginyi*
227. **girran* ‘ashes’ GA, YY *girran*
228. **gubudhu* ‘dove’ GA %*gubudhu*, YY *gubudhu*
229. **guda* ‘native bear, koala’ GA %*guda*, YY *guda*
230. **gudhuwa-l* ‘to burn’ GA, YY *gudhuwa-l*
231. **guduu* ‘cod fish’ GA, YY *guduu*; MW *gudu* (O: “kutu”)
232. **gugurrgaagaa* ‘kookaburra’ GA, YY *gugurrgaagaa*
233. **gula-l* ‘to bark’ GA *gura-l*, YY *gula-l*
234. **gulabaa* ‘coolebah tree’ GA, YY *gulabaa*
235. **gulibaa* ‘three’ GA, YY *gulibaa*
236. **guliirr* ‘spouse’ GA, YY *guliirr*
237. **guliyali* ‘pelican’ GA *guliyaali*, YY *guliyali*
238. **gumi* ‘type of berry’ GA, YY *gumi*
239. **gumuumma* ‘small lizard’ GA *gumuumma*, YY *gumawuma*
240. **gunhugunhu* ‘cough’ GA %*gunugunu*, YY *gunhugunhu*
241. **guniinii* ‘queen bee’ GA %*guniinii*, YY *guniinii*
242. **gurraagaa* ‘crane’ GA, YY *gurraagaa*; MW *garaaga* (O: “karaaka”)
243. **gurru* ‘deep’ GA %*gurru*, YY *gurrubaa*
244. **guurtman* ‘leech’ GA, YY *guurtman*
245. **guwaa-l* ‘to speak’ GA, YY *guwaa-l*
246. **guyinbaa* ‘near’ GA %*guyinbaa*, YY *guyinbaa*
247. **maayal* ‘myall tree’ GA, YY *maayal*
248. **maayirraa* ‘wind’ GA *maayirr*, YY *mayirraa*
249. **mabu* ‘beefwood tree’ GA %*mabu*, YY *mabu*
250. **madamada* ‘knotty (of hair)’ GA, YY *madamada*
251. **madha* ‘women’s marriage division’ GA %*madha*, YY *madha*; MW *madha* (O: “matha; mathaa”)
252. **madja* ‘sorry!’ GA *madja*, YY *madjagurra*
253. **manggarr* ‘bag’ GA *mangga*, YY *man.garr*, MW *manggany* (O: “mangkanj”)
254. **mangun.gaali* ‘tree goanna’ GA, YY *mangun.gaali*

255. **marayin* ‘wild dog’ GA *marayin*, YY *maayin*
256. **marrii* ‘men’s marriage division’ GA %*marrii*, YY *marrii*; MW *marrii* (O: “marriy”), GU *maruung*
257. **mawu-ŋg* ‘to scratch’ GA, YY *mawu-ŋg*
258. **milaan* ‘type of yam’ GA, YY *milaan*
259. **mingga* ‘ghost ground’ GA, YY *mingga*
260. **mirril* ‘nasal mucus’ GA, YY *mirril*
261. **mirrīrr* ‘fan-shaped shrub’ GA *mirrīrr*, YY *mirrii*
262. **mubal* ‘stomach’ GA *mubal*, YY *mubil*
263. **mudhay* ‘possum’ GA, YY *mudhay*
264. **muga* ‘blind’ GA, YY *muga*
265. **munday* ‘step’ GA %*munday*, YY *munday*
266. **mungin* ‘mosquito’ GA, YY *mungin*
267. **murrgu* ‘oak tree’ GA, YY *murrgu*
268. *-*nda* ‘bound pronoun – 2singular’ GA, YY -*nda*
269. *-*ndaali* ‘bound pronoun – 2dual’ GA %*ndaali*, YY -*ndaali*
270. *-*ndaay* ‘bound pronoun – 2plural’ GA %*ndaay*, YY -*ndaay*
271. **ngaa* ‘yes’ GA, YY *ngaa*; MW *ngaa*, BJ *ngee*
272. **ngambaa* ‘mother’ GA, YY *ngambaa*
273. **nganda* ‘bark of tree’ GA, YY *nganda*
274. **ngarribaa* ‘far’ GA %*ngarribaa*, YY *ngarribaa*
275. **ngarrila* ‘locust’ GA %*ngarrila*, YY *ngarrala*
276. **ngaya* ‘I’ GA, YY *ngaya*
277. **nginda* ‘you’ WB *ngindu*; GA, YY *nginda*
278. **ngindaali* ‘you two’ GA %*ngindaali*, YY *ngindaali*
279. **ngindaay* ‘you all’ GA %*ngindaay*, YY *ngindaay*
280. **nguru* ‘he’ GA *nguru*, YY *nguu*
281. **nhaaduu* ‘nardoo’ GA, YY *nhaaduu*
282. **nhingil* ‘saltbush’ GA %*nhingil*, YY *nhingil*
283. **nhun* ‘nape of neck’ GA %*nhun*, YY *nhun*
284. **nhuwi* ‘rotten’ GA, YY *nhuwi*
285. **waa-l* ‘to throw’ GA *waa-l*, YY *wa-l*
286. **waayamaa* ‘old man’ GA *waayamaa*, YY *wayama*
287. **wagun* ‘scrub turkey’ GA, YY *wagun*; BJ *wagun* ‘brush turkey’

288. **walaay* ‘camp’ GA, YY *walaay*
289. **walarr* ‘shoulder’ GA %*walarr*, YY *walarr*
290. **wamba* ‘mad’ GA, YY *wamba*; MW *wamba* (O: “wampa”)
291. **wamba-l* ‘to carry’ GA %*wamba-l*, YY *wamba-l*
292. **waragaal* ‘left hand’ GA %*waragaal*, YY *wayagaal*
293. **waramba* ‘turtle’ GA *waraba*, YY *wayamba*; MW *wayamba* (O: “wayampa”)
294. **warawara* ‘crooked’ GA *warawara*, YY *wayaway*
295. **warran* ‘root’ GA, YY *warran*
296. **warryima-l* ‘to build’ GA %*warraama-l*, YY *warryima-l*
297. **warrul* ‘honey’ GA, YY *warrul*
298. **wiidhaa* ‘bowerbird’ GA %*wiidhaa*, YY *wiidhaa*
299. **wiila-y* ‘to whistle’ GA %*wiila-y*, YY *wiila-y*
300. **wiima-l* ‘to light (a fire)’ GA, YY *wiima-l*
301. **wirrigaal* ‘navel’ GA *wirrigaal*, YY *wirrigal*
302. **wudhugaa* ‘type of root’ GA, YY *wudhugaa*
303. **wurunga-y* ‘to dive’ GA %*wurunga-y*, YY *wuunga-y*
304. **wuruyan* ‘curlew’ GA %*wuruyan*, YY *wuuyan*
305. **wuu-rr* ‘to give’ GA *wuu-n*, YY *wuu-rr*; BJ *wula-*
306. **wuyuu* ‘black magpie’ GA %*wuyuu*, YY *wuyuu*
307. **yaama* ‘question’ GA, YY *yaama*
308. **yadhaarr* ‘down of bird’ GA %*yadhaarr*, YY *yadhaarr*
309. **yalu* ‘again’ GA, YY *yalu*
310. **yaraay* ‘sun’ GA *yaraay*, YY *yaay*
311. **yarraan* ‘gum tree’ GA, YY *yarraan*
312. **yarrangan* ‘type of grub’ GA %*yarrangan*, YY *yarrangan*
313. **yibaay* ‘men’s marriage division’ GA, YY *yibaay*; MW *yibay* (O: “yipay; ipay”)
314. **yibadha* ‘women’s marriage division’ GA %*yibadha*, YY *yibadha*; MW *yibadha* (O: “yipatha; ipatha; ipathaa”)
315. **yii-l* ‘to bite’ GA, YY *yii-l*; BJ *ying(g)a-*, GU *yiindja-*
316. **yiili* ‘angry’ GA *yiili*, YY *yiiliyanbaa*
317. **yila* ‘soon’ GA %*yila*, YY *yilaal*
318. **yilaalu* ‘later’ GA, YY *yilaalu*
319. **yugal* ‘song’ GA, YY *yugal*
320. **yulaa-l* ‘to tie up’ GA *yulaa-l*, YY *yilaa-l*

321. **yulu-ŋg* ‘to dance’ GA, YY *yulu-ŋg*
 322. **yurrul* ‘scrub’ GA, YY *yurrul*
 323. **yurrun* ‘scar’ GA %*yurrun*, YY *yurrun*
 324. **yuruun* ‘track, path’ GA, YY *yuruun*; MW *yuruun* (O: “yurun; yuruun”), BJ *yaruun*
 325. **yuul* ‘vegetable food’ GA, YY *yuul*
 326. **yuundu* ‘stone axe’ GA, YY *yuundu*

5.3 RECONSTRUCTIONS WITH REFLEXES IN NGIYAMPAA–WIRADJURI SUBGROUP ONLY

327. **balang* ‘head’ WJ *balang*, WB *balaN*, WA *wala*
 328. **budhu* ‘smoke’ WJ *budhu* (H&M: “buundhuu”), WB, WA *budhu*
 329. **buga* ‘rotten’ WJ *buga* (H&M: “buuga”), WB, WA *buga*
 330. **burrbang* ‘initiation ceremony’ WJ *burrbang*, WB *burrbaN*
 331. **dhundhu* ‘black swan’ WJ *dhundhu* (H&M: “dhuundhuu”), WB *dhundhu*
 332. *-*dhurraay* ‘comitative’ WJ -*dhurraay*, WB -*dhurraay*
 333. **ganaa* ‘shoulder’ WJ *ganaa* (H&M: “gana”), WB *ganaaN*
 334. **gilgin* ‘armpit’ WJ *gilgin* (H&M: “gilgeen”), WB *gilgin*
 335. **girraang* ‘leaf’ WJ *girraang* (H&M: “girrang”), WB *girraaN*, WA *girraa*
 336. **girralaang* ‘star’ WJ *girralaang* (H&M: “girralang”), WB *girralaaN*
 337. **gunaarrung* ‘wood duck’ WJ *gunaarrung* (H&M: “guunaarruung”), WA *gunaarrtu*
 338. **gunii* ‘mother’ WJ *gunii* (H&M: “guuni”), WB *guniiN*, WA *gunii*
 339. **guuny* ‘ghost’ WJ *guuny* (H&M: “guuwiyn”), WB *guuyN*; MW *guuny* (O: “kuwinj”)
 340. **mirri* ‘dog’ WJ *mirri*, WB, WA *mirri*
 341. **mugiiny* ‘blind’ WJ *mugiiny* (H&M: “muugeeyn”), WB *mugiiN*
 342. **murruung* ‘grasshopper’ WJ *murruung* (H&M: “muurruung”), WB *murruuN*
 343. **ngadhu* ‘I’ WJ *ngadhu* (H&M: “ngadhuu”), WB *ngadhu*
 344. **ngalan* ‘light, flame’ WJ *ngalan*, WB *ngalan*
 345. **ngindu* ‘you’ WJ *ngindu* (H&M: “nginduu”), WB *ngindu*; MW *ngindu* (O: “ngintu”)
 346. **ngubaany* ‘spouse’ WJ *ngubaany* (H&M: “ngubaan”), WB *ngubaaN*
 347. **ngurrang* ‘camp’ WJ *ngurrang* (H&M: “nguurrang”), WB *ngurraN*; MW *ngurra*
 348. **wudha* ‘ear’ WJ *wudha*, WB, WA *wudha*
 349. **yugi* ‘wild dog’ WJ *yugi* (H&M: “yuugi”), WB, WA *yugi*

5.4 FINDERLIST OF RECONSTRUCTIONS

Aboriginal man PCNSW <i>*gibirr</i>	bite, to PGY <i>*yii-l</i>
Aboriginal person PCNSW <i>*mayiny</i>	bitter PGY <i>*badha</i>
acacia blossoms PGY <i>*galariin</i>	black PCNSW <i>*buluuy</i>
afraid PCNSW <i>*giyal</i>	black ant PGY <i>*giidjaa</i>
again PGY <i>*yalu</i>	black bream fish PGY <i>*gambaal</i>
alas! PCNSW <i>*ngarrabaang</i>	black cockatoo PCNSW <i>*biliirr</i>
alive PCNSW <i>*murrun</i>	black duck PGY <i>*garrangay</i>
angry PGY <i>*yiili</i>	black magpie PGY <i>*wuyuu</i>
ant, black PGY <i>*giidjaa</i>	black snake, red-bellied PCNSW <i>*ngandabaa</i>
ant, bull PCNSW <i>*burungga</i>	black swan PGY <i>*barayamaI</i> , PNW <i>*dhundhu</i>
anus PCNSW <i>*ngiiny</i>	blind PGY <i>*muga</i> , PNW <i>*mugiiny</i>
arm PGY <i>*bungun</i>	blood PCNSW <i>*guwany</i>
armpit PNW <i>*gilgin</i>	blow, to PCNSW <i>*buumbi-l</i>
ashes PGY <i>*girran</i>	bone PGY <i>*bura</i>
axe, stone PGY <i>*yuundu</i>	boomerang PCNSW <i>*barrgan</i>
back PGY <i>*bawa</i>	bound pronoun – 2dual PGY <i>*-ndaali</i>
bad PGY <i>*gagil</i>	bound pronoun – 2plural PGY <i>*-ndaay</i>
bag PGY <i>*manggarr</i>	bound pronoun – 2singular PGY <i>*-nda</i>
bag, string PCNSW <i>*gulay</i>	bowerbird PGY <i>*wiidhaa</i>
Baime PGY <i>*baayama</i>	box tree, white PGY <i>*bibil</i>
bandicoot PCNSW <i>*guruung</i>	boy, uninitiated PCNSW <i>*birrany</i>
bark, to PGY <i>*gula-l</i>	bread PGY <i>*dhuwarr</i>
bark of tree PGY <i>*nganda</i>	break, to PCNSW <i>*gama-l</i>
be, to PGY <i>*ginyi</i>	breast PCNSW <i>*ngamung</i>
bear, native PGY <i>*guda</i>	brigalow PCNSW <i>*burrii</i>
beard PCNSW <i>*yarrany</i>	brolga PCNSW <i>*burralgang</i>
bee, queen PGY <i>*guniinii</i>	bronzewing pigeon PGY <i>*dhamarr</i>
beefwood tree PGY <i>*mabu</i>	brother, younger PCNSW <i>*galamaany</i> , PGY <i>*dhagan</i>
belah tree PCNSW <i>*bilaarr</i>	brown snake PCNSW <i>*dhurung</i>
belt, hair-string PGY <i>*buurr</i>	budgerigar PCNSW <i>*gidjirrigaa</i>
berry, type of PGY <i>*gumi</i>	build, to PGY <i>*warrayima-l</i>
big PGY <i>*burrul</i>	
bird PGY <i>*dhigaraa</i>	

bull ant PCNSW <i>*burungga</i>	cut, to PGY <i>*garra-l</i>
burn, to PGY <i>*gudhuwa-l</i>	dance, to PGY <i>*yulu-ng</i>
burr PGY <i>*bindayaa</i>	daughter PCNSW <i>*ngamurr</i>
butterfly PGY <i>*balabalaa</i>	deep PGY <i>*gurru</i>
call out, to PGY <i>*gaga-l</i>	die, to PCNSW <i>*balu-ng</i>
camp PGY <i>*walaay</i> , PNW <i>*ngurrang</i>	digging stick PCNSW <i>*ganaay</i>
carpet snake PCNSW <i>*yabaa</i>	diminutive PCNSW <i>*-dhuul</i>
carry, to PCNSW <i>*gaa-ŋg</i> , PGY <i>*wamba-l</i>	dive, to PGY <i>*wurunga-y</i>
catfish PGY <i>*gaygay</i>	diving duck PGY <i>*dhiinbin</i>
centipede PCNSW <i>*giyan</i>	doctor PCNSW <i>*wirringan</i>
cheek PGY <i>*dhaal</i>	dog PGY <i>*buruma</i> , PNW <i>*mirri</i>
chest PCNSW <i>*biring</i>	dog, wild PGY <i>*marayin</i> , PNW <i>*yugi</i>
chop, to PGY <i>*baaya-l</i>	domain PCNSW <i>*-baang</i>
climb, to PCNSW <i>*galiyaa-y</i>	dove PGY <i>*gubudhu</i>
cloud PCNSW <i>*yurung</i>	down of bird PGY <i>*yadhaar</i>
club PCNSW <i>*bundi</i>	drink, to PCNSW <i>*ngaru-</i>
cockatoo, black PCNSW <i>*biliirr</i>	drunk PCNSW <i>*dharraang</i>
cockatoo, white PCNSW <i>*muraany</i>	dry PGY <i>*balal</i>
cod fish PGY <i>*guduu</i>	duck, black PGY <i>*garrangay</i>
come up, to PGY <i>*dhurri-l</i>	duck, diving PGY <i>*dhiinbin</i>
comitative PGY <i>*-baraay</i> , PNW <i>*-dhurraay</i>	duck, whistling PGY <i>*dhibaayu</i>
cook in ashes, to PGY <i>*dhawuma-l</i>	duck, wood PNW <i>*gunaarrung</i>
coolebah tree PGY <i>*gulabaa</i>	eaglehawk PCNSW <i>*maliyan</i>
copulate, to PCNSW <i>*dhaa-rr</i>	ear PGY <i>*bina</i> , PNW <i>*wudha</i>
cough PGY <i>*gunhugunhu</i>	eat, to PCNSW <i>*dha-l</i>
crane PGY <i>*gurraagaa</i>	echidna PGY <i>*bigibila</i>
crawl, to PGY <i>*dhuu-rr</i>	egg PCNSW <i>*gabugaa</i>
creek PGY <i>*gaawul</i>	emu PGY <i>*dhinawan</i>
crooked PGY <i>*warawara</i>	evening PGY <i>*bululuy</i>
crow PCNSW <i>*waagaan</i> , <i>*waaruu</i>	eye PCNSW <i>*mil</i>
cry, to PCNSW <i>*yu-ŋg</i>	face PCNSW <i>*ngulung</i>
curlew PGY <i>*wuruyan</i>	faeces PCNSW <i>*gunang</i>
	fall, to PGY <i>*bundaa-ŋg</i>
	fan-shaped shrub PGY <i>*mirriirr</i>

far PGY * <i>biruu</i> , * <i>ngarribaa</i>	grey kangaroo PCNSW * <i>bandaarr</i>
fast PCNSW * <i>barraay</i>	ground PCNSW * <i>dhagun</i>
fat PCNSW * <i>wamu</i>	grub, type of PGY * <i>birraa</i> , * <i>yarrangan</i>
father PCNSW * <i>babaa</i> , PGY * <i>buwadjarr</i>	gum tree PGY * <i>yarraan</i>
father, mother's PGY * <i>dhaadhaa</i>	hail PGY * <i>dharayan</i>
feel, to PGY * <i>dhamma-l</i>	hair-string belt PGY * <i>buurr</i>
fingernail PCNSW * <i>yulu</i>	hand PCNSW * <i>mara</i>
fire PCNSW * <i>wiiny</i>	hard PGY * <i>bamba</i>
fish PCNSW * <i>guya</i>	he PGY * <i>nguru</i>
fish, black bream PGY * <i>gambaal</i>	head PNW * <i>balang</i>
fish, cod PGY * <i>guduu</i>	hear, to PCNSW * <i>winanga-l</i>
fish, scale of PGY * <i>giinbal</i>	heart PCNSW * <i>giiny</i>
fish, yellow belly PGY * <i>dhagaay</i>	heel PCNSW * <i>dhanga</i>
flame PGY * <i>dhuuraay</i> , PNW * <i>ngalan</i>	hey! PCNSW * <i>yagaay</i>
fly, to PCNSW * <i>barra-y</i>	hide, to PCNSW * <i>guuma-y</i>
flying squirrel PGY * <i>bagu</i>	hill PGY * <i>dhuyul</i>
fog PCNSW * <i>guwang</i>	hit, to PCNSW * <i>buma-l</i>
food, vegetable PGY * <i>yuul</i>	hole PGY * <i>biruu</i>
foot PCNSW * <i>dhinang</i>	honey PGY * <i>warrul</i>
forehead PCNSW * <i>ngulung</i>	honeycomb PGY * <i>dhiinaa</i>
frost PGY * <i>dhandarr</i>	house PCNSW * <i>gundhi</i>
fur of animal PGY * <i>dhurrun</i>	I PGY * <i>ngaya</i> , PNW * <i>ngadhu</i>
galah PCNSW * <i>gilaang</i>	initiation ceremony PGY * <i>buurra</i> , PNW * <i>burtbang</i>
ghost PCNSW * <i>wandang</i> , PNW * <i>guuny</i>	ironbark tree PGY * <i>dhiinyaay</i>
ghost ground PGY * <i>mingga</i>	jump, to PCNSW * <i>baara-y</i>
girl PCNSW * <i>migay</i>	kangaroo, grey PCNSW * <i>bandaarr</i>
give, to PGY * <i>wuu-rr</i>	kangaroo, red PGY * <i>bawurra</i>
go, to PCNSW * <i>yana-y</i>	kingfisher PGY * <i>dhaadhiirr</i>
goanna, sand PCNSW * <i>dhuliiny</i>	knee PGY * <i>dhinbirt</i>
goanna, tree PGY * <i>mangun.gaali</i>	knotty (of hair) PGY * <i>madamada</i>
good PCNSW * <i>marrang</i> , PGY * <i>gaba</i>	koala PGY * <i>guda</i>
grasshopper PGY * <i>bunbun</i> , PNW * <i>murruung</i>	kookaburra PGY * <i>gugurrgaagaa</i>
green PGY * <i>gawarrawarr</i>	lagoon PGY * <i>gaawul</i>

lame PGY * <i>dhan.gurr</i>	mother's father PGY * <i>dhaadhaa</i>
later PGY * <i>yilaalu</i>	mouth PCNSW * <i>ngaany</i>
laugh, to PCNSW * <i>ginda-y</i>	mucus, nasal PGY * <i>mirril</i>
lazy PCNSW * <i>yinggil</i>	mussel, large PGY * <i>dhanggal</i>
leaf PGY * <i>garril</i> , PNW * <i>girraang</i>	my PGY *- <i>dhi</i>
leech PGY * <i>guurriiman</i>	myall tree PGY * <i>maayal</i>
left hand PGY * <i>waragaal</i>	nape of neck PGY * <i>nhun</i>
leopardwood tree PGY * <i>bagala</i>	nardoo PGY * <i>nhaaduu</i>
light PGY * <i>dhuraay</i> , PNW * <i>ngalan</i>	nasal mucus PGY * <i>mirril</i>
light (a fire), to PGY * <i>wiima-l</i>	native bear PGY * <i>guda</i>
light (in weight) PGY * <i>gabanbaa</i>	native orange tree PGY * <i>bambul</i>
liver PCNSW * <i>ganang</i>	navel PGY * <i>wirrigaal</i>
lizard, small PGY * <i>gumuuma</i>	near PGY * <i>guyinbaa</i>
locust PGY * <i>ngarrilla</i>	neck, nape of PGY * <i>nhun</i>
long PCNSW * <i>guraarr</i>	night PCNSW * <i>ngurrung</i>
louse PCNSW * <i>munhi</i>	nits of louse PGY * <i>garaay</i>
mad PGY * <i>wamba</i>	nose PCNSW * <i>murung</i>
magpie PGY * <i>burrugarrbu</i>	oak tree PGY * <i>murrgu</i>
magpie, black PGY * <i>wuyuu</i>	old man PGY * <i>waayamaa</i>
make, to PGY * <i>gimubi-l</i> , * <i>dhurra-l</i>	orange tree, native PGY * <i>bambul</i>
man, Aboriginal PCNSW * <i>gibirr</i>	paint, to PGY * <i>gaarra-y</i>
man, old PGY * <i>waayamaa</i>	path PGY * <i>yurruun</i>
many PGY * <i>burrulaa</i>	peewee PGY * <i>barriindjiin</i>
marriage division, men's PGY * <i>gabi</i> , * <i>gambu</i> , * <i>marrii</i> , * <i>yibaay</i>	pelican PGY * <i>guliyali</i>
marriage division, women's PGY * <i>budha</i> , * <i>gabudha</i> , * <i>madha</i> , * <i>yibadha</i>	penis PCNSW * <i>dhun</i>
meat PCNSW * <i>dhiiny</i>	person, Aboriginal PCNSW * <i>mayiny</i>
men's marriage division PGY * <i>gabi</i> , * <i>gambu</i> , * <i>marrii</i> , * <i>yibaay</i>	pick up, to PGY * <i>dhiyama-l</i>
milk thistle PGY * <i>balamba</i>	pierce, to PCNSW * <i>dhu-rr</i>
mist PCNSW * <i>gwawng</i>	pigeon, bronzewing PGY * <i>dhamarr</i>
mistletoe PGY * <i>baan</i>	pinch, to PCNSW * <i>nhima-l</i>
mosquito PGY * <i>mungin</i>	plover PGY * <i>baaldharradharra</i>
mother PGY * <i>ngambaa</i> , PNW * <i>gunii</i>	plural PCNSW *- <i>galgaang</i>
	possum PGY * <i>mudhay</i>
	privative PCNSW *- <i>dhalibaang</i>

queen bee PGY * <i>guniinii</i>	snake, brown PCNSW * <i>dhurung</i>
question PGY * <i>yaama</i>	snake, carpet PCNSW * <i>yabaa</i>
rainbow PCNSW * <i>yulubirrginy</i>	snake, red-bellied black PCNSW * <i>ngandabaa</i>
red kangaroo PGY * <i>bawurra</i>	some PCNSW * <i>gulbirr</i>
red-bellied black snake PCNSW * <i>ngandabaa</i>	son PCNSW * <i>wurrumany</i>
rib PCNSW * <i>dharrarr</i>	song PGY * <i>yugal</i>
right hand PGY * <i>dhuruyaal</i>	soon PGY * <i>yila</i>
root PGY * <i>warran</i>	sore PCNSW * <i>bagin</i>
root, type of PGY * <i>wudhugaa</i>	sorry! PGY * <i>madja</i>
rotten PGY * <i>nhuwi</i> , PNW * <i>buga</i>	speak, to PGY * <i>guwaa-l</i>
run, to PCNSW * <i>banaga-y</i>	spear PCNSW * <i>bilaarr</i>
saltbush PGY * <i>nhingil</i>	spit, to PGY * <i>dhubi-l</i>
sand PCNSW * <i>garay</i>	split, to PGY * <i>baarrayi-l</i>
sand goanna PCNSW * <i>dhuliiny</i>	spouse PGY * <i>guliiirr</i> , PNW * <i>ngubaany</i>
scale of fish PGY * <i>giinbal</i>	squirrel, flying PGY * <i>bagu</i>
scar PGY * <i>yurtun</i>	stand, to PCNSW * <i>warta-</i>
scratch, to PGY * <i>mawu-ng</i>	star PNW * <i>girralaang</i>
scrub PGY * <i>yurrul</i>	step PGY * <i>munday</i>
scrub turkey PGY * <i>wagun</i>	stick, digging PCNSW * <i>ganaay</i>
see, to PCNSW * <i>nga-</i>	stomach PGY * <i>mabal</i>
shallow PGY * <i>ganaay</i>	stone axe PGY * <i>yuundu</i>
shield PGY * <i>burriin</i>	string PGY * <i>buurr</i>
shin PCNSW * <i>buyu</i>	string bag PCNSW * <i>gulay</i>
shoulder PGY * <i>walarr</i> , PNW * <i>ganaa</i>	suck, to PCNSW * <i>ngamu-</i>
shrub, fan-shaped PGY * <i>mirrerr</i>	sun PGY * <i>yaraay</i>
sing, to PGY * <i>bawi-l</i>	swan, black PGY * <i>barayamal</i> , PNW * <i>dhundhu</i>
sister, older PCNSW * <i>buurriiny</i> , PGY * <i>bawa</i>	swim, to PCNSW * <i>gumbi-y</i>
skin PCNSW * <i>yulany</i>	tail PCNSW * <i>dhun</i>
sky PCNSW * <i>gunanggalang</i>	taste, to PGY * <i>dhadha-l</i>
sleep, to PGY * <i>baabi-l</i>	testicles PCNSW * <i>burru</i>
smell, to PGY * <i>buwi-y</i>	thigh PCNSW * <i>dharrang</i>
smoke PGY * <i>dhuu</i> , PNW * <i>budhu</i>	thin PGY * <i>burabura</i>

this way PCNSW * <i>dhaany</i>	urine PCNSW * <i>giiliny</i>
thistle, milk PGY * <i>balamba</i>	vegetable food PGY * <i>yuul</i>
three PGY * <i>gilibaa</i>	vein PGY * <i>buurraan</i>
throat PCNSW * <i>wuru</i>	vomit, to PGY * <i>gaawi-l</i>
throw, to PGY * <i>waa-l</i>	wagtail, willie PCNSW * <i>dhirridhirri</i>
thunder PGY * <i>dhulumaay</i>	wanting PCNSW *- <i>nginda</i>
tie up, to PGY * <i>yulaa-l</i>	water PCNSW * <i>galing</i>
tired PCNSW * <i>yinggil</i>	we all PCNSW * <i>ngiyani</i>
tongue PCNSW * <i>dhalany</i>	we two PCNSW * <i>ngali</i>
tooth PCNSW * <i>yirang</i>	what PCNSW * <i>minyang</i>
track PGY * <i>yurruun</i>	whirlwind PGY * <i>buulii</i>
tree, bark of PGY * <i>nganda</i>	whistle, to PGY * <i>wiila-y</i>
tree, beefwood PGY * <i>mabu</i>	whistling duck PGY * <i>dhibaayu</i>
tree, coolebah PGY * <i>gulabaa</i>	white box tree PGY * <i>bibil</i>
tree, gum PGY * <i>yarraan</i>	white cockatoo PCNSW * <i>muraany</i>
tree, ironbark PGY * <i>dhiinyaay</i>	white man PCNSW * <i>wandang</i>
tree, leopardwood PGY * <i>bagala</i>	wild dog PGY * <i>marayin</i> , PNW * <i>yugi</i>
tree, myall PGY * <i>maayal</i>	willie wagtail PCNSW * <i>dhirridhirri</i>
tree, native orange PGY * <i>bambul</i>	wind PGY * <i>maayirraa</i>
tree, oak PGY * <i>murtgu</i>	woman PCNSW * <i>yinarr</i>
tree, white box PGY * <i>bibil</i>	women's marriage division PGY * <i>budha</i> ,
tree goanna PGY * <i>mangun.gaali</i>	* <i>gabudha</i> , * <i>madha</i> , * <i>yibadha</i>
truly PGY * <i>giitt</i>	wood duck PNW * <i>gunaarrung</i>
turkey, scrub PGY * <i>wagun</i>	word PGY * <i>garay</i>
turtle PGY * <i>waramba</i>	yam, type of PGY * <i>milaan</i>
two PGY * <i>bulaarr</i>	yamstick PCNSW * <i>ganaay</i>
type of berry PGY * <i>gumi</i>	yellow belly fish PGY * <i>dhagaay</i>
type of grub PGY * <i>birraa</i> , * <i>yarrangan</i>	yes PGY * <i>ngaa</i>
type of root PGY * <i>wudhugaa</i>	you PGY * <i>nginda</i> , PNW * <i>ngindu</i>
type of yam PGY * <i>milaan</i>	you all PGY * <i>ngindaay</i>
uncle PGY * <i>garrugii</i>	you two PGY * <i>ngindaali</i>
uninitiated boy PCNSW * <i>birrany</i>	younger brother PCNSW * <i>galamaany</i> , PGY * <i>dhagan</i>

APPENDIX: GAMILARAAY RECONSTITUTION

The following is a list of the primary sources used in the reconstitution of the Gamilaraay items given above. Only the major sources are included here (see Austin (forthcoming) for further details); these are R: Ridley (1875, 1877), M: Mathews (1903), and T: Tindale (1938).

- %-baa 'domain' R: *baa*, M: *baa*
- %*baaldharradharra* 'plover' M: *baldurradhurra*
- %*baarrayi-l* 'to split' R: *baraile*
- %*baaya-l* 'to chop' R: *baia*, *baialda*, M: *bailuma*
- %*bagu* 'flying squirrel' M: *buggu*
- %*balabalaa* 'butterfly' M: *bullabulla*
- %*bara-y* 'to jump' R: *pārī*, M: *barri*
- %*barayamal* 'black swan' R: *barrianmul*, M: *pariamul*
- %*badha* 'bitter' R: *butta*, M: *buddhah*
- %*bawa* 'back' R: *baoa*, M: *bo*
- %*bawurra* 'red kangaroo' M: *ba-urura*
- %*birray* 'uninitiated boy' R: *birrī*, M: *birre*
- %*bululuy* 'evening' R: *būlului*, M: *bulului*
- %*bunbun* 'grasshopper' R: *būnbūn*
- %*burrii* 'brigalow' R: *buri*
- %*burudha* 'bull ant' R: *burudha*
- %*buurit* 'string, hair-string belt' M: *būr*
- %*buurraan* 'vein' R: *būran*
- %*buurrii* 'elder sister' R: *būrē*, T: *borei*
- %*buwi-y* 'to smell' M: *buia*
- %*gaarra-y* 'to paint' R: *karuldai*, M: *karulla*
- %*gaawul* 'lagoon, creek' M: *kawull*
- %*gabanbaa* 'light (in weight)' R: *kubonbā*, M: *kubbunba*
- %*galariin* 'acacia blossums' R: *kolorīn*
- %-*galgaa* 'plural' R: *kalka*
- %*gama-l* 'to break' R: *gumi*, M: *kumulli*
- %*ganaay* 'shallow' M: *kunnai*
- %*garril* 'leaf' R: *karril*, *kurril*
- %*garrugii* 'uncle' R: *kurugi*
- %*gawarrawarr* 'green (of grass)' R: *goärōr*, M: *kōrōr*

- %*giinbal* ‘scale of fish’ M: *geenbull*
 %*gimubi-l* ‘to make’ R: *gimobi*, M: *gimobilli*
 %*giwirr* ‘Aboriginal man’ R: *giwīr*, *giwir*
 %*giyan* ‘centipede’ R: *kian*, M: *giun*
 %*gubudhu* ‘dove’ M: *gubudhu*
 %*guda* ‘native bear, koala’ M: *guda*
 %*gulbirr* ‘some’ T: *gulbiri*
 %*gunagala* ‘sky’ R: *gūnagulla*, M: *gunagulla*
 %*guniinii* ‘queen bee’ M: *gooneenee*
 %*gunugunu* ‘cough’ M: *gunugunu*
 %*gurru* ‘deep’ M: *kuru*
 %*guru* ‘bandicoot’ R: *kūru*, M: *kuru*
 %*guwa* ‘fog, mist’ R: *gūa*, M: *goa*
 %*guyinbaa* ‘near’ R: *kuïnbu*, M: *gwinba*
 %*mabu* ‘beefwood tree’ M: *mabu*
 %*marrabaa* ‘good’ R: *murrubā*, M: *murraba*
 %*marrii* ‘men’s marriage division’ R: *murri*
 %*madha* ‘women’s marriage division’ R: *mātā*, *māthā*
 %*munday* ‘step’ M: *mundai*
 %*murrun* ‘alive’ R: *mōron*, M: *murunbu*
 %-*ndaali* ‘bound pronoun – 2dual’ M: *ndali*
 %-*ndaay* ‘bound pronoun – 2plural’ M: *ndai*
 %*ngamu-ŋg* ‘to suck’ R: *ŋamughi*, M: *ngummunga*
 %*ngarribaa* ‘far’ R: *urribu*, *ŋurribā*, M: *ngurribu*
 %*ngarrila* ‘locust’ M: *ngurrela*
 %*ngindaali* ‘you two’ M: *ngindali*
 %*ngindaay* ‘you all’ M: *ngindai*
 %*ngiyani* ‘we all’ R: *ŋiani*
 %*nhingil* ‘saltbush’ R: *nijil*
 %*nhun* ‘back of neck’ R: *nun*, M: *nun*
 %*dhaal* ‘cheek’ R: *tāl*
 %*dhaadhiirr* ‘kingfisher’ M: *thaddir*
 %-*dhalibaa* ‘privative’ R: *dalibā*
 %*dhamarr* ‘bronzewing pigeon’ R: *tāmūr*, M: *dhummarr*

- %*dhandarr* ‘frost’ R: *tundar*, M: *dhundar*
 %*dharayan* ‘hail’ R: *terian*, M: *thurrian*
 %*dharrairr* ‘rib’ R: *turrur*, M: *thurrur*
 %*dhadha-l* ‘to taste’ R: *tātule*, M: *dhuddulli*
 %*dhibaayu* ‘whistling duck’ R: *thipaiyu*, M: *jibbaia*
 %*dhiinyaay* ‘ironbark tree’ R: *tinai*
 %*dhubi-l* ‘to spit’ M: *dhubila*
 %*dhurtun* ‘fur of animal’ M: *dhurun*
 %*dhuruyaal* ‘right hand’ M: *thurial*
 %*duu-n* ‘to crawl’ M: *dhura*
 %*dhuraay* ‘flame, light’ R: *tūrī*, M: *dhuri*, *dhooree*
 %*dhuyul* ‘hill’ R: *taiyul*, M: *dhooyool*
 %*walarr* ‘shoulder’ R: *wolār*, M: *wollar*
 %*wamba-l* ‘to carry’ R: *wumbi*
 %*waragaal* ‘left hand’ M: *wurtagal*
 %*warrama-l* ‘to build’ R: *wurrumī*
 %*wiila-y* ‘to whistle’ M: *wilea*
 %*wiidhaa* ‘bowerbird’ M: *witha*
 %*wuru* ‘throat’ R: *wūrū*
 %*wurunga-y* ‘to dive’ M: *wurungaia*
 %*wuruyan* ‘curlew’ M: *wurean*
 %*wuyuu* ‘black magpie’ M: *wiu*
 %*yagaay* ‘hey!’ H: *jagai*
 %*yarrangan* ‘type of grub’ M: *yerriengun*
 %*yadhaar* ‘down of bird’ R: *yudāra*, M: *yuddar*
 %*yibadha* ‘women’s marriage division’ R: *ippātā*, *ippāthā*
 %*yila* ‘soon’ R: *īla*, M: *ila*
 %*yulu* ‘fingernail’ R: *yūlu*, M: *yulu*
 %*yuluwirri* ‘rainbow’ R: *yulowirri*, M: *yuluwirri*
 %*yurrun* ‘scar’ M: *yooroon*

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LEXICOSTATISTICS AND AUSTRALIAN LANGUAGES: PROBLEMS AND PROSPECTS

PAUL BLACK

1. INTRODUCTION

Geoff O'Grady has been one of the modern pioneers of the comparative study of Australian languages with his work towards the reconstruction of Proto Ngayarda (O'Grady 1966) and Proto Pama Nyungan (O'Grady 1979). One aspect of this work about which he must surely have developed mixed feelings was his role in a large-scale attempt to classify all Australian languages on the basis of the wretched data available some thirty years ago (O'Grady, Voegelin & Voegelin 1966). (Unknown to him, I played a tiny role in the same project, ignorantly sorting through lists of language and tribal names while working part-time for the Voegelins during one of my undergraduate years at Indiana University.) The classification was a major step forward, but at the same time it was full and explicit enough that it could soon be challenged by others able to gather better data or even just able to subject the early records of one particular area or another to more careful scrutiny.

In his comparative work O'Grady had taken an early interest in the common lexicostatistical approach to language classification, although he did not find the standard list of meanings used to be very suitable to Aboriginal languages (O'Grady 1960). The O'Grady, Voegelin and Voegelin (1966) classification was in part based on lexicostatistical evidence, but here other problems arose: not only was much of the data available both limited and unreliable, but because of the large number of languages the lexicostatistical percentages were generally calculated only for adjacent pairs of varieties (see O'Grady & Klokeid 1969). Unfortunately these are precisely the ones most likely to have borrowed vocabulary from each other and thus further affect percentages which already tended to be based on poor data. At the same time, the lack of a full matrix of percentages made it impossible to apply any but the crudest sort of subgrouping criteria, which regrettably were nonetheless accepted as a norm for further work on Aboriginal languages (see Wurm 1972:110).

We should be able to do much better today. Not only has there been nearly thirty more years of research on Australian languages, but we can now take advantage of improved computer technology and the computer archiving of much lexical data on Australian languages at the Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) in Canberra. Whereas work towards improving our understanding of the relationships should draw on all evidence available, at the moment much of the best evidence seems likely to come from lexicostatistical studies.

Why this is so is the subject of the present article. Regrettably the history of lexicostatistics has been plagued by prejudice and misunderstanding, part of what Sankoff (1973:96) described as "a tradition of hostility towards probabilistic modelling in historical

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linguistics". A major example of misunderstanding was Chrétien's (1962) highly influential paper on the mathematics of the approach, and the prejudice can be seen in the failure of the same journal to publish a rebuttal by Sankoff and three mathematicians that ultimately appeared as Dobson, Kruskal, Sankoff and Savage (1972).

Many linguists seemed to dismiss lexicostatistics on the basis of the smallest evidence that it might not always 'work', as if it could not be useful if it were not infallible. I suspect this was largely because they were not prepared to cope with the mathematical nature of the approach: if it wasn't infallible, then how could they evaluate the results they obtained to decide what parts to trust and what parts to question? In any case the same linguists seldom questioned the traditional approaches to subgrouping even though they tend to be no more reliable. This seems rather odd in that statistical approaches do not pretend to produce fully accurate results, whereas one might hope for more from the 'qualitative' traditional approaches.

The present paper accordingly begins by pointing out the limitations of more traditional approaches and why we can expect lexicostatistics to perform better in Australia. Since it has sometimes been argued that the peculiarities of Australian languages could limit the applicability of lexicostatistics, I then draw on previously unpublished work (Black 1974a, 1979a, 1979b, 1979c, 1980b) to show (a) why name taboo cannot be expected to affect lexical change in Australia to nearly as great extent as has sometimes been imagined, (b) how proposed cases of rapid lexical change are not supported by the available evidence, and (c) how lexicostatistical approaches can be used to detect and cope with cases of heavy borrowing.

2. AUSTRALIAN LANGUAGES

Australian languages seem to conspire to frustrate genetic classification. In earlier days what was obvious was that many words, such as *mara* 'hand' and *kuna* 'faeces' recurred across the continent with little phonological change. This made the relationship of the languages obvious, but the uniformity provided no basis for subgrouping. More recently, thanks largely to Hale (e.g. 1976a, 1976b), it was realised that various languages have indeed undergone extensive phonological change, if often of very similar sorts. Most strikingly, various groups of languages, especially in Cape York Peninsula and central Australia, have lost initial consonants and sometimes the following vowel.

One might hope that this would provide good evidence for subgrouping, but it usually has not. For one thing, similar changes may be observed in languages so widely separated geographically that their subgrouping is highly unlikely. For example, it would be possible to posit essentially the same set of rules to account for both initial dropping and the loss of distinctions among final vowels in Walangama of south-western Cape York Peninsula (see Black's 1980a study of Norman Pama) and Nganyaywana of coastal New South Wales (Crowley 1976), but I doubt that anyone would seriously consider subgrouping them together.

On the other hand, even within a reasonably clear subgroup similar changes sometimes seem to have occurred independently. For example, all of Hale's (1964, 1976a, 1976b) Northern Paman languages lost at least some initial consonants, and yet this cannot be taken to have happened just once in the common protolanguage. The biggest problem is that initial nasals could not have been lost before they caused various changes in the next consonant in

some but not all Northern Paman varieties. In Ngkoth (NGK), Luthig, Linngithig, and Yinwum (YIN), following intervocalic nasal-stop clusters were reduced to stops or prenasalised stops to varying extents, in Yinwum alone following intervocalic stops also become prenasalised, while in such other varieties as Aritinngithig (ARI) no such changes occurred: e.g. *nyintu > ARI ntyu, NGK ti, YIN ⁿti 'you (SG)'; *nyipul > ARI pul, NGK pyul, YIN ⁿpyul 'you (DU)'. In addition, initial laminals were not lost in Ngkoth before they caused the following vowel to be fronted, as in *t'uma > *t'yima > *ima > NGK mya 'fire', but most other varieties do not share this change: e.g. *t'uma > *uma > Awngthim mwa. Furthermore, whereas most varieties lost all initial consonants, Uradhi retains some in lenited form, as in mata < *maRa 'hand'.

Thus initial dropping cannot be treated as a single shared innovation providing evidence for Northern Paman as a subgroup. Even where it can be attributed to the common ancestor of a group it is such a commonplace development in Australia that it hardly constitutes strong evidence in support of the grouping. Similarly, although various languages along the south-western coast of Cape York Peninsula have lost final vowels, this 'areal feature' also seems to provide no evidence for subgrouping.

About the only evidence for a genetically significant shared innovation I've seen for Australian languages actually suggests grouping Hale's Northern Paman (NP) and Middle Paman (MP) varieties. On Cape York Peninsula, at least, apparently only these languages show a merger of intervocalic *t and (retroflex) *R, perhaps originally to *t but ultimately to glottal stop in many of the languages: e.g. *maRa > NP Uradhi mata, Mbiywom ta, Awngthim ?a, MP Umpila ma?a, Wik-Mungkan ma? 'hand'; *kuta(ka) > NP Uradhi utaya, Mbiywom two, Awngthim ?wa, MP Umpila ku?aka, Wik-Mungkan ku? 'dog'. The same languages also show a change of final alveolar *r, perhaps originally to a fricative *y, but later to y or zero in some languages: e.g. *akur > NP Uradhi akuy, Awngthim kawy, MP Kuuku Ya?u akuy, Wik-Muminh aku 'skin'. (This particular example also shows that Middle Paman is sometimes like Northern Paman in lacking initial consonants, but it is not clear what earlier consonant, if any, might have been lost.) However, velar or velarised reflexes of final *r have also been found for languages further south in the Peninsula: e.g. *gamur > Koko-Bera *ŋəmér* but Kok-Narr *ŋəmék* and Kurtjar *ma:ry* 'armpit'.

Thus even in Cape York Peninsula, where there is substantial evidence of phonological change, there is still very little evidence for shared innovations that might support a detailed classification of the languages. This should not be surprising, since it has long been clear that the traditional approach suffers from three major problems:

- (a) Some types of changes are so common that they are not particularly good evidence for shared innovations. This is generally true of such changes as the palatalisation of consonants before front vowels, and in Australia it also seems to be true of such changes as the loss of initial consonants. Hockett (1958:519) suggests that:

So many of the common innovations on which we have to rely for historical grouping are of this sort that it is rarely safe to put one's faith on a *single* common innovation: we look, rather, for several which set off the same subgroup of languages against the rest of those in the family.

- (b) Hockett (1958:521–522) also notes that where we do find an abundance of common innovations, sometimes they support conflicting subgroupings. For example, a number of innovations support subgrouping the major branches of Indo-European in different

ways, perhaps because they spread over the different sets of branches when these were still mutually intelligible dialects of Proto Indo-European.

- (c) Finally, there is no reason that languages must change in a way to produce shared innovations, so evidence may simply be lacking. This seems to be the case not only for many Australian groups, but also for such ones as the Cushitic group studied by Black (1974b).

3. LEXICOSTATISTICS

Lexicostatistics seems to provide considerably more evidence for subgrouping Australian languages than we have found from shared innovations. For example, even lexicostatistical percentages based on just 100-item word lists, collected by Hale for thirty varieties spoken on Cape York Peninsula, provide reasonably clear evidence for Northern Paman and other putative subgroups (Black 1974a). Interestingly, these percentages also provide somewhat weaker evidence for a higher level grouping of Northern and Middle Paman, as suggested by the evidence of shared innovations. It is not really surprising that lexicostatistics provides evidence for subgrouping where shared innovations do not: lexicostatistical percentages can always be calculated, and unless they are uniformly low or very unusual they will support some subgrouping hypothesis or another. The question one must ask is how reliable this evidence is.

Much of the evidence for the reliability of lexicostatistics is based on the simplest and most common approach, which goes back to Swadesh (1950, 1952); see also Hymes (1960) for a survey and Dyen (1975) for a variety of relevant papers. The approach starts with determining, for each language variety being considered, the form(s) that most commonly represent each meaning on a set list of perhaps one or two hundred relatively 'basic' meanings. Then, for each pair of language varieties, a judgement is made as to which meanings are represented by cognate words in the two languages and which are not. A lexicostatistical percentage is then calculated as $100(c/c+n)$, where c is the number of meanings judged to have cognate forms and n is the number judged not to have cognate forms (meanings for which no decision can be made are ignored). The percentages are then interpreted as indices of relative similarity and as such taken as evidence for subgrouping. Although applications in the literature have used a variety of procedures, both appropriate (e.g. Dyen 1962) and inappropriate, to determine a subgrouping from the percentages, perhaps it is better to view the process as one of deciding which subgrouping hypothesis is best supported by the percentages; see §4.3 and §4.5.

Considerably more advanced approaches to lexicostatistics have been investigated, for example, by Dyen, James and Cole (1967) and by Kruskal, Dyen and Black (1971, 1973). However, as Embleton (1986:66) puts it:

An important and perhaps surprising result is that these more complex models behave remarkably similarly to the simpler ones, partially justifying some of the earlier (and often implicit) assumptions, which should therefore no longer be challenged as being totally unrealistic.

Four types of evidence have been found to support the validity and general usefulness of the common approach to lexicostatistics:

- (a) Evidence that vocabulary tends to change at a reasonably constant rate was first published by Lees (1953), who used historical records on thirteen languages (eleven

Indo-European plus Coptic and Chinese) to estimate that about 19% of 215 relatively 'basic' meanings underwent lexical replacement each one thousand years. This rate tended to be confirmed in studies of Japanese, Carib and Arabic varieties (see Hymes 1960:12–13), but it was questioned by Bergsland (1958) and Bergsland and Vogt (1962), who found strikingly lower rates of replacement for Icelandic and—using eighth and tenth century manuscripts to represent the fifth century language—Georgian. Blust (1981) is said to have provided evidence of some sort (presumably not based on historical records) suggesting highly variable retention rates among Austronesian languages, but I have not yet been able to examine this paper.

It has long been known that the use of different languages within the same community often leads to heavy borrowing (Bloomfield 1933:461–475), and Pawley and Ross (1993:448–452) have recently proposed that it can also account for why some Austronesian languages seem far less conservative than others. One may accordingly wonder if the conservative nature of Icelandic relates to its relative isolation, rather than (or in addition to) the prevalence of literacy, as has sometimes been supposed. Although this may suggest that lexical replacement rates can be affected considerably by contact, presumably the effects are relatively short lived, as the languages that may have had an initially great impact on each other achieve some sort of equilibrium. There also seems to be no reason to suppose that such intimate contact was significantly greater in parts of Oceania than in Europe, whose historical complications are well known. It may thus be quite normal for languages to undergo such contact effects for just a few centuries now and then, and yet over the course of several millennia the effects on replacement rate need not be great.

- (b) The theoretical basis for expecting vocabulary change to be regular was clarified by Sankoff (1969; see also 1973), who showed that it could follow from stochastic variation in the frequency with which particular words represented particular meanings. Even though all our word choices may be well motivated as we speak, statistical regularity can be seen in the overall pattern of choices, just as it can be seen in such things as patterns of transportation or telephone use even though these also ultimately involve individually well-motivated decisions.
- (c) Carefully produced lexicostatistical classifications tend to agree with ones based on other evidence, although the correspondence is not always perfect. In particular, Dyen, Kruskal and Black (1992) found that a lexicostatistical classification of eighty-four contemporary varieties of Indo-European agreed in most respects with the most commonly accepted classification. Icelandic certainly proved unproblematic, despite its unusually low rate of lexical replacement (see (a) above). The most striking disagreement was that the lexicostatistical classification failed to find evidence for grouping the Indic and Iranian languages into an Indo-Iranian branch. However, this grouping is well established on the evidence of such ancient varieties as Sanskrit and Old Persian; it is not clear that it could be established on the basis of the contemporary varieties used in the lexicostatistical study, or that applying lexicostatistics to the ancient varieties would fail to provide evidence for the grouping.
- (d) Computer simulation of language divergence and its reconstruction (Sankoff 1969; Guy 1980:28–31; Embleton 1986:79–96) suggests that a lexicostatistical subgrouping based on two hundred meanings in ten languages or so will be fully accurate less than half the time; that is, more likely than not it will contain at least one mistake. Even so, Embleton's work makes it clear that these mistakes tend to be quite limited. Using

another measure she found correlation of nearly 0.97 (out of 1.00) between the actual tree and the lexicostatistical subgrouping for a model involving standard assumptions (a 19% replacement rate and no borrowing), or ranging between 0.85 and 0.97 for a model involving other retention rates and allowing for a borrowing rate of up to 30%. The same studies show that accuracy decreases significantly as the number of meanings is cut to one hundred or less. Some of Guy's (1980:9–10) criticisms of the common approach to lexicostatistics are based on a study involving as few as forty meanings, which not surprisingly produced results ranging from "poor...to incredibly bad".

Clearly lexicostatistics is imperfect. Perhaps it is too imprecise to be a worthwhile basis for estimating actual divergence times—an application known as *glottochronology*—especially since it is not clear that the rates of change observed for languages with long written traditions need hold for unwritten languages. For subgrouping purposes, however, its imperfections seem small enough to live with, especially considering that no other approach has yet provided much evidence at all for classifying Australian languages.

It is not surprising that we have no single reliable means of making inferences about prehistory. In such a case it seems best to consider all the evidence available. Lexicostatistics and the traditional use of the evidence of shared innovations complement each other in a valuable way because they are based on quite different sets of assumptions. When we are lucky enough to find that both approaches support the same results, we can be very confident that we are on the right track.

4. DO AUSTRALIAN LANGUAGES HAVE SPECIAL PROBLEMS?

To the extent that some of the best evidence in support of lexicostatistics is based on Indo-European languages, one may wonder if it is equally applicable to Australian languages in spite of cultural and linguistic differences (e.g. word taboo practices, widespread multilingualism, an abundance of synonyms) and relatively small population sizes. At one point Dixon (1970, 1972:331–337) went so far as to propose an alternative lexicostatistical model based on the assumption that Australian languages normally borrowed so heavily from their neighbours that adjacent languages tended toward an equilibrium level of 50% shared vocabulary. Let's review some problems that have been proposed in connection with name taboo and the rates of lexical change and borrowing to see how compelling they are.

4.1 NAME TABOO

The debate about the possible effects of name taboo on lexicostatistical investigation is fairly old; see, for example, Bergsland (1958:655–656), Hymes (1960:8–9) and Bergsland and Vogt (1962:126–127), and see also Simons (1982) and Alpher and Nash (1981) with respect to Austronesian and Australian languages respectively. For Australian languages the notion that name taboo could affect lexical change is even older. Fraser (in Threlkeld 1892:xvi–xviii) stated that:

When a man or a woman dies, his family and the other members of the tribe, as far as possible, never mention his name again, and discontinue the use of those ordinary words which formed part of his name; other words are substituted for those common ones, and become permanently established in the daily language of the clan or sub-tribe to which the deceased belonged.

In a footnote to the above Fraser added that, "It is possible that the discarded word resumes its place in the language after a while; this point I have not ascertained; in all events the adopted word remains".

As described by Fraser, name taboo would seem likely to affect lexical change, but it is not clear how great the effect might be. If the 'discarded' words never returned it could promote massive lexical change, as has been proposed for the Tiwi language by both Pilling (1970:268) and Osborne (1974:5); we will return to this case later. If the main source of substitutes was through borrowing from nearby varieties, this borrowing would surely also be heavy, as Dixon (e.g. 1972:331) suggested. On the other hand, if 'discarded' forms generally did return, the main effect might be to increase the numbers of synonyms in the language (see also Heath 1979:409–410). For Western Desert communilects, in fact, Hansen (1984:8) has suggested that name taboo is one of the factors, along with intergroup movement and intermarriage, that has promoted an abundance of synonyms for even basic vocabulary. One might expect the availability of synonyms to make it unnecessary to borrow replacements for tabooed vocabulary, but in any case it may make the impact of further borrowing less significant, since a newly borrowed form generally just becomes of one of several alternatives. To the extent that older synonyms may eventually be dropped from the language, of course, the end result may be no different than if the older form had immediately been replaced by an adopted form, but this need not imply especially rapid change or especially heavy borrowing.

What we now know about name taboo practices rules out at least the most extreme effects. Much of the following evidence was originally presented by Black (1979a):

- (a) Name taboo is or was clearly temporary in many Australian Aboriginal cultures, lasting from a few months (e.g. in Torres Strait) to many years (among the Tiwi). For Australian groups between Alice Springs and the Gulf of Carpentaria Spencer and Gillen (1904:526) noted that the taboo did not even extend to all members of the tribe. There is no clear evidence that name taboo was permanent for any Australian group, although some brief, early accounts may suggest this was the case.
- (b) For some groups, it is very clear that the names of deceased people are later reused. The Wik-Mungkan (McKnight 1975:86–87) and Yirr'-Yoront (Alpher and Nash in preparation) actually had ceremonies at which the name was returned to use a few years after the death. While studying the languages of the Kurtjar I found that people were often named after certain grandparents, and for Koko-Bera I even found a case of a nickname (*Thakathéw* 'for spit') being inherited along with the proper name. Roth (1903:20) and Haviland (1974:229) also report names that were still in use long after the first person they were known to refer to had passed away.
- (c) Words cited as examples of tabooed vocabulary have also been attested as still being in use in the language years later. For Tiwi, Hart's (1930:282) example of *mulikina* 'full' and Pilling's (1970:268–269) of *tartuwali* 'shark' are both listed in Osborne's (1974) study and in a more recent Tiwi dictionary. In discussing the 'Maroura', Holden (in Taplin 1879:21–23) noted that *Therto* 'head', *Konito* 'belly', and *Muna* 'hand' had been tabooed, and that the word for 'water', which he lists elsewhere as *Nucko*, had changed five times in recent years. These forms were subsequently attested in Curr (1886, II:239–240) as *thirtoo*, *kormtoo* ('stomach'), *murra*, and *ngookoo* 'water' respectively; I suspect that Holden's *Muna* was simply a typo for *Murra*. Some fifty years later Tindale

(1939) similarly attested *ku:ntoi* 'belly' and *'yok:o* 'water'. For other examples of proscribed vocabulary returning to use see Capell (1963:A-11) and Dixon (1980:28).

- (d) There are a variety of sources for replacing tabooed vocabulary, including the use of resources already in the language as well as borrowing from another variety well known to the community (see Dixon 1980:99). The former include synonyms, use of auxiliary vocabulary (see Capell 1963:A-11), compounding or paraphrase (see Douglas 1971), semantic shift (see Dixon 1980:122), and special vocabulary, sometimes glossed as 'no-name', whose only function is to serve as a temporary substitute (see Nash & Simpson 1981). The special substitutes can be found across the continent:

Ngarluma Joocurree (Hall 1971:30) or *Djugari* (Gray 1976:148);

Manjilyjarra kunmarnu (Patrick McConvell pers. comm.);

Gurindji yini murlung (Nash & Simpson 1981);

Mudbura kulu murlung or *mijingu* (Nash & Simpson 1981);

Warlpiri, Warlmanpa, Warumungu kumunjayi (Nash & Simpson 1981);

Pintupi/Lurija kunmanarranya, kunmanytjayi, kunmanu (Hansen & Hansen 1977);

Mangarayi gaji (Francesca Merlan pers. comm.);

Kurtjar rdookirbharr (general), *rdookirchontik* (place), *tamark* (namesake) (Black & Gilbert 1986);

Koko-Bera ngəlpángənpələy and *ngélpərrəny* (author's data);

Olgol arambat (Sommer 1976:231);

Yirr'-Yoront wolonn, wall-warrch, mer-warrch (depending on the speaker's relationship to the deceased; Alpher & Nash 1981);

Wik-Mungkan kootamàta (for a man's name), *nhamparriya* (for a woman's name) and *Weenana* (for a place) as reported by Sutton (1978); *yukaino* (for a namesake) and *wätjänänn* (other) as reported by Thomson (1946);

'on the Bloomfield [River]' *Tanyu* (namesake of the deceased; Roth 1903:20);

'Chepara' *Warkumbul* and *Waimungan* (for male and female family names; Howitt 1904).

Since name taboo was generally temporary, and since many languages used substitutes which were also clearly temporary, this cultural practice alone need not have had much effect on lexical change in Australia. One may, of course, imagine that there may be other reasons for rapid lexical change or for heavy borrowing, and we will consider these two matters further.

4.2 THE RATE OF LEXICAL CHANGE

The 40,000-odd years that people have lived in Australia provides ample time for their languages to have diverged to a point where no relationship can be recognised. Even so, similarities in lexicon and grammar are apparent across the continent. On the one hand this suggests that many Australian languages may be descended from a common protolanguage far more recent than 40,000 years ago, and on the other that there is no particular reason to

expect lexical change to be especially rapid in Australia. If lexical change were very rapid, it would be difficult to explain why many basic meanings (e.g. basic verbs, body parts) are represented by similar forms in languages across the continent. The similarity can be attributed to borrowing only if it is assumed that the more basic forms were borrowed more widely than less basic ones, a situation opposite any known case elsewhere in the world.

The alternative possibility that lexical change is unusually rapid in Australia certainly has not been apparent from the comparison of earlier and later attestations of languages. O'Grady, Voegelin and Voegelin (1966:26) noted that a list of vocabulary obtained for Parnkalla in 1960 agreed almost totally with one published in 1844. Similarly Haviland (1974:231) found that most of the Guugu Yimidhirr words published by Cook in 1770 remained "completely recognisable today"; Alpher and Nash (1981) estimate the retention of vocabulary over the two hundred years as being between 89% (if Cook was fully accurate) to 98% (if plausible explanations of error are accepted).

The best candidate for having exceptionally rapid lexical change is Tiwi, since it seems quite different from other Australian languages (although this could also be due to its isolation on Bathurst and Melville Islands) and because its speakers have had especially long-lasting taboos against using words resembling the names of the deceased. In view of the latter Osborne (1974:5, fn.8) proposed that, "It is quite likely that under these conditions the complete vocabulary of a language would be replaced in the course of several centuries".

Change in Tiwi has not been nearly as rapid as Osborne suggested, however. This can be seen by comparing Osborne's (1974) attestation (or more recent data) with that of Spencer (1914:464–476). Black (1979c) found that out of 227 forms in Spencer having meanings for which Osborne also attested forms, 139 (60.5%) are straightforward matches, 58 (25.5%) involve minor differences in pronunciation or glossing (e.g. Spencer's *tùa* 'enough' to Osborne's *tua* 'finished') 16 (7%) seem to involve mistakes in glossing (e.g. Spencer's *wailàni* 'breath, air' is similar to Osborne's form for 'yawn', which suggests how Spencer might have elicited his form), and only 16 (7%) cannot be matched up.

The last sixteen may well involve other errors or perhaps dialectal differences; they include (minus certain diacritics) *wianabàni* 'after' (cf. Osborne's *waija* 'now'), *punkìnyi* 'before', *iri ùmkeir um bùlunga* 'cheek', *pùndua* 'middle', *djidìngurin* 'man', *wunmali* 'mud' (second of two forms), *àmina pùra* 'moon', *gnabàiya jera* 'often', *auinterabili* 'pleased, glad', *ubùrma gamu* 'singing', *wiinigàni* 'then', *ninnèi* 'there', *anàba* 'wait', *kaùpo* 'water (fresh)' (second of two forms), *upauriliridi* 'weak' and *wòrkai* 'What for? Why? What is the matter? What do you want?' Readers can decide for themselves to what extent such forms from an early attestation should be considered evidence for rapid lexical change.

There could seem to be somewhat better evidence for rapid lexical change in a paper by Lithgow (1973) on the Muyuw language of the Milne Bay District in Papua New Guinea. By comparing the speech of older speakers—said to speak *Ag-wuliwel* 'the language of the old people'—with that of younger ones he found reason to believe that 27 forms on the Swadesh 100-item lexicostatistical test list had become or were becoming replaced by new forms, 13 of which were not cognate with the older forms.

It turns out, however, that many of the forms used by the younger speakers were already reported for a Muyuw dialect (see Lithgow 1976) attested under the name 'Muroa' in the British New Guinea Annual Report of 1889–90 (pp. 148–152). Of the 27 forms that Lithgow

(1973) believed had been replaced or were undergoing replacement, Black (1980b) found that the 1889-90 data was clearly closest to the 'Current Speech' in 15 instances and possibly closest in two more, whereas it was closer to the 'Old Speech' in only four or five instances. Of the other five forms, the older source lacked information on three forms and had forms similar to both the 'Old' and 'Current Speech' forms for the other two. The data thus suggests that something very close to 'Current Speech' was spoken before many of the speakers of the 'Old Speech' were born.

Lithgow (pers. comm., 17 September 1980) kindly furnished me with further details on the fascinating complexities of the situation. It seems inappropriate for me to repeat them here (I hope he has published them elsewhere), but at best they suggested that the case for rapid lexical change rests on a bit of hair splitting. Even if Lithgow's 'Old Speech' forms should represent an earlier, unattested stage of the dialect he was studying, one might wonder why the use of forms from another dialect should not be viewed as a shift in dialect allegiance rather than heavy borrowing—what would make the difference?

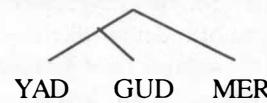
4.3 THE PROBLEM OF BORROWING AND ITS DETECTION

It is not difficult to find examples of noticeably heavy borrowing among Australian languages, whether or not this has anything to do with name taboo. What may not be realised is that such cases are found throughout the world, and even among the Indo-European languages dealt with in the lexicostatistical study by Dyen, Kruskal and Black (1992). For example, Albanian is believed to have borrowed all but a few hundred words of its entire vocabulary, and English borrowed over half of its lexicon from other languages; see the chapter on intimate borrowing in Bloomfield (1933:461–475). For an example of heavy borrowing among Cushitic languages, see Black (1976b).

When we can identify borrowings, as we often can in Indo-European, we can avoid counting them wrongly as cognates for lexicostatistical purposes. When we cannot distinguish borrowings from cognates, on the other hand, heavy borrowing can have a marked effect on lexicostatistical percentages. By the same token, however, the effect itself often enables us to detect the borrowing and make allowances for it, as Dyen (1963) demonstrated.

To see how this works, consider how lexicostatistical percentages are used to establish a subgrouping. Example (1) shows lexicostatistical percentages among three languages of the Torres Strait area, Gudang and Yadhaykeno on Cape York and Meriam Mir of eastern Torres Strait. (The percentages were calculated rather quickly (Black 1979b) on the basis of an 88-item list of meanings. Like other percentages cited in this section their purpose is simply to illustrate certain principles, rather than to present authoritative information on the languages themselves; the latter is best left to specialists working with the best sources of data.)

(1)	Yadhaykeno	YAD			
	Gudang	49	GUD		
	Meriam Mir	4	7	MER	



From these percentages it should be clear that Yadhaykeno and Gudang form a group at 49% shared cognates, and that both of them are much more distantly related (if related at all) to Meriam Mir, with which they seem to share 4% and 7% cognates respectively. We can accordingly represent their relationships (if Meriam Mir is indeed related) by the tree diagram

shown on the right. Note that this tree diagram, and the chronological sequences of linguistic splits that it represents, implies that the relationship of Yadhaykeno to Meriam Mir should be exactly the same as that of Gudang to Meriam Mir. By the same token Meriam Mir should share about the same percentage (allowing for statistical variation) with both Yadhaykeno and Gudang. And indeed it does, since the difference between 4% and 7% is not statistically significant.

More generally, for any three linguistic varieties that can be classified appropriately in a tree diagram, the two lowest lexicostatistical percentages (or any other measure of similarity) should be approximately equal. (The third percentage may or may not be higher, depending on whether or not two of the varieties form a subgroup excluding the third.) This pattern often does not hold for dialects of a single language, whose relationships are not well represented by tree diagrams (see Black 1976a, Dobson and Black 1979), but it should hold increasingly well as distinct languages undergo ‘independent’ development (as this is traditionally viewed). Accordingly, where the pattern does not hold for more divergent varieties, we can tell that something is amiss. Consider example (2), which adds other languages of the Torres Strait area to those of example (1):

(2) Yadhaykeno		<u>YAD</u>		
Gudang	49	<u>GUD</u>		
Mabuiag	9	23	<u>MAB</u>	
Meriam Mir	4	7	14	<u>MER</u>
Kunini	1	4	5	24 <u>KUN</u>

Clearly Yadhaykeno groups with Gudang at 49%, as before, but notice that their percentages with Mabuiag, of western Torres Strait, differ considerably: only 9% for Yadhaykeno but 23% for Gudang. Either the former percentage is depressed somehow, or the latter inflated considerably; the former is not impossible (see Dyen 1963), but the latter can easily be due to undetected borrowing. (Contaminated data is another possibility, since the Gudang data was from an early attestation.) Accordingly these percentages do not provide any good reason to group Mabuiag with the Yadhaykeno-Gudang groups, since its relationship to these is better represented by the 9% (or something not much higher) than by the 23%, and since 9% is not much higher than the 1% to 7% Yadhaykeno and Gudang share with the remaining languages. (There are other types of evidence suggesting that such a grouping could be correct, but the relationship may be too remote to be apparent from our lexicostatistical evidence.)

To continue with example (2), it seems that Meriam Mir groups with Kunini, of the Papua New Guinea mainland, at 24%. Accordingly we would also expect these two languages to share about the same percentages with Mabuiag, but again they differ, and again it seems likely that the 14% between Meriam Mir and Mabuiag may be inflated by borrowing, and that the 5% between Kunini and Mabuiag is closer to representing the actual degree of relationship.

To summarise my approach to subgrouping, I am simply seeking the genetic tree that is best supported by the percentages. In many cases, such as those above, the appropriate trees are fairly obvious, but where the data is less clear one could apply a mathematical measure of goodness of fit in order to evaluate the alternative trees. In any case, any such tree diagram will imply that certain of the percentages should be about equal, and significant deviation

from such equality may suggest that some of the percentages have been inflated by undetected borrowing.¹

4.4 A SECOND WAY OF DETECTING BORROWING

There is actually another way of getting a general idea of the amount of borrowing between two varieties. It seems clear that vocabulary varies considerably in stability, with words for some meanings (e.g. 'see', 'long', 'hand') tending to be far more stable than words for others (e.g. 'stretch', 'smooth', 'ghost gum'). Comparative linguists often distinguish these as more and less 'basic' vocabulary respectively, and in investigating genetic relationships they tend to trust the more basic vocabulary, viewing the less basic as more prone to borrowing. The distinction seems to correlate with frequency of use, which, as you may recall, was also the basis for Sankoff's (1969) model of lexical change. In any case it also has a practical application. As the frequencies f of meanings decrease we expect the retention rate r for cognates to also decrease while the rate of borrowing b increases (if the situation is conducive to borrowing), as shown in Figure 1; see Arapov and Kherts (1972) for evidence of this in the recent histories of several European languages.

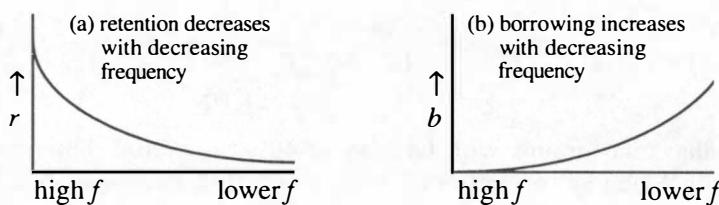


FIGURE 1: RETENTION r AND BORROWING b VERSUS MEANING FREQUENCY f

These patterns will not be apparent from a single set of lexicostatistical statistical percentages, but there are other ways to use them. For example, consider the eastern and western Torres Strait languages, Meriam Mir and Mabuiag, whose common percentage (in example (2)) appeared to be inflated by borrowing. We do not have data on word frequency in these languages, but we can fall back on the notion of more and less 'basic' vocabulary. In particular, using Ray's (1907) conveniently parallel word lists for the two languages I made a count of related forms (i.e. without trying to distinguish cognates from borrowings) among 395 meanings divided into the following four groups, which are presumed to range from most basic to least basic:

¹ It may be noted that Guy (1980) has proposed using correlations between the full sets of percentages for each pair of varieties as a basis for subgrouping. His approach seems to work well in computer simulations that involve varying rates of change, but it is not clear how well it would cope with undetected borrowings, since these can be expected to detract from the correlations that should provide a basis for determining the proper subgrouping. Guy's (1980:27) view of borrowing is quite different from commonly held views: he proposes that detected loanwords be treated as missing data, rather than as non-cognates, as is commonly done because they do indeed represent instances in which originally cognate forms have been replaced by non-cognates. Guy's explanation is rather cryptic:

To score them as non-cognates (or as cognates for that matter) is like letting scratches on a record influence one's appreciation of the performance of a musical work. Loanwords should be treated as missing items, for that is precisely what they are, as scratches on a record are bits missing from the original pressing.

Vocabulary Group	Related forms
a) 13 closed-class grammatical forms	0%
b) 82 basic nouns, verbs and adjectives from a 100-item list	11%
c) 73 other 'basic' words	12%
d) 227 terms for species names and cultural terms	27%

The fact that the percentage grows as the vocabulary becomes less basic and more cultural would certainly seem to confirm the heavy borrowing suggested by the percentages in example (2).

A similar pattern can be seen in a comparison between the Ngandi and Ritharngu of eastern Arnhem Land, which Heath (1978a) presented as a case of extremely heavy borrowing. Fortunately Heath's (1978b) Ngandi vocabulary usually notes related Ritharngu forms, and so it is easy to study their distribution. Leaving aside the closed-class forms, which are not listed in his vocabulary, the percentage of related forms rises from 33% for the 76 'most basic' forms to 42% for 77 other 'basic' forms to 57% for 228 species names and cultural terms.

To make it clear that this pattern is due to borrowing, let us consider another case. Example (3) shows lexicostatistic percentages among the Oykangand, Koko-Bera and Kurtjar languages of western Cape York Peninsula, based on a 'basic' word list of 158–165 items for each pair of varieties.

(3)	Oykangand	<u>OYK</u>		
	Koko-Bera	21	<u>KOK</u>	
	Kurtjar	15	20	<u>KUR</u>

The differences among the three percentages are not statistically significant. These differences suggest that there could have been borrowing between Koko-Bera and either Oykangand or Kurtjar or both, but it doesn't really matter, because even if we knew that either the 20% or the 21% was inflated by borrowing, the other is not really different enough from the 15% to allow us to confidently propose a subgrouping.

In any case, however, consider how the percentages of related forms vary over the same four types of vocabulary distinguished earlier. The following table gives data for all three pairs of languages, using the abbreviations introduced in example (3):

Vocabulary Group	OYK-KOK	OYK-KUR	KOK-KUR
a) 14–15 closed-class forms	60%	57%	50%
b) 79–82 'most basic'	26%	16%	24%
c) 65–68 'other basic'	8%	6%	9%
d) 80–159 'least basic'	29%	8%	19%

The middle column, for Oykangand and Kurtjar, is what you would expect when borrowing was not heavy: the percentages tend to decrease from more to least basic vocabulary. For the other two columns the same pattern is seen for the first three categories, but the percentage rises in category (d), suggesting that there has been significant borrowing, but not enough to have had much effect on the pattern of more basic vocabulary.

(Actually some effect on the latter is visible in category (b). In the same way that example (3) suggests that there was borrowing, the fact that both the OYK-KOK and KOK-KUR

category (b) percentages are eight to ten percentage points higher than the 16% of OYK-KUR suggests that one or both of the former may be inflated by borrowing. That this is not also apparent from category (c) suggests that my division into ‘more basic’ and ‘other basic’ is less than perfect. If the categorisation were more perfect, one might argue that the borrowings in category (b) should be well under 9%, since that is the highest percentage in category (c).)

4.5 A MORE EXTENSIVE EXAMPLE

Since the above cases were chosen to illustrate certain problems, they may leave you wondering if all lexicostatistical work on Australian languages is highly problematic. To balance the picture, consider the relations among Tryon’s (1974) so-called ‘Daly Family’ languages. Table 1 displays two sets of percentages: in the lower left are those calculated by Tryon (1974:xiv) for all pairs of varieties, whereas in the upper right are my own percentages between certain selected pairs. Tryon’s percentages clearly support the subgrouping shown across the top of the table: a Mulluk Group containing Mulluk and Daly Subgroups, a Wogaity grouping, what I’ve called an ‘apparent Brinkin–Maranunggu Group’ containing the Maranunggu and Brinken Subgroups, and a Tyemeri grouping. Of these, Tryon (1974:xiii) himself did not recognise the Brinken–Maranunggu Group, but instead proposed a Brinkin–Wogaity Group that included the Wogaity grouping as a third member in addition to the Maranunggu and Brinken Subgroups.

To locate the more problematic aspects of the classification, let us consider how we can use Tryon’s percentages to subgroup the languages. To start the subgrouping we consider the highest percentages, which appear along the diagonal due to the way I’ve arranged the varieties. As you use these to group varieties together, you are claiming that their relationships with outside varieties should be about the same—in terms of Table 1, that the percentages in the rectangles off the diagonal should be about the same. To the extent that this does not happen, the mathematical fit becomes poor.

It turns out that there are no problems in using the percentages enclosed in the boxes with the heaviest lines to establish the following groupings: the Mulluk and Daly Subgroups, Wogaity, the Maranunggu Subgroup, the grouping of the middle four varieties within the Brinken Subgroup, and Tyemeri. It is also no problem to establish a Mulluk Group in view of the percentages of 41% to 48% between the Mulluk and Daly varieties (in the rectangle off the diagonal). Adding Maramanandji (MMN) and Maregar (MNG) to the Brinken Group is also well indicated, even though the percentages (in the larger, thin-lined box around the diagonal) vary from 70% down to 54%. This variation could perhaps be the remains of dialect variation that does not lend itself well to being represented in a tree diagram (see Black 1976a).

The grouping of the Maranunggu and Brinken Subgroups into a Brinken–Maranunggu Group is also straightforward, even though it was not recognised by Tryon. Although the percentages between the two subgroups range from 34 to 51, some of the higher percentages are between adjacent varieties (this is indicated by the underlining) and could well be inflated by borrowing. Whereas some of the higher percentages are not between adjacent varieties, for one variety to borrow from a second affects its percentages with all varieties that are very similar to the second.

TABLE 1: LEXICOSTATISTICAL EVIDENCE FOR DALY RIVER LANGUAGE CLASSIFICATION (BASED PARTLY ON TRYON 1974)

		Mulluk Group				Wogaity		apparent Brinken–Maranunggu Group						Tyemerি				
		Mulluk Subgroup		Daly Subgroup				Maranunggu Subgroup			Brinken Subgroup							
		MLK	TYR	KMR	MTN	YNG	PNG	WDY	AMI	MND	MNN	MMN	MDN	MTH	MAM	MTY	MNG	NGA
Mulukmulluk	= MLK					30		12.5			13	9		10			9	9
Tyeraity	= TYR					65												
Matngala	= MTN	45	41					13			13	7.5		9			8	6
Yunggor	= YNG	48	45	80													<i>Box D</i>	
Kamor	= KMR	42	40	75	72			Box A										
Pungupungu	= PNG	33	36	35	33	35					15	7		9			9	4
Wadyiginy	= WDY	28	35	29	30	28	79										<i>Box B</i>	
Ami	= AMI	24	30	27	25	25	34	39										<i>Box C</i>
Manda	= MND	21	28	26	30	26	34	33	86									
Maranunggu	= MNN	27	26	29	29	29	37	32	72	72	51	49					38	17
Maramanandji	= MMN	14	19	18	20	20	20	17	40	41	46				79		62	24
Maridan	= MDN	16	15	19	16	20	22	18	43	45	47	64						
Marithiel	= MTH	16	17	21	20	21	22	20	44	45	51	63	89				75	26
MareAmmu	= MAM	16	16	18	18	18	23	19	42	45	48	58	84	88				
Marityabin	= MTY	15	15	19	17	18	21	18	42	44	44	56	83	84	85			
Marengar	= MNG	15	16	18	17	18	19	16	35	34	39	54	67	68	70	68	19	
Ngangikurrunggurr	= NGA	22	19	20	19	20	20	18	30	29	30	32	35	32	33	31	35	
Ngengomeri	= NGE	16	18	18	19	20	21	18	27	23	30	34	34	33	34	30	35	84

From Tryon's percentages alone a problem emerges. The lowest percentages in the table, well off the diagonal, tend to be between 15% and 20%. The Wogaity grouping shares much higher percentages with both the Mulluk Group languages (28% to 36%) and the Maranunggu Subgroup (32% to 39%). At least the latter seem to be inflated by borrowing, because the Maranunggu Subgroup is only one part of Brinken–Maranunggu, and Wogaity's percentages with the other part, the Brinken Subgroup, range from 16% to no higher than 23%. Does Wogaity form a higher level grouping with the Mulluk Group, or are those percentages inflated by borrowing too? (As the underlining shows, many pairs of varieties are adjacent.)

There also seems to be some evidence that Tyemeri may form a higher level grouping with Brinken–Maranunggu, but again one may wonder if the shared percentages (in the long rectangle at the bottom) are simply inflated by borrowing: at 23% to 35% they are not even as high as the questionable percentages between Wogaity and the Maranunggu Subgroup.

Tryon's percentages are based on a 200-item word list that includes about forty items of less basic vocabulary, including names of plant and animal species, terms for material culture, and even the words for 'policeman' and 'tobacco', which can hardly be traced back to a common protolanguage. Thus it's not really surprising if the percentages are often inflated by borrowing. To allow for this I calculated percentages for just a sample of varieties, essentially one from each group, using only about a hundred of the more basic items; these are the percentages in the upper right hand half of Table 1. From these it seems clear that Wogaity should not be grouped with either the Mulluk or Brinken–Marannggu Groups: its highest percentages are only 12.5% to 15% with either of these groups (in Boxes A and B respectively), which are not significantly higher than the 13% shared by the Mulluk and Brinken–Marannggu Groups themselves (in Box D). Since most of these percentages are between adjacent languages, they may well be inflated by borrowing.

There is a somewhat better case for grouping Tyemeri with Brinken–Maranunggu. The percentages between the two groups (in Box C) are noticeably higher than their percentages with other groups (in Boxes B and D). Even if the higher percentages are inflated by borrowing, the 17% between non-adjacent varieties (MMN and NGA) is still well above the 4% to 10% that the two groups generally share with the outside languages.

It should also be noted that this evidence does not actually support a grouping of all of the varieties into Tryon's 'Daly Family'. Whereas the lowest of my percentages among these languages ranges from 4% to 10%, I found that the same varieties shared from 1% to 6% with Koko-Bera, halfway across the continent. Tryon's own lowest percentages are much higher, and in an earlier work (Tryon 1968) he found that the lowest percentages among the languages tended to be noticeably higher than their percentages with three other languages of the area, namely Warrai, Kungarakany and Wageman. In both cases, however, the percentages that might seem to establish a 'Daly River Family' could well be inflated by borrowing.

This points out another problem with applying lexicostatistics to Australian languages. Our current lexicostatistical techniques work well for groups with a time depth not much greater than Indo-European. From the fact that lexicostatistical percentages as low as 8% have been found among Pama-Nyungan languages, it seems likely that many relationships will simply prove to be too remote for lexicostatistics to provide useful results, at least without substantial further development in the methodology. Even so, lexicostatistics should

be able to provide useful evidence in many cases, as the Daly River example should demonstrate.

5. PROSPECTS

It thus seems that lexicostatistics remains one of our most promising means for realising O'Grady's early goal of classifying all Australian languages genetically. Although some have suggested that Australian languages change more rapidly or borrow more heavily than languages elsewhere in the world, this is not supported by the available evidence. At the same time, it seems clear that lexicostatistics can provide useful evidence for linguistics in such cases as the study of the 'Daly Family' languages, at least if the approach is well applied. Lexicostatistics is not infallible, but neither is any other approach, so that the ideal is to apply different approaches to permit cross-checking.

The main disadvantage of lexicostatistics is that current approaches tend to be limited to a shorter time depth than is probably needed for Australia as a whole. At the same time lexicostatistics has a number of advantages. Up to the limits in time depth it will almost always provide useful evidence for classification, whereas the traditional use of shared innovations does not always provide such evidence. It can generally be applied more easily and quickly than qualitative methods involving reconstructions, though this should not be taken to mean that it should not be applied as carefully as possible. In addition, as I have shown, lexicostatistical techniques can not only cope with cases of heavy borrowing, but they can actually provide evidence for them.

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TAPS, STOPS & TRILLS

GAVAN BREEN

1. INTRODUCTION¹

I should begin by explaining, for the benefit of those readers who have not worked in Alice Springs in recent years—perhaps a sizeable minority of Australianist linguists—the local reference in the title of this paper.

Finke is a tiny publess town, situated near the lower reaches of the mighty river of the same name, most notable of the famous dry rivers of Central Australia and reputedly the oldest river in the world. The term ‘mighty’ is not mine and is not used sarcastically; on the rare occasions when it does explode into life it is most impressive, even awesome, and thoroughly deserving of the respect implied by the enormous railway bridge which spans it.

One of the sporting institutions of Alice Springs, ranking alongside Henley-on-Todd—the famous dry riverbed regatta—and the Camel Cup, is the Finke Desert Race. This is a two-day motorcycle race (with, in recent years, sections for cars as well) starting and finishing outside Alice Springs and overnighting at Finke (220 km each way). Competitors start one at a time and risk their necks hurtling down the narrow winding track over the sandhills. The road is, of course, closed to the general public for the weekend; most wouldn’t venture near it anyway, as the alternative route, though 180 km longer, is safer and faster.

A few years ago sponsorship for the race was taken over by a local supplier of bathroom equipment called Taps, Tubs & Tiles Pty Ltd. And the race was renamed the Taps, Tubs & Tiles Desert Race! Protests were feeble and in vain; I suppose we should be grateful they didn’t change the name of the town and the river as well. Anyway, it’s over now. The sponsorship has changed and the name has been restored.

When Michael Walsh invited me to contribute to this volume my reaction was, “Gee, I’d like to, but I can’t think of anything to write”. It was only later, while teaching the world’s first Wambaya literacy course, that my attention was drawn again to the relationship between taps/trills and apico-alveolar stops. And so here I am, thumbing my nose at those parochial plumbers, who will never have the slightest inkling of this, and in the same movement raising my voice, in a small way, in the chorus of praise to one of the legends of Australian linguistics.

¹ I am grateful to Peter Austin, Bob Dixon, Mary Laughren and David Nash for their helpful comments on an early draft of this paper.

2. SERIOUS INTRODUCTION

O'Grady's (1990a:xxi) idea of the sound system of Proto Pama-Nyungan differs from Dixon's (1980:158) idea of the sound system of Proto Australian in two important respects:

(i) O'Grady now postulates two series of apical consonants while Dixon has only one;

(ii) O'Grady groups the retroflex glide */r/ with */y/ and */w/ as semivowels and has */rr/ in a manner group on its own, while Dixon groups */r/ and */rr/ together as rhotics and */y/ and */w/ together as semivowels.²

Leaving aside the difference—which may be rather academic—that O'Grady is talking about Pama-Nyungan and Dixon about Australian, I will put forward some thoughts about these competing analyses. I consider first some dangers arising from the enthusiastic and seemingly uncritical acceptance of the rhotic grouping. I then survey some languages in which the opposition between apico-alveolar stop and apico-alveolar tap seems to have been lost. The next section deals with cases where these sounds approach more closely than usual to complementary distribution. Then I compare the phonotactics of the rhotic sounds with one another and with the phonotactics of glides.³ Finally, I indulge in some speculation concerning language change.

3. THE RHOTIC BLOCK

The term 'rhotic' was introduced over twenty years ago (Dixon (1980:144); see also McGregor (1988:166)) and was uncritically, it seems, adopted by a number of linguists. It has been questioned more recently; see McGregor (1988), Alpher (1988) and (briefly) Breen (1992:40–41). It is, perhaps, strange that it was not criticised earlier; the arrangement of the rhotics in Dixon's phonemic chart of Pitta-Pitta (1980:160), with the tap seemingly having its own unique place of articulation, cries out for comment.⁴

A danger of an over-enthusiastic adoption of such a concept is a procedural weakness it may lead to; if a sound is thought of as part of a group, the linguist feels a constraint against considering any analysis which would lead to its removal from this group.

For example, Dixon (1980:175) considers the possibility that the alveolar stop and lateral in Proto Australian belonged to a single phoneme. Such speculation is possible because the reconstructed sound system Dixon was considering had only one lateral. In some modern languages, such as Wangkumara (see further below), there is an apico-alveolar stop of very restricted distribution. This could be considered to be in complementary distribution with a number of other phones; the most phonetically similar are the apico-alveolar lateral and tap. From memory, I don't think I even considered the lateral as a possibility, and I was no doubt

² My orthography, used when not quoting or using an established practical orthography of a language, has the following features worth mentioning: I use 'r' for the retroflex glide, 'rr' for the other rhotic sound in the language if there is only one and if it is phonemically distinct from a voiced apico-alveolar stop, and for the trill if a language contrasts tap and trill, 'd' for the tap if it contrasts with a trill or if it is in complementary distribution with a stop, 'dj' and 'tj' for voiced and voiceless lamino-palatal stop.

³ I include the retroflex rhotic whenever I use the term 'rhotics' or the term 'glides'. There is no contradiction in this, as I use 'glide' as the name of a manner class and 'rhotic' as the name of a useful grouping of sounds with members belonging to two or three (or even four) manner classes. I have used the term 'semi-vowel' only for y and w.

⁴ Says he, having not noticed it himself until recently. (There is, of course, no suggestion that this actually represented Dixon's idea of the point of articulation of the tap.)

strongly influenced by the fact that the apico-alveolar lateral is just one of a set of four well-established laterals in Wangkumara, whereas the tap is on its own and fair game for reassignment. (There are, however, other reasons for preferring the tap.)

In the same way, the belief that the tap/trill and the retroflex glide belong together tends to inhibit consideration of other possibilities: you can't meddle with one without breaking up the group. The rhotic bloc leads to a rhotic block, blinding linguists to the possibility that the tap (or alveolar flap, as it is frequently called) might not be phonologically distinct from the apico-alveolar stop. This is despite the fact that there are dialects of English in which a tap is an allophone of /t/ (see, for example, Jones (1958:71)).⁵

Examples abound; I choose some from Volume 3 of the *Handbook of Australian languages* (Dixon & Blake 1983). Morphy (1983:20) gives for Djapu minimal pairs for some "critical pairs of phonemes": /i/ vs /u/ vs /a/; /a/ vs /a:/, /i/ vs /i:/, /u/ vs /u:/; /t/ vs /t̪/ (underlining denotes retroflexion), /t̪/ vs /d̪/, /n/ vs /n̪/, /l/ vs /l̪/; /th/ vs /tj/, /nh/ vs /ny/; /r/ vs /rr/ (i.e. glide vs trill); /d/ vs /t/, '⁶ (i.e. glottal stop—not analysed as a segmental phoneme, however) vs zero, /r/ vs /l/. She does not give any minimal pair for /t/ vs /rr/. In fact, a search through the thousand-odd items of her published vocabulary reveals no such minimal pair. Furthermore, a count reveals that /t/ is quite rare: for example, intervocally after a stressed vowel there are three instances of /t/, 55 of /rr/, intervocally later in the word the figures are two and 35, word-finally three and 40.⁶ There is, however, no question that /t/ is phonemically distinct from /rr/; note such sub-minimal pairs as *datam* 'waterlily sp.' / *darramu* 'man' and *mattjurr* 'flying fox sp.' / *marrtji*- 'to go'. The grouping of /rr/ with /r/ as exhibiting a rhotic manner of articulation does seem to be justified for Djapu; unlike many languages, Djapu has *rC* clusters and the phonotactics of /rr/ and /r/ are quite similar.

Similarly, Keen (pp.195–196 in the same volume) does not include the pair /t/—/rr/ (/r/ in her spelling) among the consonant pairs for which she feels it necessary to provide evidence of phonemic contrast for Yukulta, despite the fact that she points out that the distinction between these two phonemes tends to be lost in fast speech. In fact, there is at least one minimal pair: *ngarra* 'we dual exclusive' / *ngata* 'I (nominative)' and a number of sub-minimal pairs, as well as oppositions in bound morphemes. Nevertheless, there is not a great deal of opposition between the two: /t/ is never the first member of a cluster nor /rr/ the second; only /t/ can begin a word (and then rarely); intervocally /rr/ outnumbers /t/ about ten to one. Phonotactically, /r/ is quite different from /rr/: /r/ can begin a word but /rr/ cannot; /r/ cannot occur root-finally but /rr/ can; /r/ cannot occur in consonant clusters while /rr/ does commonly. There does not seem to be much justification for grouping /r/ with /rr/ rather than with /y/ and /w/. (Note, by the way, that Yukulta is currently classified as non-Pama-Nyungan; see Blake (1988).)

It may well be, of course, that both Morphy and Keen did satisfy themselves that these two sounds were phonemically distinct. I emphasise that both of them have come up with what seems to be a correct analysis, if not necessarily the best arrangement of the phonemes. The point is that they did not feel the need to provide the evidence.

⁵ Note also that Aboriginal native speakers of English who are partial speakers or non-speakers of their Aboriginal language and are attempting to acquire literacy in that language have, in my experience, perhaps more difficulty with the /rr/ - /t/ contrast than with any other. This is so even when the phoneme /t/ tends to be unvoiced in the language. A similar observation is made by Schmidt (1985:195) about Dyirbal non-speakers.

⁶ In this count, and others referred to later, I have disregarded loan words (if I have noticed them).

The danger in neglecting to consider the question of phonemic opposition between tap/trill and stop is well illustrated by another grammar in the same volume. This is the grammar of Nyawaygi by Dixon (1983). In this case, Dixon, although the foremost protagonist of the ‘rhotic’ concept, did *not* neglect to consider the question, and indeed found no contrast between them. He found (p.438) that there was “a phoneme that combines rhotic and stop allophones; it is normally realised as an apico-alveolar stop [d] after a consonant and as an apico-alveolar trilled rhotic [r] in all other environments (that is, word-initially, word-finally, preconsonantly and intervocally)”. Dixon (pp.449–450) shows that this situation has probably arisen in the fairly recent past by straightforward phonological changes.⁷

This [r]—[d] phoneme could be written as /rr/ on the grounds that [r] is its unmarked realisation, or as /d/, to give a neater phoneme chart and more specifically to preserve the generalisation that there is a one-to-one correspondence between oral stops and nasals in Australian languages. Dixon (pp.439–440) prefers to leave the matter open and to write *d* or *r* (his spelling of this sound) according to the environment (and to the pronunciation).

4. THE BATHROOM PHONEME

This bathroom phoneme, as I will call it because of its bringing together the tap or tile with the apico-alveolar tub, is found as an areal feature of a number of languages, belonging to a variety of genetic groups, in south-west Queensland and north-east South Australia.

When writing my grammar of Bidjara and Gungabula (Breen 1973), I used ‘d’ (for apico-alveolar stop) and ‘rr’ (apico-alveolar tap), but admitted (pp.221–222) that I had been unable to find any convincing pairs to demonstrate an opposition between them. I suggested that they might belong to a single phoneme, with [d] word-initial and in the environments /i-i/ (e.g. in *yidi* ‘smell’) (however, note that this rule gives precedence to another in a certain circumstance, as detailed below), /rrV_V/ (e.g. in *garrudu* ‘brolga’ and *Budhurradala*, a placename) and /n_/ (as in *gundu* ‘away’); both occur in free variation in /a_i/ (*barri* ~ *badi* ‘to cry’, *gamarri* ~ *gambadi* ‘far’) and /a_Ci/ (*badbirda* ~ *barrbirda* ‘echidna’); [l] in /i_idi/ (*Dhirridi*, a personal name), in /V1_CV2/ (where we do not have both V₁ as /a/ and V₂ as /i/, e.g. *warrgu* ‘bad’), in other (i.e. most) intervocalic environments and word-finally. The situation was not straightforward; for example, I pointed out that *wan-gadi* ‘hard, strenuous’ was common but *wan-garri* had not been heard.

Fieldwork that year provided further confirmation of this (Breen 1974), although there was (and remains) still room for doubt. In that document I suggested a consonant chart as in Table 1 in which [d] is an allophone of /rr/.

⁷ Note that **d* has become *rr* in some environments and *r* in others, thus providing some evidence for a grouping of *rr* and *r* even in this language.

TABLE 1: BIDJARA CONSONANTS (VERSION 1)

<i>b</i>	<i>dh</i>	<i>rd</i>	<i>dy</i>	<i>g</i>
<i>m</i>	(<i>nh</i>)	<i>n</i>	<i>ny</i>	<i>ng</i>
		<i>l</i>		
		<i>rr</i>		
<i>w</i>		<i>r</i>	<i>y</i>	

In Breen (1990a) I used ‘d’ instead of ‘rr’, thus implying the chart in Table 2 in which [N] is an allophone of /d/.

TABLE 2: BIDJARA CONSONANTS (VERSION 2)

<i>b</i>	<i>dh</i>	<i>d</i>	<i>rd</i>	<i>dy</i>	<i>g</i>
<i>m</i>	(<i>nh</i>)	<i>n</i>		<i>ny</i>	<i>ng</i>
		<i>l</i>			
		<i>rr</i>			
<i>w</i>		<i>r</i>	<i>y</i>		

However, another alternative is as in Table 3.

TABLE 3: BIDJARA CONSONANTS (VERSION 3)

<i>b</i>	<i>dh</i>	<i>d</i>	<i>dy</i>	<i>g</i>
<i>m</i>	(<i>nh</i>)	<i>n</i>	<i>ny</i>	<i>ng</i>
		<i>l</i>		
		<i>rr</i>		
<i>w</i>		<i>r</i>	<i>y</i>	

The last is the neatest, but phonetically a little unusual in that the apical stop is often retroflexed (perhaps to maintain the contrast with /rr/ in its stop allophone) but the nasal and lateral never are. A phonotactic fact that favours the second arrangement is that the retroflex stop can occur as the first member of a cluster and word-finally, thus parallelling the phoneme /d/ in that chart.

Note that one of the relevant features is a dissimilation which prevents two apico-alveolar stops or two taps occurring intervocally in successive syllables. A similar process will be noted for Wangkumara (see below) and for Wambaya (a non-Pama-Nyungan language; see §5). In some other languages, such as Arrernte, a similar situation is resolved by a dissimilation in which *tVt* becomes *tVrt* or *rrVrr* becomes *rrVr* (which does point to a grouping of /rr/ with /r/).

Bidjara clearly has lost the already limited opposition between the tap and the stop when earlier intervocalic stops have been lenited to taps. For example, *badi* ~ *barri* ‘to cry’ is a reflex of a protoform, **pati*, of some depth: it occurs in Mari and Pama groups as well as some other groups of north-east Queensland, being one of the words quoted by Dixon (1983) in his study of Nyawaygi. Another reflex of a widespread term is *nguda(n)* ‘dog’; compare Proto Pama **kutaka*, which may be **nguta* in Proto Mari (as it is in Gunya, south of Bidjara). Other words comparable with other Mari languages are *wada* ‘to play, dance’ (*wata* in Gunya) and *mudun(a)* ‘shingleback lizard’ (*mutuŋ* in Margany and Gunya). There are also, of course, examples of a tap corresponding to a Proto Mari tap or trill, such as *mudu* ‘nulla-nulla’ and *gudi* ‘blanket’ (both with trills in Margany and Gunya).

Kungkari and Pirriya (Breen 1990a, Chapters 2 and 3) were spoken to the west of Bidjara, separated from it by some little-known dialects which were closely related to Bidjara

(Breen 1990a, Chapter 4). They cannot be related to either of the major language groups of the area—Mari (which includes Bidjara) to the east and Kama to the west and south, and they are of unclear relationship to one another (Breen 1990a:159–163). The data on both, especially Pirriya, are very limited. They distinguish three rhotic sounds, trill, tap and glide, but the tap is grouped with a voiced apico-alveolar stop which occurs only in the cluster /nd/. The tap is chosen to be grouped with the stop on the grounds of phonetic similarity.⁸ /d/ is thus always voiced; the other five stops are basically voiceless.

Margany and Gunya, south and south-west of Bidjara and closely related to it, were described by Breen (1981a). These have a voicing distinction in stops, of limited distribution. The tap is grouped with the voiced apico-alveolar stop as /d/ and is regarded as a lenited form. Some of the other voiced stops: /b/, /g/ and /dh/ but not /dy/ or /rd/⁹ have lenited intervocalic allophones in the form of voiced fricatives. The classification of /d/ as a stop is supported also by the parallelism with /rd/ in that both can occur word-finally¹⁰ (but only /d/ can be first member of a consonant cluster). The voiceless stops, characterised intervocally by length, are not common, but some words containing them seem to be direct descendants of Proto Mari forms. These include *nguta* ‘dog’ (in Gunya; *nguda* in Margany), *bati* ‘to cry’ (in Gunya; Margany has *badi*), *ngatju* ‘my’, *gatja* ‘rotten’, *yatju* ‘flame’ and *nuka* ‘to taste’ (the last two only in Margany), all of which are ancestral to both Mari and Pama groups. Note, however, that phonetically voiced stops are the norm in Mari languages. It seems quite likely that the voicing distinction has been borrowed from languages to the west, even though the actual forms illustrating it were not (as Austin (pers. comm.) first pointed out to me). Note also the differences between Margany and Gunya words in some cases, indicating some difference in the lenition rule. (See also Breen (1981a:298) and Austin (1988b).) Both the tap /d/ and the trill /rr/ can be related to the Proto Mari /rr/ in some words; for example, *magida* ‘copi (gypsum), clay’ is phonetically the same as *magirra* in Gudu-Badhun while *dharra* [dára] ‘thigh’ corresponds to *dharra* [dára] in Gugu-Badhun.

Wangkumara (Breen 1981c, 1981d; see also McDonald & Wurm 1979) was spoken to the west of Margany, but is not closely related, belonging to the Kama group (Breen 1990a:156–157). Like its neighbours to both east and west, it has a voiced/voiceless distinction in stops and three rhotics, of which one, the tap, is grouped with the voiced apico-alveolar stop as a phoneme /d/. The stop allophone of /d/ does not occur intervocally except as a result of dissimilation; thus an expected **burrarra* ‘will tell’ (with purposive inflection -rra) becomes *budarra* and the /d/ is realised as a stop. The rule regarding this dissimilation is not clear; note the word *puliwarrida* ‘will fall down’, in which it is the second of the underlying trills that has become a stop (and compare the similar situation described above for Bidjara).

⁸ The reference to *d* occurring as the first member of a cluster (Breen 1990b:24) is incorrect and should be deleted.

⁹ But there is a cross-dialectal correspondence between /rd/ in Gunya and /r/ in Margany in a number of words.

¹⁰ There is a typographical error on page 291 of Breen (1981a): “Phonemes which can occur word-finally are the vowels, apical nasals and laterals (but there are no confirmed examples of final retroflex lateral voiced stops in Gunya), and /nY/”. This should read: “Phonemes which can occur word-finally are the vowels, apical voiced stops, nasals and laterals (but there are no confirmed examples of final retroflex lateral in Gunya), and /nY/”.

Wangkumara also has a trill-released stop (see also Austin (1988a)),¹¹ originally analysed as an allophone of the trill occurring word-initially and as second member of a cluster after /l/ or /n/. However, it is now thought to be a separate phoneme because it occurs intervocally in at least two roots—*madri-* ‘to hold’ and *kadra-* ‘to pierce, to spear’. Another doubtful example is *padri* ~ *parri* ‘beetle’. It also occurs intervocally across a morpheme boundary as in *dribidibri* ‘rough’. Word-initial examples include *draya* ‘tooth’, *dratja-* ‘to bite’, *dridja-* ‘to run away’ and examples in clusters include *-andru* ‘ergative suffix (allomorph)’, *nundri* ‘yam’, *puldu* ‘eye’ and *ildri* ‘tears’.

Yandruwandha (Breen 1975) was spoken to the west of Wangkumara and belongs to a different subgroup of the Kama group. In proliferation of consonants it has gone further than any other language of the area: it has six voiceless stops, six voiced stops, six nasals, two trill-released stops (/dr/ apico-alveolar and /rdr/ retroflex),¹² four laterals, one or two pre-stopped laterals, a trill and three glides. An apico-alveolar tap is combined with the corresponding voiced stop as the phoneme /d/, grouped with the voiced stop series.¹³ Of the apicals only /rd/ and /rdr/ can occur word-initially; /t/ is very rare intervocally and quite uncommon in general. The pre-stopped lateral(s) can occur only intervocally. Some relevant minimal and sub-minimal pairs are given in Table 4.

TABLE 4: DATA ON YANDRUWANDHA APICALS

<i>t</i>	<i>rt</i>	<i>d</i>	<i>rd</i>	<i>dr</i>	<i>rdr</i>	<i>π</i>	<i>r</i>
		<i>kadawa</i> ‘edge’	<i>kardakarda</i> ‘saltbush’	<i>kadra</i> ‘louse’	<i>kardra</i> ‘yam’	<i>karra</i> ‘to tie’	<i>kara</i> ‘maybe’
	<i>martimarti</i> ‘peewee (bird)’				<i>mardri</i> ‘heavy’		
<i>kanta</i> ‘over there’	<i>warnta</i> ‘short’	<i>kanda</i> ‘shallow’		<i>kandra</i> ‘top’			
		<i>kadi</i> ‘to chase’	<i>pardi</i> ‘dangerous creature’	<i>kadri</i> ‘brother-in-law’			
			<i>rdarla</i> ‘skin’		<i>rdrama</i> ‘to cut’		
			<i>martardaku</i> ‘ankle’	<i>marnadraku</i> ‘tooth’		<i>mararrala</i> ‘crab’	
	<i>martardaku</i> ‘ankle’		<i>mardanpa</i> ‘lizard sp.’				<i>mararrala</i> ‘crab’
	<i>warta</i> ‘butt of tree’	<i>wada</i> ‘to wait’				<i>warra</i> ‘arrive’	<i>wara</i> ‘who?’
<i>ita</i> ‘away’						<i>irra</i> ‘to wash’	

There may be some alternation between trill-released stops in simple stems and simple stops in compounds (e.g. *thadri* ‘bank (of river)’ / *thadipalapala* ‘both banks’). Austin (1988a) discusses the history of the trill-released stops in Yandruwandha.

¹¹ Austin (1988a) surveys the trill-released stops in this and several other languages dealt with in the remainder of this section and speculates on their history.

¹² Breen (1975) called these ‘pre-stopped trills’. Austin’s (1988a) designation ‘trill-released stops’ is more appropriate, however, especially for the Yandruwandha situation where the two are distinguished by a difference in the tongue position for the stop phase. Phonotactically, they are quite different from the pre-stopped nasals and pre-stopped laterals that occur in languages of this area (O’Grady, Voegelin and Voegelin 1966) and which occur neither word-initially nor in clusters. (I exclude here the Arandic area, where pre-stopped nasals do occur in these positions.)

¹³ Breen (1975) was still unsure on this point.

Dieri (Diyari, Diari) is one of the more southerly dialects in a chain¹⁴ in which the central and southern members seem to have a limited voicing distinction in apical stops, while the more northerly members extend it to at least some other points of articulation. It has the following apico-alveolar consonants (Austin 1981): voiceless stop, voiced trill-released stop, nasal, lateral, trill and tap. Retroflex consonants are voiceless stop, voiced stop, nasal, lateral and glide. The trill-released stop occurs only as second member of a cluster, following apical nasal or lateral. Since the trill occurs only intervocally and as a free variant of the tap in pre-consonant position, it and the trill-released stop are in a complementary distribution. Trefry (1970, 1984) would add a voiced apico-alveolar stop to the above list; he has it word-initially, as his version of what Austin identifies as a voiced retroflex stop, in a homorganic nasal-stop cluster, corresponding to a voiceless apico-alveolar stop in Austin's hearing, and in free variation with the tap intervocally.¹⁵ Trefry regarded the trill-released stop as an allophone of the trill; the stop phase can be plausibly explained as the first occlusion of the trill, which a hearer, especially perhaps an English-speaker, would hear as a stop. Certainly in duration it corresponds with an occlusion of a trill rather than a stop (1984: 318–319, note 10). Austin (1981:16–17) also grouped the two, but classified the phoneme as a voiced stop. Austin (1988a) gives reasons for regarding Trefry's analysis as inappropriate, but these are all based on comparison with neighbouring languages and so are valid only from a diachronic perspective. More recently Austin has ceased to group the trill-released stop with the trill; this is a logical step to take if diachronic criteria are to be used. Austin (1988a:225) demonstrates that the trill-released stop is a reflex of an earlier stop.

There is also a voiced retroflex stop in Dieri. Austin (1981) and Trefry (1984) point out that this sound is phonetically very short (at least intervocally) and often pronounced as a tap (or flap). It seems that the main reason (and a good one) for classifying it as a stop rather than a rhotic is the fact that (at least in Austin's hearing) it occurs word-initially and as the second member of a consonant cluster (following a homorganic nasal). The fact that it does not occur in a cluster following a homorganic lateral differentiates it from the trill-released stop, as does its intervocalic occurrence. In its word-initial occurrence it could be regarded as an allophone of /rt/.

The phonotactic complexity of the apicals in Dieri is illustrated in Table 5 (but with some simplification: I have not included the pre-stopped allophones of nasals and laterals). One way to reduce the inventory is to combine /dr/ (which is unique among the consonants in not occurring intervocally), with some other sound, and the obvious candidate is /rr/. Synchronously, it is not at all clear then whether this phoneme (/dr/) should be grouped with /rd/ and, if so, whether they should be classed as a type of stop or a type of rhotic. If Trefry (1984: 209–210) is correct, and a voiced apico-alveolar stop occurs in a homorganic nasal-stop cluster and in free variation with the tap intervocally, this could be grouped with the tap (and I have written both as 'd' in Table 5). In this case, it would be clear that this phoneme patterns with /rd/, and these would perhaps be more appropriately labelled as tap/flap rather than voiced stop. In fact, Trefry (1984:246–247) regards [d] as an allophone

¹⁴ According to my analysis (Breen 1971b:21–24), which, however, does not cover the southern end of the chain, comprising Thirrari and probably Pirlatapa (Austin 1990a). Austin (1990b) does not include the northernmost members of the chain, Mithaka and Karruwali, due, it seems to me, to a misunderstanding of a perhaps somewhat ambiguous passage in Breen (1971b).

¹⁵ I am not in a position to decide between the different versions of the phonetic facts as presented by Trefry and Austin. Certainly there are some serious phonetic errors in Trefry (1970), but this need not be justification for assuming that he was still making such errors in 1984.

of /t/ when it occurs word-initially or in a cluster following /n/, and of the tap when it occurs intervocally (in free variation with [l]). Diachronically it is clear that the trill-released stops descend from plain stops, as Austin (1988a:225) shows.

TABLE 5: DIERI APICALS AND THEIR ENVIRONMENTS

stop	<i>t</i>	<i>VtV</i>	<i>nt</i>	<i>lt</i>				
stop	<i>rt</i>	<i>VrtV</i>	<i>mrt</i>	<i>rlrt</i>				
(stop)	<i>d</i>	<i>VdV</i>	<i>nd</i>)					
	<i>dr</i>		<i>ndr</i>	<i>ldr</i>				
	<i>rd</i>	<i>#rd</i>	<i>VrdV</i>	<i>mrd</i>				
nasal	<i>n</i>	<i>VnV</i>	<i>nt</i>	<i>n(d)rr</i>	<i>np</i>	<i>nk</i>	<i>nm</i>	<i>nng</i>
nasal	<i>m</i>	<i>VmV</i>	<i>mrt</i>	<i>mrd</i>	<i>mp</i>	<i>mk</i>		
lateral	<i>l</i>	<i>VlV</i>	<i>lt</i>	<i>l(d)rr</i>	<i>lp</i>	<i>lk</i>		
lateral	<i>rl</i>	<i>VrlV</i>	<i>rlrt</i>		<i>rlp</i>	<i>rlk</i>		
trill	<i>rr</i>	<i>VrrV</i>						
tap	<i>d</i>	<i>VdV</i>			<i>dp</i>	<i>dk</i>	<i>dtj</i>	<i>dth</i>
glide	<i>r</i>	<i>VrV</i>						

Thirrari was spoken to the south of Dieri and is very closely related. Austin (1988a:224–225) shows that the trill-released stop was a very recent innovation in this dialect. In the speech of the last speaker there is free variation between [nd] and [ndr] and between [ld] and [ldr]. Only [nd] and [ld] were recorded by Reuther, who worked on the language in the 1880s.

Ngamini was spoken to the north of Dieri, separated from it by the little-known dialect Karangura and a member of the same dialect chain. Austin (1991) has examined the available data on Karangura and finds that it was closely related, but not identical, to Ngamini. Ngamini had a voicing contrast in only the apical stops, and also a three-way distinction in rhotics—trill, tap and glide. The apico-alveolar voiced stop does not occur intervocally and is in complementary distribution with the tap. If the tap is regarded as an allophone of this stop this gives us a phoneme with almost the same distribution as the voiced retroflex stop: both occur intervocally and in clusters following the homorganic nasal.¹⁶ The fact that the voiced retroflex stop occurs word-initially while the apico-alveolar does not is not a problem; the apical distinction is lost initially in most of the Australian languages that have it.

The trill-released stop is in complementary distribution with the trill, and, disregarding the diachronic facts, I would analyse it as an allophone of the trill. Austin (1988a:225–228) does not disregard the diachronic facts and concludes that a change from stop to trill-released stop has been in operation but is incomplete.

The next member of the dialect chain north of Ngamini was Yaluyandi. Austin claims (1988a:221) that trill-released stops do not occur in this dialect, nor in any other languages of the region (i.e. excluding those discussed above). I believe he is correct about Yaluyandi, but the last two members of the chain, Mithaka and Karuwali, which were spoken to the east of Yaluyandi, do have them.

Mithaka, in which I have a few hours of fairly poor quality recording from two informants, seems to be rather similar in phonology to Yandruwandha: it has a voicing

¹⁶ There is also at least one example of /ld/. Austin (1988a:226, 228) is contradictory on this point. The tap does not occur initially in clusters except as what can be analysed as a variant of the trill.

distinction in perhaps all stop positions, apico-alveolar and retroflex trill-released stops which can occur intervocally as well as in clusters and (probably only the retroflex one) word-initially, and the usual trill, tap and glide. It is likely that the tap and the voiced apico-alveolar stop can be combined into one phoneme. The voiced retroflex stop is the only plain stop that occurs word-initially.

Transcriptions at this stage are preliminary and tentative, but material from the fieldnotes seems to be very convincing on at least some points and it is supported by an early word list (Campbell 1899). Relevant examples (some from both informants) include:

pampu 'egg' / *kambu* 'calf (of leg)'

tjimpa 'black' / *kimba* 'blood'

ngapa 'water' / *wabala* 'nothing' (Campbell *napa* 'water' / *waba* 'no')

yungkindari 'crying' / *rnunggindari* 'giving' (In some cases, such as this pair, Campbell's spellings are ambiguous but can be interpreted as supporting mine.)

panytja 'knee' / *panydja* 'woman'

rdambu 'testicles', *rdirrki-* 'to break', etc.

rdranga- 'to sing'

mardra 'stone' (Campbell *mudra*)

pandri- 'to hit' (Campbell gives *partindra* for both 'fight' and 'kill'; this includes the participial ending which is always *-nda*, not *-ndra*, so he may be mistaken in his placement of the *r*.)

windra 'spear' (also in Campbell)

thindrithindri 'willy wagtail' (and others with *ndr*)

yundu 'you (ergative)' / *yundra* 'far'

The only sources of Karruwali data are an anonymous word list in Curr (1886, II: 371–373) and a semi-anonymous list by 'W.H.W.' (1912). Examples (identified as C or W) include:

nappa (C), *ngappa* (W) 'water' / *woba* (C) 'no', *wabba* (W) 'none'

patchi (C), *patchy* (W) 'good' / *kudye* (C) 'sweet', *coogege* (W) 'good'

murdra 'tomahawk' and *murtra* 'stone' (both C)

purdra (W) 'to hold'

tunda (C), *tundra* (W) 'hair of head'

windra (C) 'war spear'.

It seems that these two dialects may have borrowed at least as extensively from Yandruwandha and Yawarrawarrka as any of the languages of the area (see Austin (1988a), especially pp.241–242).

Finally, returning to the other end of this same dialect chain, we find Pirlatapa.¹⁷ The very scanty data are covered by Austin (1990a). This dialect seems to have borrowed from Yandruwandha (to its north) as it has a trill-released stop intervocally (*kadri* ‘wife’s brother’) as well as in a cluster (*ngandri* ‘mother’, *pandri-* ‘to kill’—as well as *mandra-* ‘to kill’, perhaps from Dieri, *mandru* ‘two’, *yundru* ‘you (ergative)’). It does not seem to have a voicing contrast in stops, except perhaps for the apicals; compare *warda-* ‘where?’ with the loanword *thirti* ‘tea’. However, there is no indication in the corpus of any cluster *nd* that might contrast with *ntr*. In this it seems to resemble Dieri (as analysed by Austin).

5. PARTIAL CONTRAST BETWEEN TAP AND STOP

The tap/trill and apico-alveolar stop, in a typical Australian (or at least typical Pama-Nyungan) language, are in opposition in only a very restricted set of environments: commonly, neither occurs initially; the tap or trill occurs frequently as the first element in a consonant cluster and never as the second (i.e. normally final); the stop is rarely permitted as the first element, but occurs second in one very common cluster /nd/ or /nt/, and sometimes also in a lateral-stop cluster. Many languages allow the tap/trill but not the stop word-finally. The two are in opposition intervocally. However, even this may be restricted, either in certain positions in the word or in normal (non-careful) speech.

Dixon (1983:440) refers, during his discussion of Nyawaygi phonology to a partial overlap between /d/ and /rr/ (his /r/) in the neighbouring languages Warrgamay and Yidiny. In both languages either of these phonemes can occasionally be heard as a tap [ɺ]. For Djabugay, Patz (1991:251) speaks of the difficulty of distinguishing between the two rhotics word-finally and between the trill and the apical stop in intervocalic position, especially following a stressed vowel. Another point, which she does not mention but which can be extracted from her alphabetical vocabulary (pp.332–345) is that the apical stop almost never occurs between unstressed vowels. I counted two instances of /d/ in this environment, and 82 of /rr/.

Counts of frequencies in some other languages also tend to suggest a loss of contrast between /t/ and /rr/ away from the stressed vowel. This is partly obscured by the fact that figures are lower for most intervocalic consonants in such positions (because many stems have only two syllables); nevertheless, the infrequency or absence of *t* in the third consonant position is notable in Tables 6 and 7.

An examination of the Pitta-Pitta vocabulary in Blake (1979b) gave the figures in Table 6.

TABLE 6: APICAL STOP AND RHOTIC COUNTS IN PITTA-PITTA

	/V ₁ -V ₂ (i.e. after primary stressed V)	/V ₂ -V ₃
<i>t</i>	7	1
<i>rt</i>	21	8
<i>d</i>	38	27
<i>rr</i>	65	32
<i>r</i>	24	24

¹⁷ I suspect that this name is really Pilardapa. I have heard it pronounced that way, and it seems to conform better to the phonotactics of this language group with *rd* as the initial consonant of the second element of what is most likely a compound.

In Alyawarr, as representative of Arandic languages, a count of a substantial vocabulary (about 1,500 words) gave the following figures for apical stops and rhotics.¹⁸

TABLE 7: APICAL STOP AND RHOtic COUNTS IN ALYAWARR

	before primary-stressed V	after primary-stressed vowel	away from primary-stressed vowel
<i>t</i>	37	16	0
<i>rt</i>	47	76	19
<i>yt</i>	7	9	8
<i>rr</i>	51	94	65
<i>r</i>	39	74	45

According to Douglas (1981:204) /t/ and /rr/ are easily confused intervocally in Watjarri and “may even be said to fluctuate in this position”. There is fluctuation also between /r/ and /y/. Austin (pers. comm.) found no contrast intervocally between /rr/ and /t/ in Gascoyne—Ashburton languages, while in Kanyara languages he found that word-final /rr/ is realised as unreleased [t].

In Wambaya, /d/ and /rr/ seem to be almost in complementary distribution except intervocally after the primary stressed (first) vowel. In this position I counted twelve occurrences of /d/ and 66 of /rr/.¹⁹ Word-initially and as second member of a consonant cluster only /d/ occurs. Unusually, /d/ as well as /rr/ can be first member of a consonant cluster; however, so can most of the other stops: /g/, /j/ and /rd/ (excluding only /b/). Intervocally after a non-primary stressed vowel I counted 120 occurrences of /rr/ and six of /d/ (disregarding words like *dawudawurra*, a reduplication, and *gunggudabudabu*, obviously involving compounding and reduplication). Four of the occurrences of /d/ could be attributed to dissimilation: *lirrada* ‘black cockatoo’, *birrida* ‘grebe’, *magurridi* ‘bush coconut’ and *gardurradi* ‘sitting with legs straight’. The other two are *bayida* ‘elder sister’ and *nayida* ‘young woman’; there is a morpheme boundary before the *d* in *bayida* (at least) and the *da* seems to correspond to *rda* in other kinship terms. There is no instance of the sequence *ayrr*. However, there are two words with successive intervocalic *rrs*, *birrirri* ‘shake’ and *ngurrurra* ‘shadow’.

In a search through Zorc’s (1986) large (8,407 entries) dictionary of YolNu-Matha, which combines words from many dialects, some with a phonemic voicing distinction in stops and some without, I found only six examples of intervocalic *d* (two of them personal names with no other meaning) and 69 examples of intervocalic *t* (27 personal names). (I disregarded loanwords.) By contrast, considering only *b*-initial words (48 pages out of 286) I found (again counting only intervocalic positions) 181 *rrs*, 73 *ds* (i.e. *rds*), 16 *ts* (*rts*) and 84 *rs*. There was a handful of words with *t*-initial clusters, somewhat more with *tC* and hundreds of *rrCs* and *rCs*; *rrC* outnumbered *rC* about two to one.

This sample of languages, which I believe to be typical of many others (but certainly not all) suggests that a fair proportion of Australian languages are not far from a situation in

¹⁸ The first column of figures includes word-initial consonants (which are preceded by an underlying vowel; see Breen 1990b) as well as consonants preceded by an initial surface vowel; *yt* is a prepatalised apical stop.

¹⁹ I used my literacy course word list, extracted from unpublished word lists by K.L. Hale and someone from the Institute for Aboriginal Development, and a draft of a dictionary being prepared by Rachel Nordlinger.

which an apico-alveolar stop is in complementary distribution with a tap or trill. Detailed comparative study should show in at least some cases whether the languages are moving towards that situation or away from it. For example, Dench (1991:131–132) notes that intervocalic /t/ is uncommon in other Ngayarda languages but not in Panyjima. Cognates suggest fortition of /rr/ (but this has not been investigated in detail). It is not uncommon for /t/ to be realised as a tap; /rr/ also may be a tap intervocally, but is more commonly an alveolar rhotic continuant. A count of the type illustrated in Table 6 does not show any tendency for the *t/rr* contrast to be lost in unstressed positions, however.

6. RHOTIC PHONOTACTICS

Dixon (1980:159–167) compares the phonotactics of a sample of Australian languages (two from the north-east and two from the far inland) and finds that three have *r*-initial clusters. While he does not generalise and say that *r* is one of the common initial consonants in heterorganic clusters in Australia, his sample languages may give the false impression that this is so.

Since the phonotactics of *rr* and *r* are relevant to their grouping in a ‘rhotic’ manner of articulation, and it is well known that *rr* is one of the most common initial segments in heterorganic clusters (see Dixon 1980:166), it is worth surveying the occurrence of *rC* clusters. Furthermore, it is relevant to compare their occurrence with that of *yC* and *wC* clusters, and, in some cases, to compare their occurrence word-initially and word-finally. I have not compared the phonotactics of *I* with those of *rr* in detail, but it is noted that they are usually very similar. A similar survey has already been done by McGregor (1988) for a large area of the north-west and centre of Australia.²⁰

In many inland languages rhotics are not permitted initially, final consonants are not permitted, and /rr/ but not /r/ can occur as first member of a cluster. Both alveolar and retroflex nasals and laterals can occur as the first member of heterorganic clusters, so the prohibition of *rC* cannot be attributed to any neutralisation of apical contrast in this position. Pitta-Pitta (Blake 1979b) is a good example.²¹ Having dismissed these languages I will move to the north-east to begin my survey with a couple of specimens of languages that have undergone substantial sound changes in their reconstructable history.

Kunjen dialects (Sommer 1969) have numerous *rrC* and *rrCC* clusters, some of them quite common, as well as several *rC*, one *rCC* and one *rCCC*, several *yC* and two *yCCC* (but no *yCC*), and one *wC*. Mbabaram (Dixon 1991) has numerous *rrC* clusters and also *yb* and *yg*, but only two examples of *rg* and no others with */r/*. The two rhotics are the only consonants that cannot occur word-initially, while all rhotics and glides (among others) can occur finally.

²⁰ One language covered by McGregor is Warlpiri. Mary Laughren (pers. comm.) gives some additional interesting facts on Warlpiri, and suggests that the homorganic cluster **rrt* is not permitted because *rr* was originally an allophone of */t/* and geminates are not permitted in the language. This theory could be extended to many other languages. Other points she mentions include (briefly): (a) the *rr/rd* allophony in the Willowra dialect; and (b) the use of the cluster *tj* in Eastern Warlpiri, corresponding to *rrj* in other dialects; at least one correspondence of intervocalic *t* in one dialect with *rr* in another. Other points cannot be summarised in a short note.

²¹ The chart on page 189 which suggests that there are no *rnC* clusters is to be corrected; there are at least three words with *rnk* and one with *rnm* in the vocabulary.

North-east Queensland languages typically lack a contrast between apico-alveolar and retroflex series, so any contrast between /rr/ and /r/ cannot be regarded as part of an overall apical contrast. Apart from the phonologically aberrant languages, and the partial exceptions mentioned in the next paragraph, they all permit initial apicals, but only stops and nasals, not lateral or rhotics. The other stops and nasals also can be initial. Apicals and palatals, other than stops, can occur finally. They permit *rrC*, *rC* and *yC* clusters (among others). Guugu Yimidhirr (Haviland 1979) is typical.

Gugu-Yalandji (Oates & Oates 1964a, 1964b) differs in that it permits word-final /w/. In Djabugay (Patz 1991) *rrC* is common but *rC* and *yC* are quite uncommon and /r/ seems to be closer to /y/ in this respect than to /rr/. In Yidiny (Dixon 1977) *rrC* is common but *rC* and *yC* are not infrequent. In Dyirbal (Dixon 1972) /rr/ forms part of nine different clusters, some quite common, /r/ takes part in only four, two quite rare and none very frequent, and /y/ takes part in twelve, most of them quite uncommon. The glide /r/ can occur initially in a word.

In Mari languages *rC* seems hardly (if at all) to occur. It may be possible in Gugu-Badhun but the facts are doubtful, as one might expect for a language known only from a few aged and not very competent speakers. Sutton (1973) lists the following words with *rg*: *gurgila*, a section name, *mirgi*, a placename (contrasting with *mirrgi* 'coals'), *nargurru* 'bloodwood' or 'boxwood' and *yurmbu* 'pull, push'. Of these, *gurgila* corresponds to *gurgila* in other languages, and *nargurru* is doubtful because *narrguru* is given for 'coolibah' (and the names 'box' and 'boxwood' are often used to refer to coolibah). Sutton also gives two *r*-final words, *bagur* 'sword' and *yagir*, a placename, and again this is atypical of Mari languages. Both features may result from diffusion from languages like Dyirbal. This may also account for *y*-initial clusters, which do not occur in the southern members of the group. Final /rr/ (or /d/) is found in most languages of the group, but not in Margany and Gunya (Breen 1981a). The combination *rrC* is common, and as Mari languages either do not contrast two apical series or, if they do (Margany and Gunya), do not neutralise this contrast in clusters, the difference between *rr* and *r* is best attributed to a difference in manner of articulation.

New South Wales languages are generally conventional in disallowing rhotics and laterals initially and allowing /l/ and /rr/ but not /r/ finally (except in the west where all words are vowel-final). Clusters of *rrC* are permitted but clusters of *rC* are not; since there is no apical contrast (alveolar vs retroflex) this difference must be attributed to a manner of articulation difference. The inland languages Ngiyambaa (Donaldson 1980:46) and Yuwaalaayaay (Williams 1980:23) do not allow any apical initially. They allow /y/ (but not /ny/) initially in clusters and word-finally.²² This contrasts with the situation in southern Mari languages, where /ny/ but not /y/ is found in these situations (and see Sutton (1973:37–42) on the change from ancestral /ny/ to /y/ in some northern Mari languages). Yaygir (Crowley 1979) has three rhotics, a voiced trill, a retroflex glide and a voiceless trill. Crowley shows that the voiceless trill has descended from an earlier retroflex glide following a long vowel. These are the only phonemes that are not permitted word-initially (although the contrast between /d/ and /l/ is neutralised in this position). Both *rrC* and *yC* clusters are permitted; Crowley does not list any clusters with the voiceless trill, but there does seem to be one on page 370. All four nasals, as well as /l/, /rr/ and /y/, can occur finally. In Gumbaynggir (Eades 1979) *rrC* clusters are, as usual, acceptable, *yC* and *wC* are uncommon and *rC* is not allowed. The

²² Austin (pers. comm.) points out that Yuwaaliyaay (a dialect of the same language as Yuwaalaayaay) has lenited medial *r* to *y* or zero while *rr* remains unchanged.

nasals /n/ and /ny/ can also occur initially in heterorganic clusters. All four nasals, as well as /l/, /rr/, /y/ and /w/, can occur word-finally. In Baagandji (Hercus 1982:48) /r/ is extremely marginal in clusters: there is one example of *rnh* (and, since /nh/ does not otherwise occur as second member of a cluster and interdentals do not otherwise take part in heterorganic clusters, this must be regarded as doubtful).

In western Queensland only two languages are known to have *rC* clusters. One is Warluwarra (Breen 1971a). This language has some unusual features in its phonotactics, among which are a comparative paucity of *rr*-initial clusters and a handful of *rC* clusters. There are no *rrp* clusters at all (in a vocabulary of something over 1,000 items), ten *rk*, twelve *rth* (/h/ is a velar glide), one *rw* and one *rtj*. There are three *rh* clusters. There are also five examples of a retroflex fricative which is phonemicised as a geminate /r/.²³

The other is the non-Pama-Nyungan Lardil (Hale et al. 1981). This permits final /rr/ and /r/, although /rr/ alternates with /d/ in that position; *rrC* and *rC* clusters are permitted. There may be a complementary distribution between /rr/ and /d/ in clusters; /rr/ can be followed by stops, /w/ or (rarely) /y/ while /d/ can be followed by nasals (and in these clusters it itself alternates with the nasal /n/). There is a single word in the dictionary with *wrrng—wurrngeewurrngee* ‘to drone, buzz (of bees)’, which could well be onomatopoeic. The related Yukulta (Keen 1983) does not permit *rC* clusters (although it does share with Lardil the unusual feature of *Cy*—as well as *Cw--*clusters).

The north-west Queensland languages Kalkutungu (Blake 1979a) and Ngawun (Breen 1981b) contrast alveolars and retroflexes in final consonants and do not allow glides in this position. Since they allow /rr/ but not /r/, this suggests that /r/ but not /rr/ is grouped with /y/ and /w/.

In north-east South Australia only Ngamini has *rC* clusters (*rp* and *rk*), but Austin (1988a:242) shows that these have arisen by a sound change in which /l/ or /rl/ has become /r/.

Clusters of *rC* seem to be an extremely marginal feature of the Western Desert dialects. Gugada has *rp* and *rk* according to Platt (1972). (Platt, incidentally, groups /r/ and /rr/ together as ‘continuants’.) Glass and Hackett (1970), who group /rr/ and /r/ together as ‘vibrants’, say that *rp* occurs across a morpheme boundary and *rk* intramorphemically. However, in the Ngaanyatjarra word list (Glass 1988) I found only three words involving a morpheme (*kuwar*: *kuwar-kuwarpa* ‘mad, confused’, *kuwarmara* ‘unable to understand’, *kuwartjingarnu* ‘caused to become confused’) and two English loanwords: *waarka* ‘work’ and *wiirpa* ‘wheat’. The two Western Desert dialects mentioned by McGregor (1988), Yankunytjatjara and Yulparija, do not have *rC* clusters.

Pintupi was one of Dixon’s (1980) sample of languages, referred to above. Its *rC* clusters are highly marginal. Hansen and Hansen (1978:39) make the cryptic comment that: “The infrequent occurrence of the apico-postalveolar rhotic (r) in consonant clusters is considered non-typical of desert dialects”. Any reader with experience with the Western Desert language will know that it is the occurrence of these clusters, not their infrequency, that is non-typical. Hansen and Hansen give eight examples and go on to say that: “In the speech of speakers from the South Eastern dialects, the apico-postalveolar rhotic (r) may fluctuate with the apico-alveolar (rr) in the above examples”. In the third edition of their very substantial

²³ This seems to be similar to the voiceless trill described by Crowley (1979) for Yaygir.

dictionary (Hansen & Hansen 1992) there are some discrepancies with the examples referred to above, but these seem to be due to inadvertent omission of either the *rC* form or the *rrC* form (K. Hansen pers. comm.). The closely related Kukatja also has a dozen or so examples of *rC* in a word list with thousands of entries (D. Nash pers. comm., referring to the then unpublished word list by A. Peile and H. Valiquette; see Valiquette (1993)).

Yindjibarndi (Wordick 1982) has *rC* clusters which, as the cognates Wordick gives with neighbouring languages show, are descended from *rlC* clusters. There is also a cluster *yk*. Watjarri (Douglas 1981) does not have *rC* clusters, while *rrC* is common. The alveolar/retroflex opposition is not neutralised in heterorganic clusters. Austin (pers. comm.) says that *rC* clusters are entirely absent from Western Australian coastal languages from Watjarri to the Pilbara.

Yolngu languages, as exemplified by Djapu (see §3), have *rC* and *yC* clusters, but /r/ does seem to be closer in its phonotactics to /rr/ than to the semi-vowels.

In Yanyuwa (Kirton 1967)²⁴ all rhotics and glides can occur word-initially but only /rr/ finally; *rrC* clusters are common, *rC* rare and *wC* and *yC* non-existent. Garrwa and Wanyi (Breen forthcoming) allow any consonant except /ly/ and /rr/ word-initially, while the permissible stem-final consonants, all rare, are /ny/, /l/ and /rr/. Glides do not occur initially in clusters. The status of these two languages with respect to Pama-Nyungan is unclear (Blake 1988).

The remaining languages to be considered in this section are all non-Pama-Nyungan. In Burarra (Glasgow & Glasgow 1967) all consonants can occur initially and finally. The number of *rrC* clusters is fairly limited. There are a large number of possible *rC* clusters, but most of them involve an apical second member. There are also a large number of *yC* clusters. In Iwaidja (Pym 1979) /w/, /t/ and /y/ can occur word-initially but not finally, while /rr/ can occur finally but not initially. A third rhotic, a retroflex flap /rd/, cannot occur in either position. Retroflexes other than /t/ cannot occur initially, while both retroflexes and alveolars (but not all of either set) can be word-final. A *w-r-y* grouping seems to be indicated by these facts; in particular, if /rr/ and /t/ were grouped together one would expect /rr/, as the alveolar member of the pair, to be the one that occurred word-initially. There are a number of possible *rrC* clusters, but only two *rC* and two *rdC*. Heterorganic *nC* and *mC* are both found; *yC* is not permitted but *nyC* (including heterorganic) is. Heterorganic *ngC* is permitted, but not *mC* or *wC*.

In Umbagarla (Davies 1989) /rr/ is perhaps the only consonant that does not occur word-initially while it is one of the most frequent word-final consonants (as also is /r/). Most consonants, but perhaps not /w/, can occur finally. Both rhotics occur cluster-initially, while /y/ and /w/ do not. Laragia (Capell 1984) disallows only /l/ and /rr/ initially, while finally it allows plosives and nasals (other than retroflexes) but of the other consonants only /l/ and /rr/. There are a number of *lC* and *rrC* clusters, as well as stop-initial clusters, but *rw* is the only *rC* permitted and *yC* and *wC* are not permitted. In Ngalakan (Merlan 1983) all apico-alveolars are extremely rare initially; there is only one example of morpheme-initial /rr/ and it is never word-initial. Retroflexes (including /r/) are common initially. Any consonant can be word-final. There are a good number of *rrC* and *rC* clusters (more of the former), fewer *yC* and only two *wC* (one of them *w?*).

²⁴ Jean Kirton put in many years of dedicated work on this language and her recent death is a great loss to her Yanyuwa friends, to the Summer Institute of Linguistics and to Australian linguistics.

In Nunggubuyu (Heath 1984) /rr/, /r/, /w/ and /y/ can all occur initially and finally, although final /w/ is rare. There are many *rrC* and *rC* clusters, some *yC* (parallelling *nyC*) and few *wC*. The situation for *IC* is not noticeably closer to that for *rrC* than is that for *rC*. In Ngandi (Heath 1978b) there is a rule retroflexing all word-initial apicals except /rr/; this is part of a wider complementary distribution of the two apical series. However, initial /rr/ is very rare; Heath can quote only one example. The clusters *rrC* and *rC* are common, *yC* and *wC* much less so. Mara (Heath 1981) is similar except that word-initial /rr/ does not occur at all. Again in Alawa (Sharpe 1972) initial /rr/ is not permitted. This may be attributed to the loss of the alveolar/retroflex distinction in this position, although other initial apicals are interpreted as alveolar. There seems to be some justification for challenging this interpretation (see Merlan 1983:9). Initial /r/ is not very common; /rr/ is much more common and less restricted in clusters than /r/ or /y/ while there is only one permitted *wC* cluster.

Twi (Osborne 1974) is, not surprisingly, atypical among Australian languages in not having *rrC* or *IC* clusters. It has *rC* ‘clusters’ only because retroflex stop, nasal and lateral are analysed as /rt/, /rn/ and /rl/ respectively;²⁵ /rr/ never occurs initially, while /r/ and /l/ rarely do.

Maranungku (Tryon 1970) has the usual two rhotics, classed as alveolar resonants. /rr/ is not word-initial at all, otherwise all consonants can occur both initially and finally. The clusters *rrC* and *rC* are permitted, although much less freely than *IC*, while *yC* is restricted to *yt* and *y়t* and there is no *wC*. In MalakMalak (Birk 1976) the two rhotics are among the three consonants that cannot occur word-initially or as the second member of a cluster; the other is /ly/. There are no word-final restrictions on single consonants. There are a large number of clusters and very few restrictions on their composition; one is mentioned above and another is that there are no *yC* or *wC* clusters, however, *rrC* and *rC* clusters are common and have a similar distribution to *IC*. Finally, in Jingulu (Chadwick 1975) the two rhotics are an alveolar trill and a retroflex flap. The trill is never word-initial, while the two rhotics are among the restricted set of phonemes that can occur finally. Both rhotics can occur as first member of a cluster, while /y/ and /w/ cannot.

Another feature of the Top End of the Northern Territory, not referred to above, is the presence in most languages (including the Pama-Nyungan YolNu languages) of *Cy* clusters. *Cr* is permitted too in several languages while *Crr* is permitted (but rarely) in Nunggubuyu and Burarra. These languages all permit *Cw* too, but these (especially /w/ and /rw/) are common (but not generally frequent) in many languages in other parts of Australia.

7. DISCUSSION

There seem to be two areas where the glide /r/ commonly occurs as the first member of a consonant cluster. One of these is north-east Queensland and the other the Top End of the Northern Territory.

A comparison of the phonotactics of liquids and glides in some north-east Queensland languages suggests a division into three groups:

/y/ occurs word-initially, word-finally and as the first member of consonant clusters;

/l/, /rr/, /r/ do not normally occur initially but occur in the other positions;

²⁵ See Breen (1992:39-40) for a criticism of this analysis.

/w/ occurs initially but not in the other positions.

There is no phonotactic reason to link /rr/ with /r/ in preference to /l/.

In the Top End *rC* clusters seem to be an areal feature, occurring across a wide variety of languages, both Pama-Nyungan and non-Pama-Nyungan. However, /rr/ is unusual among consonants in this area in that it is rare or disallowed word-initially (as it is in most of Australia). The semi-vowels /y/ and /w/ pattern fairly well together, given their articulatory differences. The glide /r/ resembles /l/ in its phonotactics more than it does /rr/ or the semi-vowels. /rr/ seems to belong in a single-member group in some languages, but may be logically grouped with /r/ in some languages that have two apical series.

It seems, therefore, that there may be no region (though there may be individual languages) in which a grouping of /rr/ with /r/ is indicated by the phonotactics.²⁶ Still less is it appropriate for Australia as a whole (see McGregor 1988).

The traditional alternative to grouping /r/ with /rr/ is, of course, grouping it with /y/ and /w/ as ‘glides’ or ‘semi-vowels’, although some linguists have declined to group the rhotics and glides at all; see, for example, Chadwick (1975:2), Sommer (1969:37)—whose chart is, however, arranged in a rather confusing way—and Donaldson (1980:15). This grouping is phonotactically rather heterogeneous, but this is entirely natural²⁷ and follows from the features associated with their points of articulation; for example, /w/ cannot be word-final in most languages just as the other labials, /p/ and /m/, cannot. This is not an argument against grouping it with /y/ and /r/. The differences between /r/ and /rr/, however, cannot be explained away by such considerations; for example, as mentioned earlier, many languages with the alveolar-retroflex opposition preserve this opposition in clusters—having both *np* and *rnp*, *lk* and *rlk* for instance—but still allow *rrC* and not *rC*.

Areal features, crossing genetic language group boundaries, are common in Australia; the loss of the stop-tap distinction described above is just one of several in its general area, pre-stopping of nasals and laterals being another, an opposition between apical tap and trill a third and initial dropping a fourth, to mention just phonetic and phonological features. The classic survey of diffusion in a heterogeneous area is, of course, Heath (1978a) for south-east Arnhem Land.

Clearly, sound changes spread across major linguistic boundaries, and they probably always have. There may have been no barriers, other than Bass Strait and Van Diemen Gulf, capable of blocking the movement of changes. Differences between languages might inhibit borrowing in certain circumstances, as Heath points out, but this would not generally be the case. This leads me to reflect on the meaning of terms like Proto Australian and Proto Pama-Nyungan, and to what degree they relate to any genuine protolanguage.²⁸

²⁶ Perhaps I should say ‘primary grouping’; /r/ and /rr/ may group together on another level. Several examples are noted in the paper; another is the dissimilation process described for Yidiny (Dixon 1977:100). Another such secondary grouping would be that of apical nasals and laterals with /rr/—the consonants that occur initially in heterorganic clusters in many languages.

²⁷ A point I overlooked until Mary Laughren brought it to my attention.

²⁸ While I was writing this paper, Bob Dixon sent me the first two chapters of an early draft of a manuscript on Australian languages, under the names of Dixon, Sands, Green and Green, with a request for comments. I had not read Baldi’s volume at that time, and it was this manuscript that originally inspired me to think about the reality of the reconstructed protophoneme inventories.

Johnson (1990:422–423) details two opposing influences on languages in an area of Cape York Peninsula: on the one hand, as a result of intermarriage between different exogamous patrilineal clans (or patriclans) or different language groups, and a situation where multilingualism is normal, “strong pressures exist to promote borrowings”. On the other hand: “Equally strong but opposing forces act to maintain patrilect [speech variety associated with a patriclan] distinctiveness...Patrilect is a marker of patriclan membership and thus a symbol of identity”. Dixon (1990:397) speaks of the pressure from conservative neighbours inhibiting change in a language—or at least change away from the norm, as well as the fact that “Australian Aborigines have a strong awareness of language, which is looked upon as a principal marker of membership in tribe, and in local group within tribe”.

Johnson, dealing with a language comprising a group of closely related patrilects, refers (p.423) to the “vocabulary pool” that is available to all speakers of the language. In the same volume, Grace (1990:169–170, quoting Grace 1981:263–264), speaking of two neighbouring and closely related Melanesian languages of New Caledonia, which have been substantially differentiated by rapid and seemingly irregular sound change, says: “In the situation which I have described [with, for example, inter-language marriage common and much multilingualism] we may imagine that each individual conceives of the immediate linguistic reality in terms of pools of linguistic resources...In fact, in some degree the linguistic resources of the whole island would have constituted a single pool”. It would seem, then, that while this situation could explain rapid differentiation for a period on a small scale, it would also lead to homogenisation on the island-wide scale.

Johnson and Grace are each describing a small-scale situation involving closely related languages and a small area. Grace comes to the conclusion that the synchronic unit which undergoes a change is not necessarily a language at all, but may be much smaller—one dialect of a language. However, Dixon (1990:400) notes that: “Mapping linguistic parameters across the 200-plus languages of the continent gives a picture that bears a distinct resemblance to the dialect map for a single language”. With a time-scale of tens of thousands of years, we might then be able to think of the whole of Australia as a “pool of linguistic resources”. And the synchronic unit that undergoes a change may be something bigger than a language—a language group, for example.

If sound changes (and other changes) could spread throughout the continent, then the Australian language family as a whole must have had a certain amount of cohesion. As Dixon (1990:400) says: “... it does seem that the tree model of genetic relationship, which is so useful for other language families, may not be the appropriate model for the Australian family.” McConvell (1990:7); says that: “It is simply not possible, given the amount of knowledge we now have about rates of language change around the world, to regard the Pama-Nyungan language family as a 40,000 year old grouping”. (See also Blake 1990; O’Grady 1990b.)

Bellwood (1991) outlines a dilemma posed for linguists by this relative homogeneity of Pama-Nyungan. If, as this homogeneity suggests, it is only a few thousand years old, and if, as is generally assumed, it descends from a single language, this language must have spread over most of the continent, supplanting older languages, during that few thousand years. But this sort of wholesale takeover seems to be always associated with the spread of a revolutionary new technology, or with conquest. Neither of these possibilities fits with what we know of Australian culture.

But maybe it is possible to regard Pama-Nyungan as very old. If changes spread back and forth across the continent, there may have been a cyclic situation, in which, say, a distinction between two laminal series began somewhere, spread throughout much of Australia, then was lost somewhere and this change spread over the continent, and so on. Given 40,000 years, there could have been several cycles of the type of changes that seem to have taken place in Australia—development and later loss of apical distinction, augmentation to eliminate monosyllabic words and later initial-dropping to re-establish the type, and so on. The fact that there are single-apical languages in which the apicals are alveolar (in much of eastern Australia) and others in which they are typically retroflex (e.g. Garrwa and Wanyi) suggests that our present single-apical languages do not just continue an original situation. There would be cycles of contraction and dilation of the phoneme inventories, affecting different parts of them at different times and in different places, but with a certain degree of cohesion.

Reconstruction to establish a protolanguage, then, will not establish an initial protolanguage, or even an intermediate one, but a system that would have existed at different times in different areas, and not at all in some, and that is dependent on the direction of change during the current cycle. For example, if there is a general development of a laminal distinction in progress, the ‘protolanguage’ will not have it; if we had been in a part of the cycle in which it was, in general, being lost, the ‘protolanguage’ will have the two laminal series. A change in direction in a trend may function like a singularity in cosmology and render previous history unrecoverable.

Perhaps the best we can do is establish a minimal phoneme set, maybe:

	<i>b</i>	<i>g</i>	<i>d</i>	<i>j</i>
<i>m</i>	<i>ng</i>	<i>n</i>	<i>ny</i>	
		<i>l</i>		
<i>w</i>		<i>r</i>	<i>y</i>	
<i>u</i>			<i>i</i>	<i>a</i>

and list those additions that seem to be widespread enough or common enough to be thought of as belonging to the regular cycles, including, say:

splitting of *d* --> *d* and *rr* / merging of *d* and *rr*

development / loss of a laminal split

development / loss of an apical split

development / loss of extra laterals

development / loss of lenition and a voicing distinction

and similarly with phonotactics, perhaps a basic CVC(C)V word shape:

initial-dropping / augmentation

development of new clusters—*rC*, *yC*, stop-stop / simplification of clusters

and so on. There is no reason to think the ancestral language had only the basic structure. It might have had fifteen consonants or thirty;²⁹ its form is irretrievably lost.

I am assuming that the Pama-Nyungan/non-Pama-Nyungan distinction is genetic, although this is not critical for my speculations. Blake (1988), Evans (1988) and Heath (1990) all provide evidence that it is (not to mention O'Grady's many contributions to the reconstruction of Pama-Nyungan). The heterogeneity of non-Pama-Nyungan as compared with Pama-Nyungan is a problem, but may be explainable by barriers to borrowing that arose as the various typologies within the former differentiated, or by an attitude to language that prized distinctiveness. One of the early steps in my introduction to non-Pama-Nyungan languages was to study a comparative word list compiled by Charles Osborne (n.d.);³⁰ one hundred words in each of six (I think) languages of the far north of the Northern Territory: from memory, Tiwi, Larikiya, Wuna, Limilngan, Yiwaja and something else. Some of these languages are neighbouring on others, and yet there were just no correspondences, or maybe one, among the hundred words. My reaction was to think that the different groups were deliberately keeping their languages totally separate.³¹ Just one more problem for the historical linguists!

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²⁹ In the light of new ideas about trees in biology (see Stephen Jay Gould's *Wonderful life*) we should consider the possibility that very early languages (of which Proto Australian might be one) had vast numbers of phonemes and early sound changes were mainly to greatly reduce these.

³⁰ Which I am currently unable to find—if, indeed, I did actually have a copy of my own. I am responsible for the spellings of the language names in the list as I give it.

³¹ Laycock and Mühlhäusler (1990:864–865) mention a couple of examples of "naïve linguistic engineering", the motive of which seems to be "the need for linguistically differentiating a group from all other groups".

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THE BARKLY AND JAMINJUNGAN LANGUAGES: A NON-CONTIGUOUS GENETIC GROUPING IN NORTH AUSTRALIA

NEIL CHADWICK

1. INTRODUCTION

This paper deals with the relationship between the Jaminjungan languages (referred to hereafter as Yirram) around the Lower Victoria River, Northern Territory, and languages in a geographically separate area to the east commonly called the Barkly languages since their territories occupy the western side of the Barkly Tablelands in East Central Northern Territory.

Following a 1980 paper to the Australian Linguistic Society and a detailed research report of 83 pages to the Northern Territory University in early 1984 by the author, a number of Australianist linguists have accepted that there is a non-contiguous genetic relationship between the languages in these two areas. In between the areas lies the territory of the Ngumbin languages which are effectively unrelated to the Yirram or the Barkly languages.

The proof of relationship lies in the morphology of the languages rather than the vocabulary. The object of this paper is to display the most salient of these morphological traits. The fine detail is contained in the 1984 paper.

1.1 THE LANGUAGES AND THEIR TERRITORIES

The languages of the Yirram group occupy areas around the lower Victoria River in the Northern Territory near the border with Western Australia. Of these, Jaminjung (JA) and Ngaliwurru (NGAL) are close enough to be regarded as dialects of the same language, although the two peoples are socially quite separate. These two are labelled the BAJ Subgroup (BAJ.SB) from the word for language found in both. In an adjacent area to the east lies the territory of Nungali (NU) which is very closely related to the BAJ.SB. The Yirram languages are non-Pama-Nyungan (non-P-N) and prefixing.

Adjacent and to the east of the Yirram languages lies the territory of the Ngumbin Group (NGM.GP) which are suffixing, Pama-Nyungan (P-N) languages effectively unrelated to Yirram. If it can be proven that all mainland Australian languages are related, then obviously NGM.GP will be related to languages on all sides. However, the relationship to Yirram could only be extremely distant.

Adjacent and to the east of the Ngumbin Group lies the territory of Jingulu (JI), one of the Barkly languages (B.lg), and this territory separates the territory of the other Barkly languages, which lie to the immediate east of Jingulu, from that of the Ngumbin Group. I call the languages to the east of Jingulu the Eastern Group (E.GROUP). In this group there

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are four communalects, socially regarded as separate languages. Linguistically, however, Wambaya (WA), Kudanja (KU) and Binbinka (BIN) form a dialect continuum, and since the territories of all three touch on the the McArthur River I call this continuum the McArthur Subgroup (MC.SB). To the immediate north-east of Jingulu, Ngarnka (NGN) is closely related to MC.SB, although a separate language. The genetic relationship of the Eastern Group to Jingulu is somewhat obscure.

All the Barkly languages are non-Pama-Nyungan, but are unusual in that they show a mainly suffixing morphology like most Pama-Nyungan languages. They are also, like the Yirram languages, effectively unrelated to the Ngumbin languages.

The phonologies of all three groups mentioned above are relatively similar and I have used the established orthography for Jingulu for all languages for the purpose of setting out the data in this paper. A brief explanation of the orthography is given in Appendix 1.

The symbol V is used for unspecified vowel.

Systems of genders or noun classes are found in all the Barkly languages, but are found in only one of the Yirram group, Nungali. The languages of the BAJ Subgroup, like neighbouring P-N languages, have no gender system.

2. SALIENT POINTS OF PROOF OF RELATIONSHIP

2.1 GENERAL

In the pronoun systems of the languages, there are a number of irregular and suppletive items which are similar in form and function in both Jingulu and Yirram. Together with almost complete similarities in the regular items, the anomalous items make proof of relationship between Yirram and Jingulu alone relatively easy.

The relationship between the Eastern Group and Yirram, however, is less obvious. Similarities are limited to only two suppletive items, and, even in regular items, similarities are less obvious than between Jingulu and Yirram. This applies also to a comparison between the Eastern Group and Jingulu.

What does help to establish proof is a parallel relationship between feminine and masculine affixes for ergative oblique and special feminine and masculine transitive third person pronouns in the singular found in Nungali and all Barkly languages.

2.2 GENDER MARKING

Although the BAJ Subgroup has no gender system, both Nungali and the Barkly languages show variation for four genders or noun classes.

For all languages there is a basic distinction into 'breathing' or animate creatures (human/fauna) and 'not breathing' or inanimate objects and plants. Animate creatures are divided into masculine and feminine. Inanimate things are divided into general and particular. The particular division, usually marked with *-ma/mi-* includes, amongst others, edible flora. This can be set out schematically as follows:

ANIMATE	INANIMATE
masculine	general neuter
v	v
feminine	particular neuter (vegetable)

In all these languages, masculine and feminine gender markers inflect for case. The basic distinction is between direct and oblique and the major case function indicated by the oblique affix is ergative. As in many other Australian languages the transitivity system for nouns is ergative-absolutive. The absolute form of the noun occurs for quotative, nominative and accusative. This form is relatively unmarked. I call this form and the corresponding affix, if any, the 'direct' form. The form which takes ergative affixation occurs for transitive subject and is relatively marked. I call this form, which functions for other non-nominative cases, the 'oblique' form. Nungali has two types of oblique, ergative and dative-benefactive.

Since pronouns generally operate on a nominative-accusative system, the term oblique is reserved for the pronoun forms which occur for dative and benefactive.

In Jingulu ergative function is indicated by the oblique suffix occurring as the only suffix on the noun. For example:

wawa - boy

warlaku - dog

wawa wanymaju - the boy is walking

warlaku manyankaju - the dog is sleeping

and, with free word order,

wawa warlakurni dajbanu - the dog bit the boy

wawarni warlaku mayanu - the boy hit the dog

where oblique suffix *-rni* marks ergative.

In the Eastern Group, ergative function is usually indicated by the oblique suffix followed by a second-order ergative suffix *-ni*. For example:

Kudanja

nadurna, nominative, *nadu-nga-ni*, ergative - girl

where *-nga-* marks feminine oblique.

jugi, nominative, *jugi-ni-ni*, ergative - boy

where *-ni-* as first-order suffix marks masculine oblique.

As can be seen from the Kudanja examples, the oblique affixes vary suppletively for gender, feminine and masculine, and this suppletive variation occurs in all the other Barkly languages and also in Nungali.

In Nungali for ergative some nouns are marked by suffix, others by prefix. Reconstructed forms of the affixes for both Nungali and the Barkly languages are set out in Table 1.

TABLE 1: RECONSTRUCTED OBLIQUE AFFIXES FOR ERGATIVE FUNCTION

	Feminine		Masculine	
	Prefix	Suffix	Prefix	Suffix
Nungali	<i>nga</i>	<i>ngayi</i>	<i>nyi</i>	<i>ni</i>
Jingulu	—	<i>nga</i>	—	<i>ni</i>
E. Group	—	<i>nga</i>	—	<i>ni</i>

The Nungali prefix *nyi* is not clearly related to the suffix and its origin is not dealt with in this paper.

In both Nungali and the Barkly languages, bound singular third person transitive subject pronouns also vary suppletively for gender, feminine and masculine. I label these pronouns *agent pronouns*.

In transitive sentences with a singular noun subject, ergative marking on the noun is cross-referenced in the verb phrase with an agent pronoun. To characterise this using English, it is as though the sentences:

The bitch bit me.

and

The boy hit me.

could be transformed as:

She-doer-bitch she-doer-bit me.

and

He-doer-man he-doer-hit me.

The agent pronouns for these languages can be reconstructed as in Table 2.

TABLE 2: RECONSTRUCTED AGENT PRONOUNS

	Feminine	Masculine
Nungali	<i>ngayi</i>	<i>nga-ni</i>
Jingulu	<i>ngayi</i>	<i>ni</i>
MC.SB	<i>ngayV</i>	<i>ka-ni</i>
Ngarnka	<i>ngayV</i>	<i>nV</i>

Nungali *nga-in* *nga-ni* can be reconstructed as **ka* by comparison with the BAJ.SB, and **ka* for all these languages can be reconstructed as common gender bound pronoun for *intransitive* third person. This form is commonly found for this function in North Australian languages. In both Nungali and the MC.SB a second-order marker *-ni* converts common intransitive to masculine transitive. The specific masculine marker for transitive can be reconstructed as **ni*.

It is possible now to compare the oblique suffixes for ergative function with the agent pronouns. The reconstructed forms are set out for each gender in Table 3.

TABLE 3: COMPARING THE ITEMS FOR EACH GENDER

	Feminine		Masculine	
	Oblique suffix	Agent pronoun	Oblique suffix	Agent pronoun
Nungali	<i>ngayi</i>	<i>ngayi</i>	<i>rni</i>	<i>ni</i>
Jingulu	<i>nga</i>	<i>ngayi</i>	<i>rni</i>	<i>ni</i>
MC.SB	<i>nga</i>	<i>ngayV</i>	<i>ni</i>	<i>ni</i>
Ngarnka	<i>nga</i>	<i>ngayV</i>	<i>ni</i>	<i>nV</i>

From this evidence I argue that the oblique nominal affixes for ergative function in these languages have developed from former third person forms which were probably originally free forms, pronouns and/or demonstratives, which had the initial sequence:

ng2-ya-i feminine

ni, possibly earlier, *ni-yi* masculine

These items at some stage were collocated with a noun, either preposed or postposed, to identify the transitive subject of a sentence. At a later stage, these became bound forms, suffixes for feminine and masculine in Nungali and in the Barkly languages and first-order prefixes for feminine in Nungali. In Jingulu and Nungali, the suffixes alone, without further affixation, mark ergative function. As stated above, the Eastern Group shows a further second-order suffix for ergative. In the BAJ.SB, the common gender agent pronoun and the ergative suffix for common gender, which can both be reconstructed as **ni* resemble the masculine forms in the other languages. From these items the similarities in form and function for agent pronoun and ergative oblique affix within each gender are clear between Yirram and the Barkly languages. It is notable that pronoun/demonstrative forms containing *nV* masculine and *ngV(-yV)* feminine are commonly found in neighbouring and other Northern non-P-N languages.

Another similarity is that in both the Barkly languages and Nungali oblique affixes contrast suppletively with direct affixes in each gender, feminine and masculine. Table 4 shows reconstructed forms for case-gender affixes.

TABLE 4: RECONSTRUCTED AFFIXES COMPARING DIRECT AND OBLIQUE FUNCTION

	Feminine		Masculine	
	Direct	Ergative oblique	Direct	Ergative oblique
Nungali prefixes	<i>nya</i>	<i>nga</i>	<i>di</i>	<i>nyi</i>
Nungali suffixes	—	<i>ngayi</i>	—	<i>rni</i>
Jingulu	<i>rni</i>	<i>nga</i>	<i>a/ji</i>	<i>rni</i>
E. Group	<i>ma</i>	<i>nga</i>	<i>i/ji</i>	<i>ni</i>

The main point here is that suppletive affixes replace direct affixes for oblique function in all languages. The direct forms show little correspondence between Nungali and the Barkly languages and this anomaly was addressed in detail in my 1984 paper.

Because Nungali lies in an area remote from the Barkly languages these similarities between gender-determined agent pronouns and ergative-oblique affixes cannot be ascribed to contact and convergence. Therefore this correspondence alone is enough to indicate a relationship between Barkly and Nungali. However, these indications are reinforced by evidence from anomalous forms in the pronoun system.

2.3 ANOMALOUS PRONOUN FORMS

In this section, forms are given from Kudanja as an example of those of the Eastern Group and from Ngaliwurru as an example of those in Yirram.

As stated in §2.1, whilst evidence from pronouns is strong between Jingulu and Yirram, evidence between the Eastern Group and Yirram is weaker in this area. This applies also to the evidence between the Eastern Group and Jingulu. Between Jingulu and Yirram there are at least four forms which show correspondence of form and function and which are suppletive. Only two of these are found also in the Eastern Group.

2.3.1 DUAL INCLUSIVE FIRST PERSON

The first, *-mind/mirnd-* with allomorph *-bid-* in Nungali, meaning ‘you and I’, shows up clearly in bound pronoun forms called pronoun bases which function primarily for intransitive subject. These are set out in Table 5.

TABLE 5: PRONOUN BASES

	Ngaliwurru	Jingulu	Kudanja
1SG	<i>nga</i>	<i>nga</i>	<i>ngV</i>
2SG	<i>na</i>	<i>nya/na</i>	<i>nyV</i>
3SG	<i>ka</i>	<i>ka/0</i>	<i>kV</i>
1DU.INC	<i>mind</i>	<i>mind</i>	<i>mirnd</i>
1DU.EXC	<i>yiny</i>	<i>nginy</i>	<i>ngurl</i>
2DU	<i>kuny</i>	<i>kuny</i>	<i>kurl</i>
3DU	<i>buny</i>	<i>wuny</i>	<i>wurl</i>
1PL.INC	<i>yurr</i>	<i>ngurr</i>	<i>ngurr</i>
1PL.EXC	<i>yirr</i>	<i>ngirr</i>	<i>ngirr</i>
2PL	<i>kurr</i>	<i>kurr</i>	<i>kirr</i>
3PL	<i>burr</i>	<i>wurr</i>	<i>wirr</i>

It is clear that, except for *-mind/mirnd-*, these forms exhibit a regular componential pattern within each language and, for singular and plural, across the languages also. This pattern was described in my thesis and in detail in my 1984 paper. The Eastern Group shows greater variation in the dual than the other two.

In each language the *-mind/mirnd-* form is anomalous and this form clearly corresponds for the same function across the languages. The change to a retroflex apical cluster *-rnd-* in Kudanja and the other Eastern Group languages has almost certainly been caused by a change in stress pattern. No other known language group in Australia shows a reflex of this *-mind/mirnd-* form for this function.

2.3.2 SECOND PERSON SINGULAR OBLIQUE PRONOUN

The second form shows up clearly in the oblique pronouns. In both Yirram and the Barkly languages, these are pronouns which function for dative, purposive and benefactive. In Jingulu they also occur for some accusative and possessive functions. The forms of the oblique pronouns are set out in Table 6.

TABLE 6: OBLIQUE PRONOUNS FOR BENEFACTIVE, ETC.

	Ngaliwurru	Jingulu	Kudanja
1SG	<i>ngarrku</i>	<i>ngarru</i>	<i>ngarri</i>
2SG	<i>ngungku</i>	<i>ngangku</i>	<i>ngangi</i>
3SG (masculine)	—	<i>ngarnu</i>	<i>nangi</i>
3SG (feminine)	—	<i>ngayingi</i>	<i>ngayangi</i>
3SG (common)	<i>nuwu</i>	—	—
1DU.INC	<i>mindak</i>	<i>mindaku</i>	<i>mirndaka</i>
1DU.EXC	<i>yinyak</i>	<i>nginyaku</i>	<i>ngurlaka</i>
2DU	<i>kunyak</i>	<i>kunyaku</i>	<i>kurlaka</i>
3DU	<i>bunyak</i>	<i>wunyaku</i>	<i>wurlaka</i>
1PL.INC	<i>yurrak</i>	<i>ngurraku</i>	<i>ngurraka</i>
1PL.EXC	<i>yirrak</i>	<i>ngirraku</i>	<i>ngirraka</i>
2PL	<i>kurrak</i>	<i>kurraku</i>	<i>kirraka</i>
3PL	<i>burak</i>	<i>wurraku</i>	<i>wirraka</i>

Nungali has singular third person forms *ngayiwu* (feminine), in which the initial sequence is the same as the agent pronoun, and *nuwu* (masculine), the same as the Ngaliwurru common form. Feminine singular third person forms in the Barkly languages also have an initial sequence which is the same as the agent pronoun.

The similarities of all the singular and plural forms across the languages, and of the dual forms between Jingulu and Yirram, were dealt with in detail in my 1984 paper. For the Eastern Group, the dual forms, as in the pronoun bases, are again somewhat divergent.

The one form to stand out as suppletive across the languages in these pronouns is the second person singular form which contains initial sequence *ngVng-* in all languages. This form contrasts suppletively with pronoun bases *na/nya* in Jingulu, *na* in Ngaliwurru and *nyV* in Kudanja.

2.3.3 TRANSITIVE SECOND PERSON SINGULAR

Initial sequence *ngV*, in this case *nga*, followed by a nasal consonant, appears also in another suppletive second person singular form occurring in Jingulu and the BAJ.SB. This form *nganyji* functions for transitive as opposed to intransitive second person subject where there is a following bound first person object.

In Nungali the situation is not quite so clear. The cognate form *ngaj-i-* occurs for both transitive and intransitive subject. The form *ngungku* for oblique pronoun as in Ngaliwurru is not clearly suppletive, but the second person singular object form *-nyV-* stands out as suppletive.

Within the Eastern Group both Ngarnka and Binbinka have a form *nyjV-/nyji*, which looks like the second syllable of *nganyji* and which occurs in certain tenses for both transitive and intransitive subject function. Languages of the Eastern Group have no special second person singular transitive form and all other bound second person singular forms contain the syllable *nyV*.

2.3.4 FIRST PERSON SINGULAR BOUND OBJECT

In the Eastern Group all first person singular pronouns contain the initial syllable *ngV-*. In Jingulu and Yirram, all first person singular pronouns but one begin with *ngV-*. This syllable is commonly found for first person singular in languages throughout Australia. The major forms for these northern languages are set out in Table 7.

TABLE 7: FIRST PERSON SINGULAR FORMS WITH INITIAL /ng/

	Pronoun base	Independent pronoun	Oblique pronoun
Yirram	<i>nga</i>	<i>ngayuk</i>	<i>ngarrku</i>
Jingulu	<i>nga</i>	<i>ngaya</i>	<i>ngarru</i>
Kudanja	<i>ngV</i>	<i>ngawu</i>	<i>ngarri</i>

In the Eastern Group the pronoun base functions also for first person singular direct object. However, the corresponding object form in both Yirram and Jingulu is clearly suppletive containing an apical nasal preceded by the vowel *a*- in Nungali and Jingulu. In the BAJ.SB the preceding vowel is determined by the preceding morpheme. The forms are as follows:

BAJ.SB	Nungali	Jingulu
<i>-(V)n</i>	<i>-an</i>	<i>-ana-/ama-</i>

In Jingulu the apical nasal is plain in some combinations and retroflex in others.

Again Jingulu and Yirram exhibit an anomalous item which corresponds between the languages in form and function and this contrasts with regular items which also correspond in form and function.

2.3.5 GENERAL SUMMARY OF MORPHOLOGICAL SIMILARITIES

The following abbreviations are used in the schematic summary below:

sup.	suppletive
n.sup.	not suppletive
cor.w.	correspondence with
no c.cor.	no consistent correspondence
ag.pr.	agent pronoun
erg.ob.af.	ergative-oblique nominal affix
f.	feminine
m.	masculine
c.gend.	common gender
g.	gender
1p.d.inc.	first person dual inclusive
2p.ob.pr.	second person singular oblique pronoun
2p.tr.pr.	second person singular transitive pronoun
1p.obj.	first person singular bound object

TABLE 9: GENERAL SUMMARY OF INFORMATION

	Nungali	BAJ.SB	Jingulu	E.GP
1) sup.ag.pr. similar to erg.ob.af.				
f.	cor.w.JI&E.GP		cor.w.E.GP&NU	cor.w.JI&NU
m.	cor.w.JI&E.GP		cor.w.E.GP&NU	cor.w.JI&NU
c.gend.	correspondence with m. forms in all other languages			
2) sup. 1p.d.inc.		correspondence in forms across all languages		
3) 2p.ob.pr.	cor.w.all	cor.w.all, sup.	cor.w.all, sup.	cor.w.all, sup.
	n.sup.			
4) 2p.tr.pr.	cor.w.JI&BAJ	cor.w.JI, sup.	cor.w.BAJ, sup.	no c.cor.
	n.sup.			
5) sup.1p.obj.	cor.w.JI&BAJ	cor.w.NU&JI	cor.w.NU&BAJ	no c.cor.

3. EVIDENCE FROM VOCABULARY

Whereas evidence from anomalous gender markers and anomalous pronoun forms strongly indicates a genetic relationship at least between Jingulu and Yirram, the evidence from vocabulary is much weaker.

On a 100-item list, the highest percentages of look-alikes are between Kudanja and two of the Yirram languages with Nungali showing 20% density, and Jaminjung showing 19% density. However, within the Barkly languages, the percentage of look-alikes between Jingulu and the Eastern Group is not much higher. Between Jingulu and Kudanja, the percentage is at a maximum of 25% and only 20% if items common within the region are subtracted. Therefore even the relationship of Jingulu to Kudanja in the neighbouring Eastern Group is not immediately obvious. It is evident that there has been wide-scale borrowing from the Ngumbin Group into both Yirram and Jingulu.

However, a small number of unusually similar items argue for, rather than against, a genetic relationship between the Yirram languages and Jingulu and between the Yirram languages and those of the Eastern Group. These are items which do not have look-alikes in the Ngumbin Group. They are set out below:

- alright, yes *ngali* JA.NGAL, *ali* JI, *alu* NGN, *alima* WA, *walima* KU
- ant(sp) *kija* NU, *kijakija* JA.NGAL, *kijakijirni* JI, *kijarna* all E.GP
- blow *bu* JA.NGAL, *buya-* JI, *burlinyawa* NGN, *burlinyja* KU.BIN
- child, any *di-yalik* NU, *jalik* JA.NGAL
- f. *alaknga* NGN, *alanga* WA, *walanga* KU.BIN
- m. *alakji* NGN, *alaji* WA, *walaji* KU. BIN
- cough *ngujul* NU, *ngujulb* JA, *ngujul* NGAL, *kujkulyu* JI, *kujkuli* WA
- east *ngumuku* NU, *ngumuyun* JA.NGAL, *ngubu* JI

eyebrow	<i>ma-bijibijib</i> NU, <i>yibij-yibij</i> JA.NGAL, <i>yibijibiji</i> JI.NGN
flower	<i>yulang</i> NU.NGAL, <i>yurru</i> JA, <i>yurru</i> JI, <i>yurru</i> NGN.KU.BIN
galah	<i>kirrkilang</i> NU.BAJ, <i>kirrkala</i> JA, <i>kilikilirdi</i> JI, <i>kilikiliknga</i> , <i>kilikilikarda</i> NGN, <i>kilyingkilyirda</i> WA.BIN
grass	<i>nu-warnda</i> NU, <i>warnda</i> JA.NGAL, <i>warnda</i> KU.BIN
head	<i>kulaka</i> NGAL, <i>kula</i> KU
hit/kill	- <i>ma-ng-</i> NU, - <i>ma-</i> JA.NGAL, <i>maya-</i> JI, <i>majbi</i> KU.BIN
hunt	<i>larlabang</i> JA.NGAL.NU, <i>alalangmi</i> WA
laugh	<i>wambaja</i> NU, <i>kambaja</i> JA.NGAL, <i>kabija-</i> JI, <i>kamiji</i> NGN, <i>kami</i> MC.SB
lick	<i>ngalyak</i> JA, <i>ngalyala-</i> JI
navel	<i>najurruru</i> NU.JA.NGAL, <i>majuluju</i> JI, <i>majuluju</i> NGN, <i>lulu</i> KU
rib	<i>narlikarli</i> NU, <i>karlikarli</i> JA.NGAL, <i>karlimiji</i> JI, <i>kalimbaji</i> WA
sister, elder	<i>babiny</i> NU.JA.NGAL, <i>bibirni</i> JI, <i>babanya</i> all E.GP
string	<i>munungku</i> NU.JA.NGAL, <i>murnungkumi</i> JI, <i>murnungkuma</i> MC.SB
surfeit	<i>bundud</i> NU, <i>bundurru</i> - food, <i>bundundurra</i> - surfeit JI, <i>bundurri</i> KU

4. SUMMARY OF EVIDENCE

In these languages there is a special relationship between suppletive affixes for ergative function and agent pronouns for third person singular bound in the verb phrase. In Nungali and the Barkly languages these vary suppletively for feminine and masculine. In Nungali, for feminine, both prefix and suffix and agent pronouns correspond consistently in form with the feminine items, both suffixes and agent pronouns, in the Barkly languages. In the masculine gender, only the suffix in Nungali corresponds in form to that in the Barkly languages, but the masculine identifier morpheme in the agent pronoun corresponds in form to those in the McArthur Subgroup, and to the agent pronoun in Jingulu and Ngarnka. In the BAJ Subgroup the ergative suffix, as reconstructed, and the agent pronoun for common gender correspond in form to the masculine forms in all the other languages. For both Nungali and the Barkly languages, the oblique affixes for ergative function contrast suppletively with the direct affixes. Evidence of relationship from gender markers is therefore strong.

In the pronoun systems the regular items exhibit many consistent componential similarities and the first person dual inclusive form -*mi(r)nd-* stands out as suppletive and corresponds across all languages. In the Barkly languages and the BAJ Subgroup the second person singular oblique pronoun *ngVng-* is suppletive compared to other second person singular forms. This form is found also in Nungali but is not clearly suppletive.

Special bound transitive second person singular subject pronouns of the form *nganyji-* also correspond between Jingulu and the BAJ Subgroup and these forms are suppletive in those languages. In Nungali the corresponding form *ngaj-i-* is not suppletive and functions also for intransitive subject. Languages of the Eastern Group do not have special transitive

subject forms for second person singular, but there are similarities to *nganji-* in some allomorphs of bound second person singular subject in two communalects.

Both Jingulu and Yirram show suppletive bound direct object forms for first person singular containing -*Vn*- which contrast with other first person singular forms. In the Eastern Group however, first person singular direct object is not suppletive.

Evidence of relationship from pronouns is strong between Jingulu and Yirram, but much weaker between the Eastern Group and Yirram.

In vocabulary, there is much evidence that both Jingulu and Yirram have borrowed extensively from the Ngumbin languages. Percentages of look-alikes are low between Yirram and any of the Barkly languages. They are also low between Jingulu and the Eastern Group. On the surface, lexical evidence of relationship looks weak, but about 18 forms which are distinct from those in Ngumbin and which show correspondences in form and meaning between Yirram and the Barkly languages point to the possibility of a relationship.

APPENDIX 1: THE ORTHOGRAPHY

All the languages have a three-vowel system: *i a u*. The Barkly languages have long vowel *aa* and Jingulu additionally long vowel *ii*. Minimally the consonants are:

Bilabial	<i>b m w</i>
Alveolar	<i>d n l rr</i>
Lamino-palatal	<i>j ny ly y</i>
Velar	<i>k ng</i>
Retroflex glide	<i>r</i>

As in many of the north central languages, there is only a single series of stops. Voiced and voiceless variations occur as allophones of the same phoneme. Technically, in fieldwork script, either the voiced or voiceless ciphers should be chosen consistently, that is, *b d dj(dy) g* or *p t tj(ty) k*. For the purposes of practical orthography, however, the local Barkly people prefer the voiced series but have agreed to the use of *k* for velar to distinguish the clusters *ngk, nk* from nasal *ng*. For many of the P-N languages, which also have a single series, the voiceless ciphers *p t k* are used together with the voiced cipher *j*. I have departed slightly from the established orthography in that I represent the palatal homorganic nasal+stop cluster as *-nyj-*; in the orthography it is simply *-nj-*.

The Barkly languages clearly also have a retroflex series represented with digraphs (*rd rn rl*) in addition to the retroflex glide.

The works of Hoddinott, Cleverly and others do not show retroflex phonemes for Yirram, but my own fieldwork in that region has shown that retroflex consonants do occur at least as allophones of apical stops, nasals and laterals and that there are subminimal pairs that contrast. I have chosen to show retroflex consonants in Yirram, wherever I perceived them in fieldwork, because there is often a corresponding retroflex consonant in the Barkly languages. I have not, however, had the opportunity in the field to test all items containing apicals listed in the works of others.

APPENDIX 2: SOURCES OF DATA

For the Barkly languages, I have drawn on my two theses, MA and PhD, on my monograph (Chadwick 1975), and on my fieldnotes collected between 1966 and 1990. For the Yirram languages, I have used the two descriptions by Bolt, Hoddinott and Kofod and the unpublished MA thesis by Cleverly. The material on Yirram is quoted for the most part uncritically as presented in their texts. This does not necessarily imply that I agree with the analysis presented, and where my own fieldwork, carried out at brief intervals (1983–86), is at variance, I have represented my own findings in the text.

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WHERE DO COMPLEX KINTERMS COME FROM?

ALAN DENCH

1. INTRODUCTION¹

Australian languages have become quite renowned for the complexity of their kin referencing systems, the most often cited examples being sets of derived kinterms used to refer to pairs and groups of kin. However, while there have been a number of discussions of the logic underlying such systems of kinship reference (see especially the papers collected together in Heath, Merlan and Rumsey (1982)), there has been little detailed discussion of the morphology used in deriving the terms.

This paper explores the possible origins of the morphology used to code various kin relations in a group of Australian languages spoken in the Pilbara region of Western Australia.² I show that morphemes used within restricted paradigms to indicate particular kin relationships have cognates outside these paradigms and that there are recurrent patterns of semantic connection. The paper does not attempt to provide a definitive account of the semantics underlying kin reference terminology, but is intended as an exploration of the grammaticalised metaphors that may underlie reference to kin relationships in Australian languages.

In developing the argument, I make the methodological assumption that the presence of similar forms used to mark particular categories is indicative of some connection between these categories. That is, I choose to disregard the possibility of accidental homophony. An example will make this point more clearly. In the Mantharta languages (Austin 1993b) a suffix, *-parnti*, marks plural kinterms. In the same languages a case suffix, *-parnti*, marks ablative and causal categories. My initial assumption is that this is not an accidental relationship.

The approach I am taking blurs the line between synchronic and diachronic analysis and so raises the question of polysemy. Assuming a connection can be made, is the Mantharta homophony the result of some distant historical connection with subsequent semantic

1 I am grateful to Marie-Eve Ritz for comments on this paper, and to Peter Austin for his comments on an earlier draft, for providing additional crucial examples, and for making available to me his draft grammars of Kanyara and Mantharta languages. He should not be held responsible for any errors of interpretation which I may have made of these data. I am also indebted to the following people who have helped me learn about the languages of the Pilbara: the late Percy Tucker and Herbert Parker (Panyjima), the late Algy Paterson (Martuthunira), Alexander Brown (Ngarla) and the late Daisy Williams (Nyamal). Research on Nyamal and Ngarla, and comparative work on the Pilbara languages, is funded by the Australian Research Council (grant numbers A59131653, A59532829).

2 The languages in the sample include Ngarla, Nyamal, Ngarluma, Panyjima, Yindjibarndi, Kurrama and Martuthunira (of the Ngayarda group), Jiwarli and Warriyangka (of the Mantharta group), and Thalanyji and Payungu (Kanyara group). Sources are cited throughout the paper.

divergence, or is there a synchronically valid semantic connection? I will return to this question in the conclusion, but my method of exploration addresses it indirectly. Having assumed a relationship between seemingly divergent categories I consider the broader semantic field surrounding each of the categories. In this way I hope to find points where the fields overlap. Such successive overlapping fields will ideally themselves be identified by sets of morphemes and will thus strengthen the case for a real semantic connection between seemingly disparate categories.

The paper proceeds as follows: in §2, I describe a range of morphological devices employed in Pilbara languages for encoding specific kin relationships, including the morphology of 'dyadic' and 'group' kinterms and suffixes to pronouns and nominals; §3 describes the range of forms and functions of ablative/causal suffixes across the group of languages; §4 then draws together this discussion by returning to a consideration of a selection of six specific suffix forms. Finally, I make some concluding remarks in §5.

2. KIN RELATIONS

In this section I will explore a number of different morphological systems which allow reference to kin relations. To begin with, I need to make a few general remarks about the semantics of kinship terms.

Singular, linear kinterms are inherently relational. The word 'father' can be used to refer explicitly to a single individual, but that reference necessarily involves the existence of another individual for whom the referent stands in the relation 'father-of'. Thus we can view the kin relation as a two-place predicate:

father-of (x, y)

Languages have different means for denoting the kin relation and the arguments of that predicate. In Panyjima, there are two simple means of describing a kin relationship, one involving a possessive noun phrase (1), the other involving the use of a kinterm as a predicate taking the possessor as an accusative complement (2) (see Laughren (1982) for some discussion of the logic of similar expressions in Warlpiri).³

³ Abbreviations used in glosses are as follows:

ABL	ablative	EFF	effector
ACC	accusative	EMPH	emphatic
ACT	activity	ERG	ergative
BELONG	belonging	EXC	exclusive
Bro	brother	Fa	father
CAUS	causative	FUT	future
Ch	child	GEN	genitive
COLL	collective	HABIT	habitual
CONCSS	concessive	HYPOTH	hypothetically
CTEMP	contemporaneous	ID	identification
Da	daughter	IGNOR	ignorantly
DAT	dative	IMP	imperative
DEF	definite	IMPERFss	imperfective same subject
DEIC	deictic	INC	inclusive
DU	dual	INCAUS	indirect cause
DWELL	dweller	INCH	inchoative
DY	dyad	LOC	locative

- (1) *Ngunha marlpa ngatharntu mama.*
 that man 1SG.GEN father
 That man is my father.
- (2) *Ngunha marlpa mama ngaju.*
 that man father 1SG.ACC
 That man is father to me.

All of the Pilbara languages have constructions like (1) in which the regular means for marking (alienable) nominal possession is also used to indicate the existence of a kin relation. However, a range of other means of encoding kin relationships is found among the Pilbara languages.

Firstly, kin possessive relations involving kinterms need not be expressed peripherastically. Like many other Australian languages, those of the Pilbara region have collections of dyadic and group kinterms which identify sets of two or more people on the basis of the particular kin relations existing among members of the set. The first detailed description of such systems is to be found in O'Grady and Mooney's (1973) analysis of some Nyangumarta terms. My concern here will be with the morphology of these derived terms.

Secondly, some of the Pilbara languages have sets of possessive suffixes which may be attached to kinterms to indicate the person and number of the possessor. Similar use of pronominal affixes occurs in a range of Australian languages and a number of examples are to be found in the descriptions collected together in Heath, Merlan and Rumsey (1982). The forms of these possessive suffixes in the Pilbara languages do not coincide with those of other categories to be discussed here, and so I will not deal with them further (a description of the Martuthunira system can be found in Dench (1995)).

Thirdly, as we shall see below most of the Pilbara languages make use of suffixes to free pronoun stems which specify particular kin relationships. That is, the pronoun stem specifies the possessor while the suffix specifies the kin relation—typically a parent-child relation. In some cases the suffixes involved have functions beyond the specification of kin relationships.

Beyond this, a number of the Pilbara languages have special pronoun forms which are used with particular classes of kin. As in many other Australian languages, the primary

MAT	maternal	PRIV	privative
MATRI	matrilineal	PrREL	present relative
Mo	mother	PURP	purposive
NFUT	nonfuture	PURPs=o	purposive subject = object
NOM	nominative	PURPss	purposive same subject
NPST	nonpast	QUOT	quotative
NV	not visible	REAL	realis future
OBL	oblique	REFL	reflexive
PASS	passive	SCE	source
PASSP	passive perfective	SEMLB	semblative
PAT	paternal	SG	singular
PATRI	patrilineal	Si	sister
PL	plural	So	son
PNM	proper noun marker	TOP	topic
POSS	possessive	USIT	usitative
PPERF	passive perfective	YK	'You know'
PRES	present		

organising principle here involves the notion of alternate generation sets (see Dench 1982). Similarly, this principle underlies a particular use of the 'collective' verbal derivational suffix to mark kin relationships in the Ngayarda group (Dench 1987). Finally, most communities in the Pilbara make some use of a marked 'avoidance' vocabulary. Since the use of the avoidance style is, normatively, mandatory between certain kin, it also serves to indicate the existence of particular kin relationships (for a brief description of the Panyjima avoidance style, see Dench (1991)).

My concern here is not with the interaction between these various referential systems, most of which have been described elsewhere, but with the sources of selected morphological forms involved in these systems. In the following sections, then, I will first discuss the formation of 'dyadic' and 'group' kinterms, and then secondly the forms and functions of kin relation suffixes attached to pronouns and other nominals.

2.1 DYADIC KINTERMS

All languages of the area have derived kinterms indicating groups of two ('dyadic' terms) or more ('group' terms) kin. These terms may specify both kin relationships which exist within the referent set of the term, and relationships between the speaker and/or addressee and referents of the term. For example in Panyjima, a pair of brothers who are in the same patrimoiety as the speaker will always be referred to as *kurtarra*, whereas a pair of brothers who are in the opposite patrimoiety will be referred to as *partangarra*, if in the same alternating generation set as the speaker, but as *yirtangkarra* if in the opposite generation set (Dench 1982).

In all of the languages there are dyadic terms which involve the addition of a suffix descended from the form *-*karra*, with a typical set of allomorphs as follows:

- <i>karra</i>	following a consonant
- <i>yarra</i>	following <i>i</i>
- <i>warra</i>	following <i>u</i>
- <i>rra</i>	following <i>a</i>

Some examples of dyadic terms from Panyjima are given below.

<i>kurta</i>	brother	<i>kurtarra</i>	pair of brothers
<i>nyupa</i>	spouse	<i>nyuparra</i>	married couple
<i>kumpali</i>	cousin	<i>kumpaliyarra</i>	pair of cousins

In each of these cases the relationship between the referents of the dyadic term is symmetrical. Thus, each of a pair of brothers is brother to the other. However, dyadic terms are also used to refer to non-symmetrical relationships. For example:

<i>thurtu</i>	elder sister	<i>thurtuwarra</i>	sisters
<i>mimi</i>	mother's brother	<i>mimiyarra</i>	MoBro+SiCh

The mother's brother in the second example will be called *mimi* by his sister's child, but will in turn call that child either *manyka* 'son/nephew' or *ngarraya* 'niece'. In the case of asymmetrical relationships, one of the two reference points is chosen as the basis for the dyadic term referring to the two relatives. Most analyses of dyadic paradigms (see Merlan & Heath 1982, for example) suggest a logic for the choice of linear term stem—very often this involves choosing as a stem the term referring to the most senior member of the pair, or to

put it another way, choosing the point of view of the junior member of the pair. However, this logic will not always explain particular uses of a term.

Notice that the dyadic kinterms do not specify some independently identifiable possessor of the kin relation. Instead, the possessor of the relation is *included* within the reference set of the dyadic term. This is the case whether or not the kin relation is symmetrical. In some sense, the dyadic formative serves to abstract the essence of a particular kin relation away from individuals who may stand in the particular relationship named by the linear stem. Under this view, there is no need to suggest a reference point for the choice of stem.

The use of some terms must be understood as generalisations from a prototypical relationship of some kind. For example in Panyjima, two people who are in the same matrimoity but in different alternate generation sets may be referred to and addressed by the term *kurntalkarra*, based on *kurntal* ‘daughter’. The term is appropriate to a pair of men who stand in the necessary relationship and so need not involve two people one of whom calls the other ‘daughter’. Yet, at the same time, the use of a term based on the stem *kurntal* ‘daughter’ presumably calls to mind the prototypical mother/daughter matrilineal relation.⁴

O’Grady and Mooney (1973) describe a range of dyadic terms in Nyangumarta, most (but not all) of which involve the *-karra* suffix.⁵ Here (pp.9–10), they mention the cognate term *kurntalkarra* in cautioning against assuming that dyadic terms (dual terms in their terminology) always denote two people:

[A]lthough dual terms in spontaneous utterances generally seem to denote two people, *kurntal-karra*...has in one instance been defined as a woman (singular) ‘after she has had a child’...Perhaps, then, the dual-plural terminology may in the case of some or all of the terms, or in the case of certain contexts, denote unity rather than duality or plurality: a single individual with the property of possessing certain kin, or of being in company with certain kin.

Clearly, to treat the *-karra* formative as a dual number marker would be an oversimplification of its semantics.

The *-karra* suffix appears to be quite widely distributed. It occurs, in various manifestations as a dyadic kinterm formative in most languages of the Western Desert, as well as in the Pilbara, and may have functions outside this restricted paradigm. In Yankunytjatjara for example, a nominal bearing the ‘pair’ suffix *-(ra)rra-kirra* denotes “a pair consisting of a thing or person...together with its natural counterpart” (Goddard 1985:72). Thus in addition to its use on kinterms, the suffix may appear on stems which refer to plants or animals and in these cases “the other element of the pair is understood to be a similar animal or plant” (Goddard 1985:72).

In Dyirbal, the *-garra* suffix occurs on kinterms but is clearly not a dyadic term formative. Dixon (1972:230) notes that the suffix “is most commonly used with proper names and indicates that the person referred to is one of two people involved in a general set of events”.

Both Panyjima (Dench 1991:152) and Nyamal (Dench fieldnotes 1993) have a *-karra* nominal suffix distinct from the dyadic kinterm formative (it is not subject to the same

⁴ Such metaphorical extension is not restricted to dyadic terms by any means. For a detailed example of the metaphorical extension of kinterms see Rumsey (1981).

⁵ Other Nyangumarta dyadic terms involve a suffix *-(ra)ngu* alternating with *-ngartu*. Like the *-karra* suffix, the *-(ra)ngu* suffix has probable cognates in related languages (*-rlangu* in Warlpiri (Laughren 1982), *-langi* in Gooniyandi (McGregor pers. comm.), for example).

allomorphic variation). In Nyamal, the suffix serves to produce an expression denoting the defining characteristic of a situation. For example:

Warrkamu paru-karra
work spinifex-ACT
spinifex-work (collecting seed)

Warrkamu wangka-karra
work language-ACT
language-work (linguistic elicitation)

and is the usual marker of direct objects in a particular kind of relative clause.

In Warlpiri, a *-karra* suffix functions as the complementiser for subordinate clauses describing simultaneous action and controlled by the matrix subject, and can also be attached to nominals functioning in what Hale (1982) calls an autonomous predicate function. For example:

- (3) *Wati ka nyina-mi karli-karra.*
man PRES sit-NPST boomerang-CONCSS
The man sits involved with a boomerang.

Same subject imperfective relative clauses in Thalanyji and Payungu (Austin 1993a) and contemporaneous relative clauses in Martuthunira (Dench 1995), involve reflexes of a verbal inflection of the form **-CM-karra*. Finally, in the Kimberley languages Walmatjari (Hudson 1978), Gooniyandi (McGregor 1990) and Djaru (Tsunoda 1981) a *-karra* suffix forms manner adverbs when attached to nominal or verbal stems.

This is not the place to explore the semantics of these seemingly related suffixes in detail, but this brief survey does suggest that the notion of 'duality' may not be fundamental to the *-karra* dyadic formative. As O'Grady and Mooney suggest, the apparent number specification is most likely an artefact of the primary semantics of the suffix, rather than a defining feature.

2.2 GROUP KINTERMS

In addition to the dyadic terms, terms for larger groups can be derived in each of the languages. There are essentially two methods of deriving such group terms. In most of the languages, a 'group' formative stands in paradigmatic contrast to the *-karra* dyadic formative. So for example in Jiwari, group terms involve the addition of the suffix *-parnti* to a singular kinterm (Austin 1993b):

Linear	Dyadic	Group
<i>kunyjan</i>	elder sister	<i>kunyjan-karra</i>
<i>kantharri</i>	MoMo	<i>kantharri-yarra</i>
<i>yakan</i>	spouse	<i>yakan-karra</i>

However in Panyjima, and for some of the Nyangumarta terms the group terms are derived from the dyadic terms by the addition of an augmenting suffix. In Panyjima the augmenting suffix is *-ngara*:

<i>kurta</i>	brother	<i>kurtarra</i>	<i>kurtarra-<i>ngara</i></i>	brothers
<i>nyupa</i>	spouse	<i>nyuparra</i>	<i>nyuparra-<i>ngara</i></i>	married people
<i>kumpali</i>	cousin	<i>kumpaliyarra</i>	<i>kumpaliyarra-<i>ngara</i></i>	cousins

In all cases, the group terms refer to a collection of relatives who have in their midst a relationship which is characterised by the linear stem on which the group term is based. Unlike dyads, which always involve a single (albeit occasionally asymmetrical) relationship, sets of people referred to by the group terms can involve a number of qualitatively different kin relationships.

The Panyjima group term *kumpaliyarra-*ngara** ‘cousins’ provides a good example here. The *kumpaliyarra* dyadic term is most appropriately used of two men who are cross-cousins—the relationship is symmetrical. As soon as the gathering expands to include another man of the same generation set (a necessary condition if this group term is to be used), then he must logically be a brother to one or other of the two cousins. However, the *kumpali* relation remains the most marked within the set and determines the choice of the particular group term. An analysis of the principles determining the choice of the Panyjima group terms is presented in Dench (1982).

In some sense then, the other relationships which might exist within the reference set of a group term are subordinate to that which determines the use of the term. The group’s identity is dependent on only one of the relationships which it manifests and the group as a whole is characterised as an extension of that relation. It is the recognition of this relationship of extension which allows us to ultimately connect particular nominal suffixes with the group term formative.

Table 1 presents a list of the group term formative suffixes found across languages in the sample:

TABLE 1: ‘GROUP’ KINTERM SUFFIXES

Ngarla	- <i>malingka</i>
Nyamal	- <i>malingka</i>
Panyjima	DY- <i>ngara</i>
Kurrama	- <i>warnti</i>
Martuthunira	- <i>warnti</i>
Jiwarli	- <i>parnti</i>

In §4, I will consider the *-ngara* and *-parnti/-warnti* suffixes in this set. The *-malingka* suffix is common to Ngarla, Nyamal and also Nyangumarta, but so far I have been unable to find cognates and cannot suggest a source for this.

2.3 KIN RELATION SUFFIXES

In this section I will describe the morphology of kin relation suffixes attached primarily to pronouns (denoting the possessor of the relation) as these occur in selected languages.

Martuthunira has two very restricted suffixes which will serve to introduce the phenomenon here. The two suffixes are attached to pronouns or ‘definite demonstratives’ and denote particular kin relationships. These are:

- ngulharn* (-PATRI) own father('s sibling)
 -*wula* (-Matri) own mother('s sibling)

For example:

- kartu-**ngulharn*** your (2SG) own father
*ngalii-**ngulharn*** our (1DU.INC) own father
*nhuwanaa-**wula*** your (2PL) own mother

The pronoun (or demonstrative) stem provides the person and number features of the possessor of a kin relation, while it is the suffix which specifies the kin relation. Examples (4) and (5) illustrate further:

- (4) *Ngayu nhuura-ma-rnu jurti-**wula-lu**, pipi-**ngku***
 1SG.NOM know-CAUS-PASSP 1SG.POSS-MATRI-EFF mother-EFF
nganaju-wu-lu.
 1SG.OBL-GEN-EFF
 I was taught by my own mother's people, by my mother.
- (5) *ngurmula-**ngulharn** Pirrjilingu*
 that.DEF-PATRI name
 Pirrjilingu's own father

Ngarla appears to have somewhat similar pronoun constructions, though the data is not really extensive enough to allow a confident characterisation of the suffixes involved. (Conclusions are based on forms in the Brown & Geytenbeek (1991) dictionary and my own 1993 fieldnotes.)

Firstly, the *-rrumara* suffix is used to denote the father of the referent of the pronoun stem. The examples so far elicited all involve addition of the suffix to the suppletive dative stem of the singular pronoun:

- nganu-**rrumara*** my father (1SG.DAT)
*nyinu-**rrumara*** your father (2SG.DAT)
*parnu-**rrumara*** his father (3SG.DAT)

Secondly, a pronoun bearing the *-ngkarangu* suffix is used to refer to child(ren) of one of the members of the reference set of the pronoun. It appears that the referents of the pronoun stem must themselves be in the same alternating generation set, and are typically siblings or a married couple. The terms may be used in reference or address (example (6) illustrates).

- ngaliya-**ngkarangu*** our (1DU.EXC) child(ren)
*nganyjarra-**ngkarangu*** our (1PL.INC) child(ren)
*nganarna-**ngkarangu*** our (1PL.EXC) child(ren)
*piya-**ngkarangu*** their (3DU) child(ren)
- (6) *Nyini-yanta nganarna jamurlu kanyjarri-malingka. Kanyi-yirnta*
 sit-USIT 1PL.EXC MoFa MoMo-GROUP look.after-USIT
*nganarnanya piya-**ngkarangu-lu**, ngaliyanga-**ngku** karna-**ngku**.*
 1PL.EXC.ACC 3DU-KIN-ERG 1DU.EXC.DAT-ERG uncle-ERG
 We (two boys) were there, our mother's father and our mother's mother (we boys and our MoMo making a group of *kanyjarri*). Their son was looking after all of us, our (dual) uncle.

One exception to this pattern is a form apparently based on the 1SG.DAT stem *nganu* with the addition of a syllable *wa*, and involving the *-ngkarangu* formative:

nganu-wa-ngkarangu ‘mother’

The expected sense is ‘my child(ren)’, but here there is apparent reference to the converse relation—‘my mother’.

In both Martuthunira and Ngarla, there are suffixes which are more like regular genitive suffixes in their distribution but which also have conventionalised kin relation uses. Firstly, Martuthunira has two suffixes which are attached to pronouns and demonstratives but also to common nominals. These are:

-ngura/-wura/-kura ‘Belonging’
-nguwaya/-waya ‘Owner’

(where the *-ngu* form is selected by proper names and some pronouns—the details are not relevant here (see Dench 1995)).

These suffixes have conventionalised meanings as markers of kin relations: expressions involving the *-wura* ‘Belonging’ suffix are used to refer to the children of the referent of the nominal bearing the suffix, while those involving the *-waya* ‘Owner’ suffix refer to the parents of the referent of the nominal bearing the suffix.

- (7) ...*ngayala-tharra ngurnulangu, ngurnulangu-wura*
 nephew-DU that.DEF.GEN that.DEF.GEN-BELONG
mari-wura *pawulu-tharra.*
 young.sister-BELONG child-DU
 ...his two nephews, his younger sister’s two children.
- (8) *Ngayu puni-lha ngurnu nhawu-lu, ngunhu-Iwa*
 1SG.NOM go-PAST that.ACC see-PURPss that.NOM-ID
ngurnula-waya mayili-ngu-waya.
 that.DEF-OWNER SoSo+1POSS-OBL-OWNER
 I went to see that fellow, that one who is the father of that grandchild of mine.

The following examples show the suffixes attached to common nominals. Here the ‘child-of’ and ‘parent-of’ relations are still clear.

- (9) *Ngurnu-ngura parnparn-kura kupiyaji ngularla waruu*
 that.OBL-BELONG budgerigar-BELONG little.PL there.NV still
jalyuru-la nyina-marri-nguru parnparn-ngara.
 hole-LOC sit-COLL-PRES budgerigar-PL
 Those little ones belonging to that budgerigar are still all together in a hole there somewhere.
- (10) *Ngayu nhuwa-lalha ngurnu tharnta-a wal.yu-waya-a.*
 1SG.NOM spear-PAST that.ACC euro-ACC joey-OWNER-ACC
 I speared a euro that had a joey.

Nominals marked with either of the *-wura* or *-waya* suffixes often occur as the head of a noun phrase and then simply denote either the ‘belongings’ or ‘owner’ of the stem. Example (11) illustrates this use of the *-wura* suffix. Notice that no kin relation is involved here, yet the spider is clearly the source of origin of the web.

- (11) *Ngunhaa kanparr-wura, wantha-rnu kanparr-u, mir.ta nhawu-ngu-layi*
 that.NOM spider-BELONG put-PASSP spider-EFF not see-PASS-FUT
yantharnmarta-ngara-lu, nganyjali kuyil.
 woman-PL-EFF proscribed bad
 That thing of the spider's (a web), built by the spider, shouldn't be seen by
 women, it's bad, proscribed.

In (12), the *-wura* suffix marks the cultural source of origin of a name (and see (27) and (28) below).

- (12) *Warruwa-ngara-wura Walter. Kanyara-wura Karlinpangu.*
 European-PL-BELONG Walter Aboriginal-BELONG Karlinpangu
 His European [name] is Walter. His Aboriginal one is *Karlinpangu*.

While the *-wura* suffix is conventionally used to refer to children, there are exceptions. The following extended example includes a number of instances of the suffix.

- (13) *Ngana-ngura ngunhu, punga pangkira, jal.yu wanarra?*
 who-BELONG that.NOM guts bulging neck long
 Whose (child) is that one, with the potbelly and long neck?

Ah, Nganaju-wura-nu.
 Ah 1SG.ACC-BELONG-QUOT
 Ah, one of mine.

Yarta ngarti-rru-wurtu. Mirntiwul-yu ngnunhaa ngangka
 other again-NOW-HYPHTH all-ACC that.NOM mother
ngurmungara-a. Wangka-ngu-rra ngnunhaa juringura-nu
 that.OBL-PL-ACC say-PASS-CTEMP that.NOM own.mother-QUOT
ngununhaa.
 that.NOM

Another one. For all of them, she was the mother. Apparently she was called *juringura*, 'own mother' (by all of them).

This example includes an apparently frozen form of the suffix on the 1SG.POSS pronoun *jurti*.⁶ Here, however, the derived form means 'own mother' rather than 'my child'. On another occasion, Algy Paterson, gave the form with the meaning 'own aunt (for a man or woman)' and the form *jurti-wula* (1SG.POSS-MATRI) for 'own mother' (see (4) above). Yet on still another occasion, *juringura* was described as a term a mother might use of her own children. This suggests some use of this term, at least, for either side of the 'mother-of/'child-of' converse relation pair. The reader will recall a similar 'confusion' in the sense of the Ngarla term *nganuwa-ngkarangu* 'mother'.

There is evidence of the *-paya/-waya* 'Owner' suffix in Kurrama (Dench fieldnotes 1990) also, though this has not been investigated in detail. An example is:

⁶ Martuthunira, apparently alone among the Pilbara languages, has a special possessive form of the first person singular pronoun specifically used for marking kin relationships (though *jurti* is the regular 1SG.GEN/DAT in Thalanyji). Notice that, because of its restricted distribution, the pronoun does more than indicate simple person and number features of a possessor—it indicates the existence of a kin relation. The specific kin-relation is then elaborated by some other means.

- (14) *Ngunhaat-paya-yu Corrine-waya, walarnaatpa-mpa.*
 that.one-OWNER-EMPH name-OWNER, this.one-TOP
 That one's father, Corrine's father, that's who it is.

I have also recorded examples of a Panyjima pronoun form, *ngaju-paja* (where *ngaju* is 1SG.OBL), as in example (15). I do not know how general the suffix is.

- (15) *Ngatha wiya-rna ngajupaja-ku mimi-ngu.*
 1SG.NOM see-PAST 1SG.POSS-ACC MoBro-ACC
 I have seen my uncle.

Ngarla and Nyamal have a pair of morphologically conditioned suffixes with equivalent functions to the Martuthunira -*wura* suffix; -*kapu* (on nouns) and -*ngara* (on pronouns). While the two suffixes are not cognate, they are quite clearly paradigmatically related in the modern languages. The following examples illustrate the use of the Nyamal -*kapu* suffix as a marker of the 'child-of' relation. (The suffix is glossed as 'Source' for reasons which will become clearer in the next section.)

- (16) *Nyanya-lapa ngaja jananya...*
 see-PRIV 1SG.NOM 3PL.ACC
Marrpari-nya-kapu-ku jilya-yu parnunga-ku.
 Marrpari-PNM-SCE-DAT child-DAT 3SG.GEN-DAT
 I don't see them...(I never see) Marrpari's boys, his boys.
- (17) *Ngarti piyanga yikamarta. Ngarti-kapu piyalu yikamarta-kapu.*
 mother 3DU.DAT one mother-SCE 3DU.NOM one-SCE
 They have the one mother. They are from the one mother.

As in Martuthunira, the suffixes mark apparent possessive relationships that do not involve kin relations.

- (18) *Juntiya-larta ngaja janala wangka jurtu-kapu.*
 tell-PURP 1SG.NOM 3PL.LOC word sister-SCE
Jurtu, juntiya-larta ngaja wangka nyunangara.
 sister tell-PURP 1SG.NOM word 2SG.SCE
 I will tell them (my) sister's words. Sister, I'll tell them your words.

Jiwarli (Austin pers. comm.) also has two suffixes with quite similar functions to the Martuthunira -*wura* and -*waya* suffixes. The two Jiwarli suffixes refer specifically to the possession of paternal and maternal kin relationships—the sex of the speaker is crucial:

- wari* own child (father speaking)
- kara* own child (mother speaking)

There are two main patterns of occurrence. Firstly, the suffixes can be attached to place-names to form personal names. Here the personal name is used to refer to someone who has inherited rights to the place through their father or mother respectively. So, for example:

- Pirtuthuni-wari* person whose father's country was Pirtuthuni
- Jalyily-kara* person whose mother's country was Jalyily

Austin (1993b) notes that this use of the -*wari* suffix, at least, has been extended beyond this:

With the arrival of white settlers and their possessions, the *-wari* suffix seems to have been extended in function. Jack Butler's step-father was referred to as *yawartawari*, based on his own father's name *yawarta* 'horse' (it seems he was kicked by a horse). Here *-wari* is added to a common noun, not a toponym.

Secondly, the suffixes can be added to genitive pronoun stems to indicate that the speaker or addressee is the father or mother of the referent of a co-occurring kinterm nominal. Austin (1993b) provides the following examples:

- (19) *Nganaju-wari ngunha kurntal-pa.*
1SG.DAT-PAT that daughter-CLITIC
That is my daughter. (father speaking)
- (20) *ngali-ju-ngu-wari mura*
1DU-EXC-DAT-PAT son
our son (two brothers speaking)
- (21) *ngali-ju-ngu-kara mura*
1DU-EXC-DAT-MAT son
our son (two sisters speaking)

Austin (pers. comm.) notes that the pronoun may be used without the specifying kinterm. So for the following Payungu examples we find (24) and (25) in contrast to (22) and (23):

- (22) *ngatha-ngu-kara kurntal*
1SG-DAT-MAT daughter
my daughter (mother speaking)
- (23) *ngatha-ngu-kara mura*
1SG-DAT-MAT son
my son (mother speaking)
- (24) *ngatha-ngu-kara nyanyjil*
1SG-DAT-MAT woman
my daughter (mother speaking)
- (25) *ngatha-ngu-kara kanyara*
1SG-DAT-MAT man
my daughter's husband (mother speaking)

What remains unclear here is the significance of the contrast in kin relation encoded by (25) as opposed to (23)—why does (25) not refer to "My son"? Austin (pers. comm. 2/12/93) notes that "examples from Payungu suggest that when the referent is the same sex as the speaker then own child is intended; when the sex is different then a close kin in the child's generation is referred to".

Austin has also provided me with an example of the Payungu *-wari* suffix recorded by O'Grady. I have given an alternative translation, more easily reconciled with the present discussion of the suffix, in parentheses.

- (26) *Yinha-mpa-ya wuparni-nmayi pala-ma-wari-nha mama-ngku.*
this-DEIC-EMPH kiss-NFUT he-DAT-PAT-ACC father-ERG
This one's own father kissed him. (As for this one, father kissed his own son.)

Example (26) shows that the marked pronoun forms may stand alone as expressions of the kin relation: *palama-wari* might be glossed as 'his own son'. Recall that where the suffix is attached to a placename, the resulting expression stands alone as a personal name.

While we have no direct elicitation of forms from other southern Pilbara languages, Algy Paterson noted that the Martuthunira *juringura* form of the 1SG.POSS pronoun (see above) has a Thalanyji equivalent, *jurtikara* (a form of the 1SG.DAT/GEN *jurti*), used by mothers speaking of their children.

Austin describes three additional functions of the *-wari* suffix in Jiwarli. Firstly, the suffix may be used to indicate the cultural source of origin of a name. Recall that the same pattern occurs in Martuthunira with the *-wura* suffix.

- (27) *Warri-tru nyuja-wari-thu yini yajina kumpa-ja ngunha-purra.*
not-NOW white.man-PAT-DEF name sweet.food be-PAST that-TIME
Those were sweets that time without white man's names.
- (28) *Yini ngnunha mantharta-wari.*
name that man-PAT
That is his Aboriginal name.

Secondly, Austin (1993b) notes that when added to a human noun, the suffix derives a nominal expression which indicates "the person who gave an object to someone else". Here the suffix quite transparently indicates the source of origin of some given object. Austin gives the following contrasting examples and explains that while in (29), which involves the regular dative/genitive suffix, the stick belongs to the old woman, in (30) the stick belongs to the speaker and was given to him by the old woman:

- (29) *Jarntira-wu-lu wuru-ngku puthi-rninyja.*
old.woman-DAT-ERG stick-ERG hit-PAST
(I) hit (them) with the old woman's stick.
- (30) *Jarntira-wari-lu wuru-ngku puthi-rninyja.*
old.woman-PAT-ERG stick-ERG hit-PAST
(I) hit (them) with the old woman's stick.

Thirdly, the suffix may be used to mark direct cause. This overlap in function is discussed in §3.4 (see especially (46)).

Table 2 summarises the forms discussed in this section. I have chosen to represent the suffixes by the kin relations they are used to mark, even though this is obviously not a complete description of their semantics.

TABLE 2: KIN RELATION SUFFIXES

	'Parent-of'	'Mother-of'	'Father-of'
Ngarla			-rrumarnu
Nyamal			
Kurrama	-paya/-waya		
Martuthunira	-waya	-wula	
Jiwarli			-ngulharn
Payungu			

	'Child-of'	'Child-of (fem)'	'Child-of (m)'
Ngarla	-kapu/-ngara		
	-ngkarangu		
Nyamal	-kapu/-ngara		
Kurrama			
Martuthunira	-kura/-ngura		
Jiwarli		-kara	-wari
Payungu		-kara	-wari

A number of questions remain in relation to the categories and forms represented in this table. Firstly, we would ideally like to have a more definitive statement of the kin categories for which the suffixes are appropriate. For example, I noted earlier that the Ngarla -*ngkarangu* suffix can be attached to a non-singular pronoun stem, in which case it appears that the members of the referent set of the pronoun must be in the same alternating generation set. Similarly, in describing the uses of the Jiwarli -*wari* 'paternal' suffix on non-singular pronoun stems, Austin (pers. comm.) notes that "it may be that this is only possible when the non-singular refers to a same patriline pair—the data are not sufficient to decide". I noted above that the Payungu examples (23) and (25) present a puzzle in that the -*kara* 'maternal' suffix can be used in reference to both a son (23) and son-in-law (25) suggesting, on the other hand, that reference can be made to someone who is outside the speaker's matriline.

Similar questions arise concerning the flexibility of reference of some of the inflected pronoun forms. I noted above that the Martuthunira term *juringura* 'own child', used to refer to one's mother or aunt, and the Ngarla term *nganuwa-ngkarangu*, given the gloss 'mother' but with an expected gloss 'my own child(ren)', suggest that some terms may be used for either side of the otherwise asymmetrical 'mother-child' relation. There is a clear parallel here with the use of dyadic terms based on a particular linear term to refer to either of the two kin standing in the relation (see §5).

Further questions arise in Martuthunira concerning the semantic differences between the 'parent of' relation indicated by the -*waya* suffix, and the specific 'mother of' and 'father of' relations. Similarly, it is not clear how the 'child of' relation marked by -*ngkarangu* in Ngarla differs from the 'child of' relation marked by the more general -*ngara* and -*kapu* suffixes. Given the many parameters by which kin relations can be reckoned, there exists the possibility of a range of subtle contrasts in these systems. More detailed information on these patterns of reference would allow a more confident appraisal of the differences among the

(possibly partial) systems represented in Table 2. For some of these languages this data can now never be obtained.

Secondly, we might hope to establish some cognate relationships among the suffix forms presented in Table 2. For example, given a certain similarity in form we might imagine some relationship to hold between the Ngarla *-ngkarangu* 'child of' suffix and the Jiwarli and Payungu *-kara* 'child of (female speaking)' suffix, and perhaps between the Nyamal and Ngarla *-ngara* suffix to pronouns and the Jiwarli and Payungu *-kara* suffix.

The clear overlap in functions of the Martuthunira *-ngura/-wura* suffix and the Jiwarli *-wari* 'paternal' suffix also might suggest that the forms are cognate. However, here there is no principled reason to expect such a high degree of variation in vowel quality. It is at least as plausible that the Martuthunira suffix forms are related to the *-kara* 'maternal' suffix.

Without a clearer picture of the semantic relations which exist among these categories, and a more extensive picture of possible cognate categories, it is difficult to assess the likelihood of cognacy among many of the forms in Table 2. However, there are apparent cognate relationships to forms outside this paradigm, as we shall see in §4.

3. ABLATIVE AND CAUSAL

As noted in the introduction, the *-parnti* suffix used to mark group kinterms in the Mantharta languages is identical in form to the ablative/causal suffix in these languages. In this section I present a survey of ablative/causal categories more generally among the Pilbara languages.

Most Australian languages have case suffixes marking ablative (locative source) and causal (reason) categories (see Dixon 1980:295–299). Some languages have distinct ablative and causal morphemes, at least for some nominal classes, others make use of a single morpheme with both ablative and causal functions. The ablative/causal nexus may be further elaborated by temporal uses of the ablative (to mark temporal precedence) and what might be described as spatial uses of the causal, to mark place of ultimate origin or habitual dwelling place.

Table 3 gives a rough characterisation of the semantic domain over which various ablative/causal suffixes in the Pilbara languages may range. The different functions are then briefly discussed in turn.

TABLE 3: SEMANTIC DOMAIN OF ABLATIVE/CAUSAL SUFFIXES

a.	source of motion	X moves from place Y
b.	temporal precedence	X dates from Y/ is after Y
c.	source of origin/ habitual dwelling place	X is from Y X habitually dwells at Y
d.	direct cause	X results from Y
e.	indirect cause	situation X is because of Y

3.1 SOURCE OF MOTION

The prototypical ablative marks some place as the source of motion or point of recent origin. The following Martuthunira examples illustrate this:

- (31) *Ngayu manku-lha parla-a-rru pariingku-layi ngurnaa*
 1SG.NOM get-PAST rock-ACC-NOW hit-FUT that.ACC
*mirntirimarta-a parna-a, pungka-waa-rru kalyaran-ta-**nguru**.*
 goanna-ACC head-ACC fall-PURPs=o-NOW tree-LOC-ABL
 I grabbed a rock and hit that goanna in the head so it would fall from the tree.

- (32) *Ngunhaa manku-lha-**nguru** wii panga-a kujawari-la-**nguru-u**,*
 that.NOM catch-PAST-ABL if itch-ACC whale-LOC-ABL-ACC
puni-layi yurra-l.yarra.
 go-FUT scratch-CTEMP
 If he has caught that itch that comes from a whale, he'll be going along scratching.

As these examples show, the Martuthunira ablative suffix *-nguru* is attached to a locative stem. By contrast, the common Kanyara and Mantharta ablative suffix *-parnti* does not require a locative stem.

3.2 TEMPORAL PRECEDENCE

The ablative suffix often has clear temporal functions: it may simply mark a point in time preceding the temporal reference point, or may fix the starting point of some persisting state or continuing process or action. The following Martuthunira examples illustrate the first of these patterns. The temporal use of the *-nguru* ablative does not require that the suffix be attached to a locative stem (compare (33) and (34) with (31) and (32) above).

- (33) *Nhartu-u wii warnan-ku yirla kuliya-rminyji parnta-rnura-a.*
 something-ACC or rain-ACC only hear-FUT rain-PrREL-ACC
*Ngurnu-**nguru-wa** karlwa-lha.*
 that.OBL-ABL-YK get.up-PAST
 All I heard was the rain or whatever falling. After that I got up.
- (34) *Nhartu-ma-rnu-lwa-rru ngula kanya-**nguru**, warruwa-**nguru?***
 what-CAUS-PASSP-ID-NOW IGNOR person-ABL devil-ABL
 What became of them after the time they were people, devils?

The Mantharta *-parnti* ablative/causal also has temporal functions. Austin (1993b) gives the following example of a temporal use of the Jiwari suffix:

- (35) *Nhaanha yulu wantha-rminyja nyirnta ngarri-**ngka** kajalpu-**parnti-nha?***
 what this.ERG put-PAST here ashes-LOC emu-CAUS-ACC
 What has he put here in the ashes after the emu?

The suffix also serves as the ‘different-subject’ complementiser following the past tense inflection in Jiwari perfective relative clauses (Austin 1993b).

3.3 SOURCE OF ORIGIN AND HABITUAL DWELLING PLACE

Source of origin and habitual dwelling place are typically not distinguished, both being marked by suffixes glossed variously as 'Dweller' or 'Provenience'. The derived term describes a place which is at once the source of ultimate origin for some person or thing, but with which that person or thing has an abiding qualitative association. The source of origin is a defining characteristic of that person or thing. The Martuthunira 'Dweller' suffix *-nyungu* is illustrated in (36) and (37).

- (36) *Nhiyu martawulyu, palyarri-nyungu, ngunhaa panyu jami.*
 this gum.type plant.species-DWELL that.NOM good medicine
 This *martawulyu* gum, which comes from the *palyarri* tree, it is good medicine.
- (37) *Ngunhu-ngara yinka-lwayara Kawuyu-nyungu-ngara-a yinka-lwayara*
 that.NOM-PL carve-HABIT name-DWELL-PL-ACC carve-HABIT
thawu-minyji Wirrawanti-mulyarra.
 send-FUT name-ALL
 They used to carve the ones that came from *Kawuyu* and send them to *Wirrawanti*.

In Nyamal, source of origin is marked by the use of the *-kapu* suffix, (38) and (39), described as a marker of kin relations in the preceding section.

- (38) *Wurrangkura-kapu makuya juwa-lkura.*
 tree.type-SCE grub chop-FUT
 (We) will chop the *makuyu* grub that comes from the *wurrangkura* tree.
- (39) *Nyunta wuluyu-kapu, Karrkara-kapu.*
 2SG.NOM south-SCE Perth-SCE
 You are from the south, from Perth.

Panyjima shares the *-nyungu* suffix with Martuthunira, Yindjibarndi and Kurrama. However, in Panyjima (at least) the general ablative suffix *-nguru* can be used to mark the material source of manufactured implements. Notice that here, as with temporal uses of the suffix, *-nguru* is attached to a bare nominal stem.

- (40) *Nyiya kurrjarta warama-rnaanu dintamarra-nguru.*
 this spear make-PPERF mulga-ABL
 This spear is made out of mulga wood.

3.4 DIRECT CAUSE

Panyjima has a suffix *-mari* used specifically to mark the direct cause of some situation or state. For example:

- (41) *Nharmu-pati-la pilingkarra parnma-kaji karla-mari.*
 sand-PRIV-LOC flat.rock explode-REAL fire-CAUS
 If/When it's without sand, the flat rock will explode from the fire.
- (42) *Wilinpi-rna-pula kartukarra paj-a-mari.*
 shake-PAST-REFL head anger-CAUS
 (He's) shaking his head in anger.

Examples (43) and (44) illustrate the Nyamal use of the *-kapu* 'Source' suffix to mark direct cause:

- (43) *Ngarlu punpalpa ngaja, papa-kapu.*
 guts sick 1SG.NOM water-SCE
 My guts are sick, from water.

- (44) *Winyja nguluma-ka, kama-lapa-lu. Punpal-ngarri-mpa-la puka-kapu.*
 unwanted leave-IMP cook-PRIV-ERG sick-INCH-FUT-1PL.INC
 rotten-CAUS

Leave it there, discarded, without cooking it. We'd get sick from the rotten thing.

In the Kanyara and Mantharta languages, the *-parnti* ablative suffix is used to mark the cause of some state or situation. A Jiwarli example (Austin 1993b) is:

- (45) *Ngatha kulypi-nha kari-parnti.*
 1SG.NOM be.ill-PRES grog-ABL
 I am sick from grog.

In addition, Austin (1993b) gives a Jiwarli example in which the kin relation suffix *-wari*, 'paternal', is used to mark direct cause. Only this single example occurs in the data:

- (46) *Pali-ngu-rru kumpa-ja ngunha wartawarta-rru-ngu-rru*
 vomit-IMPERFss-NOW sit-PAST that shake-INCH-IMPERFss-NOW
kala-rru thinthal-wari-kunti-rru.
 like.that-NOW poison-PAT-SEMLB-NOW
 He vomited and shook like that as if from poison.

In Martuthunira, direct causals of this kind are also marked using the kin relation suffix *-wura*, described in §2.3.

- (47) *Ngayu punga pangkira-npa-nguru kayulu-wura.*
 1SG.NOM guts swollen-INCH-PRES water-BELONG
 My guts are swelling up from water.

3.5 INDIRECT CAUSE

The Ngayarda languages have a special suffix marking the indirect cause of some situation. The Panyjima suffix *-ngarala* and the Martuthunira suffix *-ngalyarnta* are illustrated in examples (48) and (49) respectively. A possible source for these suffixes is suggested in §4.4.

- (48) *Pantharra-kutha pinyarri-ku palya-**ngarala**.*
 jealous-DU fight-PRES woman-INCAUS
 Those two jealous men are fighting over the woman.

- (49) *Yimpala-rru-wa, muyi-i ngurm pawulu-tharra thani-lalha murla-**ngalyarnta**.*
 like.that-NOW-YK dog-ACC that.ACC child-DU hit-PAST
 meat-INCAUS
 It was like that, two kids were hitting that dog over meat.

3.6 SUMMARY OF FORMS

Table 4 sets out the forms of suffixes used to cover the various functions illustrated in §3.1–§3.5.

TABLE 4: ABLATIVE/CAUSAL SUFFIX FORMS (L = LOCATIVE)

	Source	Precedence	Dweller	Cause	Ind.Cause
Ngarla	<i>nguru</i>	<i>nguru</i>	<i>kapu/kurangu</i>	<i>kapu</i>	
Nyamal	L+kulyara	kulyara	<i>kapu</i>	<i>kapu</i>	
Ngarluma	L+nguru	<i>nguru</i>		<i>kapu</i>	
Panyjima	L+nguru	<i>nguru</i>	<i>nyungu</i>	<i>mari</i>	<i>ngarala</i>
Yindjibarndi	L+ngu	<i>ngu</i>	<i>nyungu/wartu</i>		<i>ngaala</i>
Kurrama	L+ngu(u)	<i>ngu(u)</i>	<i>nyungu/wartu</i>		<i>ngaala</i>
Martuthunira	L+nguru	<i>nguru</i>	<i>nyungu</i>	<i>wura</i>	<i>ngalyarnta</i>
Jiwarli	L+nguru	<i>parnti</i>	<i>nyungu</i>	<i>parnti/wari</i>	
Warrinyangka	<i>parnti</i>		<i>nyungu</i>	<i>parnti</i>	
Thalanyji	<i>parnti</i>	<i>parnti</i>			
Payungu	<i>parnti</i>	<i>parnti</i>			

Clearly, there are sets of cognate morphemes amongst these languages. We can summarise the patterns as follows:

1. -*nguru* is restricted to the marking of spatial and temporal source and in the former instance typically selects a locative stem (the Ngarla distribution remains unclear). In Yindjibarndi and Kurrama the suffix descends as -*ngu(u)* by regular phonological changes (O’Grady 1966). This ablative suffix conforms to Dixon’s (1980:312) reconstruction of Proto Australian ablative as LOC+*ngu(ru)*.
2. -*parnti*, unlike -*nguru*, does not select a locative stem as an ablative, and in addition to both spatial and temporal source, marks direct cause.
3. -*nyungu* marks habitual dwelling place and source of origin. In Yindjibarndi and Kurrama, the suffix is restricted to common nouns; proper nouns take a -*wartu* suffix.
4. -*kapu* marks dwelling place in Nyamal and Ngarla and also direct cause in these two languages and in Ngarluma (Simpson 1980).
5. -*ngarala* marks indirect cause in Panyjima and in Yindjibarndi and Kurrama (**ngarala* > *ngaala* by regular sound changes). The Martuthunira suffix -*ngalyarnta* is not cognate.

Brown and Geytenbeek (1991) list a suffix -*kurangu* in their Ngarla dictionary which they gloss as ‘Dweller’; thus, *wula-kurangu* ‘one always found in/near water’. This form may be related to the Martuthunira -*wura/-kura* suffix (see §4.2).

Beyond this, there are suffix forms which occur in individual languages and in isolated functions. The Nyamal ablative suffix -*kulyara* will not be considered further here. The Martuthunira direct causal -*wura* will feature more prominently in the next section.

4. COMPARISONS

The reader will by now have noticed some similarities in the forms used to mark the ablative/causal categories discussed in §3, and forms used in making reference to kin relations in §2. I can now summarise these and discuss the general patterns. Consider the following table.

TABLE 5: CATEGORIES AND SUFFIX FORMS

	<i>kapu</i>	<i>wari</i>	<i>*kura</i>	<i>*ngulharn</i>	<i>ngara</i>	<i>parnti</i>
a. source						*
b. origin/dweller	*		(*)			
c. direct cause	*	*	*			*
d. indirect cause				(*)	*	
e. kin relation	*	*	*	*	*	
f. group kinterm					*	*

	<i>f</i>	<i>d</i>	<i>e</i>	<i>b</i>	<i>c</i>	<i>a</i>
<i>kapu</i>				*	*	*
<i>*kura</i>				*	(*)	*
<i>wari</i>				*		*
<i>*ngulharn</i>				(*)	*	
<i>ngara</i>	*		*			
<i>parnti</i>	*				*	*

Table 5 is organised into two parts. Firstly, a selection of suffix forms is presented against the categories discussed in §2 and §3. The second part of the table is a reorganisation in which categories are mapped against the suffixes.

In the sections which follow, I will discuss each of these six suffixes in more detail, presenting a summary of the functions listed in Table 5. Some of these suffixes have additional functions to those listed in Table 5 and I will describe these also.

4.1 -*kapu*

- source of origin/habitual dwelling place (Nyamal, Ngarla)
- direct cause (Nyamal, Ngarla, Ngarluma)
- 'child-of' kin relation (Nyamal, Ngarla)

The connection between the three categories can be made clear if we assume that the primary sense is source of origin/dwelling place. In describing this category in §3.3 I noted that the source or dwelling place was typically taken to be a defining characteristic of the person or thing originating from that place. In the same way, we can see the use of the suffix to describe an originating or persisting cause of some state or situation as a defining characteristic of that state or situation.

Finally, the kin relation uses of the suffix can be connected with the notion of originating source---children have their parents, particularly their mother, as a source of origin. What is

more, their matrilineal (and patrilineal) affiliation remains with them as an important ‘defining characteristic’ in their adult social life.

In Nyamal, Ngarla, and apparently also Ngarluma (the data are suggestive but not extensive, see Simpson 1980:97), the *-kapu* suffix is also used as an associating case marking the arguments of predicates in certain types of subordinate clauses. While this function is historically connected to the ‘source of origin’ function, I will not explore this here.

4.2 *-*kura*

- ‘child-of’ kin relation (Martuthunira)
- direct cause (Martuthunira)
- (- *-kurangu* ‘Dweller’ in Ngarla)

A connection between the three categories was established in the preceding section and this allows the possibility that the *-kurangu* suffix in Ngarla may be connected to the Martuthunira suffix (< *-*kura*+*ngu*). However, without a more detailed internal reconstruction of Ngarla nominal morphology this remains entirely speculative.

4.3 -*wari*

- ‘child-of (father speaking)’ (Jiwarli, Payungu)
- original owner (Jiwarli)
- direct cause (Jiwarli)
- proprietive (Ngarluma, Yindjibarndi, Kurrama)

The connection between the causal relation and the ‘child-of’ relation is shared with both *-kapu* and *-*kura*, though it must be remembered that only one example of the causal function of *-wari* occurs in the Jiwarli data. The more common construction involves the *-parnti* ablative/causal. On the other hand, the Jiwarli suffix appears to be cognate with the ‘proprietive’ or ‘having’ suffix in three of the Ngayarda languages.

Although I have not explored it in this paper, a connection between the proprietive and the marking of kin relations is found elsewhere among the languages of the area. Firstly, some special pronoun forms involve the proprietive suffix: the special Panyjima 2DU pronoun *nyinku+ngarni* (used where the two addressees are in the same matrimoity but different generations) involves the productive proprietive *-ngarni* added to the 2SG oblique stem *nyinku*. Similarly, the 1DU(disharmonic) pronoun in Martuthunira is *nganaju+marta*, quite transparently involving the 1SG.OBL stem plus the regular proprietive *-marta*.⁷ Further afield, Merlan and Heath (1982) describe the relationship between dyadic kin terms and ‘having’ constructions in Mangarayi and Mara. I discuss this further in §5.

Since I have so far been unable to find clear cognates for the specifically paternal kin relation suffixes in Ngarla and Martuthunira, there is no contributing pressure towards either the causal or the proprietive as a source for the kin relation uses of *-wari*. Either seems a reasonable source on the basis of current evidence.

⁷ Incidentally, the form *-marta* is one of three augmenting suffixes to dyadic kinterms in Nyangumarta (O’Grady & Mooney 1973:11).

4.4 *-ngara*

- ‘child-of’ kin relation (Nyamal and Ngarla)
- augment on dyadic kinterms (Panyjima)
- indirect causal *-ngarala* (in Panyjima)
- nominal plural (Martuthunira)

As noted in §2.3, the *-ngara* suffix stands in a paradigmatic relation to the *-kapu* suffix in Nyamal and Ngarla. In these languages, the two suffixes can be considered morphologically conditioned allomorphs; *-ngara* occurs on pronouns, *-kapu* occurs on other nominals. Of course, there are differences in the distribution of the two suffixes given that pronouns and common nominals do not occur in exactly the same distribution. For example, the *-ngara* suffix does not occur as a marker of *direct* cause in Ngarla and Nyamal. However, in all contexts in which there is the possibility of occurrence the two suffixes pattern in a similar fashion. I would ultimately expect to be able to provide historically distinct sources for the two suffixes.

It remains to connect the ‘augmenting’ use of the *-ngara* suffix in forming Panyjima group kinterms with the kin relation uses in Nyamal and Ngarla. In the discussion of group terms in §2.2, I showed that particular terms referred to groups of kin among whom existed a range of kin relation types, many of which did not coincide with the kin relation defined by the stem of the derived term. The group’s identity is dependent on a particular relation and the whole group is characterised as an extension from that important relation. In a metaphorical sense, the larger group has a smaller group, the group instantiating the important relation, as its *source* relation. Its character is determined by the persistence of that relation.

Thus, although the *-ngara* suffix is not used to mark a clear source or cause relation in the languages described here, I suggest that the essential notion of ‘characterising source of origin’ lies at the basis of the use of this suffix to mark both kin relations and group kin terms.

Note also that *-ngara* is the productive plural suffix on nominals in Martuthunira. This might argue against my assumption of a connection between the *-ngara* group kinterm augment and the kin relation uses of a *-ngara* suffix, and in favour of an analysis of the kinterm augment as a simple plural number marker. However, to take the opposite point of view, it is conceivable that the plural in Martuthunira is semantically closer to the notion of an augmenting suffix. That is, the suffix marks an *extension* of the properties defined by the stem to a group of objects. The semantics of number marking in these languages is a topic for further study.

Finally, I have suggested that the Panyjima indirect causal suffix *-ngarala* involves the *-ngara* suffix. The connection between the ‘child-of’ kin relation and direct cause has been established through the *-kapu*, *-wari* and **-kura* suffixes discussed above. Here, I am relying on the validity of this connection to suggest that a similar relationship holds between the kin relation uses of *-ngara* and the indirect causal. To make the connection, I would suggest that *-ngarala* be analysed (at some level) as **-ngara-la*, where *-la* is originally the locative suffix.

4.5 *-ngulharn/-ngalyarn+ta*

- *-ngulharn* ‘own father’ (Martuthunira)
- *-ngalyarnta* indirect cause (Martuthunira)

If the connection between *-ngara* and the indirect causal in Panyjima is valid, it suggests a similar analysis of the Martuthunira indirect causal suffix *-ngalyarnta*. This might be analysed as involving, originally, the regular locative suffix *-rta*; thus **-ngalyarn-rta*. It may then be possible to connect *-ngalyarn* with the Martuthunira kin relation suffix *-ngulharn* ‘own father’.

While it may be possible to construct almost plausible interpretations of the locative marked indirect causal expressions (as second predication of some (perhaps) mediated source of origin on the unmarked subject), I am unable to present a convincing argument.

4.6 *-parnti*

- ablative (Mantharta languages)
- causal (Mantharta languages)
- group kinterms (Martuthunira, Kurrama, Mantharta languages)

The connection between ablative and causal is clear and uncontested. The important connection to be established here is that between the group kinterm formative and the ablative/causal uses of the *-parnti* suffix. Once again, I appeal here to the notion that the group kinterms are extensions from a particular named kin relation and that in this sense, the use of a causal to mark the relation is appropriate. What is missing for *-parnti* is the set of connecting categories between causal and group kinterm. However, the connections between causal and kin relation, and between kin relation and group kinterm are established by the range of functions of other suffixes.

5. CONCLUSIONS

My aim in this paper has been to investigate possible semantic connections between the complex morphological marking of kin relations and other, less specialised, categories. In the simplest of terms I have asked, “Where does kin marking morphology come from?”.

In asking the question I am making the assumption that the morphology must have some external source, and does not arise from within the paradigm. Of course this need not be the case. Thus for example, O’Grady and Mooney (1973:11) list an instance of derivation by reduplication—the Nyangumarta group term *kurntal-kurntal* corresponds to the dyadic term *kurntal-karra* cited in §2.1. Having accepted the assumption of external source, the problem then involves first identifying possible sources for the morphology, and then constructing some believable tale about how this morphology came to have specialised uses.

I noted in the introduction that there has been virtually no discussion of the origins of kin-marking morphology in the literature. One exception to this is Merlan and Heath’s (1982) survey of dyadic kinship terms. Here (p.108) they emphasise the importance of considering the structure of such complex terms:

The affixal morphology of the dyadic terms must be considered vis-à-vis other morphological constructions in the language, especially when there is reason to

think that the dyadic terms are merely special instances of a more general construction with additional functions in the language.

In the course of their survey they note a number of connections between dyadic formatives and other morphological categories. For example, they point out (p.113) that the dyadic terms in Dhuwal involve what is the productive dual suffix in Ritharngu.

They also point out a connection between the ‘having’ affix and dyadic formatives in Mara⁸ and Mangarayi. In Mangarayi in particular, the dyadic terms are formally identical to ‘having’ expressions. Thus, Merlan and Heath note that the term *barda-yi* ‘father and child’ might be analysed as ‘having father’, where *-yi* is the ‘having’ suffix. However, they cite syntactic evidence to show that this analysis is synchronically untenable, and further suggest (p.112) that:

An analysis of dyadic terms as ‘having’ expressions would be more tenable if one could say ‘having Ch’ when the Fa is the reference point, contrasting with ‘having Fa’ from the Ch’s viewpoint, but in fact the only dyadic expression for this pair is [*barda-yi*] with the stem for ‘Fa’.

They go on to state (pp.112-113) that:

It is quite possible that dyadic kin terms are etymologically related to or identical with ‘having’ expressions, but if so they have evolved and become specialised...and the two should not be confused synchronically.

Merlan and Heath do not elaborate on the possible diachronic connection or investigate the semantic link between dyadic terms and ‘having’ constructions any further than this. Their intention is to provide a general survey and a spur to others to subject dyadic terms to detailed synchronic analysis, and so such etymological analysis is well beyond the scope of their paper.

However, their discussion does show quite clearly the direction of the change. Presumably certain ‘having’ expressions have been extended so that rather than indicating a particular individual’s property of being in some association (whatever the comitative or possessive properties of the ‘having’ suffix) with a particular named kinsman, such expressions can be used more generally to mark two people whose relationship is characterised by the fact that one may say of one of them, that they ‘have’ the other. Thus the change involves some metaphorical extension of the ‘having’ relation as well as the choice of a particular relation to stand as the basis for the dyad.

I have not been especially concerned with the logic determining the particular choice of stem (see §2.1), and have implied that what is more important is the fact that one relation is chosen as prototypical of that holding between the pair of kin. While there may be a logic to this choice, ultimately the dyadic term involves a metaphorical extension from a particular kin relationship to the abstract dyadic relationship which holds between two kin.

My main concern has been with the metaphorical extension involved in the use of particular nominal suffixes to mark kin relations. As I suggested in the introduction, an argument for a diachronic relationship between suffixes with seemingly divergent semantics raises the question of a possible persisting semantic connection. If a connection can be

⁸ In Mara, some other terms involve a suffix *-(ga)rra*, “segmentable as a dyadic suffix at least etymologically” (Merlan & Heath 1982:117). The authors do not suggest sources for this suffix.

demonstrated, then we may learn something more about the way in which kin relations and related notions are conceptualised.

To take another example, in an earlier description of the use of a verbal derivational suffix to mark certain kin categories (Dench 1987) I argued that the innovated use of the 'collective' suffix depended on a perception that the prototypical relationship among members of these categories could be characterised as 'collective activity'. The morphology reveals an important underlying principle in the conceptualisation of particular kin relations. Wierzbicka (1986, 1992) argues strongly for this approach in proposing an account of the meaning of alternating generations in Australian languages.

In this paper I have explored the connection between the categories of 'source of origin' and 'causal' in the marking of certain kin relations. Two patterns in particular have emerged: the use of source/causal morphology on nominals to mark the 'child-of' relation, and the use of similar morphology on linear and dyadic kinterms to derive group kinterms.

The first of these patterns involves the quite straightforward notion that children have their parents, and in particular their mother, as a source of origin, and their matrilineal and patrilineal affiliation as a persisting characteristic. This explains the range of uses of *-kapu* (§4.1) and **-kura* (§4.2) especially. The link between the kin relation uses of *-wari* (§4.3) and *-ngullharn* (§4.5) and the source/causal categories is not as clear.

The second pattern involves a further level of abstraction. I have argued that dyadic and group kinterms depend primarily on the generalisation from a specific kin relation involving a particular linear term to some abstraction of that relation. This abstraction is as much a part of the dyadic terms as it is part of the group terms.

There are differences in the way in which the group terms are formed (see Table 1). In Panyjima (and for some Nyangumarta terms) on the one hand, the group term involves the addition of an augmenting suffix to the dyadic term. In Kurrama, Martuthunira and Jiwarli on the other hand, the group term formative stands in paradigmatic contrast to the dyadic formative. Since the primary abstraction from the linear term occurs for dyadic and group terms in both cases, we can reconcile the differences by suggesting that the dyadic term formed by the *-karra* suffix denotes the minimal set for which the kin relation is appropriate, through some notion of 'essential complement'. In Panyjima, the *-ngara* suffix appended to dyadic terms (§4.4) augments this minimal set. In the other languages, the *-parnti* suffix (§4.6) does not depend on the notion of minimal set, but is attached directly to the (abstracted) linear term.

I have argued that in both cases the group term involves an extension from a primary kin relation which, by its presence, serves to characterise the whole group in the same way as an individual may be characterised by his or her 'source of origin'. It is this quite abstract connection which allows me to identify the Jiwarli ablative suffix *-parnti* with the Jiwarli group term formative *-parnti*.

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SIGN METONYMIES AND THE PROBLEM OF FLORA-FAUNA POLYSEMY IN AUSTRALIAN LINGUISTICS

NICK EVANS

1. INTRODUCTION¹

Among Geoff O'Grady's most important contributions to the field is the central place he has given to "the tangled web which Pama-Nyungan diachronic semantics—let alone Australian diachronic semantics!—promises to be" (O'Grady 1979:129). Within the broad enterprise of comparative Australian linguistics, O'Grady's work towards the grand vision of an eventual etymological dictionary of Pama-Nyungan has thrown up, time and again, fascinating hypotheses into semantic connections. Some, such as the link between 'egg' and 'brain', have been the subject of article-length treatments (O'Grady 1990c). Others have been sprinkled like diamond dust through the preliminary etymological entries published in various places, and especially those gathered in O'Grady and Tryon (1990).

As but a single example of the genre, consider the following extracts from entry P56, pPN **palya*₁ N 'fat, grease' (O'Grady 1990b:231). My own hypotheses on the semantic connections are in square brackets, with all other comments being O'Grady's, and I have reordered his entry to bring out what I believe to be the approximate lines of semantic development. PIT *palyi* N 'fat', NYA *paja.rli* W 'fat, dripping', S 'fat, grease' (with dissimilation from **palya.rli*), GUP *boy* 'yellow, FATTY part of crab' [O'Grady cites some parallels of GUP *oy* reflecting ancestral *alya*], PIN *palya* 'good...pleasing' [a number of languages and special registers illustrate a connection between 'fat' and 'good', reflecting the treasured position of fatty foods in the traditional Australian diet; here consider, for example, Kaurna *marni* 'good, fat, rich' (Amery & Simpson 1994:164), and the Lardil initiation register Demiin, in which *I*i* paraphrases *yaka* 'fish', *luwa* 'fat, grease' and *kuba* 'good' (Hale et al. 1981)]; WLB *palya* 'wax—from spinifex; native adze' [by synecdoche, from the use of spinifex wax in hafting the blade; the link of 'wax' to 'fat, grease' was probably

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mediated by a ‘missing link’ with the meaning ‘honey’, then ‘beeswax’; honey-fat links are also widespread, e.g. Kayardild *rirrk* ‘fat, grease, honey’ (Evans 1992a)]. An etymology like this has rich significance for our understanding of Australian prehistory, and is one tiny piece of the jigsaw that may one day give us some understanding of the prehistory of diet, plant use and artefact manufacture in the Pama-Nyungan world.

The pitfalls of such speculative etymologies, of course, are many, and O’Grady himself (1990a:xvi) has suggested that perhaps 50% may be “ultimately deemed non-viable by a consensus of linguists”. Our understanding of the phonological correspondences on which such proposals depend for their validity is still rudimentary and it will be decades before the count is in; meanwhile as Crowley (in press) says:

O’Grady’s painstaking compilation of possible cognates is the only way that we will ever be in a position to achieve any degree of reconstructive reliability in Pama-Nyungan (and in Australian languages in general). Dempwolff’s first step was in fact to carry out just this kind of compilation for Austronesian languages, and from these lists he then extracted systematic sound correspondences.

The methodology for working out these phonological correspondences is well understood; it is just a matter of time and *Sitzfleisch*. There is a second side to the problem, however, where we are on much less charted territory methodologically: the development of techniques for studying semantic change in a systematic and testable fashion. Many of the suggested semantic links in the above ‘etymology’ are speculative. Many are culture-specific rather than universal: the discussion of Indo-European etymologies for ‘good’ in Buck (1949) contains links to ‘fitting’, ‘straight’, ‘right’, ‘beautiful’ and ‘orderly’, but none to ‘fat’ or ‘grease’. And the cumulative effect of chaining together putative changes that already seem exotic when taken pairwise produces pastiches that read like a dream-therapist’s diary.

Now it is true that recent work has discovered some important and possibly universal pathways of semantic change, such as the ‘synaesthetic’ transfer of adjectival meaning across sensory modalities (e.g. touch → taste → sound but not vice versa) reported by Williams (1976), the development of epistemic from deontic modals (Sweetser 1990) and the striking parallels in the semantic sources of various grammatical categories (Heine, Claudi & Hünnemeyer 1991). However, it seems likely that semantic change will remain a haven of the particularistic (cf. Arlotto 1972:165; Hock 1986:308), and the level at which generalisations emerge is in the broad interaction of pragmatic principles (of relevance, etc.) with the specific and detailed cultural scripts that contain speakers’ encyclopaedic knowledge about the words they use. We will return to this point at the end of the paper. But in the meantime it is worth pointing out the main steps that I see as essential to support any hypothesis about a particular semantic change:

(a) THE POLYSEMY TEST

Wilkins (1996) and other authors have noted that most, if not all, semantic changes from A to B will be mediated by a stage of polysemy or vagueness, where a word either has the two senses A and B (if polysemous) or has a sense C that is a generalisation of A, later to specialise to B. Only in rare cases will such polysemy or vagueness be unstable; an example might be the case of euphemistic extension of ‘nose’ to ‘penis’, where the ‘nose’ meaning is rapidly lost under risk of confusion. Outside such rare situations, any proposed semantic change should be supportable, at least in a situation like Australia where there are large

numbers of languages (or alternative registers—see Evans 1992b) with demonstrably parallel semantic systems, by attested cases of synchronic polysemy.

The polysemy test has several spin-offs. Firstly, it allows us to bring various types of culture-based explanations, which run the risk of being overimaginative, into the domain of language: cultural ‘explanations’ are only admitted when the proposed semantic change has been demonstrated from purely synchronic linguistic evidence.

Secondly, since we are now dealing in the comfortable world of the synchronic, we can investigate various questions through fieldwork: what is the ‘bridging context’ between A and B? Do our standard semantic tests reveal the phenomenon as polysemy or vagueness?² To what extent does it interact with the grammatical typology of the language, and what discourse contexts favour such semantic developments? Are there prototype effects, or demonstrable patterns of association?

(b) THE FINDING OF PARALLELS

O’Grady (1979:120) has already pointed out the corroborative value of finding parallel examples: “The single most important principle in establishing the plausibility of a given instance of apparent semantic divergence is that of *independent documentation*”. However, he has mainly focussed on parallel ‘putative cognates’, and until we have a better grasp of Australian historical phonology we cannot be sure whether the parallels are genuine. For this reason a number of current researchers working on semantic change in Australia (see, for example, McConvell this volume, Wilkins 1996, and Evans 1992b) have focussed on parallel synchronic patterns of polysemy or derivation. Again, this has several advantages: areal features can be pinpointed (Austin, Ellis & Hercus 1976), information can be gathered from alternative semiotic systems such as respect registers or iconography which are often rich in highly abstract or polysemous lexemes (Dixon 1971, Evans 1992b), and the degree of parallelism between polysemy proper and other sorts of semantic relationships found in various types of derivation can be examined with a reasonably sure grasp of the grammatical details.

(c) THE BUILDING OF SEMANTIC NETWORKS

By connecting up the various attested semantic links, semantic networks can be developed that portray far-flung connections in a clear and explicit way, with the evidence for each link in the net shown explicitly (see Evans (1992b) and Wilkins (1996) for examples). Parallel evidence is important here as well, since the number of links in these networks is such that ‘missing links’ may only appear when a good set of languages is surveyed.³

Through the application of these steps we hope to do some of the groundwork towards the eventual preparation of an etymological dictionary of Australian languages, and inevitably many of the specific hypotheses we investigate will be those thrown up by O’Grady in his investigations of Pama-Nyungan etymology.

² Tuggy (1993) discusses some standard tests, as well as problems in applying them in all cases.

³ For an interesting anthropological analogue, in which one group’s myth contains a detail filling out a gap in the parallel myth of another group, see Sperber (1975:72–75).

2. THE PROBLEM

In the remainder of this paper I illustrate our current research by investigating an intriguing phenomenon that has hardly received a mention in the rich literature on ethnoscience:⁴ the sharing of names, or at least of roots, between biological entities of patently different classes and even kingdoms, on the grounds that one biological entity signals the presence or availability of another. Typical examples are the use of a single term for a tree and a fish or bird eating the fruit of that tree, or for a tree and a fish or shellfish that becomes available at the time the tree flowers.⁵

For this type of semantic relationship I shall use the term ‘sign metonymies’, based on the use of the term ‘sign’ in semantics to refer to situations where “from the presence of the sign...anyone with the requisite knowledge can infer the existence of what it signifies” (Lyons 1981:13). It might be argued that it would be more accurate to use the term ‘natural sign’, which refers to situations where the sign is causally connected with what it signifies (e.g. smoke is a natural sign for fire); such natural signs constitute the majority of cases I shall be examining. However, I do not wish to exclude cases where the sign is conventional or culturally established to the extent where it could not ultimately be verified by mere observation of ecological connections: an example of such a culturally-established convention is the case where the flowering of a particular grass is a sign, within a particular community, that a taboo on pregnant women gathering a particular fish is now relaxed. I shall therefore use the more general term ‘sign’. My concern in this paper is to explore the nature of these

⁴ Within the Australianist literature only six mentions of this problem are known to me. Firstly, Strehlow (1915), in his discussion of Aranda hand-signs, gives a number of cases where a bird or animal sign is the same as a plant sign, and ventures explanations for some of these in terms of metonymic connections (e.g. sign no. 216 *inmota* ‘bush’), which sign also means emu; Strehlow notes that emus eat this bush. Other metonymic connections leading to sharing of Aranda hand-signs are between the emu and an acacia species in whose shade emus take shelter, and between the red kangaroo and several plants which it eats. (I am grateful to David Wilkins for drawing the Strehlow paper to my attention). Secondly, Sutton (1980:313), in a footnote to his discussion of the ethnosemantic term ‘mate’, mentions “that where ‘X is mate of Y’, they are often minimally distinct plant species, but in some cases one is a plant while the other belongs to another life-form, is an environmental feature etc., with a close non-botanical association to the named plant”, acknowledging Athol Chase for the observation. Thirdly, Julie Waddy’s (1988) extremely valuable study of Anindilyakwa ethnoscience contains several references to the phenomenon. Fourthly, Nash (in press), in a discussion of flora terminology in Central Australian languages, notes that “There are some flora terms derived from fauna terms, probably because of some ecological association (though what, is unclear)”, citing the Kaytetye words *arwengerrp*-*arwengertepe* ‘*Isotropis atropurpurea*’ and *arwengerpe* ‘turkey’. Fifthly, Reid (1990 and forthcoming) discusses a number of Ngan’gityemerri examples of animal and plant or fruit names sharing a root but differing in noun class. He shows that in some cases metaphorical resemblances, and in other cases spatial proximity (i.e. spatial metonymies) are involved, and goes on to suggest (forthcoming: 32) that calendar metonymies may eventually be found: “It has been shown in other parts of Australia that totemic affiliations, or the relative timing of the developmental or behavioural cycle of plants and animals, form principles of systems of taxonomy and nomenclature...Ngan’gityemerri speakers also articulate the timing of certain natural events with respect to the calendar time of other events. Thus the best time to find *fungguli* ‘honey’ is when the *Melaleuca argentea* is in blossom, and the blossoming of the flowers of *Brachychiton megaphyllus* signal the time when *awerrmisya* ‘freshwater crocodile’ are laying their eggs. Further work may well reveal that calendar or other linkages underlie the perceived commonality between these multi-classed terms”. Finally, Carolyn Coleman, in her comparative lists of ethnoscificatory terms in West and Central Arnhem Land, discusses several examples of parallel sign metonymies in large numbers of languages, which I refer to below.

⁵ Note that I shall exclude from consideration the very common phenomenon by which a given root may designate fruit and tree, often combining with different noun classes.

connections, what they reveal about ethnobiology, and their consequences for Australian lexicography.

As a working hypothesis, and to cast my net wide, I am assuming that the same types of semantic relationship obtain between pairs of words whose formal relation to each other can be of a number of types: formal identity (1–3); identity of root but difference in noun class (4–5), classifier (6), or compounding classifier (7); reduplication (8), derivational relationships (9–12), or compounding (13):

- (1) Ndjébbana (Coleman 1993)

nja-murdbidj 1. ‘spangled grunter (fish)’
 2. ‘native white apple, *Syzygium eucalyptoides* subsp. *eucalyptoides*’
 [For discussion of semantic connection see §3.5.]
- (2) Kunwinjku, central dialects (Evans fieldnotes)

bokorn 1. ‘spangled grunter (fish)’
 2. ‘native white apple, *Syzygium eucalyptoides* subsp. *eucalyptoides*⁶’
- (3) Nunggubuyu (Heath 1978)

walburunju 1. plains turkey
 2. shrub whose wood is used for firesticks, *Clerodendrum cunninghamii*
 [‘One informant explained that turkeys are thought to eat the seeds of *C. cunninghamii*.’ (Heath 1978:47)]
- (4) Mayali (Evans 1991)

kordow ‘cottonwood tree, *Bombax ceiba*’ [vegetable agreement class, with no overt prefix]
ngal-kordow ‘brolga, *Grus rubicundus*’ [feminine class]
- (5) Anindilyakwa (Waddy 1988)

m-embirrkwa ‘Cooktown ironwood tree’
y-embirrkwa ‘Venus tusk fish’
 [m- and y- are different noun class markers]
- (6) Wik-Mungkan (Kilham et al. 1986)

(*minh*)*thanchal* ‘immature jabiru’ (*minh* is the ‘game’ classifier; like all classifiers its presence is optional)
(yuk)thanchal ‘milkwood tree, *Alstonia actinophylla*’ (*yuk* is the tree classifier)
- (7) Yir-Yoront (Alpher 1991)

yo-pullpall ‘silk cotton tree, *Bombax ceiba*’
minh-pulpal ‘sarus crane, *Grus antigone*’
- (8) Kaytetye (Nash in press)

arwengerrpe ‘turkey’
arwengerpp-arwengerrepe ‘Plant sp.: *Isotropis atropurpurea*’

⁶ Note also *man-bokorn* ‘cocky apple, *Planchonia careya*’.

- (9) Rembarrnga (Coleman 1993)
dawulukku 'spangled grunter fish'
ki-dawulukku 'white-apple tree, *Syzygium eucalyptoides*, subsp. *eucalyptoides*'⁷
- (10) Anindilyakwa (Waddy 1988)
yi-mundungwa 'cypress pine'
w-arningu-mindungwa-kba 'grey-crowned babbler'
 'referring to the fact that these birds are most often found associated with cypress pines' [w- and yi- are noun class prefixes, arningu- a genitive-type prefix, and -kba a 'characteristic location' suffix]
miyarrawa 'red kurrajong'
w-arningu-miyarrawa-kba 'type of beetle'
- (11) Ritharngu (Heath 1980)
walpurunju? 'plains turkey'
walpurunju?-jiniŋ 'a tree, *Clerodendrum cunninghamii*'
 See (3) on the semantic relationship; Heath does not discuss the significance of the suffix *-jiniŋ*.
- (12) Wik-Ngathan (Sutton pers. comm. 1993)
(yuk) *with* 'pandanus tree'
(minh) *witheng-wun* 'rat sp., which nests in pandanus trees'
 [-e)ng LOCative case, -wun 'lives, sleeps']
(may) *punn* 'yellowfruit; *Parinari nonda*'
(minh) *punngepal* 'Torres Strait pigeon' [-e)pal 'greedy for', i.e. bird eats fruit of this tree]
(yuk) *punngepal-thicheyn* 'tree sp., *Timonius timon*' [thiche- 'eat', i.e. 'Torres Strait pigeons eat (its fruit)']
- (13) Mparntwe Arrernte (Wilkins 1989)
 tree grub found in tree (cf. *aty* 'grub')
tnyeme 'witchetty bush' *tnyematyā* 'witchetty grub found in witchetty bush'
utnerrenge 'emu bush' *utnerrengatyē* 'grub found in emu bush'
thenge 'ironwood' *thengatyē* 'grub found in ironwood tree'

It may of course turn out that particular types of semantic connection correlate with particular formal devices; such a hypothesis can only be tested when data is gathered on all types. But preliminary findings in other areas of the lexicon of Australian languages (Evans 1992b) show that the same polysemous relation will frequently be treated by cross-classing in one language, by derivation in another, and by undifferentiated forms in another: the 'woman, girl'/'digging stick' metonymy, for example, is manifested by cross-classing in Dyirbal (*balan* [FEM] *gajin* vs *bala* [NEUT] *gajin*), as derivation in Tjungundji (*matanamarano* 'woman', lit. 'of the yamstick') (Thompson 1935), and by undifferentiated forms in Warrgamay (*gajin* 'girl; yamstick').

I am assuming that such metonymies occur in a 'bridging context' like the following: 'that grunter-fish (tree), that grunter-fish (one)'. That is, some metonymically evocative term from

⁷ Synchronically, *ki-* is simply a non-productive derivational suffix; historically it is an old possessive form of the masculine noun class prefix, so *ki-dawulukku* is etymologically 'his, the spangled grunter fish's'—see Evans (forthcoming).

another life-form category is used to narrow reference to a particular, appropriate member of a life form that is either contextually assumed, or identified by such general means as classifying generics (e.g. Wik-Mungkan *yuk* 'tree'), or noun-class-specific demonstratives. An example of the latter device, whose semantics will be discussed below, is the Kunwinjku phrase *manekke komboh* 'that [VEGetable class] komboh', lit. 'that-vegetable purple spotted gudgeon fish', in other words 'that gudgeon-fish one (of a tree or plant)'.

However, it is striking that the languages with the richest collections of such cross-kingdom metonymies have either had noun-class systems with a distinct vegetable class (e.g. Mayali, Ngan'gityemerri) or classifying generics (Yir-Yoront, Wik-Mungkan), and it is likely that classifiers or noun-class-sensitive demonstratives encourage the development of the semantic extensions discussed in this paper: a phrase like 'that-vegetable grunter.fish (one)', referring to a white-apple tree, is understandable in a far wider range of contexts, and hence more likely to be lexicalised, than one like 'that gudgeon.fish (one)', accompanied by a gesture but lacking a class-specific demonstrative.

A related typological correlate, the lack of compounding, is alluded to by Heath (1978:48) for Nunggubuyu: "the language [Nunggubuyu] has no productive compounding process which could produce formal equivalents to such English compounds as horse-mussel or emu bush. The only way to make such 'metaphorical' correlations is simply to use a single term in both botanical [sic] domains, hence *Modiolus* is called literally 'dog' instead of 'dog shell' or the like".⁸ However, there are many counter-examples to Heath's claim: both Mayali and Wik-Mungkan, for example, which have been a rich source of sign metonymies for this paper, have well-developed compounding.

3. TYPES OF SEMANTIC RELATIONSHIP

If two lexemes, or two roots, designate biota in different kingdoms, there are a number of possible explanations: accidental homonymy, various types of polysemy (pre-eminently metaphor and metonymy), in addition to more complex chains. Note that for the purposes of this paper it is useful to employ the rather more inclusive sense of polysemy given by Lehrer (1990), which includes instances of semantic relatedness between distinct lexemes in addition to relatedness between the senses of a single lexeme.

3.1 HOMONYMY

To begin with accidental homonymy: two distinct words may have become phonologically identical as a result of sound change. This hypothesis can sometimes be evaluated by phonological reconstruction. In Yir-Yoront, for example, *pornt* has the meanings 'elbow', 'mistletoe' and 'shovel ray', throwing up the hypothesis of a semantic connection between 'mistletoe' and 'shovel ray' (perhaps bridged by various types of relation to a more semantically basic 'elbow'; meaning). However, consideration of likely cognates in

⁸ It is also possible that the incorporated noun prefixes in Anindilyakwa (which form a further linguistic classification system in addition to the system of noun class prefixes which precede them; while Anindilyakwists call these incorporated noun prefixes a better term may be compounding bases) could serve a similar function: shape classifiers such as *trek(w)-* for flexible, coilable objects and *embirrk(w)-* for round objects represent the noun so that, if the context is clear, the noun may be omitted from the sentence. I have been unable to determine the degree to which cross-classification by these prefixes illustrates metonymic connections of the type discussed in this paper.

neighbouring languages suggests that the ‘shovel ray’ form, at least, is historically distinct, and has merged with the others recently due to a loss of vowel-length distinctions in Yir-Yoront.⁹

1. YY *pornt* ‘elbow’, Wik-Ngathan *puntel* ‘ankle’, Wik-Mungkan *punt* ‘point, corner (e.g. of lagoon, little river), Kuuk-Thaayorre *punt* ‘elbow’
2. YY *pornt* ‘mistletoe’, Wik-Mungkan *puntgil* ‘something like mistletoe hanging from mangrove trees’
3. YY *pornt* ‘shovel ray’, Wik-Ngathan *puunt* ‘shovel ray’, Wik-Mungkan (*minh*) *muunt* ‘shovel ray’ (with assimilation of initial to nasal of preceding generic?)

Note also Wik-Ngathan *puuntiy* ‘sword grass’; both *puuntiy* and *punyemp* in Wik-Ngathan have the two meanings ‘sword-grass; shovel ray’.

Of course, the homonymy hypothesis may also be eliminated by finding evidence from speakers for some sort of connection. But both positive and negative evidence here must be treated cautiously. Positive evidence is always at risk of being debased by folk etymology; it may also happen that different speakers offer different explanations, as in Ngan’gityemerri where in some cases “different speakers may offer competing ‘explanations’. According to one, the bark of *miwerrmisya* ‘red plum tree’ looks very much like the skin of *awerrmisya* ‘freshwater crocodile’, but another suggests that the fruit of *miwerrmisya* ‘red plum tree’ looks just like the eyes of *awerrmisya* ‘freshwater crocodile’ in the night.” (Reid forthcoming: 50).

On the other hand, negative evidence may have a number of reasons. Speakers may be aware of a connection, but this knowledge may simply fail to get into the dictionary (see §4). Or their generation may have forgotten a connection their forebears were well aware of. Or the information may be known, but esoteric, and not revealed to the investigator. The best remedies for these problems are deep and thorough fieldwork, full treatment of encyclopaedic information in dictionaries, and, again, comparative studies of as many languages as possible: one dictionary may record information another neglects, one group may remember what another group forgot, and one group may talk publicly about connections that are esoteric for another.

3.2 THE VALUE OF PARALLEL PATTERNS

It follows that whether a postulated semantic connection is real or spurious can sometimes be determined by seeing whether many unrelated and non-contiguous languages have a similar pattern. To be truly independent evidence, of course, the same connection must be involved, but with different forms. Thus the recurrence of the two senses ‘immature jabiru’ and ‘milkwood tree, *Alstonia actinophylla*’ for the related forms (*minh*) *thanchal* (Wik-Mungkan) and (*minh*) *thancheil* (Wik-Ngathan) is not good evidence for a bona fide semantic connection, since the phenomenon can equally well be explained by an earlier merger affecting a single pair of words. By contrast, a parallel set like Wik-Mungkan *marrp* ‘1. lancewood tree, *Thryptomene oligandra*, 2. sleepy cod’, Wik-Ngathan *kuuchen* ‘1.

⁹ I am grateful to Peter Sutton for drawing this example to my attention, and pointing out the Wik-Ngathan forms. (Alpher (1991:465) suggests the word is probably a loan from pre-Kuuk-Thaayorre, since it fails to attest regular loss of homorganic nasal from pP **punti* ‘elbow’ (reconstruction by Hale 1976)); however, he only cites the ‘elbow’ meaning in the etymology.

lancewood tree, *Thryptomene oligandra*, 2. sleepy cod' is much better evidence, since the same connection is present in quite unrelated words and we would now need to postulate two independent cases of homophony. In some of the examples to be discussed below, four or five quite distinct forms attest the same semantic link; in such cases the chances of so many independent mergers are vanishingly small and the possibility of homophony can be confidently eliminated.

Sometimes the semantic parallels are not quite exact, but still suggestive. In the Gundjeihmi dialect of Mayali, for example, there is a word *gordou* meaning 'canoe tree, *Bombax ceiba*'; in the Kune dialect and the closely related language Dangbon this name is also applied to the milkwood tree (*Alstonia actinophylla*), also used for making canoes. Now the root recurs, prefixed with the feminine noun class marker, in *al-gordou* 'brolga, *Grus rubicundus*', but the nature of the semantic connection is unclear and so far no speakers have offered any connection to me. One might therefore be tempted to dismiss this as a mere root homophony, except that in two languages of Cape York, distant from Mayali both genetically and geographically, roots designating either jabiru or brolga (or its close relative the sarus crane) are also found, with 'tree' classifiers, denoting the same two large trees: Yir-Yoront *yo-pullpall* 'silk cotton tree, *Bombax ceiba*', *minh-pulpal* 'sarus crane, *Grus antigone*'; Wik-Mungkan *thanchal* and Wik-Ngathan *thanchel* (*minh thanchal*) 'immature jabiru'; *thanchal* (*yuk thanchal*) 'milkwood tree, *Alstonia actinophylla*'. Though I have yet to find the nature of the semantic link (and we cannot even know whether metaphor or metonymy is involved), the recurrence of the connection between the two large canoe trees and the two large birds (brolga and crane) is a sign that we are not dealing with simple homophony.

Unfortunately, there are many cases, especially with semantic links involving biota that are rare or circumscribed in distribution, or found only in areas where much traditional knowledge has been lost, where there is simply no possibility of finding relevant parallel evidence.

3.3 ABORIGINAL INTERPRETATIONS OF FLORA-FAUNA POLYSEMY

Before passing to a discussion of specific examples, it is useful to offer some remarks on how the phenomenon of interest to us is regarded by knowledgeable Aboriginal people who have been our sources of linguistic information in the first place.

In many cases, of course, it may be shrugged off as a chance coincidence or attributed to the ignorance of some other group. When I asked Big Bill Namunjdja Murrbburnkurla about the use of the word *boddowk* for both a fish and the red apple tree, he said that this was the proper name only for the fish, and that the red apple should be called *djarduk*, but that speakers of some dialects must have forgotten the word *djarduk* and had started calling it *boddowk* like the fish.

However, in other cases, the phenomenon is singled out for comment (Sutton pers. comm. 1993):

[It] is of some fascination to people who speak this language [Wik-Ngathan] and others close to it. They have often drawn attention to sets of them [i.e. polysemous or homophonous words] for me, engaging me in a kind of 'Well, there! What do you make of that! Something important eh!' conversation and intense look from time to time...

Why the passion? Wik people are obsessed with language anyway, but I think one important extra factor driving things here is that they, like desert

people, find equivalences to be at the heart of the meaning of life, and part-equivalence ITSELF to be meaningful (free of WHAT is equivalent). The power of symbolism is not only in what is symbolised but in the act of symbolism itself. The powerful are those who can put things together legitimately, and have this connecting recognised by others as proper.

Carew (in preparation) quotes a discussion with speakers of Gun-nartpa about the phenomenon by which certain grasses share names with fish whose seasonal availability they signal (e.g. *morratorl* ‘goby fish; grass sp.’). The phenomenon brought forward the comment *gorrangunya mun-mowanga mu-guyinda jichicha*, translatable as ‘grass (*gorrangunya*) is an image (*mun-mowanga*) type of thing (*mu-guyinda*) of the fish (*jichicha*'); in this context, speakers translated *mun-mowanga* as ‘statue’.

In many parts of Australia, distinct biota will be referred to as ‘mates’ or ‘kin’ on the basis of a number of characteristics. Chase and von Sturmer (1980:297–298) mention that “[i]nformants commonly refer to one set of phenomena as being ‘mate’ to another set of phenomena”, and give an Umpila example of the ‘mate’ suffix *-mulu* deriving from the word *taway* ‘moon’, the word *tawaymulu* whose two meanings ‘floating tree gum (stated to be dried by the moon)’ and ‘fungi, toadstools’ are metonymically related to the root. Chase (pers. comm.) points out that there is a wide range of possible links between ‘mate’ species in Western Cape York languages, ranging across minimally distinct plant species, metaphorical resemblances, environmental associations and symbiotic relationships (e.g. remora to host).

Sometimes, though not always, such ‘mates’ share a name (Bradley pers. comm. 1993): “in Yanyuwa the Hawksbill Turtle is called *karrubu* (*Eretmochelys imbricata*), as is a poisonous yam...The Yanyuwa consider the Hawksbill Turtle to be poisonous, a fact which has been scientifically attested” (Limpus 1987:191). The turtle is poisonous because it ate the poisonous yam in the Dreaming. In Yanyuwa such things are said to be kin to each other, the term *nyiki-nganji* is used to express this. It literally means ‘his kin’:

ny-iki-nganji
NOM:MASC-for him-kin/relative'

As this Yanyuwa example shows, we need to be concerned with three types of connection:

Linguistic connections	Mythological connections	Day-to-day world connections
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In some cases, as in the Hawksbill turtle/poisonous yam, explanations in terms of events of the Dreaming are given to explain connections in the day-to-day world (the fact that the turtle is poisonous). Linguistic connections may draw on either of the ‘world connections’, or both. The Hawksbill turtle example has a double resonance for this reason, and we shall encounter some other examples of this type.

However, while mythological connections sometimes reflect such ‘in-nature’ links as symbiosis, resemblance, and so on, this is by no means always the case (see, for example, Bulmer (1978), Borsboom (1978) and references therein), so we should expect both mythological and day-to-day connections to independently furnish material for linguistic collation. We shall, then, be examining many examples of metonymic connections found in the observed day-to-day world, for which no mythological connections are known (or at least, were not offered to the investigators), and also of metonymic links based on Dreaming

connections (or their social manifestation) but without an offered rationale in the day-to-day world.¹⁰

We now turn to some specific examples of metaphorical and metonymic connections.

3.4 METAPHOR

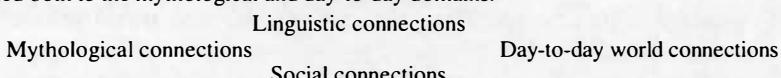
Metaphorical linkages of biota in different classes have received some coverage in the ethnobiological literature. Berlin (1992:107) quotes Walsh (1980) as evidence that “metaphorical reference is highly productive”, but Berlin confines his discussion to cases where metaphorical similarities are invoked to contrast subgeneric taxa in generic—attributive compounds. Examples are the Siona phrases *weke yahé* (lit. tapir *Banisteriopsis*), designating a large variety of this vine by analogy with the size of the tapir, as opposed to *nea yahé* ‘black *Banisteriopsis*’ and *tara yahé* (lit. bone *Banisteriopsis*) which designates a knobby-vined variety (Vickers & Plowman 1984:18–19), and the Palauan compound fishnames contrasting *didmecheilmaml*, which is almost entirely blue-green, with *triidlaml*, which is darker and has more black in the bars on its scales; triid is also the name for the white-browed rail, *Poliolimnas cinereus* (Helfman & Randall 1973:148).

Clear examples from Australian languages may be based on:

(a) tactile impact (e.g. spikiness): Mayali *nakarndekin* ‘dingo; *Capparis* sp. of thorny vine’, apparently based on the sharpness of the dingo’s tooth; Kayardild *kuyilda* ‘file ray; bindi-eye thorn’, based on the sharpness characterising both the stingray’s barb and the thorn.

(b) colour: Ndjébbana *djalówarra* ‘sweetlip emperor fish; brahminy kite’, based on the similar colouring of the fish and bird (Coleman 1993). Yanyuwa *ngakarla*, and Mara *rdangardanga*, both mean ‘moon; nautilus shell’ “because in the dreaming era the moon was originally a nautilus shell, evidence of which can still be found in the silvery colouring of the shell’s interior” (Bradley pers. comm. 1993); a further Gulf example is Kayardild *waldarra* ‘moon’, *kirdilwaldarra* ‘nautilus shell’ (*kirdil-* ‘back’). The Ngan’gityemerri pair *a-wisamuy* ‘white crane (*Ardea alba*)’, *mi-wisamuy* ‘white berry of *Flueggea virosa*’, based on the vivid white colour of the berries of *Flueggea virosa* which makes them stand out as plainly as the white crane (Reid forthcoming). Yir-Yoront *kalvmr* ‘galah, *Eolophus roseicapillus*’, *yokalvmr* ‘vine sp., *Cassytha filiformis*’; Alpher (1991:148) states that the “[s]emantic connection with ‘galah’ is uncertain but possibly has to do with its colour in certain seasons”. Nash (in press) suggests that the two Anmatyerre words (*ar)lewatyerre* ‘sand

¹⁰ In this formulation, I am including such social phenomena as Totemic groupings as Mythological connections, on the grounds that they are generally held by groups to have been ordained in some founding period. However, an alternative formulation would be to treat the social world as a fourth domain, linked both to the mythological and day-to-day domains:



Such social connections would also sometimes be available for the making of linguistic connections: an Anindilyakwa example is the pair *membirkwa* ‘Cooktown ironwood’ and *yembirkwa* ‘Venus tusk fish’, which differ only in their noun-class prefix. The only motivation for a link between these two items that Waddy (1988:65) could find is that “both these taxa are totems belonging to the same clan”, suggesting that, in the initial use leading to lexicalisation, linguistic identification of one member of the pair was made in terms of social connections between totems.

goanna' and *alewatyerrelewatyerre* 'broom bush, *Templetonia egena*' are linked by 'the similar brownish colour'.

(c) appearance/shape: Kayardild *kamarra* 'stone; stonefish', Mayali *dird* 'moon; moon-snake (lies in the shape of a crescent moon)', Kuuku Ya'u *kaa'uma* 'echidna; porcupine-fish' (Thompson 1988), Mudburra *warbanji* 'small plant sp. ('sensitive plant'), *Neptunia monosperma*, *Petalostylis cassioides*; centipede', where the resemblance is based on the many leaflets of the plant, which resemble a centipede (Wightman et al. 1992).¹¹ Anindilyakwa *dingaluwa* "is the boobook owl with its down-curved flattened beak and also the hawksbill turtle. Instead of likening the turtle's bill to a hawk's bill, Anindilyakwa speakers have likened it to the boobook owl's bill" (Waddy 1988:67).

(d) movement: Kayardild *balibali* 'butterfly; manta ray'.

(e) noise: Anindilyakwa *wurruwarda* 'dog; various species of fish (mostly of the family Scorpidae)'; "the fish taxon is so named because the fish are said to bark like *wurruwarda* 'dog' when caught" (Waddy 1988:67).

Dangbon *bob* 'bird sp.' / 'mouse sp.' (both make similar high-pitched grating cries when distressed); Kayardild *dilawurdi* 'cicada; tree-frog' (both live in trees and make similar noises).

(f) pattern of human interaction (which may be based on some other metaphorical resemblance): Mayali *dord* 'louse; grass sp. (*Cyperus* sp.) whose seeds are rubbed in children's hair and used in games of delousing'. Note that extension of use metaphors (e.g. plant X resembles plant Y in being used as fish poison) may ultimately give rise to functionally-based superordinate terms; an example is Mayali *mawurrumbulk*, which applies to a number of quite different plants all used as fish poisons.

(g) smell/taste: Ndjébbana *bórdanja*, Burarra *darrjela* both with the polysemy 'piss; ponyfish, *Leiognathus* sp.', given this name because it is useless for eating; note also Yanyuwa *karrubu*, discussed above, which unites a poisonous turtle and a poisonous yam. A further possible example is the Yir-Yoront pair *minh-kothorr* 'salt-water crocodile, *Crocodylus porosus*, "alligator"', *yoq-minh-kothorr* 'alligator tree, shitwood, *Gyrocarpus americanus*', possibly a metaphor based on the general view that crocodiles have stinking flesh (cf. the Eastern Kunwinjku term *na-manj-warre* [I-flesh-bad] for the saltwater crocodile).

Metaphors based on appearance are frequently made more precise through compounds which identify the particular locus of resemblance: Ngankikurungkurr *a-mentyi-nimba* [IV-neck-yellow.snake] 'egret', Mayali *an-bid-galkberd* [III-hand-common.wallaroo] 'yam sp., *Murdannia graminea*, whose pattern of leaves resembles a wallaroo's hand', Kayardild *balbirndibirndi* [leaf-drupe shell] 'green plum tree, *Buchanania obovata*', Dangbon/Kune *djorrkkun dedjmildungh* (lit. 'possum sperm'), *Ficus platypode* (with white sperm-like juice). In some cases the term retains the noun class appropriate to the metaphorical source: *gurdugadjì gun-denge* [II-emu foot] 'small shrub sp., *Hibiscus meraukensis*, whose pattern of leaves resembles an emu's footprint'. Sometimes a morpheme explicitly meaning 'resemblance' or 'similar' is used, as in Kayardild *ngarnal* 'white cockatoo', *minyi-ngarnal* 'white grub' [*minyi-* is the semblative prefix], Yolngu-Matha *mithirri* 'thorny stingray,

¹¹ I am indebted to David Nash for this example.

rough-skinned ray', *mithirri-nganing* 'tree—thorny with white flowers, prickly tree, *Zanthoxylon parviflora*'.

3.5 METONYMY

The metonymic connections between plant and animal terms are of three broad types: spatial, where plant and animal typically occur in the same place, temporal, where the appearance of one at a given time of year signals the imminent appearance of the other, and cultural, where the two are linked in some cultural construct such as a set of totemic symbols, a dreaming grouping, or a shared practice of taboo.

3.5.1 SPATIAL METONYMIES

Spatial metonymies usually result from the fact that a given animal can be found in, on or near a particular plant, either because it eats its fruit or leaves, or because it dwells in it (e.g. (12) and (13) above). As a result, the metonymic connection is both spatial and procedural (i.e. in the sense of a hunter-gatherer's finding procedure).

Spatial metonymies linking biota from different taxonomic domains are part of a broader pattern in which living creatures share names with environments in which they are characteristically found. Examples are Dyirbal *balagabal* '[neuter] sand', *balangabal* '[fem.] crane', a metonymy reflecting the fact that "cranes are frequently seen walking on sand" (Dixon 1972:305),¹² Mayali *dalk-ken* and Dangbon *dalk-kun* [grass-from] 'dingo' (i.e. that lives out in the grass, as opposed to the domestic dog which lives in camp), and Anindilyakwa *w-arnungw-angwura-kba* 'glossy ibis' (n.cl-genitive-fire-chac.loc), reflecting the fact that glossy ibises are found in burnt-off areas. Some examples linking birds, insects or fish with plants are given in (14)–(19); see also (3), (10), (12) and (13) above.

- (14) Gun-djeihmi dialect of Mayali (Evans 1991)

- ngal-yurr* 1. 'Leichhardt's grasshopper, *Petasida ephippigera*'
2. 'herb spp., *Pityrodia jamesii* and *Cleome viscosa*, eaten by Leichhardt's grasshopper'

Note that this grasshopper has a highly restricted food range, limited to a few aromatic shrubs and herbs, including the *Pityrodia* and *Cleome viscosa*. Further remarks on the etymology of this word are given below.

- (15) Wik-Mungkan (Kilham et al. 1986)

- (*may*)*mantamp* 'emu berries (*Grewia retusifolia*), whose edible berries are food for the plains turkey'
(*minh*)*mantamp* 'plains turkey, Australian bustard (*Ardeotis australis*)'

- (16) Yir-Yoront (Alpher 1991)

- minh-ngarrl* 'big male plains turkey'

¹² Comparative evidence here suggests the 'sand' meaning is etymologically prior: a large set of cognates across Australia spans terms for a variety of open places: saltfans, clearings, floodplains and (in the Dyirbal case) sand, one of the few vegetation-free areas in the Dyirbal rainforest habitat: Kayardild *kapaja* 'saltpan', Lardil *kapa*: 'saltpan', Mayali *kabbala* 'floodplain'; Ritharrngu *gapala* 'clearing, open plain', Nunggubuyu *abala* 'plain, open area'; 'ritual clearing', Geimbiyo *ap:al*, Gurragone *gapal* '(flood) plain', Gidabal *gabal* 'scrub, open forest', Girramay *gabal* 'sand', Wemba-Wemba *gabel* 'river'.

yo-ngarri ‘*Grewia latifolia*, fruit eaten by plains turkey as well as people’
 Note that the regular word for plains turkey is *minh-partw*; *minh-ngarri* may have become specialised.

- (17) Wik-Mungkan (Kilham et al. 1986)
(minh) kuunt ‘mangrove or striated heron’ (which feeds and nests in mangroves: Slater 1970)
(yuk) kuunt ‘looking glass mangrove tree (*Heritiera littoralis*)’
- (18) Ngan’gityemerri (Reid 1990 and forthcoming)
a-dirrinybuk ‘edible grub inside gall of *Eucalyptus foelscheana*’
yerr-dirrinybuk ‘*Eucalyptus foelscheana*’
- (19) Anindilyakwa (Waddy 1988 and pers. comm.)
alyukwurra ‘paperbark (generic)’
d-alyukwurra-murra [n.cl-paperbark-having] ‘mosquito, *Anopheles bancroftii*’ (found around paperbarks)

A further example of this type is (1), (2) and (9), involving parallel examples (with different forms) from three neighbouring languages of North Central Arnhem Land. In each the pairing of the native white apple tree (*Syzygium eucalyptoides* subsp. *eucalyptoides*) with the spangled grunter fish is based on the fact that the spangled grunter eats the fallen fruit of the tree. Coleman (1993) states that this metonymy is found throughout the non-coastal languages of Central and Western Arnhem Land.

3.5.2 TEMPORAL METONYMIES

Temporal metonymies—or, to adapt the Aboriginal English term *calendar tree*, ‘calendar metonymies’—are based on the coincidence in time between the appearance, physical or cultural availability, or attainment of a distinctive stage (particularly flowering of trees) of two biota.¹³ A Kune example is (20); the same pair of meanings is associated with a contiguous bloc of North Central Arnhem Land languages, namely *yawok* in Dangbon, *karndóya* in Ndjébbana, *gulpuru* in Gurrongi, and *djalma* in Rembarrnga.

- (20) Kune
man-yawok 1. ‘cheeky yam, *Dioscorea bulbifera*’
 2. ‘katydid, “long-horned/green grasshopper”’ (= Gundjeihmi *yamidj*)

In making sense of this connection it is useful to quote the following ethnographic information from Chaloupka et al.’s *Cultural survey*, and Chaloupka and Giuliani’s *Mayali flora*, concerning the myths of speakers of a dialect closely related to Kune, Gun-djeihmi:

[In *bangkereng* following the end of the monsoon] *yamitj*, the long horn grasshopper (*Caedicia* sp.) calls out the names of localities where *angindjek*,

¹³ Of course it is possible for a language to be used to describe such ‘calendar connections’ without giving rise to metonymies of this type. Dixon’s discussion of the Yidiny calendar (Dixon 1977:9-10) mentions a number of calendar links of this type, but it appears Yidiny did not enshrine these in the lexicon. Examples are: “when the tail feathers of the willy wagtail (*jigirrigigirr*) turn white it is time to gather rickety nuts (*badii*)...when the black scrub locust (*ganya:l*) first cries out, around Christmas time, it is a sign to ascend to the tablelands to gather black pine (*gubu:m*)”. (Yidiny words recast in practical orthography.)

the “cheeky” or “water” yam (*Dioscorea bulbifera*) is ready to be collected. (Chaloupka et al. 1985:17)

Angindjek, referred to as “cheeky” or “water” yams (*Discorea sativa*), were planted by Yamitj, now the long-horn grasshopper (*Caedeca* sp.). This being, when a man, went through the countryside, making holes in the ground with a digging stick and implanting the yams....Every year during the bangerreng season Yamitj emerges from his underground slumber to let the people know that angindjek is ready to be collected. (Chaloupka & Giuliani 1984:12)

As with spatial metonymies, calendar metonymies linking two biota form part of a larger group of metonymies, which may sometimes link a plant or animal species with a meteorological phenomenon. Some examples:

- (a) the Ndjébbana term for the wolf-herring, *balawúrrwurr*, lit. ‘wind’, of which one speaker said “*balawúrrwurrkaddjórrkayana*” “he brings the wind” (Coleman 1993).
- (b) in Yanyuwa “the cold season and the dragon fly are called a-Mardu; the dragon fly is said to herald the arrival of the cold season, they are said to be kin” (Bradley pers. comm. 1993).
- (c) again in Yanyuwa, “the term for hired assassin...is *marrawi* but during the early cold season when flowers begin to blossom, they are called *wulanthantha* the same term for flowers, this is the time in the past when such revenge killers would set out to execute their victims. The term *wulanthantha* was considered a safe term” (Bradley pers. comm. 1993).

The Gun-djeihmi term for the Leichhardt’s grasshopper, *al-yurr*, appears to result from a semantic shift bridged by such a calendar metonymy [grasshopper—lightning]; both Mayali speakers and western biology recognise that this grasshopper only appears during the stormy period of the monsoon, and cognates of this term in various neighbouring languages include Umbugarla *yurr* ‘rain’, Burarra *yorr* ‘rain’ and Jawoyn *ngalyurr* ‘lightning’ (the *ngal-* and *al-* prefixes mark feminine noun class).

In some cases the calendar link is due not to the actual appearance of some food, but rather to the fact that customary law takes the appearance of one sign as permission for a particular group to begin to eat some food. In Kunrayek, an east-central dialect of Mayali, for example, *komboh* designates both a grass species (yet to be identified) and a fish (the purple-spotted gudgeon): only when the grass comes into seed following the end of the monsoon are pregnant women and children allowed to eat the fish.

More rarely, temporal metonymies are based on diurnal associations. Waddy (1988:66) reports that one term for the honeyeater bird, *warningumulikaduwakba*, “is associated with the burrawang seeds which women used to retrieve at dawn after having put them to soak for several nights in a stream”. This term is derived from the root *mulikaduwa*, which designates the fresh nuts of the burrawang (*Cycas angulata*) (see Levitt 1981:49), by prefixation of a genitive and suffixation of a characteristic locative marker.

3.5.3 CULTURALLY MEDIATED METONYMIES

Rarely the metonymic connection is based on co-membership of a particular set of clan totems, or some other cultural practice grouping them in a way that appears, to Western eyes at least, to be independent of observable associations in the ‘real world’.

Waddy (1988:65) discusses the pair *membirrkwa* ‘Cooktown ironwood’, and *yembirrkwa* ‘Venus tusk fish’, which differ only in noun class. The only connection she has been able to discover between these taxa is that both “are totems belonging to the same clan”.

In Yanyuwa (Bradley pers. comm. 1993), the Green Plum *ma-bikiki* (*Buchanania obovata*), which ripens during the wet season, “must be treated with great respect due to its associations with rainbow serpents and the wet season. On the islands during the wet season this fruit must be called me-marrin, and likewise in a camp on the mainland...a turtle...being cooked and butchered must also be called by this term, so as not to anger the rainbow. It is one of the only cases where a meat class object which usually takes the (na-) prefix is given the (ma-) non meat vegetable class prefix”.

In Wik-Ngathan (Sutton pers. comm. 1993) the form *mipiyl* can have the two meanings ‘monkey nut tree, *Sterculia quadrifida*’ and ‘old male dugong’; the link is apparently mediated by the fact that “[t]wo large *mipiyl* trees near Yaaneng constitute a Dugong totemic increase centre...called Thinelpal-nhiin (Dugong Sits)”.

In Aranda sign language (Strehlow 1915), the sign for ‘cricket’ is the same as that for ‘marsupial wild cat’ or *tjilpa* (in Strehlow’s orthography), based on the Aranda myth in which wildcat men collected and baked many crickets.

3.6 MORE COMPLEX CONNECTIONS

In some cases the link is not directly between A and B, but mediated by links A–C and B–C, which may be of quite different types; the relation to C may or may not be linguistically explicit.

In Anindilyakwa *engemina* refers both to the Milk creeper (*Secamone elliptica*) and the legless burrowing lizard (*Lerista orientalis*). There is no direct semantic connection between these two—rather, both are linked, in quite distinct ways, to milk or breast: the Milk creeper metaphorically (via its milky sap) and the legless lizard metonymically by a cultural practice: young girls should cover their breasts when they see this lizard to make their breasts grow (Julie Waddy pers. comm.).

A second Anindilyakwa example involving a complex connection is the pair *yukwurna* ‘baler shell’ and *d-amb-ukwurna-murra* [n.cl-shape.classifier-baler.shell-having] ‘brahminy kite’: the bird is metonymically connected (in myth) with a Dreaming Site which has a rock shaped like a baler shell.

3.7 DIRECTIONALITY OF SEMANTIC EXTENSION

At this early stage in our understanding of the problem it is difficult to generalise about the directionality of the semantic extensions involved, other than to say that both directions are attested. We have four potential sources of evidence:

(a) derivational directionality. Thus in (8) the fact that a bird name forms the base for reduplication to give a plant name suggests the bird is semantically primary, in (9) the fact that a fish name takes an (archaic) possessor prefix to yield a plant name marks the fish as the primary meaning, and in (13) the fact that a plant name is the basis for a compound designating the grub, suggests that the plant is the primary meaning. It is not always the case, however, that the morphologically simpler form is semantically prior: in Mayali, for

example, derived senses sometimes eliminate the more basic noun class prefix: cf *kun-mim* 'eye' (with neuter prefix), *an-mim* 'fruit' (with vegetable prefix), both very basic and widespread, with *mim* 'breathing hole in mud for turtles, goannas etc.', formed by removing the noun class prefix.

(b) degree of anomaly of noun class membership. In those languages with noun classes, plant-animal metonymies sometimes yield anomalous class membership for one term. Thus the vegetable prefix in *man-yawok* in (20) above is semantically appropriate for the 'cheeky' Yam' meaning but highly unusual for a grasshopper, which should be in one of the two animate classes (masculine or feminine), so we conclude that the 'Yam' meaning is primary (and this is confirmed by dialectological evidence: in all dialects this lexeme has the 'Yam' meaning, while in only one does it mean 'grasshopper'). Conversely the feminine prefix of *ngal-yurr* in (14) is appropriate to the grasshopper meaning, but not for the 'herb sp.' meaning, which should be in the vegetable class, and we conclude that the grasshopper meaning is primary.

(c) comparative evidence from other dialects or languages. With *bokorn* (2), for example, the 'fish' meaning is found throughout the Mayali dialect chain while the 'tree' meaning is restricted to one dialect (and I have heard a speaker of the Kunrayek dialect, whose speakers use *bokorn* only for the fish, say that the group using *bokorn* for the white-apple must have forgotten their original name for it). The Gun-djeihmi word *ngal-yurr* was discussed above: as argued there, the existence of many Arnhem Land cognates in the 'storm', 'rain', 'monsoon' semantic field is compatible with a first metonymic development to 'Leichhardt's grasshopper' (which appears at the beginning of the monsoon), which then developed by a second spatial metonymy to 'herb sp.'; this view is supported by the presence of the feminine noun class prefix (see preceding paragraph).

(d) in the case of metonymies found with hand-signs, the iconic nature of certain signs makes it possible for the primary sense to be identified.¹⁴ In the case of the Aranda hand-sign designating both 'emu' and 'ironwood tree' (based on the fact that emus take shelter in the ironwood's shade), the nature of the sign—Involving moving a fist up and down several times, in imitation of the movement of an emu's neck (Strehlow 1915)—clearly indicates that the 'emu' sense is primary.

4. METONYMY, CULTURAL KNOWLEDGE AND LEXICOGRAPHY

From the examples discussed above it should be clear that detailed knowledge of habitat, feeding habits, seasonal characteristics and correlations, as well as knowledge of human cultural interactions with the relevant biota, and possibly of mythology/cosmology as well, is needed to interpret the significance of such metonymies, or indeed to prove that polysemy rather than homophony is involved. As linguists and lexicographers we need to follow the program outlined by Keesing (1979:27) in his discussion of Kwaio figurative language:

By explicitly articulating semantic analysis to ethnography, and hence to pervasive cultural assumptions about the cosmos, causality, time and being, we begin to capture not only the subtleties of meaning accessible to native speakers but the creative powers of language in metaphor and symbolism as well.

¹⁴ I am grateful to David Wilkins for pointing out this consequence of hand-sign organisation.

It seems clear from our understanding of how figurative language becomes lexicalised in better-understood cultures that the creative speakers who first use such figures of speech are confident that the particular cultural knowledge needed to generate the appropriate implicatures from their tropes is mutually manifest (in the sense of Sperber & Wilson 1986) and is therefore part of the shared knowledge of the speech community. As Sperber and Wilson (p.236) point out, figurative language gives “access to an encyclopaedic schema with one or two dominant and highly accessible assumptions”. The problem for lexicographers of Australian (and other ‘exotic’) languages is thus how to articulate and represent such cultural knowledge, which Keesing’s discussion of Kwaio has shown may be both highly structured and ubiquitous in the speech community.

There is a second, related problem, this time common to general lexicography as well. In general, dictionaries aim to be explicit in stating the meanings of senses, and in stating how many distinct senses a word may have, but do not regard it as necessary to state how these senses are related to each other—other than by ordering the senses in some revealing way, with the possible further complexity that the ordering may be nested at several levels (see Zgusta 1971:280–281), or (as expounded in the discussion of Dutch *vergrijpen* by Geeraerts 1983) as a complex network showing a network of semantic developments in time. Yet to omit information on how senses are related, or on how derivatives are related to roots, is to omit the very argumentation that justifies putting them together in one entry (or in one ‘vocable’ according to the stricter definition of lexeme used within Meaning-Text linguistics).

Somewhere, then, we need to make explicit the cultural knowledge that allows us to substantiate a claim of semantic relatedness, and that underlies the creative figurative use that eventually becomes lexicalised as different senses or derivatives. One solution is to enrich lexical entries by making them more encyclopaedic; some of Wierzbicka’s (1985) definitions move in this direction. This would, if taken to its logical conclusion, end up including all cultural information relevant to lexical items, removing the difference between dictionary and encyclopaedia. It would still fail, however, to make the nature of metonymic sense relations explicit, though they would be recoverable implicitly from the rich lexical entries: for example, an entry for *nja-murdbidj* in (1) might include a statement, under the full entry for the first sense, that the white-apple tree has fruit that falls into rivers and billabongs and is eaten by grunter fish, and under the full entry for the second sense, that the grunter fish eats the fruit of the white-apple tree.

A second approach would be to make the semantic relations between distinct entries explicit, and to place such cultural information there. For example, one could discuss the relationship between senses (a) and (b) of *nja-murdbidj* by saying that it is a spatial metonymy based on the fact that the spangled grunter fish (b) eats the fruit of the white-apple tree (a). While efficient in drawing attention to problematic semantic relationships, this method may be overselective, since it would only be used when a particular semantic extension ‘calls forth’ a particular piece of cultural knowledge; other bits of cultural knowledge (that may have proved invaluable in the analysis of some nearby neighbouring language where they do underly a semantic extension) may be left out.

A third approach would be to extend the notion of ‘cultural scripts’ being developed by Wierzbicka and Goddard to the point where they represent a sort of encyclopaedia of cultural knowledge, which can accompany dictionaries and be called on where needed (e.g. by a more abbreviated comment on the relation between senses (a) and (b) of *nja-murdbidj* which refers the reader to a ‘cultural script’ about spangled grunters and white-apple trees. Such an

approach would allow dictionaries to be less ponderous than they would under the first two approaches, by treating 'cultural scripts' as a sort of hyper-text. Work of this type, though suggested programmatically by Keesing (see above), has not to my knowledge been developed by linguists or anthropologists working on Australian languages, though important investigations of similar techniques have been begun by AI researchers (e.g. Schank 1986, McTear 1987).

Though each of these approaches has its merits and drawbacks, the sad fact is that current dictionaries of Australian languages deliver the requisite information in none of these ways. At best, as with the Warlpiri dictionary project, the 'oral essays' composed in connection with lexical items convey a good deal of cultural knowledge, typically dispersed through the example sentences. More common is the situation where it is clear that the lexicographer has decided to group items together but gives no indication of the nature of the semantic link.

Finally, it is worth stating that in my experience, questions that seek to uncover such semantic links often throw up interesting ethnographic facts (some of the examples discussed in this paper were discovered in this way) and better dictionaries will emerge if lexicographers are on the lookout for the phenomenon and make it a normal practice to ask such questions. For those who see comparative linguistics as something 'to do later', the fact that comparative research such as Geoff's has thrown up so many questions of this type, urgently requiring field investigation, is a fitting response.

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A PRELIMINARY ANALYSIS OF THE LAMINAL LATERAL IN PAMA-NYUNGAN LANGUAGES

SUSAN FITZGERALD

1. INTRODUCTION¹

Geoff O'Grady was one of my first linguistics professors, and his love for Australian Aboriginal languages was evident even in an introductory phonology course. His unending enthusiasm for historical linguistics, and in particular for Australian comparative work, has led me to do my graduate work in this field. As my supervisor, he has given me a great deal of support, and has freely shared his incredible knowledge of Pama-Nyungan languages with me. Although he has now retired from teaching, may he never retire from research! I look forward to many more years of working with and learning from him.

According to Dixon (1970:85), the inventory of laterals in Proto Australian (or, in terms of this study, Proto Pama-Nyungan) is one of “the most important open questions” in the study of the history of the Australian languages. The fact that most languages in the east do not have a laminal lateral while those in the west do, raises the question of whether Proto Pama-Nyungan (PPN) had a laminal lateral. Dixon (1980:157) guesses that there was a laminal lateral in the protolanguage, and he hypothesises that medial *-ly- became -j- or -l- between vowels and -ny- or -l- before consonants.² Further, O'Grady, Hendrie (1990), Fitzgerald (1991) and Chen (1992) have all used *-ly- in their reconstructions, but no rigorous study of this issue has yet been done. This paper, in which I compare 11 languages which have a laminal lateral with 10 languages which do not, is the first step in such a study. It is not meant to present an exhaustive list of all cognate sets involving medial -ly-, nor does it provide firm conclusions concerning the presence or absence of the laminal lateral in PPN. Rather, it is an attempt to determine major sound correspondences for -ly-, as a basis for further study.

In order to show that PPN either had or did not have a laminal lateral, it is necessary to undertake a two-stage comparison between those languages which have a laminal lateral and those which do not. Firstly, we should search for likely cognates for forms with -ly-. If we find that they consistently have, for example, -j- in Dyirbal and -l- in Nyawagi, then we have firm evidence that PPN did indeed include *ly in its inventory, and that -j- and -l- are the Dyirbal and Nyawagi reflexes, respectively. However, we should not stop there. It is also necessary to search for cognates for all Dyirbal forms with medial -j- and all Nyawagi forms with medial -l- in the languages with a laminal lateral. There are two possible outcomes of this search. If Dyirbal -j-, for example, consistently corresponds to both -j- and -ly- in

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² See Dixon (1970) and Evans (1988) for analyses of other laminal consonants.

Ngarla, then we can safely assume that PPN had a laminal lateral. If, on the other hand, there are no cognate pairs in which both Dyirbal and Ngarla have *-j-*, then Ngarla *-ly-* could be a reflex of PPN **-j-*, indicating that PPN did not have a laminal lateral.

Although we work under the hypothesis that sound change is regular, we are unlikely to find exceptionless sound correspondences in the early stages of comparison, as we have only a vague idea of the sound changes which may have occurred. Before we can confidently posit regular correspondences, we must collect a number of putative cognate sets. These will necessarily show irregular correspondences, since, according to Anttila (1972:335–336), “in the beginning everything is very provisional, because borrowings, analogical creations, conditioning environments, and so on, can be detected gradually”. For this reason, Anttila proposes two types of sound correspondences. *True correspondences* are those which are regular in a specified environment, while *matchings* are tentative correspondences. Matchings are found in more than one putative cognate set, but the environment in which they occur may not be clear. Only after we have determined matchings for a given language can we begin to untangle the web of borrowings and obscured environments in order to arrive at the true correspondences.

2. EVIDENCE FOR MATCHINGS

The purpose of this paper is to find matchings for medial *-ly-* in the following 10 languages, all of which lack a laminal lateral: Bidyara-Gungabula, Dyirbal, Gidabal, Gugu-Yalanji, Gumbaynggir, Guugu Yimidhirr, Nyawaygi, Wembawemba, Yidiny and Yuwaalaraay. Forms with *-ly-* are taken from Baagandji, Diyari, Mudburra, Ngarla, Ngarluma, Nyungar, Proto Kanyara, Proto Kanyara-Mantharta, Proto Mantharta, Proto Ngayarda and Watjarri.³ Starting with forms with *-ly-*, I searched for cognates in the data of the languages without a laminal lateral, paying special attention to forms with medial *-j-*, *-l-*, *-y-* and *-ny-*. Initially, I recorded any cognate set that looked remotely plausible; I later sifted through these and discarded many sets, keeping only those which appeared to be the most highly plausible. The resulting 87 cognate sets form the basis for the observations given below. The full cognate sets are presented in §4. Some of these have been presented in other works; appropriate references are given with the full sets.

In the following sections, I deal in turn with each of the languages not having a laminal lateral; I present putative cognate pairs which include a form from a language with a laminal lateral and one from the language in question, and I discuss possible matchings.⁴ Although I have attempted to include only highly plausible ‘cognates’, some of these will eventually be rejected as further research reveals true correspondences, both for medial *-ly-* and for other phonemes. For ease of reference, the number of the full cognate set to which a given pair belongs is indicated after the pair.

2.1 BIDYARA-GUNGABULA

The following 13 putative cognate pairs indicate a matching between intervocalic *-ly-* and BGU *-j-*:

³ For abbreviations and sources used in this paper see Appendix.

⁴ For ease of comparison, orthographies have been converted to the ‘ptk’ system.

- (1) a. NGL *jilya* 'child' : BGU *jijipa* ~ *jijipara* 'son' (44)
- b. BAA *kalhila* 'sick' : BGU *kaja* 'rotten' (54)
- c. NGL *kalya* 'remaining in one place, continuing in a state or process, still' : BGU *kajuna-* 'to lie (of water)' (51)
- d. BAA *kalya-* 'to run' : BGU *waja-* 'to go, to come, to walk' (52)
- e. NMA *kulhakulhara* 'grub-like animal in sea...' : BGU *ngunthany* 'shrimp' (60)
- f. NMA *kulhang-a-lku* '1. to hit him with a stone, 2. to pound up' : BGU *kuja-* 'to hit by throwing' (61)
- g. PK **kulhuwi* 'red' : BGU *kuthikuthi* 'red,' *kuthirri* 'red or yellow' (67)
- h. NGL *kulyu* 'plenty' : BGU *kuthu* 'a lot' (62)
- i. NYU *kulyumij* 'in pretence, deceitfully' : BGU *kuntha-* 'to steal' (65)
- j. NGL *malya* '1. father, 2. father's younger brother' : BGU *manthi* 'uncle' (69)
- k. PKM **ngulha* 'nothing' : BGU *kuju* ~ *kujukuju* 'short' (85)
- l. PM **walhi* 'bad' : BGU *wanju* 'bad, no good' (102)
- m. PKM **yalha* 'ground, sand' : BGU *nhanthi* 'ground, dirt' (109)

The BGU forms in (1d) and (1e) show initial weakening, as do the PKM forms in (1k) and (1m). The details of any such changes must of course be worked out before we can be completely confident of these cognate pairs; however, determining whether these are regular sound correspondences is beyond the scope of this paper. The BGU forms in (1e) and (1i)–(1l) have a prenasalised laminal stop. The irregularities of prenasalisation are discussed in O'Grady (1990c).

The following two examples show BGU *-l-* and *-y-* corresponding to *-ly-*:

- (2) a. NGL *yalyuru* 'tongue' : BGU *thalany* 'tongue, first trickle of flowing water' (112)
- b. PM **puulya-ru* 'to blow' : BGU *puyu* 'breath' (100)

Although neither *-l-* nor *-y-* can be classified as BGU matchings because they each occur only once, the above forms appear to be parts of much larger cognate sets, as can be seen in section 4. It is therefore important to keep track of them.

Finally, I have two examples of preconsonantal *-ly-*:

- (3) a. NYU *kalykat* 'cheeks, side of face' : BGU *ngalki* 'cheek' (57)
- b. PK **puulypa-L* 'to blow' : BGU *pulpu-* 'to blow' (101)

These indicate that *-l-* is a BGU matching for preconsonantal *-ly-*.

2.2 DYIRBAL

As with BGU, the major DYI matching for *-ly-* is plain or prenasalised *-j-*, as the following nine cognate pairs show:

- (4) a. PNG **jalya* 'rubbish' : DYI *jaja* 'baby' (40)
- b. MDB *jalya* 'today, just now' : DYI *janyja* 'now' (41)

- c. NMA *julyungarli* “old people”, ancestors’ : DYI *jujapa* ‘the first man (creator of animate and physical phenomena); the time of the creator’ (49)
- d. NGL *kalyu* ‘a call’ : DYI *ngajan* ‘a language’ (59)
- e. WJI *milyu* ‘bark lizard, skink’ : DYI *pinyjirriny* ‘small lizard’ (81)
- f. PK **palharta* ‘blue-tongue lizard’ : DYI *pajirri* ‘water guana’ (91)
- g. PNG **pilya* ‘vagina, clitoris’ : DYI *pijama-l* ‘swive (have sexual intercourse with)’ (93)
- h. NGL *walyi ma-n* ‘Lose it!’ : DYI *ngaji-l* ‘lose, take absolutely no notice of, ignore’ (106)
- i. NGL *wilyuru* ‘not wanting something’ : DYI *miju-l* ‘take no notice of’ (108)

The relationship between negative meanings and ‘child’ exemplified in (4a) is discussed in detail in Evans (1990). The putative weakening of initial consonants in DYI (seen in (4d)) and in the languages with a laminal lateral (seen in (4e), (4h) and (4i)) must also be accounted for.

Again, as in BGU, the proposed cognate for PM **puulya-ru* contains a medial -y-, which cannot be classified as a matching:

- (5) PM **puulya-ru* ‘to blow’ : DYI *puya-l* ‘blow, puff’ (100)

The -y- may be the result of intervocalic weakening in DYI, or the form may be a borrowing.

The following two pairs involve preconsonantal -ly-:

- (6) a. PK **puulya-L* ‘to blow’ : DYI *pulwa-l* ‘expel breath in big gasps’ (101)
 b. BAA *waly-mala-* ‘to dangle, to hang free’ : DYI *walma-y* ‘arise, get up,’ *walmpi-l* ‘raise, lift, wake up’ (105)

The DYI form in (6a) shows weakening of the medial stop; more examples are necessary in order to determine if this is a regular occurrence. The status of the -m in (6b) is not clear. The putative GID cognate for BAA *waly-mala-* also contains a bilabial (as seen in (11b)), so perhaps -ma has been reanalysed as part of the suffix in BAA. The above forms indicate that DYI -l- is a matching for preconsonantal -ly-.

2.3 GIDABAL

Unlike BGU and DYI, GID appears to have more than one matching for intervocalic -ly-. Firstly, the following eight pairs show a matching between -ly- and GID -l-:

- (7) a. NMA *kalhu-ku* ‘to call out to’ : GID *ngalawa-* ‘to search, to hunt, to ask,’ *ngalawa-y* ‘question’ (59)
 b. PK **kulhiny* ‘maggot’ : GID *kulany* ‘tick’ (60)
 c. NGL *kulyu* ‘plenty’ : GID *kulumu* ‘everywhere, all around here’ (62)
 d. NGL *malya ja-n* ‘Soak it!’ : GID *palun* ‘river, creek’ (70)
 e. PM **pulhu* ‘short’ : GID *mul* ‘short’ (99)
 f. BAA *walya* ‘bottom, behind’ : GID *pale* ‘beneath, lower surface’ (103)

- g. NGL *walyi ma-n* ‘Lose it!’ : GID *walany* ‘disappearance’ (106)
- h. NGL *yalyuru* ‘tongue’ : GID *yalany* ‘tongue’ (112)

The semantic association between ‘wash’ and ‘water’ seen in (7d) is well attested; for example, PPN **ngApu* has the reflexes *ngapa* ‘water, water source, rain’ in Warlpiri and *ngapa-n* ‘bathe’ in YDN (Fitzgerald 1991:81). Note that in GID, the putative cognate for NGL *yalyuru* contains a consonant which is a matching for -*ly*-, whereas in BGU it did not.

Secondly, three pairs indicate a matching between -*ly*- and plain or prenasalised -*j*-:

- (8) a. PNG **jalya* ‘rubbish’ : GID *ja(j)arr* ‘playful, playing the fool’ (40)
- b. PKM **malha-L* ‘to crush’ : GID *panyji-* ‘to tap, to hammer’ (71)
- c. PK **palharta* ‘blue-tongue lizard’ : GID *waanjil* ‘1. species of lizard..., 2. swagman’ (91)

The relationship between ‘rubbish’ and ‘playful’ seen in (8a) could perhaps be mediated by way of ‘child’.

Finally, the four pairs below indicate that GID -*y*- is also a matching for intervocalic -*ly*-:

- (9) a. NYU *kulyumij* ‘in pretence, deceitfully’ : GID *wuyuurr* ‘thief’ (65)
- b. NYU *ngulya* ‘brother-in-law’ : GID *wuyang* ‘male ego’s brother-in-law’ (86)
- c. WJI *pulyaman* ‘doctor, sorcerer’ : GID *wuyan ~ wiyan* ‘clever (in supernatural matters)’, *wuyan-kali* ‘clever-man, doctor’ (98)
- d. NGL *walyirr* ‘rapidly, speedily’ : GID *wayaa-* ‘to fly’ (52)

All of the above sets are plausible, and they point to three matchings. It is not yet possible to state specific environments in which each matching occurs, as all three appear both before and after a. The major GID matching for intervocalic -*ly*- appears to be -*l*-, but the evidence for -*j*- and -*y*- cannot be ignored.

As for preconsonantal -*ly*-, the data can be divided into two groups. When -*ly*- occurs before a laminal stop, the putative GID cognate has just -*l*-, as seen in (10):

- (10) a. DIY *kalhthi* ‘spear’ : GID *kalan* ‘sharp’ (56)
- b. MDB *malyju* ‘male (of person, horse)’ : GID *palukaan* ‘one kind of male spirit-being; handsome’ (77)

When -*ly*- precedes a non-laminal stop, however, the evidence is inconclusive:

- (11) a. NGL *pilyka* ‘a crack’ : GID *pilkurruung* ‘thin straight stick used to pin together the edges of the slit made in order to gut an animal, prior to cooking’ (94)
- b. BAA *waly-mala-* ‘to dangle, to hang free’ : GID *walpa-* ‘to hang, to suspend’ (105)
- c. PK **walyparta* ‘lightning’ : GID *wayparr* ‘fire; camp; firewood; matches’ (107)

Of these three pairs, (11b) and (11c) seem to be the most plausible, and they both have a preceding and following the medial cluster. Yet in (11b) GID has an -*l*- preceding the stop, while in (11c) it has a -*y*-. As there are two examples with -*l*-, it can be considered a matching.

2.4 GUGU-YALANJI

A large number of cognate pairs point to a matching between a plain or prenasalised stop in GYA and *-ly-* in those languages which have a laminal lateral:

- (12) a. PNG **jalya* ‘rubbish’ : GYA *janjarr-janjarr* ‘nuisance, cheeky, troublemaker’ (40)
- b. NGL *jilya* ‘child’ : GYA *jija* ‘grandchild (one’s son’s children)’ (44)
- c. BAA *kahlila* ‘sick’ : GYA *nganjay* ‘1. no good, wilted, 2. bad smell’ (54)
- d. NGL *kalya* ‘remaining in one place, continuing in a state or process, still’ : GYA *wanji-l* ‘desire to accompany, but unable to’ (51)
- e. NGL *kalyu* ‘a call’ : GYA *nganja* ‘1. taste, 2. voice of one’s spirit left behind’ (59)
- f. PK **kulhuwi* ‘red’ : GYA *kunjin* ‘fire’ (67)
- g. NYU *kulyumij* ‘in pretence, deceitfully’ : GYA *nguju* ‘fun’ (65)
- h. MDB *kulyurr* ‘head cold,’ *kulyurrik* ‘cough’ : GYA *kunji* ‘sneeze (n.)’ (66)
- i. NMA *malhil* ‘tired, lazy, dragging’ : GYA *majarr* ‘lazy, no good for hunting or working’ (75)
- j. PK **malyarra*-Y ‘to be sick’ : GYA *pajaypajay* ‘painful’ (72)
- k. PNG **milya*-(L)- ‘lick, drink’ : GYA *pija-l* ‘to lick’ (80)
- l. WJI *milyurra* ‘venomous snake’ : GYA *pinju* ‘small black snake, light or reddish belly, poisonous’ (79)
- m. PKM **mulha* ‘nose’ : GYA *pujil* ‘1. nose, 2. point of land which juts out into the sea, 3. mouth of river’ (82)
- n. BAA *ngulya*- ‘to wash’ : GYA *kunjirr* ‘cleansed from a dead person’s spirit’ (87)
- o. PK **palharta* ‘blue-tongue lizard’ : GYA *pajapaja* ‘blue-tongue lizard’ (91)
- p. NMA *palya* ‘thin, skinny’ : GYA *pajipay* ‘bone’ (89)
- q. PKM **pilhi* ‘buttocks’ : GYA *piji* ‘tail,’ *pijikan* ‘stern of boat’ (93)
- r. PM **puwlya*-ru ‘to blow’ : GYA *punjurri-l* ‘to blow (trv.)’ (100)
- s. PM **walhangu* ‘youth’ : GYA *wanji-paka* ‘overactive children’ (104)

The association between ‘fire’ and ‘red’ found in (12f) is also attested in GYA *ngalku* ‘bushfire’ and BAA *ngalkina* ~ *ngalkirrk* ‘red’ (Fitzgerald 1991:64). That between ‘bone’ and ‘skinny’ (12p) is seen in YUW *puya* ‘bone’ and *puyapuya* ‘thin, bony’. Note that in (12r), GYA has a stop corresponding to *-ly-*, rather than the glide seen in the putative BGU and DYI cognates.

The following two pairs point to a further matching between intervocalic *-ly-* and GYA *-lj-*:

- (13) a. NGL *julya* ‘buried in the ground’ : GYA *juljal* ‘a grave’ (47)
- b. PKM **ngulha* ‘nothing’ : GYA *wulji-l* ‘to empty out, bail out’ (85)

Wadjuk⁵ has the form *NGUL-YAP* ‘empty’, which is almost certainly cognate with PKM **ngulha*, so the association between ‘nothing’ and ‘to empty’ is highly possible. The fact that GYA -*lj*- occurs after *u* in both of the above forms is probably coincidental; since GYA -*j*- and -*nj*- also appear following *u* in several of the forms in (12), the presence of *u* cannot be taken to be a conditioning environment.

A third GYA matching, -*l*-, is indicated by the following two pairs:

- (14) a. NGL *kulyu* ‘plenty’ : GYA *kulur* ‘three’ (62)
 b. BAA *walya* ‘bottom, behind’ : GYA *wali* ‘downwards’ (103)

Again, no specific environment can be determined for this matching.

Finally, the pair seen below shows GYA -*y*- possibly corresponding to -*ly*-:

- (15) NGL *kulya* ‘bait (n.)’ : GYA *kuyalin* ‘small conical shellfish, used for bait’ (60)

Although this is a plausible cognate pair, -*y*- cannot be classified as a GYA matching, as it occurs only once. It is, however, worthwhile to keep track of this pair, in case further evidence for a -*y*- matching is found.

The following three pairs illustrate a laminal lateral preceding a laminal stop:

- (16) a. DIY *kalhthi* ‘spear’ : GYA *kayi-l* ‘1. to hook with a hook spear, 2. to charm, to fascinate’ (56)
 b. MDB *kalyja* ‘shallow’ : GYA *ngajal* ‘low tide’ (55)
 c. BAA *yalhtha* ‘I don’t know’ : GYA *nyaji-l* ‘to perceive, to hear, to see’ (110)

Regarding the semantic association seen in (16c), note that Gawurna contains the form *YAILTYANDI* ‘to believe; think; suppose’, which is cognate with BAA *yalhtha*. Although GYA -*j*- can be taken as a matching for -*lyj*-, -*y*- cannot, as it occurs in only one example.

The four putative cognate pairs in (17) all indicate that GYA -*l*- is a matching for -*ly*- when it occurs before a non-laminal consonant:

- (17) a. PK **pilykuru* ‘fish’ : GYA *milkaji* ‘small mullet’ (95)
 b. PK **puulypa-L* ‘to blow’ : GYA *wulmparri-l* ‘to blow’ (101)
 c. PK **walyparta* ‘lightning’ : GYA *palpay* ‘lightning’ (107)
 d. WJI *yalypa* ‘many, all, much’ : GYA *yalpay* ‘big’ (111)

I have found no other matchings in this environment. However, it would be desirable to have more than four examples before classifying GYA -*l*- as a true correspondence.

2.5 GUMBAYNGGIR

GUM also has more than one matching for intervocalic -*ly*- . The following 11 pairs of cognates suggest that its major matching is -*l*-:

⁵ Wadjuk (and Gawurna) data are given in upper-case letters to remind the reader that they were recorded before the development of standard transcription systems.

- (18) a. PNG **jalya* ‘rubbish’ : GUM *jalikam* ‘short, small’ (40)
- b. DIY *thilhinga-* ‘boil (v.)’ : GUM *yiila-* ‘cook’ (45)
- c. NGL *julya* ‘buried in the ground’ : GUM *julaarr* ‘dirt(y), ashes, dust, earth’ (47)
- d. BAA *kuulyi* ~ *kuulyi-kuulyi* ~ *kuulyurru* ‘winter, cold season’ : GUM *kuluun* ‘rain’ (68)
- e. NGL *malya* ‘1. father, 2. father’s younger brother’ : GUM *paali* ‘father (rarely used)’ (69)
- f. NGL *malyarnu* ‘slowly, steadily’ : GUM *palama* ‘slowly’ (73)
- g. DIY *ngalha* ‘cheek’ : GUM *ngaala* ‘side’ (84)
- h. BAA *ngulya-* ‘to wash’ : GUM *wuluuki-* ‘bathe, bogey’ (87)
- i. PM **walhi* ‘bad’ : GUM *waali-* ‘die’ (102)
- j. BAA *walya* ‘bottom, behind’ : GUM *waala* ‘behind, back of’ (103)
- k. NGL *yalyuru* ‘tongue’ : GUM *jalaany* ‘mouth’ (112)

Recall that the DYI cognate for PNG **jalya* has the meaning ‘baby’. Since ‘baby’ and ‘small’ can be related, as in NYW *janyji* ‘small; baby’, the semantic association seen in (18a) is sound. As for that between ‘winter’ and ‘rain’ in (18d), the Gawurna form *KUDLILLA* ‘rainy season; winter’, which includes both meanings, is also a member of this putative cognate set. ‘Tongue’ and ‘mouth’, seen in (18k) can be related through metonymy.

The five pairs in (19) suggest a second GUM matching:

- (19) a. NMA *kalhu-ku* ‘to call out to’ : GUM *kayi-* ‘speak, talk’ (59)
- b. NGL *kalya* ‘remaining in one place, continuing in a state or process, still’ : GUM *ngayingki-* ‘sit, stay, live’ (51)
- c. NYU *ngulya* ‘brother-in-law’ : GUM *kuyu* ‘brother’ (86)
- d. PM **puulya-ru* ‘to blow’ : GUM *muya* ‘breath’ (100)
- e. NGL *wilyuru* ‘not wanting something’ : GUM *piyakay* ‘not’ (108)

Since both *-l-* and *-y-* are found before and after all three vowels, specific environments for these GUM matchings cannot yet be established.

A third GUM matching for intervocalic *-ly-* is seen in the following three sets:

- (20) a. NGL *jilya* ‘child’ : GUM *jijaa* ‘sister’ (44)
- b. NGL *kulyu* ‘plenty’ : GUM *kujaarr* ‘completely, till finished’ (62)
- c. NMA *palharra* ‘green, green grass...’ : GUM *wajaarr* ‘grass, ground, country’ (90)

This matching also occurs following each of the three vowels, although my data suggest that it precedes only *a*. This is very likely a coincidence of the data, and as both *-l-* and *-y-* can precede *a*, we again have no specific environment for the presence of *-j-*.

The following is the only pair involving preconsonantal *-ly-*:

- (21) BAA *kalypu* ‘by and by, later on’ : GUM *kaywara* ‘earlier today’ (58)

Although these are apparently plausible cognates, the weakening of *-p-* and the change in meaning must be accounted for. More evidence is needed before *-y-* can be classified as the GUM matching for preconsonantal *-ly-*.

2.6 GUUGU YIMIDHIRR

Like BGU, DYI and GYA, YIM appears to have a plain or prenasalised laminal stop as its major matching for intervocalic *-ly-*. Evidence for this is provided by the following 12 pairs:

- (22) a. MDB *jaly* ‘wet (as of ground)’ : YIM *janyji-l* ‘bathe’ (39)
- b. BAA *kalhila* ‘sick’ : YIM *katha* ‘rotten’, *katha-warra* ‘unconscious’ (54)
- c. NGL *kulyu* ‘plenty’ : YIM *kuthiira* ‘two’ (62)
- d. NYU *kulyumij* ‘in pretence, deceitfully’ : YIM *nguthu* ‘game, play’ (65)
- e. PKM **mulha* ‘nose’ : YIM *puthiil* ‘nose’ (82)
- f. PKM **ngulha* ‘nothing’ : YIM *wunhtha* ‘empty’ (85)
- g. NMA *palya* ‘thin, skinny’ : YIM *pathipay* ‘bone’ (89)
- h. MDB *pilyak* ‘hot, burnt’ : YIM *minhthil* ‘hot’ (92)
- i. PK **pilyarr* ‘baby’ : YIM *pitha* ‘small’ (96)
- j. PM **puulya-ru* ‘to blow’ : YIM *wunyu-rr* ‘blow on, blow away’ (100)
- k. PM **walhi* ‘bad’ : YIM *wathi* ‘wounded’ (102)
- l. PK **yalhuru* ‘flame’ : YIM *yaaji-l* ‘burn’ (112)

An association between ‘lie’ and ‘play’, seen in (22d), is well attested, as in GID *ngaarti*- ‘to play’ and Wadjuk NGERA ‘to lie’ (Fitzgerald 1991:103).

In the following pairs, we again find seemingly likely cognates with correspondences which are not matchings:

- (23) a. NMA *julyungarli* “old people”, ancestors’ : YIM *thuyu* ‘dead’ (49)
- b. PKM **malha-L* ‘to crush’ : YIM *payja-rr* ‘cover, crush’ (71)

It is conceivable that **thuyu* is the result of metathesis, with **juthu* > **yuthu* through initial weakening, and **yuthu* > *thuyu*. Alternatively, it may be a case of intervocalic weakening of *-j-* to *-y-*. In any case, neither *-y-* nor *-yj-* can be considered to be YIM matchings. Further research may reveal more examples.

I have found only one putative cognate pair involving preconsonantal *-ly-*:

- (24) DIY *kalhthi* ‘spear’ : YIM *kayii-l* ‘hook, snare’ (56)

Again, more data are needed before the YIM matchings for preconsonantal *-ly-* can be established.

2.7 NYAWAYGI

NYW has three matchings for intervocalic *-ly-*. The most common one in my data is plain or prenasalised *-j-*, as seen in the following pairs:

- (25) a. PNG **jalya* ‘rubbish’ : NYW *janyji* ‘small; baby’ (40)
- b. NGL *kalya* ‘remaining in one place, continuing in a state or process, still’ : NYW *ngajil* ‘(sitting) still’ (51)
- c. NGL *kalyu* ‘a call’ : NYW *waja* ‘language’, *waja-mpi-*Ø ‘talk’ (59)
- d. WJI *kulyu* ‘native sweet potato’ : NYW *kujam* ‘yam’ (63)
- e. NGL *malya ja-n* ‘Soak it!’ : NYW *wajiri-L* ‘spill, pour, chuck out (water)’ (70)
- f. BAA *ngulya-* ‘to wash’ : NYW *nguja* ~ *ngujanguja* ‘wet’ (87)
- g. PM **pulhu* ‘short’ : NYW *puju* ‘blunt’ (99)

I have no further attestation for the association between ‘short’ and ‘blunt’ suggested by (25g). Although a relationship between these concepts is plausible, more evidence for it would be desirable.

Five cognate pairs show a matching between *-ly-* and NYW *-l-*:

- (26). a. WJI *julyara* ‘afternoon; in the afternoon’ : NYW *jula* ‘hot sun (e.g. at midday)’ (48)
- b. NMA *kulhang-a-lku* ‘1. to hit him with a stone, 2. to pound up’ : NYW *ngulan* ‘stone tomahawk’ (61)
- c. PNG **mulha* ‘nose, face’ : NYW *mulin* ‘lip’ (82)
- d. PM **walhangu* ‘youth’ : NYW *walumurrku* ‘baby’ (104)
- e. NGL *yalyuru* ‘tongue’ : NYW *jalany* ‘tongue’ (112)

Both *-j-* and *-l-* are found following *a* and *u*, and preceding *i*, *a* and *u*, so we cannot yet posit the conditioning environments for each matching.

The final NYW matching is *-y-*, as shown in (27):

- (27) a. PNG **milhura* ‘snake’ : NYW *piyajala* ‘dark-coloured water snake’ (79)
- b. PM **puulya-ru* ‘to blow’ : NYW *puya-L* ‘blow’ (100)
- c. NGL *walyirr* ‘rapidly, speedily’ : NYW *wayin-pi-*Ø ‘move quickly’ (52)
- d. NGL *wilyuru* ‘not wanting something’ : NYW *piyay* ~ *piya* ‘not’, *piyayngkul* ‘no, no more, nothing’ (108)

Again, this matching occurs in environments similar to those for *-j-* and *-l-*.

My data contain a single example of preconsonantal *-ly-*:

- (28) DIY *kalhthi* ‘spear (n.)’ : NYW *kanyjapa-L* ‘spear (using woomera)’ (56)

It is not clear whether prenasalised *-j-* corresponds to the entire laminal cluster, or whether *-ny-* corresponds to the laminal lateral. More examples of this type are obviously needed.

2.8 WEMBAYWEMBA

The evidence regarding WEM matchings for intervocalic *-ly-* is inconclusive, as my data show two matchings, one having eight examples and the other having seven. Firstly, the following pairs indicate a matching between *-ly-* and WEM *-l-*:

- (29) a. MDB *jalya* ‘today, just now’ : WEM *jelik-jelik* ‘yesterday’ (41)
- b. WJI *jalyanyara* ‘robin redbreast (probably *Petroica goodenovii*)’ : WEM *jali-kurrukuk* ‘red-capped robin (*Petroica goodenovii*)’ (42)
- c. DIY *thilhthirri* ‘centipede’ : WEM *jislung* ‘centipede’ (46)
- d. NGL *kulyu* ‘plenty’ : WEM *kuli* ‘crowd, mob’ (62)
- e. NYU *kulyumij* ‘in pretence, deceitfully’ : WEM *kulingulang* ‘a sly person’ (65)
- f. DIY *malyuda* ‘cormorant’ : WEM *walawalak* ‘little black cormorant, *Phalacrocorax ater*’ (78)
- g. BAA *ngulya-* ‘to wash’ : WEM *kulaia-* ‘to be wet’ (87)
- h. NGL *yalyuru* ‘tongue’ : WEM *jalingin* ‘your tongue’, *jalinyuk* “‘its tongue”, i.e. a flame’ (112)

Secondly, there appears to be a matching between *-ly-* and a laminal stop, as seen below:

- (30) a. PNG **jalya* ‘rubbish’ : WEM *yathangka* ‘to be bad’ (40)
- b. BAA *kalhila* ‘sick’ : WEM *kajina* ‘to be unable’ (54)
- c. PKM **kalya* ‘armpit’ : WEM *kathap* ‘armpit’ (50)
- d. MDB *pilyak* ‘hot, burnt’ : WEM *pijeka* ‘to warm oneself’, *yotayota-pija* ‘fire’ (92)
- e. PK **pilyarr* ‘baby’ : WEM *witheyuk* ‘small, little’ (96)
- f. PM **walhangu* ‘youth’ : WEM *wathip* ‘son’ (104)
- g. PM **walhi* ‘bad’ : WEM *wathənjən* ‘dead’ (102)

Both matchings occur before and after *i* and *a*. Only *-l-* occurs adjacent to *-u-*, but more data is necessary in order to determine if this is significant.

The following two pairs illustrate possible WEM matchings for preconsonantal *-ly-*:

- (31) a. BAA *yalhtha* ‘I don’t know’ : WEM *yalang-yalang* ‘idiot, stupid person’ (110)
- b. MDB *jalybuk* ‘crush’ : WEM *jalpana-* ‘to drop something’ (43)

When the laminal lateral occurs before a laminal stop, WEM has just *-l-* corresponding to the cluster. However, when the second member of the cluster is a non-laminal stop, WEM *-l-* corresponds to *-ly-*. Of course, the above two examples are not sufficient to establish matchings.

2.9 YIDINY

The major YDN matching for intervocalic *-ly-* appears to be plain or prenasalised *-j-*:

- (32) a. PNG **jalya* ‘rubbish’ : YDN *jaja* ‘child’ (40)
- b. PKM **kalya* ‘armpit’ : YDN *kanyjarr* ‘armpit’ (50)
- c. WJI *kalyartu* ‘substitute reference to a deceased person’ : YDN *kaja* ‘male ghost, white man’ (53)

- d. NMA *kulhanga-lku* '1. to hit him with a stone, 2. to pound up' : YDN *kunyji-N* 'break' (61)
- e. WJI *kulyu* 'native sweet potato' : YDN *kunyjankarra* 'beach yam' (63)
- f. BAA *kulyu-kulya-* 'to rake up, to pile up (leaves and branches)' : YDN *kujarra* 'broom' (64)
- g. NYU *kulyumij* 'in pretence, deceitfully' : YDN *wunyjay* 'a stolen thing' (65)
- h. PKM **malha-L* 'to crush' : YDN *paji-L* 'bash something on something else' (71)
- i. PKM **ngulha* 'nothing' : YDN *nguju* 'not, never, no' (85)
- j. BAA *ngulya-* 'to wash' : YDN *kujan* 'wet' (87)
- k. NMA *palharra* 'green, green grass' : YDN *paja* 'large grassy plain' (90)
- l. PM **puulya-ru* 'to blow' : YDN *puju+piya-L* 'blow at someone' (100)

This matching occurs before all three vowels and after *u* and *a*.

The following three pairs attest to a matching between YDN *-l-* and *-ly-*:

- (33) a. NMA *kulhakulhara* 'grub-like animal in sea' : YDN *wulur* 'large shrimp...' (60)
- b. MDB *pilyak* 'hot, burnt' : YDN *mimirrl* 'pins and needles, fever' (92)
- c. NGL *yilya* 'a green stick' : YDN *jilan* 'small sticks (which may still be attached to a tree), broken in such a way as to show the direction in which someone has gone' (113)

Note that *-l-* occurs after *i*, while *-j-* does not. If (33a), which shows *-l-* following *u*, were eliminated as a putative cognate pair, then we could hypothesise that in YDN *-l-* corresponds to intervocalic *-ly-* after *i*, and plain or prenasalised *-j-* corresponds to intervocalic *-ly-* elsewhere. Both matchings could thus be classified as true correspondences. However, we should first obtain additional (and more highly plausible) examples of the *-l-* matching before taking such a step.

Before consonants, both *-l-* and *-y-* correspond to *-ly-*:

- (34) a. PK **pilykuru* 'fish' : YDN *pilkir* 'small catfish' (95)
- b. PK **puulypa-L* 'to blow' : YDN *puypu-R* 'blow at, fan' (101)

Neither can be classified as matchings, however, as each occurs only once. It would be interesting to see if further examples show *-l-* after *i* and *-y-* elsewhere.

2.10 YUWAALARAY

My data contain the following nine examples of YUW *-l-* corresponding to intervocalic *-ly-*:

- (35) a. DIY *thilhinga-* 'boil (v.)' : YUW *yilama-l* 'cook' (45)
- b. NGL *kulyu* 'plenty' : YUW *kulipaa* 'three' (62)
- c. NYU *malyern* 'star, stars' : YUW *maliyankaalay* 'morning stars' (74)
- d. NGL *malyarnu* 'slowly, steadily' : YUW *paluwaa* 'slow' (73)

- e. PK **palharta* ‘blue-tongue lizard’ : YUW *waluupaal* ‘sleepy lizard’ (91)
- f. PM **puulya-ru* ‘to blow’ : YUW *pulirrul* ‘breath’, *pulirru-I* ‘breathe’ (100)
- g. BAA *walya* ‘not, don’t’ : YUW *waal* ‘no, don’t’ (102)
- h. NLA *yalyuru* ‘tongue’ : YUW *thalay* ‘tongue’ (112)
- i. MDB *yilyil* ‘hang’ : YUW *yilaa-I* ‘tie up’ (114)

YUW -*I*- occurs both before and after all three vowels.

Six examples in which -*Iy*- and YUW -*y*- correspond are also found in my data:

- (36) a. NGL *kalyu* ‘a call’ : YUW *kaay* ‘word, message’, YUW *kaya-I* ‘answer’, YUW *kaya* ‘language’ (59)
- b. PKM **malha-L* ‘to crush’ : YUW *maya-?* ‘tread on’ (71)
- c. PKM **mulha* ‘nose’ : YUW *muyu* ‘nose’ (82)
- d. MDB *mulyukuna* ‘black-headed python’ : YUW *wuyupuluuy* ‘black snake’ (83)
- e. NYU *ngulya* ‘brother-in-law’ : YUW *kuyintaay* ‘brother-in-law’ (86)
- f. NGL *pulyamarra* ‘calf of leg’ : YUW *puyu* ‘leg’ (97)

Although -*y*- occurs before all three vowels, I have no examples of it following *i*.

A third YUW matching for -*Iy*- is a laminal stop:

- (37) a. BAA *kalhila* ‘sick’ : YUW *katharrkatharr* ‘ragged’ (54)
- b. PK **palha* ‘brother’ : YUW *pathuulngaa* ‘mother-in-law’s brother’ (88)
- c. NMA *palya* ‘thin, skinny’ : YUW *pajin* ‘small’ (89)
- d. NGL *yilyurra-n* ‘Lick it!’ : YUW *thijja-I* ‘lick’ (115)

This matching can also precede all three vowels, but it does not occur after *u*. Although there are some differences in the distributions of the three matchings, it is not possible to specify an environment for each.

The following is an example of a laminal lateral preceding a laminal stop:

- (38) DIY *malhthi* ‘cool’ : YUW *paliyaa* ‘cold’ (76)

In this case, YUW -*I*- corresponds to the entire cluster. However, more data are needed in order to determine YUW matchings for preconsonantal -*Iy*-.

3. SUMMARY AND CONCLUSIONS

Although it is not yet possible to establish whether or not PPN had a laminal lateral, we can make several observations based on the data presented here. The following table summarises the matchings in three environments for each language. If a language has more than one matching, the most common one is given first. A hyphen indicates that no matching was found in that environment.

TABLE: MATCHINGS FOR *-ly-*

	V_V	<i>lyj</i>	_C
BGU	<i>j</i>	-	-
DYI	<i>j</i>	-	<i>l</i>
GID	<i>l, j, y</i>	<i>l</i>	<i>l</i>
GYA	<i>j, lj, l</i>	<i>j</i>	<i>l</i>
GUM	<i>l, j, y</i>	-	-
YIM	<i>j</i>	-	-
NYW	<i>j, l, y</i>	-	-
WEM	<i>j, l</i>	-	-
YDN	<i>j, l</i>	-	-
YUW	<i>l, j, y</i>	-	-

Of the ten languages in this study, only three (BGU, DYI and YIM) have a single matching for intervocalic *-ly-*, which in all three cases is *-j-*. We can therefore hypothesise that *-j-* is a true correspondence for these languages, pending further study. Every language has *-j-* as at least a minor matching, and *-y-* is never a major matching. It may be the case that *-j-* is a common true correspondence for intervocalic *-ly-*. If many languages in an area have *-j-* as their true correspondence, then it is likely that it will, through borrowing, appear as a minor matching in neighbouring languages with a different true correspondence. If *-y-* is a less common true correspondence, then it is less likely that a language with, say, *-l-* as its true correspondence will borrow enough forms with *-y-* for it to be classified as a minor matching. This could account for the fact that only four of the languages in this study have *-y-* as a minor matching.

My data suggest that *-ly-* preceding a laminal stop has a different matching than *-ly-* preceding a non-laminal. As the second column in the table shows, when the laminal lateral is part of a homorganic cluster, the entire cluster is matched by *-l-* in GID and by *-j-* in GYA. This pattern is also borne out by those languages having only one example in this environment, with the possible exception of NYW (see (24), (28), (31a) and (38)). When the laminal precedes a non-laminal stop, the corresponding cluster retains the non-laminal (although it may be weakened or prenasalised).

Returning to Dixon's guess that, if PPN did have a laminal lateral, it has descended as *-j-* or *-l-* between vowels and as *-ny-* or *-l-* before consonants, there is little indication of a correspondence between *-ny-* and *-ly-* in my data. The only possible case is that seen in (28), in which NYW *-ny-* may correspond to DIY *-lh-* before a laminal stop; this may instead be an example of prenasalisation. However, the absence of *-ny-* in my data is no reason to rule out such a correspondence, as only ten languages are studied here.

Much work needs to be done before we can definitively answer the question of an ancestral laminal lateral. Since both synchronic and diachronic vowel changes can completely obscure the environments in which medial consonants have changed, research into such processes would be extremely helpful. In addition, comparison among the languages which have laminal laterals should be undertaken in order to determine if the instances of laminal laterals seen here can be considered ancestral at least at the group level. Further, forms with *-j-*, *-l-* and *-y-* in languages with and without a laminal lateral should be compared in an attempt to establish or rule out that the presence of a laminal lateral is an innovation. Finally,

instances of borrowing and analogical change need to be identified and eliminated from consideration. Although many researchers consider it likely that PPN did indeed have a laminal lateral, the above work is necessary before we can be certain.

4. ATTESTATION

In this section, I present the 87 putative cognate sets which were used in this study. These should be considered to be tentative, as many of them suggest sound changes which have yet to be verified, such as initial weakening. Future work on such changes may demonstrate that some of the putative cognates presented here are invalid. In addition, forms which are found to be borrowings must be eliminated.

Any form containing a matching is included as a full member of its set. Forms that look promising, but exhibit a correspondence for which there is only one example, are included as ‘residue’. Given that this collection of sets is not exhaustive, it is entirely possible that further examples of such correspondences will be found in the future. It is therefore to our advantage to keep track of these forms.

- (39) MDB *jaly* ‘wet (as of ground)’; YIM *janyji-l* ‘bathe’
- (40) PNG **jalya* ‘rubbish’; DYI *jaja* ‘baby’; GID *jajarr* ‘playful, playing the fool’; GYA *janjarr-janjarr* ‘nuisance, cheeky, troublemaker’; GUM *jalikam* ‘short, small’; NYW *janyji* ‘small; baby’; WEM *yathangka* ‘to be bad’; YDN *jaja* ‘child’ (see also O’Grady (1990a:94–95))
- (41) MDB *jalya* ‘today, just now’; DYI *janyja* ‘now’; WEM *jelik-jelik* ‘yesterday’
- (42) WJI *jalyanyaara* ‘robin redbreast (probably *Petroica goodenovii*)’; WEM *jali-kurrkuk* ‘red-capped robin (*Petroica goodenovii*)’
- (43) MDB *jalypuk* ‘crush’; Residue: WEM *jalpana-* ‘to drop something’
- (44) NGL *jilya* ‘child’; BGU *jijipa* ~ *jijipara* ‘son’; GYA *jija* ‘grandchild (one’s son’s children)’; GUM *jijaa* ‘sister’
- (45) DIY *thilhinga-* ‘boil (v.)’; GUM *yiila-* ‘cook’; YUW *yilama-l* ‘cook’
- (46) DIY *thilhthirri* ‘centipede’; WEM *jlung* ‘centipede’
- (47) NGL *julya* ‘buried in the ground’; WJI *yulyijana-* ‘to burrow (as frogs or goannas)’; GYA *Juljal* ‘a grave’; GUM *julaarr* ‘dirt(y), ashes, dust, earth’
- (48) WJI *julyara* ‘afternoon; in the afternoon’; NYW *jula* ‘hot sun (e.g. at midday)’
- (49) MDB *Julyukarringarnayala* ‘(?) Dreaming character’; NMA *julyungarli* “‘old people”, ancestors’; PK **thulhanu* ‘old’; PM **julyu* ‘old man, grey hair’; PNG **julyu* ‘old man’; DIY *jujapa* ‘the first man (creator of animate and physical phenomena); the time of the creator’; Residue: YIM *thuyu* ‘dead’
- (50) PKM **kalya* ‘armpit’; NYU *ngaly* ‘axilla, underarm’; WJI *kalya* ‘armpit, axilla’; WEM *kathap* ‘armpit’; YDN *kanyjarr* ‘armpit’ (see also O’Grady (1990a:101, 1990d:6))
- (51) NGL *kalya* ‘remaining in one place, continuing in a state or process, still’; BGU *kajuna-* ‘to lie (of water)’; GYA *wanji-l* ‘desire to accompany, but unable to’; GUM *ngayingki-* ‘sit, stay, live’; NYW *ngajil* ‘(sitting) still’

- (52) BAA *kalya-* ‘to run’; NGL *walyirr* ‘rapidly, speedily’; BGU *waja-* ‘to go, to come, to walk’; GID *wayaa-* ‘to fly’; NYW *wayin-pi-*Ø ‘move quickly’
- (53) WJI *kalyartu* ‘substitute reference to a deceased person’; YDN *kaja* ‘male ghost, white man’
- (54) BAA *kalhila* ‘sick’; BGU *kaja* ‘rotten’; GYA *nganjay* ‘1. no good, wilted, 2. bad smell’; YIM *katha* ‘rotten’, *katha-warra* ‘unconscious’; WEM *kajina* ‘to be unable’; YUW *katharrkatharr* ‘ragged’
- (55) MDB *kalyja* ‘shallow’; GYA *ngajal* ‘shallow’
- (56) DIY *kalhthi* ‘spear’; GID *kalan* ‘sharp’; NYW *kanyjapa-L* ‘spear (using woomera)’; Residue: GYA *kayi-l* ‘1. to hook with a hook spear, 2. to charm, to fascinate’; YIM *kayii-l* ‘hook, snare’
- (57) NYU *kalykat* ‘cheeks, side of face’; BGU *ngalki* ‘cheek’
- (58) BAA *kalypu* ‘by and by, later on’; Residue: GUM *kaywara* ‘earlier today’
- (59) NGL *kalyu* ‘a call’; NMA *kalhu-ku* ‘to call out to’; DIY *ngajan* ‘a language’; GID *ngalawa-* ‘to search, to hunt, to ask’, *ngalawa-y* ‘question’; GYA *nganja* ‘1. taste, 2. voice of one’s spirit left behind’; GUM *kayi-* ‘speak, talk’; NYW *waja* ‘language’, *waja-mpi-*Ø ‘talk’; YUW *kaay* ‘word, message’, *kaya-l* ‘answer’, *kaya* ‘language’
- (60) NGL *kulya* ‘bait (n.)’; NMA *kulhakulhara* ‘grub-like animal in sea...’; PK **kulhiny* ‘maggot’; BGU *ngunthany* ‘shrimp’; GID *kulany* ‘tick’; YDN *wulur* ‘large shrimp...’; Residue: GYA *kuyalin* ‘small conical shellfish, used for bait’
- (61) NMA *kulhang-a-lku* ‘1. to hit him with a stone, 2. to pound up’; BGU *kuja-* ‘to hit by throwing’; NYW *ngulan* ‘stone tomahawk’; YDN *kunyji-N* ‘break’
- (62) NGL *kulyu* ‘plenty’; BGU *kuthu* ‘a lot’; GID *kulumu* ‘everywhere, all around here’; GYA *kulur* ‘three’; GUM *kujaarr* ‘completely, till finished’; YIM *kuthiira* ‘two’; WEM *kuli* ‘crowd, mob’; YUW *kulipaa* ‘three’
- (63) NMA *kulyu* ‘large potato species on table lands’; WJI *kulyu* ‘native sweet potato’; NYW *kujam* ‘yam’; YDN *kunyjankarra* ‘beach yam’
- (64) BAA *kulyu-kulya-* ‘to rake up, to pile up (leaves and branches)’; YDN *kujarra* ‘broom’
- (65) NYU *kulyumij* ‘in pretence, deceitfully’; BGU *kuntha-* ‘to steal’; GID *wuyuurr* ‘thief’; GYA *nguju* ‘fun’; YIM *nguthu* ‘game, play’; WEM *kulingulang* ‘a sly person’; YDN *wunjay* ‘a stolen thing’
- (66) MDB *kulyurr* ‘head cold’, *kulyurrk* ‘cough’; GYA *kunji* ‘sneeze (n.)’
- (67) PK **kulhuwi* ‘red’; BGU *kuthikuthi* ‘red’, *kuthirri* ‘red or yellow’; GYA *kunjin* ‘fire’
- (68) BAA *kuulyi ~ kuulyi-kuulyi ~ kuulyurru* ‘winter, cold season’; GUM *kuluun* ‘rain’
- (69) NGL *malya* ‘1. father, 2. father’s younger brother’; BGU *manthi* ‘uncle’; GUM *paali* ‘father (rarely used)’
- (70) NGL *malya ja-n* ‘Soak it!’; GID *palun* ‘river, creek’; NYW *wajiri-L* ‘spill, pour, chuck out (water)’

- (71) PKM **malha-L* ‘to crush’; GID *panyji* ‘to tap, to hammer’; YDN *paji-L* ‘bash something on something else’; YUW *mayu-*? ‘tread on’ Residue: YIM *payja-rr* ‘cover, crush’
- (72) DIY *malhanyji* ‘bad’; PK **malyarra-Y* ‘to be sick’; PNG *malya.rra* ‘sick’; GYA *pajaypajay* ‘painful’
- (73) NGL *malyarnu* ‘slowly, steadily’; GUM *palama* ‘slowly’; YUW *paluwaa* ‘slow’
- (74) NYU *malyern* ‘star, stars’; YUW *maliyankaalay* ‘morning stars’
- (75) NMA *malhil* ‘tired, lazy, dragging’; PNG **malhil, jarri* ‘to become tired, weak’; GYA *majarr* ‘lazy, no good for hunting or working’
- (76) DIY *malhthi* ‘cool’; Residue: YUW *paliyaa* ‘cold’
- (77) MDB *malyju* ‘male (of person, horse)’; GID *palukaan* ‘one kind of male spirit-being; handsome’
- (78) DIY *malyuda* ‘cormorant’; WEM *walawalak* ‘little black cormorant, *Phalacrocorax atter*’
- (79) NMA *milya* ‘small white non-poisonous snake species...’; PNG **milhu.ra* ‘snake’; WJI *milyurra* ‘venomous snake’; GYA *pinju* ‘small black snake, light or reddish belly, poisonous’; NYW *piyajala* ‘dark-coloured water snake’
- (80) NMA *milya-lku* ‘to lick it’; PNG **milya-(L)-* ‘lick, drink’; GYA *pija-l* ‘to lick’
- (81) WJI *milyu* ‘bark lizard, skink’; DYI *pinyjirriny* ‘small lizard’
- (82) DIY *mulha* ‘nose, face’; NGL *mulya* ‘nose, an end, corner’; NMA *mulyayirta* ‘nose bone’; NYU *mulh - moly* ‘face’; PKM **mulha* ‘nose’; PNG **mulha* ‘nose, face’; WJI *mulya* ‘nose (metonym for face)’; GYA *pujil* ‘1. nose, 2. point of land which juts out into the sea, 3. mouth of river’; YIM *puthiil* ‘nose’; NYW *mulin* ‘lip’; YUW *muyu* ‘nose’ (see also O’Grady (1990a:84, 1990c:470, 1990d:4))
- (83) MDB *mulyukuna* ‘black-headed python’; YUW *wuyupuluuy* ‘black snake’
- (84) DIY *ngalha* ‘cheek’; GUM *ngaala* ‘side’
- (85) PKM **ngulha* ‘nothing’; BGU *kuju ~ kujukuju* ‘short’; GYA *wulji-l* ‘to empty out, bail out’; YDN *nguju* ‘not, never, no’ (see also O’Grady (1987:519))
- (86) NYU *ngulya* ‘brother-in-law’; GID *wuyang* ‘male ego’s brother-in-law’; GUM *kuyu* ‘brother’; YUW *kuyintaay* ‘brother-in-law’
- (87) BAA *ngulya-* ‘to wash’; GYA *kunjirr* ‘cleansed from a dead person’s spirit’; GUM *wuluuki-* ‘bathe, bogey’; NYW *nguja ~ ngujanguja* ‘wet’; WEM *kulaia-* ‘to be wet’; YDN *kujan* ‘wet’
- (88) PK **palha* ‘brother’; YUW *pathuulngaa* ‘mother-in-law’s brother’
- (89) NMA *palya* ‘thin, skinny’; GYA *pajipay* ‘bone’; YIM *pathipay* ‘bone’; YUW *pajin* ‘small’ (see also O’Grady (1990b:231))
- (90) NMA *palharra* ‘green, green grass...’; GUM *wajaarr* ‘grass, ground, country’; YDN *paja* ‘large grassy plain’
- (91) PK **palharta* ‘blue-tongue lizard’; DYI *pajirri* ‘water guana’; GID *waanjil* ‘1. species of lizard..., 2. swagman’; GYA *pajapaja* ‘blue-tongue lizard’; YUW *waluupaal* ‘sleepy lizard’

- (92) MDB *pilyak* ‘hot, burnt’; YIM *minhthil* ‘hot’; WEM *pijəka* ‘to warm oneself’, *yotayota-pija* ‘fire’; YDN *mimirr* ‘pins and needles, fever’
- (93) PKM **pilhi* ‘buttocks’; PNG **pilya* ‘vagina, clitoris’; DYI *pijama-l* ‘swive (have sexual intercourse with)’; GYA *piji* ‘tail’, *pijikan* ‘stern of boat’ (see also O’Grady (1990c:470), in which he combines this set with that in (96))
- (94) NGL *pilyka* ‘a crack’; GID *pilkurruung* ‘thin straight stick used to pin together the edges of the slit made in order to gut an animal, prior to cooking’
- (95) PK **pilykuru* ‘fish’; GYA *milkaji* ‘small mullet’; Residue: YDN *pilkir* ‘small catfish’
- (96) NGL *pilyurr* ‘a “promised” spouse’; NYU *pily* ‘umbilicus, navel’; PK **pilyarr* ‘baby’; YIM *pitha* ‘small’; WEM *witheyuk* ‘small, little’ (see also O’Grady (1990c:470), in which he combines this set with that in (93))
- (97) NGL *pulyamarra* ‘calf of leg’; PKM **pulharn* ‘calf of leg’; YUW *puyu* ‘leg’
- (98) NYU *pulyatak* ‘diagnostician, sorcerer’; WJI *pulyaman* ‘doctor, sorcerer’; GID *wuyan* ~ *wiyan* ‘clever (in supernatural matters)’, *wuyan-kali* ‘clever-man, doctor’
- (99) PM **pulhu* ‘short’; GID *mul* ‘short’; NYW *puju* ‘blunt’
- (100) PM **pulya-ru* ‘to blow’; GYA *punjurri-l* ‘to blow (trv)’; GUM *muya* ‘breath’; YIM *wunyju-rr* ‘blow on, blow away’; NYW *puya-L* ‘blow’; YDN *puju+piya-L* ‘blow at someone’; YUW *pulirrul* ‘breath’, *pulirru-l* ‘breathe’; Residue: BGU *puyu* ‘breath’; DYI *puya-l* ‘blow, puff’
- (101) PK **pulypa-L* ‘to blow’; BGU *pulpu-* ‘to blow’; DYI *pulwa-l* ‘expel breath in big gasps’; GYA *wulmparti-l* ‘to blow’; Residue: YDN *puypu-R* ‘blow at, fan’
- (102) BAA *walya* ‘not, don’t’; NGL *walyi* ‘almost, nearly’; NMA *walyil-kulhangu-Iku* ‘to miss – with object thrown’; PM **walhi* ‘bad’; BGU *wanju* ‘bad, no good’; GUM *waali-* ‘die’; YIM *wathi* ‘wounded’; WEM *wathənjen* ‘dead’; YUW *waal* ‘no, don’t’
- (103) BAA *walya* ‘bottom, behind’; GID *pale* ‘beneath, lower surface’; GYA *wali* ‘downwards’; GUM *waala* ‘behind, back of’
- (104) PM **walhangu* ‘youth’; GYA *wanji-paka* ‘overactive children’; NYW *walumurrku* ‘baby’; WEM *wathip* ‘son’
- (105) BAA *waly-mala-* ‘to dangle, to hang free’; DYI *walma-y* ‘arise, get up’, *walmpi-l* ‘raise, lift, wake up’ GID *walpa-* ‘to hang, to suspend’
- (106) NGL *walyi ma-n* ‘Lose it!’; DYI *ngaji-l* ‘lose, take absolutely no notice of, ignore’; GID *walany* ‘disappearance’
- (107) PK **walyparta* ‘lightning’; GYA *palpay* ‘lightning’; Residue: GID *wayparr* ‘fire; camp; firewood; matches’
- (108) NGL *wilyuru* ‘not wanting something’; DYI *miju-l* ‘take no notice of’; GUM *piyakay* ‘not’; NYW *piyay* ~ *piya* ‘not’, *piyayngkul* ‘no, no more, nothing’
- (109) PKM **yalha* ‘ground, sand’; BGU *nhanthi* ‘ground, dirt’
- (110) BAA *yalhtha* ‘I don’t know’; GYA *nyaji-l* ‘to perceive, to hear, to see’; Residue: WEM *yalang-yalang* ‘idiot, stupid person’

- (111) WJI *yalypa* ‘many, all, much’; GYA *yalpay* ‘big’
- (112) NGL *yalyuru* ‘tongue’; NMA *yalhuru* ‘tongue’; PK **yalhuru* ‘flame’; PNG *yalhu.ru* ‘tongue’; GID *yalany* ‘tongue’; GUM *jalaany* ‘mouth’; YIM *yaaji-l* ‘burn’; NYW *jalany* ‘tongue’; WEM *jalingin* ‘your tongue’, *jalinyuk* “‘its tongue”, i.e. a flame’; YUW *thalay* ‘tongue’; Residue: BGU *thalany* ‘tongue, first trickle of flowing water’ (see also O’Grady (1987:523, 526, 1990a:83, 97))
- (113) NGL *yilya* ‘a green stick’; YDN *jilan* ‘small sticks (which may still be attached to a tree), broken in such a way as to show the direction in which someone has gone’
- (114) MDB *yilyil* ‘hang’; YUW *yilaa-l* ‘tie up’
- (115) NGL *yilyurra-n* ‘Lick it!’; YUW *thiija-l* ‘lick’

APPENDIX: ABBREVIATIONS AND SOURCES

BAA	Baagandji	Hercus (1982)
BGU	Bidyara-Gungabula	Breen (1973)
DIY	Diyari	Austin (1981a, and fieldnotes)
DYI	Dyirbal	Dixon (1972)
	Gawurna	Teichelmann and Schürmann (1840)
GID	Gidabal	Geytenbeek and Geytenbeek (1971)
GUM	Gumbaynggir	Eades (1979)
GYA	Gugu-Yalanji	Hershberger and Hershberger (1982)
MDB	Mudburra	David Nash (fieldnotes)
NGL	Ngarla	Brown and Geytenbeek (1991)
NMA	Ngarluma	Hale (1982)
NYU	Nyungar	Douglas (1976)
NYW	Nyawaygi	Dixon (1983)
PK	Proto Kanyara	Austin (1981b, 1988)
PKM	Proto Kanyara-Mantharta	Austin (1981b, 1988)
PM	Proto Mantharta	Austin (1981b, 1988)
PNG	Proto Ngayarda	O’Grady (1966)
	Wadjuk	Moore (1884)
WEM	Wembawemba	Hercus (1969)
WJI	Watjarri	Douglas (1981)
YDN	Yidiny	Dixon (1991)
YIM	Guugu Yimidhirr	Haviland (1979)
YUW	Yuwaalarayaay	Williams (1980)

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LEXICOGRAPHIC RESEARCH ON AUSTRALIAN ABORIGINAL LANGUAGES 1968–1993

CLIFF GODDARD AND NICK THIEBERGER

1. INTRODUCTION

O’Grady (1971:779) began his landmark review of lexicography on Australian Aboriginal languages with the rueful observation that in terms of quantity “lexicographic output...has shown a falling off since the turn of the century”.¹ He further observed that if the term ‘dictionary’ were to be confined to compendia of 5,000-plus richly detailed lexical entries, then “the state of lexicographic research on Australian (and Tasmanian) languages...can be stated very simply: no such work yet exists”. Even after lowering his sights to extend the term to reasonably sophisticated assemblages of 1,000-plus lexical entries, O’Grady could list no more than eight published dictionaries of Aboriginal languages.

In other words, as of 1968 (the final year considered in O’Grady’s article) the vast bulk of lexicographic research done in the twentieth century remained unpublished. In his paper O’Grady sought to sketch the history of lexicographic research on Australian languages, to evaluate the principal contributions, and to highlight research opportunities in the hope of helping ‘break the stalemate’ in the making and, especially, the publishing of Australian Aboriginal language dictionaries.

What then is the state of Australian Aboriginal language lexicography now, some twenty-five years later? How have changes in linguistic research techniques and in the sociopolitical landscape affected the making of dictionaries of Australian Aboriginal languages? What are the prospects as the twentieth century draws to a close? In this paper, we will address these questions following, with some elaboration, the organisation of O’Grady’s original article: §2 will update the history of lexicographic research and publishing; §3 will evaluate aspects of the new works, considering orthographic issues, scope and organisation, and questions to do with definition; and §4 will briefly look to the future of lexicography on Australian Aboriginal languages.

We adopt the following terminology, which differs somewhat from that of O’Grady. By ‘wordlist’ we mean any list of Aboriginal language words with brief translation equivalents, often consisting of a single English word. Wordlists may be of any length, though most have fewer than 1,000 Aboriginal words. We reserve the term ‘dictionary’ for a compendium of 2,000 or more lexical entries which includes detailed semantic information (either as specified ‘senses’ or implicitly in the form of varied examples of usage), and information on

¹ We would like to thank Peter Austin, Gavan Breen, Carolyn Coleman, Bob Dixon, Nicholas Evans, John Henderson, Robert Hoogenraad, Mary Laughren, David Nash, Nick Reid, Julie Waddy, Anna Wierzbicka and David Wilkins for information and comments which helped improve an earlier version of this paper. The remaining errors are of course our own responsibility.

the derivational relationships between words. Once a certain threshold size is reached, in other words, the distinguishing characteristic of a dictionary, as we see it, is the sophistication of the information it contains.² Dictionaries, thus defined, usually also give at least basic grammatical information about individual words, along with facts about their dialect affiliation, pronunciation variants, etymology and cultural significance, and include illustrative phrases or sentences.

We use the expression 'small dictionary' as an intermediate category between wordlist and dictionary proper: that is, for assemblages of dictionary-standard, or near dictionary-standard, information on fewer than 2,000 lexical entries. Most small dictionaries have between 1,000 and 2,000 entries, but they may be smaller if they are for a specialised purpose, for example, for primary school use, or for a single domain such as botany.

One type of modern lexicographic compendium escapes the terminology laid out so far, namely, lexical files on computer. Due largely to the AIAS National Lexicography Project (Nash & Simpson 1989) there are many of these which, though unpublished, are in the public domain through having been deposited in the AIATSIS Aboriginal Studies Electronic Data Archive (ASEDA).³ They will be referred to, in the current jargon, as 'electronic data files'.

2. DEVELOPMENTS IN ABORIGINAL LANGUAGE LEXICOGRAPHY 1968–1993

Diverse purposes have motivated the production of Aboriginal dictionaries over the past twenty-five years, some quite different to those which animated earlier generations of Aboriginal language lexicographers. Since the nature of a dictionary is partly dictated by its purposes, it can be expected that recent dictionaries and wordlists differ considerably from their predecessors (as well as from each other). Before moving to these matters, it will be helpful to step back and take an overview of some factors which have brought changes in almost all the component aspects of Aboriginal language lexicography, including the kind of people doing it, their aims, their methods, and the sources of support available to them.

2.1 TRENDS AND INFLUENCES

One significant development has been the rise of linguistics as an academic discipline and its expansion in Australian universities. This is not the place to relate this history, but notable turning points would include the establishment of the first Department of Linguistics in 1965 at Monash University, and the arrival at the Australian National University in 1970 of R.M.W. (Bob) Dixon, who was to become a dynamic force in Australian linguistics. Most

² Actually, it is no simple matter to index the size of a dictionary. Should one count the number of headwords, the total number of lexical entries, or the number of distinct senses identified?

³ Abbreviations used in this paper are as follows:

AIAS Australian Institute of Aboriginal Studies; AIATSIS Australian Institute of Aboriginal and Torres Strait Islander Studies; ALS Australian Linguistic Society; ANU Australian National University; ASEDA Aboriginal Studies Electronic Data Archive; ATSILIP Aboriginal and Torres Strait Islander Languages Initiatives Programme; IAD Institute for Aboriginal Development, Alice Springs; MIT Massachusetts Institute of Technology; NT Northern Territory; *PL Pacific Linguistics*; SAL School of Australian Linguistics (now CALL Centre for Aboriginal Languages and Linguistics); SIL-AAB Summer Institute of Linguistics, Australian Aborigines Branch; SIL-AAIB Summer Institute of Linguistics, Australian Aborigines and Islanders Branch; WA Western Australia.

lexicographers since the 1970s have received at least some academic training in linguistics, and have therefore been better able to cope with the phonological and syntactic peculiarities of Aboriginal languages than their predecessors. As O'Grady (1971:781) noted, many of the workers in the 1930s and 1940s spent decades compiling dictionary material without being au fait with the "phonemic facts of life".

Two other factors whose importance can hardly be overestimated are the changed standing of Aboriginal people in Australian life generally, and the rise of government-supported bilingual Aboriginal education in the Northern Territory and South Australia. At the time of O'Grady's 1971 article, Aboriginal people had had citizenship rights for a mere three years, the reforming Whitlam Labour government had not yet been elected, and 'land rights' and 'self-determination' were idealistic slogans. To all but the most visionary it would have been inconceivable that, in little more than twenty years, native land title would be recognised by the High Court or that an Aboriginal rock group (*Yothu Yindi*) would be ambassadors of Australian culture to the world, to mention only two signs of the profound change which has taken place in the status of Aboriginality.

Though such general societal trends have indirectly affected Aboriginal language lexicography in many ways, one very direct and obvious factor was the Federal government decision in 1973 to support the development of bilingual education in the Northern Territory. This created a new educational application for linguistic studies of Aboriginal languages, and, ultimately, a generation of Aboriginal people literate in their own languages. Increasingly, dictionary makers have wanted to serve the needs of Aboriginal users,⁴ as well as to document Aboriginal languages for scientific purposes. For many linguists, a dictionary is now seen as a way of getting the results of their research back to the people who provided it and in a form which is, to some extent at least, familiar and expected. A good dictionary is a basic multipurpose resource, not the least of its benefits being its capacity to 'free' the community from the linguist by providing a spelling resource they can use themselves. Aside from being the primary end-users, Aboriginal people literate in their own languages now play a crucial role as co-workers on many, perhaps most, contemporary dictionary projects.

A more mundane, but still important, change over the past twenty-five years has been improved transport and communication. As O'Grady (1971:780) observed, twentieth century linguistic scholars have generally had to travel far from their city homes to undertake lexicographic fieldwork on an Aboriginal language, which for most of the century has been a costly, arduous and time-consuming exercise. Though it still is to some extent, there can be little doubt that getting to a remote location is easier now than ever before, and that working and living conditions in the field are generally more conducive to productive research.

Sources of material support, never particularly healthy, have fluctuated greatly. From the mid-1970s to the early 1980s, funds from universities and from the Australian Institute of Aboriginal Studies (AIAS, now AIATSIS) flowed fairly freely, but linguistic research over this period favoured grammatical, rather than lexicographic, work. Ironically, as fashions in linguistic theorising have moved to reinvigorate interest in the lexicon, funding for original linguistic research from Australian universities and from AIATSIS has tended to dry up. In the Northern Territory, the Department of Education has funded some lexicography. Another source has been the Australian branch of the missionary organisation Summer Institute of

⁴ Research into the particular needs of different types of users in different situations is now beginning to inform dictionary design, cf. Henderson and Laughren (1991).

Linguistics (SIL-AAIB). Overseas institutions, such as the US National Science Foundation and Systems Development Foundation, have helped support the work on Warlpiri by the MIT Lexicon Project. Recently, money from the Commonwealth's Aboriginal and Torres Strait Islander Languages Initiatives Programme (ATSILIP) has assisted the establishment of twenty or so Aboriginal language centres, most of which do some lexicographic work. On the whole, however, it can be said that Aboriginal dictionary making is appallingly underfunded.

2.2 OUTPUT

Coming to the published output of the past twenty-five years, we can observe at once that there is a marked difference in productivity between the 1970s and the 1980s. In 1982, Heath (1982:ix) could still fairly remark "...the number of published dictionaries is scandalously low. Aside from the large Pintupi dictionary by the Hansens, I do not know of a single published dictionary which makes any pretensions of being comprehensive". The 1970s was the 'decade of the grammar', and lexical information usually amounted to a few hundred words in a wordlist at the end.

Over the 1980s, this situation improved. An increasing number of small dictionaries and wordlists began to be published, and much more work became accessible as manuscript or electronic data files. A substantial, but not exhaustive, annotated list of such materials appears as Appendices 1 and 2. Much of it reflects a trend, made possible by the availability of personal computers, to publish first (or draft) editions with a view to making corrections and additions later, and to make work-in-progress available in small print runs or in electronic form. (For interest, Appendix 3 goes through the thirty or so projects cited by O'Grady (1971:785ff.) as then in-progress, with comments on their current state.) Nevertheless, it would be fair to say, with Austin (1991), that dictionary making largely remained the 'poor cousin of grammatical description'.

It was not until the 1990s that reasonably large and comprehensive dictionaries of Aboriginal languages began to appear in any numbers.⁵ Table 1 below lists all such materials available or in press at the time of writing. From a publishing point of view, one notable thing about the currently available works is the almost total absence of commercial publishing houses. The only (partial) exceptions are academic publishers such as the University of Queensland Press and Mouton de Gruyter. Otherwise, dictionaries and wordlists were published mainly by universities, schools, SIL-AAIB, AIAS, Aboriginal Language Centres, and by the publishing arm of the Institute for Aboriginal Development (IAD).

TABLE 1: DICTIONARIES PUBLISHED SINCE 1968
[2,000+ entries with detailed semantic information]

Alpher, Barry, 1991, *Yir-Yoront lexicon: sketch and dictionary of an Australian language*. Berlin: Mouton de Gruyter.

Coate, Howard H.J. and A.P. Elkin, 1974, *Ngarinyin–English dictionary*. Sydney: University of Sydney.

⁵ Aside from Hansen and Hansen (first edition 1974), mentioned above, the main exception is Heath's (1982) *Nunggubuyu dictionary*, in which every word is indexed against a large published text corpus.

- Dixon, R.M.W., 1991, *Words of our country: stories, place names and vocabulary in Yidiny, the Aboriginal language of the Cairns–Yarrabah region*. St Lucia: University of Queensland Press.
- Evans, Nicholas, 1992, *Kayardild dictionary and thesaurus*. Melbourne: Department of Linguistics and Language Studies, University of Melbourne.
- Goddard, Cliff, 1992, *Pitjantjatjara/Yankunytjatjara to English dictionary* (2nd edn). Alice Springs, NT: IAD.
- Green, Jenny, 1992, *Alyawarr to English dictionary*. Alice Springs, NT: IAD.
- Groote Eylandt Linguistics, 1994, *Eningerribirra-langwa jurra (a book about all sorts of things)*. Groote Eylandt: Groote Eylandt Linguistics.
- Hansen, K.C. and L.E. Hansen, 1992, *Pintupi/Luritja dictionary* (3rd edn). Alice Springs, NT: IAD. (1st edn 1974)
- Heath, Jeffrey, 1982, *Nunggubuyu dictionary*. Canberra: AIAS.
- Henderson, John and Veronica Dobson, 1994, *Eastern and Central Arrernte to English dictionary*. Alice Springs, NT: IAD.
- Kilham, Christine et al., 1986, *Dictionary and source book of the Wik-Mungkan language*. Darwin: SIL.
- Kimberley Language Resource Centre and Gedda Aklif, 1993, *Bardi–English dictionary* (draft edn). Halls Creek, WA: Kimberley Language Resource Centre.
- McKelson, K.R., 1989, *Topical vocabulary in Northern Nyangumarta*. Broome, WA: Nulungu Catholic College.
- Reece, Laurie, 1975–79, *Dictionary of the Wailbri (Walpiri) language of central Australia*. Sydney: University of Sydney.
- Richards, Eirlys and Joyce Hudson, 1990, *Walmajarri–English dictionary with English finder list*. Darwin: SIL.
- Valiquette, Hilaire, ed., 1993, *A basic Kukatja to English dictionary*. Balgo, WA: Luurnpa Catholic School.
- Zorc, R. David Paul, 1986, *Yolngu-matha dictionary*. Batchelor, NT: SAL.

The IAD, an Aboriginal-controlled educational institute in Alice Springs, deserves special mention. Not only has it consistently published quality dictionaries and wordlists over the last twenty years, it has provided a sophisticated base for lexicographic projects in Central Australia for over a decade. The *Pitjantjatjara/Yankunytjatjara to English dictionary* (Goddard 1992), the Warlpiri Dictionary Project and the Arandic Languages Dictionaries Program have all been based at IAD, and a host of smaller wordlists have also issued from there (see Appendix 1).

Some impression of the diversity in nature and purposes to be found in recent lexicographic output can be gained by some quick, and necessarily highly-selective, comparisons. At the smaller end of the spectrum, there are picture vocabularies, and learner's wordlists such as *A learner's wordlist of Eastern and Central Arrernte* (Henderson 1991). The latter contains about 750 words and is intended as a reference for students learning the language and to assist literate Arrernte people in spelling. Other examples of this genre are

the wordlists of Pilbara languages produced by Wangka Maya (1989–90). Such products represent a change from the earlier academic work which was not designed for use by the speakers of the language or by the general public.

Of medium size are the recently published dictionaries listed in Table 1. These contain between 2,000 and 5,000 lexical entries, with reasonably detailed semantic, grammatical and supplementary information. By and large, they are intended as multipurpose resources, serving language learners, Aboriginal schoolchildren in bilingual education, Aboriginal adults learning or teaching literacy, translators and linguists. Barry Alpher's (1991) Yir-Yoront dictionary has perhaps the broadest scope of the published works listed in Table 1, including information about etymology, language variety (respect vocabulary) and totemic affiliation in addition to semantic information, example sentences, and so on.⁶

The only large dictionary which has been published at the time of writing is the *Eastern and Central Arrernte to English dictionary* (Henderson & Dobson 1994) though the *Warlpiri-English dictionary* is nearing completion. Both contain over 5,000 lexical entries, along with very rich exemplification and encyclopaedic information. The Warlpiri Dictionary Project (cf. Laughren & Nash 1983) is truly remarkable for its scope, longevity and ambitiousness, as well as for the concentration of linguistic talent, both Aboriginal and non-Aboriginal, being brought to bear upon it. Its primary purpose is scientific, viz. the most complete possible documentation of the semantic and morphosyntactic properties of the Warlpiri language, but abridged versions are planned to serve the needs of bilingual education and Warlpiri adult writers. The *Eastern and Central Arrernte to English dictionary* is somewhat less ambitious in scope, and attempts to combine scientific and practical purposes. Even so, the publication is so large (almost 800 pages) that an abridged 'junior' edition is envisaged for schools.

A trend in recent years has been the renewed interest in the collation and reworking of early records of Aboriginal languages. For instance, Jane Simpson and Rob Amery (1994) and Barry Blake (1991) have reconstituted parts of the vocabulary of Kaurna (Adelaide) and Woiwurrung (Melbourne) from historical sources (cf. Simpson 1993; see also Troy 1994). There will no doubt be more such work as interest develops among Aboriginal people who no longer speak their ancestral languages and with the increasing availability of funding, mainly through the ATSILIP program. The same funding has assisted the reworking of more recent, but relatively inaccessible, work into practical wordlists or dictionaries. For instance, Wangka Maya (Port Hedland) has reworked Ken Hale's Ngarluma material from an electronic data file, and the Kimberley Languages Resource Centre (Halls Creek) is keyboarding Tasaku Tsunoda's large Jaru wordlist.

Finally, it should be noted that there is evidence that in various Language Centres, schools and community council offices, Aboriginal people are increasingly doing lexicographic work in their own right. Glasgow (1984:129) reports that at Rockhampton Downs a few children "were said to be able to read and write Warumungu. One young woman (Doreen Noonan), has compiled a Warumungu dictionary in spelling devised by a teacher who was there in 1974". This dictionary has since gone missing.

⁶ In general, published Aboriginal language dictionaries tend not to include any great detail on etymologies (cf. Koch 1983), sociolinguistic variation or auxiliary languages. Reasons for this include doubts about the practical relevance to Aboriginal users, the partial or speculative nature of the information and the extra costs involved. Hopefully, in future such information may be made available at least in electronic data files, if not in published 'hard copy' dictionaries.

Such work is easily lost because the Aboriginal people doing it often do not know how to take it past the collection stage. For example, Robert Hoogenraad (pers. comm. and forthcoming) found some 150 pages of handwritten wordlists on the floor of the Gurungu (Elliott) Council office. These were mostly parallel lists in Mudburra, Jingulu and Wambaya for plants and animals, body parts, and meteorological terms, entered onto locally designed photocopied forms with ruled columns for each language. The Mudburra material has since been entered into a lexical database and checked against the existing Mudburra dictionary file: it contained over 500 entries, 280 of them not previously in the database. Mary Laughren (pers. comm.) reports having found spontaneous Warlpiri lexicography, usually in notebooks left in school ‘language rooms’ or literature production centres. Examples include lists of kin terms organised according to Warlpiri classificatory principles like senior versus junior/same generation, and lists of plant names, giving their parts and products.

More sophisticated work is also being done, as Aboriginal people become more involved in compiling wordlists and in writing definitions, both English and vernacular. In 1985, for example, Paddy Patrick Jangala began writing monolingual Warlpiri definitions for use by pupils in the upper grades of the bilingual program at Lajamanu School. Jangala’s work (see Jangala 1986) was supported by the Warlpiri Dictionary Project and incorporated into the project’s data files. Perhaps the most accomplished Aboriginal lexicographer is Veronica Dobson, co-author of the *Eastern and Central Arrente to English dictionary*, to which she has devoted five years full-time work. Also of note is Jeanie Bell’s work on historical materials on Gubbi Gubbi and Butchulla (Batjala), the languages spoken by her grandparents.

2.3 NEW METHODS AND TECHNIQUES

The new methods and techniques used by lexicographers over the past twenty-five years fall under two broad headings: new ways of gathering data and new ways of manipulating data.

At the time of O’Grady’s 1971 review, the most widely used data gathering method was elicitation, assisted by standard wordlists. O’Grady mentions Capell’s use in the 1930s of a 600-item lexical list to compile information on over ninety languages of northern Australia (cf. Capell 1945), his own use of a 100-item list in the northern part of Western Australia in the 1950s, and Stephen Wurm’s work in eastern Australia at about the same time (cf. Wurm 1967), among others. All this was essentially survey work, with a comparative orientation. Later, AIAS published its own widely used standard elicitation wordlist organised by semantic fields (AIAS & Capell n.d.; Sutton & Walsh 1979, 1987). Usually the elicitation would be done through (Aboriginal) English, a variety of Kriol, or sometimes through a traditional Aboriginal lingua franca. In any case, there are obvious limitations on the richness of the information which can be obtained by elicitation.

More substantial recent dictionary work has relied on working methods better suited to producing in-depth data on individual languages. These include intensive language-learning by the linguist, participant observation, extensive use of tape-recorded and transcribed texts, and, increasingly, collaboration with literate Aboriginal speakers of the language in question.

For the purposes of data manipulation and analysis, lexicography is today unthinkable without the computer. In place of boxes of file-slips, lexical information is now stored in some kind of structured database, which can be manipulated to produce different types of

formatted dictionary (e.g. alphabetically ordered, thesaurus, special purpose). The computer allows much greater speed, accuracy and consistency. Increasingly, vernacular source material (in the form of large and varied bodies of text) is also being kept on computer, making it possible for the lexicographer to compile textual examples using 'concordance' software.

The earliest computer-aided lexicography, such as O'Grady's 1966 comparison of wordlists of Australian languages, the *Research dictionary of the Western Desert language of Australia* (Raa & Woenne 1970–1973), and the comparative Pilbara Dictionaries Project (cf. Austin 1983), used large computers and the services of professional programmers, but almost all contemporary projects use personal computers and existing software. Current special purpose programs include IT (Interlinear Text processing), Consistent Changes (re-formatting and data management), Free Text, Micro-OCP, Shoebox, TACT, and Conc (text-browsers and concordancers), and MacLex (dedicated dictionary maker).

Much day-to-day lexicography is done without special purpose software, however. Instead, data is compiled as structured text within a standard word-processor, using declarative mark-up to make the structure of the information explicit. The marked information can later be processed and formatted using special purpose programs or 'macros', as described below. The most widely used mark-up system is based on conventions developed by SIL and promoted by the AIAS Lexicography Project (cf. Nash & Simpson 1989) and its successor ASEDA. It employs a backslash followed by a letter-code to identify different types (or 'fields') of information within the lexical entry. This is known as a 'field-oriented standard format' or FOSF file. The key advantage of a mark-up format is that it frees the text from any particular computer or software. The codes must be explicitly listed and preferably be current within an entire research community. In future we can expect to be using internationally recognised mark-up, such as Standard Generalised Markup Language (SGML), for which software and conventions for use in dictionary construction are now available.⁷

Database programs, such as Paradox or FileMaker, are also popular as a means of entering data in a structured framework, allowing it to be exported as tab-delimited text files if necessary. Relational databases have the additional ability to link data files from a number of languages, as in the use of Oracle by Peter Austin for storing and locating data from a number of Pilbara languages.

To give something of the flavour of current, computer-assisted lexicography, we will work through some of the stages involved in transforming a lexical database into final published text, on current practice at IAD. Figure 1 shows an extract from the database used to prepare the second edition of the *Pitjantjatjara/Yankunytjatjara to English dictionary*. The code \w introduces a headword, \p its part of speech, \v dialect or style (e.g. 'slang', 'sensitive language'), \d a definition, \r a thesaurus classification, and \i an example. Layering of definitions and examples is provided for by numerical codes which identify the field which they precede. Thus \n2 preceding a definition field indicates that this is the

⁷ It should be noted that FOSF has been criticised as a violation of certain principles of dictionary construction. Nathan and Austin (1992) argue that the structure of a data file should represent the linguistic knowledge encapsulated within it rather than being designed for processing convenience; they point out, for instance, that since relationships between senses (synonymy, antonymy, polysemy and so on) are integral to the dictionary, so too should they be integral to the design and computer representation of the data.

second distinct ‘sense’ of the lexical unit. Derivational relationships are provided for through the codes \ws and \wp, which identify a ‘sub-headword’ and fixed expression (idiom or phraseme). Symbols such as *, @, and <> within the definition fields mark English words for the purpose of making a reversed (English–P/Y) listing.

```
\w PAI
\p exclamation
\l (<usually directed >to dogs) *clear@off! <*be@off! piss off!
\i papa, pai! 'get out of it, dog!'
\ws PAINI
\p transitive verb (I)
\l 1
\l 289 Repulsion
\l 297 Ejection
\l <*drive@away, >*shoo@off, '*hunt@away'
\i ngananya pailpai "wiya, wantima!" 'they used to shoo us (school-children) away "No, leave it alone"'
\i ka tjana mukuringanyi, piyan tjuta, ngananya paintjikitja, nguranguru 'the white fellas want to drive us out of our country'
\i punpunna kurungka paini, kuru patjalpaingka 'I'm shooing the flies from my eyes, so they won't bite my eyes'
\l 2
\l 932 Disapprobation
\l *tell@off, *scold<, *rebuke, '*growl'
\i nyuntumpa katjangku ngayuku katja painingi 'your son's been telling my son off'
\i paluru palumpa kamuru watjantja wiya, pailpaingka 'he didn't tell his uncle, lest his uncle tell him off'
\l 3
*warn, *caution against
\l 4
\l <*forbid, >*direct not to do
\i kamilulanya painu patu inkanytjaku 'Grandmother's forbidden us to play far (from camp)'
\wPAIRA IYANI
\l *order to leave<, *send@packing (iyani 'send')
\i Ka palunya pulukangka malangka paira iyani 'after the bullock muster, we're sending him packing'
\i Tjitjingku maiku rawangku ngatjinnyangka kaar-kaararira paira iyani 'if a kid keeps on and on trying to get you to give food, you get sick of it and order them to go'
```

FIGURE 1: EXTRACT FROM DATABASE FOR *PITJANTJATJARA/YANKUNYTJATJARA TO ENGLISH DICTIONARY* (GODDARD 1992)

The schema shown in Figure 1 had various defects. For instance, having the example glosses appear within the \i field, identified by framing in single inverted commas, led to problems in subsequent processing, as did the many inconsistencies in punctuation. But although it is impossible to achieve fully automatic conversion from data files to final formatted text, a great deal of the re-formatting can be done automatically.

At IAD the initial re-formatting is done within the Nisus word processor, using the regular expression (GREP) and macro facilities, which allow users to write customised programs for manipulating text. Figure 2 shows part of such a macro devised by John Henderson. Current IAD practice is to use macros to convert an edited version of underlying database into ‘style-tagged text’ in which unique symbols enclose every stretch of characters destined for a particular final style (font/size/face combination). As well as tagging each field with the appropriate styling information, it adds any text or symbols needed to introduce the field in the published version.

```

Find/Replace "\(\l\|syc-\l\)\s+\(\.:*\l\)\s*\r*:;>\"\\l\s=\l2.\l\s" "Gg-Ota"
Find/Replace "\l\|f\l\s+\(\.:*\l\)\s*\r*:;>\"\\l\|f\l\sRefer to\l\.\l\s" "g-OtaG"
Find/Replace "\l\|d\l\s+\(\.:*\l\)\s*\r*:;>\"\\l\|f\l\sFrom\l\|\.\l\s" "g-OtaG"
Find/Replace "\l\|an\l\s+\(\.:*\l\)\s*\r*:;>\"\\l\|an\l\sOpposite of\l\.\l\s" "g-OtaG"
Find/Replace "\l\|cS\l\s+\(\.:*\l\)\s*\r*:;>\"\\l\|cS\l\sSounds similar to \l\.\l\s" "Gtg-Oa"
Find/Replace "\l\|see\l\s+\(\.:*\l\)\s*\r*:;>\"\\l\|see\l\sFor more information see \l\.\l\s" "Gtg-Oa"

```

FIGURE 2: EXTRACT FROM NISUS MACRO (JOHN HENDERSON)

Figure 3 shows a section of the ‘style-tagged text’ from the *Eastern and Central Arrente to English dictionary*, which employs over a dozen different styles. Symbols such as ® and © stand for typographical symbols such as the diamond-shaped ‘bullet’, and different types of arrow. The style-tagged text is imported into a layout program, such as Design Studio, to convert it to final formatted text like that in Figure 4. It is worth noting how very different current typographical capabilities are to those of the period described by O’Grady (1971).

<h>ankeye <tx>.
<d>wanting something from someone. ®<vx>• Ayenge ngkwenge<vxh>-<vx>werne ankeye
apetyene maneke inketyeke, ampe akweke nhenge areyeke ware merne inetyenhele. The ngenhe
mane atyinhe ingwenthe inemele anthirtnetyenhe. <tx>I’ve come here to ask you for money to
get some food for those little ones. When I get my money tomorrow I’ll give it back to you.
®<vx>• Kele<vxh>-<vx>ulkere apetyetey<vxh>-<vx>akenhe merneke impene<vxh>-
<vx>impene<vxh>-<vx>irremele arlkweme. Ingwenthe<vxh>-<vx>arle ankeye ante aneme
unthele<vxh>-<vx>anetyenhe. <tx>She can’t come now because she’s stuck into her food! And
tomorrow she’ll be wandering around wanting food from someone else! ®<vx>• Re<vxh>-
<vx>atherre mutekayeye inketyeke ankeye apetye<vxh>-<vx>alherrerne <tx>town<vx>-werne
akwele alhetyeke lyeteke ware merne inetyeke. <tx>Those two came to ask if they could borrow the
car so that they can go into town for a while to get some food. ®<vx>• Arelhe yanhe ingwele
arle ankeye rarle mpwekare<vxh>-<vx>irremele untheme, renhe atwerirreke. <tx>That woman
went off last night wanting a bloke, and she got beaten up.
©<d>Can sound like (forms of) <sy>angkeme, ngkeme, nkeme.

FIGURE 3: EXTRACT OF ‘STYLE-TAGGED TEXT’ FOR EASTERN AND CENTRAL ARRENTE TO ENGLISH DICTIONARY (HENDERSON & DOBSON 1994)

arrerneyel, arrertneyel v.t.

1. put down, put on. ♦ Kweyang aker yanh
arrerna irrwerl arengk-wety, arengkel
arlukewekerr. *Girl, put that meat high up away
from the dogs, in case they eat it.* 2. stop some-
one from going somewhere. ♦ Ayeng
alheyenh-antey wenh, angwenhel ayenh
arrerney-angenh. *I’m really going, nobody is
going to stop me.* ♦ Ilek-wety ntwa ayenh
arrerneyel? *Why are you stopping me from
going?*

arrernelheyel v.i.

1. put something on self. ♦ Akapwert-warl
arrernelh-alhem mwekart, twern-wety. *Put
your hat on your head because of the sun.*

2. land, come down (aeroplane).

arrernenh (?) (LN) n.

police. (lit. ‘one that puts you in’)
= ilyemweney, irrkwenty (LN), arlerrk (LN),
akwernenh-akwernenh.

FIGURE 4: EXTRACT OF FINAL FORMATTED TEXT, ALYAWARR TO ENGLISH DICTIONARY (GREEN 1992)

Aside from formatting, macros can be used to produce reversals and other alternate schemes for displaying lexical information. For example, a set of macros used in the AIATSIS dictionaries project performs reversals on files in which headword entries have been marked with an asterisk as a ‘turnaround’ marker. Applied to headwords marked as “white breasted *eagle”, “ornate *kangaroo *tick”, the macros produce the following list with additional alphabetised entries for each asterisked word.

eagle: white breasted eagle
 kangaroo: ornate kangaroo tick
 ornate kangaroo tick
 tick: ornate kangaroo tick
 white breasted eagle

Whether working on FOSF files or from a database, it is important to design and use automatic reversal procedures carefully (cf. Nathan & Austin 1992) otherwise the resulting lists can be bizarre and impractical. An unfortunate example of this is the finderlist in the third edition of the *Pintupi/Luritja dictionary* (Hansen & Hansen 1992:222), in which, for instance, the following series of 15 entries appears under the English word ‘did’:

did here, did miracles, did not bury, did not eat (it), did not forget, did not inform another, did not win, did nothing, did signs and wonders, did supernatural things or acts, did that which was displeasing, did there, did up belt.

Reversals can be converted, by extensive editing, into English–Aboriginal language ‘finderlists’, but it is advisable to check any finderlist against a suitably sized list of common English vocabulary. This is because a finderlist serves a person who wishes to find Aboriginal equivalents for English words, but many common English words will not have found their way into the definitions for Aboriginal language words in the main dictionary. Such lists are available in electronic form from ASEDA.

3. ISSUES IN LEXICOGRAPHIC PRACTICE

3.1 ORTHOGRAPHIES

When O’Grady (1971:792) wrote, it was still feasible for him to call for a standardisation of orthographic symbols, primarily to avoid “a major and unnecessary burden to the comparativist”. For the stop series, O’Grady himself favoured {p, t̪, t̫, c, k}, and for the nasals {m, n̪, n̫, ŋ, ŋ̫}. These suggestions have been overtaken by the times. It is now generally accepted that an Aboriginal language dictionary must employ a ‘practical orthography’ based on Roman alphabet letters, and bearing as straightforward a relationship as possible to the English spelling system. This is for the convenience of non-linguists, Aboriginal and otherwise, who are now recognised as the primary users of the dictionaries.

Even the principle of phonemic spelling is no longer sacrosanct if, for one reason or another, it conflicts sharply with the priorities of the Aboriginal community. After all, a mild amount of under-differentiation in the spelling system presents no problems for native speakers. Sometimes, too, a community already literate in English may prefer an orthography closely based on English, even at the cost of a less than maximally efficient system. For example, the Yiyili community has adopted an orthography in which the name of their language is spelt Gooniyandi, rather than Kuniyanti as it would have been in the standard ‘linguist’s notation’: this system both under- and over-differentiates phonemes (McGregor 1986, 1990:25–28). Less commonly, local tradition has sanctioned the retention of letter symbols alien to the typewriter keyboard. This is the case with the hooked ‘eng’ symbol of the Yolŋu languages of north-eastern Arnhem Land, which also employ ä to indicate the long vowel usually shown as aa.

Some of the trickiest orthographic decisions have arisen in places where two kinds of complicating factors coexist, viz. the Aboriginal language has unusual phonological properties, and, as well, there are several rival orthographies already established, as with the Arandic languages of Central Australia. Dictionary makers must sometimes come to grips with the fact that standardisation of an orthography, no less than the choice of which dialects to represent, can be a decision with political dimensions.

3.2 ORGANISATION

Most published Aboriginal language dictionaries employ listing by alphabetical sequence of lexical stems, sometimes supplemented with an English ‘finderlist’. The sequence is based either on the initial letter, as is done in English dictionaries, or, more commonly, on the initial ‘orthographic symbol’ where digraphs (i.e. sequences of two letters standing for a single phoneme) are regarded as single symbols. An example of the latter ordering principle is shown below from the *Pintupi/Luritja dictionary*.

a, i, k, l, l, ly, m, n, n, ng, ny, p, r, rr, t, t, tj, w, y

The rationale is to make it easier for Aboriginal users to locate words, assuming that they will do so directly on a phonemic basis. A listing like the one shown above prevents words beginning with ‘n’, ‘ng’, and ‘ny’ becoming interspersed.

The argument in favour of the competing letter-based sequence is that almost all Aboriginal users today go or have gone to school, where they learn the conventional alphabetical order and how to use it to find words in English dictionaries, disregarding digraphs. It can also be argued that experienced readers tend not to operate on a direct phonemic basis, but to ‘see’ words in a graphic form (so that a word like *ngunyjtu*, for instance, is seen as beginning with the letter ‘n’). Research is needed into the relative merits of the two competing systems.⁸

A less common alternative to alphabetical listing is thesaurus-style organisation, either as the primary format, as in McKelson (1989), Dixon (1991), and Groote Eylandt Linguistics (1994), or as a supplement to a conventional alphabetical listing, as in Evans (1992). An issue with thesaurus formats is the selection of the classification system, and in particular to what extent this can (or should) be based on the Aboriginal language itself, rather than on English. Many Aboriginal languages have explicit classifier (or ‘generic noun’) systems for people, living things and artefacts, making it relatively simple to organise at least some of the nominal vocabulary into an ‘ethno-thesaurus’. But the semantic organisation of other lexical domains may be obscure even to native speakers, and require detailed analytical work. Aside from the work of Dixon (1982) on the semantic implications of Dyirbal ‘mother-in-law language’, there has been little published on this, though some practising lexicographers have devised quite elaborate semantically based schemes to help with collecting lexical data. Nonetheless, it would be fair to say that semantically organised dictionaries continue to rely in large measure on categories derived from European lexicography.

⁸ Among dictionaries which list by initial digraph, there is variation as to whether the same ordering principle is followed non-initially. The *Pintupi/Luritja dictionary* (Hansen & Hansen 1992) does, so that, for instance, *pungu* ‘hit’ comes after *pu_nu* ‘tree’. Most others, such as the *Kayardild dictionary and thesaurus* (Evans 1992), use conventional alphabetical order inside the word.

Like most writing on Aboriginal language lexicography, the discussion above has been biased in assuming that the typical Australian language is of the agglutinative, predominantly suffixing, Pama-Nyungan type. In fact, perhaps one-third of all Australian languages still spoken today are non-Pama-Nyungan (nonPN). Just as the complex and diverse nonPN tongues—generally prefixing and tending toward polysynthesis—pose special problems for grammatical analysis, so do they for lexicography. No more than a handful of nonPN language dictionaries have appeared (e.g. Heath 1982; Merlan 1982; Kimberley Language Resource Centre and Gedda Aklif 1993; Groote Eylandt Linguistics 1994).

Identifying a citation form may be no easy matter in a prefixing language, where most verbs may never appear without an appropriate person-number prefix. Even if it is possible to isolate an underlying root, it will often be the case that its initial segment is modified in most surface forms. In some nonPN languages, nominals also bear obligatory prefixes showing noun-class. Another common problem is widespread suppletion in verbal paradigms, which calls for extensive and complex cross-referencing. The problems that linguistic features like these create for practical lexicography can be illustrated by the case of Ndjébbana (Kunibidji), on which dictionary work has been ongoing for over 15 years.

McKay (1983) relates that in the early 1980s the then newly-literate Kunibidji speakers would not accept verbal roots as citation forms. The decision was therefore made to cite verbs with a third person singular masculine subject prefix, although this had the effect that almost all verbs appeared under the letter 'k' in an alphabetical listing. The situation with verbs was further complicated by the existence of numerous semi-productive derivational prefixes. Literate speakers originally expressed a preference for verb stems derived in this way to be listed as separate lexemes, rather than grouping them under the root.

Over fifteen years, however, the literate community has matured in its skills and its understanding of language matters. The linguist currently working on the project, Carolyn Coleman, reports (pers. comm.) that Ndjébbana consultants now accept the verbal root as citation form. The third person singular masculine prefix is retained, but with the root highlighted in bold within the inflected word; the main entries for verbs appear in alphabetical order according to the first segment of the highlighted root (a similar convention is used in the alphabetical sections of the draft Anindilyakwa–English dictionary). This is a typographical ‘solution’ which was not practical prior to the advent of computer-assisted desktop publishing. As well, the consultants now want the main entries for the derivational variants to be listed along with the ‘head word’ (head root), provided the derived forms are listed separately with a cross-reference to the main entry. This example shows that the optimal organisation of a practical dictionary is not determined solely by linguistic facts.

Green and Reid (1993) discuss the severe problems which arise with languages of the Daly River region, such as Ngan’gityemerri and Marrithiyel. These are ‘verb-classifying’ languages. That is, verbs normally occur bearing one of a set of prefixed auxiliary elements which classify the nature of the activity being depicted. For instance, one set of auxiliary prefixes classifies transitive actions according to the manner in and/or type of instrument with which they are carried out; another set classifies according to the active involvement of certain parts of the body, such as the hands, feet and mouth. Often the auxiliaries occur as portmanteau forms incorporating person and number marking of the subject. Alphabetical listing by initial segment is not a practical proposition for these languages, and the complex cross-referencing that seems to be required will create great difficulties for newly literate users. Green and Reid are developing a computerised dictionary using FileMaker Pro which

should be more practical for community use. Lexical information will be accessible by initial segment of verb root, by auxiliary, or by thesaurus classification. The FileMaker Pro format is also much easier for native speakers to use in keyboarding new information than is the ‘backslash code’ system.

Regardless of the organisational framework, example sentences or phrases are an important part of any bilingual dictionary, though their role can be construed in various ways. Simple, common expressions are most useful for novice language-learners. More complex examples can be a vehicle for implicit grammatical information. Example sentences may also contain ethno-encyclopaedic information, or take the form of vernacular definitions.

Some dictionary makers insist that ‘naturally occurring text’ is the only or ideal source for examples, even though this may mean that many are grammatically complex and highly context-embedded. Others prefer text-based material but allow that it may be edited for increased simplicity or clarity. Still others are happy to include specially-constructed example sentences, so long as they are written by experienced Aboriginal language workers. In any case, one difficulty to be faced is that tape-recorded text corpora are almost always unrepresentative of ordinary speech, because they tend to be dominated by monologues (especially narrative).

3.3 DEFINITIONAL PRACTICE

Questions of definition are at the heart of dictionary making. In 1971, O’Grady (1971: 795) remarked of the then published dictionaries: “[Their] definitions leave much to be desired. There would be no point, however, in deriding the earlier works... [T]he compilers operated within the limitations imposed by the state of lexicography of their respective eras”.

It is not clear that the future will be able to judge contemporary practice in the same charitable light. The problem, which we hasten to point out is not confined to the Australian Aboriginal arena, is that there is a wide gulf between semantic theory and lexicographic practice. Comparatively few Australian lexicographers over the past twenty-five years have been well trained in semantics, and most have developed their definitions on a fairly ad hoc basis. This is particularly noticeable in two respects: first, descriptive inadequacy and inexplicability; second, lack of criteria for distinguishing between polysemy and semantic generality.

On the issue of semantic adequacy, we can observe that most Australian language dictionaries make little effort to explicitly capture the precise meaning of the words being defined. Rather than attempt a precise explanatory paraphrase, they more commonly list a series of possible English translation equivalents, as in the examples below, which come from the *Alyawarr to English dictionary* (Green 1992:219), an early draft of the Warlpiri dictionary (cited in Wierzbicka 1983:141), and the *Pitjantjatjara/Yankunytjatjara to English dictionary* (Goddard 1992:112), respectively.

<i>rlwaneyal, Iwaneyel</i>	pick out, sort, choose
<i>nyurunyuru-jarri-mi</i>	to hate him, despise him, be jealous of, disapprove of
<i>pikatjara</i>	sick, ill, wounded, injured

Listing possible translation equivalents does not meet one of the prime requirements of a good lexicographic definition, namely, that it should make the meaning fully explicit. The reader may fairly assume that the meaning being defined contains some components in

common with each of the English words offered, while not being completely identical with any of them, so it would be wrong to reject the listing approach as wholly uninformative. But the listing simply leaves to the reader the task which properly belongs to the lexicographer, that is, that of isolating the invariant meaning and specifying it in a testable form. This is a particularly unfortunate failing when it concerns culturally important words which lack close equivalents in English.

Of course, most dictionaries do at times attempt explicit explanatory paraphrases, in addition to listing translation equivalents. The examples below are from the same three dictionaries as cited above (Green 1992:146; Warlpiri Lexicography Group 1986a:63; Goddard 1992:43). It would be good if this practice were to become more consistent.

<i>ilpertilelheyel</i>	be confused, become mixed up, go off your head, not think straight, be in a hurry, be unable to think of something
<i>mirttmirr(pa)</i>	very rapid involuntary movements of the body; shaking, shakes, trembling, twitching, shivering
<i>kunta</i>	respectful, embarrassed, ‘shame’. Discomfort at being observed by someone because of the type of person they are, because of worrying that you might do something on account of which they might think badly of you

Australian lexicographic practice could also improve its handling of the distinction between a lexical unit having several distinct-but-related senses, as opposed to it having a single general meaning—that is, the distinction between polysemy and semantic generality. Many Australian lexicographers seem to think this distinction is arbitrary or unimportant, giving an unstructured string of glosses where others would identify separate (polysemic) senses. The entries below exemplify the contrast in approach; they deal with the same verb *nyina-ø*.

- (a) *nyina-* vi. sit, to sit, to live, to be, to exist, to stay

[*An introductory dictionary of the Western Desert language* (Douglas 1988:55)]

- (b) **nyinanyi** intransitive verb (\emptyset)

1. sit, be sitting. 2. live, stay: *Nyuntumpa kuta ngura nganala nyinanyi?* Where is your big brother staying/living? 3. be in a place: *Tjilpinha nyinanyi?* Is the Old Fella around? 4. be in, have or hold a temporary condition: *Nganana pukul(pa) nyinangi.* We were contented. 5. (with serial verb, in the ‘way of life’ construction) do something generally, customarily, as a way of life: *Kungka nyuntu nyaaku katira nyinanyi?* Why do you bring your wife with you?

[*Pitjantjatjara/Yankunytjatjara to English dictionary* (Goddard 1992:97)]

Australian dictionary makers would do well to draw on criteria identified by semantic and lexicographic theorists (e.g. Apresjan 1972, 1992 [1974]; Mel'čuk 1988; Wierzbicka 1992–1993) for establishing polysemy, such as the putative distinct meanings having different syntactic properties, or different antonyms, or only one of the senses participating in a derivational process. Importantly, whether for a generality analysis or a polysemy analysis the putative sense or senses must be statable in explicit and testable formulations.

Even dictionaries which recognise the polysemy versus generality distinction seldom implement it with consistency or supply any explicit discussion of their criteria (an exception is Alpher 1991). Some examples of apparent inconsistency are given below. We assume that separating senses by numbers or semicolons is intended to indicate polysemy, while a unitary sense is indicated by glosses separated by commas.

- | | |
|---------------------|--|
| (a) <i>maalthan</i> | (1) settle someone down after they have been angry or wild (2) tame or subdue someone or an animal |
| <i>nga'anathan</i> | hide (something or yourself); put inside (something) |
| <i>ngeeyan</i> | listen, understand, hear (and obey) |

[*Dictionary and source book of the Wik-Mungkan language* (Kilham et al. 1986:144, 142)]

- | | |
|------------------|---|
| (b) <i>wurdu</i> | 1. Corner, curve. 2. Small point on coastline |
| <i>yiiwija</i> | Lie down, sleep, camp the night |

[*Kayardild dictionary and thesaurus* (Evans 1992:143, 179)]

Most modern practical dictionaries frame their definitions in terms of relatively simple, common English words, if only to maximise their intelligibility for Aboriginal users. One of the few exceptions is the main version of the Warlpiri dictionary (i.e. the version intended for linguistic, rather than for general, use), which employs a rather technical, semi-standardised metalanguage. This has been the subject of one of the very few theoretically-oriented exchanges in the scant literature about Aboriginal language lexicography. The exchange, in Austin, ed. (1983), occurred between Anna Wierzbicka and Mary Laughren, and is sufficiently interesting to review here.

Wierzbicka (1983:136–137) criticised the style of definition shown below.

paka-mi — ‘xERG produces concussion of surface of yABS, by coming into contact with y’

lirri-mi — ‘xABS increases in size, typically to assume abnormal dimensions’

Such definitions, she said, violated the requirement that a sound definition “must reduce what is complex to what is simple, what is obscure to what is clear, what is conceptually ‘posterior’ to what is conceptually ‘prior’”. The rather learned style of language used was an unnecessary barrier to understanding. Wierzbicka also claimed that by using the complex defining language one runs the risk of committing the lexicographic sin of circularity, if only in a hidden form. For instance, if a word close in meaning to ‘hit’ is defined in terms of ‘concussion’, there is implicit circularity because we understand the word ‘concussion’ in terms of ‘hitting’.

Laughren (1983) defended the form of the definitions on the grounds that they bring out the natural semantic classes to be found in Warlpiri. She explained that the first of the definitions cited above is formulated so as to show that *paka-mi* falls into the class of ‘contact/effect’ verbs, whose core meaning is defined as ‘xERG produces an effect on yABS by some entity coming into contact with y’. The other details of the definition distinguish *paka-mi* from other verbs of the same class (e.g. *panti-mi* ‘pierce, poke, stick into, spear’, *yipi-mi* ‘squeeze out’, *palji-mi* ‘wash’). The differences are captured by specifications of the nature of the effect (e.g. concussion, pressure, cleaning, etc.), the nature of the entity (sharp pointed, hands, water, etc.) and the nature of the contact. Laughren also pointed out that the apparent simplicity of English words such as ‘hit’ may be misleading. For instance, there are several different senses for ‘hit’, only one of which could be translated using Warlpiri *paka-*

rni. Laughren even argues that technical vocabulary, because it is less polysemous, tends to focus on simple concepts better than everyday words do.

Though the Warlpiri dictionary's commitment to systematic semantic decomposition is commendable, it does not in our view constitute a sufficient defence of complex defining metalanguage because there is no reason to believe that systematic decomposition requires complex terms. Another drawback is that because terms such as 'concussion', 'surface', and 'contact' are not directly translatable into Warlpiri, the resulting definitions are not directly accessible to the intuitions of native speakers and cannot be verified by testing their substitutability into authentic Warlpiri contexts of use. It is surely preferable that a defining metalanguage should be as simple and as cross-translatable as possible, though, to be sure, establishing an optimal translatable metalanguage is no easy task.⁹

A final issue to do with the definitional side of dictionary making concerns encyclopaedic information. In general, the larger dictionaries tend to include liberal amounts of cultural knowledge in or along with their definitions or in the example sentences. The kind of facts often noted include the habits of animals, uses for plants and animals, procedures for making and using tools and implements, as well as social customs and beliefs.

From the viewpoint of semantic theory, the importance of cultural knowledge is being increasingly recognised, with richly detailed scenarios and cultural scripts now widely accepted as plausible representations of linguistic knowledge. Some semantic theorists, such as George Lakoff (1987) and Ronald Langacker (1987), reject the distinction between linguistic and real-world knowledge altogether, while others, such as Wierzbicka (1983, in press) would rather redraw the boundary so that some details about the habits of animal species and the functions of artefacts are seen as aspects of semantic knowledge. In any case, there can be no theoretical objection to the encyclopaedic dictionary, so long as the 'knowledge' being included is that of the indigenous culture, as opposed to Western 'scientific' knowledge.¹⁰ As pointed out by Evans (1992, this volume) and by Wilkins (1996), encyclopaedic information also often helps to make sense of polysemy and to identify pathways of semantic change. Finally, from a practical point of view, encyclopaedic dictionaries are often more interesting and more useful.

4. THE FUTURE FOR ABORIGINAL LANGUAGE LEXICOGRAPHY

Until recently, makers of Aboriginal language dictionaries have largely worked in isolation from one another.¹¹ It is greatly to be hoped that the future will see more debate, discussion and exchange on theory and methodology as well as on data management

⁹ Work within Wierzbicka's Natural Semantic Metalanguage (NSM) framework posits the existence of some 60 or so 'semantic primitives', hypothesised to have lexical exponents (i.e. precise translation equivalents) in all languages (Wierzbicka 1996). Evans (1994), Goddard (1994) and Harkins and Wilkins (1994) investigate the translatability of 36 of these into the Aboriginal languages Kayardild, Yankunytjatjara and Arrernte. Semantic research of this kind has obvious value for the definitional side of lexicography.

¹⁰ A further distinction could (and arguably should) be made between knowledge which is linguistically encoded, as evidenced by lexical collocations, metaphorical interpretations and so on, and specialist knowledge possessed only by the experts of the culture (cf. Apresjan 1992 [1974], Wierzbicka in press, Wilkins this volume).

¹¹ The main exception to this statement was the 1982 ALS Workshop on Australian Aboriginal Lexicography convened by Peter Austin (cf. Austin ed. 1983).

techniques. There is an important role here for AUSTRALEX (the Australasian Association for Lexicography), formed in 1990.

In terms of language coverage, the main focus for future work in Australian lexicography must surely be non-Pama-Nyungan languages, which, as mentioned, have scarcely been touched in comparison with the languages of the Pama-Nyungan grouping. Non-Pama-Nyungan languages present the lexicographer with far greater analytical and organisational challenges, whose exploration will bear on many questions of interest to general linguistic theory.

A more radical departure from current practice, and one less likely to eventuate, except perhaps sporadically, would be a move away from the 'Aboriginal vernacular-English' style of bilingual dictionary. As noted by Crowley (1986), among others, a preponderance of lexicography in this direction is indicative of the dominant status of the target language. (There have been some moves towards the development of monolingual Aboriginal language dictionaries for use in schools, such as Paddy Patrick Jangala's monolingual Warlpiri dictionary (1986), but as far as we are aware, there has been no serious attempt to develop an 'English-Aboriginal vernacular' bilingual dictionary for any language.)¹²

Advances in computer and video technology mean that dictionaries of the future will not necessarily take the form of books. Already, integrated 'multimedia' packages (e.g. Thieberger 1994) are appearing which enable users to access sound, video and animation sequences, and graphic displays, as well as printed matter. Such media offer to overcome many of the organisational limitations of print dictionaries, such as the priority of the alphabetical list format (though books will retain the edge in price and portability for some time). It becomes possible to 'navigate' through a richly structured information space, accessing information in many alternate ways and being able to move freely between different levels or modes of data without needing advanced literacy skills. Aside from placing heavy demands on computer processing speed and storage capacity, production of such multimedia dictionaries calls for new personnel and new types of collaboration on the lexicographic team.

The next twenty years will undoubtedly see far greater input into lexicographic projects from dictionary workers who are themselves native speakers. Likewise, there will be even greater demand by Aboriginal people for dictionaries, and for a wider range of uses. Two quite new uses are in language revival (as with the Kaurna people of Adelaide and the Bundjalung of the north coast of NSW), and in mainstream education programs about Aboriginal languages (to be implemented from 1994 as a Higher School Certificate subject).

Linguists too will be looking to Aboriginal language lexicography for new purposes; for example, to study semantic change and diffusion (cf. Wilkins 1996), pursuits which call for detailed and specialised lexico-semantic investigation. With the ASEDA collection now representing over 200 Australian languages, there is sufficient data to construct a pan-Australian dictionary, a project warranting serious consideration in the near future. Interestingly, one of the preoccupations of the nineteenth century, namely, reconstructing the linguistic prehistory of Australia, is beginning to re-emerge after having fallen into the shadows for many years (cf. O'Grady 1979; McConvell and Evans in press). Also, general linguistic theory is increasingly interested in the detailed structuring of the lexicon, in

¹² The largest English-Aboriginal vernacular list, not of the 'finderlist' variety, would be in McKelson (1989).

semantically oriented approaches to grammar, and in the new field of ‘lexical typology’ (cf. Lehrer 1992). Australian language lexicography can be expected to benefit from these trends.

Above all, it is important to remember that, despite the advances of the past twenty-five years, the state of Aboriginal language lexicography is still rudimentary compared with the great depth and breadth of work which has been done on English and other ‘international’ languages. The research potential in the field therefore remains effectively unlimited.

APPENDICES: LEXICOGRAPHIC OUTPUT ON AUSTRALIAN ABORIGINAL LANGUAGES 1968–1993

Note that dictionaries with more than 2,000 entries and detailed semantic information are listed separately, in Table 1 (§2.2).

The following lists have been compiled from the AIATSIS library catalogue, on keywords ‘dictionarwordlist\vocab’, supplemented where omissions are apparent. Note that this is not a complete list of such work. Where a manuscript has been superseded by a published or more substantial edition only the later edition is included here. If an electronic data file has entries marked by topic and coded for reversal, it is marked in this list as being a topical list with a finderlist.

APPENDIX 1: PUBLISHED WORDLISTS AND SMALL DICTIONARIES

Lists under 200 words are not included, except for illustrated wordlists or collections of comparative lists.

CODES

r	=	available from ASEDA as electronic data file
→	=	includes finderlist
k	=	reconstituted from historical materials
↗	=	illustrated
W	=	topical list
S	=	includes sentence examples
=	=	work in progress
#	=	unseen/unable to be coded fully

Aguas, E.F., 1968, Gudandji. *Papers in Australian linguistics* No.3, 1–20. PL, A–14.

- r→W Alpher, Barry, 1991, *Yir-Yoront lexicon: sketch and dictionary of an Australian language*. Berlin: Mouton de Gruyter.
- r→kW Amery, Rob and Jane Simpson, 1994, Kaurna. In Nick Thieberger and William McGregor, eds *Macquarie Aboriginal words: a dictionary of words from Australian Aboriginal and Torres Strait Islander languages*, 144–172. Sydney: Macquarie Library.
- r Atkins, W.H., 1991, *W.H. Atkins memorial: Nyungar–English, English–Nyungar dictionary, with equivalents in standard orthography*. Edited and published by W.H. Douglas.
- r→ Austin, Peter, 1992, *A dictionary of Jiwarli, Western Australia*. Bundoora, Vic.: Dept of Linguistics, La Trobe University.

- r→ 1992, *A dictionary of Payungu, Western Australia*. Bundoora, Vic.: Dept of Linguistics, La Trobe University.
- r→ 1992, *A dictionary of Thalanyji, Western Australia*. Bundoora, Vic.: Dept of Linguistics, La Trobe University.
- r→ 1992, *A dictionary of Tharrgari, Western Australia*. Bundoora, Vic.: Dept of Linguistics, La Trobe University.
- r→ 1992, *A dictionary of Warriyangga, Western Australia*. Bundoora, Vic.: Dept of Linguistics, La Trobe University.
- r→ 1992, *A dictionary of Yinggarda, Western Australia*. Bundoora, Vic.: Dept of Linguistics, La Trobe University.
- r→ k 1993, *A dictionary of Gamilaraay, northern New South Wales*. Bundoora, Vic.: Dept of Linguistics, La Trobe University.
- r→ k 1993, *A reference dictionary of Gamilaraay, northern New South Wales*. Bundoora, Vic.: Dept of Linguistics, La Trobe University.
- r→ W 1994, Diyari. In Nick Thieberger and William McGregor, eds *Macquarie Aboriginal words: a dictionary of words from Australian Aboriginal and Torres Strait Islander languages*, 125–143. Sydney: Macquarie Library.
- k Bindon, Peter and Ross Chadwick, 1992, *A Nyoongar wordlist from the south west of Western Australia [Nyoongar/English]*. Perth: Anthropology Dept, WA Museum.
- r→ Black, Paul, Rolly Gilbert et al., 1986, *Kurtjar dictionary*. Batchelor, NT: SAL.
- Blake, Barry J., 1979, *A Kalkatungu grammar*. PL, B-57.
- r→ kW 1979, Pitta-Pitta. In R.M.W. Dixon and Barry J. Blake, eds *Handbook of Australian languages*, vol.1, 183–242. Canberra: ANU Press.
- W 1991, Woiwurrung, the Melbourne language. In R.M.W. Dixon and Barry J. Blake, eds *Handbook of Australian languages*, vol.4, 30–122. Melbourne: Oxford University Press.
- r→ Blyth, J.N., 1988, *Wangka base dictionary*. Boulder, WA: The author.
- r→ Brandenstein, C.G. von, 1980, *Ngadjumaja: an Aboriginal language of south-east Western Australia*. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.
- 1988, *Nyungar anew: phonology, text samples and etymological and historical 1500-word vocabulary of an artificially re-created Aboriginal language in the south-west of Australia*. PL, C-99.
- # Breen, J.G., 1973, *Bidyara and Gungabula: grammar and vocabulary*. Linguistic Communications 8.
- W 1981, Margany and Gunya. In R.M.W. Dixon and Barry J. Blake, eds *Handbook of Australian languages*, vol.2, 274–393. Canberra: ANU Press.
- 1981, *The Mayi languages of the Queensland Gulf Country*. Canberra: AIAS.
- 1990, *Salvage studies of Western Queensland Aboriginal languages*. PL, B-105.
- ↗ Breen, John Gavan and Julie Jones, 1986, *Alyawarra picture vocabulary*. Alice Springs, NT: IAD/SAL.
- r→ S= Brown, Alexander (Sandy) and Brian Geytenbeek, 1990, *Ngarla–English dictionary*. Port Hedland, WA: Wangka Maya Pilbara Aboriginal Language Centre.
- Capell, A., 1984, The Laragia language. *Papers in Australian linguistics* No.16, 55–106. PL, A-68.
- Capell, A. and H.E. Hinch, 1970, *Maung grammar: texts and vocabulary*. The Hague: Mouton.

- r Chadwick, Neil, 1975, *A descriptive study of the Djingili language*. Canberra: AIAS.
- Christie, Michael, 1979, *Gupapuyngu dictionary*. Milingimbi.
- Coate, Howard H.J. and A.P. Elkin, 1974, *Ngarinjin–English dictionary*. Sydney: University of Sydney.
- W Crowley, Terry, 1979, Yaygir. In R.M.W. Dixon and Barry J. Blake, eds *Handbook of Australian languages*, vol.1, 363–384. Canberra: ANU Press.
- W 1981, The Mpakwithi dialect of Anguthimri. In R.M.W. Dixon and Barry J. Blake, eds *Handbook of Australian languages*, vol.2, 147–194. Canberra: ANU Press.
- W 1983, Uradhi. In R.M.W. Dixon and Barry J. Blake, eds *Handbook of Australian languages*, vol.3, 306–428. Canberra: ANU Press.
- W Davis, S., 1981, *Dictionary by domains, natural species: Gupapuyngu language*. Darwin: NT University Planning Authority.
- r→W Dench, Alan, 1991, Panyjima. In R.M.W. Dixon and Barry J. Blake, eds *Handbook of Australian languages*, vol.4, 125–243. Melbourne: Oxford University Press.
- rkW 1994. Nyungar. In Nick Thieberger and William McGregor, eds *Macquarie Aboriginal words: a dictionary of words from Australian Aboriginal and Torres Strait Islander languages*, 173–192. Sydney: Macquarie Library.
- W Dixon, R.M.W., 1981, Wargamay. In R.M.W. Dixon and Barry J. Blake, eds *Handbook of Australian languages*, vol.2, 1–144. Canberra: ANU Press.
- W 1983, Nyawaygi. In R.M.W. Dixon and Barry J. Blake, eds *Handbook of Australian languages*, vol.3, 430–525. Canberra: ANU Press.
- r→W 1991, Mbabaram. In R.M.W. Dixon and Barry J. Blake, eds *Handbook of Australian languages*, vol.4, 349–402. Melbourne: Oxford University Press.
- W 1991, *Words of our country: stories, place names and vocabulary in Yidiny, the Aboriginal language of the Cairns-Yarrabah region*. St Lucia: University of Queensland Press.
- r→W Donaldson, Tamsin, 1994, Ngiyampaa. In Nick Thieberger and William McGregor, eds *Macquarie Aboriginal words: a dictionary of words from Australian Aboriginal and Torres Strait Islander languages*, 23–40. Sydney: Macquarie Library.
- W Douglas, W.H., 1976, *The Aboriginal languages of the south-west of Australia* (2nd edn). Canberra: AIAS.
- W 1981, Watjarri. In R.M.W. Dixon and Barry J. Blake, eds *Handbook of Australian languages*, vol.2, 197–272. Canberra: ANU Press.
- W 1988, *An introductory dictionary of the Western Desert language*. Perth: WA College of Advanced Education.
- W 1990, *Illustrated topical dictionary of the Western Desert language: Warburton Ranges dialect, Western Australia*. Kalgoorlie, WA: Kalgoorlie College. (1st edn 1959)
- 1992, *Bardi language word-book: a revision of 'Word gems from Iwanya - Sunday Island' [Bardi/English]*. Broome, WA: Jawa Publications.
- r→kW Eades, Diana, 1976, *The Dharawal and Dhurga languages of the New South Wales south coast*. Canberra: AIAS.
- W 1979, Gumbaynggir. In R.M.W. Dixon and Barry J. Blake, eds *Handbook of Australian languages*, vol.1, 245–361. Canberra: ANU Press.
- Ernabella Mission, 1983, *Pitjantjatjara–English vocabulary*. Adelaide: University of Adelaide.

- WS Evans, Nicholas, 1992, *Kayardild dictionary and thesaurus*. Melbourne: Department of Linguistics and Language Studies, University of Melbourne.
- k Fitzpatrick, Phil, 1989, *Warra Kaurna: a selected wordlist from the language of the Kaurna people of the Adelaide Plains [Kaurna/English]*. Adelaide: Dept of Environment and Planning.
- r Foote, Tom and Allen Hall, 1992, *Kuuk Thaayorre dictionary: Thaayorre/English*. Toowong, Qld: Jollen Press.
- W Galpagalpa, J., D.Wanyumuli, L. de Veer and M.Wilkinson, 1984, *Dhuwal Djambarrpuynu Dharuk Mala ga Mayali' (Djambarrpuynu wordlist)*. Nhulunbuy: Yirrkala Community School Literature Production Centre.
- r → W Ganambarr, Merrkiyawuy, 1994, *Dätiwuy*. In Nick Thieberger and William McGregor, eds *Macquarie Aboriginal words: a dictionary of words from Australian Aboriginal and Torres Strait Islander languages*, 234–265. Sydney: Macquarie Library.
- k Gell, John Philip, 1988, The vocabulary of the Adelaide tribe. *Journal of the Anthropological Society of South Australia* 25/5:3–15.
- Geytenbeek, Brian and Helen Geytenbeek, 1971, *Gidabal grammar and dictionary*. Canberra: AIAS.
- r → S = 1991, *(Interim) Nyangumarta–English dictionary, with an English–Nyangumarta finder-list*.
- r → ↗ Glasgow, Kathleen, 1994, *Burarra–Gun-nartpa dictionary with English finder list*. Darwin: SIL.
- r Glass, Amee and Bernard Newbery, 1988, *Ngaanyatjarra word list*. Alice Springs, NT: Ngaanyatjarra Bible Project.
- ↗ W Goddard, Cliff, 1982, *Pitjantjatjara/Yankunytjatjara picture vocabulary*. Illustrated by Julie Carter. Alice Springs, NT: IAD.
- r → ↗ S 1992, *Pitjantjatjara/Yankunytjatjara to English dictionary* (2nd edn). Alice Springs, NT: IAD.
- r → ↗ S Green, Jenny, 1992, *Alyawarr to English dictionary*. Alice Springs, NT: IAD.
- r → ↗ WS Groote Eylandt Linguistics, 1994, *Eningerrbirra-langwa jurra (a book about all sorts of things)*. Groote Eylandt: Groote Eylandt Linguistics.
- S Hale, Kenneth, 1974, Warlpiri–English vocabulary [an elementary dictionary of the Warlpiri language]. Mimeo. Cambridge, Mass.: MIT.
- r → 1990, *Ngarluma vocabulary, English–Ngarluma vocabulary*. Port Hedland, WA: Wangka Maya, Pilbara Aboriginal Language Centre.
- Hale, Kenneth and IAD staff, 1990, *Warlpiri to English vocabulary with grammatical sketch and English to Warlpiri wordlist*. Alice Springs, NT: IAD.
- k Hall, Harold Aubrey and C.G. von Brandenstein, 1971, *A partial vocabulary of the Ngalooma Aboriginal tribe*. Canberra: AIAS.
- Hansen, K.C. and L.E. Hansen, 1992, *Pintupi/Luritja dictionary* (3rd edn). Alice Springs, NT: IAD. (1st edn 1974)
- r Harper, Helen, 1992, *Injinoo Ikya word list*.
- W Haviland, John, 1979, *Guugu-Yimidhirr*. In R.M.W. Dixon and Barry J. Blake, eds *Handbook of Australian languages*, vol.1, 27–180. Canberra: ANU Press.
- Heath, Jeffrey, 1978, *Ngandi grammar, texts and dictionary*. Canberra: AIAS.
- W 1980, *Basic materials in Ritharngu: grammar, texts and dictionary*. PL, B–62.
- W 1980, *Basic materials in Warndarang: grammar, texts and dictionary*. PL, B–72.
- W 1981, *Basic materials in Mara: grammar, texts and dictionary*. PL, C–60.
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- r → S Kimberley Language Resource Centre and Mathew Wrigley, 1992, *Jaru dictionary*. Halls Creek, WA: Kimberley Language Resource Centre.
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- ↗ Students of Smithfield State High School, 1987, *An Aboriginal dictionary book in the Djabugay language*. [Cairns, Qld]: Dept of Education, Peninsula Education Region.
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- r → kW Troy, Jakelin, 1994, The Sydney language. In Nick Thieberger and William McGregor, eds *Macquarie Aboriginal words: a dictionary of words from Australian Aboriginal and Torres Strait Islander languages*, 61–78. Sydney: Macquarie Library.
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- r → S Valiquette, Hilaire, ed., 1993, *A basic Kukatja to English dictionary*. Balgo, WA: Luurnpa Catholic School.
- ↗ Wafer, James and Julie Carter, 1982, *Kaytetye picture vocabulary*. Alice Springs, NT: IAD.
- ↗ Walsh, Michael, 1994, Murrinh-Patha. In Nick Thieberger and William McGregor, eds *Macquarie Aboriginal words: a dictionary of words from Australian Aboriginal and Torres Strait Islander languages*, 299–319. Sydney: Macquarie Library.
- rS Wangka Maya, Pilbara Aboriginal Language Centre, Alexander Brown and Brian Geytenbeek, 1989–90, *Aboriginal languages of the Pilbara: Ngarla*. Port Hedland, WA: Wangka Maya, Pilbara Aboriginal Language Centre.
- rS 1989–90, *Aboriginal languages of the Pilbara: Nyamal*. Port Hedland, WA: Wangka Maya, Pilbara Aboriginal Language Centre.
- rS Wangka Maya, Pilbara Aboriginal Language Centre, Bruce Thomas, Frank Thomas and Brian Geytenbeek, 1989–90, *Aboriginal languages of the Pilbara: Nyangumarta*. Port Hedland, WA: Wangka Maya, Pilbara Aboriginal Language Centre.
- rS Wangka Maya, Pilbara Aboriginal Language Centre, Jim Marsh and Milton Chapman, 1989–90, *Aboriginal languages of the Pilbara: Manyjilyjarra*. Port Hedland, WA: Wangka Maya, Pilbara Aboriginal Language Centre.

- rS Wangka Maya, Pilbara Aboriginal Language Centre, Kenneth Hale and Tootsie Daniel, 1989–90, *Aboriginal languages of the Pilbara: Ngarluma*. Port Hedland, WA: Wangka Maya, Pilbara Aboriginal Language Centre.
- rS Wangka Maya, Pilbara Aboriginal Language Centre, Lorraine Injie and Alan Dench, 1989–90, *Aboriginal languages of the Pilbara: Banjima*. Port Hedland, WA: Wangka Maya, Pilbara Aboriginal Language Centre.
- rS Wangka Maya, Pilbara Aboriginal Language Centre and Manny Lockyer, 1989–90, *Aboriginal languages of the Pilbara: Kariyarra*. Port Hedland, WA: Wangka Maya, Pilbara Aboriginal Language Centre.
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- ↗ Yamaji Language Centre and Doug Marmion, 1992, *Wajarri wangga: Wajarri words*. Geraldton, WA: Yamaji Language Centre.
- r Zorc, R. David Paul, 1986, *Yolngu-matha dictionary*. Batchelor, NT: SAL.

APPENDIX 2: UNPUBLISHED WORDLISTS AND DICTIONARIES AVAILABLE AS MANUSCRIPT OR AS ELECTRONIC DATA FILE

CODES

- r = available from ASEDA as electronic data file
- = includes finderlist
- k = reconstituted from historical materials
- ↗ = illustrated
- W = topical list
- = = work in progress
- Anderson, Bruce, *Yindjibarndi dictionary*.
- r= Andrews, Avery, *Anmatyerre wordlist*.
- rk= Anonymous and Nicholas Thieberger, [Ngarla vocabulary].
- Bani, Ephraim, 1987, *Kalaw Kawaw Ya/English dictionary* (draft).
- ↗ Banning, Roy, Wanyarra and Michael Quinn, 1989, *Djabugay ngirrma gulu Kuranda*.

- rk = Bell, Jeanie, *A dictionary of the Gubbi Gubbi and Butchulla languages*.
 r Berndt, Ronald and T. Vogelsang, *Ngadjuri wordlist*.
 k Bishop, Ida, 1990, *Koongurrukun language - lexicon letters K through to Y*.
 r Blake, Barry J., *Kalkatungu vocabulary*.
 r Pitta Pitta wordlist.
 r Yalarnga vocabulary.
 rk [Victorian languages].
 Blundell, V.J., 1976, *A dictionary of Ngarinyin terms for material culture, environmental features and related items, with Worora equivalents/ with terms recorded by H. Petri*.
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 ↪ Bolt, Janet E., W. G. Hoddinott and F. M. Kofod, 1971, *An elementary grammar of the Nungali language of the Northern Territory*.
 ↪ 1971, *An elementary grammar of the Ngaliwuru language of the Northern Territory*.
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 ↪ Brandenstein, C. G. von., 1975-77, *A Pilbara Aboriginal vocabulary - AVC languages: Ngarluma, Jindjiparndi, Karierra, Pandjima, Kurrama: with addenda Jindjiparndi*.
 r [Nyiyapali wordlist].
 k Brasch, Sarah Louise, 1991, *Working papers from thesis on Gureng Gureng: vocabularies SE Qld languages and working papers: vocabulary Bunganditj, SA. [Gureng Gureng/Bunganditj/ /English]*.
 r Breen, Gavan, *Warluwara wordlist*.
 rW 1988, *Bularnu grammar and vocabulary machine-readable file*.
 r= Garawa/Wanyi machine-readable data files.
 r= Innamincka talk machine-readable files.
 r= Kaytetye vocabulary machine readable files.
 r= Kukatj grammar machine-readable files.
 r= Mudburra graded wordlist.
 r= Wakaya.
 r Chadwick, Neil, Harold Ulamari, Janet Sandy, Mona Rennie and Kenneth Hale, *Jingulu wordlist*.
 r Coleman, Carolyn, *Ndjébbana dictionary*.
 r Mbakwithi vocabulary.
 rk Curr, E.M., 1886, *The Australian race*. Melbourne: Government Printer.
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 r Dench, Alan, *Kurrama*.
 r Martuthunira.
 r Yingkarta.
 r Dixon, R.M.W., 1975, *Dyirbal flora dictionary*.
 r= Donaldson, Tamsin, 1978, *Interim dictionary of Ngiyambaa of the Wanggaaybuwan*.
 r Drury, V., *Nanta wordlist*.
 Elwell, Vanessa M.R., 1977, *Gurugoni [Gungurugoni] "dictionary"*.

- r Evans, Nicholas, *Mayali vocabulary*.
- r Florey, Margaret and Janie Winder, *Wangka Maya, Pilbara Aboriginal Language Centre, Malkana*.
- r Florey, Margaret and Mabel Tommy, *Yinhawangka wordlist*.
- r Furby, E.S. and C.E. Furby, *Garawa dictionary*.
- r= Furby, E.S., C.E. Furby, A. Rogers and L. Rogers, *Garawa/Wanyi wordlist*.
- r= Garde, Murray, *Kuninjku (Eastern Kunwinjku) vocabulary and texts*.
- r= Green, Ian, *Daly lexicons*.
- r Green, Thomas, 1988, *Ngardily wordlist (with preliminary grammatical notes and text)*.
- r *Djabugay wordlist*.
- r *Jiwarliny*.
- r Hale, Kenneth, Ann Farmer, David Nash and Jane Simpson, 1981, *A preliminary dictionary of Lardil*.
- r Hale, Kenneth and G.N. O'Grady, *Bayungu wordlist*.
- r Hale, Kenneth, Geoffrey O'Grady and E. Curr, *Nhanta wordlist*.
- r Hale, Kenneth, Barbara Sayers and Chris Kilham, *Wik Mungkan wordlist*.
- r Handelmann, Robert, *Towards a description of Amurdak: a language of Northern Australia*.
- r Harvey, Mark, 1990, *A provisional Gamu–English dictionary*.
- r 1990, *Provisional Matngele–English vocabulary*.
- r= *Gagudju dictionary*.
- r= *Gunwinjguan papers*.
- r= *Warray grammar, Warray dictionary, bibliography, Warray verbs*.
- r Haviland, John, *Guugu Yimidhirr vocabulary*.
- r Heath, Jeffrey, 1973, *Dhay'yi (Dharlangu) texts and vocabulary*.
1975, *Anindhilyakwa (Enindhilyagwa) language materials*.
- W Hercus, Luise, *Gippsland vocabulary*.
- r *Maljangapa-Wadigali vocabulary*.
- rk = *Southern Ngarigu vocabulary*.
- rk *Wergaia vocabulary 1*.
- rk *Yarluwandi vocabulary*.
- r *Machine-readable files of Arabana and Wangkangurru vocabulary*.
- rk Hercus, Luise and Nicholas Thieberger, 1993, *Mirning vocabularies*.
- r Hewett, Heather, Anne Dineen, David Tainsby and Robin Field, *Maung dictionary project*.
- r Hore, Michael, *Nunggubuyu dictionary*.
- r→W Hosokawa, Komei, 1988, *Classified Yawuru dictionary*.
- W Howell, Robyn, 1987, *Kamilaroi language – words/phrases/terms*.
- Hughes, Earl James, 1970, *Nunggubuyu legends: more tales of the Nunggubuyu tribe*.
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- r→W Johnson, Edward, *Karajarri Sketch Grammar*.
- r= Johnson, Steve, *Ngarrindjeri wordlist*.
- rk Johnson, Steve and Amanda Lissarrague, *Yaygir vocabulary*.

- r= Johnson, Steve and Ian Smith, *Kugu Nganchara*.
r= Kimberley Language Resource Centre, *Tsunoda's Jaru*.
r= Kirton, Jean, *Yanyuwa*.
r= Klokeid, Terry, *Nyamarl wordlist*.
r= *Tharrgari (D) wordlist*.
r= Koch, Harold, *Machine readable files of "Kaytetye texts" and "Kaytetye dictionary"*.
→ Latz, Peter, 1981, *Alyawarra, Anmatjirra and western Aranda plant names*.
→ 1981, *Pintupi, Pitjantjatjara and Warlpiri plant names*.
r= Laughren, Mary et al., 1994, *Warlpiri dictionary*.
✉ Laurel, Benjamin, 1985, *Walmajarri picture dictionary*.
r= Laves, Gerhardt, *Anyumarla wordlist*.
rk= Lissarrague, Amanda, Steve Johnson and Leeton Smith, *Dhangadi dictionary*.
r= Lowe, Beula, Velma J. Leeding and M.J. Christie, *Gupapuyngu dictionary: Milngimbi communilect*.
r= Ltyentye Apurte Literature Production Centre, 1992, *Angkentye Atyinhe Arrernte, Ltyentye Apurte (Santa Teresa)*.
r= Marribank conference, Nick Thieberger and others, *Nyungar wordlists*.
r= Marsh, Jim and E. Lindgren, *Gardudjarra wordlist*.
r= Massachusetts Institute of Technology, Mary Napaljarri Laughren and Warlpiri Dictionary Project, 1975, *Warlpiri dictionary card files*.
r= McConvell, Patrick, 1993, *Gurindji dictionary*.
r= McConvell, Patrick and Francis Kofod, *Kija dictionary*.
r= McConvell, Patrick and David Nash, *Mudburra wordlist*.
r= McGregor, William, 1992, *Handbook of Kimberley languages*, volume 2: *Word lists* (first draft).
r= McKelson, Fr Kevin R., *Karajarri wordlist*.
r= *Mangala wordlist*.
r= *Yulparija*.
McKay, Graham, 1981, *Glossary of Ndjebbana (Kunibidji) adverbials and glossary of miscellaneous Ndjebbana (Kunibidji) words: preliminary version*. Maningrida, NT.
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1982, *Glossary of Ndjebbana (Kunibidji) verbs: preliminary version*. Darwin.
McNair, Norm and Helen McNair, *Gurindji dictionary*.
Meier, A., 1977, *Vocabulary of the Dieri tribe*.
Merlan, Francesca, 1982, *Ngalakan dictionary*. Sydney.
1983, *Ngalakan grammar, texts and vocabulary*. PL, B–89.
1989, *Jawoyn–English dictionary: Barunga, Beswick, and Katherine*.
rW Wardaman vocabulary.
r= Merlan, Francesca, Amy Dirn.gayg, Lulu Jilimbirrnga, Jessie Roberts, Rita Morgan and others of Jilmirn.gan and Barunga, 1990, *Mangarrayi vocabulary*.
r= Mirima Language Centre and Frances Kofod, *Miriwoong dictionary (back up)*.
rk= Moore, George F., *Wadjuk wordlist*.
rk= Moorhouse, Matthew and Jane Simpson, *Ngaiawang vocabulary*.

- r= Nash, David George, 1988, *Mudbura vocabulary: based on P. McConvell's Mudbura notes 1974-76*.
- r= Nash, David and Kenneth Hale, *Preliminary vocabulary of Warlmanpa*.
- rk= Nekes, Herman, E.A. Worms, Linda de Veer and William McGregor, *Vocabularies of Nyul Nyul and other Kimberley languages, from Nekes and Worms, and J. Bischofs manuscripts*.
- r Nordlinger, Rachel, 1993, *A grammar of Wambaya. Bilinara–English*.
- r O'Grady, Geoffrey, *Northern Mangarla wordlist.*
- r *Nyangumarta wordlist.*
- r *Niyabali wordlist.*
- r *Umpila wordlist.*
- r *Walmatjarri wordlist.*
- r *Warnman wordlist.*
- r *Warriyangka wordlist.*
- r *Yulbaridja wordlist.*
- r *Wirangu wordlist.*
- r O'Grady, Geoffrey and J. M. Black, *Narrangga wordlist.*
- r O'Grady, Geoffrey and E. Curr, 1886, *Mirniny wordlist.*
- r Ober, Dana, 1994, *Kalaw Kawaw Ya/English dictionary.*
- r= Peile, Fr Antony R., *Kukatja dictionary.*
- r= Reid, Nick, *Ngan'gityemerri dictionary files.*
- rk Reuther, J. G., *Reuther comparative 7.*
- rk Reuther, J. G., P. A. Scherer (tr), Luise Hercus and Peter Austin, *The Diari.*
- r= Robertson, Sue, *Jaabugay dictionary.*
- r Sandefur, John, *Kriol–English dictionary.*
- r= Schultze-Berndt, Eva, [Jaminjung/Ngaliwurru, Yirram vocabularies and games].
- rk Schürmann, C., Jane Simpson and Geoffrey O'Grady, *A vocabulary of the Parnkalla language, Adelaide.*
- r= Sharpe, Margaret, *Alawa/Kriol dictionary.*
- r Shnukal, Anna, *Dictionary of Torres Strait Creole (Broken).*
- r= Simpson, Jane, *Preliminary vocabulary of Warumungu.*
- rk= Simpson, Jane, J. M. Black and Geoffrey O'Grady, *Wirrung wordlist.*
- r Sommer, Bruce, *Bakanha wordlist.*
- r *Kunjen (Oykangand) wordlist.*
- r *Kuuk Thaayorre wordlist.*
- r *Yirr Yoront wordlist.*
- r Sommer, Bruce and Kenneth Hale, *Kok Bera wordlist.*
- r Stokes, Bronwyn, Gladys Johnston and Lucy Marshall, *Nyikina–English: a first lexicon.*
- r Street, Chester and Lyn Street, *Murrinh Patha dictionary.*
- r= Sutton, Peter, *Wik Ngathan.*
- r Swartz, Stephen, *Warlpiri English dictionary.*
- r Taylor, Luke, *Kunwinjku wordlist.*
- rk Teichelmann and Schürmann and Jane Simpson, *Kaurna vocabulary.*

- r Thieberger, Nicholas and Alice Smith, *Yinhawangka wordlist*.
- r Thieberger, Nicholas, Manny Lockyer, Bernie Lockyer and Sam Clifton, *Kariyarra wordlist*.
- r Thompson, David A., "Sand beach" language: an outline of *Kuuku Ya'u* and *Umpila*.
- r Thorley, Peter, *Walungurru curriculum database*.
- Tindale, Norman Barnett, *Parallel vocabularies in 160 Australian languages*.
- Trimmer, Kathy, 1990, [Wanggatha language material].
- rk Troy, Jakelin, 1990, *Australian Aboriginal contact with the English language in New South Wales: 1788 to 1845*. PL, B-103.
- Tsunoda, Tasaku, 1971-72, *Warungu vocabulary*.
- 1992, *Vocabulary cards of Djaru and other Kimberley languages*.
- University of Adelaide, 1969, *Andagarinja/English word list*.
- Vaszolyi, Eric Gabriel, c.1972, *Mangala vocabulary*.
- r Walker, Alan, [Collected data files].
- r= Wangka Maya, Pilbara Aboriginal Language Centre, Nicholas Thieberger, Desmond Taylor, Pijuka Eidwun, Minyawu Miller, Desmond Taylor, Muuki Taylor and Waka Taylor, *Warnman wordlist*.
- r= Warlpiri Dictionary Project and others, *Warlpiri dictionary*.
- West, La Mont, *Dalabon sketch dictionary*.
- Wood, Raymond, 1974-75, *Dhangu: dictionary file*. Darwin.
- r Wrigley, Matthew and Kimberley Language Resource Centre, *Wangkajunga wordlist*.
- r= Wunungmurra, Djarrayang, *Dharlwangu dictionary*.
- Yamaji Language Centre and Doug Marmion, *Wajarri dictionary*.
- r= Zorc, R. David Paul, 1986, *Yolngu-Matha dictionary*. Batchelor, NT: SAL.

APPENDIX 3: WORKS-IN-PROGRESS MENTIONED IN O'GRADY (1971)

The following is a summary of information about work mentioned in O'Grady (1971: 782-787) which has subsequently appeared, been deposited at AIATSIS, or been reworked. The order of presentation, and the references, are as used by O'Grady.

Various Tasmanian vocabularies have been compiled and published in Plomley (1976). A larger version of Teichelmann and Schürmann's work on Pankarla and Kaurna was found in Cape Town and has been keyboarded by Jane Simpson. Taplin's Narrinyeri was keyboarded by Steve Johnson and Jane Simpson. Curr's vocabularies have been widely quoted and incorporated into other work. They have now been keyboarded, but it should be noted that the printed version apparently differs from the manuscript, copies of which are in the possession of R.M.W. Dixon.

Moore's (1884) dictionary of Wadjuk is subsumed into an encyclopaedic Nyungar dictionary by Alan Dench, as is the work of Lyon (1833), Nind (1831) and Salvado (1854).

H. Hale's (1846) Gamilaraay and Wiradjuri have been reworked by Peter Austin, and Sally McNicol and Dianne Hosking, respectively. Ridley's (1875) Gamilaraay has been reworked by Peter Austin. Brough-Smyth's (1878) vocabularies appear in Barry Blake's keyboarding of Victorian languages.

Some of Bates (1904) 5,000 typescript pages of vocabularies have been keyboarded; those representing the south-east of Western Australia by Luise Hercus and Nicholas

Thieberger (1993), and those from the Kimberley by McGregor (1992). Black's (1920) vocabularies have been incorporated into Jane Simpson's South Australian data.

Capell's 600-item wordlist in 40 Arnhem Land languages has been keyboarded and is held at the AIATSIS library. T.G.H. Strehlow's 30,000 word dictionary has not appeared, though a typescript copy of around 6,700 entries is held at AIATSIS. Nekes and Worms work is being keyboarded by Bill McGregor.

O'Grady's Nyangumarta, Yulparija, Walmajarri, Payungu, Umpila dictionaries, and his 100-item lexical list of 142 communalects were keyboarded as part of O'Grady's University of Hawaii project (1966-67). An electronic data file is available in ASEDA.

Wilf Douglas's *Illustrated topical dictionary of the Western Desert language* appeared in new editions in 1977 and 1990. His *Introductory dictionary of the Western Desert language* also appeared in 1988.

Kenneth Hale's data have been reproduced or incorporated into later work. In particular, the Wambaya material has been checked and used by Nordlinger (1993), and the Yanyurla (Yanyuwa) material is in Bradley et al. (1992). The Gunwinggu material is being incorporated into a comparative Gunwinggun dictionary in preparation by Nicholas Evans.

Petri's Nyangumarta dictionary is in Germany; efforts are being made to have copies available in Australia. Von Brandenstein's 10,000-entry Ngarluma dictionary is now in AIATSIS files. Schebeck's Murngin lexical work has not appeared, but he has produced a text-based dictionary of Adnyamathanha (1987). Dixon's work on Dyirbal and Yidiny is now well known.

La Mont West's Dalabon dictionary typescript is in the AIATSIS collection. Unsure about the Kuku Ya'o and Umpila material. Coate has material on several Kimberley languages (Coate & Elkin 1974). Holmer's work on Danggadi has been incorporated into Lissarrague (1994). His survey of south-eastern Queensland (1983) has also been incorporated into Jeanie Bell's work; unsure about the Gadhang material.

The Table in O'Grady (1971:786) lists AIAS grantees of the time. Work by the following is listed in Appendix 1 or Appendix 2 of the present paper: B. J. Blake; J. Bolt; N. Chadwick; M. C. Cunningham (now Sharpe); A. H. Hall; L. Hercus; Charles Osborne; C. Yallop; J. de Zwaan.

Alpher's Yir-Yoront dictionary is now available. Flint's material on Wanyi and Yiddindji (Yidiny) has been deposited at AIATSIS. Other work mentioned in O'Grady (1971:787) which has subsequently appeared is that of: E. Hughes (Nunggubuyu); A. Peile (Kukatja); L. Reece (Warlpiri); J. Stokes (Anindilyakwa); B. Lowe (Gupapuyngu); K. McKelson (Nyangumarta, Yulparija, Mangala, Karajarri); B. and H. Geytenbeek (Gidabal); B. Sommer (Kunjen); B. Sayers and C. Kilham (Wik-Mungkan); H. and R. Hershberger and L. and W. Oates (Kuku-Yalanji); J. Kirton (Yanyurla/ Yanyuwa); K. and D. Glasgow (Burarra); H. Hinch (Maung); J. and M. Marsh (Gardudjarra/Martu Wangka); K. and L. Hansen (Pintupi); J. Hudson and E. Richards (Walmajarri).

O'Grady (1971) does not mention William Dawes's information on Dharuk/Eora, the language of Sydney (which has been reworked by Jakelin Troy), nor Gerhardt Laves, who produced extensive lexical and grammatical information about Nyunga languages of the south-west of Western Australia, the area around La Grange (Karajarri). These works are available at AIATSIS.

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A LINNGITHIGH VOCABULARY

KEN HALE

Some twenty-five years ago, in the context of his general program of documenting the lexical and grammatical wealth of Pama-Nyungan, Geoff O'Grady invited me to work with him in Honolulu during June 1968. This was just one of the many times we worked together on aspects of Pama-Nyungan linguistics, always to my great benefit and delight. On this particular occasion, I promised Geoff that I would assemble some of the Pama-Nyungan vocabularies I had in my fieldnotes, including the short Linngithigh vocabulary which I now deliver, somewhat shamefacedly, a full quarter century after making my promise.

Linngithigh is a Northern Paman, initial-dropping language originally spoken in the vicinity of the Hey and Embley Rivers, in a region referred to as Winduwinda by the speaker with whom I worked. This is north of the Watson River, in western Cape York Peninsula, North Queensland. The anthropological literature (with which I am personally familiar, at least) leaves rather ambiguous the precise location of the original Linngithigh territory, due perhaps to certain characteristics inherent in the Aboriginal practices favoured in designating local communities in the area, practices which sometimes result in the circumstance that distinct groups have very similar names (e.g. Linngithigh and Laynngith, Ndra'ngith and Ndrwa'ngith). Thomson (1972) places the Linngithigh territory north of Pera Head, west of the Hey and south-west of the Embley, a region according reasonably well with my understanding of the location of Winduwinda.

The lexical items set out below were taken down in 1960, during a period of approximately two weeks, at Aurukun, an important centre in the Wik linguistic area south of the Watson. The items were given to me by the late Sam Kerundun, who, though himself fully fluent in Linngithigh, was one of the very last speakers of the language. He was a man of many and varied talents, with correspondingly many responsibilities at Aurukun, and I was extremely fortunate to be able to work with him, if only for a fortnight. I would like to dedicate this brief vocabulary both to Geoff O'Grady and to the memory of Sam Kerundun.

A brief sketch of the phonology and morphosyntax of Linngithigh is to be found in O'Grady, Voegelin and Voegelin (1966), and a number of observations on the language are offered in Capell (1956). An excellent report on the grammar and lexicon of a closely related Northern Paman language is found in Crowley (1981).

The Linngithigh items set out below are rendered in an orthography which is 'practical', in the sense that it avoids the use of diacritics and hence can be written on an ordinary typewriter. The voiceless obstruents are represented orthographically as follows: p, th, t, tr, c, k. The peripherals (p, k) are lightly to heavily aspirated when fully stopped; they are occasionally articulated as fricatives. The lamino-dental (th) is lightly aspirated. The lamino-alveopalatal (written c) is more often a fricative than a stop, hence [sY], though the stop

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variant (somewhat aspirated) is also heard [tY]. The two apicals (t, tr), both somewhat aspirated, differ in the presence or absence of the 'rhotic' (lightly trilled) release, hence [t] versus [t^r]. The voiced counterparts of these are generally prenasalised, hence: mb, ndh, (nd), ndr, nj, n^gg. The plain apical (nd) is not recorded in genuine Linngithigh items. The peripherals and the apical are sometimes found without prenasalisation (b, d, g), one minor reason for keeping the voiced and voiceless stops orthographically distinct. Voiced fricatives are bilabial, lamino-dental, and velar: bh, dh, gh. Nasals match the stops in point of articulation, as follows: m, nh, n, ny, ng. Liquids are apico-alveolar lateral and trill: l, rr. Glides are labio-velar (rounded), apico-domal (retroflex), and centro-domal (palatal): w, r, y. The language also possesses a glottal stop ('). Vowels are: i (high front, with a high mid front variant following /'); ae (low front); a (low back), o (mid back rounded), u (high mid to high rounded, back after peripherals, moderately fronted after coronals). In some items, vowels flanking the glottal stop are nasalised; where this is regularly perceived, it is represented by the notation Vn'V (i.e. orthographic /n/ here is not a consonant but merely a diacritic indicating nasal articulation of the preceding and following vowels).

TABLE: LINNGITHIGH PRACTICAL ORTHOGRAPHY

consonants							
	bilabial	lamino-dental	apico-alveolar	apico-domal	lamino-alveopalatal	dorsal-velar	glottal
obstruents							
voiceless	p	th tr	t		c	k	'
voiced	mb	ndh ndr	(nd)		nj	ngg	
fricatives	bh	dh				gh	
nasals	m	nh	n		ny	ng	
laterals			l		(ly)		
trill			rr				
glides	w			r	y		
vowels							
	front	back					
high	i	u					
mid		o					
low	ae	a					

Entries are supplied with certain ancillary information, where this is known, including: (1) category labels in italics: n(oun); i(ntransitive) v(erb), t(transitive) v(erb); and verbal conjugation membership, in (arbitrary) numerical notation; and (2) morphological information in braces {ergative, and occasionally the dative (for nouns and adjectives); accusative, dative, and genitive (for pronouns); future, past, and irrealis (for verbs)}. In the head entry (bold), nouns are cited in the nominative (unmarked), and verbs are given in the present, if that is known (otherwise, a hyphen is supplied). Whenever, within a given pair of braces, a comma appears with nothing preceding (or following) it, the intent is to communicate the fact that the missing ending was not recorded, or has not yet been located in the fieldnotes (e.g. the notation {, -n,} indicates that only the past tense inflection is known, the future and irrealis being unrecorded. Alphabetical order ignores the conjugation suffix on

the citation form of verbs and the glottal stop (except that words beginning with a glottal stop are grouped after words beginning with the next vowel).

The appended English finderlist was constructed by David Nash.

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A LINGGITHIGH VOCABULARY

- a'a, n.**, {-ngg} Hand; forefoot of quadruped. **a'a-aran**, *n.*, Elbow.
- a'a-lan**, *n.*, Fingernail. **a'a-ngon**, *adv.*, Empty-handed. *Ayong a'angon lith*. I will be going with nothing.
- a'angga-c**, *iv.1*, {-y, -n, -'} Crawl; slither (as snake). *Animcu lin mban a'anggan*. Here's the track of a snake (i.e. a snake slithered by here). (cf. *a'a*)
- a'anhae-c**, *iv.1*, {-y, -n, -'} Grow (as of grass). *Owo'piy lu kun a'anhaec*. The grass is growing now.
- abha-**, *iv.*, Go (of river, creek). *Tron lu ko abhan?* Which way does the creek go?
- abha-c**, *tv.1*, {-y, -n, -'} Cover (as with sand). *Tru ngonh njangg abhay*. You cover him with sand.
- abhil**, *n.*, Lizard (gen.?).
- abhit**, *n.*, {-adh} Green ant. *Abhitaduinh than*. A green ant bit me.
- abhogh**, *adj.*, {abhor} Small; little. *Abhogh imamcay*. The baby (small one) is crying. *Abhor ninh can*. A small one hit me. *Ayong abhorom njin*

nggoy. When I was young I used to spear wallabies.

- acngganh**, *n.*, {-adh} Diamond stingray.
- adha**, *n.*, {-ngg} Crow. *Adha lu cay*. The crow sings out (lit. speaks).

adhar, *adj.*, Good. *Lu adhar*. She is good.

adhigh, *adv.*, Today.

adhim, *adj.*, Hungry. *Tru adhim?* Are you hungry?

adhimbrong, *adj.*, New.

adhinh, *n.*, {-adh} 1. Two-keeled turtle (killing causes south-west wind); 2. Cold west wind. *Adhinh lin kun njic*. The west wind is blowing now.

adhor, *n.*, {-adh} Pelican.

adhoy, *n.*, {adhandr} Mother.

adiwur, *n.*, Particular initiation ritual.

aghambrong, *n.*, Baby; young child.

agharr, *n.*, {-adh} Pandanus. **agharr logh**, *n.*, Pandanus fruit.

aghi, *n.*, {-ngg} Rain. *Aghingg ninh kanhngan*. The rain found (i.e. fell on,

caught) me. **aghi nha-y**, *n v expr.*, Rain; come (of rain). *Aghi kithi' lu nhay*. Rain will come soon. *Ngambay lin trandrman*. *Ma kithi' lu aghi nhay*. Why, there are clouds. It's going to rain, obviously. *Lu ngawanah aghi nhin*. It rained yesterday. {Note that /aghi/ may be omitted:} *Lu kithi' wangdhim nhay*. It'll rain tomorrow. *Ngga' kithi' lu nhay*. It won't rain.

aghi-c, *tv.*, 1. Press; apply pressure to; erg press abs; 2. Envelop (of darkness enveloping people or land). *Kandr aghic*. They put pressure on it with the foot. *Nga lin kun lu cimbac*. *Panjadhan kun aghic*. The sun is going down and darkness is pressing in on us.

agholt, *adj.*, Round. **aran aghol**, *n expr.*, Round head.

aghomb, *n.*, Sugarbag (large and sweet).

aghorrca, *n.*, {-ngg} Mangrove borer (wood-eating). *Aghorrcangg lin luthan*. The mangrove borer(s) ate this.

a'icol, *n.*, Face of (river) bank.

a'inh, *qdet.*, {erg: a'i'y} Who. *Ko lu a'inh nggay*? Who is sitting there? *Ko lu a'inh cay*? Who's that talking? *Nya ko a'i'y iyan mbwa'*? Who ate the meat there?

a'inh-a'inh, *qquant.*, {a'i'y-a'i'y} How many (people). *Mal a'i'y-a'i'y nanh can*? How many men hit you?

a'ithae, *n.*, {-ngg} Bowerbird. *A'ithaengg lu andr mam thaе a'ithngac*. The bowerbird always steals things.

a'ithnga-c, *tv. I.*, {-y, -n, -'} Steal; erg steal abs.

alan, *n.*, {-adh} 1. Sky; 2. Wild *wongai* (plum).

alath, *n.*, Honey (from sugarbag).

alay, *n.*, {alandr, alanam} Maternal uncle (younger), MoYBro. *Alanam ayong ngga' raen*. I did not marry my mother's

brother's (daughter). 'Ar nangg lin ibhadh kay alanam 'ar raeriy—alandr kok ngonh thaec. These people here in the south marry the mother's brother's daughter, the one begotten by the mother's brother. (cf. *adhoy*, *koghay*)

alimb, *n.*, {-adh, -agh} Spear. *Ayong alimbagh cic*. I'm looking for a spear.

alodh, *n.*, {-adh} Whistling eagle. *Alodh ko lu cay*. A whistling eagle is calling there.

ama, *n.*, in *expr*: **ibhor ama**, Steam.

amanhnga-c, *tv. I.*, {-y, -n, -'} Remove (as bark, instrument cut from tree); erg remove abs. *Nggighadh lawunh amanhangan*. The flying fox lifted them (the two youths, into sky—from myth of *Lawuy Pongg*, the Two Youths).

amayithae, *n.*, {-ngg} Paper fish.

ami, *iv.*, {, -n, } 1. Rise; 2. Fly away; erg rise/fly away. *Oyanhin amin*. The turkey flew away. *Lu ninh ndrae thon amin* [sic]. He raised his arm at me (to strike me).

amo-n, *tv. 4.*, {-y, -gh, -'} Warm; shine on (of sun, moon); erg shines on abs erg shines (unexpressed object). *Ngangg ninh amon*. The sun warms me, shines on me. *Canamadh amon*. The moon is shining.

amogh, *n.*, 1. Armpit; 2. Fork (of tree); 3. Gill (of fish).

amondr, *n.*, Pumpkin head (fish).

amothinnga-c, *tv.*, Warm (as wax); erg warm abs. *Maengon amothinngac*. They warm it in the fire.

andhorrkath, *n.*, Seven Sisters (constellation). *Ongarr andhorrkath kun pic*. The Seven Sisters constellation is coming out now.

andikam, *qadv.*, When. *Andikam trulith*? When will you go?

andr, *part.*, in expr: **andr pim, andr pimogh**, Always. *Lu andr pimogh prae' oyan*. He always throws stones. *Andr pim lu ngonh cayac*. He always hits him. *Andr pim lu cay*. He's always talking. *Ayong ngonh andr pim cic*. I see him every day.

anggay, *n.*, {-adh} Flood. *Anggay njin*. It flooded. *O'onh thom lin kun nggan anggayadh*. The flood washed away this humpy of mine.

anha, *n.*, Heart. *Anha cacan*. The heart is murmuring (lit. talking).

anhae, *n.*, Hole (as of goanna). *O'owadhl lin anhae i'in*. The goanna dug a hole here.

ani, *qdet.*, {-l, -w} What. *Tru ani cic?* What are you looking at? *Tru aniw inhi ndroc?* What are you looking for? *Lu nanh anil can?* What did he hit you with?

anim, *qquant.*, {animodh} How many (non-human). *Nya ngambay lu anim lu kic?* How many eggs does it lay? *Anim tru alimb?* How many spears have you? *Animodh nanh alimbadh ndraen?* How many spears stuck into you?

animcu, *n.*, {animcongg, also: animcungg} Snake. *Ninh animcongg than*. The snake bit me.

animondr, *allat of ani, q.v.*, Why. *Tru animondrimamcay?* Why are you crying? *Lu ngga' animondr liy*. He is not acting without reason (i.e. he is not doing the wrong thing—ref. to behaviour of in-law).

an'oy, *n.*, {-adh} Arrowroot.

anya-c, *tv.*, Rub; erg rub abs.

anyo'nggo, *n.*, {-ngg} Crow fruit (bitter black fruit).

ara-c, *tv.I*, {-y, -n, -'} Trample; tread on, step on; erg step on abs. *Kandr aray*. Step on it with your foot. *Lu ninh*

kandr aran. He stepped on me with his foot.

ara'agh, *n.*, {-adh} White-spotted nail fish.

arak-a-c, *iv.I*, {-y, -n, -'; usit: arakaghac} Hunker; sit with knees up and apart.

aram, *adj.*, Different. *Inhi nggadh nanam aram*. Our customs in the north are different.

aran, *n.*, Head. *Nanh aran nggac?* Do you have a headache? **aran-cany**, *n.*, {-adh} Top of bullrush. *Aranngon lu niman*. It (moon, sun) has come to be overhead.

arancornganh, *n.*, Goose sp.

arangg, *n.*, {-adh} Freshwater shark.

arar, *n.*, Cockatoo sp.

aricandr, *n.*, {-adh} Mangrove duck.

arra, *n.*, 1. Stomach; 2. Womb. *Arra brae ayong, ning nggangga'*. My stomach is bad, it is hurting me. *Lawuy ngom adhandr* [sic.] *kok lawuy arra, arrangon pimngon inac—koth lu raec—koth 'ar raeriy lin ibhadh*. Two who are from one womb—that's the one he marries—those are the ones who marry here to the south.

arrani-y, *iv.2*, {-th, -n, -c} 1. Roll down; 2. Slip (as to fall); 3. Drip (as water off tree); abs roll down (from elat) abs drip (off dat). *Withkamondr lu arranin*. He rolled down from the cliff. *Ngogh kun arraniy kilagh*. Water is dripping from the tree. *Kay arranin tru*. Your foot slipped.

arrow, *n.*, {-adh} Emu.

arrogh, *n.*, Road. *Arrogh wayigh*. The road is wide. **arrow nggay (arrogh nggay?)**, *iv.*, Follow (tradition). *Lu 'andr inhi nanam arrow nggay*. He remains true to our custom.

ath, *part.*, {selects verb in irrealis}

Admonitive; evitative. *Nan hath thac*. It might bite you.

athongithigh, *n.*, Boobie.

awa-n¹, *tv.4*, {-y, -gh, -'; prog: awarra-
n} 1. Drag; 2. Extract (as blood); erg
drag/extract abs. *Ko lu ani awarran?*
What's he dragging there?

awa-n², *tv.*, Hold; erg hold abs. *Niyam-
niyam awan*. He holds it steady (spear).

awan, *n.*, Tapered part (of spear-
thrower).

awar, *locdet.*, {awaghāl} 1. Windward side; 2. East. *Awaghāl lu njic
mburmbwinh*. The wind is blowing from the east. *Awaghāl lu ma cimbac*. He's coming from windward (east). *Ayong awar lith*. I will go east.

awopogh, *adj.*, 1. Small; 2. Small (non-singular). *Poy nangg ngga' omindh
awopogh po'*. Won't you (two) give us the small dog?

awri, *n.*, {-ngg} 1. Spine; prickle (as of porcupine, fish); 2. Barb of spear. *Lu
nhawringg nggogh*. It stuck me with its spine. **awri-con**, *n.*, Prickly; spiny.

awriwyigh, *n.*, {awriwyiŋg}
Porcupine. *Ninh ndrae-njin
awriwyiŋg*. The porcupine stuck me.

awul, *n.*, {-adh} Night bird sp. (with call: tok tok tok...).

awurpa, *n.*, {-ngg} 1. Cottontree; 2. Canoe.

awuyigh, *n.*, Waterlily seeds. (cf. *mbwadh*)

ayam, *adj.*, Green (as of leaf). **thondh
ayam**, *n.*, Green leaf.

ayathi-, *iv.*, {, -gh} Become daylight. *Ko inhi ayathigh*. It has begun to become daylight.

ayi, *n.*, {, -w/gh} 1. Food; vegetable food; 2. Pith (as in stem of plant).

Ayong adhim ayiw. I am hungry for (vegetable) food. *Ka-cac—ayi nggac*. They split it open (spear shaft)—(and) they remove the pith.

ayomindhigh, *n.*, Great-granddaughter-in-law, SoSoSoWi (male speaking).

ayomlondhigh, *n.*, Daughter-in-law, SoWi, OBrSoWi (male speaking).

ayomnhanjigh, *n.*, 1. Sister-in-law, YBrWi; 2. Granddaughter-in-law, SoSoWi (male speaking).

ayong, *pron.*, {acc: ni-nh; dat: tho-n;
gen: tho-m} I; first person singular pronoun.

ayonglondhigh, *n.*, Grandchild, SoCh (male speaking).

ayongnhanjigh, *n.*, 1. Great-grandchild, SoSoCh (male speaking) {calls Ego *inhaghay*, q.v.}; 2. Paternal nephew/niece, YBrCh.

ayongkonjigh, *n.*, Maternal nephew, niece, YSiCh.

ayongtha(e)gh, *n.*, Son, Da (male speaking); my child (the one I begat), Ch, OBrCh. *Omindh nanh thom
ayongthanamodh thac*. My son's dog might bite you. (cf. *ayongnhanjigh*)

'a, 'a'a, *adv.*, Bye-and-bye; late.

Andikam tru lith? Ayong 'a lith. When will you go? I will go bye-and-bye. 'A'a kithi' lu njiy. It might fall bye-and-bye. 'A'a lu pic. It (moon) comes out late.

'am, *part.*, Thereby. *Mae tru wayigh
kayngay, tru maepithigh 'amnimay*. Build a big fire and get warm. *Tru ninh
ca kom cath, ayong 'am nganyay*. Speak your language to me, so I can learn (lit. hear, understand) it.

'andr, *part.*, 1. Thus, that way; 2. A bit, a small amount. *Tru lin 'andr abhogh*

iyay. Take a bit of this (along). '*Andr-ang iyay.* I'll take a bit. *Tru 'andr inay.* Sit like that. '**andr lo(gh)**, *locdet.*, On the other side. *Andr lo lu nggay.* He lives on the other side. (cf. *andr*)

'andrthaē, *part.*, In that fashion. *Ngga' lu liy 'andrthaē—lu 'andr inhi nanam arrow nggay.* He does not act in that fashion, (instead) he is true to our customs. (cf. '*andr*)

'ar, *pron.*, {'a-nh, 'a-ngg, 'a-nam} They; third person plural pronoun. *Ngga' kay ayong orri 'anh ci'.* I can't see them (many).

'aw, *part.*, Directly; soon. *Canam wayi(gh) 'aw lu pic.* The big (full) moon is coming out. *Ayong candrghom 'aw ngonh cath* [sic]. I'll talk to him again this afternoon.

brae, *adj.*, {-ngg,} Bad. *Lu brae.* He is bad. *Lu mal braengg ninh can.* That bad one hit me.

ca, *n.*, Speech; language. **ca-con**, *n.*, Speaker; great talker, one fond of speaking. **ca ninnga-c**, *n v expr.*, Have a chat, conversation. *Linggay kon ca ninngay.* Let's have a tete-a-tete here. **ca ndra-c**, *n v expr.*, Talk it over (after argument).

ca-c, *tv. I.*, {-y, -n, -'} 1. Hit; strike; 2. Slit downward (as bark of messmate); erg hit abs; 3. Paint; erg paint abs with inst. *Ko'ol lu ninh can.* That one hit me. *Tru animondr can?* Why did you hit him? *Ayong ngga' cay.* I can't hit him. *Kolu a'iy cac?* Who is hitting him? *Ngga' kay tru nanh ca'.* You can't hit us. *Ndhan koth cay.* Slit the messmate bark down. *Kun linggay raey 'anh, 'ar kal cariy.* We should grab them, because they are fighting (lit. hitting each other). '*Ar kithi' wangdhim carith.* They will hit each other tomorrow. *Ayong ayam cathith.* I hit myself [sic]. *Thungg lu ninh can.* He painted me

with white paint. **caya-c**, *tv. I.*, *usit.*, *redupl. of ca-c.*, Hit habitually.

ca-y, *iv.2*, {-th, -n, -c} 1. Speak; produce sound; 2. Call (of bird or animal); 3. Produce characteristic sound; 4. Shout; call; abs speak/call (to dat). *Tru cath thon.* You speak to me! *Tru ani cay?* What do you speak (what language)? *Adha lu cay.* The crow is singing out. *Tru ngon cath mae lu raej.* You tell him to get firewood. *Alodh ko lu cay.* A whistling eagle is calling there. *Puyum kun can.* The bell has rung (e.g. for quitting time). {past and irr also recorded as: *ci-n*, *ci-c*} {Note usage:} *Cath nongh, lu tronyo lic.* Ask him where he is going. {The argument corresponding to the addressee is often abs/acc, rather than the expected dat.} *Tru ninh ca kom cath.* Speak your language to me.

caedhngga-, *tv.*, {-y, -'} {refl:} *caedhnggathi-y* Wash. *Ayong a'a caedhnggathith.* I'll wash my hands. *A'a tru caedhnggathith.* Wash your hands.

cagh, *n.*, {-adh} 1. Tail; 2. Butt end of spear. *Caghadh ninh can.* It hit me with its tail. **cagh-tha**, *n.*, Tip of tail. **cagh-nnggil**, *n.*, Base of tail.

canam, *n.*, {-adh,} Moon. *Canamadhu amon.* The moon is shining. *Canam lu pin.* The moon has come up. *Canam abhogh lu pin; adhimbrong.* The small moon has come out, the new one.

candram, *adj.*, Open (of country). **inhi candram**, *n.*, Open country.

candrghom, *adv.*, This afternoon. *Linggay ithigh candrghom ca obhanhangay.* We will recite language later on this afternoon.

ca'nggo, *n.*, {-ngg} Long-tailed stingray.

cany, *n.*, Flower.

capan, *n.*, Mullet (large).

car, *n.*, {-adh} White crane. *Caradh lu ani njay?* What does the white crane eat?

caryar, *n.*, Tree sp. (large-leaved).

cayuy, *n.*, {-adh} Barracuda.

ci-c, *tv.I*, {-y, -n, -'} {recip: ci-ri-y} 1. See; erg see abs; 2. Seek; erg seek dat. *Ayong nanh 'ithigh ciy.* I will see you bye-and-bye. *Tru ani cic?* What do you see? *Ayong ngoy cin.* I saw a wallaby. *Ayong ani kay nggoy ci', nji' kay ayong.* If I saw a wallaby or anything, I would spear it. *Ayong ngoy cic.* I am looking for water. *Animondr irae ciriy?* Why are you looking at each other? **cayi-c**, *tv.I*, *usit.*, *redupl. of ci-c.*, See habitually.

cilay, *n.*, {ciliyadh} Orchid (used in tying up head of firestick). *Ciliyadh ayong than ighoghor.* I tied the firestick with orchid.

cimba-c, *iv.I*, {-y, -n, -'} 1. Enter; hide; abs enter (into loc/allat); 2. Set (of sun). *Tru kun cimbay, lu nanh ath cic.* You'd better hide, he might see you. *Lu anhaengon cimban.* It went into the hole. *Nga lin kun lu cimbac.* The sun is going down.

cin, *n.*, {-adh} Spotted stingray (in rocks).

cindhwinh, *n.*, Shell sp. (attached to handle of spear thrower).

cinjim, *adj.*, Sick; ill. *Nya mbwa' brae, lu ninh cinjim ninngan.* The meat is bad; it made me sick.

cith, *n.*, {-adh} Fishing hawk.

ciwrin, *n.*, Kingfisher (bird, important mythological personality).

ciyigh, *n.*, {-adh} Yam. *Ciyigh lu ndramodh i'ic.* The woman is digging yam.

cu', *n.*, {-udh} 1. Leech; 2. Maggot.

Cu'u(dh) ning than, kombwinh ninh awagh. The leech bit me and drew blood.

cum, *quant.*, {cunggom} Three. *Mal cunggom ninh can.* Three men hit me.

cumodh, *adv.*, Thrice; three times. *Cumodh ninh can.* He hit me three times.

-ghom, *encl.*, Yet {with negative (*ngga*).} *Ngga' lu nhin-ghom.* He hasn't come yet.

ibha-, *tv.*, {, -n, } Burn (as tentacles of jellyfish); erg burn abs. *Ndromdhir ninh ibhan.* The jellyfish burnt me (with its tentacles).

ibhadh, *locdet.*, {elat: ibharil} South. *Ibharil lu njic.* It (wind) is blowing from the south. *Lu ngawanh nhin ibharil.* He came from the south yesterday. *Ayong ibhadh liy.* I am going south.

ibhay, *n.*, Paternal uncle (younger), FaYBr. cf. *nithagh, inhaghay*.

ibhi¹, *n.*, {-ngg, } 1. Ashes; 2. Suspended mud in water; 3. Dust. *Lu ninh ibhingg abhan.* He threw ashes on me.

ibhi², *n.*, {-ngg} Louse. *Ibhingg ninh in'aem braec.* The lice are itching my hair.

ibhicathigh, *n.*, {ibhicathir} 1. Bloodwood (yellow); 2. Dirty. *Ngogh ibhicathigh.* Dirty water.

ibhon, *adv. of stance*, On one's back. *Ibhon lu njin.* He is lying on his back.

ibhor, *n.*, Smoke. *Ibhor ninh tha braeninngath*[sic]. The smoke hurt my eyes. **ibhori-con**, *adj.*, Smoky (as of poor firewood). *Mae tru brae raen ibhori-con.* You got poor, smoky wood. **ibhor ama**, *n.*, Steam.

idha'dhigh, *n.*, 1. Four-pronged bird spear (for ducks, brolga); 2. Bamboo; 3. Sheath of firestick.

idhae, *n.*, 1. Pouch (of marsupial); 2. Nest (as of bird); 3. Top section of sugarbag; 4. Dillybag (of grass).
Abhogh lu idhaengon kic. A baby (joey) is being nursed in the pouch.
Oyathir lu idhae ninngac. The bird builds a nest.

idhirrigh, *n.*, {idhirrir} Lightning.
Idhirri(r) lu ko can. Lightning struck there. *Idhirri lu pwicac*. The lightning flashes (at night).

ighaghthinh, *adj.*, Crooked. *Alimb ighaghthinh*. The spear is crooked. (cf. *mbwinbwa-c*)

ighanha-c, *tv.I*, {-y, -n, -'} Twist.
Ndrae ighanhan. He twisted (his) arm.

ighat, *n.*, 1. Rib; 2. Side. *Ighat lin lu nggay*. He lives on this side. *Ighatngon tru ndra'*. You should put it aside (beside us). **ighat puy**, *n expr.*, Rib bone.

igho-c, *iv.I*, {-y, -n, -'} Die; abs die.
Ighon lu. He died. *'Ayong ngoy ighoc*. I am thirsty (lit. dying) for water.

ighoghor, *n.*, {-adh} Firedrill; firestick.
Tru ighoghor njiy. Make a fire (with firestick).

ighond, *n.*, {-agh} Scrub; scrub country. *Ayong kay ngga' cimba' ighondhagh*. I can't get through the scrub.

ighorprum, *adv. of stance*, Leaning on forearm. *Ighorprum njin*. He is lying down leaning on his forearm.

i'i-c, *tv.I*, {-y, -n, -'} 1. Dig up (as yam); 2. Dig (as in digging hole); erg dig up abs erg dig abs. *Ciyigh tru i'iy*. Dig up the yam. *Ngogh anhae ayong i'iy*. I am going to dig a well. *Ko lu a'iy ngogh anhae i'ic*? Who is digging a well there?

i'igh, *n.*, {loc/allat: i'inyon} 1. Anthill; 2. Capmari earth-oven; cooking trench. *Omindhcon lin i'igh*. This anthill has lots of ants. *Iinyon tru ndray*. Put it in the cooking trench.

i'indhigh, *n.*, {-adh} Cane (used for sewing bark canoe). *Ndhan lu i'indhighadh ndhaegh*. He sewed bark with cane.

i'ir, *n.*, Mullet sp. (large). *Iir ayong lin ndraen*. I speared the mullet (with multi-pronged spear).

ila, *n.*, 1. Spit; sputum; 2. Foam (as on floodwater). *Ila moy*. (He) will spit.

imal, *n.*, Wing; feather. *Imal oghoghor*. Long feathers.

imamca-y, *iv.2*, {-th, -n, -c} 1. Cry; weep; abs cry; 2. Call; shout; abs call to abs. *Ma lu ko a'inh imamcay*? Who is that man calling out to?

imbacil, *n.*, Mullet sp. (small, eaten by rock cod).

imoghay, *n.*, {imoghandr, imoghnam} Paternal aunt (younger), FaYSi. (cf. *inhaghay*)

in'a, *n.*, Hair (of head). *In'a kayngay*. Burn its hair (as of kangaroo in preparation for cooking). {/n/ here indicates nasalisation of the vowels flanking glottal stop.}

ina-c, *iv.*, {-y, -n, -'} stat: nggay, q.v. 1. Sit; sit down, live; dwell; abs sit (loc); 2. Wait for; <abs, dat> *Ayong kon inay*. I will sit here. *Thon inay, ayong 'ithigh wiy lith*. Wait for me, I'll be along soon.

in'aem, *n.*, Burnt country.

inhaghay, *a.*, Paternal uncle (elder), FaOBr; paternal aunt (elder), FaOSi. (cf. *nithagh, ibhay, imoghay*)

inhi, *n.*, 1. Place; camp; 2. Custom; tradition. *Ayongi nhingon liy*. I am going to camp. *Ngom imoghnam lu*

raec ... 'anam inhi—alandr ngomodh thaec. One marries one's aunt's child ... (that is) their custom—to marry the one) begotten by one's uncle. *Inhi nggadh nanam aram*. Our custom in the north is different. **inhi nganya-y**, v *expr.*, Pay attention; <erg, abs=inhi>. *Lu kalinhingga'nganyath*. Because he will never pay attention. **inhi tha-c**, v *expr.*, Sing; <erg, abs=inhi>. *Ko lu a'iy inhi thac?* Who is singing there? **inhi nganya-c**, v *expr.*, Be worried about; <erg, abs=inhi, dat>. *Tru aniw inhi nganyac?* What are you worried about?

inhi ndro-c, v., Seek; <abs, dat (?)>. *Ayong maew inhi ndroc*. I am looking for firewood.

injon, n., {-adh} Kangaroo. *Ayong kay alimbdhim, njin ko injon*. If I had a spear, I would spear that kangaroo.

in'or, n., {-adh} Boxwood.

irae, pron., {irae-nh, irae-ngg, irae-nam} You; ye, second person plural pronoun.

iri, n., Nose. *Tru nhin iri cay? Ngga' ayong nanh cay*. Are you going to hit me on the nose? I will not hit you. *Tru liy'andr iri cay*. You hit him back on the nose. **iri-ghothigh**, n., Long bill (of bird).

iriprorr, n., {-adh} 1. Turtle-shell turtle (poisonous); 2. Short-necked freshwater turtle.

iriryigh, n., {iriryigh} Sawfish.

iroth, adj., Dry (as of leaf). **thondh iroth**, n., Dry leaf.

irranh, n., {, -agh} Creek, creek sand; creek bed, river. *Ayong irranhngon lith*. I will go to the creek. *Ayong irranhagh linith*. I'll walk along the creek. *Lu irranhmondr pin*. He's coming out from the creek [sic]. *Irranh anggay lu njic*. The river is running; the

river is in flood. *Irranh with lu ko*. The river mouth is there. *Irranh lawuy la-andrarin*. The river forks (splits into two).

irri, n., {, -w} Excrement. *Ayong irriw liy*. I am going to defecate.

irriman, adj., Soft; slippery (of ground). **inhi irriman**, n., Soft ground. {also recorded: *irrimanh*}

ithigh, adv., Soon; later. {also recorded: *'ithigh*}

ithikrri, n., {-ngg} Four-barbed spear. {appr. v: *nji-c*}

ithirrithirri, adj., {-ngg} Rough (not smooth).

iwang, n., {-ol} Cross-cousin; mother-in-law, wife's mother's brother.

Alanam koth, iwang nan obhanhngac, oyom nanam kogh. We call our mother's brother's (daughter) *iwang*, she is our mother-in-law. *Nan iwangol kinh nam* [sic] *ko nan raec—ndram*. We take the offspring of *iwang* as a wife.

iwin, n., 1. Skin; 2. Bark; 3. Scales (of fish). *Ndhan iwin amanhngay*. Take the bark off the messmate.

iwogh, n., Ear. **iwogh-thom**, adj., Deaf; not knowing, ignorant; not remembering, forgetful. *Ayong iwogh-thom ngambayagh anim lu kic*. I don't know how many eggs it lays. *Ayong iwo-thom ma* [sic]. I don't know (that) man. {also recorded: *iwugh*} **iwu-mwithi-**, iv., {cf. *mwithi-*} Forget. *Ayong ca iwu-mwithin thom*. I forgot my language.

iya-n, tv.4, {-y, -gh, -'} Carry; take; erg carry abs. *Ayong ngogh iyay*. I'll carry the water.

iyarr, n., 1. Seagull; 2. Hawk sp. (which chases seagulls).

iyin, adj., White.

'in, *n.*, Chest. *Ayong nanh 'in njiy*. I will spear you in the chest.

ka, *n.*, 1. Mouth; 2. Edge. *Kangon tru ndray*. Put it on the edge. **ka mwiyim**, *n.*, Young kangaroo; pilot kangaroo, sentinel kangaroo (lit. black mouth). **ka-pam**, *n.*, Novices under ban of silence (after *adiwur* initiation). **kapithigh**, *adj.*, Full.

kacinthae, *n.*, {-ngg} Tree sp. of which sap is used for spear-making.

kama-y, *iv.*, {-th, -n, -c} Swell; rise (of sea); abs swell. *Ndhinh wayigh kamay lu*. The sea is rising big. *Ngawanlu kamin*. There were waves yesterday.

kambal, *n.*, {kamb(a)ladh} {phon: medial vowel reduced to schwa in ergative} Crocodile. *Lu ninh kamb(a)ladh o'in*. The crocodile chased me.

kambinh, *n.*, Silver mullet (largest variety).

kandray, *n.*, {-adh} Red schnapper.

kangkang, *n.*, {-adh, } Eagle hawk; eagle. *Kangkangadh ninh mam ndraen*. The eagle hawk nearly hooked (clawed) me. *Kangkangadh nya ko lu njay*. The eagle is eating fish there.

kandagh, *n.*, {-adh} Oyster.

kandhak, *n.*, {-adh} Black trevally.

kanhnga-y, *tv.*, {-th, -n, -c} Find. *Tru nom cimbay 'ar nanh 'athkanhngac*. You hide, they might find you.

kanj, *n.*, {-adh} Black ibis.

kanthin, *n.*, Bloodwood.

kapan, *adj.*, {-adh} Short. *Kiladh lu ninh kap(a)nadhan can*. He hit me with a short stick. **kapran**, *adj.*, Short (non-singular).

kapithigh, *adj.*, Full. (cf. *ka*)

kar, *locdet.*, {elat: karal} 1. Down; in inside; 2. West. *Kar cimbay*. Go

inside. *Karal lu nhay*. He's coming from the west. 'Ayong kar cimbay. I'll go west. *Kar 'ar nggariy onjam*. They are living in the western part. *Kara lu nggay*. He lives on the west side. *Lin lu trombrong njic? Karal*. Where is this blowing from? From the west. **karam**, *locdet.*, Underneath; below. *Karam tru thoy*. Put it underneath. **karam-karam**, *locdet.*, Bottom side; Gulf side. *Karam-karam ayong liy*. I am going to the bottom side (Gulf side).

karcanh, *n.*, {-adh} Towline mackerel.

karrkarra, *n.*, {-ngg} Diver (bird sp.).

karrnya-c, *tv. I.*, {-y, -n, -'} Bury; hide by burying.

katral, *adj.*, *n.*, 1. Bitter; 2. Salt water.

Thilinh katral. Wild chilli is bitter. *Ngogh katral ibhi*. Dirty salt water.

kawanci, *n.*, {-ngg} Woppa fish.

kay¹, *n.*, {kandr} Foot; hind foot of quadruped. *Lu ninh kandr nyogh*. It kicked me with its foot.

kay², *part.*, Potential. *Ayong kay ngga' ndrothic*. I can't cut myself. *Tru kay ndrothic*. You can cut yourself.

kayigh, *n.*, {kayinj} Carpet snake.

kaynga-c, *tv. I.*, {-y, -n, -'} 1. Burn; cook; 2. Light (fire); build (fire); <erg, abs> *Ayong nanh maengg kayngay*. I'll burn you with fire. *Maengg ninh kaygan*. The fire burnt me. *Kayngay tru mbwa'*. Cook the meat. *Ayong mae kongan kayngay, tharngon*. I am going to build a fire there, I'm cold. *Ayong kithi' mae kayngay*. I'll light the fire directly.

kayponon, *adv. of stance*, (Sitting) on heel (with heel up and toe on ground). *Kayponon lu nggay*. He's sitting on his heel (etc.).

ki', *n.*, Fat (the substance).

ki-c, *tv.I*, {-y, -n, -'} 1. Bear; give birth to, nurse; 2. Lay (egg); erg bear abs. *Abhogh lu idhaengon kic*. A joey is being nursed in the pouch. *Ko lu ngambay kithi' kiy*. There she is going to lay an egg soon. *Nya ngambay lu anim lu kic?* How many eggs does it lay?

kik, *n.*, {-adh} {phonetically: [kek]} White cockatoo.

kiki-, *tv.*, {, -'} Ask. *Ip 'ar ninh kiki'*. *Lu ko tron? Mangi, lu ko nhandr kithi' lic*. If they should ask me where he is, (I would say) he must have gone somewhere else; I haven't seen him.

kil, *n.*, {-adh, -agh} Tree; stick. *Lu ninh kiladh can*. He hit me with a stick.

kilnhuyigh, *n.*, {kilnhuyingg} Monkey possum.

kilnuyigh, *n.*, {kilnuyir} Freshwater crocodile.

kilthin, *n.*, 1. Medicine; 2. Poison (as in elongated sack in humpback turtle /ngayigh/).

kithi', *part.*, Soon. *'A'a kithi' lu njiy*. It might fall bye-and-bye soon. *Mburinbwinhadh kithi' mbway*. The wind might blow it down soon. *Aghi kithi' lu nhay*. Rain will come soon. {Note usage:} *Ma kithi' ma o'ic 'ar*. They must be chasing a man. (cf. *ma*²).

kiyigh, *n.*, Older sister. (cf. *thoncigh, laebhinthae*)

kiyu, *n.*, {-ngg} Bandicoot.

ko, *locdet.*, {allat/loc: kongon; perlat: koyigh} There, that. *Tron tru ndran?* *Ko. Ya ithigh linggay lith*. Where did you leave it? There. Yeah, soon we will go (for it). *Omindh ko kom?* *Yiy, kom*. Is that your dog? Yes, (it's) mine. *Ayong kongon liy*. I'm going over there. *Ayong kongon nggay*. I'll sit down there [sic]. *Ayong kongon lith*

cath ka ngon. I will go over there and speak to him. *Thae'aedh koyigh lu linic*. *Adhimbrong*. A mangrove goanna went by here. (Its tracks) are fresh.

ko' nga, *n.*, Beard.

koca, *adj.*, Blunt; not sharp. {also recorded: *kotya*}

koghay, *n.*, Maternal uncle (elder), MoOBr. cf. *adhoy, alay*.

koknomam, koknom, *adv.*, Long ago. *Ayong koknomam ngonh cin*. I saw him long ago.

koltutu, *n.*, Dove sp. (small).

kombwinh, *n.*, Blood. *Cu'udh ninh than, kombwinh ninh awagh*. The leech bit me and drew blood.

kombwinhaka-, *iv.*, {, -n, } Bleed.

kon, locdet., Here. *Ayong kon inay*. I will sit here.

korpan, *n.*, Beeswax {from: *mbwan, paekyigh, thaem*}

korrho, *n.*, Joey; young of wallaby or kangaroo.

koth, det., {ko'ol} That. *Tru koth cim*. You drink that. *A'iy lu iyan thom?* *Lu ko'ol iyan*. Who ate/drank that of mine? That one ate/drank it. *Omindh iraenam orrinam koth?* *Ngga', nanam ngga', 'anam*. Is that the dog of you all? No, it's not ours, it's theirs.

ko'thae, *n.*, {-ngg} File snake.

Ko'thaengg lu ninh o'in. The file snake chased me.

kun, adv., Now. *Ayong kun lith*. I will go now.

kundra-c, *iv.*, Be low tide; <abs(=nja>. *Nja kundrac*. It is low tide.

kuri, *n.*, {-ngg} Single-pronged spear.

kyanjigh, *n.*, {kyanjir} Catfish (largest variety).

lae, *n.*, {-ngg} 1. Mudshell; mangrove clam; 2. Tail of dugong.

laebhinthae, *n.*, cf. *kyigh, thoncigh*.

lagh, *n.*, {-adh} 1. Saltwater snake (flat-tailed, brown); 2. White fruit.

lakigh, *n.*, Crawfish.

lan, *n.*, 1. Tongue; 2. Rays of sun on water; 3. Point of spear. *Kun lu lan pinhngathin*. It (the sun) is going down producing rays on water. *Alimb lan(adh) lin tru mbraen* [sic]. You sharpened the point of the spear.

landh, *n.*, {, -agh} Girl; maiden. *Ayong landhagh omindh pon*. I gave the dog to the girl.

lawuy, *n.*, {lawu-nh (also: la-nh), lawu-
ngg, lawu-nam} They (two); third person dual pronoun.

lay, *part.*, Back; returning (?). *Lay kun lith*. Let's go (sailing) back. {This might really be a short form of the first person dual inclusive pronoun /linggay/ and not the particle suggested above.}

laya-c, *iv.*, Dawn; become dawn.

li-y, *iv.2*, {-th, -n, -c} Go; abs go (allat). *Tru lith*. You go! *Tronyo tru liy?* Where are you going? *Tronyo lu lin?* Where did he go? *Ayong kay lic, nji' lu ninh*. If I went, he would spear me. *Andikam tru lith?* *Ayong 'a lith*. When will you go? I'll go bye-and-bye.

lidh, *n.*, {-adh} 1. Tooth; 2. Seed. *Ninh lidh nggac*. I have a toothache. *Lidh pon nggac?* Do you (two) have toothaches?

lili-y, *iv.2*, {-th, -n, -c} 1. Run; 2. Go (by sail) run ahead of the wind (sailing); abs run (to allat). *Tru withkangon lilih*. Run to the cliff. *Lay kun lilih*. *Lu 'ath yarrcam ndron*. Let's go back (by sail). It is liable to become calm.

lin, *det.*, This. *Lin ani?* What is this? *Tru ko(th) mbwiy, ayong lin*. You kill that one, I'll kill this one. *Ayong kon lin moy, tru andr koth moy*. I'll give you this one, and you give (me) that one.

lindhagh, *n.*, 1. Sole {flat fish which buries self in sand and scurries away when flushed}, flounder?; 2. Wild mango; 3. Tuber sp. (spreading, a runner).

linggay, *pron.*, {li-nh, li-ngg, li-nam} We (two); first person dual inclusive pronoun.

linhghom, *adv.*, 1. Back; returning; 2. Again; 3. More. *Linggay kun lith, linhghom—inhingon*. Let's go now, back—to camp. *Linhghom tru ngonh cay*. Hit him again. *Linhghom tru thon moy*. Give me some more.

Linngithigh, *n.*, Linngithigh (people and language). *Ayong linngithigh cay*. I speak Linngithigh.

lo, *n.*, {-ngg} Freshwater lily.

logh¹, *n.*, {-adh} Fruit; inside of any fruit. **agharr logh**, *n.*, Pandanus fruit.

logh², *n.*, Side. *Kar lu kun nimac loghngon* [sic]. *Kun lu cimbac*. It (sun) is now on the side (in afternoon). It is going down. *Lonyon lu niman*. It (moon) has come to be on its side (descending).

loktho, *adj.*, Brackish. *Ngogh brae lin—loktho*. This water is no good—it's brackish.

londray, *n.*, {londriyadh} Spotted long-tailed stingray.

lorr, *n.*, {-adh} Bush sp. (with red fruit).

lu, *pron.*, {ngo-nh, ngo-n, ngo-m} He, she, it; third person singular pronoun.

lu', *n.*, {-udh} Mangrove (generic term). (cf. *ngamb*)

- luddhu**, *n.*, {-ngg} White fruit sp.
- ma¹**, *n.*, {-l, -w} Person; man. *Mal ninh njin*. The man speared me. *Ayong maw pon*. I gave it to the man. *Omindhadh ninh manamodh than*. The man's dog bit me. {initial /m/ of this noun is syllabic, hence the word might be transcribed /mma/}
- ma², part.** (in combination with: *kithi'*) Epistemic necessitative; must be. *Ma kithi' ma o'ic 'ar*. They must be chasing/following a man. {Alt:}
- mangi**, *Mangi lu ko nhandr kithi' lic*. He must have gone somewhere else.
- mae**, *n.*, {-ngg, -w} 1. Fire; match; 2. Firewood. *Tru mae wiy poy*. Give some matches here. *Mae njic*. The fire is burning. *Maengg ninh kayngan*. The fire burnt me. {(also: *maengg ninh amogh*)} *Ayong nanh maengg kayngay*. I'll burn you with fire. *Ayong maew inhi ndroc*. I am looking for firewood. *Tru maengon ndray*. Put it in the fire. *Maemondr olompolway*. Take it out of the fire. *Tru mae ngga?* Do you have matches? *Ayong mae lin*. I have matches here. *Lu maeyim liniy*. He has (lit. walks with) matches. *Ayong maewanjandr*. I am matchless (have no matches). **mae-lan**, *n.*, Flame. **maepithigh**, *adj.*, Hot.
- maepithigh**, *adj.*, Hot; warm. *Mae tru wayigh kayngay, tru maepithigh 'am nimay*. Build a big fire and get warm. *Ayong maepithigh*. I am hot. *Lin maepithigh ngogh*. This water's hot. *Inhi maepithigh*. It's hot.
- magh**, *n.*, {-adh} Brown snake. *Magh koth brae*. That brown snake is cheeky.
- malay**, *n.*, {-adh} 1. Fly (the insect); 2. Bee (native honey bee, producing 'sugarbag'). *Malay ninh tha than* [sic]. The flies bunged my eye. *Malayadh ninh inyay idhac*. Flies are licking my sores.

- mam**, *part.*, Nearly. *Kangkangadh ninh mam ndraen*. The eagle hawk nearly hooked (clawed) me.
- mankanh**, *n.*, {-adh} Freshwater spotted rock cod (small).
- mban-ga-, tv.**, {-y, } Scrape off; remove by scraping; erg scrape abs off. *In'a tru mban-gay*. Scrape its hair off.
- mbanhnga-**, *tv.*, {, -n, } Hang up; put at a height. *Nya ayong kun mbanhngan*. I have hung/put the meat up.
- mbani-y**, *iv.2*, {-th, -n, -c} Climb; abs climb (loc). *Ko lu a'inh mbaniy*? Who is that climbing there? *Mbanin lu, kilmondr njin*. He climbed up and fell from the tree. *Tru mbraenj andr mbanith*. You climb up first. **mban-mbani-y**, *iv.2, usit.*, Climb habitually; be able to climb. *Ayong kilngon mban-mbaniy*. I can climb trees.
- mbar**, *n.*, 1. Lungs; 2. Light.
- mbarnjigh**, *adj.*, Light (non-singular).
- mbir**, *locdet.*, Up. *Mbir-ang kun mbaniy*. I will climb up. **mbilom**, *locdet.*, On top. *Mbilom tru ndray*. Put it on top.
- mbiram-mbiram**, *locdet.*, Top side. *Mbwin mbiram-mbiram ayong liy*. I am going up to the top side.
- mbiwhg**, *n.*, {-adh} 1. Scorpion; centipede; 2. Crab.
- mborri(nga)nh**, *n.*, Large male wallaby. *Nya wayigh tru njin?* Yaw, nya *mborrinanh ayon njin*. Did you spear a big animal? Yes, I speared a large male wallaby.
- mbrae-c/y**, *tv. 1/2*, {-th, -n, -'c} 1. Scratch; 2. Itch; 3. Scrape (in manufacture of instrument); erg scratch/itch abs. *Injonadh ninh mbraen*. The kangaroo scratched me. *Tru koth ciy*. *Lu nanh ath mbraec*. You watch out for it. It might scratch you. *Ibhingg*

ninh in'ae mbraec. The lice are itching my hair (i.e. making my hair itch).

mbraeng, *n.*, Wife's brother.

mbraenj, *adv.*, First; firstly. *Thaen mbraenj nan mbraec.* First we scrape the club/spear thrower.

mbraerrigh, *adj.*, {mbraerrir} Flat.

mbrugh, *n.*, {-adh} Milky Way. *Mbrugh lu kun o'onjithiy.* The Milky Way is shifting around now. *Awar lu mbrughadh lu njin.* The Milky Way has lighted the east.

mbru'um, *n.*, Nape of neck.

mbu, *n.*, {, -w} Urine. *Ayong mbuw liy.* I am going to urinate.

mbu', *n.*, Thunder. **mbu' ca-y**, *n v expr.*, Thunder; strike (of lightning). *Mbu' kithi' lu cath.* *Nganyay kithi' puy ngonh.* It will thunder and we will hear it.

mburmbwinh, *n.*, {-ad} Wind.

Mburmbwinhadh lu kil mbwagh. The wind blew a tree down.

mbwa', *n.*, Flesh; meat. *Tru kun ndrogh mbwa'?* Did you cut the meat already?

mbwa-n, *tv.4*, {-y, -gh, '} Break; ruin, destroy. *Mburmbwinhadh lu kil mbwagh.* The wind blew a tree down.

mbwadh, *n.*, Waterlily. (cf. *awuyigh*)

mbwan¹, *n.*, Sugarbag (medium-sized).

mbwan², ?, in expr: *Awaghlu mbwan lu niman.* It (moon) has come to be easterly.

mbwi-c, *tv.1*, {-y, -n, -'; recip: mbwi-ri-y} Kill. *Mbwiriy 'ar, linggay 'anh ciy;* '*ar kiladh cariy.* They are fighting, let's look at them; they are hitting each other with sticks.

mbwin, *n.*, 1. Back (body part); 2. Top.

mbwinmam, *adv.*, Backwards.

Mbwinmam tru lith. Go backwards.

mbwinbwa-c, *tv.*, {-y, -gh, -'} 1.

Bend; 2. Break (of horse). *Lin a'iy mbwinbwagh?* Who bent this?

mbwiyingg, *adv.*, Last night. *Ayong mbwiyingg tharngon-ang niman.* I was cold last night.

mighanh, *n.*, {-adh} Possum.

mikthigh, *n.*, {mikthigh} Salmon.

miwin, *n.*, {-adh} Duck sp. ('peewisie' duck).

mwi, *n.*, 1. Charcoal; coals; 2. Spark. *Mwi tho'cin.* A spark flew out (of fire).

mwithi-, *iv.*, {, -n, } Disappear; get out of sight. *Ayong omindhagh lith thom tron mwithin.* I'm going (to look) for my dog; it has gone off somewhere. *Ma kithi' ma o'ic 'ar—kun 'ar mwithin.* They must be chasing a man—they are out of sight now.

mwiy, *n.*, {-adh} Wild fig.

nan, *pron.*, {na-nh, na-ngg, na-nam} We; first person exclusive non-singular pronoun.

ndha', *n.*, {-adh} Grass stem. *Lingga ndraerith ndha'adh.* Let's spear each other with grass stems.

ndha-, *tv.*, {, -n, } Catch (as in catching fish); erg catch abs. *Ayong nya wayigh ndhan.* I caught a big fish.

ndhae-c, *tv.3*, {-y, -gh, -'} Sew; erg sew abs. *Ayong ndhan ndhaey.* I am going to sew the messmate bark. *A'iy lu ndhan ndhaec?* Who is sewing the messmate bark? *Ndhan lu i'indhighadh ndhaegh.* He sewed the messmate bark with cane. *Ayong ngga' kay ndhan ndhae'.* I can't sew the messmate bark.

ndhaengga-c, *iv.*, Crawl (particular gait of kangaroo); abs crawl. *Injon ko lu ndhaenggac.* There is a kangaroo 'crawling' there.

- ndhae'dhigh**, *n.*, {nul} String.
Ndhae'dhigh thac. They tie it (spear point) with string.
- ndhan**, *n.*, Messmate bark.
- ndhi**, *n.*, {-ngg} Paperbark.
- ndhinh**, *n.*, Sea. *Ndhinh ngawanh lu wayigh*. The sea was big yesterday. *Tharadh lu ndhinh kun lu wayigh ninngac*. The south-west wind makes big seas. *Ndhinh kamay*. There are waves.
- ndhipal**, *n.*, {-adh} 1. Copper fish; sucker; 2. Wild cassava.
- ndho'**, *n.*, Rushes of panja. *Ndho' kun irriman*. The panja is dry (ready to dig).
- ndhodhom**, *adj.*, Straight. *Alimb ndhodhom njin*. The spear is straight. *Ndhodhom ninngay*. Straighten it.
- ndhogh**, *n.*, Testicle(s).
- ndhul**, *n.*, Four-pronged spear.
- ndra-c**, *tv.l.*, {-y, -n, -'} 1. Leave; put down; 2. Put; stick on, attach; erg leave/put abs (loc). *Tron tru ndran?* Where did you leave it? *Alimb ndray*. Put the spear down. *Awri ngonh ndrac*. *Nggoy ngonh ndrac*. They put the barb on. They put the wallaby bone barb on.
- ndrae**, *n.*, 1. Arm (upper); 2. Front flipper (of turtle).
- ndrae-c**, *tv.*, Fasten (as of part of instrument); erg fasten abs. *Nggilngon pathac*. *Cindhwinh ndraec*. They mould it (wax) onto the handle. They fasten shells (on it).
- ndrae-y**, *tv.2*, {-th, -n, -c} {recip: ndrae-ri-y} Spear (with multiple points); pierce (with multiple points, as talons of eagle); erg spear abs. *Kangkangadu nhin mam ndraen*. The eaglehawk nearly hooked (clawed) me. *'Ar ndraeriy*. They are spearing each other.
- ndral**, *n.*, {-adh} Fish sp. (like long tom but with longer nose, saltwater).
- ndram**, *n.*, {-odh} Woman. *Ninh lu ndramodh cic*. The woman is looking at me. **ndramnjigh**, *n.*, Women.
- ndranggal**, *n.*, {-adh} Small shell sp. (fastened to mangrove tree).
- ndril**, *n.*, {-adh} Native companion; brolga.
- ndromdhigh**, *n.*, {ndromdhir} 1. Milkwood; 2. Jellyfish (with long tentacles). *Ndromdhir nanh ibhan*. The jellyfish burned you (with its tentacles).
- ndro-n**, *tv.4*, {-y, -gh, -'} {refl: ndro-thi-y} 1. Cut; 2. Make by cutting; erg cut abs. *Ayong nya ndroy*. I will cut the meat. *Tru aniw ndhan ndron?* Why are you cutting the messmate bark? *Ayong ndhan ndrogh*. I cut the messmate bark. *Ayong ngga' kay ndro'*. I can't cut it. *Koth tru ani tru ndrogh?* What is that you cut? *Mbwa' tru ndroy*. Cut the meat. *Ayong ndrothin*. I cut myself. *Ko 'ar ndrohiy*. They are cutting themselves there. *Ayong kay ngga' ndrothic*. I can't cut myself. *Tru kay ndrothic*. You can cut yourself (go ahead). *Ayong trandr ayong kun ndrothith 'iy?* Should I go cut myself too? *On'on ayong ndron*. I am cutting (bark for) a humpy. {Idiom:}
- yarrcam ndro-n**, *n v expr.*, Become calm (of wind). {Idiom:} **inhi ndro-n**, *n(obj) v expr.*, Take short cut; cut through area. *Ayong inhi ndron*. I'm cutting through (this way).
- ndror**, *n.*, {-adh} Rainbow bird.
- ndrothi-ndrothigh**, *n.*, {nul} Bloodwood sp. (with dark base, trunk turning light near branches).
- ndroy**, *n.*, Neck; throat area. *Nanh ndroy nggac*. Your throat is sore. *Ayong oghin wayigh, nhin ndroy brae-ninngan*. I have a major cold (?), it is hurting my throat.

nga, *n.*, {-ngg} Sun. *Ngangg ninh amon*. The sun warms me. *Nga lu with pic*. The sun is just appearing (lit. the sun's forehead appears). *Nga lu wayi(gh)-nimac*. The sun is getting big (i.e. after rising, gets stronger). *Nga mbir 'aw niman*. The sun is up (over head).

nga'a, *n.*, {-ngg} Crab sp. (small, stays in rocks).

ngamb, *n.*, 1. Paddle; 2. Mangrove (from which paddles are made) {also called: *lu'*, q.v.}

ngambay, *n.*, {-adh, -agh} 1. Egg; 2. Larvae/eggs of sugarbag; 3. Cloud. *Ayong ngambay ngom raen; mam lu ninh ndraen*. I got its (eagle's) egg and it nearly hooked (clawed) me. *Ngambay lin lu with njay*. Clouds are building up.

nganya-y, *tv.2*, {-th, -n, -c} Hear; erg hear abs. *Tru ninh ngga' nganyath*. Can you not hear me. *Kun ayong nganyan*. I have heard (you). **inhi nganya-y**, *v expr.*, Pay attention. *Tru mbraenj inhi nganyay*. You should pay attention first. {also recorded: -c, -y, -n, -'}

ngawan, *adv.*, Yesterday. *Lu ngawan nhin*. He came yesterday. {also recorded: *ngawanh*}

ngayigh¹, *n.*, Bird sp. (small, going in flocks).

ngayigh², *n.*, {ngayir} Humpback turtle (which lays eggs on bank).

ngga-c, *tv.*, Remove (as in removing bark); erg remove abs. *Ndrone—orongac—iwin nggac—lu tranjigh nimac*. They cut it—heat it—remove the bark—and it becomes a spear shaft.

ngga-c/y, *tv.*, {-y/th, -n, -c} 1. Extract; take out; 2. Wash out, away (of flood); erg extract abs. *Tru thoplo nggay*. Take its guts out (of animal in preparation for cooking.) *O'nh Thom lin kun nggan anggayadh*. The flood washed away

this humpy of mine. *Kom o'nh onggayadh nggac*. It (flood) might wash your humpy away.

ngga', *part.*, No; not. *Tru ngga' cin alimb thom? Ngga'*. Did you not see my spear? No.

ngga'angk, *n.*, {ngga'ngga'adh} Kookaburra.

nggadh, *locdet.*, {elat: nggaril} North. *Ayong nggadh liy*. I am going north. *Nggaril nhay*. He's coming from the north. *Nggaril lu njic mburmbwinh*. The wind is blowing from the north.

nggagh, *n.*, {nggar} Multi-barbed fighting spear (barbs of stingray tail).

ngga'kayigh, *n.*, Duck sp. {with small white wing feathers, and laugh-like call: ka ka ka ka} (cf. *ngga'ma-c*)

ngga'ma-c, *iv.*, {-y,} 1. Laugh; abs laugh; 2. Laugh at; abs laugh at dat. *Animondr tru ngga'mac?* Why are you laughing? *Ayong nanh ngga'math* [sic]. I am laughing at you. *Tru yogh ngga'may*. Don't laugh.

nggani-, *iv.*, {, -n,} Break off; abs break off. *Thom thaen iri ngganin*. The 'nose' of my club broke off.

ngganjigh, *n.*, Panja; swamp-rush corms. *Ayi ngganjigh mbaetyak ayong cay*. I will pound the panja.

nggay, *iv.irreg.*, {present of ina-, q.v.} Sit; live, dwell; abs sit/dwell (loc). *Tron tru nggay? Oghol-oghol ayong nggay*. Where do you live? I live far away.

nggi, *n.*, Swamp. **ngogh nggi**, *n expr.*, Swamp. *Puy kongon oliv (ulyi?) nggingon inhi*. Let's make camp in the swamp.

nggigh, *n.*, {-adh} 1. Flying fox sp. (small); 2. Coal Sack (in sky; the two initiates, *Lawuy Pongg*).

nggil, *n.*, Handle part of spear-thrower.

nggo-, *tv.*, {, -gh,} Stab (as stingray stabs); erg stab abs. *Waradh ning mam nggogh*. The flat-tailed stingray nearly stabbed me. *Lu ning nggogh awringg*. It (i.e. fish) stuck me with its spine.

nggo, *n.*, Knee.

nggodhro, *adj.*, Black; dark. *Nggodhro kun lu nimac*. It's getting dark (with approaching storm).

nggoghanh, *n.*, {-adh} Night bird sp.

nggo'in, *n.*, Grasshopper. *Oyanhinad lu nggo'in njay*. Turkeys eat grasshoppers.

ngolkayigh, *n.*, {nul} File stingray.

nggoray, *n.*, {nggoriyadh} Flat-back turtle {lays eggs on bank; flesh not eaten, only eggs /ngambay/}

nggoy, *n.*, {, -agh} Wallaby. *Ayong nggoy njin*. *Anh(a) ayong njin*. *Thom-ghom ayong njin*. I speared a wallaby. I speared it in the heart. I speared it dead. *Ayong ko nggoy mbwiy*. I'll kill that wallaby.

ngithma-c, *iv.*, {-y,} Fear; be frightened (of); abs be frightened (of elat). *Animondr tru ngithmac?* What are you frightened of? *Ayong animcu ngithmath* [sic]. I am afraid of the snake. {see *ngga'ma-c* for similar usage}

ngkil, *n.*, {-adh,} Root.

ngogh, *n.*, {-r, -y, loc/allat: ngonyon} Water. *Ayong ngoy ighoc*. I am thirsty for water. *Ngor ning prulthaegh*. He wet me with water. *Ayong ngoy liy*. I am going for water. *Lu ngonyon njin*. He fell in the water. **ngogh-abhogh**, *n.*, Low water. **ngogh-nhan**, *n.*, High water.

ngoghnhanhcun, *n.*, {-adh} Wild apple.

ngol¹, *n.*, {-adh} Mosquito. *Ngoladh ning thac*. The mosquitos are biting me.

ngol², *n.*, {-adh} Jabiru (with black legs).

ngor'i, *n.*, {-ngg} Sandfly (small).

nhan, *n.*, in expr: **ngogh-nhan**, *n.*, High water.

nhandr, *locdet.*, Somewhere else. *Mangi lu ko nhandr kithi' lic*. He must have gone somewhere else.

nha-y, *iv.2*, {, nh-i-n,} Come; arrive; abs come. *Nggaril nhay*. He's coming from the north. *Lu ngawan nhin*. He came yesterday. *Lu karal nhay*. He's coming from the west. *Aghi kithi' lu nhay* [sic]. Rain will come soon.

nhuyigh, *n.*, {nhuyir} Edible root sp.

ni-c, *iv.3*, {-y, -gh, -'; stat: njay} Stand up. *Niy tru*. Stand up. *Ayong kay ngga' nic*. I can't stand.

nima-c, *iv.1*, {-y, -n, -'} Become; come to be; abs become n/adj. *Thaen lu nimac*. It becomes a (fully perfected) spear-thrower. *Puthak lu nimac*. It becomes strong (e.g. spear-thrower properly made). *Kar lu kun nimac loghngon*. It (sun) is coming to be on the western side now (as it is going down). *Aranngon lu niman*. It (sun, moon) has come to be overhead. *Lonyon lu niman*. It (sun, moon) has come to be on the side (i.e. the west, as it goes down).

ninnga-c, *tv.*, {, -n,} Make; cause to come to be; erg make abs. *Tran ndron—mbraec—ndhodhom ninngac*. They cut a wattle—they scrape it—and they make it straight.

nithagh, *n.*, Father.

niyam-niyam, *adv.*, Steady (as in holding something steady).

niyigh, *n.*, Older brother.

nja, *n.*, {-ngg} Ground; sand. *Lu ning njangg abhan*. He covered me with

sand. **nja kundra-c**, *n v expr.*, Be low tide.

njay¹, *iv.*, {stat} Stand; abs stand. *Kil koyigh ani njay?* What tree is standing there?

njay², *tv. irreg.*, {cim, iyan, i'a} 1. Eat; 2. Drink; erg eat/drink abs. *Tru cim*. You eat it! *Ayong ngogh cim*. I'll drink the water.

nji-, *tv.*, {-y} Wash. *Tru ninh in'ae njiy*. You wash my hair.

nji-c¹, *iv.3*, {-y, -gh, -'} Burn; be on fire; <abs> *Mae-lan kun lu njic*. It is burning as a flame, it is aflame. *Tru lin ciy, alimb thom njigh*. Look at this, my spear burned. *Lin ngga'kay lu mae nji'*. This wood won't burn. *Kom kithi' alimb njiy*. Your spear will burn directly. *Owo'piy ko lu njic, a'iy lu kayngan?* The grass is burning there, who lit it?

nji-c², *tv.1*, {-y, -n, -'} Light (as pipe); <erg, abs>. *Thom tru payp njiy*. Light my pipe. *Tru kun njin?* Did you just light it? *Ayong kay ngga' nji' kom*. I can't light yours. *Mae tru thon moy*. *Ayong lin 'am kil njiy lin—ayi lin puy njiy*. Give me a match. I am going to light the pipe here—(I'll) light this tobacco.

nji-c³, *tv.1*, {-y, -n, -'} Spear (with single point); stab; erg spear abs. *Ayong nggoy njin*. I speared a wallaby. *Ayong nanh cin nggoy njin*. I saw you spear a wallaby. *Tru ninh ngga' njiy*. Don't spear me. *Tru ninh kay nji'*, *ayong kun nanh nji'*. If you speared me, I would spear you then. *Ayong nya nggoy njithigh*. I can spear wallabies. *Andr pim lu injon njic*. He spears kangaroos all the time. *Lu ninh njin an'anggom*. He stabbed me.

nji-c⁴, *iv.1*, {-y, -n, -'} 1. Blow (of wind); 2. Run (of river, floodwater); 3. Grow (of darkness). *Adhinh lin kun*

njic. The west wind is blowing now. *Nggarillu njic mburmbwinh*. The wind is blowing from the north. *Anggay njin*. It flooded. *Irranh anggay lu njic*. The river is running. *Ko lu panj njic*. It is getting dark there.

nji-n, *iv.*, {-y, -gh, -'} Lie down; be lying prone. *Kun tru njiy*. Lie down. *Ighatngon lu njin*. He is lying on his side. *Ayong mbwin brae, ngga'kay-ang nji'*. My back is bad, I can't lie (on it). *Arrangon lu njin*. He is lying on his stomach. *A limb ndhodhom njin*. The spear is (lit. lies) straight.

nji-y, *iv.2*, {-th, -n, -c} Fall; abs fall (elat). *Mbanin lu, kilmondr njin*. He climbed up and fell from the tree. *Tru ath njic*. You might fall.

nju', *n.*, Breast. *Nju' odhithigh*. Two breasts. {sl: *abholok*}

nom, *part.*, in *expr*: **nom cimba-c**, *part v expr.*, Hide; go into hiding. *Tru nom cimbay 'ar nanh 'ath kanhngac*. You hide, they might find you.

nordhim, *n.*, Female wallaby.

nunjiny, *n.*, {-adh}

nya, *n.*, {-w} Meat; meated animal, fish. **nya-con**, *n.*, Good hunter. *Lu nya-con*. He is a good hunter. *Ayong nggadhiy nyaw nggoyadh*. I'm going north for wallaby (lit. wallaby meat, animal). *Ayong nyaw lith*. I'm going fishing.

nyo-c, *tv.3*, {-y, -gh, -'} Kick (with foot). *Lu nanh kandr nyoy*. It will kick you with its foot. *Lu ninh kandr nyogh*. He kicked me with his foot.

obhan, *n.*, Dream. **obhan ci-c**, *v expr.*, Dream; have a dream. *Ayong obhan cin injon-ang njin*. I dreamed I speared a kangaroo.

obhanhnga-c, *tv.1*, {-y, -n, -'} 1. Tell; erg tell abs to dat; 2. Call; give name to; erg call abs by term x (expression in

abs). *Tru ani ngonh* [sic] *obhanhngan?* What did you tell him? *Imoghnam nan thoghay obhanhngac*. The offspring of FaYSi we call *thoghay*.

obholpin, *n.*, New shoots (of grass starting to grow). {also recorded: *obhol*; main entry may be error for:} *Obhol pin*. New shoots have started to grow. {If so, then: *pi-c* [iv], q.v.}

odhimthinhnga-, *tv.*, {-y} Bathe; erg bathe abs. *Odhimthinhngay*. Bathe him.

odhimthi-y, *v refl.* 2, {-th, -n, -c} Swim; abs swim. *Ayong pdhimthith*. I'm going to swim. *Ko lu a'inh odhimthiy*? Who's swimming there?

odhithigh, *quant.*, {*odhithirangg*, *odhithiyandh*} Two. *Odhithirangg ninh can*. Two hit me. *Nanam odhithinam*. It belongs to us two (exclusive). *Ayong lawungg odhithiyandh pon*. I gave it to them (two). **odhithiyanj**, *adv.*, Twice. *Odhithiyanj ninh can*. He hit me twice.

odho', *n.*, {-odh} 1. Long spear; 2. Digging stick. *Lu ciyigh odho'odh i'ic*. She is digging yams with a digging stick.

ogha, *n.*, Sand beach.

ogha-c, *tv.*, {-y, -gh, -' } Smell.

oghaen, *n.*, Nasal mucus; catarrh.

Oghaen braengg kanhngan ninh. A bad cold has hold of me. **iri-oghaen**, *n.*, Nasal mucus. {also recorded as: *oghin*. This latter may in fact be the correct form. }

oghanh, *n.*, Hill; mountain. *Ayong oghanhngon mbanith*. I will climb on the mountain.

oghdhi-y, *iv.*, Sprout; shoot up (of grass).

oghin, *n.*, Nasal mucus; catarrh {see *oghaen* above}

oghol, oghol-oghol, *adv.*, Far. *Ayong oghol lith*. I will go far. *Oghol-oghol ayong nggay*. I live far away.

oghom, *adj.*, {-adh} Long; tall. **ma oghom**, *n.*, Tall man. **oghoghor**, *adj.*, Long (non-singular). *Ayong alimb oghoghor orrimcath*. I have many long spears.

o'i-c, *tv.1*, {-y, -n, -'} Chase; follow; erg chase abs. *Irae thon o'iy*. You all chase him for me. *Ko'thaengg lu ninh o'in*. The file snake chased me. *Ani ko 'ar o'ic*? What are they chasing there? *Makithi' ma o'ic 'ar*. They must be chasing a man. {also recorded as: *u'i-*, q.v. }

okmata, *n.*, {-ngg} Large black flying fox.

okpili, *n.*, {-ngg} One-pronged bamboo spear (for wallaby).

olama-c, *iv.*, {-y, } Play; <abs> *Ayong ngonyon olamay*. I'll play in the water.

olan, *n.*, Red paint (made by burning yellow ochre with heat from ironwood fire).

olay, *n.*, Paternal grandfather, FaFa, FaFaSi.

oli-, *tv.*, {-y, } Set up (camp); make (camp). *Puy kongon oliy nggingon inhi*. Let's make camp in the swamp. {possibly: *uli-*, *'uli-*, or *'oli-*}

olimom, *locdet.*, In the middle. *Olimom tru ndray*. Put it in the middle.

olo, *n.*, Penis.

ololokon, *n.*, Jellyfish (without long tentacles).

olompolwa-c, *tv.*, {-y, } 1. Remove from; take out of; <erg, abs, (elat)>; 2. Be high tide; <abs>. *Maemondr olompolway*. Take it out of the fire. *Ngogh olompolwac*. It is high tide.

olow¹, *n.*, Dove sp.

- olow²**, *n.*, {-adh} Blowfly (large, non-biting).
- oman**, *n.*, White pigeon.
- omarr**, *n.*, {-adh} Yellow fruit tree.
- omarrko**, *n.*, White fish.
- omindh**, *n.*, {-adh, -agh} 1. Dog; 2. Ant (generic term). *Omindhadh ninh than*. The dog bit me. **omindh mambrung**, *n.*, Wild dog. *Tru nya mbwa' poy omindhagh*. You give meat to the dog. *Omindhadh ninh thaengac*. Ants are tickling me. *Omindhcon lin i'igh*. This anthill has lots of ants.
- onga'adh**, *n.*, Catfish.
- onganga-y**, *iv.2*, {-th, -n, -c} Jerk (as of leg). *Kay ongangay*. It is jerking its leg.
- ongarr**, *n.*, {-adh, } 1. Star; 2. String belt (from wild mango). *Ongarradh inhi amogh*. The stars are bright (lit. have made the place bright, illuminated the place.) *Ongarr ngga' amon* [sic]. The stars are not bright. *Ongarr ko trandr lu njic*. Hey, a star is falling.
- ongolpo**, *n.*, Frog. (cf. *prae*)
- onhae-y**, *iv.1*, {-y, onhi-n, onhi-'} Swim across; abs swim across. *Ayong irranhagh onhae y*. I'll swim over (across the river). *Tru kun onhin?* Did you swim over? *Ayong kay ngga' onhi'*. I can't swim over. *Linggay onhae y*. Let's swim.
- onhi**, *n.*, {-ngg} 1. Horsefly; 2. Hornet.
- onjam**, ?, *Kar'ar nggariy onjam*. They are living in the western part.
- on'onh**, *n.*, Humpy; bark shelter. *On'on ayong ndron*. I am cutting (bark for) a humpy. {also recorded: *o'onh*}
- onyonjigh**, *n.*, {onyonjir} 1. Loggerhead turtle; 2. Hard tea-tree.
- o'ongcigh**, *n.*, Shade. *Linggay kongan o'ongcigon*. Let's (go sit) in the shade.

- o'onh**, *n.*, 1. Humpy; bark shelter; 2. Ring around moon. *Ayong o'onh ninngac*. I am making a humpy. {also recorded: *on'onh*}
- o'onjithi-y**, *iv.*, {-y, -gh, -'} Shift; turn (as of Milky Way, of wind); abs shift. *Nyu kun trombrong lu njic?* *Kun lu o'onjithigh nggaril lu njic*. Where is it blowing from now? It has shifted and is blowing from the north.
- o'ow**, *n.*, {-adh} Goanna. *Lu ninh cin o'owadah*. The goanna saw me.
- orae'**, *n.*, Native cat.
- orama-th**, *v.*, Deceive. *Yogh oramath*. It is just deceiving.
- orimbdhigh**, *n.*, Queenfish.
- orindhagh**, *n.*, {nul} Swamp turtle (freshwater).
- oronga-c**, *tv.*, Heat; warm (as spear shaft in manufacture); erg hear abs.
- oroway**, *n.*, {-adh} Freshwater sardine.
- orra**, *n.*, {-ngg} Shovel-nose shark.
- orra-c**, *n.*, Fasten to; erg fasten abs (to allat). *Thaenngon ngonh orrac*. They fasten it onto the spear thrower.
- orri**, *quant.*, {orrингом} Many. *Ayong orri cin*. I saw many. *Orrингом ninh can*. Many (men) hit me. **orrimam**, *quant.*, Many; a mob. *Orrимам 'ar liliy*. A mob is running.
- orrimcath**, ?, Having many. *Ayong alimb oghoghor orrimcath*. I have many long spears.
- owo'piy**, *n.*, {-adh} Grass. *Owo'piy lu kun a'anhaec*. The grass is growing now. *Owo'piy ko lu njic, a'iy lu kayangan?* The grass is burning there, who set it afire?
- owrae'**, *n.*, {-aedh} Pus; matter. **aran**
owrae', *n.*, 1. Brain; 2. Edible 'head' (stem) of palm.
- owrae'-owrae'**, *adj.*, {-aedh} Smooth.

owru, *n.*, Ankle.

oyanhin, *n.*, {-adh} Turkey.

Oyanhinadhu lu nggo'in njay. Turkeys eat grasshoppers.

oyathigh, *n.*, {oyathir} Bird (term restricted generally to small birds).

Oyathir lu ngambay ki'. A bird laid an egg.

oyith, *n.*, Jewfish.

oyom, *n.*, Mother-in-law, MoBrDa; Nephew-in-law, SiDaHu. *Alanam koth, iwang nan obhanhbngac—oyom nanam kogh*. Our mother's brother's (daughter) we call *iwang*, that is our mother-in-law. *Iwangol kinh ma, ma kok lu kic, lu imoghandr kok lu kic—koth nanam, oyom lu ninh lu ninh thac*. The male offspring of *iwang* [sic], a male that she gives birth to (i.e. to which our FaYSi gives birth), that one of ours, calls me *oyom*.

oyon, *n.*, {-adh} Sleepy fish.

oyoy, *n.*, Kindling.

'ondh, *n.*, Elbow.

paekyigh, *n.*, Sugarbag (largest, wax used for firestick). *Ayi paekyigh tru ndroy*. Cut open the sugarbag.

paemganh, *n.*, Porpoise. *Paemganh lu tho'cay*. The porpoise is 'jumping'.

paeramkanhinh, *n.*, {-adh} Dugong.

paew, *n.*, {-adh} Tuber sp. (round, called *kuthay*).

paey, *adv.*, Near; close. *Tru wiy paey lith* [sic]. You move here close. *Ayong lin-mam paey-mam nggay*. I live nearby.

pam, *adj.*, Silent; quiet. *Tru pam*. Be quiet. (cf. *ka-pam* (under: *ka*))

pandhim, *adv.*, This morning. *Ayong pandhim kun cin*. I spoke (to him) this morning.

panj, *n.*, {-adh} Darkness. *Panjadh aghic*. It is very dark. *Ko lu panj njic*. It

is getting dark now. {This was a totem of the late Sam Kerundun.}

patha-, *tv.*, {-y, -y, -y} Make; erg make abs.

Alimbayong pathay ayongthagh thomogh. I made [sic] a spear for my son.

patha-c, *tv.*, Mould; form (with wax);

erg mould abs. *Anhae ninngac—kacinthaenggndraec—pathac, nggilngon pathac*. They make a hole (to set notch peg in spear thrower)—they fasten it with beeswax—they mould it, and they mould it onto the handle.

pi-c, *iv.1*, {-y, -n, -'} 1. Come out; <abs, (elat)>; 2. Go across, go through; <abs, (perlat)>; 3. Begin to rise (as of smoke); <abs>. *Lu irranhmondr pin*. He's coming out from the creek. *Ayong thaghi kondr piy*. I'll go across the plain. *Canam ko lu kun pin*. The moon is new (lit. it is out). *Ongarr ko lu kun pic*. The star is coming out here now. *Lin lu rul kun pic*. The north-west clouds are coming up. *Ibhor ko lu kun pic*. Smoke is starting to rise.

pibhin, *n.*, Type of country. {normally appears in construction with preceding nominal identifying country type; also recorded: *piwin* (with tense /w/)}

thurr pibhin, *n.*, Wattle country.

tran pibhin, *n.*, Wattle country.

thagh pibhin, *n.*, Open; plain country. **prae' pibhin**, *n.*, Stoney country. **agharr pibhin**, *n.*, Pandanus country.

pil, *n.*, {-adh} {phon: [pi:l]} Butterfish.

pim, *quant.*, {pinggom} One. *Pinggom ninh can*. One hit me. **piyum**, *adv.*, Once. *Lu ninh piyum can*. He hit me once.

pimba, *n.*, {-ngg} Bullrush.

imbrong, *n.*, {-adh} 1. Water-snake (non-poisonous, black with yellow

- belly); 2. Rainbow. *Pimbrong lu kun cimban*. A rainbow has started to form.
- pinhngathi-n**, *iv.*, in expr: *Kun lu lan pinhngathin*. It (sun) is going down producing rays on water.
- pinyipiny**, *n.*, Kangaroo sp. (with long thin tail, long ears, living in rocks).
- pir**, *n.*, {-adh} {phon: [per]} Bailer shell. {also recorded: *paer*}
- pirko**, *n.*, Sugarbag (small and sweet).
- pirrpurr**, *n.*, {phonetically [perrperr]} Squeeker parrot.
- piwin**, *n.*, Type of country. {see: *pibhin*}
- piy**, *n.*, Paternal grandmother, FaMo, FaMoBr.
- po'**, *n.*, {-odh} Frilled lizard.
- po-c**, *tv.1/3*, {-y, -gh/-n, -'} Give; erg give abs to dat. *Tru wiy thon andr moy*. You give it here to me. *A'iy lu kon pogh?* Who gave it to you? *Tru ngga' kay thon ayi po?* Can't you give me food? *Ayong 'angg omindh pon*. I gave them (plural) a dog.
- po-n**, *tv.4*, {-y, -gh, -'} {usit: oyan} 1. Throw; 2. Build (as bird builds nest); erg throw/build abs. *Idhae lu lin pogh*. It built a nest here. *Idhae lu koth pon*. It is building a nest (there). *Lu ko prae' pon*. He is throwing stones. *Lu ko a'iy prae' pogh?* Who threw the stone there?
- poendh**, *n.*, Small spotted lizard (found on trees); gecko(?).
- poenjigh**, *n.*, {poenjir} White shark. {[oe] here and in the preceding entry is a rare mid front rounded vowel.}
- pondhol**, *n.*, {-adh} Blow shell.
- pongg**, *n.*, {-agh} Youth; young man unmarried man; initiate. *Omindh ayong ponggagh moy*. I'll give the dog to the young man.

- poy**, *pron.*, {po-nh, po-ngg, po-nam} You (two); second person dual pronoun.
- prae'**, *n.*, {-aeddh, } 1. Stone; 2. Stone axe; 3. Frog. *Lu nhin prae'aeddh can*. He hit me with a stone. **prae'**
- abhopogh**, *n expr.*, Gravel.
- praetnyan**, *n.*, Duck sp.
- pri'**, *n.*, {-idh} Mangrove shell sp. (long, spiralled).
- prul**, *n.*, Mud. **nja prul**, *n expr.*, Muddy ground. *Ayong nja prulngon cimban*. I got bogged in the mud.
- prulthae-c**, *tv.3*, {-y, -gh, -'} Wet; drench. *Ngor nhin prulthaegh*. He wet me with water. *Thom inhi prulthaegh aghingg*. The rain drenched my camp. {also recorded: *prultha-c*}
- puthak**, *adj.*, Strong.
- puy¹**, *n.*, Bone. **nya puy**, *n.*, Fish. **ayi puy**, *n.*, Plug of tobacco.
- puy²**, *pron.*, {pu-nh, pu-ngg, pu-nam} We; first person inclusive plural pronoun.
- puynggon**, *adj.*, Heavy. *Prae' puynggon*. The rock is heavy. *Brae' puynggonjigh*. The rocks are heavy. *Mal lawuy odhithirangg puynggon*. The two men are heavy. {Note use of erg in preceding.}
- puyugh**, *n.*, {-adh} Rock cod. *Puyughadh imbacil lu njay*. The rock cod eats mullet (a small sp.).
- puyum**, *n.*, Bell. *Puyum kun can*. The bell has rung (i.e. for quitting time).
- pwampwam**, *adj.*, Fine textured. *Thaen nan amanhngac—cariy lu—pwampwam lu nimac*. We remove the spear-thrower (from tree of which it is made)—it is split—and it becomes fine textured.
- pwanjigh**, *n.*, {pwanjir} Wild chilli.

pwica-c, v., Flash (of lightning). *Idhirri lu pwicac*. The lightning flashes (at night).

pwidhamuyigh, n., {nul} Mangrove white-tailed stingray (white).

pwinyigh, n., King parrot. {This was a totem of the late Sam Kerundun.}

rae-c, tv.1, {-y, -n, -'} 1. Get; take/catch hold of; 2. Marry; take as wife; erg get/marry abs. *Ayong kon alimb raey*. I will get you a spear. *Ayon lin raen*. I have married this one, I am married to this one. *Alanam ayong ngga'raen, nat alanam nan raec*. I did not marry the (daughter) of my mother's brother, we do not marry the (daughter) of our mother's brother. *Ayong raen—mindr thaenh—iwangol kinh*. I married the one begotten by my MoMoBr [sic], the one given birth by my mother-in-law.

rae-ri-, v.refl., 1. Couple (in mating, of sea turtles); 2. Marry each other.

Trayinadh lin lawuy raein. The two sea turtles are 'fast' (coupled in mating).

Nan raein. We are married, we married each other. **thangon rae-c**, loc v expr., Show; erg show abs to dat.

Thangon raey tru thon. Show it to me. *Lu kon thangon raen?* Did he show it to you?

raethigh, adj., Dry. *Ayong ndroy raethigh*. My throat is dry. *Ayong ngonh raethi-nin(ng)ay*. I'll dry him.

rul, n., North-west clouds. *Lin lu rul kun pic*. The north-west clouds are coming up.

tha, n., 1. Eye; 2. Entrance to sugarbag. *Ninh tha can*. He hit me in the eye.

thangon rae-c, loc v expr., Show; erg show abs to dat.

tha-c¹, tv., {-y, -n, -'} 1. Tie; 2. Coil around (as of snake); erg tie abs.

thadha-c, tv.1, usit/durative, Tie; coil, wrap. *Ko'thaengg ninh thadhac*. The file snake coiled on me [sic].

tha-c², tv., {-y, -n, -'} Taste. *Mbraenj tru thay*. You taste it first.

tha-c³, tv., {-y, -n, -'} 1. Sing; (normally with abs /inhi/); 2. Call name erg call abs by term (abs expression). *Ayong ngga' kay inhi tha'*. I can't sing. *Awunjigh ko kun 'ar thac*. They are singing a corroboree there now. *Tru ngonh thay*. You sing it. *Oyom lu ninh thac*. He calls me *oyom* (in-law).

tha-y, tv.2, {-th, -n, -c} also recorded as **tha-c**, tv.1, {-y, -n, -'} Bite; erg bite abs. *Omindhadh ninh than*. The dog bit me. *Nanh ath thac omindhadh*. The dog might bite you. (cf. *tha-c³*)

thae-c, tv.3, {-y, -gh, -'} Beget. *'Ar nangg lin ibhadh kay alanam 'ar raeri—alandr kokngonh thaec, pimngon-k 'anh kick ko*. These (people) to the south marry their child—i.e. the one which the uncle begets, as if born of one mother. (cf. *ayongthaegh*)

thae'aedh, n., {-adh} Mangrove goanna (with small spots). *Thae'aedh koyigh lu linic*. *Adhimbrong*. A mangrove goanna went by here. (Its tracks are) fresh, new.

thaecon, n., Palm tree.

thaem, n., Sugarbag (small). *Malay abhogh; ayi thaem*. *Lin ndray*. The bees are small; it's a *thaem*. Leave this one.

thaen, n., {-adh} Spear-thrower (club-shaped). *Thom thaen iri ngganin, tru kay ngga' po?* The 'nose' of my club broke off. Could you give me one?

thagh, n., Plain (country). **thagh**

pibhin, n., Open country; plain. *Ayong thaghi kondr piy*. I will go across the plain.

thalandhigh, n., in expr: **omindh thalandhigh**, Dingo.

thamb, n., Tendon.

thandragh, *n.*, {-agh} Liver. *Ayong cim thandragh*. I will eat the liver.

thandrom, *adv.*, Fast; hard intensely.

Tru thandrom lith. Walk fast. *Lu ninh thandrom can*. He hit me hard.

thar, *n.*, {-adh} 1. Cold; 2. South-west wind. **thar-ngon**, *loc.*, Cold; feeling cold. *Ayong tharngon*. I am cold.

Ayong mbwiyingg tharngon-ang niman. I was cold last night. *Ayong tharngon lin nga'ngon kithi'inay*. I'm cold, I'll (go) sit in the sun directly.

Inhi lin thar. It's cold (today). *Ibharil lu njic—ko kun lu tharngon ninngac lu*. It's blowing from the south—that makes it cold. **tharthae**, *adj.*, Cold.

tharca, *n.*, Bream.

tharriy, *adj.*, Headless; disobedient.

Mbanin lu, kilmondr njin. *Tharriy kal lu*. *Lu kal inhi ngga'nganyath*. He climbed up and fell from the tree. Because he is heedless. Because he will never listen. (cf. *inhi nganya-y* (under: *inhi*))

tharthae, *adj.*, Cold. *Lin ngogh tharthae*. This water is cold.

thawara, *n.*, {-ngg} {phon: penultimate /a/ reduced} Shovel spear. *Lu ninh mam njin thawarangg*. He nearly speared me with a shovel spear.

thi'im, *adv.*, Softly; slowly. *Tru thi'im lith*. Walk slowly. *Lu ninh thi'im can*. He struck me softly.

thilinh, *n.*, {-adh} Wild chilli sp. (green then red). *Thilinh katral*. Wild chilli is bitter.

thim, *n.*, Dirt used to cover earth-oven.

thin, *n.*, 1. Thigh; 2. Exposed root (of mangrove). **thin-arra**, *n.*, Thigh muscle (at rear) {(see *arra* 'stomach').} **lu' thin**, *n.*, Mangrove root (exposed).

thinamlong, *n.*, Kidney. *Nya thinamlong ki'dhim*. The kidneys have fat on them.

thiy, *n.*, Maternal grandfather, MoFa, MoFaBr.

tho', *n.*, 1. Shin; lower leg; 2. Shank portion of fish.

tho-c/n, *tv.*, {-y, -gh, -'} 1. Insert; fit in; 2. Hide; erg insert/hide abs. *Karam tru thoy*. Put it underneath. *Ayong kar thon*. I am putting it inside.

tho'ca-y, *iv.*, {, tho'ci-n,} 1. Hop; jump (as of kangaroo); 2. Surface and dive repeatedly (of porpoise); 3. To fly (as of spark or coal out of fire); <abs>. *Injon ko tho'cay*. The kangaroo is hopping there.

thoghay, *n.*, {-adh} 1. Maternal nephew, niece, OSiCh; 2. Maternal cousin, FaYSiCh; 3. Chick (of emu). *Imoghnam nan thoghay obhanhngac*. We call our father's younger sister's child *thoghay*. **arrow thoghay**, *n.*, Emu chick.

thok, *n.*, {-adh} Whale.

thol, *n.*, Shoulder.

thoncigh, *n.*, Younger sibling, YBr, YSi. (cf. *niyigh*, *kiyigh*, *laebhinthaе*)

thondh, *n.*, {-adh,} Leaf. **thondh ayam**, *n.*, Green leaf. **thondh iroth**, *n.*, Dry leaf.

thonomthindhigh, *n.*, Son-in-law, DaHu (male speaking).

thoplo, *n.*, {-ngg} Intestines; innards (including liver).

thoth, *n.*, 1. Small dillybag (called *waangga*); 2. Net for fishing.

thu, *n.*, {-ngg} White clay. *Thungg tru kun anyathith*. Rub yourself with white clay.

thunggur, *n.*, {-adh} Nail fish.

thurr, *n.*, {-adh} Wattle sp.

- tilnam**, *n.*, {-adh} Freshwater jewfish.
- tintin**, *n.*, Mudlark.
- torrorr**, *n.*, {-adh} Jabiru (with red legs).
- tradh**, *n.*, Barramundi.
- tran**, *n.*, {-adh} Wattle sp.
- tranjigh**, *n.*, Shaft of spear.
- trayin**, *n.*, {-adh} Sea turtle sp. (large).
Trayinadh lin lawuy raerin. The two sea turtles are ‘fast’ (coupled in mating).
- trigh**, *n.*, {-adh} Ironwood.
- tron**, *qlocdet.*, {allat: tronyo, elat: trombrong} Where. *Tron tru ndran?* Where did you leave it? *Tronyo tru liy?* Where are you going? *Ngogh tru trombrong amogh?* Where did you scoop the water from? *Nyu kun trombrong lu njic?* Where is it blowing from now?
- tronpan**, *n.*, {-adh} Bluefish.
- tru**, *pron.*, {na-nh, ko-n, ko-m} You; thou, second person singular pronoun.
- u'i-c**, *tv. I.*, {-y, -n, -'} Chase; follow.
Mal nhin u'in. The man ran me up. (cf. o'i-c, the variant recorded most often)
- wangdhim**, *adv.*, Tomorrow. *Ayong wangdhim liy.* I am going tomorrow. *Ayong nanh wangdhim siy.* I'll see you tomorrow.
- war**, *n.*, {-adh} Flat-tailed stingray.
Waradh nhin mam nggogh. The stingray nearly stabbed me.
- wa'tham-a-c**, *iv.*, <abs, dat> Be sorry for; be worried about. *Ayong wa'thamac ca thomogh.* I am sorry for my language (sorry to have forgotten it). *Ayong wa'thamac omindhagh, omindh thom nyacon.* I am worried about my dog, (it is) my good hunting dog.
- wathay**, *n.*, {-adh} 1. Old man; 2. Morning Star. *Wathayadh nhin can.*

The old man hit me. *Wathay lu kun pin.* The Morning Star has come out now.

- wayigh**, *adj.*, {wayir} Big; large wide.
Ayong wayigh cin. I saw a big one.
Wayir ninh can. A big one hit me.
Arogh wayigh. The road is wide.
- wayinjigh**, *adj.*, Big (non-singular).
Ma wayinjigh. The men are big. *Ma odhithigh wayinjigh.* The two men are big.

wiruwiru, *n.*, {-ngg} Smelly swamp turtle.

- with**, *n.*, 1. Forehead; 2. Mouth (of creek, river). **with njay**, *n v expr.*, Build up; pile up (of clouds). *Ngambay lin lu with njay.* The clouds are building up. *Irranh lu with tron lu pin?* Where is the creek mouth? **with njay**, *n v expr.*, Rise (in a large plume, of smoke). *Ibhor ko lu with njay.* The smoke is rising there in a big plume.

withka, *n.*, Cliff. *Withkamondr lu njin.* He fell off the cliff. *Tru withkongan lilith.* Run to the cliff.

withnhu, *n.*, Stranger. *Ma lu lin trombrong pin.* *Withnhu lu pin.* Where does this man come from, the stranger?

withrram, *n?*, Hide-and-seek. *Linggay withrram.* Let's play hide-and-seek (in the water).

wiy, *part.*, Hither. *Wiy tru kon inay.* You sit over here. *Tru wiyl thon andr moy.* Give it here to me.

wungwung, *n.*, {-adh} Black crane.

yarrcam, *n.*, Calm weather; no wind. **yarrcam ndro-n**, *n v expr.*, Calm down; become calm. *Yarrcam ndrogh.* It's calm; it has become calm. *Lay kun lilith.* *Lu 'ath 'ath yarrcam ndron.* Let's go back (i.e. by sail). It is liable to get calm.

yarrmanh, *n.*, Horse.

yaw, part., Yes. *Nya wayigh tru njin?*

Yaw, nya wayigh ayong njin. Did you spear a big one? Yes, I speared a large animal.

yogh, part., 1. Don't; 2. Deceptively.

Yogh tru lilith. Don't you run. *Tru ninh*

yogh prae'aedh cay. Don't hit me with a stone. *Yogh lu pic.* They (clouds) are coming up deceptively (i.e. they are just fooling and have no rain).

ENGLISH FINDERLIST FOR A LINNGITHIGH VOCABULARY

DAVID NASH

The English entries in the following list are derived solely from the glosses in the main vocabulary, and should be used merely as an index to the vocabulary, which should then be consulted. Unless otherwise noted, a Linngithigh compound is listed as a subentry under the entry for the first element.

admonitive *ath*
again *linhghom*
always see *andr*
amount (small) 'andr
animal (meated) *nya*
ankle *owru*
ant *omindh*
anthill *iigh*
apply pressure to *aghi-c*
arm (upper) *ndrae*
armpit *amogh*
arrive *nha-y*
arrowroot *an'oy*
ashes *ibhil*
ask *kiki-*
attach *ndra-c*
aunt
 paternal (elder) *inhaghay*
 paternal (younger) *imoghay*
axe (stone) *prae'*
baby *aghambrong*
back *lay, linhghom*
back (body part) *mbwin*
backwards *mbwinmam*
bad *brae*
bag (small dilly) *thoth*

bailer *shell pir*
bamboo *idha'dhigh*
bandicoot *kiyu*
barb of spear *awri*
bark *iwin*
bark shelter *on'onh, o'onh*
barracuda *cayuy*
barramundi *tradh*
base of tail *cagh-nggil*
bathe *odhimthinhnga-*
be (come to) *nima-c*
bear (a child) *ki-c*
beard *ko' nga*
become *nima-c*
bed (of creek) *irranh*
bee *malay*
beeswax *korpan*
beget *thae-c*
bell *puyum*
below *karam*
bend *mbwinbwa-c*
big *wayigh*
bill (of bird) *iri-ghothigh*
bird *oyathigh*
 night bird sp. *awul, nggoghanh*
 small bird sp. *ngayigh¹*

birth (give)	<i>ki-c</i>	call by name	<i>tha-c³</i>	
bit (a)	<i>'andr</i>	call (of bird or animal)	<i>ca-y</i>	
bite	<i>tha-c</i>	calm		
bitter	<i>katral</i>	calm down	<i>yarrcam ndro-n</i>	
black	<i>nggodhro</i>	calm weather	<i>yarrcam</i>	
bleed	<i>kombwinhaka-</i>	camp	<i>inhi</i>	
blood	<i>kombwinh</i>	cane	<i>i'indhigh</i>	
bloodwood	<i>kanthin</i>	canoe	<i>awurpa</i>	
bloodwood sp.	<i>ndrothi-ndrothigh</i>	capmari	earth-oven	<i>i'igh</i>
yellow bloodwood	<i>ibhicathigh</i>	carpet snake	<i>kayigh</i>	
blow (of wind)	<i>nji-c⁴</i>	carry	<i>iya-n</i>	
blow shell	<i>pondhol</i>	cassava (wild)	<i>ndhipal</i>	
blowfly	<i>olow²</i>	catarrh	<i>oghaen, oghin</i>	
bluefish	<i>tronpan</i>	catch (fish)	<i>ndha-</i>	
blunt	<i>koca</i>	catfish	<i>kyanjigh, onga'adh</i>	
bone	<i>puy¹</i>	cause to come to be	<i>ninnga-c</i>	
boobie	<i>athongithigh</i>	centipede	<i>mbiwgh</i>	
bottom side	<i>karam-karam</i>	charcoal	<i>mwi</i>	
bowerbird	<i>a'ithae</i>	chase	<i>o'i-c, u'i-c</i>	
boxwood	<i>in'or</i>	chat (have a)	<i>ca ninnga-c</i>	
brackish	<i>loktho</i>	chest	<i>'in</i>	
brain	<i>aran owrae':</i> see <i>owrae'</i>	chick (of emu)	<i>thoghay</i>	
break	<i>mbwa-n</i>	child (my)	<i>ayongtha(e)gh</i>	
break (of horse)	<i>mbwinbwa-c</i>	chilli		
break off	<i>nggani-</i>	chilli sp. (green then red)	<i>thilinh</i>	
bream	<i>tharca</i>	wild chilli	<i>pwanjigh</i>	
breast	<i>nju'</i>	clam (mangrove)	<i>lae</i>	
brolga	<i>ndril</i>	clay (white)	<i>thu</i>	
build		cliff	<i>withka</i>	
as bird builds nest	<i>po-n</i>	climb	<i>mbani-y</i>	
build (fire)	<i>kaynga-c</i>	close	<i>paey</i>	
build up	<i>with njay</i>	cloud	<i>ngambay</i>	
bullrush	<i>pimba</i>	coals	<i>mwi</i>	
burn	<i>kaynga-c, nji-c¹</i>	Coal Sack (in sky)	<i>nggigh</i>	
as tentacles of jellyfish	<i>ibha-</i>	cockatoo		
burnt country	<i>in'aem</i>	cockatoo sp.	<i>arar</i>	
bury	<i>karmya-c</i>	white cockatoo	<i>kik</i>	
bush sp.	<i>lorr</i>	cod (freshwater spotted rock cod)		
butt end of spear	<i>cagh</i>	<i>mankanh</i>		
butter fish	<i>pil</i>	coil	<i>thadha-c:</i> see <i>tha-c¹</i>	
bye-and-bye	<i>'a, 'a'a</i>	coil around (as of snake)	<i>tha-c¹</i>	
call	<i>ca-y, imamca-y, obhanhnga-c,</i>	cold	<i>thar, thar-ngon, tharthae</i>	

- come** *nha-y*
come (of rain) *aghi nha-y*
come out *pi-c*
cook *kaynga-c*
cooking trench *i'igh*
copper fish *ndhipal*
cottontree *awurpa*
country (type of) *pibhin, piwin*
couple (in mating, of sea turtles)
rae-ri-
cousin
cross-cousin *iwang*
maternal *thoghay*
cover (as with sand) *abha-c*
crab *mbiwgh, nga'a*
crane
black *wungwung*
white *car*
crawfish *lakigh*
crawl *a'angga-c*
crawl (particular gait of kangaroo)
ndhaengga-c
creek *irranh*
creek bed *irranh*
creek sand *irranh*
crocodile *kambal*
freshwater *kilnuyigh*
crooked *ighaghthinh*
cross-cousin *iwang*
crow *adha*
cry *imamca-y*
custom *inhi*
cut *ndro-n*
cut through area *inhi ndro-n: see*
ndro-n
dark *nggodhro*
darkness *panj*
daughter-in-law *ayomlondhigh*
dawn (become) *laya-c*
daylight (become) *ayathi-*
deaf *iwogh-thom*
deceive *orama-th*
- deceptively** *yogh*
destroy *mbwa-n*
die *igho-c*
different *aram*
dig *i'i-c*
dig up *i'i-c*
digging stick *odho'*
dillybag (of grass) *idhae*
dingo *omindh thalandhigh: see*
thalandhigh
directly *'aw*
dirt used to cover earth-oven *thim*
dirty *ibhicathigh*
disappear *mwithi-*
disobedient *tharriy*
diver (bird sp.) *karrkarra*
dog *omindh*
don't *yogh*
dove sp. *koltutu, olow¹*
down *kar*
drag *awa-n¹*
dream *obhan, obhan ci-c*
drench *prulthae-c*
drink *njay²*
drip (as water off tree) *arrani-y*
dry *raethigh*
dry (as of leaf) *iroth*
duck sp. *ngga'kayigh, praetnyan*
'peewisie' duck *miwin*
dugong *paeramkanhinh*
dust *ibhi¹*
dwell *ina-c, nggay*
eagle *kangkang*
ear *iwogh*
earth-oven *i'igh*
east *awar*
eat *njay²*
edge *ka*
egg *ngambay*
elbow *a'a-aran,' ondh*
empty-handed *a'a-ngon*
emu *arrow*

emu chick	<i>arrow thoghay</i> : see <i>thoghay</i>	fish	<i>nya, nya puy</i> : see <i>puy</i> ¹
enter	<i>cimba-c</i>	fish sp.	<i>ndral</i>
entrance to sugarbag	<i>tha</i>	white fish	<i>omarrko</i>
envelop (of darkness)	<i>aghi-c</i>	fishing hawk	<i>cith</i>
Epistemic necessitative	<i>ma²</i>	fit in	<i>tho-c/n</i>
Evitative	<i>ath</i>	flame	<i>mae-lan</i>
excrement	<i>irri</i>	flash (of lightning)	<i>pwica-c</i>
exposed root (of mangrove)	<i>thin</i>	flat	<i>mbraerrigh</i>
extract	<i>ngga-c/y</i>	flesh	<i>mbwa'</i>
	extract (as blood)		
	<i>awa-n</i> ¹		
eye	<i>tha</i>	flipper (front, of turtle)	<i>ndrae</i>
face of (river) bank	<i>a'icol</i>	flood	<i>anggay</i>
fall	<i>nji-y</i>	flounder(?)	<i>lindhagh</i>
far	<i>oghол, oghol-oghол</i>	flower	<i>cany</i>
fashion (in that)	<i>'andrthae</i>	fly	
fast	<i>thandrom</i>		as of spark or coal out of fire
fasten	<i>ndrae-c</i>		<i>tho'ca-y</i>
	fasten to		fly away
	<i>orra-c</i>		<i>ami-</i>
fat (the substance)	<i>ki'</i>		fly (the insect)
father	<i>nithagh</i>		<i>malay</i>
fear	<i>ngithma-c</i>		flying fox
feather	<i>imal</i>		large black
feeling cold	<i>thar-ngon</i>		<i>okmata</i>
female wallaby	<i>nordhim</i>		small sp.
fig (wild)	<i>mwiy</i>		<i>nggigh</i>
file snake	<i>ko'thae</i>		foam (as on floodwater)
find	<i>kanhnga-y</i>		<i>ila</i>
fine textured	<i>pwampwam</i>		follow
fingernail	<i>a'a-lan</i>		<i>o'i-c, u'i-c</i>
fire (a)	<i>mae</i>		follow (tradition)
fire (be on)	<i>nji-c</i> ¹		<i>arrow nggay</i> : see <i>arrogh</i>
firedrill	<i>ighoghor</i>		food
firestick	<i>ighoghor</i>		<i>ayi</i>
firewood	<i>mae</i>		foot
first	<i>mbraenj</i>		forefoot of quadruped
firstly	<i>mbraenj</i>		<i>a'a</i>
first person pronoun			hind foot of quadruped
	singular		<i>kay</i> ¹
	<i>ayong</i>		forehead
	exclusive non-singular		<i>with</i>
	<i>nan</i>		forget
	inclusive dual		<i>iwu-mwithi-</i>
	<i>linggay</i>		forgetful
	inclusive plural		<i>iwogh-thom</i>
	<i>puy</i> ²		fork (of tree)
			<i>amogh</i>
			form (with wax)
			<i>patha-c</i>
			four-barbed spear
			<i>ithikrri</i>
			four-pronged spear
			<i>ndhul</i>
			freshwater crocodile
			<i>kilnuyigh</i>
			freshwater lily
			<i>lo</i>
			freshwater sardine
			<i>oroway</i>
			freshwater shark
			<i>arangg</i>
			freshwater spotted rock cod (small)
			<i>mankanh</i>

frightened of (be) <i>ngithma-c</i>	of grass <i>a'anhae-c</i>
frilled lizard <i>po'</i>	Gulf side <i>karam-karam</i>
frog <i>ongolpo, prae'</i>	hair (of head) <i>in'a</i>
fruit <i>logh¹</i>	hand <i>a'a</i>
crow fruit <i>anyo'nggo</i>	handle part of spear-thrower <i>nggil</i>
white fruit <i>lagh, luddhu</i>	hang up <i>mbanhnga-</i>
full <i>kapithigh</i>	hard <i>thandrom</i>
gecko(?) <i>poendh</i>	hawk sp. <i>iyarr</i>
get <i>rae-c</i>	he <i>lu</i>
get out of sight <i>mwithi-</i>	head <i>aran</i>
gill (of fish) <i>amogh</i>	hear <i>nganya-y</i>
girl <i>landh</i>	heart <i>anha</i>
give <i>po-c</i>	heat <i>oronga-c</i>
go <i>li-y</i>	heavy <i>puynggon</i>
go (by sail) <i>lili-y</i>	heedless <i>tharriy</i>
go (of river, creek) <i>abha-</i>	heel (sitting on) <i>kayponon</i>
go across <i>pi-c</i>	here <i>kon</i>
go through <i>pi-c</i>	hide <i>cimba-c, nom cimba-c, tho-c/n</i>
goanna <i>o'ow</i>	hide by burying <i>karinya-c</i>
good <i>adhar</i>	go into hiding <i>nom cimba-c</i>
good hunter <i>nya-con</i>	hide-and-seek <i>withram</i>
goose sp. <i>arancorrnganh</i>	high water <i>ngogh-nhan</i>
grandchild (male speaking) <i>ayonglondhigh</i>	hill <i>oghanh</i>
granddaughter-in-law (male speaking) <i>ayomnhanjigh</i>	hind foot of quadruped <i>kay¹</i>
grandfather	hit <i>ca-c</i>
maternal <i>hiy</i>	hither <i>wiy</i>
paternal <i>olay</i>	hold <i>awa-n²</i>
grandmother (paternal) <i>piy</i>	hole (as of goanna) <i>anhae</i>
grass <i>owo'piy</i>	honey (from sugarbag) <i>alath</i>
grass stem <i>ndha'</i>	hop <i>tho'ca-y</i>
grasshopper <i>nggo'in</i>	hornet <i>onhi</i>
gravel <i>prae' abhopogh</i>	horse <i>yartmanh</i>
great-grandchild (male speaking) <i>ayongnhanjigh</i>	horsefly <i>onhi</i>
great-granddaughter-in-law (male speaking) <i>ayomindhigh</i>	hot <i>maepithigh</i>
green (as of leaf) <i>ayam</i>	how many
green ant <i>abhit</i>	non-human <i>anim</i>
ground <i>nja</i>	people <i>a'inh-a'inh</i>
grow	humpback turtle <i>ngayigh²</i>
of darkness <i>nji-c⁴</i>	humpy <i>on'onh, o'onh</i>
	hungry <i>adhim</i>
	hunker <i>araka-c</i>
	hunter (good) <i>nya-con</i>

I <i>ayong</i>	late 'a, 'a'a
ibis (black) <i>kanj</i>	later <i>i thigh</i>
ignorant <i>iwogh-thom</i>	laugh <i>ngga'ma-c</i>
ill <i>cijim</i>	laugh at <i>ngga'ma-c</i>
in <i>kar</i>	lay (egg) <i>ki-c</i>
initiate <i>pong</i>	leaf <i>thondh</i>
initiation ritual (particular) <i>adiwur</i>	leaning on forearm <i>ighorprum</i>
innards <i>thoplo</i>	leave <i>ndra-c</i>
insert <i>tho-c/n</i>	leech <i>cu'</i>
inside <i>kar</i>	leg (lower) <i>tho'</i>
inside of any fruit <i>logh</i> ¹	lie down <i>nji-n</i>
intensely <i>thandrom</i>	light (a) <i>mbar</i>
intestines <i>thoplo</i>	light (to)
ironwood <i>trigh</i>	fire <i>kaynga-c</i>
it <i>lu</i>	pipe <i>nji-c</i> ²
itch <i>mbrae-c/y</i>	lightning <i>idhirrigh</i>
jabiru	lily (freshwater) <i>lo</i>
with black legs <i>ngol</i> ²	Linngithigh (people/language)
with red legs <i>tororr</i>	<i>linngithigh</i>
jellyfish	little <i>abhogh</i>
with long tentacles <i>ndromdhig</i>	live (to) <i>ina-c, nggay</i>
without long tentacles <i>ololokon</i>	liver <i>thandragh</i>
jerk (as of leg) <i>onganga-y</i>	lizard (gen.?) <i>abhil</i>
jewfish <i>oyith</i>	small spotted <i>poendh</i>
freshwater <i>tilnam</i>	long <i>oghom</i>
joey <i>korpo</i>	long ago <i>koknomam, koknom</i>
jump (as of kangaroo) <i>tho'ca-y</i>	long spear <i>odho'</i>
kangaroo <i>injon</i>	louse <i>ibhi</i> ²
kangaroo sp. <i>pinyiny</i>	low water <i>ngogh-abhogh</i>
pilot kangaroo <i>ka mwiyim</i>	lower leg <i>tho'</i>
sentinel kangaroo <i>ka mwiyim</i>	lungs <i>mbar</i>
kick (with foot) <i>nyo-c</i>	lying prone (be) <i>nji-n</i>
kidney <i>thinamlong</i>	maggot <i>cu'</i>
kill <i>mbwi-c</i>	maiden <i>landh</i>
kindling <i>oyoy</i>	make <i>ninnga-c, patha-</i>
kingfisher <i>ciwrin</i>	make (camp) <i>oli-</i>
knee <i>nggo</i>	make by cutting <i>ndro-n</i>
kookaburra <i>ngga'angk</i>	man <i>ma</i> ¹
language <i>ca</i>	mangrove
large <i>wayigh</i>	exposed root <i>lu' thin</i> : see <i>thin</i>
larvae/eggs of sugarbag <i>ngambay</i>	from which paddles are made
last night <i>mbwiyingg</i>	<i>ngamb</i>

- generic term** *lu'*
mangrove borer (wood-eating) *aghorrca*
mangrove duck *aricandr*
mangrove goanna *thae'aedh*
many *orri, orrimam*
marry *rae-c, rae-ri-*
match *mae*
matter *owrae'*
meat *mbwa', nya*
meated animal *nya*
medicine *kilthin*
messmate bark *ndhan*
middle (in the) *olimom*
milk-wood *ndromdhigh*
Milky Way *mbrugh*
mob (a) *orrimam*
mould *patha-c*
monkey possum *kilnhuyigh*
moon *canam*
more *linhghom*
Morning Star *wathay*
mosquito *ngol¹*
mother *adhoy*
mother-in-law *iwang, oyom*
mountain *oghanh*
mouth *ka*
 of creek, river with
mud *prul*
mudlark *tintin*
mudshell *lae*
mullet
 large sp. *capan, i'ir*
 small sp. (eaten by rock cod) *imbacil*
must be *ma²*
nail fish *thunggur*
 white-spotted *ara'agh*
name (give) *obhanhnga-c*
napé of neck *mbru'um*
nasal mucus *iri-oghaen: see oghaen, oghin*
- native cat** *orae'*
native companion *ndril*
near *paey*
nearly *mam*
neck *ndroy*
nephew
 maternal *ayongkonjigh, thoghay*
 paternal *ayongnhanjigh*
nephew-in-law *oyom*
nest (as of bird) *idhae*
net for fishing *thoth*
new *adhimbrong*
niece
 maternal *ayongkonjigh, thoghay*
 paternal *ayongnhanjigh*
no *ngga'*
north *nggadh*
north-west clouds *rul*
nose *iri*
not *ngga'*
not knowing *iwogh-thom*
novices under ban of silence
 ka-pam
now *kun*
nurse *ki-c*
old man *wathay*
older brother *niyigh*
older sister *kiyigh*
once *piyum*
one *pim*
on one's back *ibhon*
on the other side *'andr lo(gh)*
on top *mbilom*
open country *thagh pibhin, inhi*
 candram: see candram
orchid *cilay*
oven (earth) *i'igh*
oyster *kandhagh*
paddle *ngamb*
paint *ca-c*
palm tree *thaecon*

edible ‘head’ (stem) of palm	<i>aran</i>	put down	<i>ndra-c</i>
<i>owrae'</i> see <i>owrae'</i>		queenfish	<i>orimbdhigh</i>
pandanus	<i>agharr</i>	quiet	<i>pam</i>
pandanus fruit	<i>agharr logh</i>	rain	<i>aghi, aghi nha-y</i>
pandanus country	<i>agharr pibhin:</i> see <i>pibhin</i>	rainbow	<i>pimbrong</i>
panja	<i>ngganjigh</i>	rainbow bird	<i>ndror</i>
paperbark	<i>ndhi</i>	rays of sun on water	<i>lan</i>
paper fish	<i>amayithae</i>	red paint	<i>olan</i>
parrot		red schnapper	<i>kandray</i>
king	<i>pwinyigh</i>	remove	
squeeker	<i>pirtpirr</i>		as bark, instrument cut from tree
pay attention	<i>inhi nganya-y:</i> see <i>nganya-y</i>		<i>amanhnga-c</i>
pelican	<i>adhor</i>	as in removing bark	<i>ngga-c</i>
penis	<i>olo</i>	by scraping	<i>mban-ga-</i>
person	<i>ma!</i>	from	<i>olompolwa-c</i>
pierce (with multiple points)	<i>ndrae-y</i>	returning	<i>linhghom, (?) lay</i>
pigeon (white)	<i>oman</i>	rib	<i>ighat</i>
pile up (of clouds)	<i>with njay</i>	ring around moon	<i>o'onh</i>
pith (as in stem of plant)	<i>ayi</i>	rise	<i>ami-</i>
place	<i>inhi</i>		begin to rise (as of smoke) <i>pi-c</i>
plain	<i>thagh pibhin</i>		in a large plume (of smoke) with
play	<i>olama-c</i>		<i>njay</i>
plug of tobacco	<i>ayi puy:</i> see <i>puy</i>		of sea <i>kama-y</i>
point of spear	<i>lan</i>	river	<i>irranh</i>
poison	<i>kilthin</i>	road	<i>arrog</i>
porcupine	<i>awriwyigh</i>	rock cod	<i>puyugh</i>
porpoise	<i>paemganh</i>	roll down	<i>arrani-y</i>
possum	<i>mighthanh</i>	root	<i>ngkil</i>
monkey possum	<i>kilnhuyigh</i>		edible root sp. <i>nhuyigh</i>
potential	<i>kay</i> ²		exposed root (of mangrove) <i>thin</i>
pouch (of marsupial)	<i>idhae</i>		rough (not smooth) <i>ithirritihirri</i>
press	<i>aghi-c</i>		round <i>aghol</i>
prickle (as of porcupine/fish)	<i>awri</i>		rub <i>anya-c</i>
prickly	<i>awri-con</i>		ruin <i>mbwa-n</i>
produce characteristic sound	<i>ca-y</i>		run <i>lili-y</i>
prone (be lying)	<i>nji-n</i>		of river, floodwater <i>nji-c</i> ⁴
pumpkin head (fish)	<i>amondr</i>		rushes of panja <i>ndho'</i>
pus	<i>owrae'</i>		salmon <i>mikthigh</i>
put	<i>ndra-c</i>		salt water <i>katral</i>
			sand <i>nja</i>
			sand (of creek) <i>irranh</i>
put at a height	<i>mbanhnga-</i>		sand beach <i>ogha</i>

- sandfly (small)** *ngor'i*
sardine (freshwater) *oroway*
sawfish *iriryigh*
scales (of fish) *iwin*
scorpion *mbiwgh*
scrape *mabrae-c/y*
scrape off *mban-ga-*
scratch *mabrae-c/y*
scrub *ighond*
scrub country *ighond*
sea *ndhinh*
seagull *iyarr*
sea turtle sp. (large) *trayin*
second person pronoun
 singular *tru*
 dual *poy*
 plural *iraē*
see *ci-c*
seed *lidh*
seek *inhi ndro-c, ci-c*
set (of sun) *cimba-c*
set up (camp) *oli-*
Seven Sisters (constellation)
 andhorrkath
sew *ndhae-c*
shade *o'ongcigh*
shaft of spear *tranjigh*
shank portion of fish *tho'*
shark
 freshwater *arangg*
 white *poenjigh*
she *lu*
sheath of firestick *idha'dhig*
shell sp. *cindhwinh*
 mangrove (long, spiralled) *pri'*
 small (fastened to mangrove tree) *ndranggal*
shift *o'onjithi-y*
shin *tho'*
shine on (of sun, moon) *amo-n*
shoot up (of grass) *oghdhi-y*
shoots (of new grass) *obholpin*
short *kapan*
short cut (take) *inhi ndro-n*: see *ndro-n*
shoulder *thol*
shout *ca-y, imamca-y*
shovel-nose shark *orra*
shovel spear *thawara*
show *thangon rae-c*: see *rae-c, thangon rae-n*: see *tha*
sibling (younger) *thoncigh*
sick *cinjim*
side *ighat, logh²*
silent *pam*
silver mullet *kambinh*
sing *inhi tha-c, tha-c³*
single-pronged spear *kuri*
sister-in-law *ayomnhanjigh*
sit *ina-c, nggay*
 with knees up and apart *araka-c*
skin *iwin*
sky *alan*
sleepy fish *oyon*
slip (as to fall) *arrani-y*
slippery (of ground) *irriman*
slit downward *ca-c*
slither (as snake) *a'angga-c*
slowly *thi'im*
small *abhogh*
 (non-singular) *awopogh*
 small amount *'andr*
smell *ogha-c*
smoke *ibhor*
smooth *owrae'-owrae'*
snake *animcu*
 brown *magh*
 saltwater *lagh*
 water *pimbrong*
soft *irriman*
 softly *thi'im*
sole (flat fish) *lindhagh*
somewhere else *nhandr*
son (male speaking) *ayongtha(e)gh*

son-in-law (male speaking)	stone <i>prae'</i>	
<th>thonomthindhigh</th> <td> stoney country <i>prae' pibhin</i>: see <i>pibhin</i></td>	thonomthindhigh	stoney country <i>prae' pibhin</i> : see <i>pibhin</i>
soon 'aw, <i>ithigh, kithi'</i>	straight <i>ndhodhom</i>	
sorry for (be) <i>wa'thama-c</i>	stranger <i>withnu</i>	
south <i>ibhadh</i>	strike <i>ca-c</i>	
spark <i>mwi</i>	strike (of lightning) <i>mbu' ca-y</i>	
speak <i>ca-y</i>	string <i>ndhae'dhigh</i>	
spear (a) <i>alimb</i>	string belt (from wild mango) <i>ongarr</i>	
four-pronged bird <i>idha'dhigh</i>	strong <i>puthak</i>	
long <i>odho'</i>	sucker <i>ndhipal</i>	
multi-barbed fighting <i>nggagh</i>	sugarbag	
one-pronged bamboo <i>okpili</i>	large <i>paekyigh</i>	
spear (to)	large and sweet <i>aghomb</i>	
with multiple points <i>ndrae-y</i>	medium-sized <i>mbwan</i>	
with single point <i>nji-c³</i>	small <i>thaem</i>	
spear-thrower (club-shaped) <i>thaen</i>	small and sweet <i>pirko</i>	
speech <i>ca</i>	top section <i>idhae</i>	
spine <i>awri</i>	larvae/eggs of <i>ngambay</i>	
spit <i>ila</i>	sun <i>nga</i>	
sprout <i>oghdhi-y</i>	surface and dive repeatedly (of porpoise) <i>tho'ca-y</i>	
sputum <i>ila</i>	suspended mud in water <i>ibhi'</i>	
stab <i>nji-c³</i>	swamp <i>nggi, ngogh nggi</i> : see <i>nggi</i>	
as stingray <i>nggo-</i>	swamp-rush corms <i>ngganjigh</i>	
stand <i>njay¹</i>	swell <i>kama-y</i>	
stand up <i>ni-c</i>	swim <i>odhimthi-y</i>	
star <i>ongarr</i>	swim across <i>onhae-y</i>	
steady <i>niyam-niyam</i>	tail <i>cagh</i>	
steal <i>a'ithnga-c</i>	of dugong <i>lae</i>	
steam <i>ibhor ama</i>	tip of tail <i>cagh-tha</i>	
step on <i>ara-c</i>	take <i>iya-n</i>	
stick (a) <i>kil</i>	take as wife <i>rae-c</i>	
stick on <i>ndra-c</i>	take/catch hold of <i>rae-c</i>	
stingray	take out <i>ngga-c/y</i>	
diamond <i>acngganh</i>	take out of <i>olompolwa-c</i>	
file <i>nggolkayigh</i>	take short cut <i>inhi ndro-n</i> : see <i>ndro-n</i>	
flat-tailed <i>war</i>	talker (great) <i>ca-con</i>	
long-tailed <i>ca'nggo</i>	talk it over <i>ca ndra-c</i>	
mangrove white-tailed	tall <i>oghom</i>	
<i>pwidhamuyigh</i>		
spotted <i>cin</i>		
spotted long-tailed <i>londray</i>		
stomach <i>arra</i>		

tapered part (of spear-thrower) awan
taste tha-*c*²
tea-tree (hard) onyonjigh
tell obhanhnga-*c*
tendon thamb
testicle(s) ndhogh
that ko, koth
 that way 'andr
there ko
thereby 'am
they 'ar
 they (two) lawuy
thigh thin
 thigh muscle (at rear) thin-arrā
third person pronoun
 singular lu
 dual lawuy
 plural 'ar
this lin
 this afternoon candrghom
 this morning pandhim
thou tru
three cum
 three times cumodh
throat area ndroy
throw po-*n*
thunder mbu', mbu'ca-y
thus 'andr
tide
 be high olompolwa-*c*
 be low kundra-*c*, nja kundra-*c*
tie tha-*c*¹, thadha-*c*
tip of tail cagh-tha
tobacco (plug of) ayi puy: see puy¹
today adhigh
tomorrow wangdhim
tongue lan
tooth lidh
top mbwin
top of bullrush aran-cany
top side mbiram-*mbiram*

towline mackerel karcanh
tradition inhi
trample ara-*c*
tread on ara-*c*
tree kil
 large-leaved sp. caryar
 sp. of which sap is used for spear-making kacinthaē
 yellow fruit tree omarr
trevally (black) kandhak
tuber sp. paew
 sp. spreading (a runner) lindhagh
turkey oyanhin
turn (as of Milky Way, of wind)
 o'onjithi-y
turtle
 flat-back nggoray
 humpback ngayigh²
 loggerhead onyonjigh
 short-necked freshwater iriprott
 smelly swamp wiruwiru
 swamp (freshwater) orindhagh
 turtle-shell turtle (poisonous)
 iriprott
two-keeled adhinh
twice odhithiyanj
twist ighanha-*c*
two odhithihigh
 two times odhithiyanj
uncle
 maternal (elder) koghay
 maternal (younger) alay
 paternal (elder) inhaghay
 paternal (younger) ibhay
underneath karam
unmarried man pongg
up mbir
urine mbu
vegetable food ayi
wait for ina-*c*
wallaby nggoy
 female nordhim

- large male** *mborri(nga)nh*
warm *amo-n, maepithigh*
as spear shaft in manufacture
oronga-c
as wax *amothinnga-c*
wash *caedhngga-, nji-*
wash out, away (of flood) *ngga-c/y*
water *ngogh*
waterlily *mbwadh*
seeds *awuyigh*
wattle
wattle country *thurr pibhin*: see
pibhin, tran pibhin: see *pibhin*
wattle sp. *thurr, tran*
we *nan, puy²*
we two *linggay*
weep *imamca-*
west *kar*
wet *prulthae-c*
whale *thok*
what *ani*
when *andikam*
where *tron*
whistling eagle *alodh*
white *jyin*
who *a'inh*
why *animondr*
wide *wayigh*
wife's brother *mbraeng*
wife's mother's brother *iwang*
wild apple *ngoghnhanhcun*
wild chilli *pwanjigh*
sp. (green then red) *thilinh*
wild dog *omindh mambrung*
wild fig *mwiy*
wild mango *lindhagh*
wind *mburmbwinh*
cold west *adhhinh*
no wind *yarrcam*
south-west *thar*
windward side *awar*
wing *imal*
woman *ndram*
womb *arra*
women *ndramnjigh*
wongai (plum) *alan*
woppa fish *kawanci*
worried about (be) *inhi nganya-c,*
wa'thama-c
wrap *thadha-c*: see *tha-c¹*
yam *ciyigh*
ye *iræ*
yes *yaw*
yesterday *ngawan*
yet *-ghom*
you
singular *tru*
dual *poy*
plural *iræ*
young
child *aghambrong*
man *pong*
of wallaby or kangaroo *korpo*
youth *pong*

DAMIN AND LARDIL PHONOTACTICS

KEN HALE AND DAVID NASH

1. INTRODUCTION¹

This paper presents the basics of the phonology of the Damin (Demiin) vocabulary known by the Lardil (Mornington Island, Gulf of Carpentaria). The study is prefaced by a sketch of other aspects of Damin, and of Lardil phonotactics.

The name Damin (/demiin/) is a word in the Lardil language. It can be translated as 'Being Silent', for reasons having to do with the special situations in which it was to be used. For some description of the cultural setting of Damin, see the previous literature on Damin, comprised by Hale (1973, 1982, 1992), Hale et al. (1981) and Woolford (1982). McKnight (in press) has analysed his large collection of Damin terminology, from fieldwork since 1966. The earliest known sound recording of Damin, by Norman Tindale (1963), is held at the SA Museum. Other recordings by Percy Trezise (July 1966), Barry Alpher (October 1966) and Sandra Keen (November 1969, February 1970) are held at AIATSIS.

'Lardil' is used in this paper in contrast with 'Damin', the auxiliary language or vocabulary. It may be that Damin should properly be considered as a subsidiary to, and part of, Lardil. The origin of Damin is unknown, but it may have been invented by people who knew Lardil, or it may have been invented by people who knew other languages. In any case, in the discussion below, we use the term 'Lardil' to refer exclusively to 'everyday' Lardil, as in saying, for instance, that 'Lardil has no word-initial apico-alveolars'.

Whether Damin was 'invented' or evolved in some less conscious fashion is also unknown, though there is powerful invitation to consider the degree of language-consciousness exhibited by aspects of Damin. Damin does have a number of properties in common with 'language games' which are known to be the result of invention:

¹ We are happy to dedicate this paper to Geoff O'Grady whose work on the reconstruction of the Pama-Nyungan lexicon has brought out many of the principles of antonymy and inversion which the creators of Damin have obviously drawn on in their intellectual tour de force.

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The sketch of Damin semantics in this paper was presented by Ken Hale in an IAP talk 'Linguistics and local languages: language as a resource' at MIT on 7 January 1987, and on 4 March 1987 as part of an annual teach-in on racism. David Nash presented this paper at the August 1987 meeting of the Australian Linguistic Society, Canberra, and to the Top End Linguistic Circle, Batchelor, 17 August 1996.

We are grateful to Donca Steriade, John McCarthy, Toni Borowsky, Jane Simpson and Andy Butcher for helpful comments.

- it was learnt quickly by adults, and used by them in marked social settings;
- in a number of ways it is dependent on the ‘everyday language’: for Damin, in explicit ways such as the suffixal morphology, and possibly in other ways such as the semantic structures;
- it shows a degree of consciousness of linguistic elements for which evidence is quite poor or lacking in the everyday language;
- apart from the specific ways in which it is distinguished from the everyday language of its speakers, the special language shares its remaining regularities.

2. AN OVERVIEW OF DAMIN

A sentence of everyday Lardil is rendered in the special language Damin by expressing the concept referred to by each Lardil stem by means of the hundred or so Damin stems. The Damin stems are quite different in sound from Lardil stems, and since there are so few to express the complex range of concepts expressible in Lardil, the Damin stems exhibit highly abstract semantics. In contrast to the divergence between Lardil and Damin stems, the suffixes and basic grammar of Damin is taken from Lardil.

Here is an illustrative pair of Lardil and Damin sentences.²

(1) (a) Lardil

Ngithun dunji-kan ngawa waang-kur werneng-kiyath-ur.
my WiYBro-GEN dog go-FUT food-GO-FUT
My brother-in-law's dog is going to go hunting.

(b) Damin

N!aa n!2a-kan nh!2u tiitith-ur m!ii-ngkiyath-ur.

Some of the major Damin vocabulary items are listed below, according to clusters of semantic oppositions. First the complementary Damin terms are given, and then in parentheses the English glosses:

- n!aa/n!uu* (ego/alter);
- kaa/kaawi* (now/not now);
- l*ii/thii* (bony fish/elasmobranch);
- ngaajpu/wuujpu/wijpu/kuujpu* (human/[unmarked] animal/wooded plant/stone);
- m!ii/wii* (vegetable/meat [and abstract, amorphous]); *n!2u* (liquid); *thuu* (sea mammal); *thuuwu* (land mammal);
- titi* (affect harmfully), *tiiti* (act), *kuutti* (see), *kuuktu* (hear, feel), *yiiti* (be in location), *wiiwi* (burn), *wiiti* (spear), *ngaa* (die, decay), *fuuu* (fall, the cardinal directions);
- n!aa thuuku* (point on body), *wii* (surface on body); *nguu* (head), *k'uu* (eye); *nguuwii* (hand, foot);
- thuuku* (one, another, place), *kurrijpi* (two, hither, close, short);

² The orthography used here employs a number of digraphs and indeed ‘multigraphs’, which are explained in the sources and also in the following sections.

- (ix) *j2iwu* (small), *kurrij2iwu* (large); *thuuku* (one), *kurrij2iwu* (many); *kurriji* (short), *kurtikurtijpi* (long); *kawukawu* (light), *kurtikawukawu* (heavy).

'Exact' Reference

It is common for a single Lardil word to require several Damin words for its expression:

- (2) (a) *ngaaipu wiiwi-n wuuipu*
human burn-NOM animal
'sandpiper' (lit. 'person-burning creature', a reference to Rainbow Serpent Story in which the hero's sister, Sandpiper, burns his house down)
- (b) *m!iwu didi-i-n wiijpu*
honey affect-PASS-NOM wood
'wooden axe' ('that with which honey is chopped'; axe made of wood and used for chopping down 'sugarbag', i.e. native honey)

3. LARDIL PHONOLOGICAL SEGMENTS

The lexical data on Lardil (and Damin) was assembled by Hale et al. (1981), with the Lardil revised and expanded by Ngakulmungan Kangka Leman (1997). We do not repeat the phonological literature on Lardil, which has focussed on interesting truncation processes, separate from the concerns of this paper: Hale (1973, 1981), Klokeid (1976), Wilkinson (1988), Itô (1986, 1989), McCarthy and Prince (1986, 1990), Goldsmith (1993), Lakoff (1993), Prince and Smolensky (1993) and Kenstowicz (1994).

First we consider the range of consonant clusters in Lardil, and then take a look at Damin. As far as possible we use the practical orthography of Hale et al. (1981) and Ngakulmungan Kangka Leman (1997).

TABLE 1: LARDIL SEGMENTS

vowels		front	back				
high	<i>i, ii</i>		<i>u, uu</i>				
low	<i>e, ee</i>		<i>a, aa</i>				
consonants							
		bilabial	lamino-dental	apico-alveolar	apico-domal	lamino-alveolar	dorso-velar
stops	<i>b</i>		<i>th</i>	<i>d</i>	<i>rd</i>	<i>j</i>	<i>k</i>
nasals	<i>m</i>		<i>nh</i>	<i>n</i>	<i>rn</i>	<i>ny</i>	<i>ng</i>
laterals				<i>l</i>	<i>(rl)</i>	<i>(ly)</i>	
flap				<i>rr</i>			
glides	<i>w</i>				<i>r</i>	<i>y</i>	

The orthography departs from a phonemic analysis in the following respects:

- (a) word-initially, the apical stop, nasal or lateral is written *d*, *n*, or *l* respectively, and there is no alveolar/domal contrast in that position;
- (b) the segment which is variously pronounced as an apico-domal lateral or retroflex glide is taken to be /r/ (Hale 1981:5), although written as '*l*' word-initially and '*rl*' before /d/ in the practical orthography;

- (c) in a cluster, before *m*, *ng*, or *j*, /rr/ is written ‘d’.³ Word-finally the contrast between /d/ and /rr/ is neutralised, and ‘rr’ not ‘d’ is written.

3.1 LARDIL CONSONANT OCCURRENCES

In terms of the segmental analysis which underlies the practical orthography, Lardil shows the array of consonant clusters in lexical items as shown in Table 2. Each position in the table represents an environment in which a consonant may occur. All Lardil consonants are listed down the left-hand side of the table, one labelling each row. Each column represents an environment in which a given consonant may occur, according to the column labels across the top of the table.

The first three columns of entries show the counts of occurrences word-initially, intervocally, and word-finally. The remaining columns are for the second consonant in an intervocalic cluster. (There are no word-initial or word-final clusters.)

TABLE 2: LARDIL CONSONANT OCCURRENCES

	/#---	/V---V	/---#	<i>m</i>	<i>b</i>	<i>ng</i>	<i>k</i>	<i>th</i>	<i>d</i>	<i>rd</i>	<i>ny</i>	<i>j</i>	<i>w</i>	<i>y</i>	sum	
<i>m</i>	164	101				39										304
<i>ng</i>	128	76									81					285
<i>nh</i>	1	6	1						17							25
<i>n</i>		59	234	13	18	23	48		48		1		3	2		449
<i>rn</i>	20	55	25	2	6		13			46		1				168
<i>ny</i>	32	14	9	9	2								40			106
<i>l</i>		159	105	30		12	42	22	67		10	18	15	2		576
<i>r</i>	95	184	75	12	20	10	17	1	29				4	1		354
<i>rr</i>		152	198 ⁴	37	43	7	53					5	27	2		523
<i>j</i>	124	67	1	4	24											220
<i>w</i>	177	150														327
<i>y</i>	77	84						1								162
<i>b</i>	250	104														354
<i>k</i>	300	158														458
<i>th</i>	66	66														132
<i>d⁴</i>		38														38
<i>rd</i>	136	129														265
sum	1570	1602	648	106	152	52	255	40	144	46	11	64	49	7		4746

Source: Counts were made on the 1,575 headwords in Hale et al. (1981), which includes compounds and reduplications, and some derivational affixes. Certain stems are counted more than once in so far as they recur in different lexical items, such as compounds.⁵

In addition there are the following intervocalic triples:

³ Exceptions:

wurrngewurnge ‘to hum, drone, as bee’ (possibly partially onomatopoeic)
buthurmarr ‘native companion’

bijurjin ‘stingray sp.’

derrijiderri ‘to lie on back with knees raised’

⁴ Word-finally, /d/ and /rr/ are neutralised.

⁵ There is one orthographic ‘nt’ cluster in Hale et al. (1981): *kantungu* ‘jabiru’ (an error for *kandungu*).

- bulmba* grasshopper
kalngkurr seagull, Southern Cross
kelngka grass sp. used for string
darr.ngka barracuda [spelt *dadngka*]

Note that these triples involve the common codas /l/, /rr/ and the most common intervocalic clusters /ngk/, /mb/.

4. DAMIN PHONOLOGICAL SEGMENTS

Damin vocabulary uses all the Lardil vowels, and most of the Lardil consonants: those in the upper part of Table 4a.

TABLE 3: DAMIN VOWELS

	front	back
high	<i>i, ii</i>	<i>u, uu</i>
low		<i>a, aa</i>

Lardil consonants absent from Damin are marked by Δ in Table 4a. As can be seen by comparing this table with Table 1 of Lardil consonants, Damin lacks /m/, /nh/, /l/ and the apico-domals /rt/, /rn/ and /rl/. The lower part of Table 4a, under the dividing line, presents the (at least) thirteen additional special consonantal sounds (the count depends on the extent to which some are segmentable, a topic to be treated below).

TABLE 4A: DAMIN CONSONANTS

	bilabial	lamino-dental	apico-alveolar	apico-domal	lamino-alveolar	dorso-velar
stops	<i>b</i>	<i>th</i>	<i>d</i>	Δ	<i>j</i>	<i>k</i>
nasals	Δ	Δ	<i>n</i>	Δ	<i>ny</i>	<i>ng</i>
laterals			Δ			
flap			rr			
glides	<i>w</i>			Δ	<i>y</i>	
fricative	<i>f</i>					
	<i>pf</i>				<i>j2</i>	
ejectives	<i>p'</i>					<i>k'</i>
nasals	<i>m!</i>		<i>n!</i>		(<i>m!</i>)	
		<i>nh!2</i>	<i>n!2</i>			
lateral trill				<i>l*</i>		<i>ng*</i>
		<i>pr</i>				
		<i>pr2</i>				

The IPA symbols for the sounds peculiar to Damin, repeating the lower half of Table 4a are set out in parallel fashion in Table 4b.

TABLE 4b: DAMIN CONSONANTS (IPA)⁶

	bilabial	lamino-dental	apico-alveolar	apico-domal	lamino-alveolar	dorso-velar
fricative	ɸ				tʃ \ tʃ / ʃ	
	pɸ					
ejectives	p' / ʘ↑					k'
nasals	ŋ ʘ	ŋ̬ ɳ̬	ɳ! ɳ̫ ɳ̬	ɳ̫ ɳ̬		ɳ̫
				t↓		
lateral						
trill	B					
	B\B					

The orthographic conventions used in Table 4a to rendering the sounds of Table 4b are as follows:

- ! signifies a standard click at the place of articulation signified by the preceding consonant symbol; note that all are nasalised.
- The symbol '2' signifies a doubling of the preceding consonant by rearticulation, symbolised in extIPA by \. McKnight (in press) in adopting this orthography makes one minor change in this respect: to avoid '2', he writes out the doubling, for example 'n!n!' instead of 'n!2'.
- /pf/ [pɸ] is possibly a pre-stopped alternate of /f/ [ɸ] (Hale et al. 1981:294).
- j2 is reduplicated (rearticulated) lamino-alveolar stop [tʃ\ tʃ] or voiced fricative [ʃ].
- I* [I↓] and ng* [ɳ̫] are voiceless.
- I* [I↓] is ingressive with egressive glottalic release.
- p' is produced with increased velaric pressure.
- pr [B] is a bilabial trill.

All the Damin consonants occur word- (morpheme-)initially. In word- (morpheme-) initial position there are in addition the following sequences, analysed as clusters, always a bilabial segment followed by a regular Lardil consonant: /f/ or /p'/ followed by /ny/ or /ng/; /f/ or /pr2/ followed by /y/; and the cluster /thr/.

4.1 DAMIN CONSONANT OCCURRENCES

In terms of the segmental analysis which underlies the practical orthography, Damin lexical items have word-initial consonants as shown in Table 5. The first pair of columns parallel the first two columns of the Lardil table (see Table 2); the second pair of columns are for the remaining Damin onsets and have only a rough correspondence to the first pair of columns.

⁶ Andy Butcher kindly guided us to the symbols from the International Phonetic Alphabet (IPA) 1993 revision (corrected 1996), supplemented with extended symbols (extIPA) of the International Clinical Phonetics and Linguistics Association (ICPLA) in *Clinical Phonetics & Linguistics* 8/3:263 (July-Sept 1994). Note that the symbol ↴ of Evans (1995:731) should be ↓ and his ʘ should be ʘ↑.

TABLE 5: DAMIN CONSONANT OCCURRENCES

	/#--V	/#--V
<i>m!</i>	5	
<i>ng</i>	9	<i>ng*</i> 1, <i>fng</i> 1, <i>p'ng</i> 1
<i>nh!2</i>	1	
<i>n!</i>	5	<i>n!2</i> 2
<i>rn!</i>	4	
<i>ny</i>		<i>fny</i> 1
<i>l</i>	1	<i>l*</i> 4
<i>r</i>		
<i>rr</i>		<i>thrr</i> 1
<i>j</i>	5	<i>j2</i> 1
<i>w</i>	16	
<i>y</i>	2	
<i>b</i>	5	<i>f</i> 2, <i>pf</i> 1, <i>pr2y</i> 1, <ify< i=""> 2, <i>p'ny</i> 1, <i>p'by</i> 1</ify<>
<i>k</i>	41	<i>k'</i> 1
<i>th</i>	11	
<i>d</i>	11	
<i>rd</i>		
sum	137	

Source: Counts were made on the 137 stems in Hale et al. (1981), a list derived from the 209 lexical items by eliminating compounds and the four items in /-men/.

There are some clear similarities between the Lardil and Damin counts: /k/ is clearly the most common initial segment; and /w/ is quite common initially, much more so than /y/.

5. DAMIN PHONOTACTICS

5.1 PRELIMINARY COMMENT

Some of the conclusions about Damin phonology are necessarily tentative in that they rest on the interim transcriptions of the vocabulary recorded in Hale et al. (1981). Retranscription of the available tape recordings of Damin may throw some extra light on what seem at this stage to be distributional peculiarities. Further, given the paucity of vocabulary, it is inevitable that only a fraction of, for instance, the contrasting environments for vowel length will be represented.

Also, we do not pursue here the possibility that there is Damin word-formation by compounding, which bears on the range of word-internal morpheme boundaries. For instance, there may be a relationship between the two Damin terms *m!iwu* (Lardil *wankabel*, ‘native beehive, native honey, sugarbag’) and *wum!i* (Lardil *bengkurn* ‘mud crab sp.’), and another two Damin terms *m!ii* (‘food, etc.’, see overview above) and *wuu* (Lardil *mala* ‘mud shell clam’).

In some respects Damin phonology is simpler than Lardil, and in other respects more complex, which we consider in turn. As Damin was learnt (only, as far as we know) by adult speakers of Lardil, their point of view is most relevant. The source of the differences in pattern presumably include the conscious design of Damin by its creators, unconscious phonological consequences of Damin’s design, and possibly historical changes that may have applied in Lardil (but not Damin) since the time of Damin’s creation.

5.2 SIMPLIFICATIONS

Damin phonology is simpler than Lardil in two respects. Firstly, suffixes are all drawn from Lardil, and do not show the Lardil range of (phonologically conditioned) alternations (Hale 1973, the subject of discussion in the subsequent phonological literature). Secondly, and the focus here, the combinatory possibilities of segments are significantly fewer.

5.2.1 VOWELS

The four-vowel system of Lardil is replaced by the (common Australian) three-vowel system, so that /e/ is not used in Damin transcription, except in writing those Lardil suffixes with /e/ which are used in Damin, such as *-men* ‘originating from’ (Hale 1981:39). One possibility is that the creation of Damin took place when pre-Lardil was a three-vowel language.

5.2.2 NO RETROFLEX SERIES

There is no domal/alveolar contrast in apical consonants. This contrast is neutralised word-initially in Lardil (and most Australian languages), and in Damin in all positions. However, word-initially in Lardil this series surfaces as the apico-domal, whereas in Damin the series has apico-alveolar articulation. The one possible exception to this is Damin apico-domal nasal click /rn/, used in the roots *rn!aa* and *rn!ii*, contrasting with apico-alveolar nasal click /n!/ in the roots *n!aa* and *n!uu*. However as Hale et al. (1981:294) remarks, /rn!/ is “not securely documented as a separate click”.

Note that a generally north-south line can be drawn across the Australian continent, to the west of which languages contrast domal and alveolar articulation of apical consonants, and to the east of which languages lack this contrast (Dixon 1980:140–141). Interestingly, Lardil is close on the west of this division; that is, languages to the east of Lardil (on the mainland) lack the domal/alveolar contrast just as Damin does. As for the vowel system just discussed, a possibility is that the creation of Damin took place when pre-Lardil lacked the apical contrast.

5.2.3 SYLLABLE SHAPES

Damin syllables do not exhibit the range of shapes of Lardil syllables, though in other ways, to be considered below, Damin syllables can be considered to be more complicated than Lardil.

- (a) Damin syllables are usually open. Closed syllables in Damin allow only two possibilities for the coda: /n/ and /rr/. Notice that these two consonants are by far the most common word- and syllable-final consonants in Lardil (leaving out of consideration homorganic nasal-stop clusters). Lardil also allows word- and syllable-final /l/, /d/, /r/, /rn/ (and some /ny/, /j/, /nh/).
- (b) Intervocalic clusters in Damin are quite limited:
 - (i) Damin lacks nasal-stop clusters, which are very common in Lardil, particularly homorganic clusters. Note, however, that some of the common Lardil suffixes used in

Damin, including what might be considered Damin word formation, do have such clusters.

(ii) The only Damin (intra-stem) intervocalic clusters are /rrd/, /rrth/, /rrk/, /rrb/ and /jb/. The first two of these do not occur in Lardil, whereas the last three are reasonably common, as can be seen from Table 2.

5.3 COMPLEXITIES

The peculiarities of Damin are most striking in syllable onsets—indeed, the onset may be the sole locus of the specialities of Damin phonology in comparison to Lardil phonology. Further, the complexities are plausibly a conscious creation to make the sound of Damin speech contrast with that of Lardil.

5.3.1 SYLLABLE ONSETS

It is only in onsets that the segments peculiar to Damin occur. (See segments in Table 4.) This is partly attributable to the nature of their articulation. For instance, in any known language with clicks, clicks are confined to prevocalic position. Clicks are known otherwise only in one part of the world, but in at least three different language families: Khoisan (e.g. !Xo), Bantu (e.g. Zulu, Xhosa) and Cushitic (Dahalo, spoken in Kenya), as well as in Sandawe and Hadza (spoken in East Africa) which may be Khoisan (Ladefoged 1991).

In Damin the nasal clicks /m!/ , /nh!2/ , /n!/ , /n!2/ (and /rn!/ if it exists) do not contrast with the regular nasals: Damin lacks /m/ , /nh/ , /rn/ ; /n/ occurs only word-finally, and /ny/ occurs, if at all, only in the complex /fny/. The remaining nasal, velar /ng/ , has no corresponding click (indeed, none is articulatorily possible).

Phonologically, then, we can posit the Damin correspondences shown in Table 6, with realisation rule ‘Click nasal where possible’.

TABLE 6: DAMIN PHONOLOGICAL CORRESPONDENCES

surface		underlying	
IPA	orthography	IPA	orthography
ŋ̥θ̥	m!	m	m
ŋ̥n̥ŋ̥	nh!2	n	nh2
ŋ̥.	n!	n	n
ŋ̥n̥ŋ̥?	n!2	n̥n	n2
ŋ̥±	(rn!)	ŋ̥n̥	(rn)
ŋ̥	ng	ŋ̥	ng

Only in onsets do consonants receive rearticulation (rendered by the orthographic ‘2’).

There appear to be onset-nucleus co-occurrence restrictions. Of course the small number of root forms surely makes for many more ‘accidental gaps’ than we are used to contemplating in everyday languages.

No Damin consonant is found to precede all three vowels. A good number precede only one vowel, as follows:

- (i) only precede /u/:

p'ng	p'ny	pr2y	thrr	j2	k'
fng	fy		nh!2		

- (ii) only precede /i/:

pf		d			
f	fn̪y	rr	y		
m!		I*		ng*	

The remaining Damin consonants occur preceding two of the three vowels, as follows:

- (iii) precede /a/, /u/:

n!	n!2	ng	k
----	-----	----	---

- (iv) precede /i/, /u/:

b		th	j
w			

- (v) precede /a/, /i/:

rn!⁷

It is not clear how many generalisations are inherent in the co-occurrences (i)–(v). It does appear that only velars and non-distributed coronals may precede /a/. Note that /a/ is less common than each of /i/, /u/ in Damin (and similarly for the corresponding long vowels), which is the reverse of the situation in Lardil, in other Australian languages, and indeed the usual situation in a language with a similar vowel inventory. Among the headwords, the vowels occur with the frequencies shown in the following table.

TABLE 7: LARDIL AND DAMIN VOWEL OCCURRENCES

	LARDIL		DAMIN words		DAMIN stems		
	short	long	short	long	short	long	
a	1530	111	a	40	25	9	16
e	470	41					
i	885	64	i	190	65	59	31
u	901	45	u	240	94	66	36

Note however that the preponderance of short vowels over long vowels is generally maintained in Damin, with the exception that in Damin stems /aa/ is more common than /a/.

It is not clear to what extent the onset complexes may be segmented, but it does seem justified to assign two consonantal positions to at least some onsets. This is in contrast to Lardil, in which all onsets consist of precisely one consonant (leaving aside the possibility that homorganic nasal-stop clusters may also be represented this way).

Damin /p'ng/, /p'ny/, /fng/, /fn̪y/ may be confidently analysed as clusters of /p'/ and /f/ with /ng/ and /ny/ respectively, especially since /f/ occurs alone in onsets. Similarly /fy/ and /pr2y/ segmentable as /f/ or /pr2/ followed by /y/ (/y/ also occurs alone as an onset, and Hale

⁷ If in fact /n!/ and /rn!/ do not contrast, then /n!/ is the sole Damin consonant which can be followed by any Damin vowel.

et al. (1981:294) records that the bilabial trill /pr/ “occurs both simple and reduplicated, /pr2/”). Thus far, then, we have the following onset possibilities in Damin:

- (i) the regular Lardil consonants which also occur in Damin onsets: /b/, /th/, /d/, /j/, /k/, /ng/, /rr/, /w/, /y/;
- (ii) the Damin nasal clicks, attributable to /m/, /n/, /rn/;
- (iii) certain of (i), (ii), in rearticulated double form: /j2/, /n!2/; and /nh!2/ (though /nh!/ does not otherwise occur);
- (iv) other segments peculiar to Damin: /f/, /p'/, /pr2/, /l*//, /k'/ and /ng*/; /pf/ (possibly a pre-stopped alternate of /f/—Hale et al. 1981:294);
- (v) certain clusters, involving a bilabial segment of (iv) followed by a regular Lardil consonant: /f/ or /p'/ followed by /ny/ or /ng/; /f/ or /pr2/ followed by /y/; and the cluster /thrr/.

6. THE MINIMAL WORD IN DAMIN

Continuing the analysis of the complex onsets, we continue in a highly speculative vein to consider the possibility that all complex onsets in Damin (i.e. (iv) and (v) above), and not just the rearticulated ones (i.e. (iii) above), are to be analysed as the double association to onset of a single segment.⁸ Various possibilities come to mind for the correspondence between observed onsets and purportable underlying doubles. (In fact, that there are several possibilities is probably a sign that the analysis is fatally under-determined.) Here is one possibility:

<u>surface</u>	<u>underlying</u>
<i>thrr</i>	<i>d d</i>
<i>l*</i>	<i>l l</i>
<i>k'</i>	<i>k k</i>
<i>ng*</i>	<i>ng ng</i>

The possibility that all complex onsets are ‘double’ gains some credence from the distribution of vowel length in monosyllabic Damin words as recorded in Hale et al. (1981). Given the forms listed in Hale et al. (1981), the minimal Damin word is either CVV (which is also the minimal word of Lardil), CCV (where CC includes the clusters listed in (iii) and (v) above), or CV.⁹ However, the instances of CV words are only where C is /k'/, /ng*/ or /l*/ (and not, for instance, any regular Lardil consonant). Each of these three consonants is articulatorily double in some sense, as revealed by the descriptions of Hale et al. (1981:294):

- (1) /l*/ has two airstream mechanisms sequentially operating (“ingressive voiceless lateral, with egressive glottalic release”)

⁸ Pursuit of this suggestion would not have been possible had it not been made to us by Morris Halle.

⁹ In some transcriptions, there are no CV words. For instance, the only word with /l*//, namely /l*ii/ ‘bony fish’, has also been transcribed as /l*ii/. With so few forms it can be difficult to judge whether a vowel is to be considered short or long.

- (2) /k'/ and /ng*/ have “double effort” in the airstream: /k'/ is ejective, and /ng*/ has “extra pulmonic pressure”.¹⁰

If these three consonants are to be properly considered as filling two consonant ‘slots’ in the onsets in which they occur, then the minimal Damin word can be simply stated to be of the form CVV or CCV (but not CV). It would seem that Damin continues to satisfy the Lardil bimoraic minimal word requirement only if CCV words are considered to be bimoraic, including those words with onsets of /k'/, /ng*/ or /l*/. That onset quality can contribute to syllable weight is uncommon, but is reported for instance for Pirahã stress placement by Everett and Everett (1984).

7. CONCLUSION

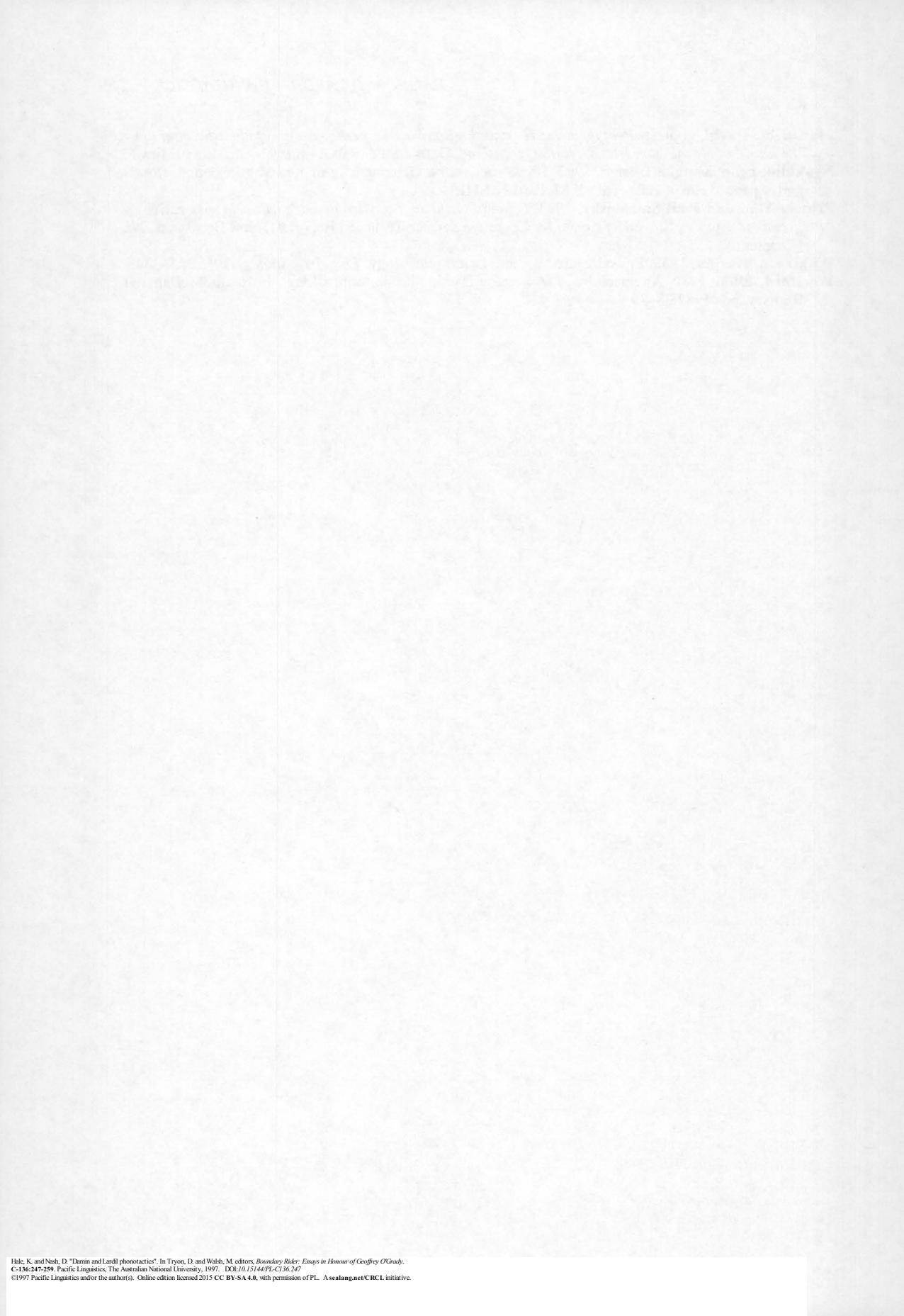
The conscious consonantal complexities of Damin are introduced only into syllable onsets, and the aberrance from Lardil is greater phonetically than phonologically (for instance, the click sounds), and Damin words can still be seen to conform to the Lardil bimoraic minimal word constraint. Also, speakers’ language-consciousness appears to include appreciation of the relative frequency of vowels.

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¹⁰ /p'/ is ejective too, “produced with velaric (rather than laryngeal) pressure”, but cannot be regarded as double since it occurs (only, in fact) followed by another consonant.

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ADVERBS FORMED WITH THE VERBALISER *-ma-*

LUISE HERCUS

1. INTRODUCTION

In his BA thesis (1959) G.N. O'Grady showed that Pilbara languages, specially Gascoyne–Ashburton languages like Thalanyi share great similarities with Yolngu, more than they do with their immediate eastern neighbours. Later, in the remarkable 1969 article 'Australian linguistic classification: a plea for coordination of effort' (O'Grady & Klokeid 1969) he again drew attention to the intricacy of the relationship between Australian languages, and to the way that the distribution of linguistic similarities might have been changed by migrations. This view had not been pursued widely: because of the dramatic changes brought by white settlement one is often tempted to think of earlier periods as having been, in contrast, quite static. The fact that it was not so is usually recognised with regard to the westward movement of Western Desert people (Tindale 1974:210), but similar movements must have taken place elsewhere and may have left lingering evidence in Aboriginal languages. This has been shown in work by Blake (1988), Chadwick (n.d.), Evans (1990) and Sutton (1991). The present paper is an attempt to show one further such possibility with regard to just one minor feature, the formation of a small group of adverbs of manner.

It is a widespread phenomenon not only in Australian languages but also in the world's languages that many descriptive adjectives do not form adverbs: they usually convey the notions of quantity and quality with regard to nouns, and they cannot describe a verb. There are nevertheless a few adjectives of this category that convey notions which describe the action of the verb: these are adjectives of quality and quantity.

2. ARABANA–WANGKANGURRU: ADVERBS FORMED WITH *-ma-*

In Arabana–Wangkangurru adverbs are formed from a limited group of descriptive adjectives by the suffixation of the present tense forms of the transitive verbaliser *-ma-* 'to make':¹ this

¹ Abbreviations used in this paper are as follows:

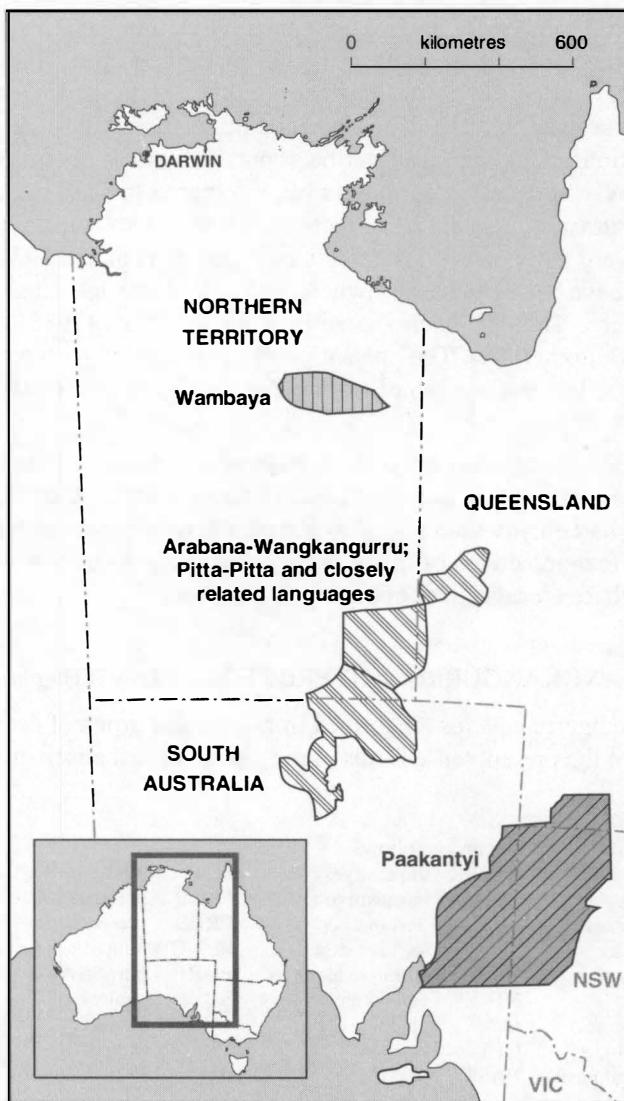
A	agent	IMPER	imperative	PL	plural
(A)	Arabana	INTR	intransitive	PLUP	pluperfect
ADV	adverb marker	LEST	'lest marker'	PRES	present tense
DAT	dative case	LOC	locative case	PUNC	punctiliar present
ERG	ergative case	NAR	narrative tense	PURP	purposive
FAC	factitive	NF	non-future	S	subject
FUT	future tense	O	object	SG	singular
HAB	habitual	OPT	optative	TR	transitive
HIST	historical past	PAST	past tense	(W)	Wangkangurru
IMP	imperfect				

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verbaliser is widespread throughout the continent, and the verb *ma-* ‘to make’, on which it is based was in fact listed long ago as part of Common Australian Vocabulary by Capell (1956:92–93). The verbaliser is common, but this use is most unusual:

<i>ngurku</i>	good	<i>ngurku-marnda</i>	making a good job of it, doing it <u>well</u>
<i>madlanthi</i> (A)	bad	<i>madlanthi-marnda</i>	making a mess of it, doing it <u>badly</u>
<i>madla</i> (W)	bad	<i>madla-marna</i>	doing it <u>badly</u>
<i>nhuka</i> (A)	many	<i>nhuka-marnda</i>	doing it <u>much</u>



MAP: LOCATION OF RELEVANT LANGUAGES

This suffix follows some of the rules of the general present tense marker: it is normally *-marnda* in Arabana and, very rarely, *-mara*, and *-marnda* or *-marna* in Wangkangurru. It is an important point that the present tense marker of Arabana–Wangkangurru *-rnda* is a participial marker in the related Central Kardic languages, for example in Diyari (Austin 1990). Adverbs formed with *-marnda* are found *only* with transitive verbs; they always immediately precede the verb and form a unit with it in the sense that nothing can intervene.

- (1) *Maltya maltya nhuka-marnda kuti, wardu-kari-rnda purru-nга!*
 not not greatly pull.IMPER child-PL-DAT full-LOC
 Don't, don't pull it out so far (on this ground), it is occupied for my children!

This is the Arabana song of the little Wren, who tries to stop the ancestor *Wilkurda* from spreading out the huge kangaroo skin that ultimately forms Lake Eyre.

- (2) *Nhuka-marnda puntha-limaru... (A)*
 much-ADV drink-PLUP
 After he had had too much to drink...
- (3) *Untu madla-marnda iki-ra.*
 you.ERG bad-ADV drive-PUNC
 You drive badly.
- (4) *Ngurku-marna thiki-lhiku!*
 good-ADV take.back-PURP
 Take it back carefully!

The normal way of forming adverbs from adjectives in Arabana–Wangkangurru is by the addition of the suffix *-li* (Hercus 1994:213):

<i>paku-li</i>	in vain	<i>paku</i>	vain, empty
<i>aratya-li</i>	in a straight line, correctly	<i>aratya</i>	straight, right
<i>kunti-kunti-li</i>	crookedly	<i>kunti-kunti</i>	crooked, twisted
<i>nguyu-li</i>	on one's own	<i>nguyu</i>	one, alone
<i>partyarnda-li</i>	altogether	<i>partyarnda</i>	all, complete (A)

The adjective *tyirka* 'happy, nice' is unusual in that it can function as an active rather than a descriptive adjective and take this normal adverbial marker *-li*; hence *tyirka-li* 'nicely'. It can also—without any evident change of meaning—function as a qualitative adjective, hence *tyirka-marnda* 'nicely'. A combined form *tyirka-li-marnda* was heard several times:

- (5) *Tyirka-li-marnda nhampa-ru.*
 nice-ADV-ADV bury-NAR
 They covered it over nicely (so that nothing would show).

The verbaliser *ma-* can be used in Arabana–Wangkangurru to form a transitive verb from practically any nominal, and even case-forms of nominals, as for instance:

- (6) a. *kumpira-ma-* to kill
 dead-make
- b. *katyiwiRi-ma-* to rear (a child)
 big-make
- c. *maka-purru-ma-* to heat up, boil
 fire-having-make

- d. *nguyu-nga-ma-* to put together, unite
one-LOC-make-

The words for ‘good’ and ‘bad’ can be used to form transitive verbs in exactly the same way:

- (7) a. *ngurku-ma-* to fix up, cure
good-make
- b. *madla-ma-* to spoil, destroy
madlanthi-ma- (A)
bad-make

These derivatives however are verbs, not adverbs and can take tense and aspectual markers:

- (8) *Minparu-ru ngurka-ma-yika.*
doctor-ERG good-make-PAST
The witchdoctor cured him.
- (9) *Partyarnda madlanthi-ma-lira.*
all bad-make-LEST
He might spoil everything.

Being verbs these derivatives cannot be used with any other verb except in compound verb constructions with a ‘second member’ verb. In Arabana–Wangkangurru, as in Diyari and neighbouring languages, only a small group of verbs, mainly signifying motion, can be used as ‘second member’ of compound verbs (Austin 1990). Compound verbs can be formed with *ma-* verbs just as with any other verbs, and the imperfective or the present tense is used with the first member to indicate contemporaneous or subsequent motion. Thus one can say:

- (10) *Wilypa-marnda-thika-lhuku.*
open.make-PRES-return-HIST
He came back from opening (the gate).
- (11) *KuRawarra murka-rna-marka-ka.*
raincloud rumble-IMP-crawl-PAST
The raincloud moved along steadily, making a rumbling sound.
- (12) *Madlanthi-ma-rna-marka-ka.* (A)
bad-make-IMP-crawl-PAST
(They, the swarm of locusts) moved along steadily, destroying everything as they went (*marka-* ‘to crawl’, the second member of the compound verb, implies steady movement).

Madlanthi-ma- is a verb here. It is in fact the main verb and head of the construction, for which the second member of the compound provides the associated motion.

The adverbial usage of *-marnda* is different: it is not a question of associated motion such as underlies most compound verbs as shown by Koch (1984), and as in the examples given above. The adverbs in *-marnda* do not have any verbal function, they actually describe the manner of the action of a verb which remains the one and only verb in the construction, as in:

- (13) *Madla-marna wadnhi-ra.*
 bad-ADV cook-PRES
 He doesn't cook it properly.

The use of what is a verbal suffix to form an adverb, however, does point towards the possibility that the adverbial function was originally derived from verbal usage. It probably arose in a participial verb construction 'he cooks it making it bad'.

2.1 INTRANSITIVE VERBS FORMED WITH *thirnda*

In the west, in the Arabana dialect of the Arabana–Wangkangurru language there has been a further development, distinct from Wangkangurru. The adverb *nhuka-marnda* 'greatly' used only with transitive verbs, was associated by the speakers with the denominative transitive verbs in *ma-*. There was felt to be a gap for intransitive usage: this gave rise to a frequently used adverb of the same type, but which occurs only with *intransitive* verbs. This is *nhuka-thirnda* 'greatly', 'too much'. It is based on *nhuka* a lot, combined with the present tense of the intransitive inchoative verbaliser- *thi-* : 'becoming'.

- (14) *Yuka-rnda nhuka-thirnda.* (A)
 go-PRES much-ADV
 (They) go there altogether too much.
- (15) *Nharla awarda nhuka-thirnda mantura-li.*
 man this great-ADV snore-HAB
 This man always snores like mad.

This use of *-thirnda* can be explained as simply having arisen in analogy with adverbs in *-marnda*.

Possibly by analogy with the Arabana *nhuka-thirnda*, the corresponding Wangkangurru adverb *kangi*, *kangiri* is sometimes extended to *kangirirnda*. This is used in exactly the same circumstances as *nhuka-thirnda*:

- (16) *Yuka-rnda kangiri-rndi.*
 go-PRES too.much-ADV-ADV
 (They) go there altogether too much.

These analogical developments must have arisen over time and would tend to indicate that adverbs in *-ma-* were well established in the language for a considerable period.

3. PITTA-PITTA: ADVERBS FORMED WITH *-ma-*

In the Pitta-Pitta dialects (Blake 1979:212; Breen n.d.a) there is an adverb-forming suffix *-marnta*. This is added to exactly the same types of adjectives as the corresponding Arabana–Wangkangurru forms:

<i>manha</i>	bad	<i>manha-marnta</i>	badly
<i>kuyungu</i>	good	<i>kuyungu-marnta</i>	well
<i>nguRu</i>	one	<i>nguRu-marnta</i>	once

In Pitta-Pitta *-marnta* also has a wider and more important function, being used with placenames to indicate 'in the direction of', presumably originally 'making it towards'.

The adverbial formation *-marnta* is clearly analysable in terms of Arabana–Wangkangurru, but unanalysable in terms of the present-day Pitta-Pitta dialects. There is, at least at the moment, no evidence of any similar feature in any of the other neighbouring Kärnic languages for which we have excellent descriptions: Diyari (Austin 1981), Yandruwantha–Yawarawarrka (Breen n.d.b). It could be interpreted as a borrowing from Arabana–Wangkangurru into Pitta-Pitta, or as a separate joint development of these two north-easternmost Kärnic languages, Arabana–Wangkangurru and Pitta-Pitta. There are a number of significant shared developments of this kind between just these two related languages, such as the use of a causal case in *-ra/-Ja*, a remote past in *-li-parna*, the formation of habitual-agent nouns from verbs by means of the suffix *-li*, quite apart from shared vocabulary.

4. PAAKANTYI: ADVERBS FORMED WITH *-ma-*

This situation would seem to be simple and straightforward were it not for a complicating factor: a form with *ma-* appears as an adverbial marker in exactly the same circumstances further afield, in the language of the Darling river, Paakantyi, which is not part of the Kärnic group (Hercus 1982:232). The corresponding adverbs in Paakantyi are formed with the verbaliser *-ma-* and a suffix *-la*:

<i>paliira</i>	good	<i>paliira-mala</i>	well
<i>thulaka</i>	bad	<i>thulak'-mala</i>	badly

and one other instance:

<i>thulu</i>	close together	<i>thulu-mala</i>	in a heap
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These adverbs can be used with both transitive and intransitive verbs. They either immediately precede or immediately follow the verb:

- (17) *Kila pari-y-athu paliira-mala.*
 not go-3SG.S good-ADV
 He can't walk properly.
- (18) *Thulak'mala pana-mi-r-u-ana.*
 badly prepare-make-PAST-3SG.S-3SG.O
 He made it badly.

Paakantyi has a lively system of derivation by means of the verbalising suffix *-ma* (*-mi* in the past tense), which can even serve to make derivative verbs, as in *pana-mi-ru* in the sentence above. The most common use of *ma-* is as a suffix added to nominals to form transitive verbs, a composite form *-ma-la* (*-la* being a topicalising suffix) is added to nominals to form intransitive verbs:

<i>puka-ma-</i>	to kill (lit. to make dead)
<i>puka-mala-</i>	to die
<i>paliira-ma-</i>	to fix up, cure (lit. to make good)
<i>paliira-mala-</i>	to become good

In Paakantyi *-la* has a twofold function: it is a topicalising suffix, as shown above, but it is also a present participle form that can have a purposive meaning, as in:

- (19) *Ngiinga-t-ali paara-la.*
 sit-FUT-we.two listen-OPT
 1. We two will sit down listening.
 2. We two will sit down to listen.

The adverbs *thulak'mala*, *paliira-mala* and *thulu-mala* are clearly based on these participial forms, and therefore have a close resemblance in derivation to the corresponding Arabana-Wangkangurru adverbs.

5. WAMBAYA

The non-Pama-Nyungan language Wambaya from the Barkly Tablelands shows similarity in this particular feature. As pointed out by Rachel Nordlinger in her recent thesis (1993:220) there are cases where a predicate contains two verbs and “one verb appears to have an adverbial function” and “takes the non-future tense regardless of the inflection of the main verb”.

Nordlinger analyses these first as factitive verbs:

The most common examples of this are with the verbs *gurinymi* ‘make good’ and *ganjimi* ‘finish’. When functioning adverbially these verbs have the meanings ‘well, properly’ and ‘all’ respectively:

- (7-87) *Gajbi irr-a ganjimi.*
 eat-NF 3PL.A-PAST finish:NF
 They ate (it) all.
- (7-88) *Ngarl-wa guriny-mi!*
 talk-FUT good-FAC:NF
 Talk properly!

And then she adds with great perspicacity:

Note that it is also possible that *ganjimi* ‘all’ and *gurinymi* ‘well, properly’ are simply separate lexemes, although homophonous with and derived from the verb *ganjimi* ‘finish’ and *gurinymi* ‘make good’ respectively. Under this analysis constructions as in (7-87) and (7-88) above are not complex predicates but simply contain a verb and a modifying adverb.

In Wambaya *-mi* is a verbalising suffix, which has the form *-ma* in the future and is in fact cognate with the widespread verbaliser *-ma*. In other words Nordlinger surmises a situation in Wambaya that is exactly parallel to Wangkangurru where the corresponding form *ngurku-marnda*, as discussed above, can be the present form of a verb ‘to make good’ and can also be an adverb meaning ‘well’.

6. FURTHER SIMILARITIES

Seeing that verbal derivation with *-ma-* (Wambaya *-mi*) is particularly well established in Arabana-Wangkangurru, in Paakantyi and in Wambaya, one might interpret the occurrence of adverbs with *-ma-* in all three areas as being due to parallel evolution. It is nevertheless curious that the resemblance should be so strong and that the development should in all three areas be restricted to only such a small group of words, and predominantly to ‘good’ and in Arabana-Wangkangurru and Paakantyi also to ‘bad’. Parallel evolution cannot usually be expected to be quite so closely parallel.

There is one further similarity that is altogether too much of a coincidence: in Pitta-Pitta *-marnta* is used to mark the allative case in placenames. In Paakantyi this case is also formed with *-ma*, it is *-ma-Ri*, the final *-Ri* being the dative marker. In Southern Paakantyi *-maRi* is used mainly with pronouns to form deictic adverbs, as in *yaamaRi* 'this way' and *wathumaRi* 'that way'. However, in the northern dialect, Kurnu, it is a general allative marker, the Kurnu form *-miRi*, is probably derived from *-maRi* by vowel harmony. Kurnu examples are:

yapara-miRi to the camp

paaka-miRi to the river

There is a high probability that the purposive marker *-manti*, used throughout the Paakantyi dialects, is also based on *-ma*. The close relationship between allative and dative is well known (Blake 1977:60), and the purposive is one of the functions of the dative in the majority of Australian languages. Examples of the use of *-manti* are:

- (20) *Manhu-manti pari-ty-impa.*
food-for go-PAST-2SG.INTR
You went out for food.

- (21) *Ngaatha-manti palka-ty-intu-anha.*
nothing-for hit-PAST-2SG.TR-3SG.O
You hit him for nothing.

It is not surprising that *-ma-Ri* and *-ma-nti*, one implying a direction and the other a purpose should be similar in derivation, both being formed with *-ma*.

Allative or dative-purposive markers formed with *-ma* do not seem to occur in Australian languages except in the Pitta-Pitta dialects and in Paakantyi. The only exception is Wambaya, which has an allative in *-nmantyi*.

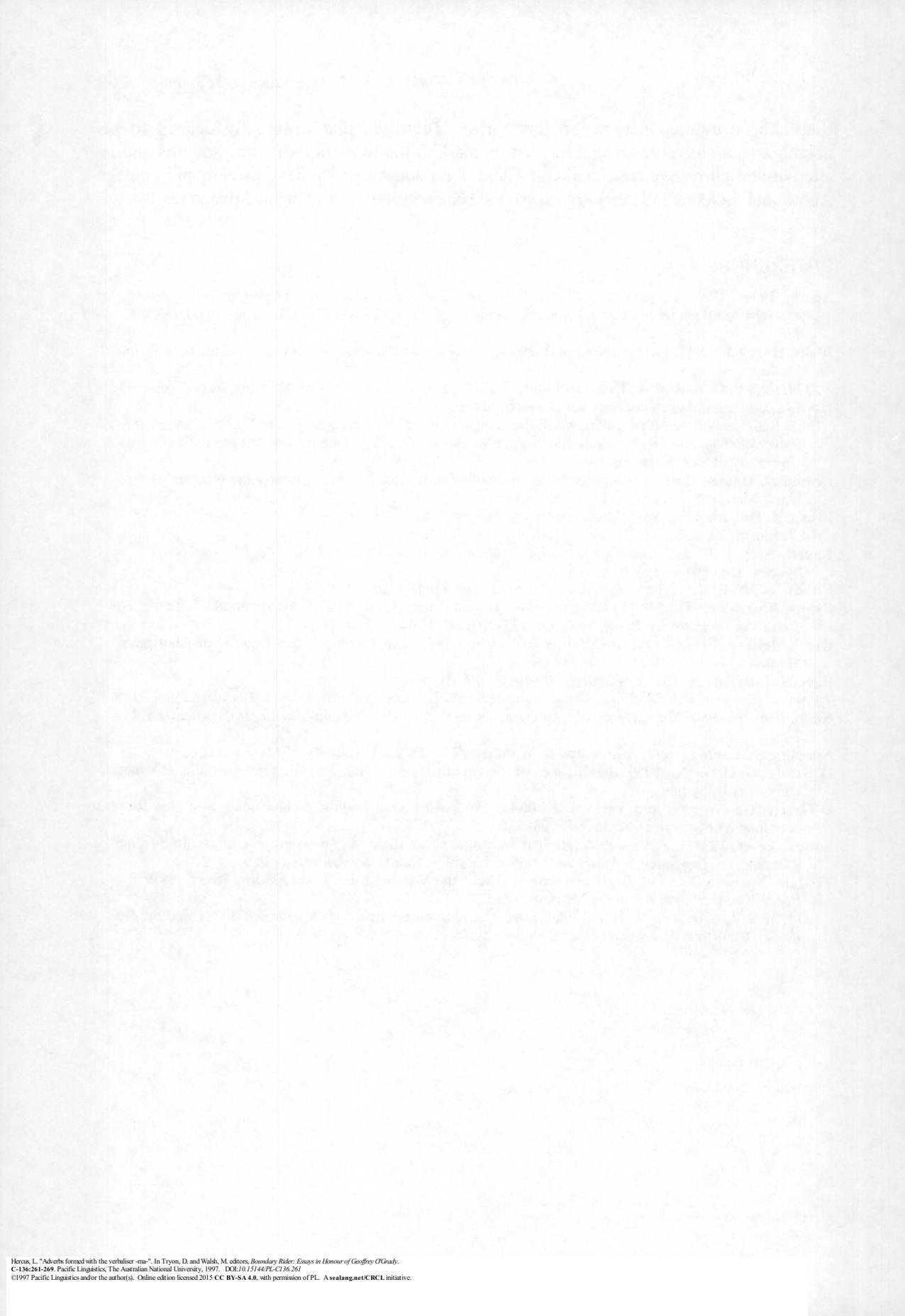
7. CONCLUSIONS

These similarities in both the adverbial formation and case marking between a) Arabana-Wangkangurru and the Pitta-Pitta dialects (being related languages of the Kardanic group), b) Paakantyi, and c) Wambaya are too closely parallel to be random occurrences or even examples of parallel evolution. The most probable explanation is that the speakers of these languages (or older forms of these languages), who now belong to three quite separate areas were in fact once upon a time geographically adjacent to one another. Wambaya and Pitta-Pitta are likely to have been separated from one another by an easterly push of Arandic people, an easterly push that may be connected with the well-known easterly expansion of Western Desert people. It is possible that Warluwaric people came in from further to the north (Brammal 1991:74), though naturally at the moment this simply remains a surmise. Paakantyi people must have been close to the Pitta-Pitta, and then migrated to the Darling from the north-west. Tindale (1939:259) gives some evidence from the oral traditions of the Eaglehawk and Crow myths for a southerly movement of Paakantyi people. This is supported by further linguistic evidence: there are other grammatical resemblances between Paakantyi and Pitta-Pitta, such as the locative suffix *-(i)na*, the use of the dative to mark an unimpinged object, and ways in which tense can be expressed by pronouns. Except for the locative marker there does not appear to have been any 'great morpheme robbery' in this area unlike the situation in Arnhem Land (Heath 1978). There was however a convergence of

linguistic structures between neighbouring languages that eventually ceased to be neighbours, a convergence that has left its mark in the formation of some adverbs and in allative and purposive case-markers. There is no doubt that we have to view pre-contact Aboriginal societies and languages as having been not static, but living and dynamic.

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PAMA-NYUNGAN REFLEXES IN THE ARANDIC LANGUAGES

HAROLD KOCH

1. INTRODUCTION¹

1.1 THE PROBLEM OF ARANDIC COGNATES

Geoffrey O'Grady, in his major work on comparative Pama-Nyungan, made the following comments on the Arandic languages (1990a:xviii):²

It might be argued, as Ken Hale has done (p.c.), that the Arandic languages should have been included in such a comparative study as the present one. Although these languages clearly mesh intimately into the rest of Pama-Nyungan, we have omitted them on the present pass through the data because of the reduced chances of correctly identifying cognates shared by Arandic with other Pama-Nyungan languages. This is due to the virtually universal loss of initial consonants, as well as to the neutralisation of word-final vocalic contrasts, in Arandic languages. In the case of a highly marked starred form such as *nurrku *egg, brain* (with rare initial apical nasal), it is quite literally a hundredfold more difficult to pinpoint an Arandic reflex than in the case of a language which preserves the *n-. When the number of reconstructions comes to exceed the critical mass necessary for demonstrating Pama-Nyungan's status as a language family in the strictest sense, comparative work on Arandic should not be delayed.

1 This report is based on research undertaken as part of a joint research project, "Comparative study of the languages of Central Australia", with Luise Hercus, David Nash and Jane Simpson, which was supported by the Australian Research Council (grant no. A58932251). An earlier version of §2 was presented as "Arandic historical phonology" at a workshop on comparative Australian linguistics held at Melbourne University's field research station at Strathfieldsaye, Victoria in April 1993. I am grateful to participants in that workshop for their comments, and to Ilia Peiros, Gavan Breen and Juliette Blevins. My research on the Kaytetye language was supported by the Australian Institute of Aboriginal Studies and the Australian National University.

2 The Arandic languages are spoken in a large area in the south-eastern part of the Northern Territory. The fundamental division of the Arandic languages is between Kaytetye, spoken around Barrow Creek, and numerous varieties of Arrernte (Aranda); see Hale (1962). The following abbreviations are used for names of the Arandic languages and/or dialects cited in this paper:

A	Arrernte (Eastern and Central)	LA	Lower (Southern) Arrernte
Aly	Alyawarr	SA	Southern Arrernte = Pertame
Anm	Anmatyerre	WAnm	Western Anmatyerre
Ant	Antekerrepene	Yr	Ayerrengeng
K	Kaytetye		

Other abbreviations used in this paper are:

ABL	ablative	ERG	ergative	KIN	kinterm	PL	plural
ACC	accusative	EXC	exclusive	LOC	locative	POSS	possessor
DAT	dative	GEN	generation	MOI	moiety	SG	singular
DU	dual	INC	inclusive	NOM	nominative	SM	same

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O'Grady was wise to omit Arandic from his Pama-Nyungan cognates. He recognised the problems in correctly identifying cognates that arise from the drastic sound changes of Arandic. As he correctly stated, these changes affected both the beginning and the end of words. Initial consonants were lost and final vowels were neutralised. Other changes neutralised vowels in further contexts and transformed some consonants into typologically rare segments. These sound changes need to be understood before cognates can be correctly identified. In §2 I give a description of the historical phonology of Arandic. Once the phonological transformations are known, however, we are still left with a great number of possible etyma of each Arandic word, since so many phonological segments and contrasts have been lost. In §3 I give a demonstration of how the number of possible ancestors can be calculated for words of different phonological shapes.

Most of the problems of Arandic etymology stem from the severe phonological changes undergone by this subgroup of languages. The reduction in the length of words has had the effect that many words apparently became too short to be viable or distinctive and hence survive only in longer forms that incorporate a suffix—meaningful or otherwise—or continue earlier compound words. For example, **nguku* (possibly **kuku*) ‘water’ should have become by sound changes ***ikwe* or ***akwe* (I use double asterisk for unattested but not reconstructed forms). It survives in extended form in Arrernte *kw.atye*, of which only the *kw-* is inherited from **nguku*; the rest is some kind of extension. (I use a full stop to mark an erstwhile boundary, following the practice of O'Grady.) ‘Water’ if unextended would have become identical to ‘egg’, from **muka*; the latter survives with a different increment in *kw.arte*. **Nguku* is also found in former compounds, with the word for ‘shade’ (as pointed out by Breen pers. comm.), in the meaning ‘cloud’ (*a)k.ulye* in Arrernte and the further evolved meaning ‘rain’ in Kaytetye *akw.elye* ('shade' is *ulye* in Arrernte and *elye* in Kaytetye). Some Arandic words have come to incorporate a former inflectional suffix, derivational suffix, or enclitic. Thus the descendants of some Proto Pama-Nyungan (pPN) monosyllabic verb roots represent earlier disyllabic inflected tense forms; from pPN **nga-* ‘eat’ Kaytetye has as its root *ayne-*, which continues **nga-rni* (‘eat-PAST’ in Walmajarri, for example). The normal word for ‘mouth’ in Arrernte is (*a)rrakerte*, which represents the fusion of the ‘having’ suffix *-akerte* with the inherited term *arre* (from **Rirra* ‘tooth’), which is still used without the suffix in Kaytetye. An example of the incorporation of an enclitic is found in the Kaytetye for ‘what’, *w.ante*. This is cognate with Arrernte *iwe.nhe* ‘what’, incorporating the definite suffix **nha*; both must reflect a Proto Arandic **ewe* of uncertain provenience. The Kaytetye for ‘what’, *w.ante*, and for ‘who’, *atn.ante*, incorporate a form *-ante* which probably was an interrogative-indefinite particle. (For a discussion of reanalyses that result in incorporation of extraneous material into a root, using some Arandic examples, see Koch (1995, 1996).

These etymological problems, which are ultimately caused by the phonological transformations of the original material, are supplemented by the usual problems of semantic change that are found when one does etymology. Thus if we go looking for the ancestor of ‘hand’, Arrernte *iltye* and Kaytetye *elye*, we will not find it in the meaning ‘hand’ but rather in the term for ‘fingernail’, **miltyV* (as noted already in Dixon 1970:91, n.11). We must assume a semantic shift from ‘nail’ to ‘finger/hand’ in or before Proto Arandic. This is in accordance with the unidirectional semantic shifts expected in body parts according to the theory of Wilkins (1996).

It will be obvious that reliable etymologies depend on an adequate understanding of the historical phonology of the language in question. On the other hand it must also be

remembered that the historical phonology must be based on reliable etymologies. If the sound changes are worked out on the basis of false cognates, they will be wrong. Similarly if loan words are mistaken for cognates and sound changes are extracted from correspondences found in these sets of words, this also leads to an incorrect historical phonology. So where do we get the reliable etymologies that can form the basis for Arandic historical phonology?

1.2 THE GENETIC POSITION OF ARANDIC

Other problems in the identification of cognates of Arandic words stem from the uncertainties about the genetic position of Arandic. In the first place, there are no apparent languages of the same subgroup that have not undergone the same sound changes. This is unlike the situation in the Ngayarda languages (O'Grady 1966) and the Kanyara-Mantharta languages (Austin 1981b), or Paman languages (Hale 1976b), where closely related languages virtually retain the ancestral forms unaffected by phonological changes. Secondly, we do not know which languages are the closest genetic relatives of the subgroup; that is, we do not know whether Arandic is part of an intermediate subgroup of Pama-Nyungan. Hence we do not know beforehand where it is most profitable to look for cognates. On the assumption that the nearest relatives are likely to be (some of) the languages that are now adjacent, we might begin our search for cognates by looking first to neighbouring languages. If we do this, however, we risk mistaking loan words for cognates, since it is with its immediate neighbours that a language is most likely to exchange loan words. It is safer to look farther afield; but this may lead to diminishing returns if, as it is reasonable to expect, the number of cognates varies in inverse proportion to the geographic distance between the languages. The safest strategy is to begin with words that have reasonably secure reconstructions in the higher-level ancestor, Proto Pama-Nyungan. There are not a great number of these, but they do have the virtue of having relatively basic meanings and including some of the more 'grammatical' words such as personal pronouns (as well as some affixes). It is reasonably safe also to find cognates in languages of the wider region, Central Australia and even Western Australia, provided that no reliance is placed in the initial stages of research on immediate neighbours. (For principles of how to distinguish loan words from cognates in adjacent languages, after the historical phonology is worked out, see Koch in press.)

In practice I have also scoured lists of words reconstructed for other subgroups of Pama-Nyungan, such as Proto-Kanyara and Proto-Mantharta (Austin 1981b), Proto-Ngayarda (O'Grady 1966), Proto-Paman (Sommer 1969), Karnic (Austin 1990), Warluwarric (Carew 1993). I have also looked through comparative wordlists of languages in Central Australia in the broadest sense contained in works such as O'Grady and Klokeid (1969), Breen (1971, 1990a), Menning and Nash (1981), and dictionaries of languages in the area broadly defined.

It can probably not be said yet that pPN has been reconstructed in as much detail as O'Grady (above) suggested is necessary before Arandic cognates can be exploited. The number of reliably reconstructed words is still pretty meagre. Moreover, we lack a handy list of reconstructions: there is no etymological dictionary available (although O'Grady's comparative files surely contain the makings of such a work). We still lack a proper subgroup structure for the Pama-Nyungan family. While this situation prevails, we have no certainty as to what spread of languages permits a set of cognates to be reconstructed for

pPN, as opposed to a subgroup of Pama-Nyungan. If a word is found in the Centre and West but nowhere in the East it is doubtful that we should have any confidence in reconstructing it for pPN; the Centre plus West may constitute a subgroup or early dialect area that has undergone shared innovations. Likewise if a form is found only in the East, even if it attested from Cape York to Victoria, might it not also represent an innovation in an eastern subgroup or early dialect area? But what if a form is found in the West, Centre, North (i.e. Yolngu) and Cape York? Can we not reliably treat it as inherited from pPN? To answer yes presupposes that there could not have been a 'northern' or 'north-western' subgroup that excluded the South and East. This is not yet certain in view of the likelihood that Pama-Nyungan languages originally expanded from somewhere in the northern part of the continent. It seems to me that a word can most reliably be reconstructed for pPN if it has a considerable geographic attestation in both the east-to-west and north-to-south dimensions.

Is Arandic etymology still premature? I believe that it is not. Although there is not a great deal of reconstructed pPN material, there is now a great amount of lexical material available for many of the languages west of Queensland and New South Wales, that is, in the region in which the most cognates are to be expected. There is also now a vast quantity of lexical material available on Arandic languages, with the recent publication of dictionaries of Alyawarr (Green 1992) and Eastern-Central Arrernte (Henderson & Dobson 1994). My own research has yielded extensive amounts of Kaytetye vocabulary.

Another factor that hindered earlier use of Arandic lexical material for comparative purposes was the poor understanding of Arandic synchronic phonology and the resulting misleading orthographic representation of Arandic words (e.g. Strehlow 1944, and even to some extent Yallop 1977). Arandic synchronic phonology is now reasonably well understood (see Wilkins (1989) for a detailed description of Arrernte phonology).

2. ARANDIC HISTORICAL PHONOLOGY

2.1 SYNCHRONIC PHONOLOGY

Before investigating the diachronic phonology of the Arandic languages it is necessary to make some observations about their synchronic phonology. Table 1 gives the maximal inventory of Arandic consonants. Like other languages of Central Australia, the Arandic languages distinguish two sets of laminal consonants and two sets of apicals. Some varieties, notably Kaytetye, Alyawarr (Yallop 1977; Green 1992), and Antekerrepene (Breen 1977) have a further set of prepalatalised apical consonants; there is evidence that other dialects once had these as well but have largely merged them with the prepalatals. Another series of phonemes characteristic of Arandic is the prestopped nasals; these are nasal consonants with a delayed nasal onset; they occur at all places of articulation. Arandic languages also have an unusual unrounded velar-uvular glide which is represented orthographically by *h*. Most varieties can be analysed as containing a full set of rounded (R) and unrounded (U) consonants; this analysis doubles the consonant inventory. The vowel system, shown in Table 2, is uncharacteristic of Australian languages; the most common vowel is a schwa, spelled *e*. Kaytetye and Western Anmatyerre can be analysed as having only the vowels *a* and *e*; for other varieties one or both of *i* and *u* are recognised, although their role is somewhat more limited than might be expected (Breen 1990b).

TABLE 1: MAXIMAL CONSONANT INVENTORY OF ARANDIC LANGUAGES

Labial		Lamino-Dental		Apico-Alveolar		Apico-Postalveolar		Prepalatalised Apical		Prepalatal		Dorso-Velar	
U	R	U	R	U	R	U	R	U	R	U	R	U	R
p	<i>pw</i>	<i>th</i>	<i>thw</i>	<i>t</i>	<i>tw</i>	<i>rt</i>	<i>rtw</i>	<i>yt</i>	<i>ytw</i>	<i>ty</i>	<i>tyw</i>	<i>k</i>	<i>kw</i>
<i>pm</i>	<i>pmw</i>	<i>tnh</i>	<i>tnhw</i>	<i>tn</i>	<i>tnw</i>	<i>rtn</i>	<i>rtnw</i>	<i>ytn</i>	<i>ytnw</i>	<i>tny</i>	<i>tnyw</i>	<i>kng</i>	<i>kngw</i>
<i>m</i>	<i>mw</i>	<i>nh</i>	<i>nhw</i>	<i>n</i>	<i>nw</i>	<i>rn</i>	<i>rnw</i>	<i>yn</i>	<i>ynw</i>	<i>ny</i>	<i>nyw</i>	<i>ng</i>	<i>ngw</i>
		<i>lh</i>	<i>lhw</i>	<i>l</i>	<i>lw</i>	<i>rl</i>	<i>rlw</i>	<i>yl</i>	<i>ylw</i>	<i>ly</i>	<i>lyw</i>		
				<i>rr</i>	<i>rw</i>	<i>r</i>	<i>rw</i>			<i>y</i>	<i>yw</i>	<i>h</i>	<i>w</i>

TABLE 2: VOWEL INVENTORY OF ARANDIC LANGUAGES

High	(i)	(u)
Mid		e
Low		a

Several facts about the phonotactics of Arandic languages need to be understood. All words and all morphemes end in the vowel *e*, in my analysis. (In Breen's analysis the final vowel *e* is not present in the underlying form but is added by a phonological rule (Breen 1977:375, 1990b; cf. Green 1992).) Words may begin with a consonant or a homorganic cluster of consonants; in most varieties most words begin with a vowel.

2.2 PRE-ARANDIC PHONOLOGY

For the Pama-Nyungan language ancestral to the Arandic languages I assume a 'normal' Australian phoneme inventory with six places of articulation, no prestopped, prepatalalised or rounded consonants, and no *h*. This system would be shared with languages to the east and south, but not with those to the west and north, where only one set of laminal consonants is found. I assume a system of three vowels, probably with a contrast of length. The length contrast, although not found in contemporary languages in the Centre (but occurring in the Thura-Yura languages of South Australia), is reconstructed for Proto Pama-Nyungan and lower-order protolanguages such as Proto Paman. Positing a length contrast in Pre-Arandic allows us to use vowel length as a conditioning environment that favoured a certain sound change, such as lenition of *k* to *h*, and inhibited others, such as nasal prestopping and possibly consonant rounding. Table 3 gives the assumed Pre-Arandic phoneme inventory.

TABLE 3: PRE-ARANDIC PHONEME INVENTORY

	Peripheral		Laminal		Apical	
	Labial	Velar	Dental	Prepalatal	Alveolar	Postalveolar
Obstruent	<i>p</i>	<i>k</i>	<i>th</i>	<i>ty</i>	<i>t</i>	<i>rt</i>
Nasal	<i>m</i>	<i>ng</i>	<i>nh</i>	<i>ny</i>	<i>n</i>	<i>rn</i>
Lateral			<i>lh</i>	<i>ly</i>	<i>l</i>	<i>rl</i>
Tap/Trill					<i>rr</i>	
Approximant	<i>w</i>			<i>y</i>		<i>r</i>
Vowel short		<i>u</i>		<i>i</i>		<i>a</i>
Vowel long		<i>uu</i>		<i>ii</i>		<i>aa</i>

For Pre-Arandic phonotactics, I assume that words necessarily began with consonants (but perhaps not all consonants were permitted in initial position) and ended with vowels and certain consonants. I posit stress on the initial syllable, as is normal for Australian languages.

2.3 EFFECTS OF ARANDIC SOUND CHANGES

A series of Arandic sound changes had the following effects:

- a) creation of schwa vowel (*e*);
- b) creation of prestopped nasal consonant phonemes: *pm*, *tn*, etc.;
- c) creation of prepalatalised apical consonant phonemes: *yt*, *yn*, etc.;
- d) creation of a velar-uvular approximant consonant phoneme (*h*);
- e) creation of rounded consonant phonemes: *pw*, *mw*, etc.;
- f) loss of initial consonants;
- g) shift of stress rightward by one syllable;
- h) addition of final vowel to consonant-final words.

2.4 ARANDIC SOUND CHANGES AND SUPPORTING ETYMOLOGIES

In this section I present, in their presumed historical order, the sound changes (SC) which characterised the Arandic subgroup, along with the etymologies which justify the changes. The sound changes are described both informally and in formal notation. The etymologies are repeated, in a different ordering and with references to the comparative literature, in §4.

(SC1) Nasal prestopping: N > TN / #C[-nas]V̄ –

A nasal consonant became prestopped (i.e. developed a non-nasal onset) when it followed a stressed vowel, provided that the initial consonant of the word was not also nasal. The stop phase would have been the result of a timing lag between the oral closure and the velic opening components of the nasal consonant. (Where there was an initial nasal consonant, the stressed vowel presumably was nasalised, and the velum was thus already open until the

following nasal was articulated.) A further condition may apply to this change: namely, that vowel was not long. This is suggested by 'dig' **paanga-* > *ange-* (not ***aknge-*). On the other hand, 'carry' *aknge-* (cf. Warlpiri *ka-nгу* (PAST)) has *kng* in Arrernte although it is supposed to have had a long vowel in Proto Pama-Nyungan, **kaa-ng-* (see Dixon 1980:132, 404). It is not yet clear whether prestopping affected nasals occurring as the first member of a consonant cluster; in Kaytetye, where prestopped nasals contrast with plain nasals in this environment as well, it does appear that the prestopping resulted when an initial non-nasal consonant was present. See 'smell' and 'stone' in Table 4. Prestopped nasals occur before stops only in Kaytetye and in Alyawarr, where they sometimes alternate with plain nasals. Hence it is possible that nasals in this environment generally became prestopped and then later lost the prestopping in such clusters in most dialects of Arrernte.

The allophonic prestopped nasals became contrastive with plain nasals when initial consonants were lost, or, if the vowel length condition applies, when vowel length ceased to be distinctive. (If the vowel length condition applies, our task of finding possible sources for Arandic words is made more difficult: we are not justified in positing initial non-nasal consonants for the Pre-Arandic forms of every word where TN is found in Arandic.)

Note that the basic conditions on the change of prestopping (following a stressed vowel, dependence on the nasality of the initial consonant) are the same as the conditions on a synchronic allophonic rule in Diyari (see Austin 1981a:18). Phonetic prestopping of nasals is an areal feature that includes, beside the Arandic languages, Wangkangurru, Arabana and Diyari in the Kurnic group, and Adnyamathanha, Guyani and Nukunu in the Thura-Yura group (see Hercus 1972, 1992). Similar prestopping occurred in some Cape York languages. In Walangama and the Kunjen dialects prestopping occurred after a short vowel that was preceded by an initial non-nasal consonant (Black 1980:217, Sommer 1969:54–58). The same conditions appear to have applied in the Lamalamic languages, where in Lamalama and Parinmankutinma, but not in Umbuykamu, there has been a further development of *pm* to *mb*, etc. (data in Laycock 1969).

TABLE 4: ETYMOLOGIES THAT INDICATE N > TN / #TV_ (WHERE T = NON-NASAL)

Gloss	Etymology	Kaytetye	Arrernte
digging stick	* <i>kana</i> +	<i>atneme</i>	<i>atneme</i>
excrement	* <i>kuna</i>	<i>atne</i>	<i>atne</i>
to spear	* <i>Ra-ni</i>	<i>aytne-</i>	
deaf, mad	* <i>wanga</i>	<i>akngwe</i>	
name	* <i>yini</i>	<i>etne</i>	[arr]irtne, [arr]itnye
snake	* <i>wama</i>	<i>apmwe</i>	<i>apmwe</i>
coolamon	* <i>purnu</i>	<i>rtnwe</i>	<i>urtne</i>
carry, take	* <i>ka-nгV</i>		<i>aknge-</i>
smell	* <i>parnti-</i>	<i>eytnе-</i>	<i>inte(mе)-</i> (Aly)
stone	* <i>parnta</i>	<i>artnе</i>	

TABLE 5: ETYMOLOGIES THAT INDICATE N > N / #NV:_

Gloss	Etymology	Kaytetye	Arrernte
night	* <i>munga</i>	<i>engwe</i>	<i>ingwe</i>
eat	* <i>nga-rni</i>	<i>ayne-</i>	
mother/breast	* <i>ngama</i>	<i>ame-nhenge</i> 'Mo-DYAD'	<i>me-</i>
lie	* <i>nguna-</i>	<i>enwe-</i>	
sit	* <i>nh(i)na-</i>	<i>ane-</i>	(<i>a</i>) <i>ne-</i>

TABLE 6: ETYMOLOGY THAT INDICATES N > N / #TV:_

Gloss	Etymology	Kaytetye	Arrernte
dig	* <i>pa(a)nga/i-</i>	<i>ange-</i>	<i>angerne-</i>

(SC2) Origin of *h*: k > h / #CV:_V

Arandic *h* is a voiced velar-uvular approximant, which tends to be weakly articulated and to disappear. It occurs in only about a score of words in each language, and is largely restricted in occurrence to the first consonant position in a word. Both the rarity of the phoneme and its restricted distribution would be nicely accounted for if it can be shown that *h* originated from a consonant that followed a long vowel. Proto Pama-Nyungan and some other languages have a contrast in vowel length and restrict long vowels to the first syllable of a word. I propose that *h* is in fact the reflex of *k* after long vowels in Pre-Arandic. In many languages obstruents occur short, optionally voiced and fricative after stressed long vowels while they are realised as long, voiceless and fully stopped after stressed short vowels; for example, Wik languages (Hale 1976c:50). In a number of languages distinctive voiced fricatives have arisen from obstruents following long vowels, concomitant with the loss of vowel length contrast (Uradhi: Hale 1976a:43, Crowley 1983:332; Anguthimri: Crowley 1981:159; Kuku-Thaypan: Rigsby 1976:74; see also Dixon 1980:298f.). I posit that a similar change took place in the prehistory of Arandic, but that it led to a phonemic split only in the velars. The velar fricative, unsupported by fricatives at other places of articulation, later opened into an approximant. (Some instances of *h* occurring in suffixes have been reported for Alyawarr and Anmatyerre (Breen pers. comm.); the fact that some of these correspond to *k* in other varieties of Arandic seems to suggest a later change of the same kind we are positing for Pre-Arandic.)

An alternative origin of *h* from *w* (by derounding) has been suggested by Breen (1977:379)—following a suggestion of Hale, but disclaimed later (Breen 1990b)—and Alpher (1988:192). This idea is apparently based on correspondences between Arandic *h* and Warlpiri *w* in sets of words such as those given in Table 7. This correspondence is rather to be explained as an adaptation of Arandic *h* into the phoneme system of Warlpiri as part of the borrowing process; the variable initial consonants (*w*, *y*, *ng*) are indicative of borrowing from Arandic into Warlpiri (Koch in press).

TABLE 7: CORRESPONDENCE ARANDIC H : WARLPIRI W

Gloss	Kaytetye	Warlpiri
wife's father	<i>ahenterre</i>	<i>wantirri</i>
kangaroo	<i>aherre</i>	<i>wawirri, yawirri</i>
bush currant, <i>Canthium latifolium</i>	<i>ahakeye</i>	<i>yaakiyi, yawakiyi</i>
python sp.	<i>ahenenye</i>	<i>ngawininyi</i>
throat	<i>ahenytje</i>	<i>yiwinji</i>

Although the derivation of *h* from *k* is the most plausible origin, it is not yet possible to prove it conclusively by etymologies. The best etymology is the one that relates the initial part of 'earth', Kaytetye *ahe.me* and Arrernte *ahe.lhe* to a widespread Pama-Nyungan **Raaku* (see §4, List 5).

(SC3) Long vowel shortening: V: > V

At some time the contrast between long and short vowels in initial syllables was neutralised unconditionally. This was subsequent to the change *k* > *h*, if this was conditioned by a preceding long vowel. It must also have been subsequent to the prestopping of nasals if this took place only after a preceding short vowel (cf. 'dig' above).

(SC4) Nasal stop cluster reduction: N_iT_i > N_i / #C̄VCV_V

Homorganic clusters of nasal plus stop were reduced to just the nasal after unstressed syllables. The examples are all from the third consonant position of a word. It is assumed that the stress was still on the first syllable of the word when this change took place. This change can be seen as a kind of extreme lenition of the stop, and it is likely that the stop was pronounced as voiced before it was lost.

Certain evidence exists only for the clusters *mp* and *ngk*. The 'liver' cognates (a Barkly area regional term) supply the best etymological support, along with the Ergative/Locative allomorph *-nge*, which surely reflects Pama-Nyungan *-*ngku* Ergative and *-*ngka* Locative, and in certain languages, including Warlpiri, occur after disyllable stems ending in a vowel. This change further suggests likely sources for the *-me* morph of the Kaytetye 1 Dual Inclusive Nominative/Ergative Same-Moiety-Same-Section pronoun *ayleme*, since a Dative suffix *-*mpa* is widely attested in non-singular pronouns, and there is a tendency for dative forms of personal pronouns to end up as nominatives and/or stems. The same *-me* recurs in the Kaytetye 3 Dual Nominative/Ergative Same-Moiety-Same-Section pronoun. Meanwhile the widespread word for 'galah' gives evidence that the non-homorganic cluster *nty* (\neq *nyty*) was not affected. The 'snake' word given in Table 8 is attested only in Alyawarr, and the presumed etymon occurs in Western Desert (WD) in the meaning of 'rainbow serpent'.

TABLE 8: ETYMOLOGIES SUPPORTING NASAL CLUSTER REDUCTION

Gloss	Etymology	Kaytetye	Arrernte
liver	* <i>malampa/i</i>	<i>aleme</i>	(<i>a</i>) <i>leme</i>
ERG	*- <i>ngku</i>	# <i>V(C)CV-nge</i>	
LOC	*- <i>ngka</i>	# <i>V(C)CV-nge</i>	
we.two-DAT	* <i>ngali-mpa</i>	<i>ayleme</i>	
they.two-DAT	* <i>pula-mpa</i>	<i>elweme</i>	
snake	* <i>warnampi</i> (WD)		<i>rtnweme</i> (Aly)
galah	* <i>kilan.tyi</i>	<i>elentye</i>	<i>ilentye</i>

(SC5) Prepalatalisation of apicals before *i*: C[apical] > yC / ũ_(C)i

This change affected obstruents, nasals, and laterals but not rhotics, at both alveolar and postalveolar (retroflex) places of articulation. That preceding stress was a necessary condition is clear from ‘father’s mother’ **kaparli* > *aperle*, where *rl*—occurring after the unstressed second syllable—was not affected by a following *i*. The change thus antedates the shift of stress to the second syllable. The change probably operated across consonant clusters; examples are ‘smell’, ‘lie’ and ‘ear’ (< ‘leaf’).

It is probable that this change was simultaneous with the reduction of unstressed vowels to *e*, and served to preserve something of the quality of the disappearing vowel. This motivation is obscured, however, by the formal ordering of this rule before vowel centralisation. It is possible that there were prepalatalised allophones of apicals before *i* in the language for a long time but that they became contrastive only when the following vowels merged to schwa.

Subsequent change within many dialects of Arrernte led to the merger of the prepalatalised apicals with the inherited prepalatal consonants. In some instances initial *yC* developed into *iC* or *irC*: the factors responsible for this differentiation have not yet been determined. Note too that ‘name’ in Kaytetye (*etne*) and possibly Alyawarr (*itne*) are unexplained exceptions to normal prepalatalisation; perhaps they continue an earlier variant **yina* or **yinu*.

TABLE 9: ETYMOLOGIES SUPPORTING PREPALATALISATION

	Gloss	Etymology	yC	Language	Cy, iC, irC	Language
<i>yl < li</i>	we.DU	*ngali	ayle-	K, Aly	ile-	A
	prickle	*tyilika	eyleke	K	lyeke	A
<i>yl < rli</i>	boomerang	*karli	aylayle	Aly	alye, ilye	A
<i>ylp < lpi</i>	leaf	*karlpi	eylpe	K	irlpe	A
<i>yn < rni</i>	eat	*nga-rni	ayne-	K		
<i>ynt < nti</i>	lie < fall	*wanti-	aynte-	Aly	inte-	A
<i>ynt < rnti</i>	smell	*parnti-	eytnte-	K	ntyerne-	A
					interne-	Aly
<i>yt < rti</i>	grub	*parti	[k]ayte	K	-atye	A
			-ayte	K, Aly		
		*yirtiya	eyteye	K	tyeye	WAnm
					irtaye	SA
<i>ytn < ni</i>	to spear	*Ra-ni	aytne-	K		
<i>ytn < ni</i>	name	*yini	(etne)	K	[arr]itnye	A
					[arr]irtne	A
					itne	Aly
<i>ytn < mi</i>	fall	*warni-	aytne-	Aly	atnye-	A

(SC6) Vowel centralisation: V > e / [-stressed]

Vowels were reduced to schwa in unstressed syllables. Several subtypes of this change need to be distinguished. In the first place: vowels in absolute final position of multisyllabic words. All the etymologies in this paper can be used to illustrate this final vowel neutralisation. Secondly, vowels in a final closed syllable: only disyllabic words are citable. Examples are given in Table 10, of which probably only ‘tongue’ is of pPN antiquity. Then there are more numerous examples of vowel reduction in the medial syllable of trisyllabic words. Examples are given in Table 11, which presents words containing medial *a*, *i* and *u*. Of words with medial *a* the one with the longest pedigree is ‘two’, which may be of pPN antiquity.

TABLE 10: CENTRALISATION OF VOWELS IN FINAL CLOSED SYLLABLE

Gloss	Pre-Arandic	Proto Arandic	Arandic	Language
tongue	*thalany	*eleny.e	alenye	K, A
back of neck/head	*tyi(r)ta(r)n	*ertern.ngē	rternnge	K, Aly
bone	*nungkarn	*ungkern.e	ngkwerne	K, A
tooth	*kurritya(r)n	*urrtiyern.e	errtywerne	K
mosquito	*kiwiny	*eweny.e	iwenye	A

TABLE 11: CENTRALISATION OF VOWELS IN MEDIAL SYLLABLES

Gloss	Pre-Arandic	Proto Arandic	Arandic	Language
two	* <i>kutharra</i>	* <i>etherre</i>	- <i>therre</i> 'DU' (<i>a</i>) <i>therre</i>	K
father's mother	* <i>kaparli</i>	* <i>eperle</i>	<i>aperle</i>	K, A
magpie	* <i>kurtparu</i>	* <i>urppere</i>	<i>arpwvere</i>	K, A
wife's brother	* <i>ngumparna</i>	* <i>umperne</i>	<i>mpwerne</i>	K, A
liver	* <i>malampa</i>	* <i>eleme</i>	<i>aleme</i>	K, A
galah	* <i>kilanty</i> V	* <i>elentye</i>	<i>elentye</i>	K A
dog	* <i>malak</i> V	* <i>eleke</i>	<i>aleke</i>	K
emu	* <i>karlaya</i>	* <i>erleye</i>	<i>arleye</i>	A
road	* <i>yirtiya</i>	* <i>eyteye</i>	<i>eyteye</i>	K
			<i>tyeye</i>	WAnm
north	* <i>kayirra</i>	* <i>eyerre.re</i>	<i>ayerrere</i>	
prickle	* <i>tyilika</i>	* <i>eyleke</i>	<i>eyleke</i>	K
			<i>lyeve</i>	A
fly	* <i>nhimu.ngu</i>	* <i>emenge</i>	<i>amenge</i>	K, A
smoke	* <i>tyukurtu</i>	* <i>ukerte</i>	<i>kwerte</i>	A

The final situation to be considered is words of four (or more) syllables, which in many Australian languages have a secondary stress on the penultimate syllable. Not many Arandic words of this structure have been found which have good etymologies as monomorphemic words. Nevertheless, Arrernte *antekerre* 'south' ('west' in certain dialects), which is presumably from the *yantakarra* found in Karnic languages, and the pan-Arandic *atetherre* 'budgerigar', with cognates *ngatajarri* in Warumungu and *ngatijirri* in Warlpiri, support the suggestion that the vowels of third syllables of four-syllable words also turned into schwa.

It is possible that vowel centralisation took place in final open syllables before final closed syllables, and/or in final syllables before it affected medial syllables: rule SC6 then represents the telescoping of two or more historical changes. It is also possible that the words cited in Table 10 added a final vowel (or CV increment)—by SC7—before the vowel of the original final syllable was centralised. This would simply remove the second category of examples and make them rather examples of the third category.

(SC7) Final vowel addition: Ø > e / C_#

In accordance with other languages of a large Centralian block (including the Karnic, Thura-Yura and some Warluwarric languages) the Arandic languages do not tolerate word-final consonants. Where these did occur formerly, they were eliminated either by the incorporation of a vowel-final particle (especially Arandic -nge and -tye) or by the addition of a final vowel. It is impossible to tell whether the vowel was added before or after the neutralisation of final vowels to schwa. If the paragogic vowel addition predated final vowel reduction, it is impossible to tell what principles governed the selection of the extra vowel; it may have been a harmonising vowel, or it may have been consistently the same vowel, for instance *a*. If final vowel addition postdated final vowel reduction, the added vowel would have necessarily been schwa. I arbitrarily place vowel addition after centralisation in the

chronology of sound changes so that the formal expression of the change only needs the vowel *e* as its output. This change can be illustrated by the words already given in Table 10. (According to the analysis of Breen, modern Arandic languages lack a final vowel in the underlying form of words; any actually occurring vowels are predictable and generated by phonological rules (see Breen 1990b, Green 1992). In this analysis, SC7 would represent the addition to the grammar of the relevant phonological rules.)

(SC8) Rounding of *a* after initial *w*: *a* > *o* / #*w*_

The vowel *a* was rounded after an initial *w* (see Table 12). This was presumably a synchronic phonetic (allophonic) rule in an earlier stage of the language. It is impossible to tell how long this rule was in the language. But its output must have been present in the language before the loss of initial consonants. (That is why I have ordered it here.) This is a phonetically natural rule, found in many Australian languages; hence it is plausible that it occurred in Pre-Arandic as well. There may have been further conditions on this rule. The rounding may not have affected a long vowel, and it was apparently inhibited in certain environments, such as when the following consonant was lamino-dental or a prepalatalised apical; for examples see Table 13. (For details of the conditioning of rounding in Arabana-Wangkangurru, see Hercus 1994.) After the loss of the initial consonant *w* the vowel [o], originally an allophone of /a/, was presumably reinterpreted as an allophone of /u/. Its subsequent development was identical to that of original *u*. The telescoping of these two diachronic processes would yield a diachronic rule of the form *wa* > *u* / #_.

TABLE 12: ETYMOLOGIES SHOWING *wa* > *wo* (> *u*)

Gloss	Pre-Arandic	Proto Arandic, SA	Arandic	Language
crow	* <i>waka</i>	* <i>uk.aye</i>	<i>kwayekwaye</i>	K
arm	* <i>waku</i>	* <i>uke</i>	<i>akwe</i>	K, A
snake	* <i>wama</i>	<i>upme</i>	<i>apmwe</i>	K, A
deaf	* <i>wanga</i>	* <i>uknge</i>	<i>akngwe</i>	K
fire	* <i>waru</i>	<i>ure</i>	<i>ure</i>	A
			<i>ware</i>	K
snake	* <i>warnampi</i> (WD)	* <i>urtneme</i>	<i>rtnweme</i>	Aly

TABLE 13: ETYMOLOGIES SHOWING *a* NOT UNDERGOING ROUNDING AFTER *w* WHEN PRECEDING LAMINODENTALS AND PREPALATALISED APICALS

Gloss	Pre-Arandic	Proto Arandic	Arandic	Language
where	* <i>wantha</i>	* <i>enthe-</i>	<i>nthe-</i>	A
give < leave	* <i>wantha-</i>	* <i>enthe-</i>	(<i>a</i>) <i>nthe-</i>	A
lie < fall	* <i>wanti-</i>	* <i>eynte-</i>	<i>aynte-</i>	Aly
			<i>inte-</i>	A
fall	* <i>warni-</i>	* <i>eytne-</i>	<i>aytne-</i>	Aly

There are a few unexplained exceptions to rounding, where the Arandic terms lack any indication of rounding, although they presumably have numerous cognates beginning with *wa*- . These would be regular if we were to posit that the Pre-Arandic form began with another consonant, such as *k* (there are examples in Australian languages of *kangka* and a

few of *kapa-*), or that the vowel was long and inhibited rounding; examples are given in Table 14.

TABLE 14: ETYMOLOGIES THAT ARE EXCEPTIONS TO ROUNDING

Gloss	Pre-Arandic	Proto Arandic	Arandic	Language
go	*wapa-	*epe-	ape-	K
speak	*wangka-	*engke-	(a)petye- 'come'	A
			angke-	K, A

(SC9) Loss of initial consonant: C > Ø / # _

All initial consonants disappeared. Initial dropping can be illustrated by all the examples cited in this paper as illustrations of other changes. It is impossible to know whether the loss of initial consonants happened all at once or in stages. It is plausible to suggest that at least some of the consonants were first lenited to voiced fricatives and/or glides before being lost. There are examples from elsewhere in Australia of laminal stops and nasals being lenited to *y* (Thura-Yura languages, according to J. Simpson pers. comm.), labial stops being lenited to *w* (Warlmanpa and Walmajarri *parntapi* 'bark' vs Warlpiri *warntapi* 'bark container') or *v* (Adynamathanha). There are also examples, however, of consonants disappearing directly; for example, *ng* in Arabana (Hercus 1994:32), *k* in Adynamathanha (Hercus 1972).

Perhaps the best example that may indicate an intermediate stage in the loss of initial consonants concerns a nasal consonant in a personal pronoun. The first person plural root in Arrernte is *anwe-*, which reflects an earlier *une-* (which is attested in Lower Arrernte). This should reflect a form **NunV*, where *N* is a nasal consonant, since prestopping has not taken place, and *V* is not *i*, since there is no prepalatalisation. The likely pPN etymon, however, has the form **ngana*, which does not have a rounded vowel. Bearing in mind that Arandic rounding may result from **wa-*, we might suggest that in this pronoun the initial *ng* lenited to *w* after prestopping ceased being operative and that *wa* then evolved into *u* by the regular processes of change. The progression of forms would then have been as follows:

**ngana* > **ngane* > **wane* > **une* > *anwe-*

There is no evidence that initial *ng* lenited to *w* generally. The assumption of special sound changes in personal pronouns is nevertheless justifiable in the light of their tendency to cliticise (in modern Kaytetye, for example). There is no trace of a similar lenition in first person singular and dual pronouns, which also began with **nga-*. (If it did take place there, however, it is possible that the *wa* did not develop into *u* because the following consonant was either a laminal or a prepalatalised apical, the Pre-Arandic forms being **ngathu* '1SG.ERG', **ngay* '1SG.NOM', **ngatyu* '1SG.DAT', **ngali* '1DU'.) Furthermore, there is no supporting evidence for this change in Kaytetye, since there the first person plural root is a different form *ayne-*, which either represents an analogical change of the expected form ***ane-* < **ngana*) under the influence of the first dual *ayle-* < **ngali*) or reflects a different Pre-Arandic form, probably **ngarni* (cf. Arabana-Wangkangurru *arni* < **ngarni*, Pitta-Pitta *ngarna*).

There are some other indications of intermediate stages in the loss of initial consonants in Arandic. The Kaytetye form of 'give', *etnye-*, suggests that the Pre-Arandic form was **yinya* by the time nasal prestopping took place. This form, with lenited initial *ny* and an assimilated *i* in place of original *u*, has parallels in other languages; for example Walmajarri

has *yinya* compared to the more conservative Mudburra *nyunya[rra]* as the past tense of **nyu-* ‘give’. In second person singular pronouns, which also presumably reflect Pre-Arandic forms beginning with **nyu-*, Kaytetye likewise shows no trace of the rounded vowel. This may indicate an early development of **nyu* to **yi*, possibly via **yu* with lenition of *ny* to *y*. Of languages in the region, Pitta-Pitta and the Warluwarric languages (Carew 1993:53) have pronominal forms beginning with *yi-*. On the other hand, Arrernte bears witness to forms containing *u*, *unte* (directly attested) and **ungke* for the ergative and dative respectively. There are several possible interpretations of these differences. They may reflect an early common sound change *ny* > *y*, followed by a change *yu* > *yi* in Kaytetye only. These different developments are shown in Table 15. On the other hand, the Kaytetye pronouns may result from the (irregular) loss of rounding that affected alveolar consonants (see below), with perhaps the unroundedness of the ergative *nte* effecting an analogical derounding of the dative ***ngkwe-* to *ngke-*. (If Kaytetye and Arrernte underwent slightly different changes, with respect to derounding after *y*, before initial consonants were completely lost, then it follows that some of the loss of initial consonants took place after the stage that can be called Proto Arandic in the strict sense. One way out of this dilemma is to accept the notion of dialects in the protolanguage.)

TABLE 15: POSSIBLE CHRONOLOGY OF 2SG.ERG

Kaytetye	Arrernte
* <i>nyunte</i>	* <i>nyunte</i>
* <i>yunte</i>	* <i>yunte</i>
* <i>yinte</i>	
* <i>ente</i>	<i>unte</i> (A)
<i>nte</i>	<i>ntwe</i> (Aly)

Whatever the detail of the loss of initial consonants, this change had important consequences for the phonological system. The difference between plain nasals and prestopped nasals became contrastive (unless this took place earlier as a consequence of the loss of vowel length contrast). Another consequence of the loss of initial consonants, in particular of *w*, would have been the reanalysis of initial *o* (deriving from *a* after *w*) as belonging to the phoneme *u*.

(SC10) Stress shift to second syllable: #'SS.. > #S'S..

Stress in Arandic is on the first syllable beginning with a consonant (i.e. (V)'CV). This reflects the second syllable of Pre-Arandic. It is possible that the shift of stress is related to the earlier strong stress on the first syllable, which occasioned the reduction of vowels in unstressed syllables. The stress may in some way have spread over to the second syllable and been reinterpreted as belonging there. One might posit that the loss of initial consonants was somehow caused by the shift of stress. However, there are enough examples of lenition and even loss of initial consonants in other Australian languages where there is no shift of stress—for example Arabana-Wangkangurru (Hercus 1994:32)—to make it clear that initial consonant loss is not necessarily a result of destressing.

(SC11) Reinterpretation of initial rounding: #uCe > #eCwe

Only the south-western dialect of Arrernte (Southern Arrernte or Pertame) consistently preserves initial *u* which derives from Pre-Arandic *Cu-* or *wa-*. Elsewhere this *u* is reflected as rounding on the following consonant or consonant cluster, which is indicated in the orthography by *w* following the consonant (cluster). The earlier *u* disappears completely if the word still has two syllables without it (and the *u* is not followed by a heterorganic consonant cluster). Otherwise it is replaced presumably by schwa, which is reflected ultimately as *a*, *i* or nothing (see next paragraph). Presumably the rounding has spread rightwards sufficiently to be perceived at the plosion of the consonant. With this change we are in the realm of individual Arandic dialects; this is no longer a Proto Arandic sound change. Examples are given in Table 16.

TABLE 16: ETYMOLOGIES SHOWING ROUNDEDNESS SPREAD

Gloss	Pre-Arandic	Proto Arandic/SA	Other Arandic	Language
urine	* <i>kumpu</i>	* <i>umpe</i>	<i>mpwe</i>	K, A
cook	* <i>kupa-</i>	* <i>upe-</i>	<i>pwe-</i>	K
butcherbird, magpie	* <i>kunparu</i>	<i>urpere</i>	<i>arrpwere</i>	K, A
egg	* <i>muka</i>	* <i>uke+</i>	<i>kwa[rte]</i>	K, A
night	* <i>munga</i>	<i>unge</i>	<i>ingwe</i>	K, A
night-LOC	* <i>munga-ngka</i>	* <i>unge-nge</i>	<i>ngwenge</i> 'tomorrow'	K
anthill, termite mound	* <i>mungka</i>	* <i>ungke+</i>	<i>ngkwe[peye]</i> <i>ingkwe[peye]</i>	K A
water	* <i>ng/kuku</i>	* <i>uke+</i>	<i>kw[aty]</i>	A
3SG.DAT	* <i>nguku</i>	* <i>uke</i>	<i>kwe-</i> - <i>ikwe</i>	K A
wife's brother	* <i>ngumparna</i>	<i>umperne</i>	<i>mpwerne</i>	K, A
lie	* <i>nguna-</i>	* <i>une-</i>	<i>enwe-</i>	K
forehead	* <i>ngurlu</i>	* <i>urle</i>	<i>erlwe</i> 'eye' <i>rlwe[tnperre]</i>	K K
bone	* <i>nungkarn</i>	<i>ungkerne</i>	<i>ngkerne</i>	K, A
2DU	* <i>nyumpVI</i>	* <i>umpele</i>	<i>mpwele</i>	K, A
2SG.ERG	* <i>nyuntu</i>	* <i>unte</i>	<i>nt(w)e</i>	Aly
3DU	* <i>pula</i>	* <i>ule</i>	<i>elwe-</i>	K
big > old man	* <i>purlka</i>	* <i>urke</i>	<i>erlkwe</i>	K
smoke	* <i>tyukurtu</i>	<i>ukerte</i>	<i>kwerte</i>	A
crow	* <i>waka</i>	* <i>uk.aye</i>	<i>kwayekwaye</i>	K
arm	* <i>waku</i>	* <i>uke</i>	<i>akwe</i>	K, A
snake	* <i>wama</i>	<i>upme</i>	<i>apmwe</i>	K, A

In a couple of Kaytetye words the rounded vowel, instead of spreading rightwards, has split into a consonant and a vowel. Both examples involve a following approximant (see Table 17).

TABLE 17: SPLIT OF ROUNDED VOWEL IN KAYTETYE

Gloss	Pre-Arandic	Proto Arandic/A	Kaytetye
meat	*kuya	*uye	weye
fire	*waru	ure	ware

There are some exceptions to rounding spread. In a number of words whose cognates clearly show a rounded vowel in the first syllable there is nonetheless no rounding in Arandic languages. Some examples are given in Table 18. Perhaps it is significant that the following consonant is (lamino)dental or (apico)alveolar. These articulations appear to be the least compatible with rounding. There is considerable variation in rounding between the different varieties of Arandic (see '2PL' and '3DU' for examples). It seems that rounding was least stable with alveolar and dental consonants and most stable with velars.

TABLE 18: EXCEPTIONS TO ROUNDING SPREAD

Gloss	Pre-Arandic	Expected Proto Arandic	Arandic	Language
two	*kutharra	*utherre	(a)therre	K, A
excrement	*kuna	*utne	atne	K, A
nose	*mulha	*ulhe	elhe	K
			alhe	A
raw > alive	*kunka/*wanka	*utnke	atnke	K
2PL	*nhurra	*urre-	eitwe-	K
			arre-	A
3DU	*pula	*ule	elwe-	K
			ale-	A

(SC12) Neutralisation of initial *a* and *i*

Initial vowels in Arandic do not reflect the vowel of the Pre-Arandic first syllable. Where this was *u*, it is usually reflected as rounding on the following consonant. Otherwise in place of the original vowel is a very short *a* or *i* or no vowel at all. Precise rules predicting *a* or *i* have not yet been discovered. There are considerable differences between the varieties of Arandic in the treatment of these vowels.

3. THE CALCULATION OF COGNATE POSSIBILITIES

We are now in a position to demonstrate how, using our knowledge of Arandic historical phonology, we can start from an Arandic word and infer how many possible sources it might have in Pre-Arandic.

Let us consider the fate of originally disyllabic words of the structure C₁V₁C₂V₂ (where C₂ may be a consonant cluster). C₁ is lost, V₂ is neutralised to *e* (schwa), and V₁ is largely neutralised and/or lost. Only C₂ is preserved. Now Proto Pama-Nyungan probably allowed a contrast of three vowels *a*, *i*, *u* in both vowel positions (probably additionally a length contrast at V₁) and 13 consonants at C₁—*k*, *ng*, *w*, *p*, *m*, *TY*, *NY*, *LY*, *y*, *T*, *N*, *L*, *r* (where *TY*, etc. represents a laminal and *T*, etc. represents an apical). I am assuming that there was no contrast of apical consonants—alveolar vs retroflex—in initial position, and that at least one of the apical consonants, perhaps *rr*, did not occur (cf. Dixon 1980:167f.). I also

accept as a working hypothesis that there was no contrast initially between dental and prepalatal laminal consonants, that is, *th* vs *ty*, *nh* vs *ny*, *lh* vs *ly* (cf. Dixon 1980:153f.) Thus a given Arandic disyllabic word may be the reflex of $13 \times 3 \times 1 \times 3 = 117$ different pre-forms (without considering a possible length contrast in the first syllable, which would require the figure to be doubled; see below).

Actually the situation is not quite so bad. In the first place, the nature of V_1 may be partly known. If V_1 was originally *u*, C_2 is usually reflected as a rounded consonant *Cw* in most dialects. Exceptions are likely to be with apico-alveolars (**kuna* > *atne* ‘excrement’) and lamino-dentals (**kutharra* > (*a*)*therre* ‘two’). Thus an Arandic word of the shape (V)*Cwe*, with rounded C_2 , continuing a Proto Arandic form **uCe* (still reflected in some dialects), may be the reflex of only $13 \times 1 \times 1 \times 3 = 39$ pPN forms. If C_2 is unrounded, however, the pPN form (notated as **CEcV*, where E stands for a vowel that may have been *a* or *i* but not *u*) may reflect one of $13 \times 2 \times 1 \times 3 = 78$ forms. These calculations apply only where both C_1 and V_2 are unknown. Where the nasal or non-nasal nature of C_1 is known from the type of nasal at C_2 (see below) the possibilities are actually narrowed down to those indicated in Table 19, 4-7.

The nature of the initial consonant C_1 may likewise be partially inferrable. In the case where C_2 is a nasal consonant, this descends as prestopped where C_1 was originally non-nasal (and V_1 short, but we are ignoring here the complications of long vs short V_1). Where C_2 is a plain nasal, the original C_1 was one of the four nasal consonants (or, rarely, C_2 was preceded by a long vowel preceded by any consonant). Hence the possible number of pre-forms is, for words with non-nasal C_2 , theoretically $13 \times 3 \times 1 \times 3 = 117$, but, given that V_1 is partly knowable, at worst $13 \times 2 \times 1 \times 3 = 78$ (where V_1 was not *u* and C_2 is not nasal) and at best $4 \times 1 \times 1 \times 3 = 12$ (where V_1 was *u* and C_2 is a plain nasal)—see Table 19, 2-7.

Similarly, the identity of V_2 may be (partly) known, since it may be reflected in the nature of C_2 . Where C_2 was an apical stop, nasal or lateral (*t*, *rt*, *l*, *rl*, *n*, *rn*, but not *r* or *rr*) and V_2 was *i*, the apical descends as a prepalatalised apical (*yt*, *yl*, *yn*, or *ytn*)—for example, **ngali* > *ayle*, **karli* > *ayle*—the contrast between alveolar and retroflex place of articulation being neutralised. Thus an Arandic word of the structure *Vyte* (where *t* indicates an apical non-rhotic consonant) has $13 \times 3 \times 2 \times 1$ possible etyma (e.g. a word *ayte* may be the descendant of a set of pPN words summarised by the formula **CV(r)t*). An Arandic word containing an apical stop, nasal or lateral that is not prepalatalised reflects forms that may be summarised as **CVtO*, where O indicates a vowel *a* or *u* but not *i*. There is not the ambiguity between an earlier alveolar and retroflex, say *t* and *rt*, that there is before an earlier *i*. The number of possible etyma of words with non-nasal apical C_2 is 52 or 26, as shown in Table 19, 8-11. For words containing an apical nasal at C_2 , the possibilities are even smaller, ranging from 36 down to 8, as shown in Table 19, 12-19.

The calculation of all these possible numbers of pre-forms are given in Table 19; the abbreviations used are as follows:

upper-case letter	=	unspecified phoneme
lower-case letter	=	specified phoneme
C	=	unspecified consonant
V	=	unspecified vowel
c	=	specified consonant
v	=	specified vowel
E	=	<i>i</i> or <i>a</i> (not <i>u</i>)

O	=	a or u (not i)
P	=	non-nasal unspecified for place of articulation
M	=	nasal unspecified for place of articulation
p	=	non-apical non-nasal
m	=	non-apical non-prestopped nasal
pm	=	non-apical prestopped nasal
l	=	apical (alveolar or retroflex) non-nasal consonant
n	=	apical (alveolar or retroflex) non-prestopped nasal
tn	=	apical (alveolar or retroflex) prestopped nasal

TABLE 19: NUMBER OF DISYLLABIC PRE-FORMS OF ARANDIC WORDS ACCORDING TO PHONOLOGICAL SHAPE

	Pre-Arandic	Proto Arandic	Arandic	Number of possible pre-forms
1	*CVcV	*VCe		13x3x1x3=117
2	*CEpV	*epe	(V)pe	13x2x1x3=78
3	*CupV	*upe	(V)pwe	13x1x1x3=39
CVmV				
4	*PEmV	*epme	(V)pme	9x2x1x3=54
5	*PumV	*upme	(V)pmwe	9x1x1x3=27
6	*MEmV	*eme	(V)me	4x2x1x3=24
7	*MumV	*ume	(V)mwe	4x1x1x3=12
CVlV				
8	*CEli	*eyle		13x2x2x1=52
9	*CElO	*ele	(V)le	13x2x1x2=52
10	*Culi	*ule		13x1x2x1=26
11	*CulO	*ule	(V)lwe	13x1x1x2=26
CVnV				
12	*Peni	*eytne		9x2x2x1=36
13	*PenO	*etne		9x2x1x2=36
14	*Puni	*uytne		9x1x2x1=18
15	*PunO	*utne		9x1x1x2=18
16	*MEni	*eyne		4x2x2x1=16
17	*MEnO	*ene		4x2x1x2=16
18	*Muni	*uyne		4x1x2x1=8
19	*MunO	*une		4x1x1x2=8

In making the above calculations, I have not taken into consideration the relative frequencies of particular phonemes in a given environment of pPN. In various Pama-Nyungan languages where such statistics have been given, there is typically a very low frequency of apical consonants at C₁, and some phonemes may be totally lacking (e.g. *ly-* in Nyangumarta (O'Grady 1957)). There are also particular consonant-vowel combinations that are infrequent to the point of absence, such as *ki* and *ngi* (O'Grady 1957, but note widespread *kila(n)* 'galah'). The frequency of V₂ may also vary according to the nature of V₁ (Dixon 1980:179). The effect of taking the relative frequency of pPN phonemes into account would not reduce the number of possible pre-forms, but only make certain ones much less likely than others.

Proto Pama-Nyungan probably had a contrast of long vs short vowel at V₁ position (Dixon 1980:132), which was generally neutralised in the Arandic languages. The effect of taking this variable into account would be to change the number of variables at V₁ from 3 to 6, or usually, where the vowel is known to have been round, from 1 (*u*) to 2 (*u* or *uu*), and, where the vowel is known to have been unrounded, from 2 (*i* or *a*) to 4 (*i*, *ii*, *a* or *aa*). In effect all scores need to be doubled. The one exception known at this time is where C₂ descends as the velar approximant represented orthographically by *h*. As described in §2, *h* probably continues an earlier *k* that followed a long vowel. It is possible that the conditioning of **k* was more complex; *k* might conceivably have developed into *w* after *uu*, perhaps only when it was followed by an unrounded vowel, if ‘kangaroo’ *aherre* reflects **tyuukurru* (cf. Diyari *tyukurru*). It is conceivable that consonants other than *k* underwent a different development after a long vowel; perhaps *ty* or *th* > *y* in this environment, or *t* > *rr*, or *rt* > *r*, even *p* > *w*. So far, however, no etymologies supporting such developments have been found.

It is quite likely that a long vowel prevented the prestopping of nasals. If this was the case, a word containing a plain nasal at C₂ position may not unequivocably be reconstructed as, say **PE(:)mV*, representing 108 (9x4x1x3) possible forms with a non-nasal C₁ and a long or short unrounded V₁, but reflects either **PEmV*, representing 54 (9x2x1x3) possible forms with a non-nasal C₁ and a short V₁, or **CE:mV*, representing 78 (13x2x1x3) possible forms with any C₁ and a long V₁, which makes a total of 132 possible sources.

The calculations given above would need to be altered if we posit that pPN had only a single apical consonant at C₁, as implied by the argument of Evans (1988) and by my pPN reconstructions using **R* in List 5. Instead of 13, there would be only 10 consonant possibilities at C₁. Even if this is true for pPN, it may not have held anymore for the Pama-Nyungan form of language that immediately preceded Arandic. On the other hand, if we assume that the Pre-Arandic form of Pama-Nyungan had an initial contrast of laminodentals with prepalatals, we need to add three more consonants to the C₁ possibilities. We are thus back to a figure of 13 if we at the same time posit a single apical, but 16 if we accept four initial apicals. Then the worst case structure—13x2x1x3=78 for row 2 of Table 19 (or 13x4x1x3=156 if we allow for vowel length at V₁)—changes to 16x2x1x3=96, and, with consideration of vowel length, 16x4x1x3=192.

4. LISTS OF ARANDIC REFLEXES OF PAMA-NYUNGAN

The Pama-Nyungan forms are cited in an orthography that consistently uses voiceless stop symbols, *rC* for retroflex consonants, *Cy* for lamino-prepalatals and *Ch* for laminodentals. For the phonology of Proto Pama-Nyungan (pPN) I have assumed two sets of apicals, as per O’Grady (1990b:136), but without interpreting the retroflex consonants as clusters (O’Grady 1979:134). For initial apicals, whose phonetic nature is unclear, I use the symbol **R* (cf. Evans 1988:103f.). I represent pPN as having both dental and prepalatal laminals, according to the evidence of double laminal languages.

Lists 1-4 give Arandic forms which have a relatively certain Pama-Nyungan etymology. The first list gives affixes. The subsequent lists divide the etymologies into pronouns, verbs and nominals. Forms are ordered alphabetically by the gloss of the pPN form, which is given in the first column. The protoforms are given in the second column. The next column to the right gives the presumed Proto Arandic form; that is, the form that resulted from the

common Arandic sound changes before the form was diversified in the various Arandic languages and dialects. The next column gives the attested forms, followed by an indication of which language or dialect it occurs in if it does not occur generally in Arandic. Then the gloss in Arandic is given if it is different from that of the corresponding pPN word. The final column lists references to other scholars who have previously recognised the etymology. List 1 omits the Proto Arandic column but includes a column where the conditioning environment of the affix may be given. Hyphens in the pPN forms are used to mark morpheme boundaries. A full stop is used in Proto Arandic forms to separate increments that were presumably not part of the pPN form, following the practice of O'Grady. Square brackets are used to separate parts of Arandic forms which are not inherited from the protoform.

List 5 combines and lists in alphabetical order all the Pama-Nyungan forms that have been cited in the tables of §2, with glosses, and provides bibliographical references to the reconstruction of the pPN forms. These sources include Capell's Common Australian, O'Grady's Proto Nuclear Pama-Nyungan, Dixon's Proto Australian, as well as the (merely) Proto Pama-Nyungan of Blake, Evans and Alpher. Not all forms cited as pPN may prove to go as far back as Proto Pama-Nyungan. Inclusion of a form only means that I consider it to be a candidate for Proto Pama-Nyungan. Some forms have been included because some scholar has reconstructed it as such. I have included some forms not mentioned by others that I nevertheless consider to be eligible on the basis of the geographical distribution of cognates.

List 6 presents a further set of Arandic words that have good cognates in other Pama-Nyungan subgroups. Here the reconstruction gives the Pre-Arandic form that is suggested by the most closely related cognates. These etymologies will be justified elsewhere by the citation of the actual cognates. (For language/dialect names see fn.2. Where no language name is given, the form occurs in the two main branches of Arandic, Kaytetye and Arrernte in the broadest sense.)

LIST 1: AFFIXES

Gloss	pPN	Arandic	Language	Environment	Reference
Ablative	*-ngu	-nge	A		
Accusative	*-nha	-nhe	A		Capell 1956:65
Dative	*-ku	-ke	A		Capell 1956:64, 100
		-we	K		
Ergative	*-lu	-le			Capell 1956:64
Ergative	*-ngku	-nge	K	#VCV_	
Locative	*-la	-le			
Locative	*-ngka	-nge	K	#VCV_	
Nominaliser	*-ntha	-(ny)tye	A		Evans 1988:94
Past	*-nha	-nhe	K		
Purposive	*-ku	-we[the]	K		

LIST 2: PRONOUNS

pPN gloss	pPN form	Proto Arandic form	Arandic form	Language	Arandic gloss	Reference
1DU.DAT	*ngali-mpa	*eyleme	ayleme	K	1DU.INC.NOM SM.MOI.SM.GEN	
1DU.EXC	*ngali-rna		aylerne ilerne	K, Aly A		Capell 1956:100
1DU.INC	*ngali	*eyle	ayle- ile- alye-	K, Aly A Ant		Breen 1977:374
1PL.EXC	*ngana-rna	*unerne	(a)nwerne	A		Capell 1956:100
1PL.INC	*ngana	*wana > *une	(a)nwe-	A		
1SG.DAT	*ngatyu	*etye	-atyē		1SG.KIN.POSS	
	*etye.ngē	(a)tyenge			1SG.DAT	
1SG.ERG	*ngathu	*ethe	(a)the	A		Capell 1956:100 O'Grady 1959:95 Dixon 1970:87
1SG.NOM	*ngay	*eye.ngē	(a)yenge			
2DU	*nhumpVIV	*umpele	mpwele			Capell 1956:100 Breen 1977:374
2PL	*nhurra	*urte-	errwe- arre-	K A		Capell 1956:100 Breen 1977:374
2SG.ACC	*nyuna	*ene	{at}jene	K	I:thee	
2SG.DAT	*nyunku	*ungke	-ingkwe	A	2SG.KIN.POSS	
		*engke	ngke-	K	2SG.KIN.POSS	
		*ungke.ngē	ngkwenge	A	2SG.DAT	
		*engke.ngē	ngkenge	K	2SG.DAT	
2SG.ERG	*nyuntu	*unte	unte	A		Capell 1956:100
		*ente	nte	K		O'Grady 1959:75, 95
2SG.NOM	*nyun	*un.ngē	nge			
3DU	*pula	*ule	elwe- ale-	K A		Breen 1977:374
3DU	*pula-mpa	*ule.me	elweme	K	3DU.NOM SM.MOI.SM.GEN	
3SG.DAT	*nguku	*uke	kwe- -ikwe	K A	3SG.KIN.POSS 3SG.KIN.POSS	
		*uke.re	kwere	K	3SG.DAT	
			ikwere	A	3SG.DAT	
where	*wanh-tha	*enthe	nthe-			O'Grady 1959:99

LIST 3: VERBS

pPN gloss	pPN form	Proto Arandic form	Arandic form	Language	Arandic gloss	Reference
bite	* <i>patha-</i>	* <i>ethe-</i>	[<i>kw</i>] <i>athe-</i>	K	drink < water eat (see * <i>nguku</i>)	
burn	* <i>kampa-</i>	* <i>epmpe-</i>	<i>a(p)mpe-</i> (<i>a)mpe-</i>	Aly		O'Grady 1959:21
carry	* <i>ka-ngV</i>	* <i>eknge-</i>	(<i>a)knge-</i>	A		
cook	* <i>kupa-</i>	* <i>upe-</i>	<i>pwe-</i>	K		
cut	* <i>paki-</i>	* <i>eke-</i>	<i>ake-</i>	A	cut, break off	
dig	* <i>paangi/a-</i>	* <i>enge-</i>	<i>ange-</i>	K		
		* <i>engerne-</i>	<i>ange.rne-</i>	A		
eat	* <i>nga-rni</i>	* <i>eyne-</i>	<i>ayne-</i>	K		
fall	* <i>wanti-</i> (< * <i>panti-?</i>)	* <i>eytnte-</i>	<i>aynte-</i> <i>inte-</i>	Aly	lie	
get	* <i>ma-ni</i>		<i>ine-</i>	A		
			- <i>eyne-</i>	K	CAUSATIVE	
give	* <i>nhu-nya</i> > * <i>yinya</i>	* <i>etnye-</i>	<i>etnye-</i>	K		
go	* <i>wapa-</i>	* <i>epe-</i>	(<i>a)pe-</i>	K		
		* <i>epe.tye-</i>	(<i>a)petye-</i>	A	come	
leave	* <i>wantha-</i>	* <i>enthe-</i>	(<i>a)nthe-</i>	A	give	O'Grady 1959:99 (‘put’)
lie	* <i>nguna-</i>	* <i>une-</i>	<i>enwe-</i>	K		
shoot	* <i>Ruwa-</i>	* <i>uve-</i>	<i>we-</i>			Capell 1956:92
sit	* <i>nyiina-</i>	* <i>ene-</i>	(<i>a)ne-</i>			Breen 1977:374
smell	* <i>parnti-</i>	* <i>eytnterne-</i>	<i>eytnte-</i> <i>inter(ne)-</i> <i>ntyer(ne)-</i>	K Aly A		
speak	* <i>wangka-</i>	* <i>engke-</i>	<i>angke-</i>			Capell 1956: 93, 100 O'Grady 1959:95
spear	* <i>Ra-ni</i>	* <i>eytne-</i>	<i>aytne-</i>	K		
stand	* <i>thana-</i>	* <i>etne-</i>	(<i>a)tne-</i>			Breen 1977:374
stand >						
become	* <i>tyarrV</i>	* <i>erre-</i>	- <i>erre-</i> - <i>irre-</i>	K A		
watch	* <i>miira-</i>	* <i>ere-</i>	<i>are-</i>		see	

LIST 4: NOMINALS

pPN gloss	pPN form	Proto Arandic form	Arandic form	Language	Arandic gloss	Reference
anthill, termitite mound	* <i>mungka</i>	* <i>ungke+</i>	<i>ngkwe[peye]</i>	K		
arm	* <i>waku</i>	* <i>uke</i>	<i>akwe</i>	A		
beard	* <i>nganka</i>	* <i>enke</i>	[<i>arrjanke</i>	Aly		
big	* <i>purlka</i>	* <i>urlke</i>	<i>erlkwe</i>	K	old man	
			<i>irlkwe</i>	Aly	grey-haired	
breast	* <i>ngama</i>	* <i>eme+</i>	<i>am[arle]</i>		female	O'Grady 1959:99
crow	* <i>waka</i>	* <i>uk.aye</i>	<i>kwaye[kwaye]</i>	K		
dark, night	* <i>munga</i>	* <i>unge</i>	<i>ingwe</i>			O'Grady 1959:72,78,95
digging stick	* <i>kana</i>	* <i>etne.me</i>	<i>atne[me]</i>			
earth	* <i>Raaku</i>	* <i>ahe+</i>	<i>ahe[rne]</i>	K, A		
			<i>ahe[lhe]</i>	A		
egg	* <i>muka</i>	* <i>uke+</i>	<i>kwarte</i>			O'Grady 1990d: 14, 1990c: 86, 102
excrement	* <i>kuna</i>	* <i>utne</i>	<i>atne</i>			Schmidt 1919:188 Capell 1956:87, 100 O'Grady 1959:72, 94 Breen 1977:374
eye	* <i>miil.ngV</i>	* <i>elkngē</i>	<i>alknge</i>	A		
fingernail	* <i>miltyV</i>		<i>elye</i>		hand	Dixon 1970:91
fish	* <i>kuya</i>	* <i>uye</i>	<i>weye</i>	K	meat	
forehead	* <i>ngurlu</i>	* <i>urle</i>	<i>erlwe</i>	K	eye	
			<i>rlwe[tnperre]</i>	K	forehead	
MoFa	* <i>ngatyi</i>	* <i>etye</i>	<i>atyē[waleye]</i>	K		
MoMo	* <i>kami</i>	* <i>epme[nhe]</i>	<i>ipmenhe</i>	A		
mother/breast	* <i>ngama</i>	* <i>eme</i>	<i>me-</i>	A	mother	O'Grady 1959:99
			<i>ame[-nhenge]</i>	K	mother-DYAD	
nose	* <i>mulha</i>	* <i>ulhe</i>	<i>elhe</i>	K		Schmidt 1919:188
	(> * <i>milha?</i>) (* <i>elhe?</i>)		<i>alhe</i>	A		Capell 1956:88, 100 O'Grady 1959:68, 72 Breen 1977:374
raw, alive	* <i>kunka</i>	* <i>etnke</i>	<i>atnke</i>	K	alive	Capell 1956:100 O'Grady 1959:94
stone	* <i>parnta</i>	* <i>ertnte</i>	<i>artnte</i>	K		O'Grady 1990b:133
tongue	* <i>thalany</i>		(<i>a)lenye</i>			Schmidt 1919:188 Capell 1956:89, 100 O'Grady 1959:99 Dixon 1970:91 Breen 1977:374
tooth	* <i>Rirra</i>	* <i>erre</i>	<i>are</i>	K	mouth	O'Grady 1959:99
			(<i>a)rr[akerte]</i>	A		
two	* <i>kutharra</i>	* <i>etherre</i>	- <i>therre</i>	K	DUAL	Capell 1956:62 Capell 1956:93, 100 O'Grady 1959:72,94,99 Dixon 1970:90
			(<i>a)therre</i>			

pPN gloss	pPN form	Proto Arandic form	Arandic form	Language	Arandic gloss	Reference
urine	* <i>kumpu</i>	* <i>umpe</i>	<i>mpwe</i>			Breen 1977:374
water	* <i>ngapa</i>	* <i>epe.lhe</i>	<i>pelhe</i>	A	saliva	
water	* <i>nguku</i>	* <i>uke</i>	<i>kw[atyē]</i>	A		Capell 1956:89
						O'Grady 1959:51, 1990d:14
		* <i>uke+*ethē-</i>	<i>kwathe-</i>	K	drink < water	
					eat	
		* <i>uke+*ulye</i>	<i>akulye</i>	A	cloud	
		* <i>uke+*elye</i>	<i>akwelye</i>	K	rain	

LIST 5: PROTO PAMA-NYUNGAN FORMS

Form	Gloss	Reference
*-ku	Dative	Capell 1956:65, 77ff. Dixon 1980:311, 314 Blake 1988:27
*-ku	Purposive	Capell 1956:63, 77 Dixon 1980:381, 410 Alpher 1990:165
*-la	Locative	Dixon 1980:311 Blake 1988:27
*-lu	Ergative	Capell 1956:64 Dixon 1980:311 Blake 1988:27f.
*-ngka	Locative	Capell 1956:65 Dixon 1980:311 Blake 1988:27f.
*-ngku	Ergative	Dixon 1980:311 Blake 1988:27f.
-ngu	Ablative	Dixon 1980:312 (-ngu(ru)?) Blake 1988:27 (*-ngu ABL?) Alpher 1991 (*-nguru)
-nha	Accusative	Capell 1956:28, 65, 77 (-na) O'Grady 1979:127 (*-nya) Dixon 1970:89, 1980:315, 338 (*-NHa) Blake 1988:27 (*-nya) Evans 1988:99 (*-NHa)
*-nhV	Past	O'Grady 1979:122 (*nha (< *-y-na)) Dixon 1980:381f., 410 (*-NHu) Alpher 1990:164f. (*-nya)
*-ntha	Nominaliser	Evans 1988:94
*ka- <i>ngV</i>	carry	Capell 1956:92 (*ka-) Dixon 1980:132, 404 (*kaa- <i>ng</i>) Hale 1982:373 (*ka-) Alpher 1990:165 (*ka-)

Form	Gloss	Reference
* <i>kami</i>	mother's mother	O'Grady 1979:107, 1990c:101 Hale 1982:373
* <i>kampa-</i>	burn	Alpher 1991 (* <i>kaampa-</i> , see <i>kaw</i>)
* <i>kana</i>	digging stick	Koch in press
* <i>kumpu</i>	urine	Capell 1956:89 Dixon 1980:100
* <i>kuna</i>	excrement	Capell 1956:81, 87 (* <i>kuna</i>) Capell 1956:84, 87 (* <i>kunang</i>) Hale 1982:374 Dixon 1980:99f., 152, 172
* <i>kunka</i>	raw > alive	Dixon 1980:155 (* <i>kunka</i>) O'Grady 1990c:87 (* <i>ku(u)nka</i> (> Nyungic * <i>wanka</i>)) Alpher 1991 (* <i>kunka</i> , see <i>kunq</i>)
* <i>kupa-</i>	cook	
* <i>kutharra</i>	two	Capell 1956:93 (* <i>kutyarra</i>) Dixon 1970:90, 1980:153, 323, 367 (* <i>kuTHarra</i>)
* <i>kuya</i>	fish	O'Grady 1979:118, 1990c:103 O'Grady 1990c:103 (* <i>kuyang</i>)
* <i>ma-ni</i>	get	Capell 1956:81, 92 (* <i>ma-</i>) Dixon 1980:405 (* <i>maa-n</i> 'hold in hand') Hale 1982:374 (* <i>ma-</i> 'take/get') O'Grady 1990c:79 (* <i>maaN</i> 'grasp, hold in hand') Alpher 1990:160 (* <i>ma(a)n</i> V Past, * <i>ma(a)ni</i> nPast)
* <i>miil</i>	eye	Capell 1956:81, cf. 87 (* <i>mi:l</i>) O'Grady 1979:120 (* <i>miilpa</i>) Dixon 1980:99f., 172
* <i>miira-</i>	watch	O'Grady 1990c:85
* <i>miltyV</i>	fingernail	Dixon 1970:91 O'Grady 1990c:84 (* <i>milytu</i> 'point, end')
* <i>muka</i>	egg	O'Grady 1990d:14, 1990c:86
* <i>mulha</i>	nose	Capell 1956:81 (* <i>mula</i>) Capell 1956:84 (* <i>mulang</i>) O'Grady 1990c:84 (* <i>milya</i> 'nose, end')
* <i>munga</i>	night, dark	O'Grady 1990c:86 ('dark')
* <i>mungka</i>	anthill, termite mound	O'Grady 1990c:86
* <i>ng/kuku</i>	water	Dixon 1980:100, 172 (* <i>kuku</i>) O'Grady 1979:109 (* <i>nguku</i> pPam)
* <i>ng/nyu-ku</i>	3SG.DAT	Dixon 1980:361 (* <i>NHu</i> 3SG) Blake 1988:6 (* <i>nyu</i> (East) /* <i>ngu</i> (West) 3SG)
* <i>nga-rni</i>	eat	Capell 1956:91 (* <i>nga-</i>) O'Grady 1979:125 (* <i>nga-</i>) Dixon 1980:405 (* <i>nga-l</i>) Alpher 1990:161 (* <i>ngarni</i> Past)
* <i>ngali</i>	IDU.INC	O'Grady 1979:130 Dixon 1980:334, 353 (* <i>ngaLi</i>) Blake 1988:6 (* <i>ngali</i>)

Form	Gloss	Reference
*ngali-mpa	1DU.INC.DAT	
*ngali-rna	1DU.EXC	
*ngama	breast, mother	Capell 1956:85, 87 (*ngamang 'breast') O'Grady 1979:114 ('breast, milk') Dixon 1980:100, 152 (*ngama/u(n) 'breast, woman') Hale 1982:374 ('female, mother') Alpher 1991 ('mother')
*ngana	1PL.INC	O'Grady 1979:130 Dixon 1980:155, 334, 353 (*ngaNa 1PL.EXC) Hale 1982:372 (*ngana 1PL.EXC) Blake 1988:6 (*ngana 1PL)
*ngana-rna	1PL.EXC	
*nganka	beard	Capell 1956:81, 87 (*nganka(<i>rr</i>)) O'Grady 1979:120 (*ngarka) Dixon 1980:100 (*nganka(<i>r</i>))
*ngapa	water	Capell 1956:90 (*ngapang)
*ngathu	1SG.ERG	Dixon 1970:87, 1980:341 (*ngatHu)
*ngatyi	mother's father	Hale 1982:374
*ngatyu	1SG.DAT	O'Grady 1990c:88 (< *ngay-ku)
*ngay	1SG.NOM	Dixon 1980:339, 172 Blake 1988:6
*nguna-	lie	Dixon 1980:407, 156 (*ngu-n (<i>w-</i>) > <i>ng/wuna-</i>) Alpher 1990:165 (*nguna-/*wuna-)
*ngurlu	forehead	Dixon 1980:157 Alpher 1991 (*ngulu?, see <i>ngol</i>)
*nuh-nya	give	Capell 1956:81, 91 (*yu-/*ngu-/*wu-) Dixon 1980:404 (*NHu- <i>ng</i>) Alpher 1990:165 (*wu-)
*nhumpV/V	2DU	Dixon 1970:86f., 1980:334 (*NHu(m)paLV) Hale 1982:374 (*nyupala) Blake 1988:6 (*nyuNpalV) Evans 1988:103 (*NHunpaIV)
*nhurra	2PL	Dixon 1970:88, 1980:334, 153 (*NHurra) Hale 1982:374 (*nyurra) Blake 1988:6 (*nyurra)
*nyiina-	sit	Capell 1956:81 (*ni(n)-) Dixon 1980:407, 153 (*NYii-n (> nyina-)) Hale 1982:374 (*nyina-) Alpher 1990:164 (*nyiina-)
*nyun	2SG.NOM	Dixon 1980:340, 344, 172 (*ngin (/nyin/nyun?)) Blake 1988:6 (*ngin)
*nyunku	2SG.DAT	
*nyuntu	2SG.ERG	Dixon 1980:340, 344 (*ngintu) Hale 1982:374 (*nyuntu)
*paangV-	dig	O'Grady 1990e:237(*pangu-)

Form	Gloss	Reference
* <i>paka-</i>	cut	Dixon 1980:408 (* <i>paka-l</i> ? 'dig/strike'?) Alpher 1990:158 (* <i>paka-</i> 'dig/hit') Alpher 1990:158 (* <i>paka</i> 'hit') Alpher 1991 (* <i>paka-</i> 'cut/hit', see <i>pe</i>) O'Grady 1990e:224 (* <i>paka</i> 'spear') O'Grady 1990e:225 (* <i>paki-</i> 'cut')
* <i>parnta</i>	stone	O'Grady 1990b:133, 1990e:251 (* <i>pArnta</i>)
* <i>parnti-</i>	smell	O'Grady 1990b:126f., 1990e:251 (* <i>parntiL</i>)
* <i>patha-</i>	bite	O'Grady 1979:118 (* <i>patya-l</i>) Dixon 1980: 403, 408 (* <i>patya-</i>) Hale 1982:374 (* <i>patya-</i> 'bite/eat/taste') Alpher 1990:156 (* <i>patya-</i>) O'Grady 1990e:220 (* <i>patya-</i> 'bite') O'Grady 1990e: 222 (* <i>paat ya-</i> 'taste')
* <i>pula</i>	3DU	Capell 1956:61 ('DU') Capell 1956:93 (* <i>pula(ty)</i> 'two') O'Grady 1979:130 ('two') Dixon 1980:100, 172, 356 ('3DU, two') Hale 1982:374 ('two, DU') Blake 1988:6 ('3DU')
* <i>pula-mpa</i>	3DU.DAT	
* <i>purlka</i>	big	Capell 1956:93 (* <i>pulka</i> 'big/old') Dixon 1980:100, 157 Hale 1982:373
* <i>Ra-ni</i>	spear	Alpher 1991 (see <i>pulqa</i>)
* <i>Raaku</i>	earth	Evans 1988:104 (* <i>RLDa-</i> 'throw spear') Hendrie 1990:32 (* <i>taakun</i>) Alpher 1991 (* <i>taaku</i> , see <i>larr</i>)
* <i>Rirra</i>	tooth	Evans 1988:104 (* <i>RLDag-</i> 'fire/hearth/camp/place') Capell 1956:83, 89 (* <i>lirrang</i>) Dixon 1980:100 (* <i>tirra</i> (/l-/r-) 'teeth') Hale 1982:374 (* <i>rirra</i> 'mouth') Evans 1988:104 (* <i>RLDirra</i> 'tooth') Hendrie 1990:71 (* <i>rirrang</i>)
* <i>Ruwa-</i>	shoot	Evans 1988:104 (* <i>RLDuwa</i> 'hit with a missile') Hendrie 1900:73 (* <i>ruwa</i> -)
* <i>thaarrV</i>	stand, become	O'Grady 1979:121f. (* <i>tyaarra-y</i>)
* <i>thalany</i>	tongue	Capell 1956:89 (* <i>talang</i>) Capell 1956:81 (* <i>tali:nj</i>) O'Grady 1979:129 (* <i>tyalany</i>) Dixon 1970:89, 1980:99f. (* <i>THalaNY</i>) O'Grady 1979:120, 129 (* <i>tyalany</i>) Evans 1988:99 (* <i>DHalaNH</i>)
* <i>thana-</i>	stand	Dixon 1980:407 (* <i>THa-n</i> (> <i>tyana-</i>)) Alpher 1990:165
* <i>waka</i>	crow	Capell 1956:81 (* <i>wa:kan</i>) Capell 1956:90 (* <i>wakang</i>)

Form	Gloss	Reference
* <i>waku</i>	arm	Hale 1982:374
* <i>wangka-</i>	talk	Capell 1956:93
* <i>wanh-tha</i>	where	Dixon 1980:374f. (* <i>waNH-THa</i>) Hale 1982:374 (* <i>wanytya/u/i</i>)
* <i>wantha-</i>	leave > give	Hale 1982:374 (* <i>wanta-</i> 'put, leave')
* <i>wanti-</i>	fall	Dixon 1980:179 (* <i>wanti-</i>) Alpher 1990:165 (* <i>wantV-</i>) Alpher 1991 (* <i>wanti/a</i> , see <i>war</i>)
* <i>wapa-</i>	go	Hale 1982:374 (* <i>wapa-</i> 'go, walk') O'Grady 1990b:121, 131 (* <i>wapaY</i>)

LIST 6: WIDESPREAD PAMA-NYUNGAN FORMS

Gloss	Pre-Arandic	Proto Arandic	Arandic	Language	Gloss	Reference
cry	* <i>kaka-</i>	* <i>eke-</i>	<i>ake-</i>	K		
east	* <i>kakarra</i>	* <i>ekngerre</i>	<i>akngerr[ake]</i>	K		
	> * <i>kangarra</i>		<i>ikngerre</i>	A		O'Grady 1959:25
FaMo	* <i>kaparli</i>	* <i>eperle</i>	<i>aperle</i>			
emu	* <i>karlaya</i>	* <i>erleye</i>	<i>arleye</i>	A		O'Grady 1959:72, 89, 94
boomerang	* <i>karli</i>	* <i>eyle</i>	<i>/k]ayle</i>	K		
			<i>aylalyle</i>	Aly		
			<i>alye, ilye</i>	A		
leaf	* <i>karlpi</i>	* <i>eylpe</i>	<i>eylpe</i>	K	ear	
			<i>irlpe</i>	A	ear	
north	* <i>kayirra</i>	* <i>eyerre.re</i>	<i>ayerrere</i>			
galah	* <i>kilan</i>	* <i>elen.tye</i>	<i>elentye</i>	K		
			<i>ilentye</i>	A		
mosquito	* <i>kiwiny</i>	* <i>ewenyc</i>	<i>iwenye</i>	A		
humpy	* <i>kuntyi</i>	* <i>untyte</i>	<i>anytywe</i>	A	nest	
father	* <i>kurla</i>	* <i>urle-ye</i>	<i>arlweye</i>	K		Koch 1995:53
magpie	* <i>kuntparu</i>	* <i>untpere</i>	<i>anpwere</i>	K	butcherbird	
tooth	* <i>kurrtya(r)n</i>	* <i>urrtyn.e</i>	<i>errywerne</i>	K		
heart	* <i>kurtu</i>	* <i>urte</i>	<i>urt[akerte]</i>	A		
			<i>urt[apwerte]</i>	Ant	Breen 1977:374	
head	* <i>maka</i>	* <i>eke</i>	<i>ake</i>	K, Ant		O'Grady 1959:63
			<i>ak[aperte]</i>	A		
dog	* <i>mala.kV</i>	* <i>eleke</i>	<i>aleke</i>	K		
			<i>alekere</i>	LA, Yr	Koch in press	
liver	* <i>malampa</i>	* <i>eleme</i>	<i>aleme</i>			
bone	* <i>nungkarn</i>	* <i>ungkerne</i>	<i>ngkwerne</i>			
swallow	* <i>nguka-</i>	* <i>uke-</i>	<i>kwe-</i>	K		
			<i>kwe.rne-</i>	A		
WiBr	* <i>ngumparna</i>	* <i>umperne</i>	<i>mpwerne</i>			
fly	* <i>nhimu.ngu</i>	* <i>emenge</i>	<i>amenge</i>			
lick, suck	* <i>p/kuntya-</i>	* <i>untyte-</i>	<i>untye-</i>	LA	drink	
			<i>anytywe-</i>	A		

Gloss	Pre-Arandic	Proto Arandic	Arandic	Language	Gloss	Reference
rib	* <i>pangkV</i>	* <i>engke+</i>	<i>ngkerralye</i>	A		
			<i>ngkarralye</i>	K		
body, flesh	* <i>parlku</i>	* <i>erlke</i>	<i>arlke</i>			
grub	* <i>parti</i>	* <i>eyte</i>	<i>[k]ayte</i>	K		
			- <i>ayte</i>	K		
			- <i>ayte</i>	A		
hair, fur	* <i>punytyu</i>	* <i>unytye</i>	<i>etnytye</i>	K		
tree, wood	* <i>purnu</i>		<i>urtne</i>	A	wooden dish, coolamon	
sand	* <i>thulpu</i>	* <i>ulpe+</i>	<i>elpw[aye]</i>	Anm	creek	
		* <i>elpe+</i>	<i>elp[aye]</i>	K		
bird	* <i>thuthV</i>	* <i>uthe</i>	(<i>u)th[ipe]</i>	A		
			<i>th[angkenhe]</i>	K		
back of neck	* <i>tyi(r)ta(r)n</i>	* <i>ertern.ngē</i>	<i>rternnge</i>	K, Aly	back of head	
prickle	* <i>tyili ka</i>	* <i>eyleke</i>	<i>eyleke</i>	K		
			<i>lyeke</i>	A		
smoke	* <i>tyukurtu</i>	* <i>ukerte</i>	<i>kwerte</i>	A	O'Grady 1959:56, 75, 99	
snake	* <i>wama</i>	* <i>upme</i>	<i>apmwe</i>		O'Grady 1959:95	
					Breen 1977:374	
deaf	* <i>wanga</i>	* <i>uknge</i>	<i>akngwe</i>	K		
fall	* <i>warni-</i>	* <i>eytne-</i>	<i>aytne-</i>	Aly	Dixon 1980:405 (<*pa-n?)	
			<i>atnye, itnye</i>	A		
fire	* <i>waru</i>	* <i>ure</i>	<i>ure</i>	A	Capell 1956:90	
			<i>ware</i>	K		
name	* <i>yini</i>	* <i>eytne</i>	<i>itne, [arr]itnye</i>	A		
		* <i>etne</i>	<i>etne</i>	K, Ant	Breen 1977:374	
road	* <i>yirtiya</i>	* <i>eyteye</i>	<i>eyteye</i>	K		
			<i>tyeye</i>	WAnm		

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SEMANTIC SHIFTS BETWEEN FISH AND MEAT AND THE PREHISTORY OF PAMA-NYUNGAN

PATRICK MCCONVELL

1. INTRODUCTION¹

A term *kuya* or *kuyu* (and some other minor variants) is widespread among Pama-Nyungan languages throughout Australia. Its meaning is ‘fish’ in some languages and ‘meat/animal’ in others.²

In this paper I look in detail at the geographical distribution of the two meanings of *kuya/kuyu*. They form two discrete and continuous geographical blocks: the meaning ‘fish’ in eastern Australia, as far west as southern South Australia, and, in the north, including the Yolngu languages of north-east Arnhem Land; and the meaning ‘meat’ across the west of the continent, west of, and separated from, the area with the ‘fish’ meaning.

A question which arises is: which of these two, ‘fish’ or ‘meat’ was the original meaning of the word **kuya/*kuyu* at an earlier stage of the Pama-Nyungan family? Or could it be that the protoform was polysemous, having both meanings?

Linguistic and anthropological evidence for these alternatives is examined. Models of the relationship between semantic systems and human ecology are needed to assess how likely it is that a change in meaning of key items will accompany a change in environment, for instance whether a ‘fish’ word is more likely to shift to a more ‘meat’ word where people move from a situation where fish is abundant and a preponderant element of the diet to one where it is a minor element or is entirely replaced by meat from land animals. Such models dealing with single lexical items are not sufficient in themselves: the presence or absence of related items in the semantic field also affects the outcome of semantic shift. It is less likely for instance that a word will shift from the meaning ‘fish’ to the meaning ‘meat’ if another word for ‘meat’ is already present in the language.

¹ I would like to thank Paul Black, Gavan Breen, Nick Evans, John Henderson, Harold Koch, Mary Laughren, David Nash, Jane Simpson and Nick Thieberger for sharing data and discussing issues with me.

² The voiceless stops are used in transcribing Aboriginal words (e.g. *kuya* instead of *guya*), except in languages where there is a phonemic voiced/voiceless or lenis/fortis distinction in the language, in which case the voiced stop is used for the voiced/lenis phoneme. For the sake of consistency all Aboriginal words are written as far as possible in the same orthography, which is based on the Warlpiri orthography (with stops *p*, *t*, *k* and *j* for the lamino-palatal stop; *rt*, *rn*, *rl* indicating retroflex sounds; *ny* and *ly* for lamino-palatal nasal and lateral; *r* for a glide and *rr* for a tap/flap rhotic and *y* for the palatal glide). In addition, *th*, *nh*, and *lh* are used for lamino-dentals and *rth* for a trill where phonemically distinct from a flap/tap; *e* is a schwa as in the Arandic orthography. Where appropriate, the original spelling of the source is given in square brackets.

A model of semantic change is employed in which items which undergo semantic shifts are expected to have gone through a stage of polysemy between the two senses involved in the shift (Evans 1992b; Wilkins 1993). In this case it is hypothesised that a ‘meat’ > ‘fish’ or ‘fish’ > ‘meat’ shift is preceded by a stage of meat/fish polysemy.

This kind of meat/fish polysemy is indeed found recorded for some modern Australian languages—although I have not found any instances of it occurring with forms related to the root **kuya*/**kuyu*. Where the meat/fish polysemy occurs in a particular root in one language it seems to be associated with meat/fish semantic shift having occurred with the same root in neighbouring languages.

Both polysemy and semantic shift are found in the case of the two other meat/fish roots examined here: **wakari* found right across northern and central Australia from the Gulf of Carpentaria to the Pilbara; and **minya* found in Cape York Peninsula. The geographical distribution of these other instances of meat/fish semantic shift are plotted in this paper.³

It is often difficult to find compelling evidence to decide on the directionality of historical semantic shift, and the cultural and environmental conditions under which it might have occurred, if the shift considered is an isolated example. The chances of attaining this goal are enhanced if we have a number of parallel examples. We are fortunate enough to have in the Pama-Nyungan family at least three separate examples of meat/fish semantic shift.

It is possible to conclude with a reasonable level of confidence that two of these cases, **kuya*/**kuyu* and **wakari*, involve a semantic shift from ‘fish’ to ‘meat’, while the third is a fairly clear case of a change from ‘meat’ to ‘fish’. The latter is much more localised than the former cases, and is associated with an area in northern Cape York Peninsula close to a wider linguistic area in Papua and beyond, where fish/meat polysemy is commonplace; an ecological explanation in terms of fish being the protein staple in the area seems feasible. The two cases of ‘fish’ > ‘meat’ meaning shift took place close to each other near the Gulf of Carpentaria, and spread far west across the north of the continent. I argue that they are related to movements of groups of people from the Gulf region south-west into drier

³ In an earlier version of this paper I included a discussion of a third example of ‘fish’ > ‘meat’ semantic shift, in South Australia, involving a root **parru*/**parlu*. Here two distinct forms *parru* (‘fish’ in some languages; ‘meat’ in others) and *pa(a)rлу* (‘meat’) are found, which I at first thought could be traced back to a single protoform. However, information provided to me subsequently by Jane Simpson shows fairly conclusively that they are distinct roots. In the Adnyamathanha language there is *varlu* ‘meat’ and also *varru* ‘fish’ (McEntee & McKenzie 1992): initial *v* in Adnyamathanha regularly corresponds to *p* in neighbouring related languages. Ngamini to the north is reported as having *parru* in the meaning of a particular—and common in the area—fish species, ‘silver bream’ (with *kupi* being the generic term for ‘fish’: Gavan Breen pers. comm.). Neighbouring Diyari has *parthu* as the generic ‘fish’ term (Austin 1981) and it could be cognate to a generic term for ‘fish’ found on the south-west coast of South Australia: “Venus Bay” *?parru* [barrow Taplin 1879]. A probable scenario here is for the ‘silver bream’ term to have been extended to all fish.

In Kaurna (Teichelmann & Schürmann 1840; Amery & Simpson 1994) and Parnkala the term for ‘meat’ is *parru* or *paru* while the *kuya* root is retained for ‘fish’. Simpson reports Hercus to have found both *paarlu* for ‘meat’ and *partu/paru* for ‘meat/flesh’ in Nukunu. This indicates that the *parru* terms for ‘meat’ are related to the latter item, rather than to the former *paarlu* term (the apparent discrepancy in *r*'s is another problem, which I shall not discuss here). If so, there is still a possibility of a connection between the northern and western ‘fish’ root *parru* and these south-central ‘meat’ terms. In the case of the ‘fish’ > ‘meat’ semantic shift of **parru* the presence of another ‘fish’ term *kuya* competing for semantic space probably influenced the change. In the other cases to be discussed in the body of this article there is no evidence that such competition in the lexical field was a factor.

country, where fish was in very short supply—an ecological circumstance which is probably responsible for the semantic shift.

This hypothesised movement of people may be identifiable with the expansion of a subgroup of Pama-Nyungan languages which can be established on independent linguistic grounds: Northern Nyungic branch, one of two branches of the Nyungic group which covers, roughly speaking, the entire western half of the continent.⁴ The shift 'fish' > 'meat' in *kuyu* represents a clearcut semantic shared innovation in Northern Nyungic, with no retention of the 'fish' meaning in any western languages; in the case of *wakari*, however, some languages in the far west of its distribution, as well as in the east, have the meaning 'meat' and some have the meaning 'fish'. This difference may provide evidence pointing to different phases and routes of Nyungic expansion.

These stories of linguistic change are linked to the movement of people and their adaptation to new environments, and could contribute an important part to the overall history of people in Australia. In particular the story of the expansion of *kuya/kuyu* and subsidiary movements being opened up by linguistic prehistory may help us understand the complexity and staged nature of the expansion of Pama-Nyungan languages.

2. O'GRADY ON THE ROOTS **kuya* AND **minya*

O'Grady (1979) introduced the concept of Proto Nuclear Pama-Nyungan (PNPN) which is the target of reconstruction work which he has been carrying out for many years. His rough approximation of the genetic tree in which this protolanguage has its place is the following:

4 Subgrouping within Pama-Nyungan is far from properly worked out yet. O'Grady's work provides highly plausible classifications based partly on lexical similarity, but much of the work remains to be done, using more classical methods of comparative linguistics. O'Grady appears to distinguish two major branches within Nyungic, one northern and one southern. He refers to 'Northern Nyungic' as a common ancestor of Wati and Marrngu of which Pintupi and Nyangumarta are given as representative examples, respectively. Later (1979:124) he discusses 'Proto Northern Nyungic' of which Warlpiri (Ngarga group) and Jaru (Ngumbin group) are also descendants. It seems likely that these latter two groups should be classified together in a subgroup tentatively named Ngumpin-Yapa. It is likely that the branch of Pama-Nyungan relevant to this discussion of *kuya/kuyu* and *wakari* is Northern Nyungic rather than Nyungic as a whole, since reflexes of these items do not appear in southern Nyungic languages, as far as I know. It is argued elsewhere (McConville & Laughren 1996) that Northern Nyungic is made up of three 'super-groups': Ngumpin-Yapa-Marrngu (with the root **kuya* for 'meat'), Ngayarda-Kanyara-Mantharda (with the root **wakari*), and Kardu-Wati (with the root **kuka*).

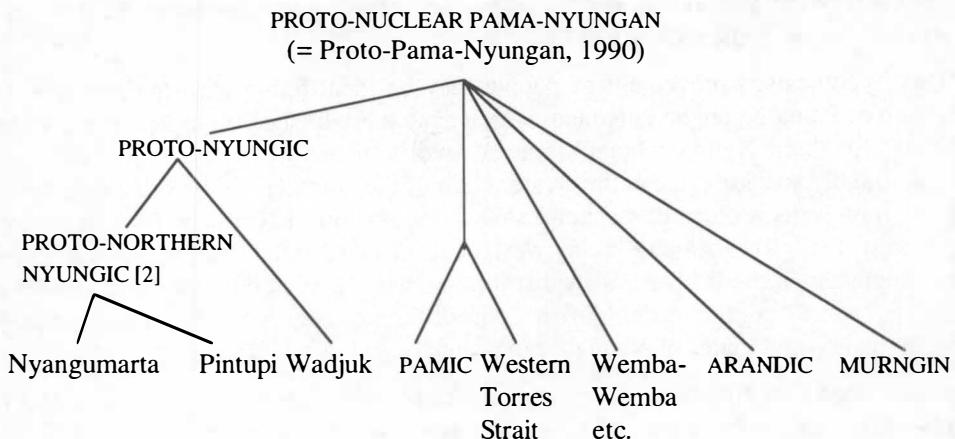


FIGURE: O'GRADY'S VIEW OF PNPN (1979)

The grouping Nuclear Pama-Nyungan here is close to what other authors, particularly recently, refer to as 'Pama-Nyungan' (the subgrouping is controversial and generally agreed to be subject to modification in the light of ongoing work). The branches of Pama-Nyungan which split off before the stage of Proto Nuclear Pama-Nyungan according to O'Grady (1979:115) are named as Gunwinygu and Lardil. The Kunwinjku languages are generally thought of as a separate family; and the Tangkic group to which Lardil belongs was included in earlier characterisations of Pama-Nyungan but recent work has tended to classify these languages as non-Pama-Nyungan (Blake 1988; Evans 1988). For these reasons O'Grady (1990a:xi, xviii) regards PNPN as "superseded" and effectively identical to PPN (Proto Pama-Nyungan).

O'Grady (1979) challenges Wurm's hypothesis (1972:165) of a Pama-Nyungan homeland in Western Australia south of the Eighty-Mile Beach, pointing out that Pama-Nyungan languages in this general area have a close genetic relationship. He proposes (p.114) an alternative homeland location, presumably based at least partly on the high level of linguo-genetic distance between Pama-Nyungan languages in the area: "the northern part of the Arandic speech area, as well as the territory immediately to the northeast and east, seems more plausible as a centre of dispersal". In later discussion of the 'fish' > 'meat' semantic shift, the Barkly Tablelands/Gulf of Carpentaria region pinpointed by O'Grady will also assume importance, and the possible relationship between waves of dispersal from this area and this semantic shift will be examined.

O'Grady (1979:118) does not directly discuss the 'fish' > 'meat' semantic shift and apparently does not assign a meaning to the PNPN protoform **kuya*:

PNPN **kuya* > Nyngumarda *kuyi* animal, meat

However, in more recent work (O'Grady 1990b:103), a PPN root **kuyang* 'fish' is reconstructed. No reflexes with the meaning 'meat/animal' are mentioned, while names of some individual fish species are listed as cognates, one of the more plausible being Gidabal *kuyang* 'mullet' (further discussed below).

It is clear, from the kind of evidence reviewed below, that the meaning 'fish' (generic) is found in the reflexes of the root **kuya*/**kuyu* in all the Pama-Nyungan languages east of O'Grady's proposed PN homeland, including the Yolngu (Murngin) languages of north-east

Arnhem Land. A 'fish' meaning has been assigned to the protoform **kuya/*kuyu* in Proto Paman of North Queensland by Hale (in Sommer 1969) and the same meaning would certainly be reconstructable in a number of other eastern PN subgroups. The indications are that the same root in this meaning may go further back, perhaps to PPN itself.

One could alternatively suggest that in terms of the subgrouping within PN displayed in the figure above, the Northern Nyungic subgroup continues an original meaning 'meat, animal' and the eastern meaning 'fish' is an innovation. However, the fact that reflexes of **kuya/*kuyu* in the meaning 'meat' are found *nowhere* outside Northern Nyungic is *prima facie* evidence against this alternative hypothesis.⁵ There is no one branch of Pama-Nyungan with independent justification in which the meaning 'fish' is found.

Some difficulty is caused for the alternative view also by the fact that in the same article, O'Grady (1979:125–127) reconstructs *another* protoform for 'meat/animal' in Proto Pama-Nyungan: **minya*; indeed he suggests that the presence of a reflex of this root may be "one of the hallmarks of a Pama-Nyungan language". This form has been reconstructed for Proto Paman meaning 'meat/animal' (Hale 1976b:24) and is found reflected in most of the Pamic languages of North Queensland with that meaning. It is not found with that meaning outside this region, however.⁶ In a more recent work, however, O'Grady (1990b) does not list **minya* among proposed M-initial Pama-Nyungan roots. It is not clear whether he no longer thinks this item is reconstructable to that level, since the issue is not discussed.

⁵ Kaytetye, a northern Arandic language, does have a reflex of **kuya/*kuyu: uye (weye)* (Harold Koch pers. comm.; cf. Koch this volume); the other Arandic languages have reflexes of the other fish/meat root discussed in this paper, **wakari*. The Kaytetye form has undergone initial dropping of *k* in the regular expected way. This root may be a loanword rather than an inheritance; even relatively recent loanwords into Arandic languages from Warlpiri like subsection terms have undergone initial dropping (McConvell 1985). The Kaytetye form has an undifferentiated central final vowel. It is unlikely that it is descended from **kuya*, as all known forms with final -*a* have the meaning 'fish' and the nearest attestation is about 1,000 km east of the present location of Kaytetye. It is more likely to be descended from the **kuyu* 'meat' root which is widespread to the north, quite possibly a loanword from Ngumpin-Yapa/Warumungu. Differences in the effects of initial dropping on loanwords into Arandic languages can help to determine their time depth though linguistic stratigraphy (McConvell 1990) but my own expertise in Arandic does not run to that.

The other 'non-Nyungic' language (in terms of O'Grady's 1979 conception of Nyungic) which has *kuyu* 'meat' is Warumungu. It may be possible to argue for inclusion of Warumungu within a revised Nyungic group.

⁶ O'Grady's argument that it goes back to the overall Pama-Nyungan ancestor is based on two suppositions:

(1) there has been a shift to a meaning 'stink' and the like in some western languages;
 (2) there has been a shift to a meaning 'what' in languages south of Pamic (and in Western Torres Strait); loss of the initial syllable relates this root further to words for 'what' beginning with *nya-* further west.

Dixon endorses the likelihood of a meaning change 'meat/animal' > 'something' > 'what'. I share Dixon's scepticism about hypothesised change (2) above **minya* > *nya* (Dixon 1980:376). If this change is eliminated, the only reflexes of O'Grady's hypothesised PPN **minya* in Nyungic are those with a significant change of meaning. O'Grady (1979:126) comments on the hypothesised change:

Bearing in mind the POTENTIAL:ACTUAL feature of Australian semantic systems discussed in O'Grady (1960) and Dixon (1972), it seems reasonable to conclude that just as ANIMAL is the potential counterpart of (actual) MEAT, so also could MEAT be regarded as the potential counterpart of (actual) PUTREFACTION.

This argument has its merits, and some parallel semantic developments can be offered to back it up (e.g. roots such as *murla* in various languages of the far west of Western Australia range in meaning over 'rotten', 'dead' and 'meat'); but it is not wholly convincing as it stands.

We would be left in a dilemma about the question of Proto PN (or ‘PNPN’) if we accepted two PPN words for ‘meat’, **kuya* and **minya* and no clear way to reconstruct a word for ‘fish’. Having two words of identical meaning reconstructed for the same stage of an ancestor language invites reconsideration: it is more probable that the words had different meanings; or they occurred at different historical stages. In the case of **kuya* and **minya*, the latter alternative may be the preferable solution; **minya* may be confined to some eastern branches of Pama-Nyungan and may not be reconstructable all the way back to PPN. Where the two roots do occur in the same protolanguage in north-eastern Australia (e.g. ‘Proto Paman’ or the like), **kuya*/*kuyu* is clearly ‘fish’ and **minya* ‘meat/animal’. However, that does not unambiguously resolve the question of the meaning of Proto PN **kuya*/*kuyu*. While it is highly likely to have been ‘fish’; it is still possible that it was ‘meat’ or polysemous with both ‘fish’ and ‘meat’ senses.

Let us examine first the distribution of the root **kuya*/*kuyu* and then return better prepared with data to consider the question of the meaning of the protoform from which they descend.

Eastern Australia: *kuja-/kuya-* ‘mullet’

1. Bandjalang *kujam/kuyang* (different dialects) ‘mullet’ [Sharpe 1995]

Southern and eastern Australia and Arnhem Land: *kuya* ‘fish’

2. Wiradjuri *kuuya* [*kuya* “Wiraidhuri” Mathew 1899; *guuya* Hosking and McNicol 1993]
3. Gamilraay *kuya* [*guiya* Taplin 1879]
4. Ngiyambaa *kuya* [*guya* Donaldson 1980:95]
10. Punthamara *kuya* [Gavan Breen pers. comm.]
11. Wangkumara *kuwa* [Gavan Breen pers. comm.]
12. Badjiri, Kalali *kuya* [Gavan Breen pers. comm.; “Warrego River, Queensland” *kewya* Taplin 1879]⁷
13. Kungkari *kuya* [Gavan Breen pers. comm.]
14. Ringa-ringa *kuya* [Gavan Breen pers. comm.]
15. “Hamilton River” *kuuja* [*kooja* Curr 1886]⁸
16. Dyirbal, Mamu dialect *kuya* [*guya* Dixon 1972]⁹
71. Parnkala *kuya* [Taplin 1879]

⁷ Gunya of the Warrego River area is recorded by Breen (1981a) as having the form *kuyu* (see that section of listing). Taplin (1879) lists *kuya* [*kewya*] as the form for the Warrego River. However, as can be seen from the map, *kuya* forms are found not far to the west of the area, and may also be found to the east, in the area marked with a query, so it would not be hard for such forms to have been recorded for the region in general.

⁸ This term is somewhat aberrant in that it has an apparent lamino-palatal stop *j* instead of a *y*. It is possible that it is unrelated to the *kuya* terms; however, it is possible that it is a remnant of an older form of the term *kuya*: see below for further discussion.

⁹ Other Dyirbal dialects have the form *japu* for generic ‘fish’, which means ‘black bream’ in Mamu. Dixon (1980:119) offers no evidence about direction of semantic shift here or occurrence of generic fish/fish species polysemy in the area. Elsewhere on the east coast, for instance in Bandjalang in northern New South Wales (Sharpe ed.1992:160), there is polysemy between ‘fish’ and ‘mullet’, an example of lifeform/prototype generic polysemy (Berlin 1992:29). In northern Cape York there is also meat/mullet polysemy (see below in section on *minya*). In Baaganji there is apparently no generic for ‘fish’ but the term *barndu* which means ‘Murray Cod’, the prime food fish of the area, was used by a number of other groups on the Murray and Darling Rivers as a generic fish term.

72. Kaurna *kuya* [Teichelmann & Schürmann 1840; Mathew 1899]
73. “Moorundee River, Murray, S.A.” *kuyanga* [*kuyonga* Taplin 1879]
74. “Upper Glenelg River and Wannon” *kuyang* [*kooiyang* Curr 1886]
50. Yolngu *guya* [Djapu, Morphy 1983]

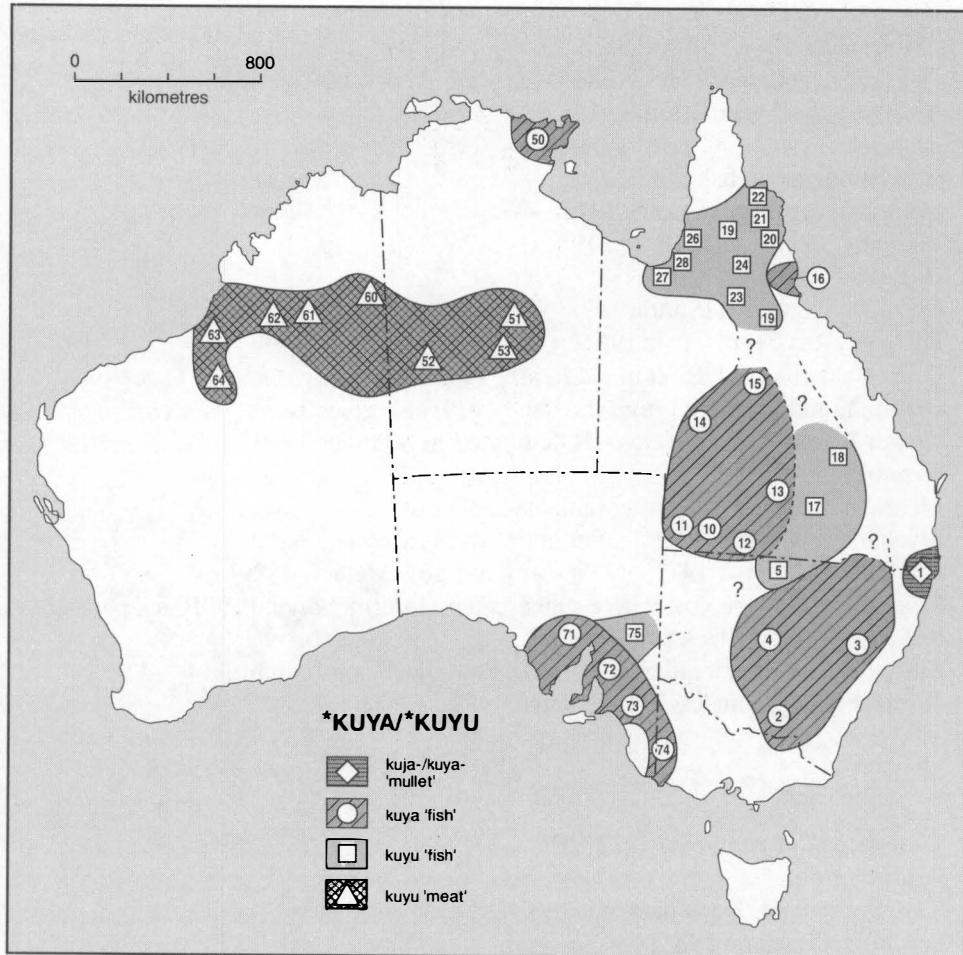
Northern central: *kuyu* ‘fish’

5. Muruwari *kuyu* [*guyu* Oates 1976]
17. Margany, Gunya *kuyu* [Breen 1981a]
18. Bidyara *kuyu* [Breen 1973]
19. Gugu-Badhun *kuyu* [Sutton 1973]
20. Djabugay *kuyu* [*guyu* Patz 1991]
21. Gugu Yalanji *kuyu* [“Bloomfield River” Taplin 1879; *guyu* Oates & Oates 1964]
22. Guugu Yimidhirr *kuyu* [*guyu* Haviland 1979; also gives *kuuju* (*guudyu*) “Proto-Paman” **kuya*/**kuyu* [Hale quoted in Sommer 1969] Reflexes of the **kuyu* form include:
23. Mbara *yo* [Sutton 1976] (after initial syllable loss)
24. Mbabaram *yu* [Dixon 1991] (after initial syllable loss)
25. Kunjen *uy* [Sommer 1972; cf. “Palmer River” *oyi* Mathew 1899]
26. Koko-Bera *koy* [the vowel here suggests a protoform **kuyu*; Paul Black pers. comm.]
27. Kukatj *koy* [Paul Black pers. comm.]
28. Kurtjar *wooy* [after lenition of initial k; Paul Black pers. comm.]¹⁰
75. “Crystal Brook, Flinders Range” *kuyu* [*quiyu* Taplin 1879]

Western: *kuyu* ‘meat’

51. Warumungu *kuyu* [Evans 1982:63]
52. Warlpiri *kuyu*
53. Kaytetye *uye* [H. Koch pers. comm.]
60. Jaru *kuyu* [Tsunoda 1981]
61. Walmajarri *kuyi* [Eastern *kuyu*; Richards & Hudson 1990]
62. Mangarla *kuwi* [*gui* McKelson 1974]
63. Nyangumarta *kuwiyi* [Sharp & Thieberger 1992]
64. Wamman *kuwiyi* [Sharp & Thieberger 1992; also *wakari*—see Map 2]

¹⁰ There is a form for ‘ceremonial knife’ in Pitta-Pitta in central west Queensland, *kuya* ~*kuyi* ~*kuyana* which resembles the ‘fish’ root and displays the characteristic final vowel variation of the eastern forms. This root with the ‘fish’ meaning is otherwise not known in the area, yet it is close to an area where both *kuya* and *kuyu* forms were found, so it is not inconceivable that it is a cognate with a meaning change. The shift ‘fish’ > ‘knife’ might refer to the function of cutting meat/fish (*madhu* in the Western Torres Strait language is polysemous between ‘meat’ and ‘knife’). As this is a ceremonial knife, however, it might refer to similarity in shape between the blade and the fish, or more esoteric symbolic connections.

MAP 1: THE DISTRIBUTION OF **kuya/*kuyu*

3. THE DISTRIBUTION OF **kuya/*kuyu*

The overall picture is the following:

- (1) The *kuya* 'fish' form is found in a large area of south-eastern Australia from a pocket in eastern North Queensland (but not in the far north) through New South Wales in an area west of the Great Dividing Range, and in south-western Queensland around the meeting of the Queensland, New South Wales and South Australian borders. There is also an area in southern South Australia as far as the coast extending a short distance into Victoria according to old sources. The root is not found with this or any related meaning in the highlands of the Great Dividing Range nor on the coastal strip east of the range in Queensland or New South Wales, and is not found in Victoria apart from a small section in the south-west: other unrelated forms are found for 'fish' and 'meat'. *Kuya* 'fish' is also found in the isolated Yolngu group of Pama-Nyungan languages in north-east Arnhem Land.

- (2) The *kuyu* 'fish' area is found north of the *kuya* area, from central Cape York Peninsula west to the eastern Gulf Country, reaching the east coast in eastern Cape York Peninsula, and in a strip which divides the eastern and western sections of the range of *kuya*, extending south to South Australia through the western inland. In the northern Pama-Nyungan languages between the *kuyu* 'fish' area and the *kuyu* 'meat' area to the west, other unrelated stems are found for 'fish' and 'meat'.
- (3) The *kuyu* 'meat' area extends across the northern Pama-Nyungan languages of the western half of the continent, the most easterly location of reflexes of this stem being in Warumungu around Tenant Creek in the Northern Territory, and in Kaytetye, the most northerly of the Arandic languages. From there the *kuyu* 'meat' area extends west as far as the eastern Pilbara, but in the Eastern Ngumpin languages in the far north of the Pama-Nyungan spread, in the western Pilbara, and south in the Western Desert and southern Western Australia other unrelated stems are found for 'meat' and 'fish'.¹¹

The form *kuwi* or *kuwiyi* found in Marrngu languages in the far west is fairly clearly descended from the form *kuyi* found to its east, which in turn is descended from *kuyu* to the

¹¹ For instance Eastern Ngumpin (Gurindji, Ngarinyman, Mudburra etc.) borrowed the term for 'fish', *yawu*, from their northern Jaminjungan neighbours. Just about all the distinctively riverine flora and fauna terminology has been borrowed from the north in this way, supporting the argument that Eastern Ngumpin-speaking peoples had spent some time in a dry environment with little or no fish before entering the Victoria River valley (McConvell in press). In present-day Jaminjung and Ngaliwurru, the Jaminjungan neighbours of Ngarinyman, the northernmost Ngumpin language, the term for 'fish' is *yak*. This is to be interpreted as descending from an earlier form **yaku* (related to 'fish' roots further east—see section on *wakari*). Absence of original final vowels is also found in other Jaminjungan words when compared to the languages of the eastern branch of the same Mirndi family (e.g. Jaminjung *warrij* : Wambaya *wariji* 'crocodile'; Jaminjung *kuyuk* : Wambaya *kuyika* 'fire'). Jaru, a more south-westerly Ngumpin language, retains the borrowing in its original form *yaku*. Since that borrowing took place and diffused as far as Jaru, a process of *lenition* has taken place in the Eastern Ngumpin languages under the influence of northern neighbours converting intervocalic *k* to *w*, yielding *yawu* (see McConvell 1985, 1990). Warlpiri *yawu* 'fish' is a later borrowing from Gurindji or Mudburra resulting from recent contact; if the Warlpiri had been part of the earlier contact with northern languages they would have borrowed the term *yaku* before lenition, like the Jaru.

Apart from loanwords from riverine peoples, apparent neologisms for 'fish' in the languages of peoples who inhabited the dry western interior seem to reflect the fact that fish were a rarity and not a major food item. Terms for 'water' and 'floodwater' have been adapted to be used for 'fish' (Gavan Breen pers. comm.; Walmajarri and Panyjima *kapi* 'fish', cf. Pitjantjatjara *kapi* 'water').

As for meat, the term *kuka* occurs throughout the Western Desert, and *kuwa* < *kuka* is found in Watjarri (Douglas 1981) and *kuka* in other Kardu languages in the Murchison region of Western Australia. Expansion of the *kuka* people throughout the Western Desert is relatively recent, perhaps in the last 1,000–2,000 years (McConvell 1990), and the homeland is likely to have been in or near the Murchison (McConvell & Laughren 1996). The root *kuka* was probably borrowed by Proto Kardu-Wati from southern neighbours where, in Nyungar, *kuka* means 'quokka' (*Setonix brachyurus*), a type of wallaby found only in the south-west of Western Australia (Dench 1994), which is likely to have been the prime meat source in the area and thus susceptible to the meaning shift to generic 'meat'. The presence of the ethnonyms *Kukatha* and *Kukatja* 'meat-having', in north central South Australia and in the north south of the Kimberleys respectively, indicates that the Western Desert people were differentiated by neighbours because of having this distinctive term for meat. Such an ethnonym would only arise in a location where there were neighbours with different terms for meat (i.e. not in an area in the central Western Desert where all neighbours say *kuka*).

Other terms for meat found in the south of Western Australia and the western Pilbara may reflect substrates. However, at least some of them reflect common semantic shifts which occur to provide new 'meat' words in Australia and elsewhere (e.g. Ngarluma (Sharp & Thieberger 1992), Payungu (Austin 1992a) *murla*, cf. Watjarri *murla* 'dead'; Panyjima (Dench 1991), Yinggarda (Austin 1992d) *mantu*, cf. Watjarri *mantu* 'cooked').

east again, the final vowel fronting resulting from influence of the preceding palatal. The Warlpiri form *kuyu* might have been said to result from vowel harmony, were it not for the fact that other languages in the same Ngumpin-Yapa subgroup without vowel harmony like Jaru also have this form.

In the Ngumpin-Yapa subgroup, *kuyu* is found only in the south-western Ngumpin languages Jaru and Walmajarri (eastern dialect) but the other Ngumpin languages to the north and east have *ngarin* (Gurindji, Ngarinyman) or *ngarina* (Mudburra) for ‘meat, animal’. This is a loanword from the non-PN Jarragan languages to the north-west (Miriwung *ngarin*; Kajirrawung *ngartin*)—the final -a in the Mudburra form reflects a regular augmentation process in the history of this language (McConvell 1988).

The fact that the stem *kuyu* was replaced by *ngarin* may be reflected in local ethnonyms. Many Australian Aboriginal ethnonyms comprise a word (usually with a suffix of some kind) which is perceived as especially distinctive of that group as it differs from words for the same item used by neighbours. Words for ‘meat’ are not uncommonly used in this type of ethnonym formation, for instance Kukatha and Kukatja from the Western Desert word *kuka* (discussed further in fn.11). The ethnonym Gurindji is *Kuurrinyji* or *Kuyurrrinyji*; the Ngumpin group to their north are the *Ngarinyman*. Now -*man* (-*pan* following non-nasal stops) is a suffix in this group of languages. X-*man/-pan* mean ‘thing or person that makes the characteristic sound/motion X’ (e.g. *ngak-pan* ‘frog [that goes *ngak*]’), and also appears in a number of language names in the region (e.g. Wardaman, Yangman). So *Ngarinyman* could have meant at one time ‘people who say *ngarin* [for ‘meat’]’. By contrast *Kuyurrrinyji* could have meant ‘people who say *kuyu* [for meat]’.¹² At an earlier stage of accommodation between the groups and non-Pama-Nyungan northern neighbours, before the Gurindji also adopted the term *ngarin*, this could have been exactly the case as the Ngarinyman would have been the closest to the Miriwung and related peoples.

This picture is consistent with a view of the PN Ngumpin group pushing down into the Victoria River valley from the south (McConvell in press) which also fits with the fact that the two branches of the non-Pama-Nyungan Mirndi family (Chadwick 1984) are discontinuous and separated by the intrusive eastern Ngumpin languages. Local legend calls these southern intruders the Warlman (cf. the ethnonyms Warlmanpa and Walmajarri, possibly Warnman). This grouping may be identified with those carrying the root *kuyu* ‘meat’—until they replaced it with a loan, in the case of the Eastern Ngumpin.

4. THE EARLY HISTORY OF **kuya*/**kuyu*

The *kuyu* ‘fish’ block is closest geographically to the *kuyu* ‘eat’ block, and there are, as far as I know, no reflexes of **kuya* that mean ‘meat’. All the western ‘meat’ forms are descended from **kuyu*. If the direction of shift was from an original ‘fish’ to ‘meat’ then the

¹² The *ny* rather than *n* as the final consonant of *ngarin* in Ngarinyman requires explanation: it may be an archaic form. The apparent suffix -*rinyji* in *Kuyu-rinyji* is not otherwise attested in the language so some question must remain about this interpretation. Another possible derivative of *kuyu* in Gurindji is *kuyuwarn* ‘bone’, which is found in a number of neighbouring languages too, even as far away as the eastern Mirndi language Wambaya, where it appears as *kuyuwarna*, with the meaning ‘dead body’ (Nordlinger & Hoogenraad 1993). David Nash (pers. comm.) has pointed out that -*warn*, although it does not occur as a suffix in Gurindji, is similar to the Warlpiri suffix -*warnu* ‘without’. ‘Without meat’ is certainly an apt description of bones; if there were a proto-suffix *-*warn(u)* it would certainly appear in Warlpiri with the vowel as -*warnu*.

linguistic evidence indicates that the meaning shift occurred in the *kuyu* area, which to judge by its present distribution, was to the north-west of the *kuya* area. The present distribution of 'meat' forms sweeps west from an eastern starting point bordering on the Barkly Tablelands, so the location of the semantic 'fish' > 'meat' split was probably in the vicinity of the Gulf of Carpentaria.

Guugu Yimidhirr has a localised form *kuuju* for 'fish' as well as the regionally widespread *kuyu* and variants, and an old source records a form *kuuja* close to the *kuya* zone in central interior Queensland. These forms could reflect the older forms of *kuyu* and *kuya* respectively, since lenition *j* > *y* intervocally is much less marked than the opposite change, other things being equal. Bandjalang in coastal northern New South Wales has forms for 'mullet' *kujam* in southern dialects and *kuyang* in northern dialects like Gidabal (Geytenbeek & Geytenbeek 1971), which are affected by the sound change of intervocalic lenition *j* > *y* (Crowley 1978). Reports that Bandjalang (Sharpe ed. 1992) and other east coast languages possess prototype polysemy of fish/mullet (with the term *jalum*; see also fn.9) do help to give the connection with *kuya/kuyu* more substance. If this supposition could be confirmed it would provide strong support for the 'fish' meaning being prior (since these older forms mean 'fish/fish species').

The differentiation into *u* final and *a* final variants would also be shown to be quite ancient, predating the *j* > *y* lenition process. The distribution of the two sets of forms relative to each other and the relative location of these putative older forms would tend to support a more northerly position for the *kuyu* group and a more southerly position for the *kuya* group at an early stage, but probably both in Queensland. The presence of the *kuya* form in the Yolngu languages of north-east Arnhem Land does require some explanation, however. If we are talking about actual migration here, then the group with *kuya* might have taken two diametrically opposite routes away from North Queensland: one south and one north-west, perhaps along the coast of the Gulf of Carpentaria, to Arnhem Land. The *kuyu* group from further north may then have moved south forming a corridor in the middle of the western and eastern flanks of the *kuya* group, and west, eventually travelling across the continent.¹³

It is within this *kuyu* group that I propose that the semantic change from the earlier 'fish' meaning to the new 'meat' meaning of *kuyu* took place, as the group left the Gulf of Carpentaria region heading west. I shall now consider whether this type of semantic change fits with patterns of semantic shift found in other languages, and whether change in mode of life and environment of a people also affects what kind of semantic shifts are to be expected in areas of vocabulary dealing with fields like food.

5. SEMANTIC CHANGE

In terms of a theory of semantic change, one might consider which of the changes 'fish' > 'meat' or 'meat' > 'fish' is inherently more likely, or more common in other languages. While I do not know of this exact type of semantic shift, or of meat/fish polysemy, in

¹³ A 'migrationist' viewpoint is taken here: languages are assumed to expand and become differentiated largely because of movements of people which either colonise uninhabited areas or cause language shift among existing populations, rather than simply by language contact and diffusion of languages. The linguistic arguments do not stand or fall on the basis of the model of language expansion, however; the present explanation could be considered to be simply a way of talking about language expansion. For a fuller discussion of a model of Pama-Nyungan expansion which includes different types of language spread at different phases, see Evans and McConvell (forthcoming).

languages outside the Australia/New Guinea region, some parallels might shed light on the question. In general, semantic narrowing or ‘specialisation’ from a broad generic concept to a more specific one that seems somehow the most salient or prototypical of the broader category seems more common than the opposite, broadening, in the field of animals.

Polysemy of ‘wild animal’ and ‘deer’ is attested in a number of Indo-European languages, ancient and modern, and semantic change seems to run only in the direction ‘wild animal’ > ‘deer’. Exactly this process has occurred with the word *deer* between Old English and Modern English. In the field of food, ‘meat’ in English has undergone a narrowing from ‘food in general’ to ‘animal flesh food’ in the last few centuries, and an exactly parallel process has occurred with French *viande*. This perhaps relates to the central importance placed on meat as a food in most cultures including modern Britain (Fiddes 1991).

‘Fish’ words are generally very stable in Indo-European, but Modern Greek has replaced the Ancient Greek ‘fish’ word with one which originally meant ‘little delicacies’ (*opsari* > *psari*), which at a certain period became synonymous with fish as food, then fish in general (Buck 1949:184).

These examples of semantic narrowing of words for animal or food in general to a specific prototype, and extension of a word for a type of food to the animal of which it is made, although different among themselves, all add to the impression that it is the shift ‘meat’ > ‘fish’ which would be most common and perhaps most natural, contrary to the balance of probabilities about the root **kuya*/[†]*kuyu* as discussed above.

On the other hand, there are also many examples of specific foods which are staples or ‘prototypical’ foods having their meaning extended to mean food in general. In Omaha-Ponca and other Native American languages the term for ‘deer’ is also used for ‘meat’ in general. In East Asian languages the word for ‘rice’ is commonly used to mean just ‘food’ or ‘a meal’; in parts of the New Guinea region, like the Trobriand Islands where yam is the preferred staple, the word for the most common or preferred yam species takes on such a role. Among Melanesian people in Australia itself, in the eastern Torres Strait, the term *lewer* means both a yam and vegetable food in general. The term *lar* in a parallel fashion means both ‘fish’ in general and ‘meat’, fish being the major protein element of the diet (McConvell, Day & Black 1983:26). In Indonesia too the term *ikan* means ‘fish’ but can be used to refer to other types of meat (Amy Uhrbach pers. comm.).

Therefore it seems that a ‘fish’ word can develop into a polysemous term which can be used to refer to ‘meat’ in general, provided that ‘fish’ is the preponderant or prototypical type of meat available to the speakers of a language. In Meriam Mir, the language of the eastern Torres Strait, there is polysemy between ‘meat’ and ‘fish’. The polysemy here is made up of two distinct concepts, ‘meat’ and ‘fish’, that is, it is a case of “categorial polysemy” in the terminology of Gerraerts (1985:144). This is shown by the fact that fish which are not edible are still called *lar*. However, the overlap area between the two concepts, signifying ‘fish meat’, could be regarded as the prototype for the ‘meat’ concept.¹⁴

¹⁴ The meat/fish shift must also be thought through in relation to specific principles of semantic organisation found in Australian Aboriginal cultures. In indigenous Australian languages the major ‘meat’ term is nearly always polysemous between ‘meat’ and ‘animal’; sometimes it may be glossed ‘game’. This has been seen as a particular case of a more general semantic principle of the ACTUAL/POTENTIAL polysemy principle (Dixon 1980:102–103). A living animal is an actual exemplar of a potential piece of meat (when it is dead and cooked) so they are referred to by one term. Such polysemy is unknown in Europe as far as I know, and may be unique to Australia. There is in just

We must be open to the possibility that semantic shift might take place in different directions—'meat' > 'fish' and 'fish' > 'meat'—at different times and places. This need not mean that we dispense with a theory of semantic shift altogether, however: the conditions, linguistic, cultural and environmental, may be distinctively different for each type of change.

6. ECOLOGICAL INTERPRETATIONS OF SEMANTIC SHIFT

In the case of the Meriam Mir meat/fish polysemy referred to above, it is attractive to assume that this polysemy has to do with the lifestyle of the people. They live on small islands in an area of abundant fish, are heavily involved in fishing and have fish as the overwhelmingly preponderant part of their protein diet, supplemented by occasional turtle and dugong. The most important and most common form of 'meat' therefore is fish. The clear Australian Aboriginal case of a shift from 'meat' to 'fish' via a form of polysemy occurs in far northern Cape York Peninsula (not too far from the Torres Strait) and it is coastal clans (where presumably fishing is or was very important) which use the 'fish' meaning. This situation too seems to lend itself to a human ecological interpretation of semantic shift.

Such a human ecological interpretation would focus on migration of groups into new environments and change in conceptual and semantic systems as they adapt to these. We cannot afford to be too deterministic about the application of this idea. Clearly not every group which moves say from a dry inland environment with an emphasis on land animal hunting to a marine environment with an emphasis on fishing will necessarily make the change to meat/fish polysemy or ultimately shift their word for 'meat' to mean 'fish'. However, when such meaning shifts have happened it may be useful to look at probable conditioning circumstances in these human ecological terms.

Let us return to the question of the semantic shift in *kuya/kuyu* with this perspective in mind. The gap area between the 'fish' and 'meat' meanings of *kuya/kuyu* is the Gulf Country region, which in the north and east has both seacoast and rivers with plentiful fish, and in the south-west few creeks, in which fish are of such small size and appear so irregularly as not to form a real part of the diet of Aboriginal people in the area. While we might reasonably think that the semantic shift took place in this area, and that environmental and human ecological factors such as those quoted might have played a role, it is not so easy to work out just *how* the ecological factors translate into semantic change.

Let us try it as a thought experiment—or if you prefer, a just-so story. One could propose as the first alternative scenario that a people who had the term, with the meaning 'fish', lived near the coast of the Gulf of Carpentaria and depended heavily on fish. Then for some reason (perhaps improving climatic conditions) some of them ventured off south-west into drier country. As time passed and their diet changed in the inland, the erstwhile 'fish' term came to be applied more and more to meat of land animals, and with the dwindling amount of fish eventually exclusively so. By the time the group encountered new river systems to the west,

about all Australian Aboriginal languages a strong lexical distinction between 'meat' and 'vegetable food'; each has its separate generic term and there is no true term like 'food' in English which covers both, although in most languages the 'vegetable food' word is less marked and may be used, for instance, to cover a mixed meal of vegetable and meat. There is often another word in Australian Aboriginal languages for 'meat' in the sense of 'flesh' as opposed to 'bone', distinct from the 'meat/animal' word. It is generally a more marked and specialised word, and not used when general references to 'meat' or 'game' are made.

the ‘fish’ sense of the term had been forgotten, and new terms for fish were made up or borrowed from neighbours.

The second, alternative, scenario would focus on a group which at the beginning of the period we are considering already lived in a drier inland area. A group split off from this main body and moved north-east towards the coast and large rivers. As fish became the main protein element of their diet, the term ‘meat’ applied to ‘fish’ and eventually came to mean ‘fish’. From there the new meaning spread out south, east and north-west, while the old ‘meat’ meaning continued to spread west.

With the ability to track the groups and their dietary patterns through the archaeological record, we could advance much further towards a decision, based on consideration of the one example of *kuya/kuyu* alone in the Gulf region. The small amount of archaeological research which has been done in the relevant area south of the Gulf of Carpentaria can provide no answers to our questions at this stage, however, because faunal remains (which give clues as to diet) are poorly preserved, and there is very poor resolution of strata in the excavations in the mid-Holocene period when the migration hypothesised took place (Hiscock 1984; Morwood 1990).

Evidence that there was an earlier meaning of **kuya*- of a specific fish species far to the east, and the likelihood of the spread of this root earlier in eastern Australia tends to support the first scenario, of people changing from the meaning ‘fish’ to ‘meat’ as they moved south-west into arid country. A parallel pattern with another fish/meat root, which we shall now consider, strengthens the evidence for this hypothesis.

NORTH-WESTERN SECTION: *wakari* ‘MEAT/FISH’ (SEE MAP 2)

Eastern Australia: ‘eel’

- 29. Birri, Wirri *wakari* ‘eel’ [Holmer 1983:367–368]
- 13. Kungkari (Gunggari) *wakal* ‘eel’ [Holmer 1983:261]

Eastern distribution: meat/fish polysemy

- 30. Mayi-Kutuna *wakari* [*wakarri*] Breen 1981b:148, 166]¹⁵

Eastern distribution: meat

- 31. Mayi-Thakurti *wakaru* [*wakarru*] Breen 1981b:148]
- 32. Wunumara *wakaru* [*wakarru*] Breen 1981b:148]
- 54. Eastern Arrernte *akere* ~*kere* [John Henderson pers. comm.]¹⁶

¹⁵ The spelling with *rr* in this and the following two forms recorded by Breen indicates a tap/flap but we are dealing here with interpretations of old written sources or remembered fragments recorded from semi-speakers who may not clearly differentiate the *r*’s. Blake (1979:172) gives the Kalkatungu form with a glide *r*. In his notes Breen gives the forms as recorded from informants as *wakari* and *wakaru* (1979:149,167). The presence of the alternative form *wakayi* might argue for the form *wakari* as marginally more likely. If the form in this area is indeed *wakarri/wakaruu*, then it may still be connected to the other forms in the west discussed, but more doubt would be cast on the proposal.

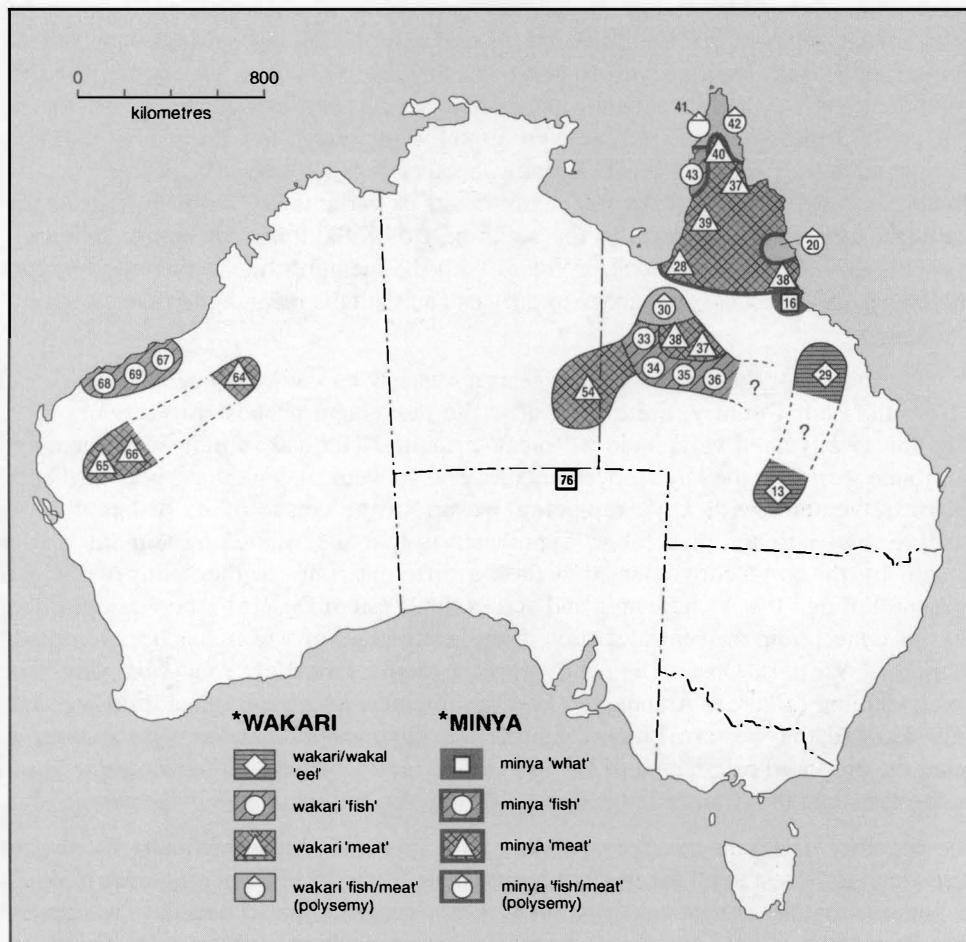
¹⁶ On the basis of regular correspondences, *kware* rather than *kere* might have been expected in Arandic as a reflex of **wakari*, but exceptions exist to the spread of rounding from the proto-preceding onset *w* to the following syllable following initial dropping (H. Koch pers. comm.); it is possible also that an intermediate form **wakiri* existed as a source of the Arandic form.

Eastern distribution: fish

- 33. Mayi-Yapi *wakayi* [Breen 1981b:166]
- 34. Kalkatungu *wakari* [Blake 1979:172]
- 35. Janda (Yanda) *wakari* [Breen 1971:72]
- 36. Goa (Guwa) *wakari* [Breen: 1971:73]

Western distribution: meat

- 65. Tharrgari *wakari* [*wagari* Austin 1992b]
- 66. Warriyangga *wakari* [*wagari* Austin 1992c]
- 64. Warmman *wakari* [Sharp & Thieberger 1992]

MAP 2: THE DISTRIBUTION OF **wakari* AND **minya*

Western distribution: fish

67. Nyamal *wakari* [*wakaRi* O'Grady 1966:116]
68. Ngarluma *wakari* [*wagari* Sharp & Thieberger 1992; Hall & von Brandenstein 1971:49; *pii* also given as 'fish']
69. Martuthunirra *wayari* [Sharp & Thieberger 1992]

7. *Wakari* 'MEAT/FISH'

The stem *wakari/wakaru* generally meaning 'meat' is found distributed across the PN languages of northern Australia from the eastern Gulf Country of Queensland to the western Pilbara of Western Australia, and is found generally in the Arandic languages of Central Australia as *akere* or *kere* (forms resulting from initial dropping). It is not found in the central area between these extreme eastern, western and southern ends of its distribution where reflexes of **kuyu* replace it as the 'meat' word.

In the Pama-Nyungan Mayi languages (Mayabic group) of the Queensland eastern Gulf Country, *wakaru* 'meat' is found in the south-eastern languages Mayi-Thakurti and Wunumara. In the extreme north-western member of this group Mayi-Kutuna (Mayaguduna), however, the cognate *wakari* is polysemous between the meanings 'fish' and 'meat'; in another language of the same group to the south of Mayi-Kutuna but still north-west of the languages with the 'meat' meaning, another cognate *wakayi* is recorded with only the meaning 'fish' (Breen 1981a:166) and *wakari* or variants are found further south in Kalkatungu and other languages to the south-east of Kalkatungu meaning 'fish'. In its western Pilbara distribution *wakari* is found with the meaning 'meat' in two contiguous inland languages and a desert language to the east and with the meaning 'fish' in at least two coastal languages.

The distribution of the root *wakari* suggests a westerly movement of people carrying this root from the Gulf Country, quite parallel to the movement proposed to account for the distribution of *kuyu* and variants in its 'meat' meaning. The *wakari* movement penetrated further to the west than the *kuyu* movement did. This movement could have been earlier than the *kuyu* movement, with *kuyu* replacing *wakari* in the centre of its distribution. An alternative, and perhaps preferable, hypothesis is that the *wakari* movement was not overtaken by the *kuyu* movement, but took a different route to the south of the *kuyu* movement, through the Arandic area and across the Western Desert to the western Pilbara. Under this conception, the central section of the distribution of *wakari* has been overlaid by expansion of Western Desert dialects with their distinctive meat root *kuka*, and initial dropping yielding (*a*)*kere* in Arandic is a later development after the original form *wakari* had already reached the western Pilbara. Unlike the *kuyu* movement there is no large gap between the proposed origin area of the form in the Gulf Country and the eastern end of its western expansion: the Arandic languages are contiguous to Kalkatungu in the east.

The presence of extant meat/fish polysemy for this root (and specifically for the form *wakari* which is closest to all the western forms) in the eastern Gulf Country tends to confirm the hypothesis that the semantic split occurred in this area. The 'meat' meanings are generally more eastern and the 'fish' meanings western in this area, which is perhaps not what is to be expected given the predominant 'meat' meaning in the western expansion. However, the presence of a reflex of another widespread meat root *ati* (< **warti*) in Kalkatungu could have

prevented the 'meat' sense of the polysemy emerging here. This situation also points to the 'fish' meaning being the earlier one.

As with the reflections of **kuya* (**kuja*) on the east coast with the meaning 'mullet', there the root *wakari* also occurs with the meaning 'eel' in the Birri language of the Queensland central coast and related forms meaning 'eel' extend inland a long distance. It is likely that 'eel' was the earlier meaning of **wakari*, and was extended to become a general 'fish' word in neighbouring areas on the basis of eels being the most abundant and reliable fish food source.¹⁷ If so, using a parallel argument to that advanced for **kuya*, 'fish' is likely to have been the meaning of the root after the initial broadening semantic shift, although early fish/meat polysemy cannot be ruled out.

If the 'fish' meaning is the older one, then what has occurred here is a 'fish' > 'meat' shift via fish/meat polysemy parallel to the shift hypothesised for *kuyu* in the same general area. If these shifts and westward expansions of the 'meat' item happened at around the same time period then presence of polysemies for *both* the items could be implicated as part of an areal pattern of semantic organisation (a semantic *Sprachbund* effect).

In ecological terms, both the *kuyu* and *wakari* spreads would have involved movement from a well-watered environment south-west into a dry zone in which fish were scarce or almost non-existent. Under these circumstances the 'fish' meaning of a polysemous meat/fish word could easily be lost.

One difficulty for this model of the *wakari* movement is the existence of the 'fish' meaning on the Pilbara coast. In purely linguistic terms this fact looks positive: it is remnant evidence of the proposed original meaning far from its putative source. If however we are building a model which is anthropological, geographical and ecological as well as purely linguistic, then the explanation runs into problems. If, as we speculated above, the term *wakari* made a long journey through the arid heart of Australia, where there were no fish to speak of, then we might expect the 'fish' meaning to be well and truly lost by the time it reached the sea fishing of the Pilbara. An independent semantic shift back from 'meat' to 'fish' locally in the Pilbara could be the answer, and use of the term 'meat' to mean 'fish' in appropriate contexts is common in Pilbara languages, not only with *wakari*, but also for instance, with *kuwi* in Karajarri. Possibly though, *wakari* might also have taken a more northerly route retaining its 'fish' meaning in areas where there were fish to speak of. This

¹⁷ O'Grady (1966:116) reports the 'fish' meaning in Nyamal (Ngayarda subgroup), the 'meat' meaning in Tharrgari, and the Arandic 'meat' cognate, but not the Queensland forms assembled here. He also cites, further south in Western Australia, Nhanta (Kardu) *waka'* 'snake' and Wadjuk (Nyungar) *wakal* or *wakarl* 'snake'. The first of these looks like a good cognate, with the known sound change **r* > glottal stop in Nhanta in evidence (Blevins & Marmion 1994), and the Wadjuk form is probably connected too. I would speculate that the 'meat' meaning shifted to 'snake'. Snake is a major meat source especially in the desert, and the terms for 'snake' seem particularly prone to euphemistic replacement in Australian Aboriginal languages, because of both sexual and ritual connotations (cf. Walmajarri for 'snake' *jirlpujarti*, means 'having guts'). Presence of other common words for 'meat' in the region (such as the Kardu-Western Desert **kuka*, **juru* found in Nyungar and stretching right across into South Australia, etc.) would have helped to shift the meaning of **wakari* too. It seems rather odd that in the extreme west of its distribution this root returns to a meaning—'snake'—quite close to what was proposed as its original meaning on the Queensland east coast—'eel'. This may be a spur to seek another route of connection; for my part, though, I put this down to coincidence.

would fit with the generally more north-eastern distribution of the ‘fish’ meaning of *wakari* in Western Australia. I leave these questions to further research.¹⁸

NORTH-EASTERN SECTION: *minya* (SEE MAP 2)

Northern Central: meat

37. Kuku Ya'u *minya* [Thompson 1976]
38. Yidiny *minya* [Dixon 1977]
39. Yir-Yoront *minh* [Alpher 1976]
28. Kurtjar *eeny* [resulting from initial dropping; oblique base *nyaa-*; Paul Black pers. comm.]
40. Atampaya *minha* [Crowley 1983]

Northern: meat/fish

20. Djabugay *minya* [Patz 1991; Hale 1976a:326]
41. Angkulmuthi *inha* ['meat/mullet' Crowley 1983; generic 'fish' *inha anyi*, lit. ?meat/mullet name]
42. Yadhaykenyu—as for Angkulmuthi above

Northern: fish

43. Anguthimri, Mpakwithi dialect *nha* [Crowley 1981]

Southern: what

16. Dyirbal *minya* [Dixon 1972]
76. Arabana-Wangkangurru *minha* [Hercus 1976]

8. MEAT > FISH: *minya*

Minya and related forms (often with initial dropping and other phonological changes) are the most common words for ‘meat/animal’ in a large area of North Queensland; there seems little doubt that ‘meat’ was the common original meaning of the immediate protoform of these forms. Farther south the root also has a wide distribution with the meaning changed to

¹⁸ *Wakari* in Gulf Pama-Nyungan might possibly be related to words for fish in neighbouring non-Pama-Nyungan languages to the north-west. In the Tangkic family, Yukulta has for ‘fish’ *yakurli* [Keen 1983]; Kayardild *yakuri* [Evans 1992a]; and Lardil *yaka* [Klokeid 1976]. The Jaminjung word for ‘fish’ *yak* [Cleverley 1968] (< **yaku* but cf. Lardil *yaka* whose stem is *yak-*; see fn.11) may have been borrowed from Tangkic at a time when Tangkic and Jaminjungan were in closer contact; Alawa, a western neighbour of Tangkic, has *aka* [Sharpe 1976]. Borrowing of the form *yakuri* into Gulf PN as *wakari* seems highly unlikely, especially as the Birri form with an earlier meaning is found so far to the south-east. The opposite proposal, that *wakari* was borrowed from Gulf PN into non-PN languages as *yakuri*, would fare equally badly. Some intermediate steps are required to convert initial *w* to *y* and the second vowel *a* to *u*, and at the moment evidence for such steps is lacking. Nick Evans (pers. comm.) has suggested that the form *yakurli* may have originally been a dimorphemic compound **yaku-rli* with **yaku* meaning ‘fish’ and **rli* ‘coast’, which undermines any such suggestion of borrowing. The eastern branch of Mirndi which is today closer to the Gulf than Jaminjung has forms that may be related to the Tangkic forms, but are phonetically more distant: Wambaya *kakuwi* [*gaguwi* Nordlinger & Hoogenraad 1993]; Djingilu *kaakwi* [*gaagwi* Chadwick 1975]; Ngarndji *kaakwi* [*gaagwi* Chadwick 1971]. While there is some vague similarity here to *wakari*, it is mostly likely due to chance, and not worth pursuing.

'what'; only two examples of this are shown on the map, as this meaning shift is not the one with which we are concerned here.¹⁹

The shifts under consideration here are more localised, involving meat/fish polysemy and ultimately in the far north of Cape York, shift to the 'fish' meaning.

The appearance of meat/fish polysemy in the case of Djabugay may be related to a high reliance on fish in the diet. I do not have enough local knowledge to support or deny this claim; in any case it is unlikely to be the whole story as other groups live in similar environments in North Queensland without having this type of polysemy. Accidental local factors like death taboo can be responsible for polysemy (if a person with a name like the word for 'fish' died, 'meat' could well be used instead for a while). However, the gap in the lexicon is usually soon filled again—if the polysemy continues other factors of a general cultural or ecological nature must surely be involved. Another possibility is that languages in this area once had no generic term for fish: the neighbours of the Djabugay, the Yidiny, and some other groups are in this situation. Extending the 'meat' term to fish in general would be a half-way house situation between no generic and a distinct one.

The cases of polysemy and semantic shift of reflexes of *minya* further north on Cape York are more clearly related to human ecology. The meat meaning is retained by an inland group but the groups on the coast to the east and the west have developed polysemy between 'meat' and 'mullet' presumably based on the importance of that fish in the protein diet, and the word for 'fish' in general is derived from 'meat'/'mullet'. Even further north, where the peninsula narrows to a cape and all groups would have been involved in a marine lifestyle, the conversion of the 'meat' root to the meaning 'fish' is complete.

9. CONCLUSIONS

Two of Geoffrey O'Grady's main concerns have been the reconstruction of Proto Pama-Nyungan, and the tracing of cognate roots where semantic shift has taken place to obscure the relationship between the words. I hope that this paper has made a contribution to these twin endeavours.

¹⁹ Dixon draws attention to the fact that reflexes of **minya* both in the sense of 'meat/animal' and 'something/what' have irregular case suffix forms. Paul Black has provided me with an example in Kurtjar where the ergative of *eeny* 'meat' (< **minya*) is *nyaa-l* (< **minya-lu*) whereas -*k* is the normal ergative marker.

Evans (in press) suggests that **minya* may be a loanword from an Austronesian item **minya* 'fat, grease'. If so, the fact that it was borrowed into northern Queensland after the departure of some groups to the west (such as the Nyungic *kuyu* group) may explain absence of reflexes in these western subgroups. If the Austronesian origin of the root **minya* could be more firmly established, it would therefore advance the study of the chronology of Pama-Nyungan expansion. It seems doubtful if Austronesian languages would have been in a position to contact northern Australia much before 2500 BP (judging by Austronesian expansion chronologies in Bellwood (1995:102) and Pawley & Ross (1995:63)). This would then be an earliest date for a proposed period which comes after the western *kuyu* 'meat' spread and before the eastern *minya* 'meat' spread.

If a reflex *itnya* is present in Central Arandic as claimed by Blake and Dixon (1991:14) this may indicate continuing contact between some earlier stage of Arandic and eastern groups after the more westerly Pama-Nyungan groups had moved away. However, if this is intended to be the word for 'vegetable food' (*etnye* in some other Arandic languages) this etymology is doubtful: even apart from the semantic shift implied, pre-stopping of nasals does not occur in Arandic where the protoform has a nasal onset in the preceding syllable (like **minya*; H. Koch pers. comm.).

I have tackled a small group of words in Pama-Nyungan languages in depth, to try to trace their origins, and at the same time to try to develop the theory of semantic change building on the insights and difficulties encountered in this process. This theory of semantic change involves not only a linguistic theory, but also a theory of how meaning and meaning change is embedded in the culture and human ecology of the people who use the words.

In particular, three roots which mean 'meat' in some Australian languages, and 'fish' in others, have been investigated. In two of these cases, **kuya*/**kuyu* and **wakari*, I find that the original meaning was 'fish' and that this meaning shifted to 'meat'. I propose the hypothesis that the groups using these words moved south-west from the Gulf of Carpentaria into an arid area where there were few fish, and that this change of environment was crucial in the semantic shift. It is not necessary to postulate two independent and parallel semantic shifts here: the groups concerned could well have been in close contact and influencing each other in the course of this process. The other case, of **minya* in Cape York Peninsula is an example of the opposite process, a semantic shift from 'meat' to 'fish', but again ecological factors could have been at work influencing the change, as fish predominated in the maritime human ecology of the narrow northern end of the peninsula.

This paper remains within the general 'top-down' approach favoured by O'Grady, particularly in more recent work: attempting to track down developments on a continental scale within the very widespread Pama-Nyungan family as a whole. I do heed calls for more detailed work on subgroups as the only way to substantiate our claims in terms of subgrouping, and am working in this 'bottom-up' fashion too. I do not necessarily go along with the attitude, sometimes coupled with calls for 'bottom-up' work, that linguists like cobblers should stick to their lasts and consider only linguistic evidence, and not consider evidence from archaeology, anthropology, ecology and so on. I agree with O'Grady about the need for wide-ranging hypotheses, and I favour use of non-linguistic data where helpful.

I have been emboldened in writing this paper by the dedication of this volume to Geoffrey O'Grady, whose work in Australian historical linguistics has been refreshingly, intriguingly, and sometimes exasperatingly bold in the steps it takes, particularly in proposing semantic shifts in the meaning of roots. For someone who has a record of harshly criticising speculation about Australian linguistic prehistory and advocating caution (McConvell 1985), this paper might seem to contradict some of my own methodological precepts. Yet it seems to me that progress depends on scholars, if not exactly 'throwing caution to the winds', sometimes at least conveniently setting aside caution for a later date, and producing hypotheses both challenging and likely to be challenged. O'Grady has been a master of this approach, and it is in the fascination engendered by his ideas that important currents in contemporary Australian historical linguistics and linguistic prehistory have had their beginnings. Some scholars may have failed to venture beyond obvious generalities, while others have been led by their speculation beyond what evidence and logic can support. O'Grady has avoided these extremes. He has always given us plenty of meat—solid data and a logical argument—without it sounding fishy. I hope my little story of meat and fish has the same qualities.

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NYANGUMARTA PRONOUNS

JANET SHARP

1. INTRODUCTION¹

In many languages it is often difficult deciding on which morphemes constitute affixes and which morphemes constitute free words. Sometimes there is a mismatch between what might be described as a phonological word, morphological word and/or a syntactical word. On the surface the distinction between word and affix might appear as clear cut as that shown in Figure 1 where there is no overlap between word and affix.²

	'Word'	'Affix'
Pause word	x	
Case/tense, mood, aspect	x	
Stress word	x	
Minimal word	x	
Position bound ³		x
Phonological rule domain		x
Buffer vowel domain		x

FIGURE 1: WORD/AFFIX DISTINCTIONS

Nyangumarta is a language in which distinctions between affixes and words are not always clear cut, particularly in the area of pronouns. Nyangumarta has been described as having two sets of pronouns: a set of free pronouns and a set of pronominal affixes attached to the verb (O'Grady 1964; Hoard & O'Grady 1976; Geytenbeek, B. 1991; Geytenbeek, H. 1988; Sharp 1985, 1986; Sharp & Thieberger 1992). (Much of the work on Nyangumarta has been carried out by O'Grady since he began his study of the Nyangumarta spoken at Wallal in 1949. O'Grady's phonological work with James Hoard (1976) deals with this northern Nyangumarta dialect spoken at Wallal (north of Hedland) in the 1950s. The present study although recognising and utilising aspects of the northern Nyangumarta dialect is concerned predominantly with the phonology of the southern Nyangumarta dialect.)

1 I would like to thank John Henderson, Juliette Blevins and Alan Dench for their helpful comments and suggestions regarding this paper. All errors are my own.

2 The criteria used to distinguish affix from word in Figure 1 is concerned with phonological facts for Nyangumarta specifically and may or may not apply to other languages.

3 It is acknowledged that this category is definitely not one which can be used to differentiate words and affixes across languages as fixed order is not only found for affixes and clitics but is also found for words. However, in Nyangumarta the situation is such that generally word order is free (although there are preferred orders) and hence phonological words can occur in any position in the phrase whereas affix order is fixed. In the situation of the verbal pronouns, the order is fixed even though it will be argued that some of these pronouns are in fact phonological words.

The mismatch between word and affix has not been discussed previously for the verbal pronouns although Geytenbeek (1992) has touched on the topic in his paper entitled ‘Nyangumarta verbalisers—suffixes or separate forms?’. Hoard and O’Grady (1976) have also acknowledged two distinct boundaries for the verbal pronouns: a boundary for ‘internal morphemes’ and the other boundary for ‘external morphemes’.

In this paper the issue of ‘word’ or ‘affix’ is investigated for Nyangumarta based on the phonological operations of the verbal phrase and in this regard it is argued that in Nyangumarta there are three distinct sets of pronouns. On one hand there is a set of independent pronouns which pattern with the optional nominals in Nyangumarta sentences occurring with the same case-marking system (see Tables 2 and 3) and operating in a general system of free word order. On the other hand there is a set of verbal pronouns, occurring obligatorily following verbal inflections. It is proposed that the pronouns occurring in the verbal phrase are in fact two distinct phonological sets: one a set of word type pronouns and one a set of affix type pronouns. The major, consistent difference between the two sets is that one set (affix type pronouns) undergo general phonological rules whereas the second set (the word type pronouns) do not undergo the same phonological rules.⁴ Stress placement and the minimal word constraint in Nyangumarta are also factors for determining two distinct sets within the verbal phrase.

The verb phrase in Nyangumarta is a phonological phrase defined as a stress group, consisting of one or two phonological words, which cannot be broken by a pause (see Blevins (1993) for a similar referral to the phonological phrase in Gilyak). Phonological words in Nyangumarta usually have the distinctive attribute that in normal speech the speaker can actually stop or pause before the word is uttered and then resume speaking with that particular word as the first word; subminimal words must be uttered in the phrase and cannot be the first utterance after a pause. The ‘pause word’ feature is utilised within this paper due to the fact that even though there appears to be an unambiguous division between those phonological words which are independent and subminimal words which are clitics or affixes, for the pronouns occurring within the verbal phrase the division is not clear cut and ‘pause word’ is one criteria used to show the ambiguity between what is argued, two distinct sets.

Section 2 outlines general features and distribution of the three sets of pronouns, §3 outlines some of the relevant phonological facts, particularly facts regarding vowel alternations which apply to the affix type pronouns, §4 establishes the major differences between the two sets of verbal pronouns, and §5 outlines some special cases of Nyangumarta pronouns.

⁴ The fact that the verbal pronouns have operated as two distinct sets in the phonology is not new (see Hoard and O’Grady (1976) who use the notation + to refer to the bound pronouns as internal morphemes and # to refer to the rest as external morphemes). Sharp (1985) has argued that affixation in Nyangumarta occurs on two separate strata; the level 1 affixes being the bound morphemes and the level 2 affixes the free verbal pronouns.

2. NYANGUMARTA PRONOUNS

2.1 NYANGUMARTA DIALECTS

Nyangumarta, a language spoken in the north-west of Western Australia, is a member of the Pama-Nyungan language family which covers about seven-eighths of the Australian continent. Nyangumarta according to O'Grady (1964) and O'Grady, Voegelin and Voegelin (1966) belongs, together with Karajarri and Mangarla, within the Marrngu subgroup of the Nyungic branch of Pama-Nyungan. Traditionally, the Nyangumarta people lived in an area that stretched from south and east of Lake Wakarlikarli (towards Telfer) northwards to a long string of claypans that lie east of Sandfire, and which reach over 120 kilometres into the Great Sandy Desert. There are two principle dialects of Nyangumarta: a northern coastal and a southern desert. The term Walyirli (Wanyarli) is the more common name for the coastal and more northern of the two dialects. The Nyangumarta grammar written by O'Grady (1964) is based on this dialect. The speakers of Walyirli currently live in the area of Broome and La Grange (along with the speakers of several other Aboriginal languages). Geytenbeek (1987) has suggested that the word Walyirli comes from the Nyangumarta word *walyi* 'shoulder' and is used to refer to this group's punishment practice of spearing the shoulder or the thigh. The Ngurlipartu dialect is spoken by people from the southern inland regions of the Pilbara although many Nyangumarta speakers attest that Ngurlipartu is a separate language spoken further east of Nyangumarta.⁵ After white pastoralists arrived, some of the northern Nyangumarta people moved westwards. For over a century they were the main occupants of the Eighty Mile Beach area. Today there are about 800 speakers of Nyangumarta. Most of these live within a 200 kilometre radius of Marble Bar or in the La Grange area. The data in this paper encompasses the two major dialects. Where it is necessary, the different dialects have been noted. One of the notable differences between the two principal dialects is the productiveness of the progressive vowel harmony systems, the northern dialect being the more productive of the two.

2.2 NYANGUMARTA PRONOUNS

Nyangumarta pronouns show a distinction of three numbers (singular, dual and plural) and three persons (first, second and third), with an inclusive/exclusive contrast in the first person dual and plural. Table 1 gives the three sets of pronouns (the shaded area gives the forms of the free verbal pronouns as distinct from the affixes).⁶

⁵ See Sharp (forthcoming) for a further discussion of Nyangumarta language names.

⁶ Abbreviations used in this paper are as follows:

ABL	ablative case	ERG	ergative case	NM	nominaliser
ACC	accusative case	EXC	exclusive	NOM	nominative case
ADV	advisory mood	FUT	future tense	PAST	past tense
ALL	allative case	GEN	genitive case	PL	plural
ANT	anticipatory mood	IMP	imperative mood	POT	potential mood
AVER	aversive case	IMPF	imperfective aspect	PRIV	privative case
COM	comitative	INC	inclusive	REM	remote past
DAT	dative case	INCH	inchoative	SG	singular
DEIC	deictic	LOC	locative case	VBS	verbaliser
DES	desiderative aspect	NEG	negative word	VOL	volitional aspect
DU	dual	NFUT	non-future		

TABLE 1: NYANGUMARTA PRONOUNS

Person	Independent	Bound Verbal Pronouns and Free Verbal Pronouns		
		Nominative	Accusative	Dative/Locative
1SG	<i>ngaju</i>	-mV	-nyV	-jV
2SG	<i>nyuntu</i>	-n/hpV	-ntV	-ngu
3SG	<i>paliny</i>	-Ø/-rrV ⁷	-Ø	-IV/lu
1DU.INC	<i>ngali</i>	-li	<i>ngali-nyi</i>	<i>ngali-ku</i>
1DU.EXC	<i>ngalayi</i>	-layi ~ -liya	<i>ngalayi-nyi</i>	<i>ngalaya-ku</i>
1PL.INC	<i>nganyjurru</i>	-nyV	<i>nganyjurri-nyi</i>	<i>nganyjurra-ku</i>
1PL.EXC	<i>nganarna</i>	-yimV	<i>ngani-nyi</i>	<i>ngana-ku</i>
3PL	<i>jana</i>	-yV	<i>jani-nyi</i>	<i>jana-ku</i>
3DU	<i>pulany</i>	<i>pulu</i>	<i>puli-nyi</i>	<i>pula-ku</i>
2DU	<i>nyumpala</i>	<i>nyumpulu</i>	<i>nyumpuli-nyi</i>	<i>nyumpula-ku</i>
2PL	<i>nyurra</i>	<i>nyurru</i>	<i>nyurri-nyi</i>	<i>nyurra-ku</i>

The free verbal pronouns closely resemble the independent pronouns, the major difference being the type of case-marking system used to encode their function in utterances: independent pronouns are inflected for ergative/absolutive case (as well as dative, allative, locative, ablative and genitive), whereas the word type pronouns operate in a nominative/accusative system and overt case marking can be identified: *-nyi* for the accusative set and *-ku* for the dative set. The bound verbal pronouns do not appear with overt case marking but they do operate in a nominative/accusative system.

The verbal pronouns are so called because their position in the verbal phrase is fixed: they occur following inflections for tense, mood or aspect (except for the anticipatory mood morpheme which is a discontinuous morpheme with the final segment appearing phrase finally). The word type pronouns always occur in the verbal phrase where there is always a distinct ordering of words and morphemes. Independent pronouns (or full nominal expressions) and bound pronouns can co-occur in sentences, although independent and the word type verbal pronouns are rarely found in the same utterance. In most sentence types of Nyangumarta, the verbal pronouns are obligatory and the independent pronouns are optional. However, in advisory constructions (see examples (11)–(14)) the opposite situation occurs: only the independent pronouns occur (although they are still not obligatory).

2.2.1 INDEPENDENT PRONOUNS

Independent pronouns inflect on an ergative/absolutive case-marking system: pronouns in transitive subject function are marked for ergative case whereas pronouns in intransitive subject and transitive object function are unmarked for case. Independent pronouns in indirect object function are marked for dative and at times locative case.

The independent pronouns follow the same pattern of case marking as does the class of nominals. Tables 2 and 3 show the case inflections on independent pronouns and nominals in Nyangumarta. The following examples illustrate the co-occurrence of the independent

⁷ The *-rrV* only occurs in the northern dialect of Nyangumarta and only when no other person markers follow it. The morphemes in bold text represent the verbal 'free' pronouns. The independent pronouns are presented in absolute case which is null.

pronouns and the affix type pronouns in Nyangumarta. Absolutive case marking is unmarked.

- (1) *Ngaju-lu kampa-rna-ma mayi.*
1SG-ERG cook-NFUT-1SG.NOM food
I cooked the food.
- (2) *Ngali-lu ma-na-li partany.*
1DU.INC-ERG get-PAST-1DU.INC.NOM child
We two got the child.
- (3) *Nganarna-lu kanyji-rni-yirna-lu.*
1PL.EXC-ERG look.for-NFUT-1PL.EXC.NOM-3SG.DAT
We all looked for it.
- (4) *Wirla-lama-rna-nta nyuntu ngaju-lu.*
hit-FUT-1SG.NOM-2SG.ACC 2SG 1SG-ERG
I will hit you.
- (5) *Paliny-ju yirri-rni janinyi jana.*
3SG-ERG see-NFUT 3PL.ACC 3PL
He/she saw them.
- (6) *Partany ya-na nyuntu-karti.*
child go-PAST 2SG-ALL
The child went to you.
- (7) *Partany ya-na-lu paliny-ku.*
child go-PAST-3SG.DAT 3SG-DAT
The child went for her/him.
- (8) *Partany kaja-rna ngaju-ngu.*
child sit-PAST 1SG-LOC
The child sat with me.
- (9) *Pirirri-lu ma-na-lu kuyi paliny-ja.*
man-ERG get-PAST-3SG.DAT meat 3SG-ABL
The man got meat off him.
- (10) *Partany ngaju-mili ya-na.*
child 1SG-GEN go-PAST
My child went.

Nyangumarta has distinct forms for third person pronouns, that is, Nyangumarta has both third person pronouns as well as having corresponding third person demonstrative forms.⁸ For example, *paliny* ‘3SG’ versus *nyungu* ‘this’, *pulany* ‘3DU’ versus *nyungu-jirri* ‘these-DU’, and *jana* ‘3PL’ versus *nyungu-rrangu* ‘these-PL’.

⁸ Many Australian languages do not have ‘third person pronouns’ that are similar to first and second person pronouns. Instead there is a system of demonstrative pronouns which often involve obligatory specification of whether the person referred to is near to or distant from the speaker, sometimes whether he is visible or not and so on. Dixon (1980:277) claims that these “items combine a deictic semantic role” (i.e. referring to ‘this’ or ‘that’ in the environment of the utterance). They have some properties of third person pronouns in that they can make up a noun phrase by themselves (as an alternative to a head noun) or else they can occur with a noun in a noun phrase.

TABLE 2: CASE MARKING ON SINGULAR INDEPENDENT PRONOUNS

	First Person	Second Person	Third Person
Ergative	<i>ngajulu</i>	<i>nyuntulu</i>	<i>palinyju</i>
Absolutive	<i>ngaju</i>	<i>nyuntu</i>	<i>paliny</i>
Dative	<i>ngajuku</i>	<i>nyuntuku</i>	<i>palinyku</i>
Locative	<i>ngajungu</i>	<i>nyuntungu</i>	<i>palinyja</i>
Allative	<i>ngajukarti</i>	<i>nyuntukarti</i>	<i>palinykart</i>
Ablative	<i>ngajuja</i>	<i>nyuntuja</i>	<i>palinyja</i>
Genitive	<i>ngajumili</i>	<i>nyuntumili</i>	<i>palinymili</i>

TABLE 3: CASE MARKING ON NOMINALS⁹

	<i>ngurra</i> 'camp'	<i>karru</i> 'creek'	<i>mirtawa</i> 'woman'
Ergative	<i>ngurralu</i>	<i>karrulu</i>	<i>mirtawaju</i>
Absolutive	<i>ngurra</i>	<i>karru</i>	<i>mirtawa</i>
Dative	<i>ngurraku</i>	<i>karruku</i>	<i>mirtawaku</i>
Locative	<i>ngurrangu</i>	<i>karrungu</i>	<i>mirtawaja</i>
Allative	<i>ngurrakarti</i>	<i>karrukarti</i>	<i>mirtawakarti</i>
Ablative	<i>ngurraja</i>	<i>karruja</i>	<i>mirtawaja</i>
Genitive	<i>ngurramili</i>	<i>karrumili</i>	<i>mirtawamili</i>

The independent pronouns (as well as other nominal expressions) occur in advisory main clauses and in non-finite subordinate purposive clauses. In these clause types, neither bound pronouns nor word type pronouns occur. In these types of constructions the verb is inflected with the advisory mood morpheme ((11)-(14)) or else the verb is nominalised and inflected for dative case producing purposive dependent clauses ((15)-(17)).

- (11) *Malya-naku mungka ngaju-lu.*
chop-ADV tree 1SG-ERG
I will chop the tree.
- (12) *Kanyji-naku paliny-ju narnngula-ku.*
look.for-ADV 3SG-ERG bush.honey-DAT
He's looking around for bush honey.
- (13) *Lakarn-pi-naku parirr-ju ma-ninyaku pala narnngula nyuntu-lu.*
peel-VBS-ADV hand-ERG get-ADV that bush.honey 2SG-ERG
You should peel it back with your hand to get the bush honey.
- (14) *Munu yirru-ku karli-nyaku ngapa-majirri.*
NEG still-ERG dig-ADV water-PRIV
Don't keep digging when there is no water./You shouldn't keep digging if there's no water.
- (15) *Kurnta-na-ku jakurli-rna paliny-ju.*
sing-NM-DAT persuade-NFUT 3SG-ERG
He persuaded or caused him to sing.

⁹ The occurrence of some of these forms is rare owing to the awkwardness of meaning caused by the case inflection (e.g. *ngurra-mili* 'the camp's...', or *karru-mili* 'the creek's...' etc.).

- (16) *Wirlarra-lu mima-nikinyi-pulinya kujarrany-ku nyimurlja-jarri-nya-ku*
 moon-ERG wait-IMPF-3DU.ACC both-DAT dive-INCH-NM-DAT
paliny-mila-ku-jirri partany-ku-jirri.
 3SG-GEN-DAT-DU child-DAT-DU
 The moon waited till both of his children had dived (under the water).
- (17) *Pirirri-lu-jirri wika ma-na-pulu mayi-ku-pa kuyi-ku*
 man-ERG-DU wood get-PAST-3DU.NOM food-DAT-and meat-DAT
kampa-na-ku pulany-ju.
 cook-NM-DAT 3DU-ERG
 Two men got firewood to cook meat and vegetables.

2.2.2 AFFIX TYPE PRONOUNS

Bound pronouns in Nyangumarta occur attached to the verbal element and are a significant part of the verbal morphology (see Table 4). Generally bound pronouns are monosyllabic and do not bear stress. The two exceptions to this are first person dual exclusive (*-layi/-liyi*) and first person plural exclusive (*-yirni*) which surface as bisyllabic morphemes (although they do not take major stress). These cases will be discussed below.

TABLE 4: AFFIX TYPE PRONOUNS

Person	Nominative	Accusative	Dative/Locative
1SG	-mV ¹⁰	-nyV	-jV
2SG	-n/npV	-ntV	-ngu
3SG	-Ø/-rrV	-Ø	-JV/lu
1DU.INC	-li		
1DU.EXC	-layV/-liyV		
1PL.INC	-nyV		
1PL.EXC	-yimV		
3PL	-yV		
3DU			
2DU			
2PL			

2.2.3 WORD TYPE PRONOUNS

The verbal phrase word type pronouns complete the set of verbal pronouns as is seen comparing Tables 4 and 5. The word type pronouns are all bisyllabic or polysyllabic with major stress occurring on the first syllable. The word type pronouns can be analysed as being inflected for nominative, accusative and dative/locative case due to the fact that each pronoun in the accusative and dative/locative set consists of a word stem and a suffix. The stem undergoes phonological rules which affect the surface form of the final vowel. The accusative pronouns can be analysed as having an accusative suffix *-nyi* and the dative/locative pronouns can be analysed as having an overt dative suffix *-ku* which is also consistent with dative case marker found on nominals. The set of dative/locative pronouns are used to indicate indirect object when the semantics of the predicate requires either a

¹⁰ V notation refers to featureless vowel slots; that is, the vowels are unspecified for features in underlying representation and receive feature specifications by phonological rule or default rules.

purpose, locative or benefactor. The dative/locative set can also occur with word-final /a/ as distinct from /u/. This is generally when the sense is purposive (although this does tend to differ from speaker to speaker in the current speech of Nyangumarta people).

TABLE 5: WORD TYPE PRONOUNS

Person	Nominative	Accusative	Dative/Locative
1SG	—	—	—
2SG	—	—	—
3SG	—	—	—
1DU.INC	—	<i>ngalinyi</i>	<i>ngaliku</i>
1DU.EXC	—	<i>ngalayinyi</i>	<i>ngalayaku</i>
1PL.INC	—	<i>nganyjurrinyi</i>	<i>nganyjurraku</i>
1PL.EXC	—	<i>nganinyi</i>	<i>nganaku</i>
3PL	—	<i>janinyi</i>	<i>janaku</i>
3DU	<i>pulu</i>	<i>pulinyi</i>	<i>pulaku</i>
2DU	<i>nyumpulu</i>	<i>nyumpulinyi</i>	<i>nyumpulaku</i>
2PL	<i>nyurru</i>	<i>nyurrinyi</i>	<i>nyurraku</i>

In Nyangumarta sentences, the affix type pronouns and the word type pronouns can co-occur in the verbal phrase. The word type pronouns always occur as the final elements of the verb phrase (except for the anticipatory suffix as mentioned above). The ordering of the verbal pronouns: subject forms precede object except for first singular pronouns which precede all others, and second singular object and dative forms precede third dual. This ordering constraint puts the 'free' verbal pronouns as the final members of the verb phrase, that is, the affix type pronouns precede the free word type pronouns (except for the third singular dative/locative pronoun *-IV/-lu* which will be discussed below). The free word type verbal pronouns show some interesting (although expected) animacy hierarchical phenomena. When the direct object or indirect object is animate the dative/locative pronoun is overtly marked in the verb phrase; when it is inanimate it is not. Example (18) gives the pronoun form *-li* '3SGDAT/LOC' to indicate the climbing onto the cow whereas in (19) the climbing up the tree is not marked as an argument of the verb. Example (20) gives the indirect object 'the two children' being marked in the verb phrase: *pulaku* '3DU.DAT'.

- (18) *Purlika-nга karnti-nyi-li.*
bullock-LOC climb-NFUT-3SG.LOC
He climbed onto a cow.
- (19) *Mungka-nга karnti-nyi.*
tree-LOC climb-NFUT
He climbed up the tree.
- (20) *Pala-nга partany-ja-jirri paliny-mili-ngi-jirri parrupantu parmpi-mi
that-LOC child-LOC-DU 3SG-GEN-LOC-DU net throw-NFUT
pulaku kujarrany-ja.*
3DU.DAT both-LOC
And there he threw the net over both of his children.

3. NYANGUMARTA PHONOLOGY

In Nyangumarta there are thirteen underlying consonants and three underlying vowels. Nyangumarta has five paired stops and nasals, two rhotics and three coronal laterals. There are no fricatives and there is no voicing contrast.

	bilabial	alveolar	post-alveolar	alveo-palatal	velar
stop	<i>p</i>	<i>t</i>	<i>rt</i>	<i>j</i>	<i>k</i>
nasal	<i>m</i>	<i>n</i>	<i>rn</i>	<i>ny</i>	<i>ng</i>
lateral		<i>l</i>	<i>rl</i>	<i>ly</i>	
trill/tap		<i>rr</i>			
approximant	<i>w</i>		<i>r</i>	<i>y</i>	<i>w</i>

FIGURE 2: NYANGUMARTA CONSONANT PHONEMES

The three Nyangumarta vowels are given in Figure 3.

	front	back
high	<i>i</i>	<i>u</i>
low		<i>a</i>

FIGURE 3: NYANGUMARTA VOWEL PHONEMES

3.1 DISTINCTIVE FEATURES

The following features (Table 6 for consonants and Table 7 for vowels) are assumed distinctive underlyingly for Nyangumarta.

TABLE 6: NYANGUMARTA CONSONANT UNDERLYING FEATURES¹¹

	<i>p</i>	<i>t</i>	<i>rt</i>	<i>j</i>	<i>k</i>	<i>l</i>	<i>rl</i>	<i>ly</i>	<i>m</i>	<i>n</i>	<i>rn</i>	<i>ny</i>	<i>ng</i>	<i>r</i>	<i>rr</i>	<i>w</i>	<i>y</i>
consonant	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-
sonorant	(-)	(-)	(-)	(-)	(-)	+	+	+	+	+	+	+	+	+	+	+	+
nasal	(-)	(-)	(-)	(-)	(-)	(-)	-	-	+	+	+	+	+	(-)	(-)	(-)	(-)
coronal	x ¹²	x	x		x	x	x	x	x	x	x	x	x	x	x	x	
lateral	-	-	-		+	+	+		-	-	-	-	-	-	-	-	
anterior	+	-	-		+	-	-		+	-	-	-	-	+	-	-	
distributed	-	-	+		-	-	+		-	-	+	-	-	-	-	+	
labial	x						x						x				
high		+					+				+		+		+	+	
back													+				

¹¹ Parenthesis notation is used to denote features which are not distinctive underlyingly in Nyangumarta. These features are filled in by default rules and/or redundancy rules later in the phonology.

¹² X notation is used for privative features such as coronal and labial.

TABLE 7: NYANGUMARTA VOWEL DISTINCTIVE FEATURES

	<i>i</i>	<i>u</i>	<i>a</i>
high	+	+	(-)
low	(-)	(-)	(+)
back	(-)	+	+
round	(-)	(+)	(-)

3.2 STRESS AND THE MINIMAL WORD CONSTRAINT

3.2.1 STRESS

In Nyangumarta the following generalisations can be made about stress placement:¹³

- (21) a. Primary stress occurs on the initial syllable of a word.
- b. Secondary stress occurs on alternating syllables after primary stress.
- c. Secondary stress occurs on the initial syllable of bisyllabic and polysyllabic suffixes.
- d. The final syllable of a word does not bear stress.

The patterns of Nyangumarta stress can be seen in (22). Notice in (22e) and (22f) a contrasting pattern emerges between an affix type pronoun *-yirni* '1PL.EXC.NOM' and a free type pronoun *pulu* '3DU.NOM'. The affix type pronoun does not bear primary stress whereas the free type pronoun interrupts the stress pattern and starts a new pattern of stress. If we take the domain of stress to be the phonological word, then we can state that the word type pronouns constitute phonological words whereas the affix type pronouns do not.

- (22) a. *wírla-rna*. He/she hit it.
- b. *wírla-rnà-rna*. I hit it.
- c. *wírla-rníkinyi*. He/she was hitting it.
- d. *wírla-rníkinyì-rni*. I was hitting it.
- e. *wírla-rníkinyì-yirni*. We were hitting it.
- f. *wírla-rníkinyi púlu*. Those two were hitting it.
- g. *wírla-rníkinyi púlinyi*. He/she was hitting those two.

To this point, we have seen that on two counts the word type pronouns exhibit word characteristics and on one count an affix characteristic. To summarise then we know that word type pronouns are not pause words (they are part of the verbal phrase stress group which does not allow pauses), they bear primary stress on the first syllable, they are inflected for case and they occur in a set position with respect to other morphemes in the verbal phrase. These findings are given in Figure 4.

¹³ See Sharp (forthcoming) for a complete description of stress patterns for Nyangumarta. Also see Nash (1980) for similar findings for Warlpiri and Goddard (1985) for similar stress patterns in Yankuntjatjara.

	'Word'	Word Pronouns	Affix Pronouns	'Affix'
Pause word	x			
Case/tense, mood, aspect	x	x		
Stress word	x	x		
Minimal word	x			
Position bound		x	x	x
Phonological rule domain				x
Buffer vowel domain				x

FIGURE 4: WORD/AFFIX DISTINCTIONS IN NYANGUMARTA (STRESS)

3.2.2 MINIMAL WORD

In Nyangumarta there exists a rule of vowel reduction which operates over the domain greater than the minimal word.¹⁴ The rule is prevented from occurring where the result of the rule would create a violation of the minimal word constraint. A minimal word in Nyangumarta is bimoraic with stress on the first mora. If the vowel which is deleted or elided is stressed, then stress shifts to the following vowel with vowel lengthening occurring. The minimal word constraint is represented in (23a), and (23b) shows an instance whereby the constraint is violated.

(23) Minimal Word Constraint

- a) [μ μ] word b) *[μ] word

To ascertain the usefulness of this criteria for the analysis of the verbal pronouns, it will be shown how this constraint operates within the phonology of Nyangumarta. This can be done by examining the rule of vowel reduction. The rule is given below and examples (24a)–(24h) show where the rule has applied; (25) shows where the rule does not apply because of the minimal word constraint and (26) shows a contrast between reduplicated forms. In (26a) and (26c) the rule does not apply even though the reduplicated form would fit the structural description of the rule; the reduplicated root does not. In (26b) and (26d) the rule applies to each root. Example (26) again shows the mismatch between morphological word and phonological word. All of the complex forms are morphological words in that their meaning is dependent on the complex form although it appears that each morphological word consists of two distinct phonological words, each with its own stress domain.

Vowel Reduction/Deletion

u/i -----> Ø/V / [-sonorant] _____ r or w

- (24) a. *kuwarri* *kwártti* e. *pampuru*¹⁵ *pámpru*
now blind

¹⁴ This rule was pointed out to me by Brian Geytenbeek.

¹⁵ *Pampuru* 'blind' has two alternants: *pampuru* and *pampuyu*, neither of which undergo the rule of vowel reduction. Geytenbeek (1991) notes that the full phonemes /r/, /rr/ and /y/ are often variants in cognates between languages in the Pilbara region. The Ngarla word for Coolibah tree *pirarr* (p'rarr) undergoes the vowel reduction rule but the Nyangumarta word for the same tree *piyarr* occurs with stress on the first syllable and does not undergo the rule because of the /piy/ sequence.

- | | | | |
|-------------------|---------------|------------------|--------------|
| b. <i>pirirri</i> | <i>prírri</i> | f. <i>kurarr</i> | <i>krárr</i> |
| man | | Native Mesquite | |
| c. <i>purungu</i> | <i>prúngu</i> | g. <i>kuwaly</i> | <i>kwály</i> |
| skin section | | white person | |
| d. <i>yunturi</i> | <i>yúntri</i> | h. <i>pural</i> | <i>prál</i> |
| sulky | | rolled up bundle | |
- (25) a. *tira* **trá*
firm, hard
- b. *puru* **prú*
aimless
- (26) a. *kura-kura* *kúra-kúra*
placename
- b. *kuran-kuran* *krán-krán*
species of spinifex
- c. *piru-piru* *píru-píru*
uninhibited
- d. *pirirr-pirirr* *prírr-prírr*
saw-shark

Evidence such as the operation of the vowel elision/reduction rule suggests that a minimal word in Nyangumarta can be described in several ways including allowing stem-final consonants to take syllable weight, like vowels. Thus the following configurations can occur:

- (27) Nyangumarta Minimal Words (μ = mora)
- | | | |
|-------------------------|-------------|------------------------|
| a) C V C _o V | b) C V V | c) C V C ¹⁶ |
| | | |
| μ μ | μ μ | μ μ |

The application of the vowel reduction rule can now be explained. The nominal *tira* ‘firm, hard’ fits the description of the rule. The lexeme *tira* consists of two morae: the two vowels /i/ and /a/. However, the rule of vowel reduction cannot apply because the resulting form would consist of only one mora—a violation of the minimal word constraint. The lexeme *kurarr* ‘Native Mesquite’ on the other hand has three morae: two vowels and the final consonant. The vowel reduction rule can apply as the resulting form would not violate the minimal word constraint because the resulting form would still consist of two morae. If we use the minimal word constraint as one of the means for distinguishing affixes from words it can be seen that all of the word type pronouns satisfy the minimal word constraint whereas the majority of the affix type pronouns do not (the two in question, *-layi* and *-yirni*, will be discussed in §3). Figure 5 gives a summary.

¹⁶ As predicted by this representation there are words of this form in Nyangumarta: *lurn* ‘kingfisher’, *muny* ‘rump bone’, *ngurr* ‘growl’, *tily* ‘a cracking noise’, *jiir* ‘spread out’. The only possible consonants occurring in this position are sonorants.

	'Word'	Word Pronouns	Affix Pronouns	'Affix'
Pause word	x			
Case/tense, mood, aspect	x	x		
Stress word	x	x		
Minimal word	x	x		
Position bound		x	x	x
Phonological rule domain				x
Buffer vowel domain				x

FIGURE 5: WORD/AFFIX DISTINCTIONS IN NYANGUMARTA (MINIMAL WORD)

3.3 PHONOLOGICAL RULES

Many of the phonological rules in Nyangumarta apply to words and morphemes within the verbal phrase, that is, the verb stem plus inflections for tense, mood, aspect and verbal phrase pronouns. The vowel harmony rules, for example, apply almost exclusively to the morphemes within the verbal phrase (with some harmony occurring in restricted nominal morphemes). The following discussion briefly outlines some of the phonological processes relevant to the verbal phrase. The significant aspect of investigating the application of the following phonological phenomena is that processes which apply to the phonological word as the domain of application only affect the affix type verbal pronouns whereas those applying across word boundaries affect the free word type verbal pronouns.

3.3.1 VOWEL ELISION

A rule of vowel elision operates whereby the first vowel of a sequence of two adjacent vowels is deleted. This is seen clearly in the NY conjugation forms of the imperative and the potential mood. Example (28) gives forms of the imperative and potential mood where vowel elision has occurred; it also gives forms of the non-future where the final vowel of the verb stem remains unchanged.

Vowel Elision Rule¹⁷

V-----> Ø / _____ V

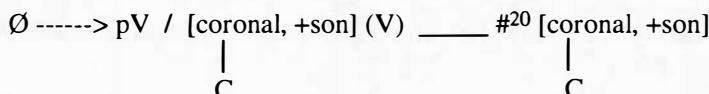
- (28) a. *ngalp-a* *ngalp-u* *ngalpa-nyi*
 enter-IMP enter-POT enter-NFUT
- b. *karnt-a* *karnt-u* *karnti-nyi*
 climb-IMP climb-POT climb-NFUT
- c. *karl-a* *karl-u* *karli-nyi*
 dig-IMP dig-POT dig-NFUT

¹⁷ See Hoard and O'Grady (1976) and Sharp (1985) for a similar rule in the northern, coastal dialect of Nyangumarta.

3.3.2 EPENTHESIS

Many forms of the verbal morphemes are determined by a general rule of epenthesis which inserts *-pV* whenever two coronal consonants are juxtaposed across morpheme boundaries. For example, the second singular nominative morpheme *-n* appears as *-npV* after suffixation of morphemes beginning with a coronal consonant.¹⁸ The remote past morpheme *-l* also occurs as *-lpV*¹⁹ after suffixation of morphemes beginning with a coronal consonant. See (29), (30) and (31) for examples of these forms:

Epenthetic *pV* Rule



- (29) Second Person Singular Nominative *-n*

	Underlying Forms	Surface Forms
a.	<i>ngalp-a-n-IV</i> enter-IMP-2SG.NOM-ANT	<i>ngalp-a-npi-li</i>
b.	<i>ngalpa-nyV-n</i> enter-NFUT-2SG.NOM	<i>ngalpa-nyi-n</i>

- (30) Remote Aspect *-l*

	Underlying Forms	Surface Forms
a.	<i>wirla-mVI-li</i> hit-REM-1DU.INC.NOM	<i>wirla-malpa-li</i>
b.	<i>wirla-mVI</i> hit-REM	<i>wirla-mal</i>
c.	<i>wirla-mVI-mV</i> hit-REM-1SG.NOM	<i>wirla-malpa-ma</i>
d.	<i>wirla-mVI nyurV</i> hit-REM 2PL.NOM	<i>wirla-mal nyurru</i>

- (31) Future Tense *-lkulVny/-IV*

	Underlying Forms	Surface Forms
a.	<i>wirla-lkulVny</i> hit-FUT	<i>wirla-lkuliny</i>
b.	<i>wirla-IV-yV</i> hit-FUT-3PL.NOM	<i>wirla-lapi-yi</i>
c.	<i>wirla-IV-yVmV</i> hit-FUT-1PL.EXC.NOM	<i>wirla-lapi-yirmi</i>

¹⁸ This rule appears to refer to vowels as well as sonorant consonants in some dialects of Nyangumarta where the purposive suffix *-a* exists. For example, *ngalpa-nyi-np-a* 'you went in (for a reason)' compared with *ngalpa-nyi-n* 'you entered'. The additional vowel is deleted by the rule of vowel elision.

¹⁹ The remote past inflection has several allomorphs depending on the verbal conjugation. In the NY class it occurs as *-nyil*, in the RN class it occurs as *-rnVI*, and in the N class it occurs as *-nVI*.

²⁰ # notation refers to morpheme boundary.

3.3.3 NASAL ASSIMILATION

A rule of nasal assimilation (informally written below) explains the surface form contrast of the future tense morpheme when it occurs with bound pronouns. Nasal assimilation occurs only in the context of the future tense morpheme and follows *-pV* epenthesis.

Nasal Assimilation²¹

p -----> m / ____ V [nasal]

	Underlying Forms	Surface Forms
a.	<i>ya-nku-IV-li</i> go-POT-FUT-1DU.INC.NOM	<i>ya-nku-lupa-li</i>
b.	<i>ya-nku-IV-nyV</i> go-POT-FUT-1PL.INC.NOM	<i>ya-nku-lumi-nyi</i>
c.	<i>wirla-IV-yV</i> hit-FUT-3PL.NOM	<i>wirla-lapi-yi</i>
d.	<i>wirla-IV-nyV</i> hit-FUT-1PL.INC.NOM	<i>wirla-lami-nyi</i>

3.3.4 PALATAL CLUSTER REDUCTION²²

A rule of palatal cluster reduction occurs as an external sandhi rule. The rule does not apply within phonological words, only within the verbal phonological phrase. Whenever two consonants with the feature [+distributed] occur across word boundaries, the first is deleted. This rule is generally optional but is obligatory in the future tense morpheme for both dialects and the remote past in the northern dialect.

Palatal Cluster Reduction (Optional)²³

[+distributed] -----> Ø / ____ V_o # [+distributed]

See (33) for examples of the rule occurring in the verbal phrase whereby the 2PL.NOM pronoun *nyurru* appears word finally and the rule occurs deleting the palatal consonant which precedes it. See (34) for examples whereby the rule has not occurred in the nominal morphology (see discussion below).

	Underlying Forms		Surface Forms
a.	<i>yaja-m V-nyV</i> follow-NFUT-1SG.ACC	<i>nyurrV</i> 2PL.NOM	<i>Yaja-mi-nyurru.</i> You followed me. (cf. <i>Yaja-rni-nyi nyurru.</i>)
b.	<i>ka-ngku!V-nyV</i> take-FUT-2SG.NOM	<i>nyurrV</i> 2PL.NOM	<i>Ka-ngu-lumi-nyurru?</i> Will you take me? (cf. <i>Ka-ngku-lumi-nyi nyurru?</i>)

²¹ See Hoard and O'Grady (1976) and Sharp (1985) for a similar rule for Nyangumarta.

²² See Hoard and O'Grady (1976) for a description of the truncation rule: *nji -----> Ø / ____ # nj*. The # notation in their analysis indicates an external morpheme boundary. The truncation rule explains surface forms or *ngalpi#njumpulu* and *ngalpi#njurru* as distinct from *ngalpi+nji#njumpulu* and *ngalpi+nji#njurru*.

²³ This rule (which is a post-lexical rule) feeds the vowel elision rule which appears as a lexical and a post-lexical rule. The vowel harmony (VH) rule also applies as a lexical rule and a post-lexical rule.

- | | | | |
|----|--|--------------------------|---|
| c. | <i>ka-ŋkulV-jV</i>
take-FUT-1SG.DAT | <i>nyurrV</i>
2PL.NOM | <i>Ka-ŋgu-lupi-nyurru?</i>
Will you take it for me?
(cf. <i>Ka-ŋku-lumi-ji nyurru?</i>) |
| d. | <i>wirla-mVkVnyV</i>
hit-IMPF | <i>nyurrV</i>
2PL.NOM | <i>Wirla-rna-ki-nyurru.</i>
You all were hitting it.
(cf. <i>Wirla-ma-kinyi nyurru.</i>) |
| e. | <i>wirla-IkulVny</i>
hit-FUT | <i>nyurrV</i>
2PL.NOM | <i>Wirla-Iku-lu-nyurru.</i>
You all will hit it.
(cf. * <i>Wirla-Iku-luny nyurru.</i>) |
- (34) a. *partany-ju* child-ERG
 b. *Wanywany-ju* name-ERG
 c. *milpiny-ja* fingernail-LOC
 d. *kurntany-ja* shame-LOC
 e. *pikaly-ja* happy-ABL

Examples where the palatal cluster reduction rule fails to apply within phonological words (across morpheme boundaries) include instances where the ergative, locative and ablative allomorphs *-ju*, *-ja/-ji* and *-ja* are suffixed to nominals: *partany-ju* ‘child-ERG’, *Wanywany-ju* ‘name-ERG’, *milpiny-ja* ‘fingernail-LOC’, *kurntany-ja* ‘shame-LOC’ and *pikaly-ja* ‘happy-ABL’ as seen in (34) above.

3.4 VOWEL ALTERNATIONS

There are two types of vowel alternations in Nyangumarta. An unbounded rule of progressive assimilation and a local rule of regressive assimilation. Rightward vowel alternations are triggered by the final vowel of a verb or nominal stem, vowels within specific bound morphemes and by consonants. Leftward assimilation is consonant induced generally although in one special case there is leftward assimilation triggered by a vowel. Vowel positions are generally the targets of both rules.

3.4.1 PROGRESSIVE ALTERNATIONS

The vowels of some Nyangumarta morphemes surface with the same vowel as the final vowel of the stem. The effects of these vowel alternations can be seen below.

- (35) Nominal Morphology: Locative
- a. *pirti-ngi*
hole-LOC
 - b. *paru-ngu*
spinifex-LOC
 - c. *ngurra-nга*
camp-LOC

Example (35) shows that the locative suffix *-ngV* occurs as *-ngi*, *-ngu* or *-nга*. The vowel qualities of the suffix are determined by the final vowel of the stem to which it is added. This is also seen in (36) below where the non-future tense morpheme *-mV* can occur as *-mni*, *-mnu* or *-ma* depending on the final vowel of the verb stem.

(36) Verbal Morphology: Non-Future

- a. *yirri-mi*
see-NFUT
- b. *warli-mi*
touch, detain-NFUT
- c. *kalku-mu*
keep-NFUT
- d. *wirla-ma*
hit-NFUT

Example (37) gives the vowel alternations occurring when bound pronouns with featureless vowel slots are affixed to the verb; (38) illustrates vowel alternations occurring in the imperative morpheme; and (39) those occurring in the remote past.

(37) Verbal Morphology: Bound Pronouns

Underlying Forms	Surface Forms
a. <i>yirri-mV-mV</i> see-NFUT-1SG.NOM	<i>yirri-mi-mi</i>
b. <i>warli-mV-mV</i> touch, detain-NFUT-1SG.NOM	<i>warli-mi-mi</i>
c. <i>kalku-mV-mV</i> keep-NFUT-1SG.NOM	<i>kalku-mu-mu</i>
d. <i>wirla-mV-mV</i> hit-NFUT-1SG.NOM	<i>wirla-ma-ma</i>
e. <i>kalku-mV-ntV</i> keep-NFUT-2SG.ACC	<i>kalku-mu-ntu</i>
f. <i>yirri-mV-ntV</i> see-NFUT-2SG.ACC	<i>yirri-mi-nti</i>
g. <i>wirla-mV-ntV</i> hit-NFUT-2SG.ACC	<i>wirla-ma-nta</i>
h. <i>kalku-lku-mV</i> keep-POT-1SG.NOM	<i>kalku-lku-mu</i>
i. <i>yirri-mV-mV-ntV</i> see-NFUT-1SG.NOM-2SG.ACC	<i>yirri-mi-mi-nti</i>

(38) Verbal Morphology: Imperative²⁴

Underlying Forms	Surface Forms
a. <i>yirri-IV</i> see-IMP	<i>yirri-li</i>
b. <i>kalku-IV</i> keep-IMP	<i>kalku-lu</i>

²⁴ The pronouns occurring with the imperative morpheme will be discussed in §5.

- c. *wirla-IV* *wirla-la*
hit-IMP

- (39) Verbal Morphology: Remote Past²⁵
- | Underlying Forms | Surface Forms |
|--------------------------|------------------------|
| a. <i>paji-rnVl-rnV</i> | <i>paji-rnilpi-rni</i> |
| bite-REM-1SG.NOM | |
| b. <i>paji-rnVl-yV</i> | <i>paji-rnilpi-yi</i> |
| bite-REM-3PL.NOM | |
| c. <i>paji-rnV-l-nyV</i> | <i>paji-rnilpi-nyi</i> |
| bite-REM-1PL.INC.NOM | |

Although vowel alternations are generally triggered by the final vowel of a stem and they generally target affixes with featureless vowel slots (such as the non-future morpheme *-rnV*, the remote past allomorph *-lpV* and the first person singular nominative morpheme *-rnV*), there are instances of vowel alternations occurring within stems and within suffixes. There are also instances of morphemes with unalternating vowels which in turn trigger vowel alternations. Example (40) gives instances of vowel alternations occurring within stems, (41) gives forms where the final vowel of the genitive suffix alternates between /i/ and /a/, and (42) gives forms whereby the desiderative mood morpheme triggers vowel alternations.

- (40) Alternations in Stems
- | Underlying Forms | Surface Forms |
|----------------------|---|
| a. <i>ngunilV</i> | <i>ngunili</i>
that same one (cf. <i>ngunila-lu</i>) ²⁶ |
| b. <i>kujungurrV</i> | <i>kujungurru</i>
sea (cf. <i>kujungurra-lu</i>) |
| c. <i>walypilV</i> | <i>walypili</i>
whitefellow (cf. <i>walypila-lu</i>) |
- (41) Nominal Morphology
- | Underlying Forms | Surface Forms |
|----------------------|---|
| a. <i>ngaju-milV</i> | <i>ngaju-mili</i>
1SG-GEN (cf. <i>ngaju-mila-ku</i>) ²⁷ |
- (42) Alternations triggered by potential mood morpheme
- | Underlying Forms | Surface Forms |
|-------------------------|--|
| a. <i>yirri-lku-rnV</i> | <i>yirri-lku-rnu</i>
see-POT-1SG.NOM |
| b. <i>kalku-lku-rnV</i> | <i>kalku-lku-rnu</i>
keep-POT-1SG.NOM |

²⁵ When the verb stem is *u* progressive harmony does not occur in the remote past for the southern dialect. Instead the following forms occur: *kalku-rnalpa-rna* 'hold-REM-1SG.NOM', *kalku-rnalpi-nyi* 'hold-REM-1PL.INC.NOM', and *kalku-rnalpi-yi* 'hold-REM-3PL.NOM'.

²⁶ *-lu* is the ergative case marker with a non-alternating /u/ vowel.

²⁷ *-ku* is the dative case marker with a non-alternating /u/ vowel.

- c. *wirla-lku-rnV* *wirla-lku-rnu*
hit-POT-1SG.NOM

Examples (43), (44) and (45) show instances where vowel alternations do not occur for the desiderative and the volitional mood morphemes in the southern Nyangumarta dialect. Alternations do occur in these forms in the northern dialect.

- | | | |
|------|---|---|
| (43) | Desiderative (southern) | Desiderative (northern) |
| a. | <i>yirri-rnama</i>
see-DES | <i>yirri-rnimi</i>
see-DES |
| b. | <i>kalku-rnama</i>
keep-DES | <i>kalku-rmumu</i>
keep-DES |
| c. | <i>wirla-rnama</i>
hit-DES | <i>wirla-rnama</i>
hit-DES |
| (44) | Volitional (southern) | Volitional (northern) |
| a. | <i>yirri-rnaka</i>
see-VOL | <i>yirri-rniki</i>
see-VOL |
| b. | <i>kalku-rnaka</i>
keep-VOL | <i>kalku-rnuku</i>
keep-VOL |
| c. | <i>wirla-rnaka</i>
hit-VOL | <i>wirla-rnaka</i>
hit-VOL |
| (45) | Future (southern) | Future (northern) |
| a. | <i>yirri-lama-rna</i>
see-FUT-1SG.NOM | <i>yirri-limi-rni</i>
see-FUT-1SG.NOM |
| b. | <i>kalku-lama-rna</i>
keep-FUT-1SG.NOM | <i>kalku-lumu-rnu</i>
keep-FUT-1SG.NOM |
| c. | <i>wirla-lama-rna</i>
hit-FUT-1SG.NOM | <i>wirla-lama-rna</i>
hit-FUT-1SG.NOM |

3.4.2 CONSONANT INDUCED ALTERNATIONS

Palatal consonants ([+distributed +high]) induce vowel assimilation to the right. Example (46) illustrates the possible surface forms of pronominal affixes. In (46a-e) the surface form of the vowel is attributed to progressive harmony triggered by the palatal consonants /ny/, /y/ and /j/. In instances where the vowel surfaces as /a/, a buffer vowel effect has occurred (see §3.4.4).

- | | | |
|------|-----------------------|---------------------------|
| (46) | Pronominal Affixes | |
| | Underlying Forms | Surface Forms |
| a. | -nyV
- IPL.INC.NOM | -nyi
(cf. -nya; *-nyu) |
| b. | -yV
-3PL.NOM | -yi
(cf. -ya, *-yu) |
| c. | -jV
-1SG.DAT | -ji
(cf. -ja, *-ju) |

- d. *-nyV* *-nyi*
-1SG.ACC (cf. *-nya*, **-nyu*)
- e. *-yirnV* *-yirni*
1PL.EXC.NOM (cf. *-yirna*, **-yirnu*)

The allomorph of the locative suffix *-ngV*: *-jV* also occurs with a vowel alternating between /i/ and /a/.

- (47) Nominal Morphology
 Underlying Forms Surface Forms
- b. *partany-jV* *partany-ji* ~ *partany-ja*²⁸
child-LOC

3.4.3 REGRESSIVE ASSIMILATION

A local rule of regressive assimilation occurs in Nyangumarta where a palatal consonant causes the vowel to its left to surface as /i/.

- (48) Word type pronouns with accusative case marking
 Underlying Forms Surface Forms
- a. *pulVnyi* *pulinyi*
3DU.ACC (cf. *pulu*)
 - b. *nyurtVnyi* *nyurrinyi*
2PL.ACC (cf. *nyurru*)
 - c. *nyumpulVnyi* *nyumpulinyi*
2DU.ACC (cf. *nyumpulu*)
- (49) Underlying Forms Surface Forms
- a. *wirla-rnV-nyV* *wirla-rni-nyi*
hit-NFUT-1PL.INC.NOM
 - b. *kalku-rnV-nyV* *kalku-rni-nyi*
keep-NFUT-1PL.INC.NOM
 - c. *wirla-rnVmV-nyV* *wirla-rnami-nyi*
hit-DES-1PL.INC.NOM
 - d. *wirla-rnVmV-lpV-nyV* *wirla-rna-ma-lpi-nyi*
hit-DES-REM-1PL.INC.NOM
 - e. *wirla-rnV-lyV* *wirla-rni-layi* (northern dialect)
hit-NFUT-1DU.EXC

3.4.4 BUFFER VOWEL EFFECTS

Although many suffixes in Nyangumarta have alternating vowels, there are some bound morphemes which have non-alternating vowels. The 1DU.INC.NOM suffix *-li* and the

²⁸ For some speakers of southern Nyangumarta, the locative suffix does not have an alternating vowel. This is seen in the form following final vowels as *-nga* as well as the *-ja* form following consonants.

2SG.DAT suffix *-ngu* are two such suffixes. The following data show that vowels which normally alternate, do not alternate and surface as /a/ when they immediately precede a non-alternating vowel. This has been termed the 'buffer vowel' effect by Hoard and O'Grady (1976:65) and Archangeli (1986). The following examples illustrate the buffer vowel effect.

- | (50) | Underlying Forms | Surface Forms |
|---------|---|---|
| a. | <i>yirri-mnV-li</i>
see-NFUT-1DU.INC.NOM | <i>yirri-mna-li</i>
(cf. * <i>yirri-mni-li</i>) |
| b. | <i>kalku-mnV-li</i>
keep-NFUT-1DU.INC.NOM | <i>kalku-mna-li</i>
(cf. * <i>kalku-mnu-li</i>) |
| (51) a. | <i>yirri-mnV-li-ntV</i>
see-NFUT-1DU.INC.NOM-2SG.ACC | <i>yirri-mna-li-nti</i>
(cf. * <i>yirri-mni-li-nti</i>) |
| b. | <i>kalku-mnV-li-ntV</i>
keep-NFUT-1DU.INC.NOM-2SG.ACC | <i>kalku-mna-li-nti</i>
(cf. * <i>kalku-mnu-li-nti</i>) |
| c. | <i>wirla-mnV-li-ntV</i>
hit-NFUT-1DU.INC.NOM-2SG.ACC | <i>wirla-mna-li-nti</i> |
| (52) a. | <i>yirri-mnV-ngu</i>
see-NFUT-2SG.DAT | <i>yirri-mna-ngu</i>
(cf. * <i>yirri-mni-ngu</i>) |
| b. | <i>kalku-mnV-ngu</i>
keep-NFUT-2SG.DAT | <i>kalku-mna-ngu</i>
(cf. * <i>kalku-mnu-ngu</i>) |
| c. | <i>wirla-rnv-ngu</i>
hit-NFUT-2SG.DAT | <i>wirla-mna-ngu</i>
(cf. * <i>wirla-mni-ngu</i>) |
| (53) a. | <i>yirri-mnV-lyV</i>
see-NFUT-1DU.EXC.NOM | <i>yirri-mna-layi</i>
(cf. * <i>yirri-mni-layi</i>) |
| b. | <i>kalku-mnV-lyV</i>
keep-NFUT-1DU.EXC.NOM | <i>kalku-mna-layi</i>
(cf. * <i>kalku-mnu-layi</i>) |
| (54) a. | <i>yirri-mnV-lyV-ntV</i>
see-NFUT-1DU.EXC.NOM-2SG.ACC | <i>yirri-mna-layi-nti</i>
(cf. * <i>yirri-mni-layi-nti</i>) |
| b. | <i>kalku-mnV-lyV-ntV</i>
keep-NFUT-1DU.EXC.NOM-2SG.ACC | <i>kalku-mna-layi-nti</i>
(cf. * <i>kalku-mnu-layi-nti</i>) |
| c. | <i>wirla-mnV-lyV</i>
hit-NFUT-1DU.EXC.NOM | <i>wirla-mna-layi</i>
(cf. * <i>wirla-mni-layi</i>) |
| d. | <i>wirla-mnV-layV-ntV</i>
hit-NFUT-1DU.EXC.NOM-2SG.ACC | <i>wirla-mna-layi-nti</i> |
| (55) | Buffer Vowel Effects with Dative Case Marking | |
| | Underlying Forms | Surface Forms |
| a. | <i>pulVku</i>
3DU.DAT | <i>pulaku</i>
(cf. * <i>puluku</i>) |
| b. | <i>nyurrVku</i>
2PL.DAT | <i>nyurraku</i>
(cf. * <i>nyurruku</i>) |
| c. | <i>nyumpVIvku</i>
2DU.DAT | <i>nyumpulaku</i>
(cf. * <i>nyumpuluku</i>) |

3.4.5 PREVIOUS ANALYSES

Nyangumarta vowel harmony has been described previously by Hoard and O’Grady (1976), Rennison (1987), Archangeli (1986), Archangeli and Pulleyblank (1986), van der Hulst and Smith (1985) and Sharp (1986). The analysis by Hoard and O’Grady incorporated a traditional linear analysis whereby progressive and regressive assimilation was described by a complicated linear rule. Rennison’s account offered an alternative account of Nyangumarta morphology. Non-linear accounts have been given by van der Hulst and Smith (1985), Archangeli (1986), Archangeli and Pulleyblank (1986) and Sharp (1986). In these accounts the morphemes undergoing harmony are analysed with completely unspecified vowel slots with the /i/ and /u/ vowels triggering vowel alternations. Van der Hulst and Smith use the features [+high, -back] for /i/, [+high, +back] for /u/ and [-high] for /a/. Archangeli (1986) and Sharp (1986) introduced a more restricted theory of underspecification where the vowel /a/ was left totally unspecified for features in underlying representation. This also meant that all features of /a/ were left unspecified for any vowel: [-high], [+low], [-labial] and [+back]. This left the features [+high] for /i/ and [+high, +round] for /u/. Both van der Hulst and Smith (1985) and Archangeli (1986) assumed that in instances where vowels in verb stems did not trigger harmony, the vowel is extrametrical (the /a/ vowel in *kalkulumurnu* ‘I will keep it’) or else the vowel matrix itself is extrametrical (the /a/ vowel in *wirlalamarna* ‘I will hit/kill it’). Sharp’s (1986) analysis of the southern Nyangumarta dialect incorporates much the same use of vowel representations and rule formulations as Archangeli’s. Because the /a/ vowel was represented as the default vowel, the analysis for the southern Nyangumarta data (which consists of many instances of idiosyncratic lack of harmony in morphemes that in other circumstances undergo harmony) required that non-alternating /a/ vowels were underlyingly V slots connected to a featureless vowel matrix. Archangeli and Pulleyblank’s (1986) account differed from the earlier analysis in the representation of the /u/ vowel as [+round] underlyingly with a redundancy rule filling in the value of [+high] before the application of the spread rule. The feature geometry also differed. In the latter account, spread was triggered by a secondary place node spreading the features [+high] or [+high, +round]. In this account the feature hierarchy is incorporated making it distinct from previous accounts whereby consonants and vowels were represented on separate planes. Archangeli (1986), Archangeli and Pulleyblank (1986) and Sharp (1986) all invoked the Obligatory Contour Principle (OCP) (McCarthy 1986) to explain the appearance of buffer vowels between two harmony domains.

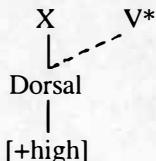
In this account vowel harmony will be shown to occur as a result of the spreading of the dorsal node which will necessitate the use of dorsal node features for vowel specifications: high, low, back (but not round which is dominated by the place node). Thus vowel specifications will include: /i/ has the feature [+high], /u/ the features [+high, +back] and the appearance of non-alternating /a/ in stems and in bound morphemes will necessitate that /a/ be specified in underlying representation for the feature [+back].²⁹ Palatal consonants are also specified as [+high] reflecting the fact that they trigger vowel harmony.

²⁹ The /a/ vowel could have equally been represented as [-high] or [+low] or even fully specified.

3.4.6 THE ANALYSIS: VOWEL HARMONY

In this section the harmony process of Nyangumarta will be examined. Progressive rightward spread is reflected in the following vowel harmony rule for Nyangumarta in which featureless vowel slots rightward of a vowel specified for the feature [+high] receive the feature [+high].

Vowel Harmony (VH)



V^* notation refers to any number of featureless vowel slots (or nuclei) and the X notation refers to either a consonant or a vowel specified for [+high].³⁰ The feature geometry relevant to the Nyangumarta data is given in Figure 6. Only relevant nodes have been included.

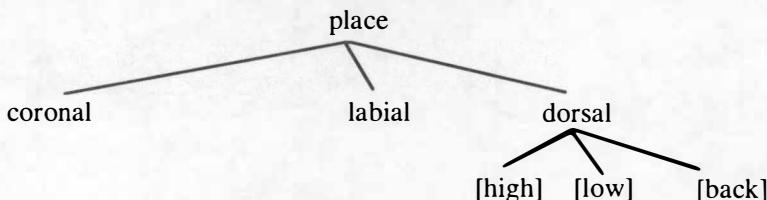


FIGURE 6: FEATURE GEOMETRY

The progressive harmony rule as given above predicts that spreading is triggered by the vowels /i/ and /u/ and the palatal consonants /ny/ /y/ /ly/ and /j/ as these phonemes are specified with the feature [+high] underlyingly (see Table 8). The velar consonants /k/ and /ng/ are not triggers for progressive harmony although both are specified for [+high] with full feature representation.³¹ In this analysis then, it is assumed that both /k/ and /ng/ lack dorsal nodes (hence do not have underlying specifications for [+high]).

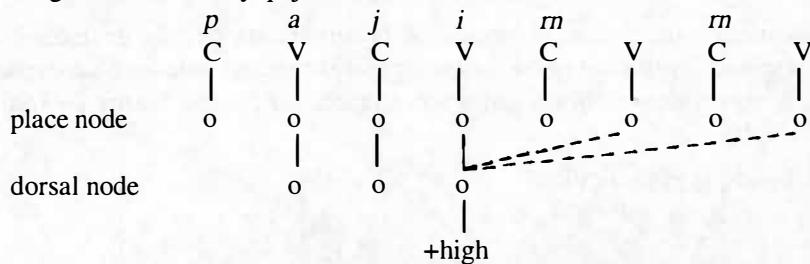
TABLE 8: MINIMAL DISTINGUISHING VOWEL FEATURES

	<i>i</i>	<i>u</i>	<i>a</i>
high	+	+	
back		+	+

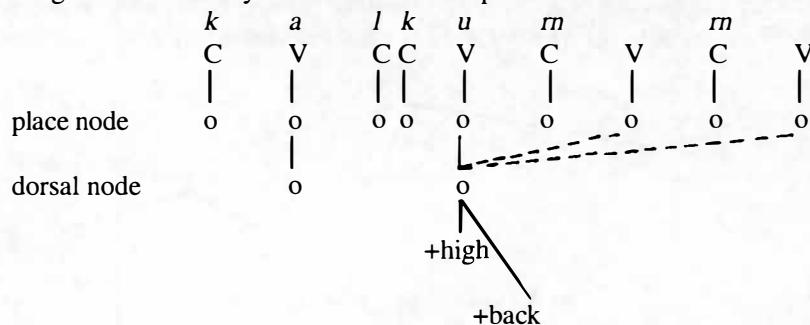
The derivations for *paji-mi-mi* 'bite-NFUT-1SG.NOM' and *kalku-mu-mu* 'keep-NFUT-1SG.NOM' are given in (56) and (57). Note that the dorsal node spreads (not the individual features) which means that both the features [+high] and [+back] spread by the same rule and that the representation only includes the place and dorsal nodes (all others have been suppressed).

³⁰ See Levin (1985) for further explanation of the use of X notation.

³¹ The rule and the feature specifications also predict that the phoneme /w/ triggers and blocks vowel harmony. Evidence for this is given in Sharp (1986).

(56) Progressive Harmony: *paji-rni-mi* 'bite-NFUT-1SG.NOM'

In (56) spreading is triggered by the final vowel of the verb stem *paji* 'bite' and spreads rightward to all V slots unspecified for features. In (57) we see the spread of /u/ as the final vowel of the verb stem *kalku* 'keep' is specified for [+back] in addition to [+high].

(57) Progressive Harmony: *kalku-rnu-mu* 'keep-NFUT-1SG.NOM'

3.4.7 BUFFER VOWELS

Recall the data in (50), (51) and (52) repeated here as (58), (59) and (60). The non-future morpheme *-rn* V surfaces as *-ma* when it immediately precedes a morpheme specified for the value [+high] such as the 1DU.INC.NOM pronoun *-li* and the 2SG.DAT pronoun *-ngu*; (59) also illustrates that the 1DU.INC.NOM pronoun *-li* initiates a harmony domain to the right: *-nti* (2SG.ACC).

(58) Underlying Forms

- a. *yirri-rnV-li*
see-NFUT-1DU.INC.NOM
- b. *kalku-rnV-li*
keep-NFUT-1DU.INC.NOM

Surface Forms

- yirri-rna-li*
(cf. **yirri-rni-li*)
- kalku-rna-li*
(cf. **kalku-rnu-li*)

(59) a. *yirri-rnV-li-ntV*

see-NFUT-1DU.INC.NOM-2SG.ACC

Surface Forms

yirri-rna-li-nti

(cf. **yirri-rni-li-nti*)

b. *kalku-rnV-li-ntV*

keep-NFUT-1DU.INC.NOM-2SG.ACC

Surface Forms

kalku-rna-li-nti

(cf. **kalku-rnu-li-nti*)

c. *wirla-rnV-li-ntV*

hit-NFUT-1DU.INC.NOM-2SG.ACC

Surface Forms

wirla-rna-li-nti

(60) a. *yirri-rnV-ngu*

see-NFUT-2SG.DAT

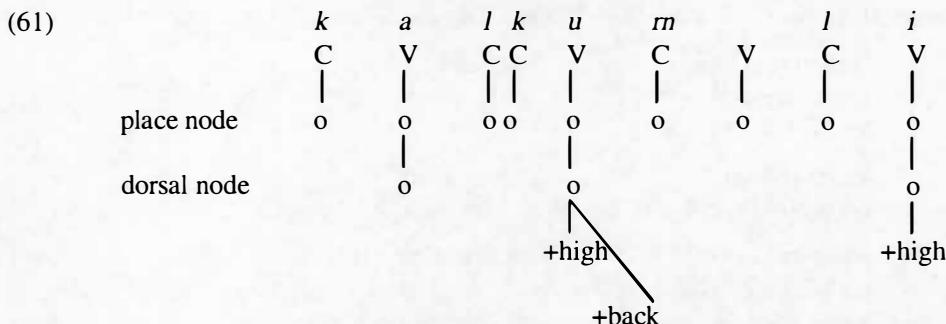
Surface Forms

yirri-rna-ngu

(cf. **yirri-rni-ngu*)

- | | |
|-------------------------|-------------------------------|
| b. <i>kalku-mV-ngu</i> | <i>kalku-mna-ngu</i> |
| keep-NFUT-2SG.DAT | (cf. * <i>kalku-mnu-ngu</i>) |
| c. <i>wirla-rnv-ngu</i> | <i>wirla-rna-ngu</i> |
| hit-NFUT-1DU.INC.DAT | (cf. * <i>wirla-rni-ngu</i>) |

Buffer vowel effects are explained here by adopting earlier suggestions (Archangeli (1986) and Sharp (1986) which invoke the Obligatory Contour Principle. The OCP prohibits representations in which there are identical phonemic matrices adjacent on the same melodic level. In this analysis the OCP is invoked when a rule would result in two identical adjacent dorsal nodes. Consider (58b) *kalku-rna-li* 'keep-NFUT-1DU.INC.NOM' in which a buffer vowel /a/ appears in the non-future morpheme. This surface form is accounted for by the OCP (see (61)).



The harmony rule does not apply thus preventing an OCP violation, that is, if the [+high, +back] features were to spread to the suffix *-rnV* then two adjacent dorsal nodes would have identical specifications of the feature [+high]. The resulting vowel therefore surfaces with the values for the /a/ vowel. Since /a/ is the vowel which results whenever harmony does not occur, this has been taken to be evidence for leaving all values for /a/ unspecified underlyingly (Archangeli 1986; Sharp 1986). The fact that there are instances of idiosyncratic lack of harmony in morphemes that generally undergo harmony with /a/ appearing in surface forms (seen in (62)) is also further evidence for /a/ as the default vowel.

- (62) Underlying Forms Surface Forms
- | | |
|-----------------------|--|
| a. <i>kalku-mV-mV</i> | <i>kalku-mna-mnu</i> |
| keep-NFUT-1SG.NOM | |
| b. <i>kalku-mV-mV</i> | <i>kalku-rna-mna</i> |
| keep-NFUT-1SG.NOM | |
| c. <i>kalku-mVmV</i> | <i>kalku-rna-ma</i> |
| keep-DES | (cf. * <i>kalku-mnu-mu</i>) ³² |

If we were to assume that /a/ is totally unspecified for features in underlying representation then the features for Nyangumarta vowels could be as presented in Table 9. The difference between this specification and that of Archangeli (1986) is that Archangeli uses [+round] for /u/ not [+back] as this is an unspecified feature for /a/. However, this degree of underspecification is not invoked in this analysis. The minimal underlying vowel

³² Recall that this form is the one found in the northern dialect.

features as presented in Table 9 do not address the question of why there are surface forms with a non-alternating /a/ vowel such as in the ablative suffix *-ja*.

TABLE 9: MINIMAL DISTINGUISHING VOWEL FEATURES

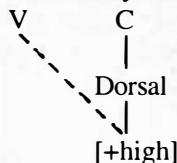
	<i>i</i>	<i>u</i>	<i>a</i>
high	+	+	
back		+	

3.4.8 REGRESSIVE HARMONY RULE

A local rule of regressive harmony operates in Nyangumarta. The forms in (49) (repeated here as (63)) show that the non-future *-mV*, the desiderative *-mV* and the remote *-lpV* morphemes all surface with the vowel /i/ when they are followed by a palatal consonant.

- (63) Underlying Forms Surface Forms
- a. *wirla-mnV-nyV* *wirla-rni-nyi*
hit-NFUT-1PL.INC.NOM
 - b. *kalku-mV-nyV* *kalku-rni-nyi*
keep-NFUT-1PL.INC.NOM
 - c. *wirla-rnVmV-nyV* *wirla-rna-mi-nyi*
hit-DES-1PL.INC.NOM
 - d. *wirla-rnVmV-lpV-nyV* *wirla-rna-ma-lpi-nyi*
hit-DES-REM-1PL.INC.NOM
 - e. *wirla-rnV-lyV* *wirla-rni-layi* (northern dialect)
hit-NFUT-1DU.EXC

Regressive Harmony Rule (local)³³



The rule is a local rule and only affects those V slots that are featureless. It does not change values of vowels to the left. This is seen in (64) whereby the /u/ vowel of the potential mood morpheme does not undergo the rule.

³³ See Archangeli and Pulleyblank (1986) for a similar regressive harmony rule which spreads [+hi] but not the entire secondary place node (equivalent to the dorsal node in this description). In that description only palatal consonants are triggers (although in Nyangumarta the anticipatory morpheme *-li* triggers regressive harmony in cases like *wirla-la-rni-li* 'hit/kill-ANT-1SG.NOM-ANT'). The other issue to consider regarding this rule is: what is to prevent [k] and [ng] both with [+high] specifications after full specification from triggering regressive harmony? In this account there is the problem of allowing full specification of all segments except for [a] prior to the rule. There is also the problem of [k] and [ng] triggering regressive harmony. There are instances of [k] being a possible trigger in the imperfective morpheme *-kVnV* in cases like *wirla-rnikinyi* 'hit/kill-IMPF'. More investigation is needed to resolve these issues.

- (64) Underlying Forms Surface Forms
- a. *wirla-lku-nyV* *wirla-lku-nyi*
hit-POT-1PL.INC.NOM (cf. **wirla-lki-nyi*)
 - b. *kalku-lku-nyV* *kalku-lku-nyi*
keep-POT-1PL.INC.NOM (cf. **kalku-lki-nyi*)

The regressive harmony rule is not sensitive to the OCP (as the rule is not blocked when the vowel in the previous syllable is [+high]) and it is claimed that the rule occurs late in the phonology after full specification of features has occurred.

4. EVIDENCE

The following discussion will outline the division between the verbal pronouns based on the application of phonological rules including vowel harmony rules. We will see that the phonological rules treat the pronouns (in the verbal phrase) as two distinct sets: one a set of verbal affixes and the other a set of free phonological words although syntactically bound in the verbal phrase. We have already seen the division in the two types of pronouns using criteria such as stress and the minimal word. It has been shown that minimal phonological words in Nyangumarta must have the following features: i) primary stress falls on the first syllable or mora; and ii) the word must consist of at least two morae. Using these two criteria, the verbal pronouns can be divided into the following groups:

(65) Nyangumarta Verbal Pronouns

		Affixes		Words
1SG	NOM	-mV	1DU.INC.ACC	<i>ngalinyi</i>
	ACC	-nyV	1DU.INC.DAT	<i>ngaliku</i>
	DAT	-jV	1DU.EXC.ACC	<i>ngalayinyi</i>
2SG	NOM	-n/npV	1DU.EXC.DAT	<i>ngalayaku</i>
	ACC	-ntV	1PL.INC.ACC	<i>nganyjurrinyi</i>
	DAT	-ngu	1PL.INC.DAT	<i>nganyjurraku</i>
3SG	NOM	-Ø/-rrV	1PL.EXC.ACC	<i>nganinyi</i>
	ACC	-Ø	1PL.EXC.DAT	<i>nganaku</i>
	DAT	-IV/lu	3PL.ACC	<i>janinyi</i>
1DU.INC.NOM		-li	3PL.DAT	<i>janaku</i>
1DU.EXC.NOM		-lyi	3DU.NOM	<i>pulu</i>
1PL.EXC.ACC		-nyV	3DU.ACC	<i>pulinyi</i>
1PL.EXC.NOM		-yimV	3DU.DAT	<i>pulaku</i>
3PL.NOM		-yV	2DU.NOM	<i>nyumpulu</i>
			2DU.ACC	<i>nyumpulinyi</i>
			2DU.DAT	<i>nyumpulaku</i>
			2PL.NOM	<i>nyurru</i>
			2PL.ACC	<i>nyurrinyi</i>
			2PL.DAT	<i>nyurraku</i>

The forms shown in (65) in the column for ‘words’ indicate that the free words consist of two morphemes with the root morpheme being bimoraic. Primary stress occurs on the first syllable of the free forms.

There are two bound or affix pronouns which require further discussion: the 1DU.EXC.NOM morpheme *-layi* and the 1PL.EXC.NOM morpheme *-yirni*, both of which consist on the surface as morphemes of two morae.

As noted earlier the surface form of first person dual exclusive nominative is *-layi* or for some speakers *-liyi*.³⁴ However, this has been represented underlyingly as *-l.yV*. The motivation for this analysis is due to the fact that it causes a buffer vowel effect as given in (66) and can trigger regressive spread in the northern dialect as given in (67). An epenthetic vowel breaks up the sequence of *I + y*, a sequence not allowable in consonant clusters of Nyangumarta. This proposed epenthesis rule is not epenthetic *-pV* as discussed earlier owing to the fact that the sequence does not occur over a morpheme boundary.

	Underlying Form	Surface Form
(66)	<i>yirri-rn V-l.yV</i> see-NFUT-1DU.EXC.NOM	<i>yirri-rna-layi</i> (cf. * <i>yirri-rni-layi</i>)
(67)	Northern Nyangumarta	
	Underlying Form	Surface Form
	<i>wirla-rn V-l.yV</i> hit-NFUT-1DU.EXC.NOM	<i>wirla-rni-layi</i> (cf. * <i>wirla-rna-layi</i>)

As also noted earlier, 1PL.EXC.NOM is another example where a bound pronoun suffix consists of two morae. The explanation for this could be that *-yirni* consists of two morphemes: a plural marker *-yi* and a first person marker *-rnV*. Whenever *-yirnV* occurs the first syllable becomes a glide of the final syllable of the verb stem and it does not take primary stress.

Another possible explanation for these two forms would be to assume that *-yi* is an exclusive marker and that *-li* and *-rnV* are markers for dual and first person. Thus *-layi* consists of dual marker + exclusive marker (compare *-li* first person dual inclusive) and *-yirni* consists of exclusive marker + first person marker (compare *-rnV* first person singular). The combination is unambiguously plural because dual is marked (*-li*) and first person singular does not have an inclusive/exclusive contrast.

4.1 EPENTHETIC *-pV*

Observing the application of the epenthetic *-pV* rule again shows two distinct groups of pronouns. Whereas the affix pronouns undergo the epenthetic *-pV* rule, the word type pronouns do not. The following examples illustrate these differences: (68a) and (68b) give the form *-npi* for the second singular nominative pronoun when it occurs before the anticipatory suffix *-li* and the first singular accusative pronoun *-nyV*; (68c) gives the form *-n* for the second singular nominative pronoun when it occurs word finally and (68d) gives the form *-n* before the pronoun *nganinyi* '1PL.EXC.ACC'.

³⁴ Although *-liyi* is a cited form for this pronoun by Geytenbeek (1991) my data consistently records this pronoun as *-layi*. If we were to propose that underlyingly the form was *-liyV*, then buffer vowel effects and regressive assimilation effects could be accounted for. The surface form can also be *-laya* when the purposive clitic occurs.

(68)	Second Person Singular Nominative -n Underlying Forms	Surface Forms
a.	<i>wirla-IV-n-IV</i> enter-ANT-2SG.NOM-ANT	<i>ngalp-a-npi-li</i>
b.	<i>wirla-rn V-n-nyV</i> hit-NFUT-2SG.NOM-1SG.ACC	<i>wirla-rna-npi-nyi</i>
c.	<i>wirla-rn V-n</i> hit-NFUT-2SG.NOM	<i>wirla-rna-n</i>
d.	<i>wirla-rn V-n</i> <i>ngan Vny V</i> <i>wirla-rna-nnganinyi</i> hit-NFUT-2SG.NOM 1PL.EXC.ACC	

Example (69) gives the forms of the remote past with person markers for the verbs *paji-RN* ‘bite’ and *karnti-NY* ‘climb’. The forms given here show clearly that the epenthetic *-pV* rule only applies to the affix pronouns and not to the word type pronouns.

(69)	Person	RN Class	NY Class
	1DU.INC	<i>paji-milpa-li</i>	<i>karnti-nyalpa-li</i>
	1PL.INC	<i>paji-milpi-nyi</i>	<i>karnti-nyalpi-nyi</i>
	1SG.EXC	<i>paji-milpi-rni</i>	<i>karnti-nyalpa-rna</i>
	1DU.EXC	<i>paji-milpa-layi</i>	<i>karnti-nyalpa-layi</i>
	1PL	<i>paji-milpi-yirni</i>	<i>karnti-nyalpi-yirni</i>
	2SG	<i>paji-milpa-n</i>	<i>karnti-nyalpa-n</i>
	2DU	<i>paji-mil nyumpulu</i>	<i>karnti-nyal nyumpulu</i>
	2PL	<i>paji-mil nyurru</i>	<i>karnti-nyal nyurru</i>
	3SG	<i>paji-mil</i>	<i>karnti-nyal</i>
	3DU	<i>paji-mil pulu</i>	<i>karnti-nyal pulu</i>
	3PL	<i>paji-milpi-yi</i>	<i>karnti-nyalpi-yi</i>

4.2 VOWEL ALTERNATIONS

The two rules of vowel assimilation also indicate a distinction between two types of person markers in the verbal phrase: those that cause buffer vowel effects versus those that do not, and person markers that trigger regressive assimilation versus those that do not. The affix pronouns block the progressive assimilation rule causing a buffer vowel effect, whereas the word type pronouns do not; the affix pronouns also trigger regressive assimilation, the word type pronouns do not.

Example (70) gives forms comparing instances whereby the affix pronouns block progressive assimilation and cause buffer vowel effects and the word type pronouns do not.

(70)	Buffer Vowel Effects Underlying Forms	Surface Forms
a.	<i>yirri-rnV-li</i> see-NFUT-1DU.INC.NOM	<i>yirri-rna-li</i> (cf. * <i>yirri-rni-li</i>)
b.	<i>yirri-rnV pulV</i> see-NFUT 3DU.NOM	<i>yirri-rni pulu</i> (cf. * <i>yirri-rna pulu</i>)
c.	<i>yirri-rnV-ngu</i> see-NFUT-2SG.DAT	<i>yirri-rna-ngu</i> (cf. * <i>yirri-rni-ngu</i>)

- d. *yirri-mi nyumpulV* *yirri-mi nyumpulu*
 see-NFUT 2DU.NOM (cf. **yirri-ma nyumpulu*)

It would seem that the OCP, even though it is sensitive to skeletal positions across morpheme boundaries, is not sensitive to skeletal positions across phonological word boundaries. If *pulu* '3DU.NOM' was an affix attached to the verb, then the grammar would predict that **yirri-ma-pulu* would be well formed. The fact that *pulu* and the other free verbal pronouns do not invoke OCP effects is strong evidence for the free verbal pronouns being separate phonological words.

Example (71) shows contrasting examples of regressive assimilation being triggered by the palatal consonant /ny/ when it occurs morpheme initially in an affix pronoun but not in a free pronoun.

(71) Regressive Assimilation		
	Underlying Forms	Surface Forms
a.	<i>wirla-m V-ny V</i> hit-NFUT 2PL.INC.NOM	<i>wirla-mi-nyi</i>
b.	<i>wirla-m V nyurrV</i> hit-NFUT 2PL.NOM	<i>wirla-ma nyurru</i> (* <i>wirla-mi nyurru</i>)
c.	<i>kalku-m V-ny V</i> keep-NFUT 2PL.INC.NOM	<i>kalku-mi-nyi</i>
d.	<i>kalku-m V nyurrV</i> keep-NFUT 2PL.NOM	<i>kalku-mu nyurru35</i> (* <i>kalku-mi nyurru</i>)
e.	<i>wirla-m Vm V-ny V</i> hit-DES 2PL.INC.NOM	<i>wirla-ma-mi-nyi</i>
f.	<i>wirla-m Vm V nyurrV</i> hit-DES 2PL.NOM	<i>wirla-ma-manyurru</i> (* <i>wirla-ma-mi nyurru</i>)

4.3 PALATAL CLUSTER DELETION

The rule of palatal cluster deletion affects forms of the future tense. The future tense has several allomorphs which can be divided into two distinct groups as can be seen in (72). The forms which have bound pronouns suffixed to them generally have the form -IV which is realised as -IVpV when it precedes a sonorant consonant (with the rule of nasal assimilation determining the occurrence of -IVmV). The other form is potential + -IVny, which is realised as potential + -IV before palatal consonants. The palatal cluster deletion rule has applied to the string *paji-lkulVny nyumpulu* and *paji-lkulVny-nyurru* to derive the surface form of *paji-lkul nyumpulu* and *paji-lkul nyurru*. It has also applied to the string *ka-ngku-IV-nyV nyurru* to derive the surface form *ka-ngku-lumi-nyurru* 'take-POT-FUT-1SG.ACC-2PL.NOM: Will you (plural) take me?' Notice in this form the allomorph for the future tense is that which is used for affix pronouns, which indicates that the nasal assimilation rule and the rule of regressive assimilation have both applied to the string prior to palatal consonant

³⁵ In some idiolects of Nyangumarta *kalku-mu nyurru* can occur as *kalku-ma nyurru*. This appears to be unconnected to OCP sensitivities. Rather it is part of the process of the weakening of the harmony process in the southern Nyangumarta dialect.

deletion. Example (72) gives a verbal paradigm for the verb *paji-RN* 'bite' with nominative pronouns.

(72) Future Tense Paradigm (-IV/-IkuVny are the two basic allomorphs)

RN Conjugation Class *paji-RN* 'bite'

Person	Singular	Dual	Plural
1 INC		<i>paji-lapa-li</i>	<i>paji-limi-nyi</i>
1 EXC	<i>paji-lama-rna</i>	<i>paji-lapa-layi</i>	<i>paji-lipi-yirni</i>
2	<i>paji-lama-n</i>	<i>paji-Ikulu nyumpulu</i>	<i>paji-Ikulu nyurru</i>
3	<i>paji-Ikuliny</i>	<i>paji-Ikuliny pulu</i>	<i>paji-lipi-yi</i>

Notice that in forms where there is zero marking for third person singular, the future tense verbal word appears as *paji-Ikuliny* which is precisely the underlying forms for instances whereby word type pronouns occur. When the accusative and dative forms occur with the future tense (when subject is third person singular) they follow an identical pattern as seen in (73) which gives the accusative case paradigm.

(73) RN Conjugation Class *paji-RN* 'bite' Accusative Pronouns

Person	Singular	Dual	Plural
1 INC		<i>paji-Ikuliny ngalinyi</i>	<i>paji-Ikuliny nganyjurrinyi</i>
1 EXC	<i>paji-Ikulinyipi-nyi</i>	<i>paji-Ikuliny ngalayinyi</i>	<i>paji-Ikuliny nganinyi</i>
2	<i>paji-Ikulinypa-nta</i>	<i>paji-Ikulu nyumpulinyi</i>	<i>paji-Ikulu nyurrinyi</i>
3	<i>paji-Ikuliny</i>	<i>paji-Ikuliny pulinyi</i>	<i>paji-Ikulu janinyi</i>

The palatal cluster deletion rule does not operate within the verbal word as is shown below where first person plural inclusive, first person plural exclusive and third person plural have not undergone palatal cluster reduction in contrast with second person dual and plural.

(74) RN Conjugation Class *paji-RN* 'bite'

Person	Singular	Dual	Plural
1 INC		<i>paji-rnikinya-li</i>	<i>paji-rnikinyi-nyi</i>
1 EXC	<i>paji-rnikinyi-rni</i>	<i>paji-rnikinya-layi</i>	<i>paji-rnikinyi-yirni</i>
2	<i>paji-rnikinyi-n</i>	<i>paji-rniki nyumpulu</i>	<i>paji-rniki nyurru</i>
3	<i>paji-rnikinyi</i>	<i>paji-rnikinyi pulu</i>	<i>paji-rnikinyi-yi</i>

The paradigm again shows a distinction between two sets of pronouns. The palatal deletion rule does not apply within a phonological word such as *paji-rnikinyi-nyi* (cf. **paji-rni-ki-nyi*) or *paji-rnikinyi-yirni* (cf. **paji-rni-ki-yirni*) but it does apply as an external sandhi rule deleting the first of two palatal consonants across phonological words: *paji-rniki nyumpulu* and *paji-rniki nyurru*.³⁶

4.5 SUMMARY

The verbal pronouns in Nyangumarta can be divided into two distinct sets: affixes and free words. Table 10 summarises the difference between the two sets according to the application of phonological rules.

³⁶ In text though the deletion is strictly within the verbal phrase. This rule of palatal deletion is optional in the imperfective aspect of the southern dialect.

TABLE 10: SUMMARY OF THE FEATURES OF THE VERBAL PRONOUNS

	Affix Pronouns	Word Pronouns
Satisfies minimal word constraint		x
Primary stress on initial mora		x
Palatal deletion rule applies		x
Epenthetic -pV rule applies	x	
Causes buffer vowel effects	x	
Triggers regressive harmony (1st syllable)	x	
Vowel harmony domain	x	

Table 10 indicates a neat division between two types of phonological segments: a bound type and a free word type. However, when you look at the wider picture and incorporate features such as the inability to pause on a segment in conjunction with a distinctive ordering constraint (two features not consistent with other free words in the language) you find that the word type pronouns could be classed as a subgroup of free words with some affix type characteristics. The original distinction in the language between 'words' and 'affixes' is not so clearly defined. This is given in Figure 7. At most we can say that the phonology of the language is clearly an important factor regarding the status of morphemes. In this regard it is significant then to suggest that the apparent case-marking features present in the word type pronouns yet absent in the affix type pronouns could be phonologically based (as distinct from syntactically motivated), that is, the word type pronouns in object and indirect object positions are marked for accusative *-nyi* and dative *-ku* and this marking appears to be directly related to the fact that these types of pronouns function phonologically as 'words'. The case marking is not present in the affix type pronouns. However, the two sets obviously behave as a syntactic class and the class of pronouns is bound in its position in the phonological phrase.

'Word'	Word Pronouns	Affix Pronouns	'Affix'
Pause word	x		
Case/tense, mood, aspect	x	x	
Stress word	x	x	
Minimal word	x	x	
Position bound		x	x
Phonological rule domain			x
Buffer vowel domain			x

FIGURE 7: WORD/AFFIX DISTINCTIONS

5. OTHER CONSIDERATIONS

The division of the two sets of pronouns into two distinct sets according to whether they constitute phonological words or not appears quite straightforward when we examine the facts given above. However, there is further evidence to consider. One area to examine is the form of pronouns used in the imperative mood; the other is the function of the third singular locative and dative pronouns *-IV* and *-lu* which occur following all other pronouns, and if we assume that one set of pronouns constitutes free words then they are probably best described as phrasal affixes or clitics.

5.1 IMPERATIVE

In nominative case, only second person pronouns occur in the imperative mood for Nyangumarta: *Ø* for second person singular, *pulu* for second person dual and *-yi* for second person plural (see Table 11). These forms are identical to the third person singular, dual and plural pronouns (which is very common in languages in the Pilbara and neighbouring areas: Manyjilyjarra (Marsh 1976), Warnman, Ngarla, Nyamal, Yankunytjatjara (Goddard 1985, etc.).

TABLE 11: IMPERATIVE NOMINATIVE PRONOUNS

	Singular	Dual	Plural
Class NY			
enter	<i>ngalpa</i>	<i>ngalpapulu</i>	<i>ngalpa-yi</i>
climb	<i>karnta</i>	<i>karntapulu</i>	<i>karnta-yi</i>
Class RN			
hit	<i>wirla-la</i>	<i>wirla-lapulu</i>	<i>wirla-la-yi</i>
keep	<i>kalku-lu</i>	<i>kalku-lu pulu</i>	<i>kalku-lu-yi</i>
see	<i>yirri-li</i>	<i>yirri-li pulu</i>	<i>yirri-li-yi</i>
Class NG			
take	<i>ka-wa</i>	<i>ka-wa pulu</i>	<i>ka-wa-yi</i>
give	<i>yi-wa</i>	<i>yi-wa pulu</i>	<i>yi-wa-yi</i>
Class N			
go	<i>ya-rra</i>	<i>ya-rra pulu</i>	<i>ya-rra-yi</i>
get	<i>ma-rra</i>	<i>ma-rra pulu</i>	<i>ma-rra-yi</i>

The interesting feature of the dual and plural forms is their similarity to each other regarding the application of phonological rules. The second dual pronoun *pulu* does not block harmony. This can be seen in forms like *kalku-lu pulu* and *yirri-li pulu* whereby the progressive harmony rule is not blocked by the /u/ vowel of the pronoun. This is what we would expect if *pulu* was a free word. However, the plural pronoun *-yi* also fails to block harmony: *kalku-lu-yi* (**kalku-la-yi*) and *yirri-li-yi* (**yirri-la-yi*). In addition the plural pronoun does not trigger regressive harmony which is expected if it is a bound affix: *wirla-la-yi* (**wirla-li-yi*).

The imperative can occur with accusative and dative/locative pronouns as seen in (75)-(78).

- (75) *Kalku-lu-yi janinyi partany-karrangu.*
keep-IMP-2PL.NOM 3PL.ACC child-PL
All of you take care of the children.
- (76) *Kalku-lu-yi janaku mirtawa-rrangu-ku.*
keep-IMP-2PL.NOM 3PL.DAT woman-PL-DAT
All of you take care of it for the women.
- (77) *Kuyi yi-wa-la partany-ja.*
meat give-IMP-3SG.LOC child-LOC
Give the meat to the child.
- (78) *Kuyi yi-wa-lu partany-ku.*
meat give-IMP-3SG.DAT child-DAT
Give the meat to him for the child.

5.2 THIRD SINGULAR DATIVE/LOCATIVE

As illustrated in the following examples, third person singular dative/locative occurs following word type pronouns. In (79) *-lu* is a third person singular locative marker which follows the free pronoun *pulu*. Locative case is used with the verb 'tell' and therefore the underlying form of the pronoun is *-IV* as distinct from the purposive pronoun *-lu*. In (79) we can see that no buffer vowel effect has occurred (which again indicates that it is underlyingly *-IV*); hence *pululu* (cf. *pulalu*).

- (79) *Pala-nga lirjal-ju-jirri partany-ju-jirri wurra-ma-pulu-lu...*
 that-LOC greedy-ERG-DU child-ERG-DU tell-NFUT-3DU.NOM-3SG.LOC
 And those two greedy children said to him...

When dative case is used as an adjunct to the sentence such as in (80) and (81), the purposive pronoun *-lu* occurs. The effect of using a dative adjunct is often to indicate a benefactor/purpose of an action.

- (80) *Nyampa ya-na pula-lu pulany paliny-ku.*
 quick go-PAST 3DU.NOM-3SG.DAT 3DU 3SG-DAT
 Those two went too quickly for him.
- (81) *Pulany nyampa mirti-jarri-nyi pula-lu warnku-karti-jakun*
 3DU quick run-INCH-NFUT 3DU.NOM-*lu* rock-ALL-only
pala-nga kuku-jarri-nyi pula-lu jurnti-ngi.
 that-LOC hide-INCH-NFUT 3DU.NOM-*lu* cave-LOC
 Those two quickly ran from him to the cave where they hid from him.

However, when the adjunct occurs following a dative pronoun as seen in the following examples, the meaning can be genitive as well as purposive.

- (82) *Piriri-*lu* wirri-ma kawa-rnikinyi pula-ka-*lu* majangu-rrangu*
 man-ERG put-NFUT travel-IMPF 3DU-DAT-*lu* flesh-PL
kuyi warnku-ngu kankarni.
 meat rock-LOC on.top.of
 The man kept putting the/their meat on top of the rocks for those two (children) as he was travelling along.
- (83) *Wirla-lapi-yirni nyumpula-ka-*lu* kuyi.*
 hit-FUT-1PLE.XEC.NOM 2DU-DAT-*lu* meat
 We (plural exclusive) will kill (shoot) the meat for you/your meat.
- (84) *Yija-ngarra kuyi yirri-rni rankurji minyji-rni pula-ka-*lu**
 truly-DEIC meat see-NFUT bustard set.light.to-NFUT 3DU-DAT-*lu*
partany-ju.
 child-ERG
 The meat he saw was certainly turkey and he lit the fire for those two/their fire.
- (85) *Pala-ja paliny-ju nyampa-*lu* ji-ni pulaka-*lu* wirlarra-*lu**
 that-ABL 3SG-ERG quick-ERG do-NFUT 3DU.DAT-*lu* moon-ERG
parruparru mungka-ja.
 net tree-ABL
 After that he, the moon, quickly made a net for those two/their net from the tree.

- (86) *Partany-karrangu malya-mni-yi ngalayi-ka-lu mungka*
 child-PL chop-NFUT-3PL.NOM 1DU.EXC-DAT-*lu* tree
kaju-jartiny-ju.
 axe-COM-ERG

The children with an axe, chopped the tree for us (two) /our tree.

The situation of the third singular dative/locative pronoun is interesting. It is the only affix pronoun which follows free verbal pronouns when they occur (otherwise it is affixed to the verb: *wurrarna-la* 'she/he said to him/her'. The other interesting aspect of the occurrence of these two pronouns is the fact that its reference is either a nominal adjunct or the same reference as the other dative pronoun. The alternative analysis for *-lu* is to analyse it as a purposive/genitive marker, not a pronoun.

6. CONCLUSION

I have provided phonological evidence for a division of the verbal pronouns in Nyangumarta by showing that phonological rules applying within the verbal phrase treat the pronouns as two distinct sets: one a set of verbal affixes and the other a set of free phonological words. Table 11 summarises the similarities and differences between the two sets based on these rules and Figure 7 gives an overview of Nyangumarta 'words' and 'affixes' incorporating the categories of prototypical words and affixes. As suggested earlier, the match up between Nyangumarta phonological, morphological words and syntactic words does not show a one-to-one correspondence. However, if we were to assume that compounding processes in Nyangumarta produce distinct morphological words from two phonological words, we could account for the word type pronouns occurring in a fixed position in the verbal phrase. Other types of compounding processes in the language would need to be investigated further to assess whether the feature of natural breaks (or the notion of the 'pause word') is also a feature of other compounds.

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YUGAMBEH-BUNDJALUNG: WHAT CAN BE LEARNT FROM THE DIALECT DIFFERENCES

MARGARET C. SHARPE

1. INTRODUCTION

Part of the incentive to write this paper came from discussions with Geoff O'Grady during my time on study leave in Victoria B.C. in November, 1993, and I have incorporated a couple of his comments. However, I have, I believe, resisted any temptation to base any argument on proposed Proto Pama-Nyungan reconstructions, and the findings in this language can therefore be used as independent evidence for some possible changes.

The Yugambeh-Bundjalung language¹ was spoken (and is still sometimes in use) by Aboriginal people living in clans from some 16 km south of Brisbane, along the Gold Coast, and south in the Northern Rivers area of New South Wales almost to Grafton, inland to Drake on the Bruxner Highway (east of Tenterfield) and north-west to Warwick and Allora, in Queensland. Dialect names commonly recognised today are Yugambeh, Minyangbal (Minjangbal), Gidhabal and Bundjalung. Very few first language speakers are alive today. (Map 1 shows the language and dialects, with the area covered by Sharpe's Western Bundjalung dictionary highlighted.) The lower Clarence River area including Grafton fell in the range of Gumbaynggir and Yeygir, but the range of the southern Bundjalung dialects spread across the Clarence River to the middle Rocky River area. The myth of the three brothers landing by canoe (usually near Evans Head) is told throughout this area, and all claim to be descendants of the different brothers. Another myth about the cranky old woman Dirahnggan is well known in the Woodenbong to Tabulam area for the origin of the Clarence, and myths of a hunter and two dogs are told in the north (and known to others inland) to explain much of the northern topography. Old volcanic cores dot the landscape in this very fertile part of Australia. At least three traditional paths crossed the Border Ranges through the dense rainforest in pre-contact times, and the groups travelled every three years or so to the Bunya Mountains (Queensland) for the Bunya festival, returning 'sleek and well fed' (to quote one early observer). In at least some areas, semi-permanent dwellings were constructed, as there was no great need to travel extensive distances for food.

One's spouse generally came from a neighbouring clan within the language area; such exchange chains presumably kept dialects from drifting too far apart. Grammatical differences between the different areas were minor. There were some sound shifts from one area to another, mainly allophonic. However in some limited sets of words, vowels (and occasionally) consonants differed between groups, and this is reflected in dialect names,

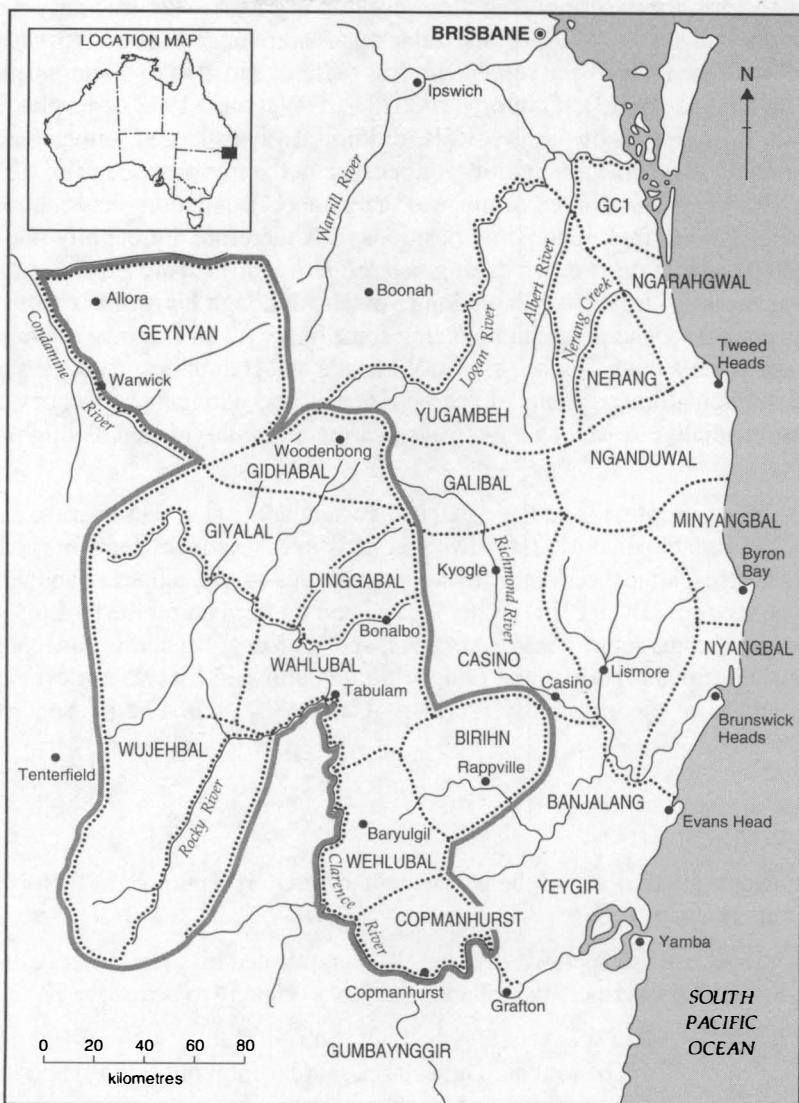
¹ The spelling Bundjalung is used in English to ensure that the general public pronounces it approximately correctly (e.g. in the name Bundjalung National Park), although a more correct linguistic spelling would be Bandjalang, and hence as language name Yugambeh-Bandjalang.

which very often pinpointed a key word or pronunciation in which that dialect differed from its immediate neighbour. (For example, the Galibal said *gali* not *gala* for 'this'; the Gid(h)abal said *gidha*² with an interdental fricative; the Minyangbal used *minyang* not *nyang* for 'what, something', while the Nyangbal used the shorter form; the Wiyabal, Wujehbal, Wuyabal, Wehlubal etc. used *wiya*, *wujeh*,³ *wuya*, *wehlu* for 'you (singular)', and the Yugambeh said *yugam(beh)* for 'no'. Very many words and their glosses were invariant right through the area; however, a number of words for common items were not cognate, with one form used in the north and another in the south, or one towards the east and another towards the west. A small number of words show meaning shifts from place to place, another small number show phonemic changes from place to place, and a number of other words differ markedly as one moves through the region. A few irregular verbs show vowel shifts in one of the tense affixes. From anecdotal evidence from descendants of speakers, and from one older speaker of Gidhabal (Boyd pers. comm.) there were almost certainly changes in voice quality, overall pitch and intonation, and perhaps in rate of utterance from place to place. By comparing all the sources, it is possible to note a number of patterns of difference, though none cover all possible words which could show the shift.

Holmer, in his work on the Lismore and Beaudesert dialects (Holmer 1971, 1983 respectively) claims verbs do not distinguish tense, but only aspect, whereas my analysis of both of these (in the first case on more limited data, in Cunningham n.d. and 1969 respectively) showed a system which fitted well with the tense-aspect systems described by Geytenbeek and Geytenbeek (1971) for Gidhabal, Crowley (1978) for Wahlubal/Wehlubal and Smythe (c. 1946) for the (possibly) Casino dialect. However, comparing the examples in Holmer with other data, it would seem that pragmatically—however described—the systems generally worked in a compatible way. Consideration of minor formal and semantic differences in verb affixation will not be discussed in this paper.

² The digraph *dh* indicates an intervocalic or word-medial fricative or affricate consistently realised as an interdental fricative in Gidhabal (GD), an interdental fricative or lamino-palatal stop in Wahlubal (WA), and as a lamino-palatal stop, affricate or even sibilant fricative in Yugambeh (Y), Minyangbal (M) and Casino (C) dialects—probably also in intervening dialects on which we have less phonological information. There is no /d/ phoneme (except rarely) word medially except after an alveolar nasal /n/. In this position /j/ is also a stop or affricate. /j/ can occur after /ny/, but /d/ cannot. The Geytenbeeks analysed the archiphoneme /dh/ as an allophone of /d/. I have interpreted it as more akin to /j/, the lamino-palatal stop. A few, mainly onomatopoeic, words in Gidhabal have a word-medial lamino-palatal stop, and corresponding words in Minyangbal (and probably other dialects) have a word-medial or final voiced sibilant. Examples are the words for 'tickle' *gij-gij* (GD) and *giz-giz* (M), and 'lilly pilly' *jijimahm* (GD). Where needed as a guide to pronunciation, *j*, *dh* and *z* are employed non-word initially in my transcriptions.

³ Throughout this paper, *h* after a vowel symbolises vowel length.



MAP 1: APPROXIMATE LOCATION OF THE BUNDJALUNG-YUGAM DIALECTS
(Broken line encloses the full range of the language)

1.1 THE DATA ON WHICH THIS WORK IS BASED

We have a considerable data bank in Yugambeh-Bundjalung, from many sources, and of widely differing quality and quantity. The first grammar of a dialect of the language was H. Livingstone's 'Minyun' in 1892, and despite some uncertainty about whether some of the transcriptions reflect the vowel /a/ or /u/, and about lamino-palatal nasals and less commonly

lamino-palatal stops, the description and transcription is good.⁴ After this early work, it was not until Smythe's work in the 1940s that velar nasals were unambiguously written, and the descriptions since then have been reliable on this feature, and also in distinguishing /a/ and /u/. Allen and Lane (1913), Hanlon (1935), and Watson (1943), despite efforts to disambiguate transcription of these vowels, did not always succeed, either because their systems inherently had some ambiguities, or because in the transference from their notes to print some diacritics were omitted or misread. Yugambeh-Bundjalung has contrasting long and short vowels⁵ with four contrasting positions; it is therefore a great pity that Holmer's transcriptions do not in most cases distinguish /e/, /e:/ and /i:/ from /i/, nor do they mark length except (usually) for first syllable long vowels, although his work is valuable for its coverage of vocabulary and for disambiguating some of the /u/ and /a/ transcriptions of other lists. Allen and Lane's transcription, as also Watson's and Hanlon's and all the shorter lists, also have ambiguous transcriptions of such phonemes and phoneme sequences as /ng/, /ŋ/ and /ŋg/ word medially, as well as not always hearing an initial /ŋ/, and having problems at times with /ny/.

As well as these grammars and their attached vocabulary lists or dictionaries, a number of shorter lists are available, many taken down by magistrates or police. Some of these, gleaned from various sources, almost certainly are not independent—for example a handwritten list in Queensland police files (DG1 1910) kindly located and transcribed for me by Liz Dana seems to be the source of some lists in *Science of Man*, and Watson's list shows few changes from (though some additions to) Allen and Lane's. Some published lists do not even accurately reflect the spelling of the original transcriber—Curr (1887) states he revised spellings in some lists.

1.2 INTERPRETING THE DATA

These 'amateur' transcribers of the past were hampered by a number of factors which are reasonably well known:

1. Irregularities of English spelling, perhaps also complicated by some dialect differences in the speech of the transcribers (which information is unlikely to be recovered).
2. Like all normal English speakers they had notorious difficulty with un-English sounds, or un-English positions of sounds. The velar nasal (except word finally) and the lamino-palatal stop and nasal were problems to them.
3. Phonemes symbolised /b/ and /g/ are pronounced in a much more lenis way than in English, and can occur as fricatives. Some /b/ were transcribed v, which creates no problem of interpretation by the linguist, but both some /g/ and some velar nasals could have been symbolised with h, or w, or not symbolised at all, creating an interpretation problem for the linguist as to which phoneme was really there.

⁴ Livingstone uses a unitary symbol, g with a dot inside it, for the velar nasal, thus avoiding ambiguity which plagues the other earlier work in other than word-initial or word-final position. Only occasionally has he failed to hear an initial velar nasal. In this paper his symbol has been replaced by /ŋ/.

⁵ Two successive syllables with long vowels are not allowed within words. Only one exception occurred in my data, see *guhn* in §3.2. When verb affixes would produce two such successive long vowels, length on the second is generally dropped. However in Gidhabal and Yugambeh, but not Wahlabal, the length of the second vowel can 'hop' one syllable to the right, e.g. *nyah-* + *-li+* *-hla* becomes *nyahlelah* in GD and Y, but *nyahlela* in Wahlabal.

- Despite attempts by many to disambiguate the vowels /a/ and /u/, English patterns often interfered, and if recent data is to be followed, misleading transcriptions were made in many cases.

Contrast in voicing—or lack of it—in the obstruents generally creates no major problem for the linguist interpreting the old data, except that working through many of the lists one realises that a sound transcribed *t* or *d* might reflect the phoneme /d/ or /j/. However, in working with these lists, and comparing them with more certainly transcribed material from recent linguistic work, one forms an impression as to whose work is closest to phonological and grammatical accuracy (in the scant evidence for grammar in their lists), and one is occasionally delighted to find corroboration for what seems at first glance to be a nonce form in one list from a list or grammar from quite a different area of the language's range.

In this paper I am considering evidence for regular, if not universal shifts of sound or grammar, which can be established with confidence from these various records. Many apparent differences are almost certainly due to one or other recorder not hearing some syllables or sounds correctly, or to a different transcription system. For example, it is not unknown today for less academically educated speakers of English to write *g* for the *j* sound, even before *a* or *u*, so use of a *g* in such a list where a more reliable source uses *j* (or *tch* or *ty*, etc.) is not as strong evidence for a sound difference, as the use of *k* can be. If certain recorders show little evidence of being able to distinguish /ny/ and /ng/ from /n/, their record is of minimal help in distinguishing these sounds. If Calley (n.d.) usually uses [j] for the semivowel *y* and [dj] for the obstruent *j*, but occasionally appears to 'slip' and use *y* for the semivowel and *j* for the obstruent, some of his data is not *prima-facie* evidence for *j* or *y* or lenition of *j*.⁶ The transcription of a vowel as *u* from a less reliable source is not clear evidence of the phoneme /u/, whereas if *oo* is written, there is a good chance that the phoneme was /u/.⁷ Some of the older lists use *rr* for the rhotic, but also use *r*. After comparing with other sources, a few of the occurrences of single *r* can with reasonable confidence be taken to be an indication of vowel length and quality in such sequences as *ar* ([a:]) or *are* ([ɛ:]). No modern linguist has found any firm evidence of two rhotics in any dialect of Yugambeh-Bundjalung, so the general practice is to assume all other occurrences of *rr* and *r* in older transcriptions represent the same phoneme, and in addition, the strongly trilled articulation of /r/ syllable finally has often given the transcriber reason to write a vowel following the rhotic. But at times I wonder if another reading of the data could suggest a contrast between /r/ (retroflexed continuant) and /rr/ (apical flap/trill) which could have been lost quite recently.

Similarly the generally flapped articulation of the lateral syllable finally before an obstruent, makes it appear there is a vowel intervening in some cases, or the /l/ is heard as /r/ (or by one transcriber as 't', see §3.2.2). In some cases, if the transcriptions of modern-day linguists is any guide, there is a vowel intervening. For example, when one linguist writes *walagan* in one dialect list and the same linguist or one equally competent writes *walgan* in

⁶ I have used Calley's material with caution. In his later years his ability as a researcher was unfortunately impaired, but his work at this stage, in the late 1950s, seems reliable.

⁷ But even this generalisation proves false for the currently used pronunciation of some Australian place-names, many almost certainly based on the well-known Pama-Nyungan word for 'shit', for example Goondiwindi ([gəndiwindi]), and Goonoo Goonoo ([ganaga'nu])! Therefore I do not put as much weight on an 'oo' transcription, particularly in a syllable presumed to be unstressed, as in 'u' from a good linguist's transcriptions.

another for ‘shoulder’, I accept both forms as correct (either a vowel has intruded in one dialect or been lost in another).

It should be noted that Yugambeh-Bundjalung speakers I have encountered can outdo Strine-speaking Australians for slurring words and syllables together, a feature not universal in Australian languages—in fact, if most authors are to be believed, I have had unusual experiences in encountering stress-timed languages in Yugambeh-Bundjalung and in non-Pama-Nyungan Alawa. This could have some bearing on the relevance of sound shifts and elisions in Yugambeh-Bundjalung to the consideration of what may have gone on elsewhere in Australia. Especially in a stress-timed language, those who have learnt the language in situations where the language is not in full everyday use, can make a number of ‘errors’ in learning words and phrases. Possibly our data is more ‘tainted’ by this feature than we care to believe. Perhaps some investigators did not hear sounds that a careful articulation from a good speaker would have shown to be there. But even if this is so, the data can be used to show what changes can occur in learning and passing on a language. Such changes are not always neat and affecting every possible word, but are still very understandable.

1.3 SUMMARY OF FINDINGS AND RATIONALE

Keeping all these caveats in mind, we have good evidence for a number of phonological changes from dialect to dialect, and sometimes in variant pronunciations from the same area. None affect all possible occurrences of the sound under investigation. Work of recent dialectologists show this as a very normal phenomenon. The cases of complete shifts ('sound changes are without exception') or the pinpointing of the specific mechanism which might block an otherwise near universal sound shift, which has given a solid basis for so much comparative work, are not the only possibilities. Modern-day examples in English include the *sheer/share* merger in New Zealand English, which is gradually ‘gobbling up’ more and more lexemes, but appears to have originated in a few frequently used words.

It is perhaps pertinent to digress for a moment. Scientific thought of the nineteenth century, which has shaped so much of our attitude to the world, held that in time, precise mathematical rules and careful observation would allow us within a short time to explain all phenomena without exception, and to predict what would happen to any system. Physical laws were immutable, as were linguistic laws. Linguists felt an obligation to show how scientific their discipline was, and strove for the same precision and exhaustiveness. But the *physicists* know better now. It is *not* possible to predict the movement of any fundamental particle: an electron, or a photon can turn up anywhere—even moving backwards in time. What we observe in large systems is the statistical average of movements and interactions of vast numbers of fundamental particles. What is produced in language change over a long time is a statistical average of many changes, including those summarised in the witty linguistic law ‘every word had its own history’. Given time certain changes may permeate a whole language or dialect, but at any particular point in time we *may* find changes that have only affected the most common words, or a subset of possible candidates for change, with no perceived phonological or morphological reason why just those words have been affected. Some such changes may in fact never affect all possible candidates for the change, if the process stops for any reason. Many linguists are of course aware of this—or become aware when their reconstructed protolanguage has a plethora of sound correspondences which would suggest far more protophonemes than are feasible for a real language.

1.4 DIALECTS DISTINGUISHED IN THIS PAPER

The list of dialects below are arranged roughly from north to south from Y to BJ and again after the presumed somewhat central C, again north to south from GN to CP.

- Y: Yugambeh/Yugumbir/Manandjahli/Wangerriburra as spoken in the Beaudesert area, recorded in Allen and Lane (1913), Watson (1943), Cunningham (1969) and Holmer (1983) (if need be distinguished as Yal, Yw, Ym and Ynh respectively: Yw is heavily derivative from Yal; occasionally other sources are used);
- Ywh: Yugambeh as recorded by Hanlon (1935), representing the dialect of Jenny Graham, an ancestor of a number of members of the Kombumerri Aboriginal Corporation, a good quality source;
- Ng: Nerang-Gold Coast area (possibly Ngarahgwal) as recorded in various lists in Curr (1887) and *Science of Man*, not of the highest quality;
- NC: Nerang Creek, from Curr (1887) collected by F. Fowler;
- NG: Ngarahgwal (presumably), Coomera listing in *Science of Man* (1904);
- AT: Albert and Tweed, in various lists in Curr (1887), possibly overlapping with one of the above, spellings awful in most lists, but useful;
- GC: Gold Coast, a short poorly spelt list from the Tallebudgera Police (approximately 1900–1901);
- TD: from the Tweed area, possibly the dialect Livingstone (1892) calls Ngahnduwal, reasonably good source compiled by Joshua Bray, who apparently spoke the language;
- TW: another list from the Tweed area compiled by Joshua Bray, and published in *Science of Man* (1904);
- M: Minyangbal as recorded by Livingstone (1892) and in a few words in a recent Fingal Head desktop publication;
- NY: the dialect attested from Douglas Cook of Cabbage Tree Island, possibly Nyangbal, from my own notes;
- MUR: a vocabulary list recorded at Murwillumbah, the dialect probably being Minyangbal, Ngahnduwal or Galibal;
- WI: Wiyabal and Wuyebal from Lismore and Coraki, recorded in Cunningham (n.d.) and Holmer (1971) (used here to cover both Wiyabal of Lismore and Wuyebal (BJ) from Coraki, unless BJ specifically noted);
- BJ: Wuyebal from Coraki, when not subsumed under WI above;
- C: the dialect recorded by Smythe (c. 1946), which Crowley suggests is from the Casino area (however, there is some evidence that Smythe may have had informants from more than one dialect);
- GN: the dialect Gidhabal speakers referred to as Geynyan, and was called Kitapul by its compiler, J. Mathew (1926), whose transcriptions are quite good;
- UC: an Upper Clarence dialect, possibly Gidhabal or Geynyan, recorded by J.P. Thomas (1900), whose transcriptions, except in distinguishing the nasals, are very systematic;

- GD: Gidhabal (or Gidabal), as recorded by the Geytenbeeks (1971) at Woodenbong; .
- WU: the dialect, possibly Wujehbal or Dinggabal (possibly the same dialect), from Calley's unpublished notes (c. 1950s) from speakers at Woodenbong;
- WU2: Another listing, recorded at Woodenbong, but of a dialect more closely resembling Calley's than the Geytenbeeks' Gidhabal;
- GX: A listing from 'Woodenbury' (sic), which appears to be close to Gidhabal from Woodenbong;
- WA: Wahlubal, or Bandjalang, of the Tabulam area, as recorded by Crowley (1978);
- WE: Wehlubal or Wiribi, the purported dialect of Baryulgil, recorded by Crowley (1978) and Geytenbeek (n.d.) from Ken Gordon (who, according to recent information from Bundjalung people, is from a family that moved to Baryulgil from elsewhere a generation or two back);
- B: Birih, the Rappville dialect, recorded by Crowley (1978);
- CP: Copmanhurst, on the fringe of the Yugambeh-Bundjalung area, showing about 50% clearly Yugambeh-Bundjalung features and 50% quite 'foreign' features, and only attested in an old and not very good list.

When referring in summary to a change in a form through the different dialects, the generalisation *north to south* will indicate an ordering of the dialects similar to this list. A glance at Map 1 will show this is a rather zig-zag east to west path.

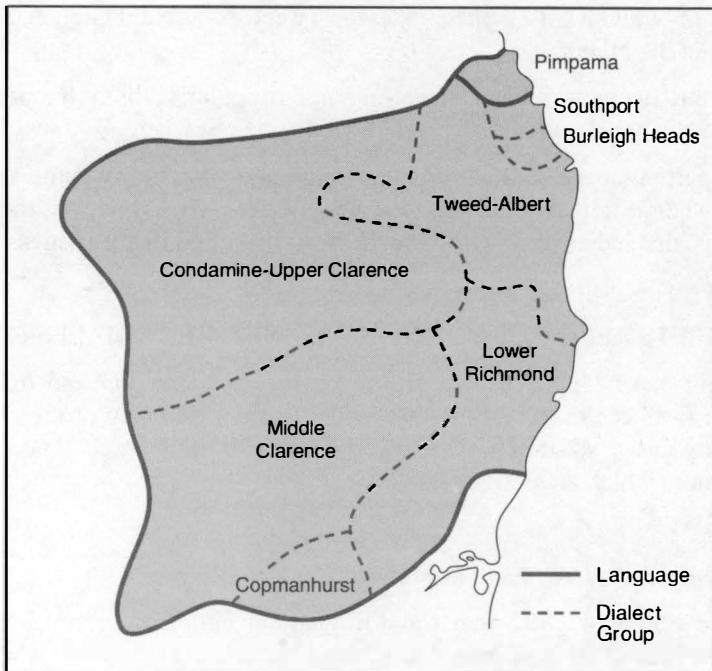
Crowley, on the basis of different common words for 'Aboriginal man', 'Aboriginal woman', 'boy', 'eye', 'hand' and 'sun', as well as a few items noted below, groups dialects into three small Gold Coast areas (Pimpama, quite marginal, Southport, and Burleigh Heads, lists labelled AT here), the Tweed-Albert area (including Y, M, TD, TW, GC), Lower Richmond (WI, C, NY), Condamine-Upper Clarence (GN, UC, GD, and probably WU, WU2 and GX), Middle Clarence (WA, WE, B), and Copmanhurst (CP). (See Map 2.) For those who might refer to Crowley (1978) or to Sharpe (1995) and Sharpe et al. (1988, 1996), these areas, together with the dialect names listed in those publications, are listed below.

Tweed-Albert: Ngarahngwal or Ngarahngwal, Yugambeh, Minyangbal, Ngahnduwal;

Lower Richmond: Nyangbal, Wiyabal, Coraki Bandjalang, Galibal;

Condamine-Upper Clarence: Geeyyan, Gidhabal (and probably Wujehbal and Dinggabal) and 'Upper Clarence' (Thomas);

Middle Clarence: Wahlubal or Bandjalang from Tabulam, Baryulgil (Wehlubal), Birih, Copmanhurst



MAP 2: BUNDJALUNG DIALECT GROUPINGS
(Reprinted, with permission, from Crowley (1978:143))

The definitive common words and their distribution, as described by Crowley (and reproduced in Sharpe et al. (1988, 1996)) are:

- ‘man’ *mibiny*⁸ in the Tweed-Albert area
baygal elsewhere
- ‘woman’ *jalgany* in the Tweed-Albert area
dubay elsewhere
- ‘boy’ *jabuh* in the Tweed-Albert and Condamine-Upper Clarence areas
janagan/janangan elsewhere
- ‘eye’ *miyi/mih* in the Tweed-Albert, Lower Richmond and Condamine-Upper Clarence areas
jiyaw elsewhere
- ‘hand’ *dangan* in the Tweed-Albert and Condamine-Upper Clarence areas
jambay in UC and elsewhere
- ‘sun’ *nyanga* in Minyangbal, Ngahnduwal and one Tweed-Albert list
yalgan elsewhere and in two Tweed-Albert lists

Crowley also uses two suffixes:

⁸ In the *Dictionary of Western Bundjalung*, a syllable final /ny/ is written *yn*.

-gubih 'thing' suffix, used in all areas but the Middle Clarence,

-jam/-dham 'without', used on verbs in the Tweed-Albert and Gidhabal areas, but only on nouns in the others.

He also takes into account the /eh/ vowel in some irregular verbs in the past indefinite in Yugambeh and Nyangbal, but not (in his data) occurring elsewhere.

Watson in particular uses some diacritics on certain vowels. An acute accent indicates stress usually when it falls on other than the first syllable. By Crowley's, the Geytenbeeks' and my analysis, this indicates a long vowel in the syllable perceived as stressed.

2. VOWEL SHIFTS RELIABLY NOTED IN THE DIFFERENT DIALECTS

Little weight can be placed on a difference between, say, /a/ and /u/ in unstressed syllables, even from the most reliable transcribers, or between any of the short unstressed vowels in many cases, although generally the transcriptions agree. The sections below discuss differences which are easily heard.

2.1 UPWARD SHIFT OF VOWELS IN SOME WORDS

Livingstone noted in 1892 that the Minyangbal called their northern neighbours Ngahnduwal, because they said *gahn* (nominative *gahndu* ergative) for 'who', whereas the Minyangbal said *gehn* (and *gehndu*), and were therefore called Ngehnduwal by the Ngahnduwal. *Nehn* is also the form in GD, but the vowel is /ih/ in WA, WU and WE. We have this shift in vowel quality occurring in the following words:

'who' *gahn* in Ngahnduwal and presumably north (we lack the form in Y)

gehn in M, WI (prob.),⁹ GD

gihn in WA, WU, with *yihn* in WE

'you (sg. erg.)'¹⁰ *wahlu* in Y, M, WI, GD, WA

wahlu/wehlu in C

wehlu in WE

wihlu in C

'you (sg. acc.)' *wahnyi* Y, *wahnyi* WI, GD, *wihnyi* WA, WE

Paralleling the above shift is a change in the vowel in three of the irregular verbs:

ban- 'fall' in GD, Y, NY, and WI, *ban-/bin-* in C, *bin-* in WA

yahn- 'sit' in dialects north of WA,¹¹ which has *yehn-*

-an- in Y, *wan-/war-* 'be, become' in GD, and *wen-/wer-* in WA (reducing to *-un-/ən-*)

⁹ I am relying on memory here, without my own notes. Holmer records *gihn*, but he does not distinguish /eh/ and /ih/ in his transcriptions.

¹⁰ Also used for nominative in WI, WE, GD and Y.

¹¹ See also §3.5.2.

2.2 DOWNWARD SHIFT OF VOWELS IN CERTAIN WORDS AND AFFIXES

Interestingly, there is a reverse direction shift in a variable word-final vowel in the most common demonstratives, in an interrogative locative, and in the third person singular masculine pronoun, all of which have a variable quality word-final vowel:

gali/gale/gala ‘this, close to speaker, visible’

mali/male/mala ‘that, close to hearer, visible’

gili/gile/gila ‘that, far from speakers, visible’

yili/yile/yila ‘where’

nyuli/nyule/nyula ‘he (nom.)’

(and a few other two syllable words from closed sets)

Fluctuation between word-final /i/ and /e/ (rarely /a/) is found in the records of the northern dialects (Y, M, Galibal), and between /e/ and /a/ (never /i/) in GD, WA, WE, etc. When suffixed by case or other suffixes, the vowel is unambiguously /a/ (e.g. *nyulayu* ‘he (erg.)’ all, *nyulagan* ‘she’ Y, GD). Another shift occurring in the north with the more close front vowel is discussed in the next section.

Short vowel /e/ is relatively restricted in occurrence, and in some dialects it is clear that all other occurrences have arisen from the shortening of /eh/.¹² Elsewhere /e/, when regarded by the analyst as a phoneme, is only found where /a/ has been fronted following a lamino-palatal (/j/ or /y/).¹³

2.3 VOWEL SHIFTS IN IRREGULAR VERB AFFIXES

According to Crowley (1978), Yugambeh-Bundjalung gives evidence of having had a stock of about fourteen irregular verbs, all of which appear to have ended in a consonant (unlike other verbs), and to have taken various augmenta to give a vowel-final stem for inflection. (For this reason, I have quoted such verbs in their putative consonant final stem forms.) Among the various patterns in these verbs the most common is the addition of -ga. The augment -ba is used on *yan-* ‘go’ preceding -li antipassive/continuous; -ga is used elsewhere. For the tense called ‘past indefinite’ in Crowley, the Geytenbeeks and Cunningham, such verbs end in -gahn. However, in Yugambeh, Nyangbal and Wiyabal some of these verbs end in -gehn, and one (where the stress patterns of the language force a vowel shortening) ends in -gen. These verbs are:

yan- ‘go’: *yangehn* in Y, NY, WI, *yangahn* in WA, GD, BJ, C

ban-/bin- ‘fall’: *bangehn* in Y, NY, WI *bangahn* in GD, *bingahn* in WA

-anga-/wan-/wen- ‘be, become’: -*angehn* in Y, NY, WI, -*wangahn* in GD, -*wengahn* in WA

yahn-/yehn ‘sit’: *yahngen* in Y, NY, WI, *yahngan* in GD, *yehngan* in WA

¹² See footnote 5.

¹³ In some cases recent researchers have disagreed about whether to transcribe a vowel /ih/ or /eh/ in some verb suffixes. Marjorie Oakes, who collected much data over the years from Lismore people, disagreed with my transcription, and she may well have been right.

The limited evidence also suggests these patterns applied in the future tense which would end in *-gehny* where it occurred (this form appeared to have been absent from Y, or to have had an irrealis 'lest' function), and for the past in M, and for at least some forms in WI.

In the verbs, the lengthening of a final /i/ in a verb stem or in the antipassive/continuous suffix *-li* results in /eh/, not /ih/; however the lengthening of the nominaliser suffix *-li* results in the vowel /ih/.

nama- 'hold' + *-li* antipassive + *-:la* => *namalehla* 'was holding'

gawari- 'run' + *-:* imperative => *gawareh* 'run!'

gawari- 'run' + *:n* past indefinite => *gawarehn* 'ran'

but *namalihgu* 'for holding' (all), *jiyaw-nyahligu* 'spectacles' (lit. 'eye for seeing') WA

The underlying form of *-gi* for the augment in the eastern dialects of Y, NY, M and WI, contrasting with *-ga* in the other dialects is also substantiated by the form *bangilur* (<bangeloro>)¹⁴ in M.

2.4 /a/ TO /u/ SHIFT IN A LIMITED SET OF WORDS

The dialect title Yugambeh/Yugumbir attests the significance of a shift, presumably from /a/ to /u/ and not the reverse (Alpher (pers. comm.) and O'Grady (pers. comm.), based on other Pama-Nyungan forms) in marking dialect differences. Three common words show this shift (to date I have only found one other candidate):

yagam 'no, not' GD, WA, WU2, *yugam* WE, WU, *yugam*, *yugum* Y, *yugum* GN,¹⁵ [jogom] (probably *yugum* WI, C)¹⁶

waŋah 'your (sg.)' WI, WA, *wanja(h)* M, *wanah* GD, *wuŋah* Y (*wahluŋah* also attested in WI)

najany 'food' in GD, WA, C, WI,¹⁷ *nujany* Y, WU; cf. *najany-gali* 'person (man) fond of food', *najahny* 'good hunter', *nujuhny* 'feeling love' WA, *nugam-gali* 'one who is constantly chewing' GD

dalaŋ 'afraid' C (and *jarany* WI), *dulug* GD, *du(h)y(ih)ny* Y (cf. *guyihr* 'afraid' C)

Not as certain, but possibly in this category is

<*koongil*> 'arms' Ywh, *gangil* 'upper arm' Ym, 'arm' WA, GD, GN, GX (<*kanggil*> GN, <*congle*> GX, <*guhngil*> Yal, <*kungal*> M, <*kungle*> TW, <*gungil*> Yw, <*kungal*> M)

Hanlon's <*koongil*> very probably attests *gungil*, and Allen and Lane's spelling makes it quite likely. Most other northerly sources could be either. A transcription like GX <*congle*>,

¹⁴ Words enclosed in <...> are in original spelling given by sources not compiled by modern linguists, and where an attempt at phonemicisation would hide or over-interpret the evidence of the spelling. This paper does not discuss this verb suffix, which is only attested in Ynh, M and WI.

¹⁵ One other list, from the Woodenbong area has <*usumba*>, attesting the sibilant allophone of /j/, rather than /g/, see /j/ to /g/ alternation below, as well as suggesting /u/ in the first syllable.

¹⁶ Smythe uses a broad phonetic transcription. Based on his listing, an /a/ would have been written a, not o. However, he also records [jagam].

¹⁷ Holmer records *nangany*, but I know I have heard *najany* in BJ.

with ‘o’ after c/k, usually matches with the backed allophone of /a/ occurring contiguous to a velar consonant.

The shift to /u/ (if indeed this is the direction of the shift) occurs in the north.

2.5 SHIFTS IN PRONOUNS

The nominative form of the second person singular pronoun, where not subsumed under the ergative form, as well as the benefactive stem, show vowel changes as well as lenition of /j/ (see §3.1). In the examples here and in §3.1 (and elsewhere where the phonetic form of medial /j/ is significant for the point under consideration), *j* indicates the lamino-palatal stop or affricate, *dh* the interdental fricative, and <z> or *z* a sibilant lamino-palatal fricative.

- M: *weh* you nom., cf. *wiya(h)* (<wia>) benefactive (stem *wi(y)-*)
- C: [wie:/wudje:]
- WI: *wiye/wiya* (stem *wi(y)-*)
- BJ: *wu(h)ye/wu(h)ya* (stem *wu(h)(y)-*)
- GD: *wudhah* benefactive (stem *wudh-*)
- WA: *wudhe/wudha/wuje/wuja*
- WU: *wujeh*

Except for Smythe’s Casino list, which shows different forms, the lenition of the medial consonant increases towards the east and north, and the initial vowel is pulled forward.

2.6 VOWEL ASSIMILATIONS AND REDUCTIONS

A number of assimilations and reductions occur in conjunction with the attested lenition of /j/ or /t/ to /y/ between vowels. These will be given in other sections. The quality of unstressed vowels is not always as certainly ascribed as for those in stressed syllables, and it is perhaps immaterial whether a phonetic mid front vowel after a lamino-palatal is analysed as phonemically /a/ or /e/, but as well as reduction of /aya/ or /eya/ to /eh/, the following assimilation was found.

gayal ‘ground, dirt’ WA (replacing *jagun*, which occurs in all other dialects), *gayil* ‘clay’ WE, GD (and cf. *gayir* ‘cliff’ WA, GD, WU), <ngil> GN, *girbin/nyirbin* ‘gorge wall, very steep slope’ GD (cf. *gihir*, etc. ‘forehead’)

2.7 OTHER VOWEL SHIFTS

nimbihl ‘behind’ WE, *nimbihngi-* ‘return’ WE, *numbihl* ‘after, behind’ GD, C, WI, *numbuh-* ‘return’ GD, Ym, Ywh, *numbungi-* ‘return’ C

widhang ‘grass’ WU, GN, *wudhan* WA, WE, GD, WU2, GX, C, *wihdhan/yihdhang* Y, AT, TD, NC

<kirri> ‘pademelon’ Yw, <kurree> Ywh

gayi- 'enter, go in' GD, Ywh, M, *gayeh-* WA, *giya-* WU, TD (<kia>)¹⁸

yuna- 'lie down' WA, WE, WU, M, *yuna-/yina-* C, WI, *yina-* GD, Ym, Yal, *nyina-* Yw

wiyun 'clever man' WA, *wuyan* GD, *wuyun* WI, *wiyug* ([wi:uŋ]) C

and the doublet attested in Gidhabal and Yugambeh, but with wider semantic range in other dialects, covering 'a covering, rag', etc.:

gumbiny 'house' WE, GD, GN, Ym, M, *gumbin(y)* Yal, Yw, Ywh, *gumban* 'blanket' GD, Ym

Given the uncertainty of some of the sources as well as what is known about the phonetic quality of vowels contiguous to /y/ in 'enter, go in', the evidence for the interchanging of /ayi/ and /iya/ is not particularly convincing.

3. CHANGES IN CONSONANTS

Consonant shifts in the Yugambeh-Bundjalung dialects include examples of lenition and of alternation between consonants with the same point of articulation, of alternation between alveolar and lamino-palatal consonants, and a limited number of alternations between interdental/laminopalatal and velar. There are also some shifts between nasals of different points of articulation. Some of these are common assimilations (such as /n/ assimilating to /ŋ/ before /g/), but a number of putative examples of this are suspected of being transcription inadequacies or ambiguities. Certain points should be noted, however:

1. In the real world of speech, such assimilations are far more common in connected speech than in citation forms of words, and almost all our data in this language comes from short, often not fluent, dictated sentences;
2. In the real world of speech, certainly in large speech communities, some speakers, in the course of normal language acquisition, acquire an assimilated form where other speakers do not;¹⁹
3. When a language has been going out of active use, many of those who have supplied data have not, or have not for decades, been in a living speech community using the language, and thus may never have had variant pronunciations corrected by the purists of their community (and the Yugambeh-Bundjalung community, in my experience, had its fair share of them!).

3.1 LENITION OF /j/

Lenition of /j/ is quite clearly a factor affecting the Yugambeh-Bundjalung dialects. The interdental fricative realisation of the word-medial archiphoneme in Gidhabal, and the sibilant allophone in northern dialects are lenitions of the lamino-palatal stop. In addition, as one

¹⁸ <kia> could stand for *gaya-*, depending on whether the compiler was using 'i' to represent 'short i' or 'long i' in this case.

¹⁹ O'Grady commented that usually about half his students used a velar nasal in saying *Vancouver*, while the others used the apical. I am also aware that some assimilations and other pronunciation variants are common in some social groups and rare in others among Australian English speakers.

moves across the area from south-west to north-east, the shift is from *j* through *dh* and *zh* to /y/ (IPA [j]) in a variety of words.

Examples of lenition of the lamino-palatal stop/obstruent are found in the first person singular ergative pronoun, and in the second person singular nominative pronoun in those dialects that maintain the old nominative form. Yugambeh, Gidhabal and Wehlubal appear to have lost the nominative form; in Y and GD *wahlu* is used, and in WE *wehlu*. Examples of this lenition, the direction of which few historical linguists would contest as proceeding from the stop towards the semivowel (and sometimes to complete loss), are:

first person singular ergative: *gadhu* WA, WE; *gayu* Y, WI; *gaw* (nom. and erg.) Ym²⁰

second person singular nominative: *wujeh* (always a lamino-palatal stop or affricate) WU; *wuje/wudhe/wuja/wudha* (more commonly the interdental fricative) WA, WE; *wuhye* BJ;²¹ *wiye/wiya* WI; and *weh* M. Gidhabal preserves the root *wudh-* in the benefactive *wudhah*.

There are also a number of words which show this lenition, and in some cases the consonant completely disappears, leaving a long vowel.

baji- ‘hit, punch’ WI, BJ, GN, C, *badhi-/baji-* WA, WE, *badhi-* GD, *bayi-* Y

bijan ‘father’ WI, Y, [bidan] C,²² *biyan* Y, M (also *biyul* in one list for Y), *biyan* ‘grandfather’ WI²³

wajun ‘mother’ (<wydong>) GX, <wadhun> GN, *wajun/wadhuŋ* WA, *wadhuŋ* ‘mother’ GD, <wajung/wadhung> Yal, Yw, *wajun* M, <wardon>, <waudhun>, <weathung> AT (three sources), [wadhun/wadjun/wi:jan/weijun] ‘mother-in-law’ C, *wayan* (<wyung>) NC (cf. *wiyan* ‘wife’s brother’ WU, *wuyaŋ* WA, GD)

waji- ‘speak, talk, say’, WU, WE, *wayi-* WI, *wihya-* C, *wayma-* Y, GD (probably from **wayi-* + -ma)

gidha-/gudha- ‘say, tell’ GD, *giya-* Y, M, TD, GD, *giyi-* Ym²⁴

gahja- ‘chase’ C, *gaja-/gadha-* ‘chase, hunt’ WA, *gadha-* GD, *gaya-/gahya-* WI, *gaya-* ‘chase, hunt, drive’ Yal, Yw, *gayi-* Y, M

mujum ‘one’s child’ WU, *mujum/mudhum* WA, *mudhum* GD, *mudhum/muyum* C, *muyum* Y, M, TD, WI²⁵

Unlike the above examples, the next example does not show an unambiguous lenition moving from north to south.

²⁰ Joe Culham frequently used *gaw* rather than *gayu/gadhu*. It may have been idiolectal, or a further reduction of *gayu*.

²¹ Note that the final vowel of this pronoun, except when it is long, can vary just as the final vowel of *nyula/nyule/nyuli*, etc. does.

²² /d/ does not occur intervocally, so Smythe is probably in error here; the form is possibly [bidhan] or [bidjan].

²³ Possibly in error for ‘father’. Note that the homonym *bidhan* ‘little’ has never been attested as **biyan*. It only shows the allophonic shifts in /dh/ common to each dialect.

²⁴ From Joe Culham; all other sources of words for this and Minyangbal attest *giya-*.

²⁵ We also have <margum>, probably *mahgam* ‘son’, <margumgun> ‘daughter’ GX, which suggests that *mujum* might have had an alternate *mugum/magam*, paralleling the *jahjam/jahdham/jahgam* alternation in WI (also, apparently, with the u/a vowel shift).

yaljal 'sick' Yal, Yw, C, *yalyal* Ym, M, WI, Ywh, *yadhal* GD

Compare also the following doublets:

jaj 'bad', *yajma-* 'abuse, swear (at)' WA, GD, WI

wudhumbiny 'groin' GD, *wuyi* 'pubic hair' GD

jarahny 'frog' WA, GD (and other dialects), *yirihny* 'small green tree frog' GD

gadhi 'here, exact area in sight' WA, GD, *gayi* 'here, general area, not in sight, present time' GD (and other demonstratives/locatives)

Compare also the following, where we could be dealing with two words **warjam* and **wajam* in earlier forms of the language, or a doublet formation from **warjam* with elision of /r/, compounded with (in the case of Ym) misstating (through lack of use) the meaning of the word. However, the *wardham* has been called 'the fearful whale' by a Gidhabal speaker, sharks and rays are closely related zoologically (although it is not known how they were classified in coastal dialects), and rays and flying squirrels resemble each other in flatness and broadness.

warjam/wardham 'sea monster' WA, WE, *wardham* GD, *wadham* 'sugar glider, scorpion' GD, *wajam* 'shark' Ym, *waryam* (<warriom>) 'shark' Ng, *wayam* 'stingray, large flying squirrel' Yw, <wemmm> Ywh

and:

budhay 'swift' GD, *bujay-buyay* M, *budhay-buyay* 'swallow' (bird) GD

and the following showing other changes:

wudhurga- 'steal' WI, *wurga-* (<wurga>) 'steal' Yal, Yw, <woora> Ywh, TD

and, less securely established:

jaraj 'leg, thigh' (most, *yaraŋ* (<yer-ung>) WU2 (a less reliable source)

junbar/yunbar 'fly' WU (best source), *junbar* 'fly' (all others)

3.2 LOSS OF RHOtics AND LATERAL

It is an easy thing to do, in the case of old and poorly spelt lists in an area where we have good quality recent recordings and transcriptions, to interpret all 'lapses' from good matchings with the recent data as due to the lack of skills of the older recorders, in both phonetics and spelling. However, there are a number of consistencies in some of the lists to suggest these recorders may have been responding to some genuine differences in form and pronunciation of some words, which may not have been evident to later researchers. We are talking, in some cases, of a time depth of about a century, still not a lot, but enough (from what we know of English and other world languages) for some detectable changes in pronunciation to occur. The discussion below (in §3.2.1–3.2.3) relies on a careful consideration of some of the older lists, which leads one to consider the strong possibility that some rhoitics have been lost in a number of words, with, in many cases, a lengthening of the vowel, either word finally, or word medially where the purported /r/ was between identical vowels (/*ara/ and /*uru/, and possibly also /*ari/, but not /*iri/).

3.2.1 EVIDENCE OF CONSISTENCY IN AN UPPER CLARENCE LIST

Among the old lists of vocabulary we have one listed as Upper Clarence and collected by J.P. Thomas (1900). A careful checking of this list shows remarkable consistency of orthography when the words are checked against the modern transcriptions (a large proportion of his words also occur in recent lists). He did not distinguish velar nasals, or alveopalatal nasals, consistently from the alveolar nasal, but seems fairly accurate in other areas. His consistency and system encourage confidence in his transcriptions of four key words where in three of them we know there was a final lateral.

Examples of Thomas's transcriptions justifying confidence in his consistency of symbolisation (for the points under consideration, comparing his transcriptions with the known phonemic form of the word whose meaning he gives) are:

- <talagerah> equates with *dalagar* 'mud'
- <diggerrie> equates with *digir* 'bitter'
- <toolooberrie> equates with *dulubir* 'dove'
- <cobbirie> equates with *gabir* 'hungry'
- <dunerah> equates with *danir* 'ribs'
- <yaborah> equates with *yabur* 'one'
- <bi-ar-rah> equates with *bayahr* 'centipede'

The interpretation of his word <cumiver> (*gamay-beh* 'big indeed') for 'thumb, big toe' as ending in /r/ is less certain, as his most consistent pattern is to write a vowel following the /r/. Some words which are harder to be sure of are:

- <bagabar> for *bagaba* 'shoulder blade'
- <mara> for *mahr* 'black duck'
- <charo, jara> for *jaru* 'stone'

It is consistent to equate many of his <Vr> sequences within a syllable with a vowel alone, possibly long, when they are within a syllable:

- <corndoona> 'hair' (*guhndun*)
- <chargum> 'child' (*jahgum*)
- <borndun> 'lungs'
- <mergam(gun)> 'son (daughter)' (probably *mahgam*, cf. *mudhum/muyum* and <margum> GX)

3.2.2 LOSS OF FINAL /r/ AND /l/

I have long suspected that there may have been a loss of a final /r/ in Yugambeh-Bundjalung words which in recent lists end in /e/ or /eh/. My suspicions were first aroused on the basis of Watson's naming of the dialect as *yugumbir*. My informant, Joe Culham, referred to it as *yugambeh*. Certainly a contributing factor to Joe Culham's pronunciation was his relative toothlessness, which made production of the rhotic a bit vague; however, on the basis of my work and his more deliberate pronunciations, I became fairly confident

whether there was a rhotic or not. Nevertheless, in a number of the older lists, there are spellings that would suggest the presence of a rhotic which more recent investigators did not find. I have even considered whether an earlier version of the language had two rhotics (the most common pattern in most Aboriginal languages), and perhaps the retroflexed (and unflapped) rhotic has either dropped out or merged with the flapped rhotic, in part (at least) determined by its position.

In J.P. Thomas's list, there are four words he spells with final <t>. In three cases, this final <t> corresponds with a final /l/ in other lists. In the Yugambeh-Bundjalung dialects, in word- or syllable-final position, /r/ is trilled, /l/ often flapped, and nasals are often prestopped. From J.P. Thomas's transcriptions, one can surmise this was particularly the case in the data he recorded. He also records a stop finally in many words we know to have concluded in a nasal—which indicates the flap onset of the nasal was particularly marked. The four words he has written with final <t> are:

- <bigot> 'Aboriginal man' (*baygal*)
- <nogot> 'cheeks' (*nugal*)
- <niyett> 'earth' (*nzayil*)
- <choolget> 'worms' (cf. *julgeh, julga* in other lists)

This is strong evidence that a final consonant, most likely /l/ from his list (although otherwise I would surmise /r/), was present in **julgil/julgir* 'worm'. My surmise is that a number of other words attested as ending in /eh/ or /e/ in different dialects are later forms of words ending in /*ir/, and the rhotic in question may possibly, like those discussed in §3.2.3, have been a retroflexed 'r' rather than the flapped/trilled /r/ (rr).

In my 1969 monograph on Yugambeh, I followed Watson in naming the language Yugumbir, and given the old age toothlessness of Culham, with whom I worked, rhotics were a slight problem. In the long run I decided there was no /r/, and the second vowel was better represented /a/. The only occurrence of <yugumbir> therefore is in Watson's name for the language, but why did he spell it that way? The -be(h) suffix is well attested in Wahlubal and Gidhabal, where it may function as a mild intensifier (GD) or is glossed 'only' (WA). Perhaps this vowel, long in some dialects, has evolved from a /Vr/ sequence. (Holmer hints that -beh could be a 'shortened form' for -bari 'having').

The evidence, therefore, though limited, strongly hints at a loss of some final occurrences of /r/ and perhaps /l/, with consequent vowel lengthening in at least some dialects.

3.2.3 LOSS OF MEDIAL /R/ BETWEEN (IDENTICAL) VOWELS

A few words show a medial /r/, usually in the context /ara/, being replaced by /y/, or the VCV changing to /eh/; in some there is also a change from /j/ to /d/ elsewhere in the word:

jarul 'stone' C, *jaru* WA, WE, GD, WI, <*garro*> CP, <*tarrau/darraw*> Yal, Yw, <*day-yo, dao*> AT, *dehyu* Y, <*yeron*> AT²⁶ (and cf. *dawgay* 'rock' WA)

²⁶ The final 'n' of <*yeron*> could be a misreading of 'u'. A number of words in old lists appear to have been misread, as 'n' and 'u' were very similar in older styles of handwriting. The source for this form is not one of the most reliable, but it does at least suggest that the initial consonant was lenis enough to have been heard as 'y'.

<gorumgun(n) ‘star’ Yal, Yw, <kuroomgun> AT, *guyuhm(gan)* WA, WE, GD, WU, GX, Ym, Ywh, TD, *guyumgan* C (and <wungyurgum> GN)

waran ‘root of tree’ Yal, *warahn* ‘pelvis’ Yal, Yw, *wayan* ‘hip’ WA, GD, [wei]ndjar] C, *wayan* ‘hips’ M, <wahn> Ywh, <wen> TD, *wayanyjar* ‘root’ WA, *wayangir* ‘root of tree or plant’ GD

baraj (<barang>) ‘today, now’ Yal, <burang, byein> AT (different sources), *bayahny* C, WI, <baian> Yw, M, <baiad> AT,²⁷ <barn, baan> NC, TD, *bahny* Ym

girehr/girihr ‘shy’ GD, *gayehr* ‘ashamed, embarrassed, shy’ WA, [geije:r] WU

<borrol> ‘mountain’ Yal (stress on second syllable); <bor’rol, bor’rōl> (stress marked on first syllable) ‘mountain range or peak’, bū-ūl ‘hill’) Yw; *buyuhl* Ym; <bool, boo-ool, boiool> Ywh, <poiol> M, <biola> TD, <beoll> AT (one list)

buruhlgan (<brolgun>) ‘stone plover’ Yw, <buruagun> Y(another list), *buyuhlgan* Ym (apparently derived from ‘mountain’)

<guran/kuran> ‘possum’ Yal, *guwihny* (*guyihny*) Ym, *guyahn(y)* Ywh, NC, AT, TD, *guwahn(y)* (<cooan, quaan>) NG

Compare also, although not too much weight can be placed on the sources for WU2 and GX:

<gerung> (presumed *jeraŋ*) ‘mouth’ WU2, <fedung> GX, *jayag, jehŋ, jeyag* ‘mouth, beak, lip’ Ym, <jeng> Yal, *jeħny* ([dje:nj] C, <diang> Yw, <jang> Ywh, <jerng, chaung> TD, <jairn> MUR, <chang>, <jairn> AT, <djayang> M, *jahŋ* WI (note WI does not distinguish all vowels)

From one record only, there may have been an /r/ in the word for ‘possum’, which has disappeared, leaving a form all transcribers—including myself—have had difficulty with; was it **guwihny* or was it **guyahny*, or perhaps both are reduced from **guwiyahny* or **guriyahny*, etc. In addition it seems there are close doublets in some dialects which are used for different possums.

guyahny ‘possum’ WA, GD; also ‘rabbit’ WA, often used generically for any species of possum, also ‘Mt Possum’ GD (cf. *ganam* ‘black possum’ GD)

<guran> ‘opossum’ Yal, *guwihny/guyahny* ‘possum, big forest possum’: *guyihny* Ym, <gweeahn> Ywh, *quini* AT, <quarn> TD, <gueyan> NC, <quaan> Ng, <Kunnumboon> ‘place of possums’ Ywh

guwin ‘ringtail possum’ Ym, <wing> Yw

The following hints at elision of /r/ with consequent vowel length:

gurun ‘hot’ WI, ‘warm’ WA, ‘sky’ GN, *guhn* ‘hot’ (almost all)

In my Yugambeh data I have one example of two contiguous long vowels in *guhngahla* ‘it’s hot’. It is, as far as I know, the only example in any modern linguist’s data of two contiguous long vowels, which suggests the elision of /r/ is rather recent in the informant’s language history, leaving an anomalous form.

²⁷ The transcriber has reacted to the pre-stopped nasal that often occurs in this position—after a long vowel—and is very common in the pronunciation of ‘today, now’.

If indeed there has been a loss of intervocalic /r/ in a number of words, the limited data also suggests a couple of mechanisms which may have blocked such loss. One is near doublets with unrelated meanings which could result in homonyms. The other is the presence of a lamino-palatal consonant in the word. (All words which may be involved are of the form /C₁VrVC₂/, where the vowels are both /a/, both /u/ or occasionally /a/ followed by /i/, and the initial and final consonants are different.)

3.3 LENITION OR ELISION OF /l/

It was not always easy with Culham, who I worked with in Yugambeh, to distinguish /l/ and /r/, especially given his articulation problems with loss of teeth. The problem was rather widely encountered in ‘salvage work’ as it was called—the recording of languages no longer in everyday use. But generally over a short time, I and other linguists made fairly confident decisions on which was which. If we were always and in every respect correct, then there was some variation between /l/ and /r/ in presumed cognate words in different dialects and languages. In any case, /l/ appeared also to undergo some of the shifts /r/ undergoes.

3.3.1 LENITION OF /l/ TO /y/

Note that in the first example below, there also appears to be a vowel shift in some dialects, and an /r/ attestation, and a shift from /d/ to /j/:

dulug ‘afraid’ GD, *dalaŋ* C, *du(h)y(i(h)ny* Y (and *jarany* WI)

bulbul ‘Angophera’ Ym, <*bulbo*, *būai-iūū*> Yal, Yw, *bu(h)y-bu(h)y* (<*boiee-boiee*>) Ywh, <*pubo*> Ng

<*koolgum*, *kooeegum*> ‘sand’ Ywh, <*kooigum*> ‘sandhill’ TD, *guygum* ‘sand’ C

There is lenition and vowel change in the next example:

wula- ‘give’ Y, TD, MUR, C, WI, *wiya-* M

3.3.2 LENITION OF /l/ TO /w/

This change appears to be less common. The following doublet is a rare example:

galga- ‘chop, cut’ (all dialects), *gawga-* ‘cut, slice, saw’ GD

3.4 LENITION OF VELARS

Given the very lenis, oftentimes fricative articulation of /g/, it would be surprising not to find /g/ lenited to /w/. Other lenitions also appear to occur infrequently. None of them show any clear trend from north to south or east to west among the dialects, in part because the evidence is so scanty.

3.4.1 LENITION OF /g/ (TO /w/)

Three, perhaps more, words show lenition word initially, two in my own work with one speaker, who varied freely between both forms:

gurba-/wurba- ‘hide’ Ym, *wuhrba-/wulba-* C

guginy/wuginy ‘quick’ Ym, *wuginy* Yal, Yw, Ywh

<kurraboo, woolalboo> ‘lots of, plenty’ Ywh, <kurraboo> TD

Two of the following ‘losses’ word medially could be regarded as lenitions to /w/, but it is perhaps more accurate to regard them as examples of elision of medial /g/ in a cluster /wg/ or /rg/:

jawga- ‘send, allow to go’ GD, Y, *jawa-* ‘send’ WA

<gaugon> ‘get angry at’ Yal, Yw, <kowgoon, kowoon> Ywh

wudhurga- ‘steal’ WI, *wurga-* (<*wurga*>) ‘steal’ Yal, Yw, <woora> Ywh, TD

jungaahr ‘pelican’ C, *jungaahr* WA, M²⁸

The doublet *gundal*, *wundal* may belong here, with some meaning shift:

gundul ‘bark of tree’ Ym, Yal, Yw *gundal* (<*goondool*, *gundool*> ‘canoe’ Ywh, <*kundal*> M,²⁹ <*koondool*> ‘canoe’, <*koonjool*> ‘bark of tree’ AT, <*condool*> ‘canoe, bark of tree’ NC), *wundal* (<*wundul*> Yal, <*wundal*> Yw ‘(bowl made from cork tree’)

3.4.2 /g/ TO /ŋ/ LENITION

The first example here shows a number of changes, though Calley may have missed the lamino-palatal articulation of the nasal in the WU examples:

gunbi ‘carpet snake’ WU, *guhnyba* ‘snake (generic)’ WA, *guhnybe* GD

gawrayjam ‘dumb, without speech’ Yw, *gawrayjam* Yal

gulany ‘tick’ Ym, *gulan* Yal, Yw, *gulan* Yw

<n’gooloolee, goolee-ee> ‘diamond fish’ Ywh

3.4.3 LENITION OF /ŋ/ TO /w/

I have only found one example to suggest this lenition with any confidence:

gurahm ‘asleep’, *wurahm* C, WI

The following example is perhaps no evidence at all, but I include it in case evidence from elsewhere shows it to be a plausible semantic shift:

²⁸ All northern sources except the recent Fingal Heads source have ambiguous <ng> spelling in this word. However, the Fingal Heads source has a hyphenated placename: <joong-urra-narrian> ‘pelican dance’, which suggests a velar nasal only.

²⁹ A number of forms attested from some sources could be interpreted as *gandal/gandul*, but on the basis of Ywh’s list and one of the AT lists, it is taken to be *gundal*.

ganyjar ‘lie, falsehood’ GD, <ungjurra, ungdhūrra>³⁰ ‘false, untrue’ Yal, Yw, *wahnyjari-* ‘to roll, turn, change, turn into’ WA, *wanyjigur* ‘blanket’ WA

3.5 VARIATION BETWEEN APICAL AND PALATAL ARTICULATION

Among the many examples where transcribers differ in the rendition of some sounds, a modest number can be considered as reasonable evidence for such variation. Many earlier workers commented on the difficulty of being sure about some of these sounds; their problem was exacerbated by their not realising that there was no voiced/voiceless contrast.

3.5.1 /d/ TO /j/ SHIFT

In my own work I have noticed some variation between initial /di/ and /ji/ in some words, and this variation, and variation in other syllables, is attested in various other sources, some very reliable, and some less so:

diraj ‘tooth’ WA, WE, GD, WU, TD, NC, *diraj/jiraj* Ym, Ynh, Yal, Yw, AT, <cheering> GX (probably Gidhabal or neighbouring dialect, collected at Woodenbong), *jiraj* WI, <titang> (probably *diraj*) GN

dijimahm ‘lilly pilly’ WU, *jijimahm* GD³¹

dahbalam/jabilum ‘Tabulam’ WA³²

dawga-/jawga- (<daugar/jaugarr, dhaugar>) ‘send’ Yal, Yw³³

diman ‘ashes, camp’ Ym, Yal, TD, NG, Ng, AT, *dihman* C, ‘ashes’ GD, *jiman* Yw, Ywh

dabal ba-/dulul ba- ‘rattling noise’ (many dialects), *jalal ba-* ‘make bumping noise’ WA, GD

Examples also occur of /d/ to /j/ alternation after /n/, occasionally with shift of /n/ to /ny/. In some cases, for example with *minji-/minyji-* (I do not feel much weight can be attached to the alternation of /n/ and /ny/) the difference is hard to hear and hard to maintain articulatorily, and most of our sources were incapable of noting any distinction.

mundurguhm ‘death adder’ GD, <underugam> Ywh, *munulgum* Ym, <mundalgam> Yal (sometimes ‘corrupted’ to <mundulum> Yw), <manjeralgan/munjeralgan> Yw

³⁰ I consider this much more likely to reflect an initial syllable /ŋa/ than anything else. Yal and Yw omit to record initial /ŋ/ in the syllables /ŋan/ and (presumably here) /ŋany/. Ywh records the initial /ŋ/, in such syllables but does not attest this word.

³¹ Note the general rule that non-word-initial /j/ is an interdental fricative in GD is broken here, as it is in a few other onomatopoeic words.

³² Vowels of unstressed syllables such as the second and third syllables here are not always unambiguously definable.

³³ It is not often that Watson’s list differs from Allen and Lane’s in rendition of /d/ or /j/. Watson consistently uses <dh> when Allen and Lane use <j>. Although the possibility of an error in type setting cannot be ruled out, for Watson’s list to have added <h> to Allen and Lane’s <d> is less likely than if a <j> in Allen and Lane’s list had been rendered as <d>. In transcriptions in this paper, I have replaced word-initial <dh> with <j>, although Watson’s general comment that the sound is a flat tongue articulated one rather than a grooved articulation is an accurate observation on all the allophones.

<kundera> ‘rat’ Yal; <kun’dhera, kun’dे̄ra; mun’dhařu> Yw, *gundur* WI, Ywh Goondaroo

mundaru ‘naked’ Ywh, Ym, *mundur* ‘naked, bare’ GD, *munyjah* ‘naked’ WA³⁴

minji- ‘laugh’ WE, *minyji-* WA, WE, GD

buhn ‘coil’ GD, *buhn-buhny* ‘small whirlwind’ GD, *buhny-buhny* ‘whirlwind’ GD

See also §3.6. Not all the evidence here is very conclusive. For example, the alternation of /n/ and /ny/ before /j/ is quite unremarkable in this language in my opinion, although in my work in Alawa (Northern Territory, a non-Pama-Nyungan language), would suggest that for that language the speakers are far firmer in their differentiation of these two phonemes in this position. If it were not that modern linguists (Cunningham, Crowley, the Geytenbeeks and Holmer) showed their ability to distinguish these two nasals in such a position, almost no weight could be placed on the supposed contrast.

3.5.2 /ny/ TO /y/ INITIALLY, TO /y/ OR /l/ FINALLY

In three cases Watson uses an initial <nyi> where Allen and Lane’s list have initial <i> (the glide of initial /y/ before /i/ or /w/ before /u/ is often not apparent). Nor is it always certain to the best of us whether what is heard is an initial syllable /nyi/ or /yi/. I would not regard Watson’s hearing or transcription here as weighty evidence, and no other sources support it, but it could be possible. Moreover, as he includes a variant with initial <w> and a different vowel, one suspects he is not just copying Allen and Lane in his work (he did claim to check all his data, and modern Yugambeh people say there is no doubt there were speakers he could have and would have consulted at that time). The second example could perhaps be a doublet.

nyina- ‘sit’ Yw, *yahna-* Ym, Ywh, M, AT, TD, GD, *yehna-* WA, WE, WU, C, and, curiously a variant <weina> in Yal, Yw

nyirij ‘green snake’, *yirahny* ‘green or whip snake’ Ym, <iring, irrig> ‘green (tree) snake’ Yal, Yw, <yerrin> ‘green snake’ Ywh, <eron> Y(another list), *yiran* ‘green tree snake’ GD

<nyinga> ‘bite’ Yw, *yiga-* Ym, <inga> Yal, <inga> M, *yiga-/yingga-* WA, WE, GD

We have one case of a final /ny/ attested in one list after /u/ where all other sources suggest /y/ or /l/:

yaguny (<yaguin>) ‘bandicoot’ GN, *yaguy* ‘Eastern Bandicoot’ WA, GD, C, *yagu(h)* Ym, *yaguy* Yal, Yw, Ywh, <yackiel> Y (another source), <yawgu> Ng

3.6 OTHER SHIFTS IN NASALS

In examples below, a small meaning shift correlates with the difference in form, suggesting perhaps fossilised suffixes.

dalaŋ ‘red ochre’ WA, *dalaŋ* ‘white clay’ GD, *dalaŋ* ‘clay, ochre’ WI, *dalahn* ‘white’ WA, GD, WU, WI

³⁴ This could furnish another example of loss of final /r/.

gudhihn 'red, orange-red' GD, WI (possibly *gudhihn*), *gudhihny* 'red' WE, WU, *gudhij* 'red clay, red ochre' GD

gudhi 'paint, ochre' Ym, 'red clay' Yw, *gudhihn* 'red' Ym,³⁵ *gudhij* 'red ochre, red pigment' Ym, <gogin> 'light red' Yal, <goging> 'dark red' Yal, <kūtdhī> 'light red' Yw, <kūtdhin> 'red clay or pigment' Yw, <kuji> 'red' M, <Coochimudlo> 'Coochiemudlo' (a place) Ywh, <kudgen> 'red land' Ywh

The overlap in meaning of 'clay/ochre' and colour allows the shift of colour term meaning to move through a plausible intermediate step. *Dalanj* keeps its colour reference of 'white' in the compounded word *dalanjehny* in WA listed as 'Greyfaced Wallaby', probably the Whiptailed or Pretty-faced Wallaby, which has white markings on its face. See also §4.1.

3.7 VARIATION BETWEEN /j/ AND /g/

While this variation is not common, it occurs in WI in the common word for 'child', which is sometimes heard with a medial velar fricative:

jahjam/jahgam 'child'

also:

jigay 'catbird' WU, GD, and other dialects, *gigay* GD

<boobojan, boobigun> 'ashes of fire' Ywh

giwa 'laced monitor (goanna)' Yal, Yw, *jiwah* Ym

See also *gudhi*, etc. in §3.6 above, where Allen and Lane has a medial <g>, which could possibly be a mistranscription for <j>.

Variation in the sequence /gi/ to /ji/ (or /ŋi/ to /nyi/) is plausibly accounted for: /g/ and /ŋ/ can be fronted to a palatal articulation, not only in dialects of this language, but in other Australian languages I have worked with. The fricativising of /g/ in Yugambeh-Bundjalung also brings medial /j/ and /g/ closer acoustically.

3.8 OTHER CONSONANT ALTERNATION

3.8.1 /n/ AND /l/

The list of examples is short, but the words are commonly used, and their variation cannot be ignored:

gaban '(rain) forest, (big) scrub' Y, *gabal* WA, WE, GD, M, C

manaldjahli Ym, *manandjahli* Ynh 'name of the Beaudesert language'

The word form *manal* 'ready, ripe, cooked' WA, GD, 'hard, baked' Ym is attested, but never **manan*. According to Watson, suffixes <jan> and <ja> are abbreviations; -ja(h), as an affix, is commonly attached to the substantive roots of placenames to indicate 'place of' (Watson 1943). This accords with Culham's explanation of the language and placename *Manaldjahli* as 'hard, baked ground', although I have no explanation for the final /li/. The

³⁵ Except for the source Ym, little certainty exists as to what the final nasal is in this list, except that Yal's <goging> may reflect a final velar nasal.

form *manandjahli* has been the form used by other descendants of speakers; Culham's explanation may be a folk etymology based on his own pronunciation. On the other hand, towards early summer, the Queensland side of the territory can be markedly browner and drier than the New South Wales side.

3.8.2 /n/ AND /r/

dangar 'mud' WA, *dalgar* WA, *dalagar* WE, GD, *dalgar/dalgal* Yal, Yw

3.8.3 /l/ AND /r/

Keeping in mind earlier comments about the difficulty at times in distinguishing these two phonemes, I put forward the following list:

bula, *bulah* all but GD, *buruhr* GD, [burul, burur] 'two, both' C

dalgar 'mud' Yal, [dalagar] C, *dalgal* Yw

yandal 'jaw' WA, *yandar* 'jaws of fish' GD

yabur 'one' WA, WE, GD, WU, C, *yabur*, *yaburu* (all northern dialects) *yabul* (<*yabul*>) GN

yalbi- 'sing' B, *yarbi-* WA, WE, GD, WU, C, WI

qihl 'forehead' WA, <ngil> 'brow, ground' GN, *qihr* 'forehead' GD (cf. *qirbin*, *nyirbin* 'gorge wall, very steep slope' GD, *qihrgil* 'river bank' WA, *qihr gawahny* 'seasonal change—breaking of season before and after the monsoonal period', *gayir* 'cliff' WA, GD, WU (very likely the same root), *qihra-* 'look upward' GD), *yilim* 'eyebrow' Yal, Yw³⁶

wulaj, *wurahŋ* 'leaf' Ym, *wuraj* Yw, Ywh, TD, *wurahŋ* WA, WE, GD, C

gulgun 'language' Ym, *gurgun* Yw

dulgul 'dirty' Ym, Yal, <tülgürra, tülgül> Yw, <toolgul> Ywh (cf. §3.8.2)

bawur 'head' Ym, Yw, TD, C, *bawul* Yal, Yw, <bowah> MUR (and <buraugh> AT, <poweroo> NC, <bowra> TD, <powroo, pahroo> Ywh; and <baru> 'head, hair' in one Ynh source)

3.8.4 /l/, /r/ AND /y/

jangar 'wet' WA, B, *jangal* WU, *jangahy* GD

3.8.5 LENITION OF /b/ TO /w/

galbuny 'lyrebird' GD, Ym, <kalbun> Yal, Yw, <kalwun> Ywh, <caboon> Y, Ng, GC

³⁶ This last suggests a loss of initial /ŋ/, but see §3.9 for another suggestion.

mabahŋ ‘old man’ GD, WU, *mabaŋ* WA, *mabaŋ* ‘person of importance’ C, *mawahŋ* ‘old man’ WI

3.8.6 WORDS FOR ‘WHERE’

The various words for ‘where’ suggest various lenitions and losses, in one case lenition of initial /j/ or of medial /l/ to /y/, and in another loss of initial /w/. All medial /nj/ could be /nyj/, the homorganic cluster.

jiyah ‘where’ WU, *jih* C, *yili/yile/yila* Ym, Yal, Yw, Ywh, AT, NC, TD, *yila*, *yilah* WA, WE, WU, GD, GN, *yihla* C

wunda/wunji Ynh, *winji/yinji* Ym, M, Ynh, *winji* TD, *yinji* Ng³⁷

juganga ‘where to?’ C

The suffix *-gu* can be added to *yili/yila* and *winji/yinji* forms for ‘where to’, and *-gal* to *winji/yinji* forms for ‘where from’. Some, if not all forms can also be used for indefinite place ‘somewhere’, etc. Note that only the first line of examples can occur unaffixed.

3.9 METATHESIS

Metathesis has been considered to be a feature which occurs in this language. It has often been suggested that the Yugambeh-Bundjalung word for water *gun/guhŋ* has been metathesised from a Proto Pama-Nyungan **guku*, but examples that occur within or between dialects include both consonant and vowel metathesis. For examples of the vowels, see §2.7. Consonant metathesis is exemplified below:

nyulamaŋ/nyulaŋam ‘they’ WA, GD (a regularised plural form built on *nyula* ‘he’)

julgu/jugul ‘heart’ WA, *dulgu* GD, *gulju* WE

and possibly, although the /d/ and /b/ do not match, and there is some doubt about the stressed vowel:³⁸

gumbu/gambu ‘cobra worm’ (a teredo worm, a delicacy) <*gūmbō*> Yal, <*Koomboobah*> ‘Coombabah’ (a place), ‘place of cobra worm’ Yal, <*gūmbō*> Yw, <*combo*> GC, <*Coombabah*> ‘a pocket of land’ Ywh, *dumgahm* WA, *numgahm* GD

One other case could be metathesis, or else initial lenition (but see §3.8.3):

<*ilim*> ‘eyebrow’ Yal, Yw, cf. *miyi/mil* ‘eye’ (one informant only gave *mil*)

3.10 INITIAL DROPPING

There are a few intriguing examples of words with an unanalysed initial syllable occurring before a recognisable morpheme with little or no meaning shift.

nambuhl ‘bora ring’ GD, *gambuhl* WA, *buhl* Yal, Yw, <*bul/bule*> M

³⁷ Whether or not an initial glide is heard in a language such as this one, an initial front high vowel is interpreted as following an initial /y/.

³⁸ The connection could just be through the *gam/gahm*.

nambargul (<nambaragool>) ‘canoe’ Ywh, *bargul* ‘bark’ GD (and *bagul* ‘bark, canoe’); WA, WE, GD, C)

guwin ‘ringtail possum’ Ym, *wiŋ* Yw (see also §3.2)

miyumba- ‘show, teach’ WA, [mi:umba] C, *nyumba-* GD, Yal, Yw, <numbah> Ywh

Two curious examples appear to occur in

Murwillumbah (probably *muy-wulumbah*) the town nearest *wulumbiny* ‘Mt Warning’, and

Muy-ŋagambah ‘Fingal Caves’ (mythical dog place)³⁹

The following seems more a case of initial adding, rather than dropping, at least from the contemporary evidence:

baragayil ‘light orange colour’ GD, *ŋayil* ‘clay’ GD, ‘ground’ WA

3.11 ELISION AND/OR PRENASALISATION

dugum ‘shellfish’ WA, *dugunum* ‘species of shellfish’ GD, C, *dugunam* ‘pipis’ WI

gandaygil ‘liver’ WE, *gandagil* WE

janangan ‘boy’ WE, WI (also *janaŋ* WI), ‘single men’s camping ground’ GD, *janagan* ‘boy’ WA, WU, *janaŋ* (and cf. <yinanga> ‘boy’ CP)

dandaygam ‘old’ WE, ‘old man’ WA, WU, C, *danigam* WU

dagahral ‘bad ghost’, *dagaw* ‘ghost’, *dagay* ‘ghost, white man’ GD

I think other examples can be found, but for the moment these will suffice.

3.12 OTHER

waŋal ‘deaf, unheeding, disobedient’ Yal, Yw, *waŋam* NC, GC, <wongoom> ‘a fool’ Ywh, <wongalir> ‘deaf’ GN

While the similarities in the following are tantalising in both form and meaning, I am inclined to consider it a chance similarity. However, Geoff O’Grady (pers. comm.) suspects occasional shifts of Proto Pama-Nyungan *rr to /θ/ in Cape York and Kala Lagaw Ya.⁴⁰

bidhaŋ ‘little’ in all dialects but those to the south-west, which have *beraŋ* WE, WU, CP

C has both listed.

³⁹ In one older source, which I cannot at present locate, a prefix which may have been <murra> was noted for the placename Murwillumbah. Compare also *Muy-ŋagambah* ‘dog place’ for Fingal Caves. Together with Watson’s transcription of Yugambeh as Yugumbir, this may indicate a rather recent loss of /r/ in certain positions. Also the Copmanhurst list has <mory-gerongla> ‘bora’.

⁴⁰ **nyurra* ‘you (pl.)’ > KLY *nitha*, **yarrang* ‘beard’ > KLY *yatha* (from O’Grady).

4. MEANING SHIFTS

The cataloguing of phonological shifts above is reasonably exhaustive, but this is not so for the examples below. I am not sure whether a search might not find many more examples.

4.1 ANTONYMIC SHIFTS

dabu-dabuh 'shallow' WA, *dabu-dabu* 'deep' WU

dalaq 'white clay' GD, 'red ochre' WA, 'white' C (cf. *dalahn* 'white' WA, GD),
dalahg 'pipe clay, white paint' C

Interchange of 'white' and 'red' as meaning for one stem also occurs in neighbouring dialects of Ifugao, Philippines, an Austronesian language, so precedents for such a shift exist in unrelated languages.

4.2 A FEW OTHER MEANING SHIFTS

guhg 'water' WA, 'toddler' GD, *guŋ* 'water' GD, 'water, baby' C (cf. *wuhm* 'baby' C)

<konggong> 'skull, egg' Yal, Yw (vowel could be /a/ or /u/; I have interpreted it as /a/
nyaram 'Frilled-neck Lizard, vulva' WA, 'Blue-tongue Lizard' B, Ywh (also loosely
used for Frilled and Jew lizards), 'Bearded Jew Lizard' GD, C, Ym, <ŋarūm> Yal,
Yw

muruhn 'wood, firewood' GD, *muruhny* 'ashes' WE, GD, 'hot coals' WA

mibiny 'Aboriginal person' Y, M, etc., 'person, face; to know someone' GD, 'face',
'to know (someone)' WI, *mibig* 'jaw, chin' C

4.3 GRAMMATICALISATION

The following may be an example of grammaticalisation of the substantive *jaŋ* 'bad'. However, against this we should set *banyar* 'good, great', *banyaŋ jaŋ* 'very bad', *banyaŋ guluhl* 'very tired'.

jaŋ 'bad' (all dialects), *-jahŋ/-dhaŋ* 'very' GD, *-jaŋ* C

5. 'FOSSILISED COMPOUND'

In both the languages I have worked on most in Australia, and also noted as a possibility by Evans (1990:186), a word for 'old (man/person)' appears to be derived from a word for 'grey-headed, grey hair':

Alawa (NT) *wurrkul* 'grey hair', *wurrkularr* 'old person', presumed compounded from *wurrkul-warr* 'with grey hair', as the case inflections follow the pattern for *-warr* rather than for other nominals ending in /rr/;

Yugambeh-Bundjalung: *gidhiru* 'grey hair', WA, *gidhur* 'grey colour' WA (also 'chrysalis of witchetty grub', which is grey), *gidhuhm* 'old (of animates), old man' GD.

6. CONCLUSION

The above listings of examples are reasonably exhaustive of the most reliable data. In this paper I have not adduced evidence or speculation from other Pama-Nyungan (or other) languages to support any of these shifts. Because only internal evidence from dialects of Yugambeh-Bundjalung has been used and allowed to speak for itself, the shifts shown to occur can be adduced in support of a number of processes of shift proposed for the whole language family.

Among the dialects of Yugambeh-Bundjalung, we see high to low vowel shifts with dialect, and the reverse, some shifting of /a/ to /u/, gradation of pronoun forms, lenition of /j/ through /y/ to zero, often with compensatory vowel lengthening, lenition of /r/ through /y/ to zero, again often with compensatory vowel lengthening. These appear to occur on a cline through the area where the language is spoken. Other intermittent changes occur, but do not seem so clearly graded for area.

Working from the least ambiguous data on this language and its dialects, collected over a space of a little over a century, it is possible to see examples of a number of changes postulated to link assumed cognates in different Australian languages.

One whole area of supposed sound shift has been left to one side in this paper, and a further study of the data may add to our stock of possible shifts over time. This is where there is compounding or affixation which may obscure the original shape of a morpheme. A possible example of what I mean is the series *waji-*, *wayi-*, *wayma-* noted above among examples of /j/ lenition, where a suffix *-ma* is added to one form of the morpheme.

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HOW MANY AUSTRALIAN LANGUAGES WERE THERE?

MICHAEL WALSH

1. PREAMBLE¹

The impetus for this paper derives from a thought-experiment by Geoff O'Grady. In pondering the linguistic prehistory of Australia Geoff has considered how many Aboriginal languages there might have been and imaginatively describes the fate of some of those languages (1979). He sketches out a hypothetical genealogy of selected Australian languages (1979:113), rightly pointing out that many would not have survived to the modern era. In this paper and in person Geoff O'Grady has shown not just a fascination for the details of Australian languages but a very positive regard for the people who have spoken them. This is well brought out in the scenario Geoff gives for Tasmanian (1979:116):

Rising sea levels eventually formed Bass Strait... The people to the south of the new strait, lacking the technology needed to cross large bodies of stormy water, gave up further thought of visiting their kinsfolk across the channel after the severe winter of 6,057 B.C., when a series of westerly gales, pushing up phenomenally high tides over a wide stretch of still shallow sea, washed away the remaining low islands in the narrowest part of the channel. Their language...continued to evolve in total isolation for a further 79 centuries—until the unparalleled tragedy wrought on the people by the Europeans.

In this paper I take some of O'Grady's basic ideas further by considering three factors: recent reassessments about pre-contact Aboriginal population; the range of population size of viable linguistic communities; the extent of language attrition. After these considerations a number of conclusions must be reached: the linguistic situation at first contact must be reassessed; the number of linguistic varieties that had disappeared by first contact is likely to be very large in comparison with those that are now extant; the extent to which linguists can assist prehistorians in postulating prehistoric scenarios is quite limited.

¹ Thanks to the organisers of the conference, Archaeology and Linguistics: Understanding Ancient Australia, Northern Territory University, Darwin, 8–12 July 1991—especially Patrick McConvell—for the opportunity to present some of these ideas in a public setting and get useful feedback. Thanks also to David Nash for alerting me to the Hansen paper, to Bruce Rigsby for drawing attention to some criticisms of the Butlin position, and to John Beaton for reassuring me that it is good to be suspicious. Perhaps I should note here that I originally wrote this paper for an audience that included many non-linguists. As a result some of the material may seem obvious to the trained linguist. After deciding to publish a revised version in this volume I have retained much of this 'obvious material' not so much through laziness but in the hope that some of the papers in this volume will be read by non-linguists as well.

2. THE PRE-CONTACT POPULATION OF AUSTRALIA

Since Butlin's reassessment (1983) there has been considerable debate among demographers and prehistorians about the pre-contact population of Australia. Until Butlin the prevailing view of 300,000 had been that espoused by Radcliffe-Brown (1930). Beaton (1990:29) observes: "Few appreciate that Radcliffe-Brown himself considered his estimates based on the available data to be too low, and he then inflated it to its roughly 1/3 million level". Although this figure may have been an extrapolation across the continent based on a sample of particular regions the new nationwide figures have tended to be extrapolations as well. These new projections are based on Butlin's argument that, at least for south-eastern Australia, pre-contact populations have been severely underestimated. He would claim that south-eastern Australia alone would have had at least 250,000 people. Earlier estimates were so low, Butlin argues, because early observers were encountering artificially small Aboriginal populations whose numbers had been drastically reduced by smallpox and other introduced diseases.

However, Butlin's estimates have been attacked from a number of standpoints. Kefous (1988) queries Butlin's reliance on the availability of food resources to determine pre-contact populations. The demographer, Alan Gray, has criticised Butlin's conclusions because of the variability of impact of infectious diseases. More specifically Gray (1985) considers Butlin's supposed mortality rates to be far too high. Another issue concerns the reliability of early ethnographic accounts. In Butlin's view (1983:175) the early demographic disruption brought on by introduced epidemics means that such accounts must be set aside:

Substantially all white description of blacks may need to be treated as conveying the characteristics of radically disturbed societies and may be seriously misleading in relation to "1788" conditions.

But Jones (1990) does not believe the ethnographic literature is necessarily compromised given that early accounts present a consistent pattern of relatively small groups of Aborigines which are mobile and of low density—similar to patterns which prevail today in Arnhem Land. Butlin is careful to point out that his proposed population readjustment for south-eastern Australia does not allow one to extrapolate to the rest of Australia. Nevertheless, if one were to accept Butlin's conclusions for south-eastern Australia and retain the Australia-wide total proposed by Radcliffe-Brown then it would suggest that a mere 50,000 were distributed across the rest of Australia. By any estimate this is highly unlikely.

This raises a significant question for linguists: just how large was the Aboriginal population at first contact? Despite Butlin's caution about generalising across the rest of Australia and the criticisms of Butlin's whole approach there has been a strong tendency to go ahead and adjust the Australia-wide pre-contact population. White and Mulvaney (1987) suggest a population of 750,000. When Blake and Dixon (1991:2) remark that "the original population may have been between one and two million" one wonders where this estimate might have come from since no argumentation or references accompany it. As it happens the Blake and Dixon suggestion falls well within the range of estimates put forward by early commentators. Reynolds (1987:62) reports that estimates ranged from as low as 100,000 to 5,000,000:

Most estimates were over 1,000,000. The most thorough assessment of the available evidence was made by a sub-committee of London's Aborigines Protection Society in 1838. It concluded after examining 'every reasonable account and estimate' that the total population could not 'be stated as short of 1,400,000'.

On the other hand, Beaton (1990:36) points out:

The size of the Aboriginal population after 40,000 years was probably not as low as 150,000, and a figure of one million will require more than its assertion to become widely acceptable.

What does it matter how many people there were at first contact? For prehistorians the interest will lie in patterns of resource utilisation. For linguists it matters in determining how many Aboriginal languages there were. This question requires a detailed consideration of how many languages there are now as well as how many there might have been in the past. We treat these two related questions in §2 and §3 respectively before reaching some tentative conclusions in §4.

3. HOW MANY ABORIGINAL LANGUAGES ARE THERE?

3.1 A RANGE OF ANSWERS

Specialists in the study of Australian Aboriginal languages give a range of responses. Walsh (1991:27) indicates:

It has been estimated that around 250 distinct languages were spoken at first (significant) European contact in the late eighteenth century. Usually each language would have a number of dialects so that the total number of named varieties would have run to many hundreds.

Wurm (1972:9) observes: "On the Australian continent, around 260 distinct languages are, or were, spoken—many of them consisting of a considerable number of dialects", while Yallop (1982:29) proposes a figure of about 250 languages.

One must also consider the relative health of Aboriginal languages. Dixon (1980:18) points out:

Of the 200 or so languages spoken in Australia before the European invasion about 50 are now extinct...Then there are probably around 100 languages that are on the path towards extinction...Finally, perhaps 50 languages are in a relatively healthy state—spoken as a first language by a few hundred (or, in one or two cases, by a few thousand) people and preserving their full range of use in everyday affairs and in ceremony and ritual.

A more recent survey by Schmidt (1990:2) presents an even more pessimistic picture:

Today, only one-third (about 90) of the original 250 languages are still living. Two-thirds have been eliminated since the onset of white contact and are either totally extinct or have only a handful of elderly speakers remaining. Of the surviving languages, only 20 of these (eight per cent of the original 250) are in a relatively healthy state; in other words are being actively transmitted to and used by children. The other 70 surviving languages face severe threat of extinction.

In each case the total number of languages is of the order of 200–250. Even so, a recent book aimed at a more general audience gives a much higher figure (Keneally 1987:13):

Long before the death of Caesar or the birth of Christ, therefore, there were some six hundred tribes and six hundred separate languages on the Australian mainland...

In fact Keneally is not really in error. Rather, he is operating at a different level of abstraction.

The problem is that the term ‘language’ can be used to mean quite different things. For a specialist in linguistics, all the speakers of a given language will be able to understand each other—more or less. In this sense the numerous varieties of English spoken around the world form one language, English, in that the different varieties are mutually intelligible. So the different forms of English found in Australia and Zimbabwe, India and the United States, Canada and Cornwall are all mutually intelligible. Of course there may be some disagreements about how readily a Scot can communicate with a speaker of Ozark English but from a linguistic point of view it will be clear that these superficially rather different varieties of speech share essentially the same grammar and a large proportion of vocabulary. In this case the barrier to communication may have more to do with pronunciation than any deep-seated linguistic differences.

More problematic is the linguist’s pronouncement that forms of speech such as Danish, Norwegian and Swedish are simply dialects of the one language. In this case everyone knows that Denmark, Norway and Sweden are separate countries with separate governments. It is normal to think of Danish, Norwegian and Swedish as being separate languages. In addition the speakers of Danish, Norwegian and Swedish have rather definite views about the separateness of their languages since this is an important part of their identity as separate peoples. It is not the linguist’s intention to do violence to the political and territorial aspirations of the peoples of the world but to establish the differing degrees of relatedness among the varieties of language in the world. To accomplish this task there needs to be a level of precision in terminology which transcends popular usage.

3.2 THE VARYING SCOPE OF THE TERM ‘LANGUAGE’

To address the question of how many Aboriginal languages there are one must also consider the differing senses of ‘language’. Dixon (1980:33, see also 1976) distinguishes between language-as-dialect: language₁ and language-as-language: language₂. Using these terms one can say of the situation in Scandinavia that there are a number of separate languages₁, Danish, Norwegian and Swedish, which together make up a single language₂. The fact that this language₂ is not recognised as a single linguistic entity by its native speakers is reflected by the fact that it does not have a name. But this is a reflection of historical, political and social factors rather than a clear indication of linguistic relatedness. Schematically the examples mentioned above can be set out as follows where the ‘missing’ language₂ label has been supplied:

LANGUAGE (i.e. language ₂)	DIALECT (i.e. language ₁)
English	Aboriginal English, American English, Australian English, British English, Indian English...Zimbabwean English
‘Scandinavian’	Danish, Norwegian, Swedish...

In Aboriginal Australia it often happens that there is no indigenous language₂ label: so linguists have supplied a term to capture the collectivity of a group of closely related and mutually intelligible languages₁. Sometimes it is obvious that these terms have been introduced from outside: the Western Desert language₂ or the Western Torres Straits language₂ (also referred to as Kala Lagaw Ya). More often the linguist chooses one of the

local language₁ labels like Dyirbal or Murrinhpatha and presses it into service to do duty as a language₂ label. To an extent then this practice is artificial in that these terms are being imposed from outside but these language₂ labels also reflect Aboriginal perceptions that their local languages₁ are closer to each other than other languages₁ which a linguist would describe as belonging to a separate language₂. Using these terms for Aboriginal Australia it seems there were, at first contact, around 200 languages₂ and around 600 languages₁.

3.3 THE RANGE OF LABELS FOR FORMS OF SPEECH

But the number of language *names* far exceeds 600. There is a bewildering array of labels attached to various forms of speech in Aboriginal Australia. Sometimes these labels appear to be referring to the same form of speech as when Gwandera, Kokomindjen, Millera are used as alternates for Jir-Joront or when Djerimanga appears to be interchangeable with Wulna (Oates & Oates 1970). In other instances different labels are simply alternative spellings and transparently so, such as Walbiri and Warlpiri. In still other cases there seems to be an amazing number of separately designated forms of speech in a small area. Schebeck (1968) has outlined one such situation in his classic but as yet unpublished 'Dialect and social groupings in north-east Arnhem Land', while Sutton (1978) has documented linguistic diversity in the Cape Keerweer area of Queensland.

In part the proliferation of labels can be explained in terms of differing linguistic perspectives. Considering just language₂ labels, each language₂ will usually have its own term for each of the languages₂ surrounding it. In this way a language₂ like German can be seen from various perspectives:

German	in English
Deutsch	in German
l'Allemand	in French
Doitsugoo	in Japanese

If we then look at the languages₁ which make up the language₂, German, more labels arise such as Hoch Deutsch and Platt Deutsch as well as more locally specific varieties relating to cities (Berlin, Munich etc.) or to regions (Bavaria, Alsace etc.). A language₂ other than German is unlikely to replicate the full array of languages₁ which make up German especially if, like Japanese, it is not geographically close. But such languages₂ as French or Hungarian may have a number of their own labels for the languages₁ of their neighbouring language₂.

The difficulty in looking at linguistic labels from Aboriginal Australia is that many of the terms are opaque from the outsider's perspective. Until rather recently, for instance, Garama and Murinbata were listed as separate languages₂ (Oates & Oates 1970:21). It turns out that Garama is the language₂ name given to the Murinbata by their language₂ neighbours to the south, the Djamindjung. In the same work Murindjabin is given as an alternative for Murinbata: in fact Murindjabin is the Murrinhpatha name for a language a little to the north whose speakers refer to it as Marri-Djabin. The name, Murinbata, has gained some currency through the writings of the distinguished anthropologist, W.E.H. Stanner (e.g. 1964) so that this is the name which is familiar to many people who have little awareness of the nomenclatural subtleties being outlined here. However, the people who Stanner worked with on the isolated west coast of the Northern Territory are now emergently literate and refer to themselves (in written form) as Murrinhpatha. In a sense this is just another example of an alternative spelling but it is also more than this. Now that this people is in the process of

acquiring indigenous literacy their preferred spelling for their own language₂ has a privileged status: it would be a courtesy to this people not to use that particular label.

Murrinhpatha from the perspective of its language₂ neighbours:

Murinbata	'in English' (established through the ethnographic literature)
Murrinhpatha	in Murrinhpatha
Garama; Linywudi	in Djamindjung
Marri-Wuda	in Marri-Ngarr
Magati-Wuda	in Magati-Ge

3.4 THE RANGE OF LINGUISTIC VARIETIES

But there are many more linguistic labels in use among the Murrinhpatha and these are neither language₂ nor clearly language₁ labels. Gregory (1967) provides one framework for linguistic varieties:

- dialectal varieties: the linguistic reflection of reasonably permanent characteristics of the *user* in language situations;
- diatypic varieties: the linguistic reflection of recurrent characteristics of the user's *use* of language in situations.

Among other things what is being referred to here is 'language' when one says: 'My spouse speaks his/her own language'; 'Politicians speak a totally different language from us'. Within Gregory's dialectal varieties are geographical dialects (perhaps the most obvious kind to non-linguists) such as British English and Australian English but also the 'language' of an individual: Michael Walsh's English (my *idiolect*). There are also temporal dialects (for example, Old English and Middle English) and social dialects (sometimes called 'sociolects') such as Upper Class English and Middle Class English. And there are dialects which are differentiated according to their range of intelligibility such as Standard English and non-Standard English. Among the diatypic varieties are forms of speech which differ according to subject matter, as 'bureaucratese' or technical English. Other diatypic varieties depend on the 'mode of discourse', for example, written versus spoken English. Finally, there are diatypic varieties which depend on the user's relationship to the person being spoken to. Here might be included the 'language of the classroom', Formal English versus Informal English and 'pillowtalk'.

Considering some of these factors in the Anglo-Australian situation we can recognise a rich supply of linguistic labels. In terms of 'local' affiliation, the speech of some Anglo-Australians might be described as: Australian, ocker, Outback, Private School, Queensland, 'silvertail', Sydney etc. but his/her language₂ remains unaffected by this welter of terms: it is English. As before (when considering linguistic perspective) when we turn to Aboriginal Australia the terms are mostly opaque: a casual inspection of the terms does not indicate whether they refer to language₂, to language₁, or to something else, such as linguistic varieties differentiated by some kind of 'local affiliation'. Murrinhpatha provides some examples:

LABEL	'LOCAL AFFILIATION'	GLOSS
Murrinh-Thitay	totem	sugarbag language
Murrinh-Bathuk	totem-site	Bathuk language
Murrinh-Darrimurn	region	sand/beach language
Murrinh-Yidiyi	place	Yidiyi language
Murrinh-Tiwungku	moiety	eaglehawk language
Murrinh-Kale	mother	Mum's language
Murrinh-Purrima	wife	'the wife's' language
Murrinh-Kura	dialect	water language
Murrinh-Diminin	dialect	gravel language

The last two are languages₁ but the others can also be given in answer to the question: what is your language? In particular I have been taught about the language₂, Murrinhpatha, by a number of people who have told me that their language is Murrinh-Thitay. Clearly Murrinh-Thitay is not a language₂ term since there are many other totemic groups who regard their language₂ as Murrinhpatha even though they may also refer to their 'language' as Murrinh-Thinmel 'seagull language' or Murrinh-Thiniminh 'bat language'. This issue is also briefly referred to in Walsh (1991).

In Aboriginal Australia some linguistic varieties involve a special *mode* of discourse. Perhaps the most clear-cut example is the elaborate sign language used by recently bereaved widows among the Warlpiri (Kendon 1988). Because these women may not use the *spoken mode* of discourse for a number of years this sign language is not some kind of limited repertoire of gestures but a fully-fledged mode of communication able to carry out all the communicative requirements of a spoken language₂.

There are also forms of speech in Aboriginal Australia which depend on the user's relationship with the addressee. The best-known of these are the so-called 'avoidance languages' which are used between a speaker and certain relatives whom custom dictates should be 'avoided' (see, for example, Haviland 1979). But there are numerous other varieties of this kind like 'baby talk' (for example, Laughren 1984) only a handful of which have been noted let alone studied. Since they are neither languages₁ nor languages₂ we need another designation for these 'lects' and 'types'. Arbitrarily we can divide languages₁ into two subcategories: languages_{1a} mainly for 'geographical dialects' and languages_{1b} for other named varieties 'below' languages₂. I would be the first to admit that there are problems with this overly simplified array but I gain some comfort from the fact that too often the alternative is simply to ignore anything other than 'language' and 'dialect' (usually undefined) (although see Sutton 1995).

While the detailed study of dialectal and sociolectal differentiation in Australia has scarcely begun we can be confident that quite small populations (say 30–40) maintained distinctive linguistic varieties recognisably different in terms of their labels, their vocabulary and their rules for appropriate use in social interaction (Sutton 1978, esp. 186ff.). This is also around the average size for the landowning unit variously called (amongst other things) the clan (Peterson 1986:69). I hasten to add that I am not suggesting that there is a simple one-to-one correlation between some linguistic variety and an entity with all its definitional problems such as a clan. However, Aboriginal people will assert an identity in terms of a label which at once refers to what they regard as a linguistic variety and to some other affiliation as well (see also Rumsey 1993). At one time I had thought that there must be some kind of minimum for a viable linguistic community before one reached 'singularity' (i.e. the idiolect).

However, Hansen's detailed study of the Western Desert area (1984) made me realise that this minimum can be very low indeed.

This emphasis on labels should be treated with some caution. It is not that a language_{1b} requires a label to have any validity, it is just that unless it happens to have a label it is likely to be 'invisible' except in those very few instances where we have sufficiently fine-grained sociolinguistic studies to draw on.

At this point it should be noted that the distinction being drawn here between languages_{1a} and languages_{1b} is somewhat artificial. As an ideal type a language_{1a} is linked to its own specific territory and it has a specific group associated both with that territory and with that language_{1a}. This kind of thinking underlies the Birdsell-Tindale dialectal tribe model. In this view each tribe has its own discrete territory, its own discrete dialect and a significant degree of political coherence. It is also proposed that each tribe had a population of around 500 (Tindale 1974:30ff.) which might grow larger until it reached some kind of 'critical mass', say 800, at which point it would divide into two 'new' tribes. Various criticisms have been directed at this model (for example, Peterson 1976, Sutton 1978, 1991, Rigsby & Sutton 1982) but there has still been enough acceptance of it (for example, Dixon 1980:22ff.) to have an effect on the way the overall Australian language situation is currently viewed. At a quite general level the terms 'dialect' and 'sociolect' are rather fuzzy and even the essential defining characteristic of 'dialect', namely 'mutual intelligibility' has been brought into question (for example, Trudgill 1983).

It is clear, in Aboriginal Australia, that there was a high degree of multilingualism (involving languages₂, languages_{1a} and languages_{1b}) so that the discreteness of the populations is brought into question. In addition, work by Sutton around Cape Keerweer in Queensland indicates that the discreteness of linguistic territories must be queried (Sutton & Rigsby 1979). The labelling adopted here (languages_{1a} and languages_{1b}) is intended to be a reflection of the fact that these linguistic varieties are, in some sense, of the same order and thus are in contrast to languages₂ which should be seen as superordinate units.

3.5 THE ABSTRACTNESS OF LANGUAGES₂

Here it should be re-emphasised that, compared to languages₁, languages₂ are relatively abstract. In answer to a question 'What is your language?/What language do you speak?' one is most likely to get an answer that refers to languages₁. It then tends to be the result of observing certain commonalities among these languages₁ that a linguist (or some other investigator) will propose labels for languages₂. The speakers on the ground may accept the validity of the superordinate label without hesitation, accept it with reservations or even reject it. The point is that labels for languages₂ need not be part of the idiom of the people to whom they refer (as in the case of 'Scandinavian'). In the context of Aboriginal Australia this gap between languages₂ and languages₁ may provide part of the explanation for the bewildering array of linguistic labels. Of course this problem is not unique to Aboriginal Australia. Considering the language situation in California, Langdon (1990:185) wryly remarks: "It seems to me that what is recognized as a language is essentially done by proclamation and usage in the literature".

Some named varieties which have been recorded constitute part of the 'background noise' of research into Australian linguistics. There are numerous names which appear in Capell's survey (1963), Oates and Oates (1970), the Oates 1973 Supplement (1975), Tindale (1974),

Wurm and Hattori (1981) and the card catalogue of ‘tribal names’ at the Australian Institute of Aboriginal and Torres Strait Islander Studies. These may have been casually relegated to the status of ‘alternate names’ without any indication as to whether they are languages₂, languages_{1a}, or languages_{1b}, or, for that matter, names used by neighbouring groups. Von Sturmer (1978, esp. 572–579) and Sutton (1979) point out and resolve difficulties in some parts of Cape York. But a good deal of caution needs to be exercised when using these names, their locations and purported relatedness as the basis for further conclusions. And Sutton’s detailed rebuttal (1995) of Davis (1993) and Davis and Prescott (1992) suggests that there are numerous sources for potential nomenclatural confusion. A long-term project under the direction of Bob Dixon at the Australian National University is going some way towards sorting out this confusion.

3.6 GROUPINGS LARGER THAN LANGUAGES₂

In closing this section attention should be drawn to groupings larger than languages₂ ably considered by Sutton (1990:73):

Somewhere in between Peterson’s culture-area groupings and the so-called dialectal tribes of Birdsell and Tindale lies the intermediate-scale realm of what the early ethnographers called ‘nations’ (Howitt), ‘confederacies’, and even ‘messmates’ (Roth).

These appear to have been sets of hundreds or even a few thousand of people who intermarried often, who spoke many if not all of each others’ languages, and whose countries tended to cover linked sub-parts of a drainage system, where drainage was clearly differentiated. These are the groupings where one usually finds...many surface similarities among languages...

By surface similarities here I mean those easily diffused features such as phonetics, kinship-pronominal categories, floral and faunal taxonomies, rules for speech etiquette, and the semantic structures of idiomatic expressions, as opposed to those historically deep differences of grammar and vocabulary which yield the genetic groupings postulated by comparative linguists.

The reason for the distinctive localisation of superficial similarities between languages is that Aboriginal people with different languages are classically polyglots, but their speech repertoires tend to be socially clustered.

Sutton is at pains here and elsewhere to point out that language is just one of a number of factors Aboriginal people took into account in identifying themselves and interacting with each other. So these nations or messmates are not really linguistic groupings so much as groupings constituted by many factors of which one quite significant factor is language.

4. HOW MANY AUSTRALIAN LANGUAGES WERE THERE?

4.1 AT ‘FIRST CONTACT’

Let us reconsider the linguistic situation at first significant non-Aboriginal contact. We can assume that there was a range of linguistic forms: some we would want to describe as languages₂, some as languages_{1a}, and some as languages_{1b}. These varieties were spoken by a population of around 300,000 at ‘first contact’ according to Radcliffe-Brown (1930) who extrapolated from relatively meagre data from an earlier period.

Here let us recall some of the issues concerning the pre-contact population of Australia. Considering various population scenarios in New South Wales and Victoria Butlin (1983) suggests that previous estimates did not sufficiently allow for the devastating effects of introduced diseases such as smallpox: he therefore proposes an original population of around 250,000 just for the south-east of Australia. Drawing on Butlin's conclusions White and Mulvaney (1987) have attempted to extrapolate from south-east Australia to the rest of the country. They suggest that the original, pre-contact Aboriginal population could have been as high as 900,000 but propose a figure of 750,000 as a reasonable estimate.

A population of this size requires a rethinking of views on the relationship between language varieties and their speakers. Either there were many more distinct linguistic varieties at first contact or there was a much larger population for each variety, 3-3,750 on average for each distinct language₂, assuming 200-250 languages₂ for a total population of 750,000. Alternatively one could retain the average for the number of speakers per language₂ based on the Radcliffe-Brown estimate of 300,000, namely 1,500 or less, and adjust the number of languages upwards in line with the revised population estimate to give a total number of languages₂ of 500+.

Taking the Birdsell-Tindale dialectal tribe model as a starting point we would expect between c.950 and 1,500 dialects (languages_{1a}) assuming an average population of 500-800.² Otherwise the 'Sutton approach' (small populations of 30-40 each with distinctive linguistic varieties) assuming homogeneity across the continent would yield something like 20,000 linguistic varieties.³ This is not really seriously being proposed but is merely a product of following certain modelling assumptions. A more plausible scenario would have a heterogeneous distribution of language-variety density: for example, high in parts of Cape York and north-east Arnhem Land but relatively low in areas such as the Western Desert (considered in some detail by Cane 1990). Of course the pattern of variation is quite complex (see Lourandos 1987 and Pardoe 1990, for example) but we cannot enter into those details here. For the sake of argument let us assume that a heterogeneous distribution of language-variety density yields only half the number of varieties under a homogeneous regime.

In the following table we present the range of linguistic varieties assuming differing Aboriginal populations at first contact. For purposes of comparison I have included the Blake and Dixon estimate of between one and two million, showing it as 1,500,000. The first column recalls those larger groupings, intermediate between Peterson's culture-areas and the Birdsell-Tindale dialectal tribes, referred to as 'nations' or 'messmates' (Sutton 1990:73). We have no hard information on the average size of these clusters: Sutton gives a range of 'hundreds or even a few thousands'. The Western Desert area seems a promising candidate for a grouping at this level. Hansen (1984) demonstrates the interconnectedness of small-scale groups across this area while Cane (1990) outlines the cultural and ecological factors binding people in this area and estimates the population for the area at about 4,000.⁴ This matches well with linguists' estimates for the Western Desert language group of 4,000-

² These figures are reached by dividing an overall population of 750,000 by an average population of 500 per dialect to give 1,500 dialects and by dividing an overall population of 750,000 by an average population of 800 per dialect to give 937.5 dialects, here rounded to 950.

³ This figure also assumes an overall population of 750,000 but is divided by 30 to give 25,000 varieties and by 40 to give 18,750 varieties. The figure of 20,000 falls within the range and is used here to indicate the order of magnitude.

⁴ Incidentally R.M. Berndt has suggested a prehistoric population estimate of 18,000 for this area (Cane 1990:151; Berndt & Berndt 1988:26).

5,000 (Schmidt 1990:4–5, for this and estimates which immediately follow). Perhaps another candidate might be the Arandic group of central Australia with an estimated population of 3,000+. However, it is not at all clear whether we should set up a larger grouping of Arandic with the Warlpiri—given their spatial contiguity, personal and ceremonial connectedness. This composite group would have a population of 6,000+. The same problem of boundedness is found with the Yolŋu group of 1,700–2,000. To what extent should neighbouring groups be brought into a larger grouping with the Yolŋu? There is no straightforward answer to questions of this kind. There will be some relatively clear points of cleavage, for example, the Kala Lagaw Ya, or Western Torres Strait group with a population of 3,000–4,000 are culturally, linguistically and physically rather distinctive for their area. But for the most part it will be a matter of degree and requiring a level of detail well beyond what the ethnographic record will supply. For the sake of modelling I will adopt an average population of 3,000 for groupings of this kind. This figure is of a size with some of the more obvious candidates for ‘messmates’ like Kala Lagaw Ya, Western Desert or Yolŋu. It falls within Sutton’s generous (or cautious) range and should be considered a guess. On this basis the Radcliffe-Brown figure of 300,000 for the first contact population yields 100 ‘nations’. Interestingly the White and Mulvaney estimate of 750,000 gives 250 groups—coinciding with the linguists’ estimates for number of languages₂, which are all groupings of smaller, perhaps more socially visible units.

The next level is the linguists’ abstraction: languages₂. Whatever the first contact population the estimates hover around 200–250. Smaller scale groupings escalate in number as the overall populations increase. These figures, it should be remembered, result from certain modelling assumptions. The figure of 40,000+ varieties is almost certainly too high relying as it does on two quite questionable assumptions: a rather high original population and a homogeneous distribution of fine-grained differentiation right across the continent. More believable are estimates of some thousands of smaller scale groupings. The following table should provide some idea of the envelope to be considered rather than designating a definite account of what is happening on the ground.

TABLE 1: NUMBERS OF LINGUISTIC VARIETIES ASSUMING DIFFERING ABORIGINAL POPULATIONS AT FIRST CONTACT

	language clusters (‘messmates’) average popu- lation: ?3,000	languages ₂	languages _{1a} average population: 500–800	languages _{1b} average popula- tion: 30–40 (heterogeneous regime)	languages _{1b} average popu- lation: 30–40 (homogeneous regime)
Radcliffe-Brown: 300,000	100	200–250	375–600	3,750–5,000	7,500–10,000
White & Mulvaney: 750,000	250	200–250	c.950–1,500	10,000+ ⁵	20,000+
Blake & Dixon: 1,500,000	500	200–250	c.1,900–3,000	20,000+	40,000+

⁵ As before the figure of 10,000+ indicates an order of magnitude. The actual figures assume an overall population of 750,000, divided by 30 to give 25,000 varieties and by 40 to give 18,750 varieties. The range of 18,750–25,000 is divided by two because we are assuming half the number of varieties in the heterogeneous regime: 9,375–12,500.

Some of the figures in this table are unlikely to be a close fit to whatever the ‘real’ situation might have been. It seems pretty clear that the figures for languages_{1b} in a homogeneous regime are inflated. One could debate the size of the average population for these varieties: a lower figure here would yield a larger number of linguistic varieties. But this increase would be offset by the artificiality of assuming a homogeneous regime. We know that there is some kind of variation in the distribution of linguistic diversity but we don’t have any firm information on the details of that variation. We can be fairly confident that the figures in the rightmost column are too high but it is less clear whether the figures in the column next left are still too high, too low or just right. One way of interpreting this table is to think of the figures towards the centre of the table as approximating the actual situation. In terms of original populations Radcliffe-Brown is probably too low and the Blake and Dixon suggestion may be too high. In terms of linguistic differentiation the language clusters may be too coarse and languages_{1b} under a homogeneous regime too fine.

4.2 PRIOR TO FIRST CONTACT

Fundamental to a consideration of the pre-contact situation are Boas’s remarks (1940:212) on North American languages that “it seems reasonable to suppose that the number of languages that have disappeared is very large”.

In Australia we can assume that there have been thousands of generations of speakers during which languages have died, have changed at differing rates or have merged with a linguistic neighbour. O’Grady (1979:112) assumes “that from 95% to 99% of the languages spoken in Australia 15,000 years ago have long since become extinct”.

Adopting this assumption let us consider the number of languages that have been *lost* over the ages. Let us assume that the distributions shown in Table 1 represent an average for a long period of time (say 15,000 years). And then extrapolate from O’Grady’s estimate that “from 95% to 99% of the languages spoken in Australia 15,000 years ago have long since become extinct” to see the total number of languages that have disappeared. Given the marginal nature of the ‘language clusters’ they are not included in this exercise.

TABLE 2: NUMBERS OF LINGUISTIC VARIETIES LOST OVER THE LAST 15,000 YEARS
ASSUMING DIFFERENT ATTRITION RATES AND DIFFERING ABORIGINAL POPULATIONS AT
FIRST CONTACT

ASSUMPTIONS	languages ₂	languages _{1a} average population: 500– 800	languages _{1a} average population: 30–40 (hetero- geneous regime)	languages _{1b} average population: 30–40 (homogeneous regime)
'original' population: 300,000 attrition rate: 95%	3,800–4,750 ⁶	7,125–11,400	71,250–95,000	142,500–190,000
'original' population: 300,000 attrition rate: 99%	19,800–24,750 ⁷	37,125–59,400	371,250–495,000	742,500–990,000
'original' population: 750,000 attrition rate: 95%	3,800–4,750	18,050–28,500	190,000+	380,000+ ⁸
'original' population: 750,000 attrition rate: 99%	19,800–24,750	94,050–148,500	990,000+	1,980,000+
'original' population: 1,500,000 attrition rate: 95%	3,800–4,750	36,100–57,000	380,000+	760,000
'original' population: 1,500,000 attrition rate: 99%	19,800–24,750	188,100–297,000	1,980,000+	3,960,000+

At this stage the number of proposed linguistic varieties may seem difficult to believe. But the point that needs to be emphasised is that the number of languages that has disappeared (without a trace) is likely to be quite large whatever the precise number is. When considering the astonishing linguistic diversity in New Guinea Foley (1986:8–9) points out:

...a time depth of 40,000 years for human habitation in New Guinea would allow ample time for the natural processes of language change and diversification to produce a great plethora of languages. Assuming a single immigrant community speaking a single language and a language splitting into two every 1,000 years—both conservative assumptions—this alone would result in 10^{12} languages in 40,000 years. Even New Guinea has nowhere near this astronomical number of languages; but this model does provide a glimpse of the order of magnitude of language change that 40,000 years can produce.

⁶ Referring back to Table 1 we recall the range of 200–250. This can be regarded as a residue of 5% in that there has been an attrition rate of 95%. The number of languages lost can then be calculated by multiplying the range of 200–250 (the residue) by 19: 3,800–4,750.

⁷ Now the residue is multiplied by 99: 19,800–24,750.

⁸ This order of magnitude figure is reached by multiplying the residue of 20,000+ by 19. The actual range is 18,750–25,000 as a residue and this multiplied by 19 to give: 356,250–475,000 as the number of varieties lost. The other order of magnitude figures on this table are easy to compute by taking the relevant figures from Table 1 and multiplying by the appropriate figure for different attrition rates.

The assumptions I have used above may be questioned and I accept that. One must assume in the model of language attrition presented that the overall population at first contact remained steady for 15,000 years. But we can safely assume that people have been in Australia for much longer than 15,000 years so then the questions can be posed about how long it took the 'original' Australians to people the country and what kind of population fluctuations there might have been. As it happens a number of commentators have proposed an early period of growth for the population coming into Australia followed by a very long period of stability (Birdsell 1957; Gray 1985; Smith 1980). The long period of stasis falls well within the 15,000 years I am proposing. An added complication is to consider the effects of occasional environmental catastrophes causing episodes of rapid population decline followed by episodes of rapid population increase (Davidson 1990, esp. 54). This kind of demographic scenario would complicate the linguistic picture especially by causing violent fluctuations in the relatively vulnerable language_{1b} range. Again the point to be made is that the number of languages that have been lost is very large. How does this affect our picture of ancient Australia?

5. SOME PESSIMISTIC CONCLUSIONS

We have no way of knowing what effects these languages which have since disappeared had on their linguistic neighbours. One is better placed when standing in an ancient forest to ask 'how many trees have there been in this forest?'. Some trees live for a considerable time and it is relatively straightforward to determine their age. Even the ones that have died or fallen leave a relatively long-lasting physical remnant. When languages die there is little left behind. In the Indo-European language family we know that some languages have persevered with relatively little change for thousands of years while others, like English, have changed rather rapidly. But we know these things mainly through written records of different stages of the languages.

According to the view held by most linguists nearly all Australian languages can be traced back to a single common ancestor: Proto Australian. This would mean that at some time before 1788 the language situation would have looked like this:

I(Proto Australian)	??	???
LANGUAGES ₂	LANGUAGES _{1a}	LANGUAGES _{1b}

where we have no firm evidence about linguistic varieties 'below' language₂. It is entirely reasonable that the people who brought in Proto Australian did not speak just one language₂ and one language₁. Indeed one would have to ask why this group would be slavishly monolingual when that kind of linguistic practice seems to quite atypical in the world today. However, a protolanguage is a linguist's abstraction and is not intended to be a direct representation of an original language: rather it is a model which has been set up to account for the purported development of known descendant languages.

There is no firm date for Proto Australian. Although people have been in Australia for a long time, the dingo entered as recently as 4,000 B.P. The people who arrived with the dingo could have brought in Proto Australian and displaced whatever languages had been there before. Recall that the ancestor language for English and many of the languages of Europe, Proto Indo-European, is somewhat over 5,000 years old and this language has displaced most of its predecessors, often without a trace. Dixon (1980:228) has suggested:

“...it is likely that proto-Australian was spoken a very long time ago—probably at least 10,000 years ago and quite possibly longer”.

Prehistorians are generally agreed that people have been in Australia for 40,000 years while there is sufficient evidence to be confident about a figure of 50,000 years B.P. There is even some evidence pointing to much greater time depths: 100,000 years (White & Lampert 1987). Within this and greater time periods there are numerous possible scenarios concerning the origins and migrations of people as pointed out by, for example, Urry (1978). From a linguist's point of view it does not much matter: we are not going to know what the linguistic situation was prior to Proto Australian with our present tools and the written records available for Australian languages.

It is an easy (though fruitless) exercise to speculate about what happened linguistically prior to Proto Australian. One scenario is about as good as another since there is no evidence to back any of them up. Wielding Occam's Razor in this setting is a dangerous practice: one is likely to cut off one's nose to spite one's face. Where we do have evidence about the historical development of languages in some area the reality is rarely anything like the simplest scenario one could develop merely on the basis of the most recent language situation. As O'Grady (1979:112) remarks:

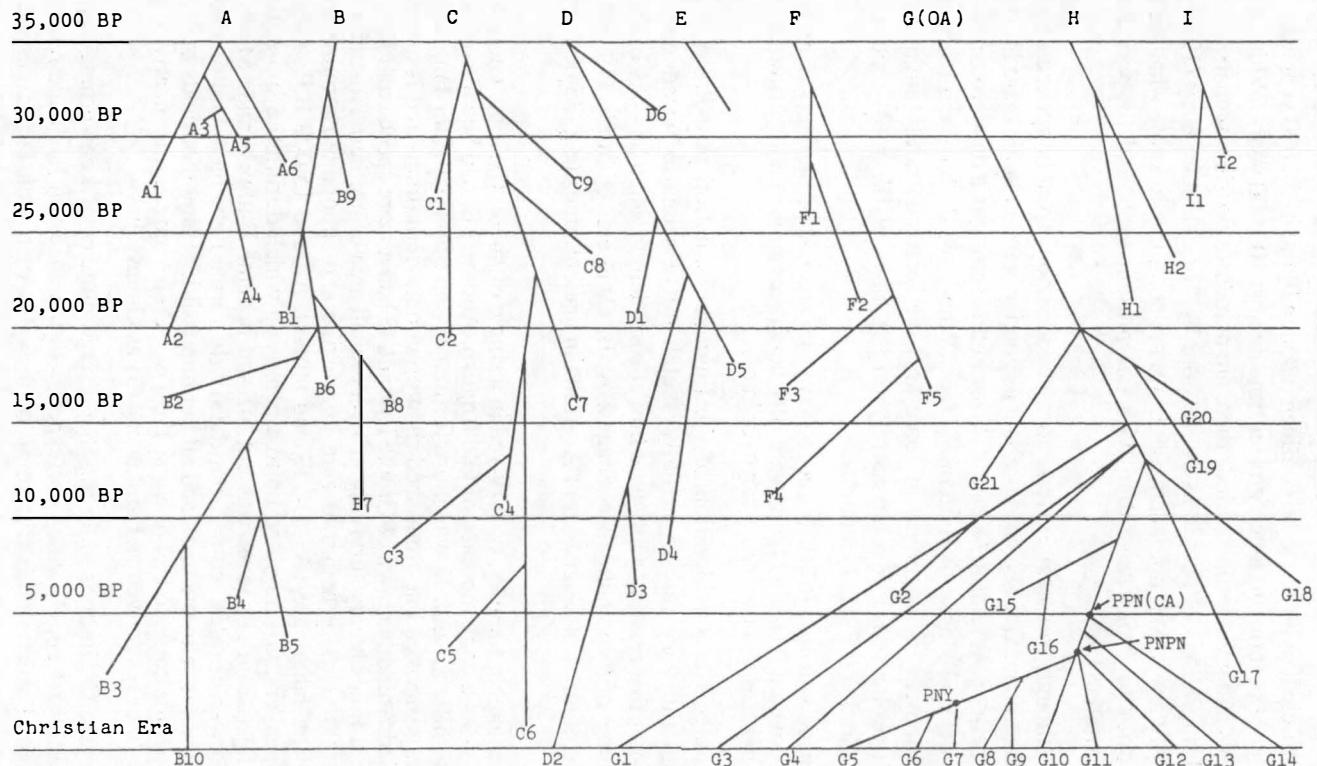
The linguistic situation in Australia 15,000 years ago can presumably in no way ever be recovered. Whether there were fifty languages spoken at that time or five hundred, none of us now living can ever know.

More rewarding is a consideration of the linguistic situation post-Proto Australian. O'Grady is one the very few to actually sketch out a scenario based on linguistic considerations. For that reason I will quote him at some length when he talks of the life and death of a number of hypothetical languages: A, B, C, D etc. O'Grady (1979:112–114) assumes that the number of languages in Australia in ancient times (e.g. 35,000 years B.P.) was quite large:

One of the ancient tongues, C, survived in a single offshoot, C₆, long enough to end its days as a contemporary of Old English. Another, E, had become extinct thirty-two millennia ago. D was more fortunate: one of its daughter languages, D₂, not only survived but flourished right up into modern times, and is now the well-studied Anindilyaugwa of Groote Eylandt. G had a more spectacular history still: after at times barely surviving in a very small area of northern Australia for about 15,000 years, it began to gain in prestige and supplanted a number of neighbouring languages (A₂, D₅, F₃ and others). Around 15,000 B.P. a small band of speakers, G₁, migrated on to a peninsula which during the subsequent post-glacial rise in sea level was cut off and became Bathurst and Melville Islands. Powerful tides scoured out the newly formed channels and rendered contact by canoe with the mainland all but impossible. Many thousands of years later, the people came to be known as the Tiwi. G₂ became extinct nearly 6,000 years ago, but G₃ survived as Larakia and G₄ as Gunavidji.

Under this scenario O'Grady is claiming that a large number of known languages derive from an original language, G, which corresponds to the ancestral language referred to by Capell as 'Original Australian'. But some of today's Australian languages came from separate lines of development (e.g. Anindilyaugwa) and, in O'Grady's view, there is little that can be firmly established about the ancestry of these languages.

TABLE 3: HYPOTHETICAL GENEALOGY OF SELECTED AUSTRALIAN LANGUAGES
 (reprinted from O'Grady 1979:113)



What of linguistic influences from outside the Australian mainland? There is a little evidence that there was some linguistic intermingling with visitors from the north-west. Urry and Walsh (1981) have outlined the linguistic effects of the Macassan trepang traders from Indonesia. Hosokawa (1987) has documented the Malay influence on Aboriginals in the Broome area. Some contact varieties have arisen and there has been borrowing of vocabulary. However, there is no evidence to suggest that these or other influences caused deep-seated changes. But it remains an open question what other influences there might have been over the vast expanses of time between the arrival of the speakers of Proto Australian and 1788. Because of the shallowness of time depth for records of Australian languages (1770 is the earliest recording for any Australian language) linguistic palaeontology of the kind used elsewhere is not really feasible or, at best, rather limited. For Indo-European, linguistic evidence can be used to present a picture of the culture and institutions of the people who spoke the protolanguage as well as locating their homeland (for example, Benveniste 1973 or Renfrew 1987).

About the linguistic situation prior to Proto Australian we must mostly remain silent. If Proto Australian was 'the dingo language' of 4,000 years B.P. then there are up to 96,000 years of linguistic development that we can speculate about. If, as Dixon suggests, Proto Australian goes back 10,000 years or more then we have a somewhat shorter but equally unmanageable period of 90,000 years to ponder on. Languages, like artefacts, are highly portable and can be transported across great distances with a fair amount of ease. In recent times, for instance, Aborigines travelled from the north coast of Arnhem Land to southern Sulawesi taking their own languages with them and bringing back a knowledge of the non-Aboriginal tongues they encountered there (Urry & Walsh 1981). For Australian languages we have no way of knowing how many chance encounters like the Macassans there might have been over the tens of thousands of years.

So, to return to the original question: how many Aboriginal languages were there, it can be seen that a wide range of answers is possible. To do justice to this question one has to consider at least three time-frames: at the time of Proto Australian and before; at first contact; now.

TABLE 4: NUMBERS OF LINGUISTIC VARIETIES AT DIFFERENT TIME-FRAMES

time-frame	languages ₂	languages _{1a} average population: 500–800	languages _{1b} average popula- tion: 30–40 (hetero- geneous regime)	languages _{1b} average population: 30–40 (homo- geneous regime)
10,000 years B.P.	numerous including 1 (Proto Australian)	??	???	???
1788: 'original' population: 300,000	200–250	375–600	3,750–5,000	7,500–10,000
1788: 'original' population: 750,000	200–250	950–1,500	10,000+	20,000+
1788: 'original' population: 1,500,000	200–250	1,900–3,000	20,000+	40,000+
now	20 (strong) 70 (less strong) 160 (extinct)	??200–300	??500+	??1,000+

Some of the figures on this table are quite speculative and this is explicitly indicated by the question marks. If we accept estimates of around 90 languages still surviving and allow 2–3 dialects per language we reach the figure of around 200–300 (actually somewhat less). Given the likely vulnerability of small-scale varieties the figures of 500+ and 1,000+ are quite speculative: they assume an attrition rate of languages^{1b} of about 90%.

To conclude on a rather pessimistic note. The linguistic situation at first contact must be reassessed: if the population was radically different so too will be the linguistic situation, at least at a fine-grained level. One cannot radically alter the supposed original population and expect everything to remain the same: either there were many more distinct linguistic varieties at first contact or there was a much larger population for each variety. The number of linguistic varieties that had disappeared by first contact is likely to be very large in comparison with those that are now extant: this means that we must extrapolate back into the past from a minuscule sample in the present. The extent to which linguists can assist prehistorians in postulating prehistoric scenarios is mostly negative: the time depths that linguists can talk about with any confidence are either too recent or too vague to be of much use; the inferences that can be made about prior population movements are likewise highly constrained; we don't even know how many Aboriginal languages there were.

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HANDSIGNS AND HYPERPOLYSEMY: EXPLORING THE CULTURAL FOUNDATIONS OF SEMANTIC ASSOCIATION

DAVID P. WILKINS

Many ‘implausible’ semantic changes will no doubt be validated in time by those with a deep knowledge of traditional Australian Weltanschauungen. (O’Grady 1987:525)

1. INTRODUCTION¹

Just over thirty-five years ago, Geoff O’Grady submitted an ambitious work that married anthropological concerns with linguistic concerns and set the scene for the comparative historical endeavours he has pursued ever since. This was his research BA thesis for the Department of Anthropology at the University of Sydney. The first line of this work reads:

The purpose of this thesis is to determine the extent to which the advance of circumcision among the Aboriginal tribes of Western Australia is reflected in the present-day distribution of languages and cultural traits. (O’Grady 1959:1)

In this we see an early interest in the interplay between cultural practice and linguistic traits which would expand in focus from Western Australia to the whole of Australia. O’Grady was the first to look seriously at the relation between cultural diffusion and linguistic diffusion in Australia. Implicit in his work is the idea (well-known to historical comparativists of the Indo-Europeanist tradition) that the diffusion of cultural practices involves the diffusion of concepts and the diffusion of concepts is typically accompanied by the diffusion of linguistic elements. As such, even in this early work, he recognised that semantic shift and semantic association provided critical clues to cultural practice and culture

¹ Much of the approach which this paper uses was developed in collaboration with Nicholas Evans, and I would like to thank him for his input, advice and encouragement. I would also like to thank Balthasar Bickel, Gavan Breen, Ingjerd Höem, Adam Kendon, David Nash, Gunter Senft, Eva Schultze-Berndt, Barbara Villanova and Michael Walsh for their help and advice. My own research on Arrernte is supported by the Yipirinya School in Alice Springs and I am greatly indebted to the Yipirinya community for their guidance and friendship. Margaret Heffernan, especially, has been a wonderful teacher and, in relation to this paper, she has been my main guide in understanding contemporary handsign usage. My understanding of the use and meaning of lexical items in Arrernte also owes much to conversations with Gavan Breen, Jenny Green and John Henderson who all work extensively on Arandic varieties. I must also acknowledge the Arandic Languages Dictionary Program based at the Institute for Aboriginal Development in Alice Springs for access to language documentation relevant to this paper. Finally, I would like to thank Geoff O’Grady for his interest and encouragement with respect to my research into semantic change. I remember particularly when he and his wife Alix visited me and my wife Barbara for lunch in Davis, California in 1989. Among other things, we talked about the interconnections between ‘brain’, ‘egg’, ‘marrow’, ‘water’, ‘pus’, ‘head’ and ‘skull’, and about his early travels in Australia collecting linguistic materials. His continuing interest in, and love for, his work were palpable and inspiring.

change. For instance, he wrote (1959:115) that “In non-W[estern] D[esert] there are indications of a semantic link between ‘mother’ and ‘sun’” and suggested that “[t]his may be a clue to some aspects of non-WD religious beliefs”, a suggestion which, in these days of *Women, fire and dangerous things* (Lakoff 1987), is now known by much of the linguistic world to be true. Similarly, he observed (1959:114) that “C[ommon] A[ustralian] **ŋuraj* ‘ground, camp’ is absent from S[outh] W[estern Australia], and *gala* there tends to refer to ‘camp’ as well as to the basic meaning ‘fire’” and he hypothesised that this semantic shift is to be explained by the fact that “in the colder SW climate the camp is regarded as consisting first and foremost of the camp-fire” (cf. Evans 1992b:493–501).

Like much of his later work, his BA thesis was concerned with lexical comparisons and comparative reconstruction, and his awareness of the importance of such semantic associations led him to observe (1959:113) that “[e]ven in a test list of little over 100 words semantic factors cannot be eliminated, and precise cognate counting demands due allowance for the changes involved”. But, assessing the plausibility of a semantic association or semantic change has from the very beginning been a consistent and nagging problem for comparative reconstruction. In more recent years, O’Grady’s method has been to assemble semantically disparate cognate sets based on the probability of phonological match. He states (1987:519) that “Pama-Nyungan cognate search is thus above all phonologically motivated”, and he elaborates that “[q]uestions of semantics are raised only after phonology-based identification of potential cognates has been carried out”. But as he points out, an inevitable outcome of such a method is that one is “confronted with the necessity to make a judgement as to whether, for example, a negative particle could have evolved into a word for ‘edible root’”. Lacking such evidence as independent documentation or correspondence to well-attested patterns of universal and Australian-specific patterns of semantic association (see O’Grady 1979), O’Grady in fact rejects the association of ‘negative particle’ and ‘edible root’, but not before admitting (1987:525) that his unawareness of a semantic link between these two notions “is not necessarily shared by the native speaker”. It is at this point that O’Grady makes the statement that stands at the beginning of this paper, an acknowledgement that a much greater understanding of Australian ethnography will be needed if we are to reconstruct not just forms, but the concepts and world view they embodied. For O’Grady, every reconstructed form is both a claim and a clue concerning the Weltanschauung of a once vital speech community. While it has not been his own mission to immerse his work in the nitty-gritty of ethnographic detail, he has acknowledged and assumed such links must be made.

This paper is an extension of research undertaken jointly with Nicholas Evans into the exploration of polysemy and semantic change in Australian languages, and may rightly be seen as a companion piece to Wilkins (1996) and Evans (this volume and 1992b). Our research complements that of O’Grady since it places semantics before form, and works towards a semantically-based identification of potential cognates, leaving questions of phonology to be raised only after potential semantic associates have been identified. To achieve this goal first requires an understanding of current patterns of semantic association. Three of our most important operating principles are: (i) “all semantic changes within a speech community involve polysemy at their beginning point or at their endpoint” and as a result “[s]ynchronic polysemy becomes crucial in the investigation of semantic changes because it acts as a proof of the plausibility that two meanings are semantically related and that one meaning could give rise to the other” (Wilkins 1996); (ii) everyday language is just one of a number of semiotic systems which a speech community has at its disposal, and so

one should not only look to other everyday languages to provide independent documentation of a semantic association, but one should also cross-compare semiotic systems; and (iii) there is a “need to make explicit the cultural knowledge that allows us to substantiate a claim of semantic relatedness” (Evans this volume). The central purpose of this paper is to further explore the assumption that semantic associations in distinct semiotic systems may parallel one another and to demonstrate the need for making explicit the cultural foundations from which semantic associations emerge. One result will be several networks of attested semantic associations which can later be used to search for cognates in the rest of Australia.

As Evans (1992b:488) notes, it is an open question as to how far semantic associations in other semiotic systems will parallel those of everyday language. Figure 1 presents my working hypothesis concerning the relative degree to which conventions of everyday language are mirrored by other symbolic conventions used by various Australian communities. It is hypothesised that non-linguistic symbolic conventions which are more public are more likely to reflect the kind of semantic associations found in everyday language. By contrast, semiotic codes which are supposed to be secret and/or restricted to certain subgroups of society may depart radically from everyday conventions in order to promote opacity. Further, it is also hypothesised that as a semiotic system becomes less and less like everyday spoken language in terms of medium and structure, there is a parallel decrease in the likelihood that it will maintain the same types, range and specificity of associations as those found in everyday languages.² Semiotic systems do not map directly on to one another, on the contrary, it is assumed that each semiotic system that a group uses can provide a unique and equally useful (and valid) picture of how the society structures semantic space. However, we might expect that the more obvious or important a semantic association, or type of semantic association, is for a particular cultural group, the more semiotic systems that association will be mapped into.

² This discussion and the hierarchy as presented in Figure 1 are admittedly oversimplified and overidealised. For one thing, the hierarchy as presented misleadingly suggests, for instance, that highly restricted secret languages are likely to mirror everyday language conventions more closely than everyday public songs. This need not be the case. There are two dimensions which vary independently but are conflated in the hierarchy: (i) degree of public access; and (ii) types of semiotic expression (which differ in terms of primary medium and structure). Here I have chosen to hierarchically arrange the types of semiotic expression, and it is only within each type that I have hierarchically arranged subtypes according to degree of public access.

Another complication which is not being addressed here is the fact that it is not always simply a specific semiotic code which is restricted or public; specific elements which constitute the code (e.g. specific words) may also vary according to degree of public access. Moreover, as Michael Walsh (pers. comm.) has rightly pointed out, there are cases where a form may be public but its sense may be restricted, or at least one of its semantic associations may be restricted. Similarly, a form may be publicly useable by just a restricted subgroup of the community, but open to reception (and understanding) by the whole community (see, for instance, Morphy's (1991, Chapter 5) discussion of inside and outside knowledge among the Yolngu). As important as these issues are, they are peripheral to the current aims of this paper.

Decreasing degree to which other symbolic conventions mirror those of everyday spoken language

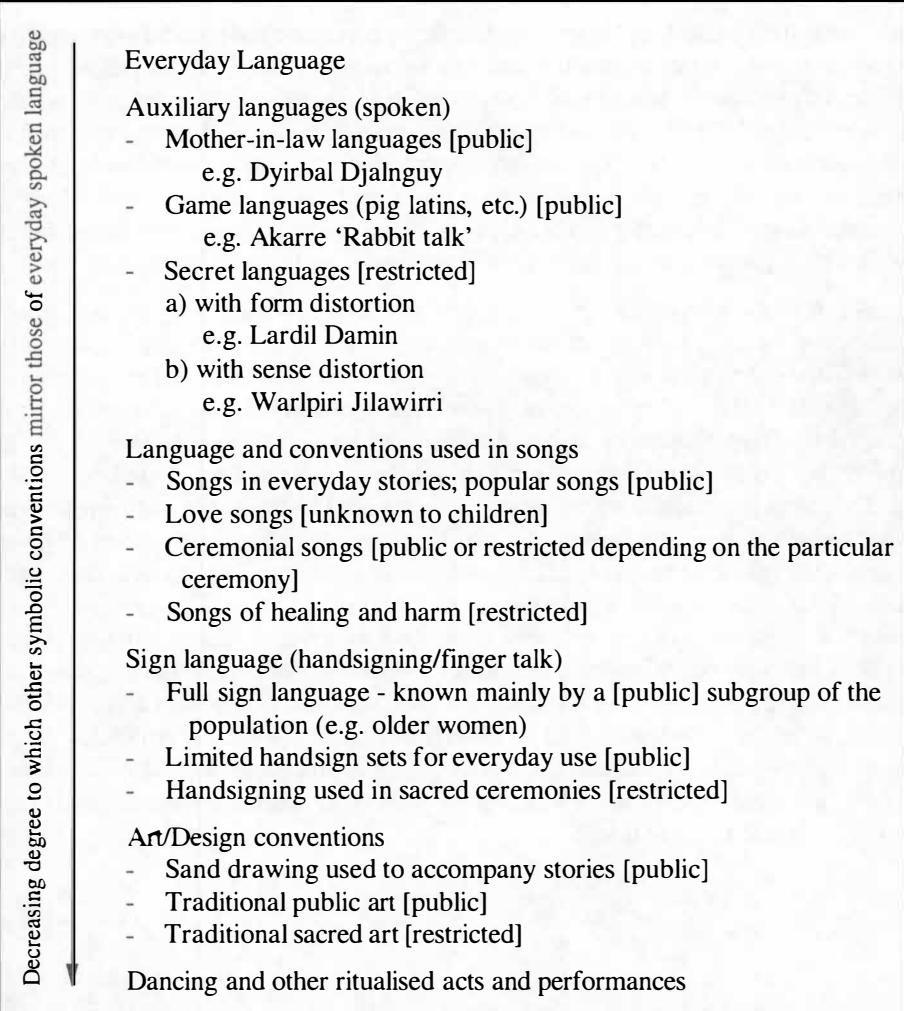


FIGURE 1: MULTIPLE SEMIOTIC SYSTEMS IN AUSTRALIAN COMMUNITIES

To narrow the scope of this exploration, I will focus on the question of whether and how semantic associations found in Arrernte handsigns, as described by Carl Strehlow (1915:54–78; 1978), are reflected in everyday language. These handsigns are part of a public code, a kind of auxiliary sign language with a limited sign vocabulary and simplified syntax available for use by all members of the community. In other auxiliary languages in Australia, it is common that a severely reduced vocabulary means that there are high levels of polysemy relative to the everyday language, and this is also true of Arrernte handsigns where one handsign can correspond to as many as ten distinct (non-synonymous) lexemes. As a very simple example which can be found in contemporary Arrernte handsign usage, one handsign corresponds to both *aherre* ‘plains kangaroo’ and *kere* ‘meat; game animal’, reflecting that this kangaroo is considered the prototypical game animal and a preferred meat.³ Evans (1992b:476) refers “to the lavish polysemy found in such systems as *hyperpolysemy*”.

³ The same handsign is described and illustrated by Kendon (1988:149–150) for Warlpiri, but only in the meaning of ‘plains kangaroo’ (i.e. *marlu*). He records (p.266) a separate Warlpiri sign for ‘meat; game animal’ (i.e. *kuyu*).

Through detailed case studies of two hyperpolysemous handsigns, I will explore how the network of semantic associations involved in each case of hyperpolysemy reflects both universal and culture-specific concerns, and can only be fully accounted for when one is in possession of quite specific ethnographic facts. Further, everyday language data will be examined to determine the extent to which semantic associations in the hyperpolysemous networks of each handsign are also present in language. For this comparison with everyday languages, I will rely on my own research on Arandic languages, especially Mparntwe Arrernte (Wilkins 1989, 1993), as well as using four very recent and excellent dictionaries of different Australian languages: one, for the Arandic language Alyawarr (*Alyawarr to English dictionary*, Green 1992); two for different Western Desert languages (*Pitjantjatjara/Yankuntjatjara to English dictionary* (2nd edn), Goddard 1992, and *A basic Kukatja to English dictionary*, Valiquette 1993); and one for a much more culturally, linguistically and geographically distinct language, Kayardild (*Kayardild dictionary and thesaurus*, Evans 1992a).

The rest of the paper will be organised as follows: §2 contains a brief discussion of sign use among the Arrernte; §3 and §4 contain the two case studies referred to above; §5 provides conclusions.

2. HANDSIGNS AMONG THE ARRERNTE

In using the term *handsign*, as opposed to simply using the term sign, I am attempting to capture something of the Arrernte view of these codified gestures. Arrernte speakers themselves talk of *iltye-le ile-me* (hand-INST tell-present) ‘telling something with the hands (i.e. using handsigns)’ or *iltye-le angke-rre-me* (hand-INST speak-RECIP-present) ‘speaking to each other with the hands’, and a reduplicated form based on *iltye* ‘hand’, *iltye-me-iltye-me*, is the term used for conventionalised handsigns themselves. Further, as Carl Strehlow (1915:54) noted, one term for sign language, or handsign use, is *(a)kw-irre-nty* (C.S. *kwerinja*) which is formed from *akwe* ‘hand, arm’, plus the inchoativiser *irre-*, plus the deverbal nominaliser *-nty*. Following Kendon (1988:97) we may describe handsigns as codified manual gestures used for communicative purposes and involving “a phrase of movement in which hand or hands are moved away from a rest position towards some region in space or towards some part of the body, and then back again” and “[a]s the hand approaches this location, the hand itself comes to assume a distinctive organization, or *handshape*”.

Handsigns are ubiquitous in communicative interaction among the Arrernte. They may accompany speech or they may be used independently of it. Storytellers will often use a handsign rather than a word to convey certain information, and people drawing stories in the sand may use a handsign to disambiguate a highly general sand-drawn symbol. During meetings, silent side comments are often made using handsigns, and it is very common to see people who are distant from one another communicating in sign. As far as I’ve been able to observe, the Arrernte case falls somewhere in the middle of the continuum that Kendon (1988:2) draws between *sign use* (“[w]here the number of codified gestures used is relatively small and where they are not used as an autonomous mode of discourse”) and *sign language* (“where the codified gesture vocabulary is large, and where codified gestures can be employed as a mode of discourse on their own”). Unlike the highly elaborated sign language controlled, for instance, by Warlpiri and Warumungu women, where the gesture vocabulary

consists of thousands of items and there is a complex syntax⁴ which allows anything that could be said in the everyday language (including lengthy narratives) to be easily rendered in sign language (Kendon 1988), the Arrernte situation involves a handsign vocabulary that seems to be somewhere between 300 and 500 items, and these items may be put together to form signed utterances using a simplified syntax with reduced grammatical distinctions that places limits on what can practically be communicated. Carl Strehlow (1978:349) notes with respect to the sign language of the Arrernte that “[a] knowledge of it seems to be universal” and “[i]t is understood by all the adult men and women”, and this remains true. We are talking of a simplified auxiliary communication code that is used on an everyday basis by all members of the speech community, not an elaborated language in its own right which is used primarily by women under a speech taboo (usually in connection with mourning: Kendon (1988:85)).

Carl Strehlow's (1915) description of 'Die Zeichensprache der Aranda' (The sign language of the Arrernte)—see also Strehlow (1978)—remains the largest compendium of handsigns recorded for the Arrernte (more particularly the Western Arrernte). This is just one section out of his mammoth and impressive multi-volume work *Die Aranda- und Loritja-Stämme in Zentral-Australien* (1907–1922). This section is primarily a list of Western Arrernte words and expressions with a description of the corresponding handsign, or complex of handsigns. Although there are no breaks in the 454 entries, they are ordered according to the semantic domains that the everyday language words fall into (human status and age terms, followed by kinship terms, followed by terms for spiritual being, followed by body parts, and so on). Sometimes a single entry will contain a list of everyday words that the handsign corresponds to, and occasionally an entry will be an expression made up of two or more already listed handsigns combined according to the rules of the simplified syntax. Very frequently there is no actual description of the handsign corresponding to a Western Arrernte word, instead there is an indication that that word is covered by the same handsign as another word, and the cross-reference is given, and on rare occasions an explanation for this polysemy of the handsign is provided. The following is just such an example (C. Strehlow 1915:63):

153. <i>alknénara</i> :	Wie <i>tjilpa</i> (Beutelmarder) No.62, weil nach der Tradition
(Cikade) und die	der <i>Tjilpa</i> -Mann viele <i>alknénara</i> gesammelt und gebraten
hat andern Cikadenarten	(s. Aranda-Sagen S.53).

An English translation of this section on sign language was made by C. Chewings and published in 1978. His rendering of this entry is as follows (p.357):

153. *alknénara* (cricket and other cricketlike insects). The same sign as for *tjilpa* (the marsupial wild cat, No.62) because according to tradition, the *tjilpa* man collected and baked many *alknenera*.

Although it is a good thing to have an English translation, this example will suffice to show why one must also deal with the original rather than trusting only to the translation. Firstly, *alknginere* refers to 'cicadas', as the German original indicates, not 'crickets', and, secondly, the German original provides cross-references here (and in many other entries) to other parts

⁴ It should be pointed out that the morphosyntactic structure of the sign languages used by Warlpiri and Warumungu women appears to be modelled largely on the morphosyntactic structure of everyday spoken Warlpiri and Warumungu (Kendon 1988, Chapter 8). Thus the complexity of these sign languages appears to be inherited from everyday language rather than being an independent property.

of Strehlow's larger work where one can find further information on the semantic and cultural relations mentioned, and these were uniformly omitted from the translation. Further, the translation copy has a couple of mistaken internal cross-references to terms which are meant to share the same sign, and this is clearly a problem if one is attempting to examine cases of hyperpolysemy.

With all the preceding discussion taken into account, it is possible to state that there are 261 distinct basic handsigns which correspond to 477 everyday words.⁵ Of these, 172 handsigns are, as far as one can tell from Strehlow's data, non-polysemous. That is to say, in these cases there appears to be a one-to-one correspondence between a handsign and a Western Arrernte everyday language word. However, just over a third of the handsigns, 89 to be precise, cover the same semantic space as 305 of the distinct, non-synonymous, everyday language terms provided by Strehlow. In other words, there is substantial polysemy in the handsign lexicon relative to the everyday language lexicon. Each of these 89 handsigns corresponds to between two and ten words. While much of this hyperpolysemy has not been confirmed with respect to the current contemporary situation of sign use amongst the Arrernte or other groups, the truth is, there has been very little follow-up research, and there seems no reason to doubt the accuracy of Carl Strehlow's observations for the time and place he was gathering data. Indeed it is an exciting find that this reduced auxiliary sign language has some of the encoding properties found in spoken auxiliary languages from other parts of Australia (e.g. Guugu Yimidhirr 'brother-in-law language' (Haviland 1979), and Damin initiation register used by the Lardil (Evans 1992b; Hale 1982)). For one thing, it may allow one to determine whether medium effects the patterns and types of hyperpolysemic relations one finds in auxiliary language systems. For our purposes, it provides us with examples of networks of associated concepts for which explanations of connections are needed, and which allow us to explore what degree of parallelism exists between semantic associations as revealed by handsigns, and semantic associations as revealed in language.

The two case studies which follow are organised in the same fashion and each contain five main subsections. They begin with a general description of the sign complex, that is, the set of everyday words which the handsign corresponds to. This is followed by a description of the form of the handsign itself. Then a discussion of the semantic and cultural connections is presented, in which relevant ethnographic details are included in order to substantiate the associations. After this, the exploration turns to the search for everyday language parallels to, and extensions of, the semantic associations manifested by the handsign. Finally, there is a summary of the results of the particular case study.

⁵ These figures differ slightly from those of Kendon (1988:49, 388) who concludes that Strehlow described 290 signs covering 454 meanings. I believe the discrepancy is explained as follows. Firstly, Kendon has treated each entry as a separate meaning, while, as I have noted, sometimes an entry contained more than one corresponding Western Arrernte word (of different meanings) and sometimes an entry contained complex expressions which can be explained in terms of more basic signs and general rules of combination. Thus my correspondences are sign to word correspondences, which differs from the number of entries. Secondly, it seems as though Kendon may have counted as single signs certain sign complexes that could be generated by syntactic rules and this would explain why he has 13 more signs than I do.

3. CASE STUDY 1: WOMEN OF THE SUN

3.1 THE SIGN COMPLEX

Strehlow indicates that *arrekwetye* ‘woman’ (C.S. *arágutja* ‘Frau’), *kwarre* ‘big girl’ (C.S. *kwara* ‘Mädchen, größeres’), *lernnge* ‘sun’ (C.S. *lénga* ‘Sonne’); *kwerralye* ‘the Pleiades, the seven sisters’ (C.S. *kurájja* ‘Siebengestirn’) and *arlte-le* [day-LOC] ‘in the daytime, during the day’ (C.S. *általa* ‘am Tage’) are all represented by one and the same handsign. The only semantic connection among these notions which he makes explicit is in his description of *arltele* ‘in the daytime’ where the full entry reads: “Same as *lénga* (sun, No. 255) or *arágutja* (woman, No.2), for the sun is regarded as a woman” (C. Strehlow 1978:366). However, we may render the relations in this complex as in Figure 2.

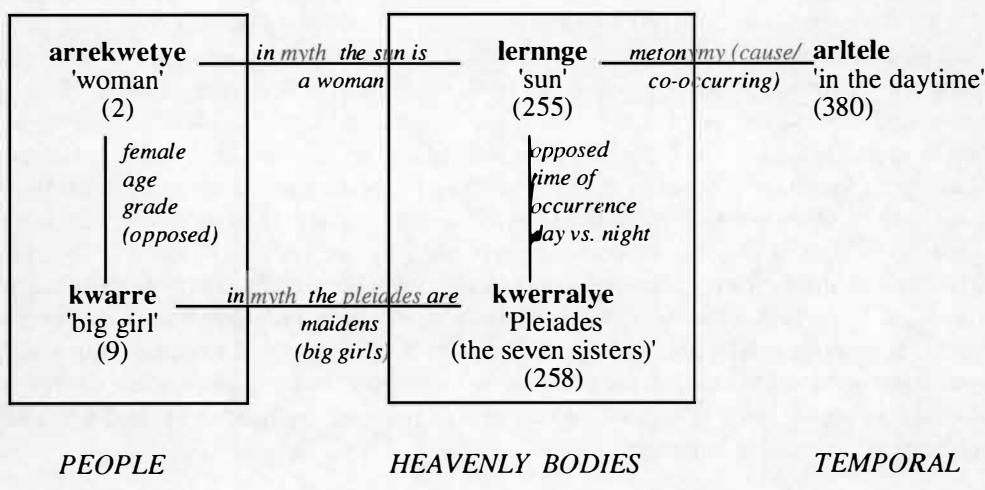


FIGURE 2: THE ‘WOMAN/SUN’ COMPLEX

3.2 THE HANDSIGN

“Spread all the fingers of the right hand horizontally with the back up, hold 1 [the thumb] somewhat up and 2 [index finger] somewhat down, and bring the whole hand into trembling motion.” (C. Strehlow 1978:350)

Kendon (1988:396) represents this Arrernte sign in his notation as follows $xB^\vee \downarrow^r$. That is, xB = a variant on an ASL ‘B’ handshape with digits 2, 3 and 4 fully extended, 1 [index finger] extended at A joint, flexed at B joint, thumb fully extended and abducted, the other fingers may either be drawn together or pulled apart, depending on the sign [see figure on p.122]; \vee = facing or pointing downwards; \downarrow = away from signer ; and r = tremble, a very rapid, small amplitude movement.

The semantic base of the sign is currently unknown. That is to say, if the sign form has a non-arbitrary origin, it is yet to be uncovered. Moreover, Strehlow’s is the only known attestation of this sign; the sign for ‘woman’ which I have recorded for Mparntwe Arrernte speakers is entirely different (it is based on the breast), and the sign which Spencer and Gillen (1927) give for ‘sun’ is also distinct (cf. figure 51 on p.606). However, Kendon (pers. comm.) has suggested that there may be a formal and a semantic connection between

this Arrernte sign and the Warlpiri sign for *parraja*, which is the term for a long flat wooden dish (*coolamon*) which women use for preparing edible seed, carrying food, and carrying babies. Such artefacts are uniquely associated with women and are often used to refer to, or symbolise, women. Kendon (1988:127) observes that, in his study of Warlpiri sign language, the handshape $\times B$ (i.e. the handshape at the base of the Arrernte sign) "occurs but twice, in the sign for *parraja* 'coolimon', and in the sign for *pirrarni* 'yesterday'". These signs, and the Arrernte sign, differ in their movement component, so any connection is only through handshape, but it is very interesting and suggestive that the only two Warlpiri signs with this handshape have meanings that are easily fitted to the network in Figure 2 (i.e. *parraja* 'coolamon' is conceptually associated with 'woman' and *pirrarni* 'yesterday' is conceptually associated with the temporal notion of 'in the daytime'). In this connection, it is also worth noting that Kendon (1988:474–512) presents both a signed and spoken version of a story which "belongs to the Dreaming and is part of a complex of stories that are concerned with the star constellation the Pleiades or Seven Sisters". This story is entitled *Parraja-kurlu* 'About the coolamons', and in it coolamons play a crucial role in precipitating a climax where a group of sisters of the Napaljarri subsection "take off and go up into the sky to become the *Napaljarri-warnu* constellation [i.e. the Pleiades—DPW]" (1988:475). In Warlpiri, therefore, it appears that 'coolamon' and 'the Pleiades' are also closely connected concepts, and this further supports the hypothesis that the formal connection (in terms of $\times B$ handshape) between the Warlpiri sign for 'coolamon' and the hyperpolysemous Arrernte handsign for 'woman; girl; sun; Pleiades; in the daytime' reflects a conceptual connection as well.

3.3 DISCUSSION OF SEMANTIC AND CULTURAL CONNECTIONS

The network in Figure 2 does not appear to involve a single central concept from which all others radiate, but instead appears to involve a structured parallelism. In short, the classic semantic opposition of 'girl' and 'woman' which involves shared gender but opposed age grades, is mirrored by the opposition of 'the sun' and 'the Pleiades', which are both heavenly bodies, but are noticeable at opposed time periods, daytime versus night-time. The parallelism and sense of structured oppositions is further reinforced by the fact that in Arrernte myth 'the sun' is a 'grown woman' (*arrekwetye*) and 'the Pleiades' is a group of 'girls' (*kwarre*). The fifth concept in the network, 'in the daytime', appears to be a simple association with 'sun'. The fact that 'the sun' is a cause of 'daytime', and the two are observably co-occurrent most of the time, leads to a very common association cross-linguistically (as for instance the Indonesian term for 'sun' *mata hari* 'eye of the day'), and in this network may be seen to support the assertion that the 'daytime' versus 'night-time' opposition of 'the sun' and 'the Pleiades' is indeed a relevant semantic consideration. This sketch of the relations, however, does not do justice to the actual richness of the relations, nor does it give a sufficient account of the cultural understandings within which the network is embedded.

An enriched account would require, among other things, a sketch of the actual mythic beliefs concerning 'the sun' and 'the Pleiades'. C. Strehlow provides both a Western Arrernte (1907:16–17) and a Luritja (1908:8) account of 'the sun'. Although both renditions are similar on many points, there are significant differences. In the Arrernte account, the sun (*lernnge*) is a solitary beautiful unmarried woman, while in the Luritja account the sun (*tjintu*) is, in fact, a group of sisters (an elder sister and progressively younger sisters). In both accounts, the sun has long white hair, her/their home is in a place in the east, and the sun's

journey involves climbing a high tree up into the heavens, and then travelling westwards, and then descending in the far west out of sight. In the Arrernte account the home in the east is called *‘cRarka* (i.e. *aherrke*, currently a Mparntwe Arrernte word for ‘sun’), the tree is a supplejack (*tnyere*), the source of light and heat is a large firestick carried by the woman, and the western descent is into a large hole in the ground (C.S. *‘cralpara*, MpA *ahalpere*), while in the Luritja account the home is called *Ununpa* ‘very hot’, the tree is a bloodwood tree (*artkinka*, Ar. *artkernke*), the source of light and heat is the red and fiery body of each sister, and the descent is into the sea. During the night the sun travels back to her home in the east concealed in the armpit of a man. The Arrernte version has the sun woman making the same journey every day, while in the Luritja version a different and progressively younger sister makes the journey every day, until it is the eldest sister’s turn again. The Luritja version also allows for different sun women to be located in different places, and the sun women of summer have a different source from the sun women of winter. Strehlow notes that Western Arrernte people consider the rays of the sun to be the sun’s pubic hairs (see §3.4.3), and in the Luritja account he mentions that an eclipse arises when the spun hair of a possum covers the sun.

Certainly, both accounts of ‘the sun’ support the pan-Australian connection of ‘sun’ with ‘woman’, and contain features which suggest a semantic and cultural affinity with the Dyirbal inclusion of ‘woman’, ‘sun’ and ‘fire’ within the same noun class (Dixon 1972). However, the differences between the Arrernte and Luritja accounts must surely be considered as important as the parallels. There is a lot of room for variation, even when a common cultural core is held constant. In the Arrernte case, the association of ‘sun’, ‘woman’, ‘firestick’, ‘day’, ‘supplejack’, ‘large hole in the ground’, ‘man’s armpit’ and ‘pubic hair’ within the mythic account itself forms a network worthy of further investigation. In my own research into Mparntwe Arrernte terms and uses for plants, I was told, for instance, that there is a special ceremonial firestick, *ntyangkwerlkng*e, which can only be made from *atnyere* ‘supplejack’, thus adding a further cultural link between the fact that ‘the sun’ woman climbs the ‘supplejack tree’ and the fact that she carries a ‘firestick’, two points which are central to the Arrernte account but are not part of the Luritja account.

To the above we can add the interesting fact that one of the Mparntwe Arrernte words for ‘the sun’, the word preferred by many older speakers, *aherrke* is cognate with the name Strehlow gives for the eastern home of ‘the sun’, *‘cRarka*. Koch (1983), in the first serious attempt to compile etymological entries for Arandic languages, has suggested an Arandic protoform **ahe-* with the semantic range ‘hot; angry; fight’ (based on such associates as Alyawarr *aha* ‘angry’, *aherk* ‘dawn’, *aherreyt* ‘hot weather, summer, dry country’, *aherrk* ‘sun, sunlight’), and notes that this would constitute the first element of *aherrke* ‘sun’, with the second element *-rrke* being an unproductive suffix used in nominal formations. In such a context, it makes sense to ask whether *ahalpere* ‘large hole in the ground’ (C.S. *‘cralpara*), which might otherwise seem unrelated semantically to ‘fire’ (or ‘sun’), has a first element that derives from **ahe* with the connection to ‘fire’ (through ‘sun’) provided by the Dreamtime account (i.e. it is the place in the West that the sun drops into every night). This is a question to which an answer is currently unavailable, but is the type of hypothesis which the culturally enriched data leads us to pursue.

Turning now to the Western Arrernte account of the Pleiades, Strehlow (1907:19–20) notes that in the Dreamtime a group of many girls (older girls, not yet women) lived at a place called *Kermtele* [cold, frosty-LOC] ‘Frost’, or ‘Ice’ (C.S. *Kantala*). These girls were called *Kwerralye* (C.S. *Kuralja*), which is the name of the Pleiades, and Strehlow claims that

this name is in fact composed of *kwarre* ‘big girl’ and an ending *-lye* (C.S. *lja*) which he suggests means ‘many’ but which I have been unable to confirm in any of the available linguistic sources. These girls were gathered to dance the women’s dance (*nthepirreme*) at a young man’s initiation, and performed this dance in the evening with torches in their hand. They performed their dance for a number of evenings during the rites, and when the ceremony was finally completed they returned home to *Kerntele*, and then ascended into the skies where they are visible as the Pleiades. Strehlow observes that the Pleiades are most visible during the summertime when they rise in the east in the early evening and are visible throughout the whole night. Moreover, this is the time of year when most ceremonies take place, lasting long into the night, and the Pleiades are considered to be spectators of these rites. Maegraith, who went to record the astronomical observations of the inhabitants of Hermannsburg in 1929, confirms (1932:23–24) a number of Strehlow’s observations, but claims that “the famous Pleiades, or Seven Sisters, is considered to be the tracks of a group of young girls, also ‘not yet lubras’”. He also writes that “[t]his group receives the name of *Kuralja*, but is given no marriage classification”, which contrasts with the Warlpiri account mentioned in §3.2. For the Luritja, Strehlow (1908:9) presents only a very brief account of the Pleiades. The Luritja word for Pleiades, *Ukarala*, is cognate with the Arrernte, and is apparently also based on the word for ‘teenage girl or young woman’, *ukara*. These girls lived at *Ukaralyi* ‘Girls’ Place’, and they are associated with the gathering of bush bananas and the performance of the women’s dance. However, there is no mention of ‘firesticks’, ‘evening dancing’ nor participation in initiation rites which are part of the Arrernte version. It is worth pointing out that there is *no* claim in any of these early Arrente and Luritja accounts that the girls of the Pleiades were sisters,⁶ nor do they ever specify a number (like seven), thus it seems better to steer clear of the potentially confusing designation ‘Seven Sisters’ and stick to translating *Kwerralye* as ‘the Pleiades’.

If we bring the Arrernte accounts of ‘the sun’ and ‘the Pleiades’ into comparison, we find new patterns of association. Based on the mythic account, both heavenly bodies are females carrying firesticks. On the everyday knowledge side, we can say that both have a particular association with summer, the time when both are especially perceptible, and when they both have a significant east-west trajectory. As for reinforced oppositions, in the Dreamtime stories both arise from home countries with diametrically opposed associations; ‘the sun’ is the denizen of a place associated with ‘heat’ and ‘fire’, whereas ‘the Pleiades’ have their original home in a place associated with ‘cold’ and ‘frost’. In terms of their actual ‘day–night’ opposition, we can refine the account by saying that, in fact, ‘the Pleiades’ has a special association with ‘evening’ (moving into night), and the opposition may perhaps be better understood as a ‘day’–‘evening’ opposition.

Evans (this volume) has noted that when considering a pair of potentially related concepts we need to be concerned with three types of connection, triangularly associated: linguistic connections, mythological/social connections and day-to-day world connections. If we change ‘linguistic connections’ to ‘sign form connections’, then the relation between ‘the sun’ and ‘the Pleiades’ nicely exemplifies how all three connections can be relevant at once. Moreover, it shows how we must pay equal attention to both similarities and oppositions in

⁶ This is in contrast to the Warlpiri account mentioned in §3.2 where it was noted that the Pleiades are considered to be a group of sisters of the Napaljarri subsection, and the Warlpiri name for the Pleiades, *Napaljarri-wamu*, reflects this.

gaining a full understanding of the strength and texture of the connections. We may diagram this triangle of connections as follows.

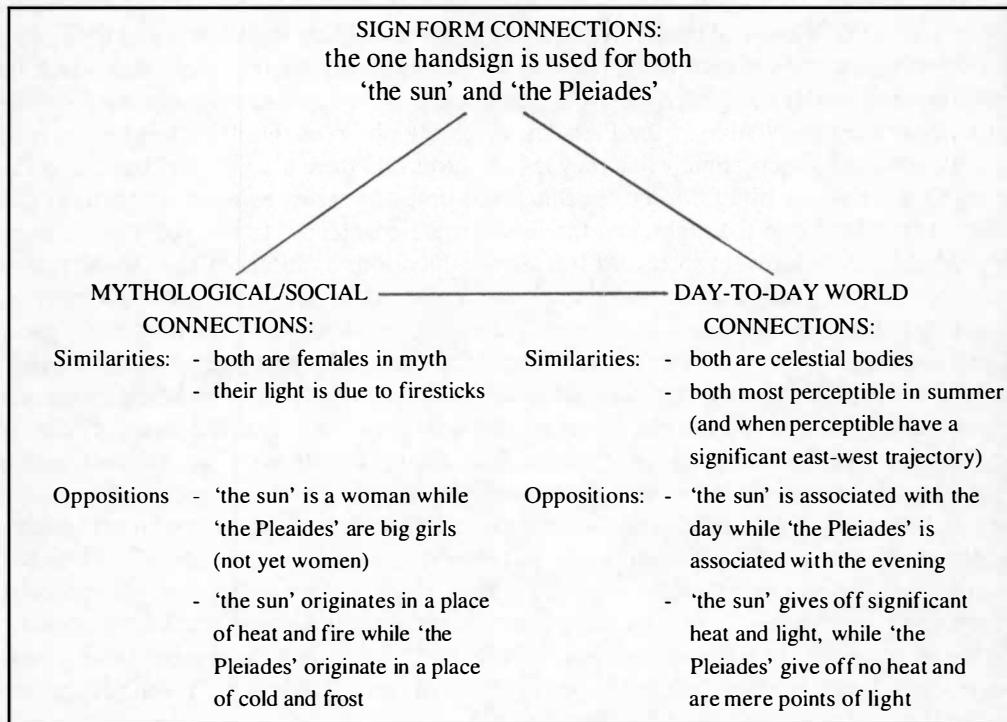


FIGURE 3: THE TRIANGLE OF CONNECTIONS WHICH ASSOCIATE 'THE SUN' AND 'THE PLEIADES'

In short, the association of 'woman', 'big girl', 'the sun', 'the Pleiades' and 'day', is enmeshed in, supported by and perpetuated through a rich network of cultural associations which involves understanding a much larger number of interlinked relations and concepts than those five which the single handsign brings together. These cultural associations are both of a 'day-to-day world' kind and a 'mythological/social' kind. Without an elaborated ethnographic account, the explanation of the five-term 'sun/woman' complex illustrated in Figure 2 would be severely impoverished, and its peculiarly Arandic nature would be lost behind a pan-Australian and universalist overlay, which could explain the skeletal framework of the network, but would be insufficient for explaining how these relations are maintained and made meaningful by a single cultural community which places its own particular layers of semiotic flesh on such a skeleton. While the Luritja facts would support the same basic associations, these resonate against the background of substantially different mythic accounts which branch into different wider cultural relations, with different overlays of similarity and opposition than is found in the Arrente account. As we shall see below, the wider network of cultural associations will be needed when we explore everyday language parallels, and this exploration will, in turn, expand the net of cultural connections.

3.4 EVERYDAY LANGUAGE PARALLELS AND EXTENSIONS

3.4.1 SUN & DAY

As noted previously this is a cross-linguistically common association which is also widespread in Australian languages. Mediating notions can be ‘sunlight’ and ‘daylight’. The fact that it is common in Aboriginal Australia to make direct reference to sun position for keeping track of time, makes an association of ‘sun’ with ‘time’ common.

Kukatja	<i>tjirntu</i>	1) sun; 2) day
Pitjantjatjara	<i>tjintu</i>	1) sun; 2) sunlight; 3) day
Pitjantjatjara	<i>tjirirpi</i>	1) sun; 2) sunlight; 3) day
Kayardild	<i>warrku</i>	1) sun; 2) day; 3) time
Alyawarr	<i>aherrk</i>	1) sun; 2) sunlight; 3) daylight [arlt 1) day; 2) daytime]
Mparntwe Arrente	<i>aherrke</i>	1) sun; 2) time of day; 3) time [arlte 1) day; 2) daytime]

Note also in this connection the following association of ‘flame’, ‘heat’, ‘hot part of the day’, ‘daylight’ and ‘day’:

Yankunytjatjara *kalala* 1) hot part of day, noon-time; 2) daylight, by day [from *kala* ‘flame’] [cf. O’Grady’s (1990:221) etymological set for PPN *paaja₂ which includes, with varying degrees of certainty, the notions ‘sun’s rays’; ‘to dawn, break—of day’; ‘to ignite a fire’; ‘shine’; ‘fire’; ‘bum’]

3.4.2 SUN & WOMAN

The everyday lexical association of ‘sun’ and ‘woman’ does not appear to be very common, and does not appear in the dictionaries examined. However, as noted above, O’Grady (1959:115) observes a semantic link between ‘mother’ and ‘sun’, citing as partial evidence the Balardong form *ngang* ‘sun/mother’. O’Grady (1966:116) also proposes an etymological set involving ‘sun’ and ‘woman’: Martuthunira and Thalandji *yaka.ra.ngu* ‘sun’, East Miminy *yaka* ‘woman’.⁷

3.4.3 SUN & PUBIC HAIR

In his discussion of the Arrernte account of the sun, Strehlow mentioned that the rays of the sun are considered to be the sun’s pubic hair. In Kukatja a couple of lexical items recapitulate an association between ‘sun’ and ‘pubic hair’, but the association appears to be supported by a different belief. In the entry for *ngurrum(pa)* ‘1) pubic hair; 2) sun’ there is a cultural note which states “[t]he sun makes pubic hair grow; thus *ngurrumpa* means both ‘sun’ and ‘pubic hair’” (Valiquette 1993:157). However, an example sentence under *puru-purula* ‘to rise’ suggests there is not only a causal connection, but also a perceived metaphoric parallelism between the ‘sun’ and ‘pubic hair’: “The sun rises and pubic hair rises, pubic hair [which is] certainly [something] private, does grow.” Another lexeme which demonstrates the same general association is *nyanyi* ‘1) pubic hair; 2) sun early in the morning and late in the afternoon’. The cultural note appended to this form repeats the causal connection, but adds the important information that it seems to be associated primarily with

⁷ In addition, O’Grady (1966:96) states that: “[t]he linguistic evidence for a Pan-Nyungic Weltanschauung seems to suggest an early polarization of the concepts *mother’s brother* and *father’s sister*; *wind* 808; *sun* 868 (Balardong *yo.k*, EM *yaka* woman, Ny *yaku* male cross-cousin)...”.

adolescent girls (p.163): “The relationship of the sun to pubic hair [in promoting its growth in adolescent girls] is considered to be so close that the word *nyanyi* (pubic hair) is sometimes used to refer to the sun early in the morning and late in the afternoon”. The reduplication of *nyanyi* continues the connection, but new concepts are added to the mix; *nyanyi-nyanyi* ‘1) face; 2) forehead; 3) pubic hair; 4) general appearance of person or object; 5) sun, especially in the late afternoon’. In both the Arrernte and Luritja accounts of the ‘sun’, long white hair is a characteristic of the sun, thus it may not be out of place to note that an example sentence under *nyanyiwuurt(pa)* ‘incipient pubic hair’ notes that one of the salient characteristics of incipient pubic hair is that it is considered to be white: “The first pubic hair [is] white like [on] a *tjuwil* (Acacia tree)”. The lexical semantic facts, along with the cultural notes and example sentences, show a connection in Kukatja between ‘sun’, ‘pubic hair’, ‘white hair’ and ‘adolescent girls’ which strongly parallel several of the significant cultural connections made in the Arrernte and Luritja accounts of ‘the sun’, although it must be emphasised that different cultural explanations and supporting associations appear to be at work.

It makes sense to ask whether there is evidence of these connections in the sibling varieties of Western Desert. Inspection of the Pitjantjatjara/Yankunytjatjara dictionary does not reveal any parallels with the Kukatja case, although it does contain an entry for the shared form *nyanyi*, which is only given the gloss of ‘pubic hair’ and has a further cultural note that this word is considered sensitive language which is “[u]sed in sexual banter, and ‘getting fresh’”. There was no suggestion in the Kukatja dictionary that the words for pubic hair were considered sensitive language, but this may be due to the fact that the Kukatja dictionary “favors ‘old words’ and usages by people who are now in their 60’s and 70’s” (Valiquette 1993:ii), and it contains many illustrative sentences which reflect the culture prior to the establishment of the local Catholic mission in 1942. The Pitjantjara/Yankunytjatjara dictionary, on the other hand, tends to represent contemporary culture and usage.

Looking further afield, the Kayardild dictionary indicates that *kujawuru* ‘uninitiated young man’ is based on the root *kujaa* which means both ‘pubic hair (of either sex)’ and ‘sprouts (e.g. from water-lily bulb)’. Once again we see the natural ‘day-to-day’ world connection of ‘pubic hair’ with adolescence, but in this case the lexical connection singles out adolescent (uninitiated) males, while in the Kukatja case the cultural connection singles out adolescent girls.⁸

3.4.4 WOMAN & GIRL

The association of lexical items for ‘woman’ and ‘girl’ is common both cross-linguistically and within Australia. Of course, ‘female’ is a common mediating notion. The following table of terms from three Western Desert varieties shows how one form, *kungka*,

⁸ Actually, this is too simply stated. It is important to note that uninitiated young men, especially young men about to undergo initiation, may be considered to be like young women. Among the Arrernte for instance, initiation is considered to be a rite of passage which, among other things, moves the initiate from ‘the way of the women’ into the ‘way of the men’, and the treatment of the novice often reinforces that they have a ‘womanly side’ that they must leave behind (Morton 1985:395–401). A linguistic reflection of this type of philosophy may be found in the Western Desert term *kungkangkatja* which is based on the form *kungka* ‘girl, unmarried girl’ and means both ‘pertaining to the female, feminine’ and ‘an adolescent boy almost ready for initiation’ (Douglas 1988:17, 283).

can be used primarily for ‘woman’ in one variety (Yankunytjatjara), ‘girls’ in another variety (Kukatja), and ‘female’ in the third (Pintupi/Luritja, Hansen & Hansen 1992).⁹

	WOMAN	FEMALE	GIRL
Yankunytjara	<i>kungka</i>	<i>akuri</i>	<i>akuri</i>
Pintupi/Luritja	<i>minyma</i>	<i>kungka</i>	<i>kuyunypa</i>
Kukatja	<i>ngapurlukurlu</i>	<i>tutju</i>	<i>kungka</i>

Distinctions are often made in age or human classification terms depending on whether a female human being is married or not (e.g. Pintupi/Luritja *watitjarra* ‘woman [married; lit. ‘man-having’]’), or whether she has children or not (e.g. Pitjantjatjara *minyma* ‘mature woman, particularly those with two or more children’), or whether she has breasts or not. ‘Girlhood’ and ‘womanhood’ may then be notions that are relative depending on the particular parameters chosen for distinction. Thus, for example, in Alyawarr the form *aleyak* refers primarily to ‘a young girl’, but it can apply to a childless woman of any age. One example sentence, for instance, translates as: “The old woman has no children, she is *aleyak*”. This type of application is parallel to the use of the term ‘boy’ for a male human being of any age who has not gone through initiation.

While breasts are a salient characteristic of women, and frequently the term for breast is used in terms for women, one cannot generalise precisely as to what age grade such a term will be applied to. In Kukatja the general term for ‘women’ is *ngapurlukurlu*, which literally means ‘breast-having’, but in Kayardild it is the term for ‘adolescent girl’, *munirruru*, which is based on the form for ‘breast’, *munirra* 1) breast, 2) milk, 3) pectoral fin of shark’. The term *ngapurlu* 1) breast; 2) milk’ in Kukatja is also used as a woman’s term of address to a blood or classificatory sister.¹⁰ Of course, one of the most common associations with ‘breast’ is ‘mother’; for example, in Pintupi/Luritja three different forms, *ngunyju*, *yipi* and *mimi* are synonyms which all cover the semantic range of ‘mother’, ‘breast’ and ‘milk’.¹¹ (Remember, we have already seen a language with a form that polysemously refers to both ‘mother’ and ‘sun’ in §3.4.2, so parallelisms between ‘mother’ and ‘woman’ are relevant to our current investigation.)

One of the features of interactional language use which facilitates semantic shifts between human age grade classifications is the vocative use of a totally inappropriate age grade term to signal informality and affection towards the addressee. For example, I have recorded Western Arrernte women calling to, or addressing young girls, with the term *ulkemane* ‘old woman’, and I have recorded an Mparntwe Arrernte woman who when speaking affectionately to a baby girl that she was picking up said “*Ngke arelhe ampwe*” (lit. give-it-here woman old) ‘Come here old woman’. Similarly, in Kukatja, the term *kuyumpa* ‘pre-pubescent girl’ is sometimes used by older women when they address each other in a familiar way (instead of using kinship terms).

⁹ It would appear that in Pitjantjatjara *kungka* polysemously covers all three notions.

¹⁰ Murrinh-Patha (Walsh pers. comm.) has the same form as Kukatja for ‘breast’ and ‘milk’ (i.e. *ngapurlu*), however, unlike Kukatja, the derived form which translates literally as ‘breast-having’ (i.e. *ngapurluma*) is used for ‘adolescent girl’, not ‘woman’.

¹¹ Kendon (1988:396) shows that it is very common in Australian Aboriginal sign languages for the signs for ‘mother’ and/or ‘woman’ to crucially involve the breast. In fact some of the sign languages employ the same sign at the breast for both ‘woman’ and ‘mother’ (e.g. Maithakari, Wanamara and Koa).

3.4.5 GIRL & PLEIADES

Strehlow's suggestion (cf. §3.3) that the Western Arrernte and Luritja terms for 'the Pleiades' are based on the word for 'girl' is plausible, but inconclusive. Both the forms *kwerralye* and *kwarrelye* have been recorded for 'the Pleiades' from Western Arrernte speakers (Breen pers. comm.), and this variation in form parallels variation in the Arandic area of either *kwerre* or *kwarre* for 'girl'. However, we would expect forms of similar phonological shape to have similar variation patterns, thus the parallelism in form is striking, but not convincing. The same also holds for the cognate forms that Strehlow records for Luritja, *ukara* 'girl' (cf. Yankunytjara *ukara* 'teenage girl or young woman') and *ukarala/ukaralyi* 'Pleiades'. That is, this would be the forms we would expect, if, for instance, Luritja had borrowed the words *kwarre* 'girl' and *kwerralye* 'the Pleiades' independently. What one needs to explain is the -(a)lye ending, which Strehlow claims means 'many', but for which there is no further attestation. If Strehlow was accurate in recording a difference in the Luritja forms, such that *ukarala* meant 'the Pleiades' and *Ukaralyi* was the name of the place ('Maidens' Place') the star-girls of the Pleiades originate from, then the variation of the ending *-la* versus *-lyi* itself would be strong evidence in favour of an independent stem *ukara* in the formation of the word for Pleiades, and there would be little doubt that its gloss should be something like 'girl' or 'adolescent girl'. However, again Strehlow is currently the only source for this information, and what is needed is independent confirmation. One is tempted to throw Kukatja *kurrpulu* 'the Pleiades' into the mix and suggest that Arrernte *kwerre* ~ *kwarre* 'girl' corresponds to the first elements of the Kukatja form (i.e. *kurr*). However, this would require a story about borrowing, and an explanation of what the element *-pulu* might mean, and these are not forthcoming.

The plausibility of the linguistic connection between *kwarre* 'girl' and *kwerralye* 'the Pleiades' does, however, increase when we consider parallel evidence from *An introductory dictionary of the Western Desert language* (Douglas 1988). Here we find *kungka* 'girl, unmarried girl' (cf. the WOMAN & GIRL association above) and three forms for 'the Pleiades', all of which appear to be based on this root: *kungkarangkalpa*, *kungkarungkuru* and *kungkara*. Cultural notes attached to the entries for *kungkarangkalpa* 'the Pleiades' state that the word applies to "female characters in a sacred story" and indicate that they are regarded as "creators of the east wind, in sacred mythology". This last mythological connection may be taken to correspond, albeit indirectly, to the prior observation that 'the Pleiades' is associated with a significant 'east-west' trajectory when it is most visible (i.e. during the summer).

It should be noted that other Arandic varieties have different forms for 'the Pleiades'. In Alyawarr the form is *interrk*, the primary meaning of which is 'white ant'. In Mparntwe Arrente *arrarrkwe* is the word for 'the Pleiades', a form for which no story about a connection with 'girl' can be created.

As for parallels outside Central Australia, O'Grady (1990:246) reconstructs a Proto Pama-Nyungan form **paarla* 'woman, wife', and the set of forms upon which he bases the reconstruction contains, as suffixed forms, Pankarla *palla.ra* 'woman' and *palla.ri* 'Pleiades'.

3.4.6 PLEIADES & SUN

No everyday lexical connections have yet been attested to directly link ‘the sun’ and ‘the Pleiades’, although previous entries demonstrate that it would be possible for these two notions to be lexically connected through the mediating links of ‘woman’ and ‘girl’ (with the connection ‘female’ and ‘wife’ also being relevant).

3.4.7 PLEIADES & STAR

The Western Arrernte form *kwerralye* ‘the Pleiades’ is identical to the Mparntwe Arrernte form *kwerralye* meaning ‘star’. Clearly there has been a semantic shift, and if we give any credence to the hypothesis that the form is originally derived on the basis of *kwarre ~ kwerre* ‘girl’, then the direction of the shift would be ‘the Pleiades’ → ‘star’. Whichever direction the shift, the broadening or narrowing of reference that would be involved can be taken as particular evidence for the special significance of ‘the Pleiades’ at the time that the shift would have occurred. Wilkins (1986) has suggested that:

In semantic changes which involve ‘kind-of’ relations and which were traditionally classified as widening and narrowing, it is not just any member of a category whose name could be taken to apply to the category as a whole (widening) or which could take on, as its specific name, the name of a category (narrowing); only core members of a category, particularly those closest to the prototype, are involved in such changes.

In the case under consideration, ‘star’ is the category of which ‘the Pleiades’ is a member (along with ‘the morning star’, ‘the Southern Cross’, ‘Antares’, ‘the Hyades’, etc.), and the claim would be that ‘the Pleiades’ would have to be considered a core, nearly prototypical, member of the ‘star’ class if a semantic shift from one of these notions to the other is to take place.

In §3.3 we investigated the structured cultural and semantic opposition between ‘the Pleiades’ and ‘the sun’ (cf. Figure 3). Aspects of this opposition may also apply more generally to the relation between ‘star’ and ‘sun’. For example, note the ‘hot-cold’ opposition that is recapitulated in the following translated example sentence from the Kukatja dictionary entry for *tiru* ‘1) unreal; 2) lie; 3) “make-believe”; 4) trick’: “The sun is characterised by heating. [From its heat] pubic hair develops. The stars are make-believe [with regard to] being characterised by heating and are unrelated [to the development of pubic hair]” (Valiquette 1993:254). This example also reflects the opposition implicit in the fact that the sun is associated with pubic hair, while the stars are not.

3.5 RESULTS OF CASE STUDY 1

We have established everyday language lexical parallels for four of the five links in the original hyperpolysemous network under discussion. These links are: SUN & DAY; SUN & WOMAN; WOMAN & GIRL; and GIRL & PLEIADES. The only link for which no lexical connection has been attested is PLEIADES & SUN. Not surprisingly, the links which are based on more universal ‘day-to-day’ world connections (i.e. SUN & DAY and WOMAN & GIRL) are far more surely and widely attested than those which are based on more culture-specific mythological connections (i.e. SUN & WOMAN and GIRL & PLEIADES). The two further associations which were investigated, SUN & PUBIC HAIR and PLEIADES &

STAR, both extend the original network of associations and reinforce several of the key conceptual elements that were present in the mythological and day-to-day account of ‘the sun’ and the nature of its relation to ‘the Pleiades’. Furthermore, this pairwise investigation of lexical connections lends support to the hypothesis that a similar logic underpins associations in both the auxiliary sign language and everyday language, and shows that it is worthwhile to use the hyperpolysemous network as a guide to searching cross-linguistically for potential cognates.

The network of attested lexical connections which arose in the course of the preceding discussions may be summarised as in Figure 4.¹² There are four main types of connection that occurred in the data, and they are given distinct representation in the network: 1) polysemy; 2) derivational relation; 3) confident etymological relations (i.e. cognacy) of forms in closely related languages or dialects; and 4) relation through derivation from same base form. Note that there are no attested forms which are polysemous for the concepts ‘SUN’ and ‘WOMAN’ (although the parallel connection of ‘sun’ and ‘mother’ is an attested polysemic relation), nor are there any attestations of a form which covers both ‘the Pleiades’ and ‘girl’. In the former case, our best lexical connection is based on cognate forms in closely related languages, and in the later case the lexical connection is based on a derivational relation where the form for ‘GIRL’ is the base for the form for ‘the Pleiades’. Thus, the hyperpolysemy of the original handsign is not reflected in a continuous chain of everyday language polysemies which covers all points in that network. In short, the primarily mythological associations are here not manifested by polysemy in everyday languages, while the common day-to-day associations are. Still, what is considered a common day-to-day connection is also subject to cross-cultural variation.

It is important to emphasise that here we are only investigating lexical connections. There are other important linguistic connections between concepts which have been paid only little attention here. Such things as textual co-occurrence, frequency of collocation, and common grammatical treatment are also pertinent linguistic parameters which can reveal patterns of conceptual association. Though there is no lexical connection between ‘star’ and ‘sun’ in these data, we have certainly seen translated example sentences which show that they are talked about together and considered to be part of the same general area of experience. Similarly the fact that the words for ‘the sun’, ‘the Pleiades’, ‘woman’ and ‘girl’ all fall together in Dyirbal noun class II (*balan*) (along with the words for ‘flame’, ‘breast’, ‘milk’, ‘star’ and ‘mother’) is, as Dixon (1972, 1982) and Lakoff (1987) have shown, a significant everyday language manifestation of the conceptual connection among these notions. However, the concentration here has been on discovering lexical connections, because the ultimate concern is to devise a semantically-based means for increasing and evaluating the cognate base for comparative reconstruction in Australia.

¹² A network such as that presented in Figure 4 can be understood as an artificially delimited section that has been extracted from a significantly larger network of lexical connections. For example, the extensive network which Evans (1992b:490) labels “the fire/camp/country nexus” would articulate with the network presented here through the ‘sun’, ‘day’, ‘time’ and ‘flame’ nodes, more than doubling the number of concepts linked together.

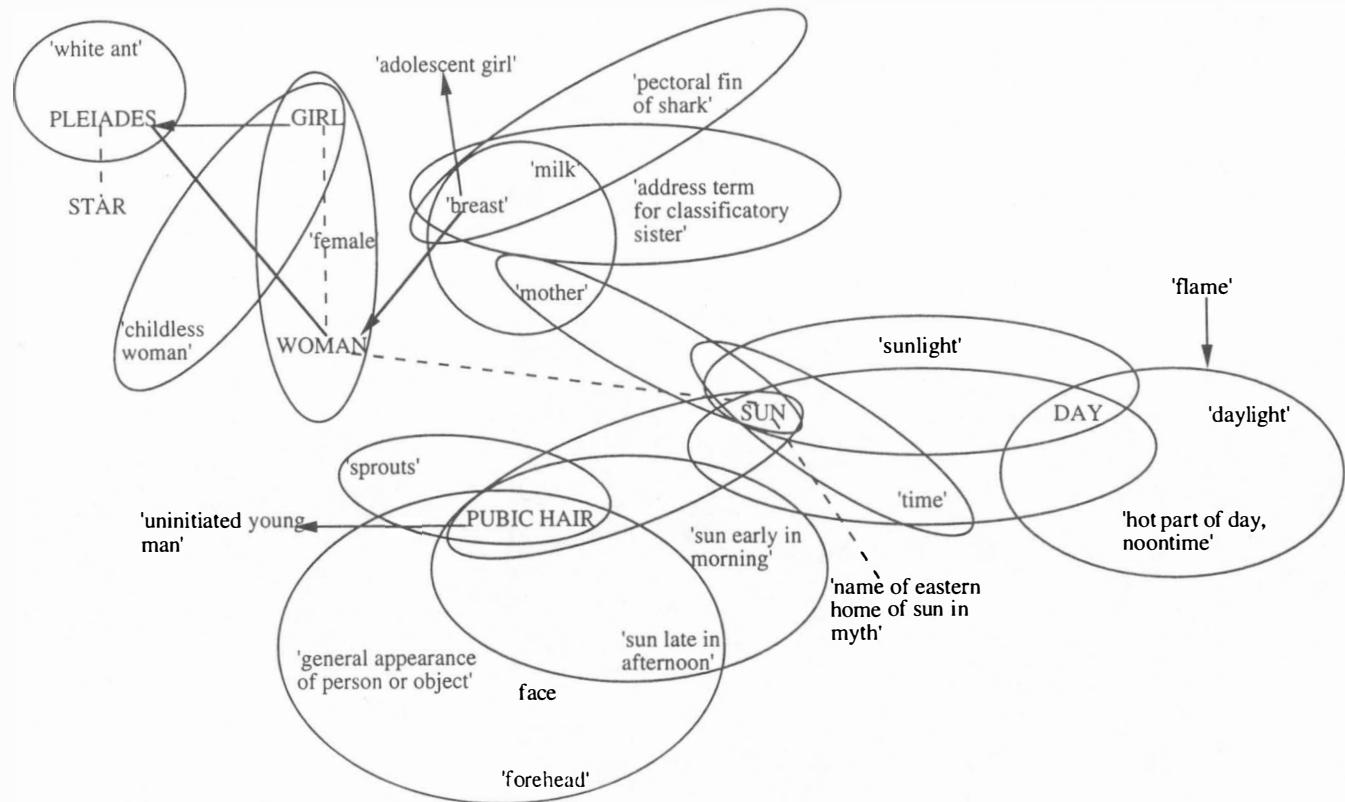


FIGURE 4: ATTESTED LEXICAL CONNECTIONS IN CASE STUDY 1 (WOMAN/SUN COMPLEX)

(*'x'* 'y') = attested polysemy involving '*x*' and '*y*'

'*x*' → '*y*' = a word for '*y*' derived from a word for '*x*'

'*x*' — '*y*' = '*x*' and '*y*' are derivations based on the same stem

'*x*' - - '*y*' = clear etymological relation between words for '*x*' and '*y*' in closely related languages

4. CASE STUDY 2: EMU FOOD AND EMU FOOT

4.1 THE SIGN COMPLEX

In this case, one sign replaces eight lexemes of the everyday language: *ileye* ‘emu’ (C.S. *īlia* ‘Emu’), *kamule* ‘camel’ (C.S. *kámula* ‘Kamel’), *tywarnpe* ‘ironwood tree’ (C.S. *tjuánba* ‘*Acacia estroph.*’), *alkumala* ‘a kind of tree’ (only attested in C.S. and he glosses it ‘Baum’), *inmurte* ‘members of the lepidium genus’ (C.S. *inmóta* ‘Busch’), *lelarre* ‘chocolate bush’ (C.S. *lélara* ‘Strauch’), *ilkurte* ‘desert cucumber’ (C.S. *ilkóta* ‘gurkenähnliche Pflanze’) and *tamana* ‘edible plant species’ (only attested in C.S. and he glosses it ‘Strauch’). Strehlow notes explicitly in his entry for *inmurte* ‘members of the lepidium genus’ that emus eat these plants, and in his entry for *tywarnpe* ‘ironwood tree’ he claims that emus rest in the shade of these trees. These are the only two connections which he explicitly remarks upon. Figure 5 shows the proposed network structure of this complex of associations, as determined from further information discussed below.

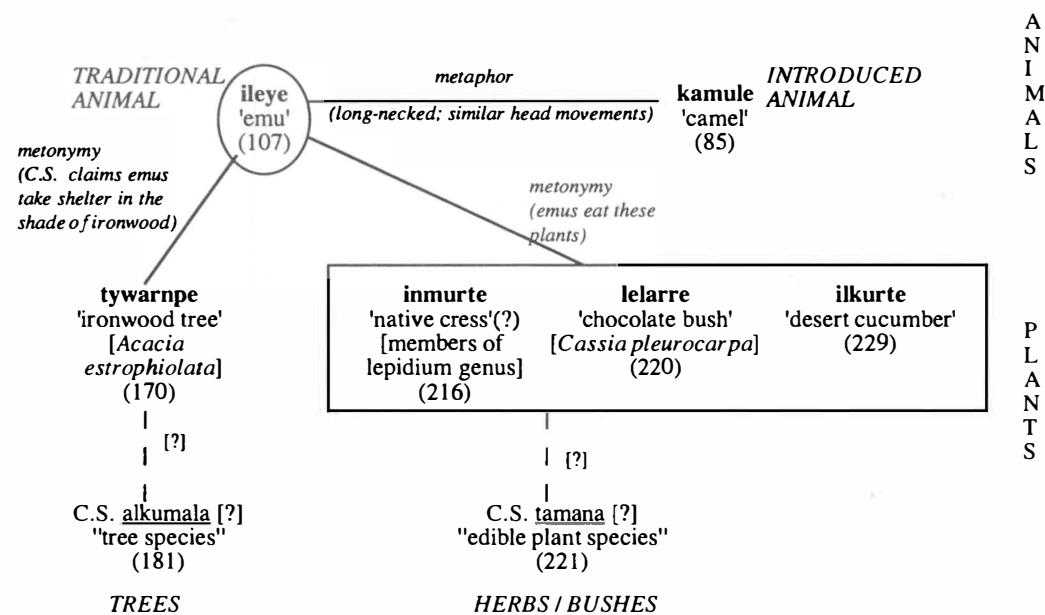


FIGURE 5: THE EMU COMPLEX

4.2 THE HANDSIGN

“Make a fist, with back of hand down, and quickly move it downward a few times (the movement being confined to the wrist, not the arm). The sign indicates the movement of the throat or neck of the emu.” (C. Strehlow 1978:355)

Spencer and Gillen (1927:604, with drawing on 605) describe the sign for ‘emu’ (i.e. “*Erlia*”) as follows: “The four fingers are bent over the palm; the thumb is bent with its tip touching the first and second fingers. The hand held horizontally and moved up and down on the wrist”. They do not indicate that it has any further meanings.

Indeed, this sign for ‘emu’ remains in common use today throughout Central Australia. Kendon’s description (1988:179) and drawing (p.167) of the Warlpiri sign for *yankirri* ‘emu’ capture perfectly the sign that I have recorded for Mparntwe Arrernte *arleye* ‘emu’ and Western Arrernte *ileye* ‘emu’. He observes that “the hand is held vertically on the forearm, bunched in such a way that the second joint of the flexed index finger slightly protrudes, and the Sign Action consists in a series of wrist extensions, producing a pattern of movement reminiscent of the emu’s head movements as it walks...”. This final comment of Kendon’s confirms Strehlow’s observation concerning the iconic nature of this sign. More specifically, Kendon (1988:166) notes that the base representation of this sign involves two techniques of iconic representation: first, the handshape *models* the emu’s head, and second, the movement of the handshape mimics the movement of the emu’s head as it walks and is therefore an *analogic enactment* of the action.

4.3 DISCUSSION OF SEMANTIC AND CULTURAL CONNECTIONS

Not only is the form of this handsign based iconically on features of an ‘emu’, but, as Figure 5 shows, the structure of its meaning complex appears to be a radial network centred on ‘emu’. Within this network we have some clear examples of the type of metonymically-based flora-fauna polysemies discussed by Evans (this volume).

In discussions of, or narratives involving, the emu, it is very common for people to make direct reference to the types of plant and fruit which the emu eats. In the Dreamtime account of the ‘emus’ provided by C. Strehlow (1907:42–45), there is an explicit statement that a party of emu ancestors travelling westwards came upon a place named *Ileye-ke Merne-nhe* (emu-DAT plant food-ACC) ‘Food for Emus’¹³ where the party fed on *inmwerte* ‘plants of the lepidium genus’. Elsewhere, in discussing how Dreamtime ancestral beings would transform into the animals which they had given rise to and thereby assume all the characteristics of those animals, Strehlow notes that the emu ancestors ran around like emus do, and that they ate the cabbage-like leaves of the *inmwerte* just like emus do. He further notes here that Arrernte people themselves steam the leaves and eat them.¹⁴ This association of *inmwerte* ‘plants of the lepidium genus’ and *ileye* ‘emu’ is further strengthened by the fact, recorded by John Pfitzner (Arandic Languages Dictionaries Program n.d.), that when Western Arrernte people cook the *inmwerte* leaves, they place them between layers of hot stones (with the leaves sometimes also sandwiched between layers of pigweed) and then bury this under hot sand and ashes, after which they “[m]ake two emu footprints on top” and then “[e]veryone must go away out of sight” otherwise the *inmwerte* leaves won’t cook. Pfitzner notes that the use of emu footprints in this context is an acknowledgment of the fact that this plant is eaten by emus.

In other Dreamtime accounts, Strehlow also records emus eating *ilkurte* ‘desert cucumber’ and *ankwerrpme* ‘mistletoe (*Lysiana exocarpi*)’, as well as charcoal and small stones. I myself was told that emus feed their babies with *ankwerrpme* ‘mistletoe’ and recorded a story accompanied by sand drawings in which the drawn representation for *ankwerrpme* was

¹³ Strehlow records the placename as *Iliaka-mannana* ‘Emu-Futter’.

¹⁴ Strehlow further suggests that the plant has a terrible taste. Pfitzner (Arandic Languages Dictionaries Program n.d.) observes that when the plant is eaten raw it has a hot taste like pepper. The Kukatja dictionary notes that the taste of these plants after being steam baked is “compared with that of ash”. The Kukatja name for plants of the lepidium genus is *yunmurrta*, a form which is clearly related to Western Arrernte *inmwerte*.

a circle, representing a tree functioning as host for this parasitic plant, with two emu footprints facing the circle, indicating that an emu would feed on the plant. For the Yankunytjatjara, Goddard and Kalotas (1985:147) note with respect to *parka-parka* ‘mistletoe (*Lysiana murrayi*)’ that “the ripe red fruits are eaten by people and emus”. They also note more generally that the different types of mistletoe in the Central Australian area tend to prefer Acacia and Eucalyptus tree species as their hosts, a fact which may not be irrelevant in the search for an explanation as to why there are two trees included in the network in Figure 5.

Yet another example of how common it is to associate emus with the food they eat is to be found in the example sentence given in the Alyawarr dictionary under the entry for *ankerr* ‘emu’. Here emus are characterised as eating *akatyerr* ‘bush raisin, bush tomato (*Solanum centrale*, *Solanum coactiliferum*)’, *arrarntenh* ‘bush plum (*Canthium attenuatum*)’, *intekw* ‘type of plant (*Scaevola parvifolia*)’, *arnwekety* ‘conkerberry (*Carissa lanceolata*)’, and *anngey-anngey* ‘type of plant with fruit like the bush plum (*Clerodendrum floribundam*)’. It is important to note that while the Arrernte, like the Alyawarr, use the term *akatyerre* for the ‘bush raisin’, another Arrernte term for this plant and its fruit is *ankerrele-arkwenhe* which translates as ‘emu food’ (*ankerre* ‘emu’; -*le* ‘ERG’, *arkwe-* ‘eat’, -*nhe* ‘nominaliser of habitual action’). Such a lexicalisation is of course one of the most overt linguistic manifestations of a direct metonymic relation between flora (in this case the bush raisin) and fauna (the emu). However, in terms of handsigns, this connection is not preserved and Strehlow indicates that *akatyerre* ‘bush raisin (*Solanum centrale*, *Solanum coactiliferum*)’ has its own unique sign rather than being included as one of the plants that can be referred to using the ‘emu’ sign. Thus, not all common emu foods are covered by the ‘emu’ sign.

While Strehlow indicates in his writings that *inmwerte* ‘lepidium genus’ and *ilkurte* ‘desert cucumber’ are both eaten by ‘emus’ he does not say anything of *lelarre* ‘chocolate bush (*Cassia pleurocarpa*)’ nor *tamana* ‘edible plant species’. We do know, however, from notes gathered by the Arandic Languages Dictionaries Program that *lelarre* is edible only to birds, and we also know from the Kukatja dictionary that another type of cassia, *Cassia venusta*, is eaten by emus. Thus the assumption is being made here that emus will eat *lelarre* ‘chocolate bush (*Cassia pleurocarpa*)’. Since we do not know which plant *tamana* refers to, it is difficult to be sure where it fits into the network, but since it is labelled as an edible plant species, and since many of the plants which emus eat are also plants eaten by people, it is possible that *tamana* was covered by the ‘emu’ sign because it also refers to a plant eaten by emus. This, however, is an extremely tentative suggestion.

In the context of the current paper, one of the most significant aspects of the preceding discussion is the fact that the metonymic association of ‘emu’ and ‘plant food eaten by the emu’ is recapitulated across a number of the distinct semiotic systems used by the speakers of Arandic languages (cf. Figure 6). Graphically, emu footprints have been attested as indicating *inmwerte* ‘lepidium plants’ and *ankwerpme* ‘mistletoe (*Lysiana exocarpi*)’. Linguistically, there are both lexical and textual connections. Lexically, one of the terms for the ‘bush raisin’ is a compound of the word for ‘emu’ and a nominalisation of ‘eat,’ and textually, both Dreamtime narratives and expository accounts concerning the ‘emu’ typically include a comment on one or more of the plant foods eaten by the emu. Finally, of course, the ‘emu’ handsign covers at least three plants eaten by the ‘emu’.

Semiotic system	Attested associations of 'emu' and 'plant food eaten by emu' in Arandic groups
Everyday language	<ul style="list-style-type: none"> Textually: in narrative and espository texts, when 'emu' is talked about it is typical to talk about the (plant) food that it eats [plants of the <i>lepidium</i> genus; mistletoe, desert cucumber; bush raisin, bush plum; conkerberry]. Lexically: one word for 'bush raisin' is a compound involving the words for 'emu' and 'eat'.
Handsigns	<ul style="list-style-type: none"> The handsign for 'emu' (which is iconically based on an emu's head and movements) also covers some plants which emus eat [plants of the <i>lepidium</i> genus; <u>desert cucumber</u>; <u>chocolate bush(?)</u>].
Sand drawing (graphic art)	<ul style="list-style-type: none"> Emu feet are drawn in the sand on top of where cabbage-like leaves from plants of the <i>lepidium</i> genus are being steam baked in the ground, acknowledging that emus also eat this plant. In a sand story, two emu feet drawn facing a circle representing a tree were used to signify 'mistletoe', a plant which bears fruit eaten by emus and people.

FIGURE 6: CROSS-SEMIOTIC REPETITION OF THE ASSOCIATION OF 'EMU' AND 'EMU FOOD'

Although graphic depictions of emu footprints may be used to signify, or indicate, plants eaten by emus, the Arrernte compound *arleye-ingke* 'emu foot' and the Alyawarr compound *ankerr-ingk* 'emu foot' both refer to a plant which is not eaten by emus, *Goodenia lunata*. An example sentence in the Alyawarr dictionary explains the basis for the name: *Alperr ankerr-wenh ingk-apeny* (leaf emu-POSS foot-SEMLB) 'the leaves are like emu's feet' (Green 1992:49; the entry includes an accompanying drawing which demonstrates the likeness). This association, then, is metaphoric rather than metonymic. Another Alyawarr example sentence points out that *Goodenia lunata* used to be chewed with ashes like wild tobacco. As another long-shot association to be explored, it is worth pointing out that the Alyawarr entry for *athimp* 'ironwood' indicates that the leaves of the ironwood tree were used to make ashes for tobacco. Could the association between 'ironwood' and 'emu' which the handsign under consideration suggests be mediated by the fact that a plant known as 'emu foot' (*Goodenia lunata*) was chewed like wild tobacco with ash, and one source for that ash was the ironwood? Perhaps, but there is currently insufficient evidence to build this connection with any degree of confidence. Still, it must be said that C. Strehlow's claim that 'ironwood tree (*Acacia estrophiolata*)' and 'emu' are associated by the fact that emus take cover in the shade of this tree is not supported by any further data and seems equally speculative. Remember, however, that since a favoured food of the emu, 'the mistletoe', is a parasite on *Acacia* and *Eucalypt* tree species, one could see emus feeding on any mistletoe that grew on ironwood trees, but this association would not be unique to the 'ironwood'. So, this arm of the radial network represented in Figure 5 seems a particularly weak, but not totally unpromising, semantic connection. However, as we shall see in the section on lexical connections below, an association of 'emu' with 'coolibah tree' (*Eucalyptus microtheca*) seems quite strong.

'Emu foot' is not only the name used for *Goodenia lunata*, it is also the Western Arrernte name which C. Strehlow (1907:1) records for one of the great spirits that dwells in the sky. This being is called *Ileye-ingke* (emu foot) because he is a large man with feet shaped like that of an emu. T.G.H. Strehlow (1964:725) describes this man as follows:

The Western Aranda believed the sky to be inhabited by an emu-footed Great Father (*kngarritja*), who was also the Eternal Youth (*altjira nditja*). This Great Father had dog-footed wives, and many sons and daughters—all the males being emu-footed and all the females dog-footed. They lived on fruits and vegetable foods in an eternally green land, unaffected by droughts, through which the Milky Way flowed like a broad river; and the stars were their campfires. In this green land there were only trees, fruits, flowers, and birds; no game animals existed, and no meat was eaten...the reddish-skinned emu-footed Great Father of the sky, whose blonde hair shone 'like a spider web in the evening sublight', looked as young as his own sons...

Once again the recurrent connection of 'emu' and 'plant food' is reinforced. The emu-footed Great Father lives in a sky world where no meat is eaten, and fruits and vegetable foods provide the only sustenance. Further, as Morton (1985:122–123, 163–166) points out, this account is but one manifestation of a widespread association between 'the emu' and 'the Milky Way'. Throughout much of Australia "this emu tends to be identified with the dark patches of the Milky Way" (p.122) because the conjunction of these dark patches together looks to the naked eye very much like an emu with the Coal Sack forming the head (cf. Basedow 1925; see illustration in Morton 1985:164). In connection with the first case study concerning the 'woman/sun' network, it is important to point out that the Western Arrernte account of this particular association of an ancestral being ('the emu-footed Great Father') with a celestial body ('the Milky Way') contains similar features: for instance the reddish skin of the beings, their blonde (white) hair, and fires being the sources of the stars (in this case campfires and in the previous case firesticks). From the point of view of the current case study, the important feature is the re-occurrence of a double metonymy which we have seen before in other contexts: the 'emu foot' stands for 'the emu, with all its salient characteristics' and one of these essential properties concerns 'the plant food which the emu eats'. Furthermore, the Milky Way is simultaneously the river running through the verdant fruit-filled land presided over by the great emu-footed man *Ileye-ingke*, and is also the white background against which a great dark 'emu' can be discerned, and so once again a mythic connection and a day-to-day (perceptual) connection reinforce each other, and in so doing reflect patterns of association previously encountered in other contexts.

The only connection which has not yet been discussed is that between 'emu' and 'camel'. In fact, many of the signs that C. Strehlow gives for introduced animals are the same as signs for traditional animals. Thus, the sign for 'sheep' and 'goat' is the same as that for 'kangaroo rat'; the sign for 'donkey' and 'cat' is the same as that for '(native) dog'; the sign for 'rabbit' is the same as that for 'native cat (quoll)'; and the sign for 'chicken' is the same as that for 'eagle (and birds more generally)'. This then was a general pattern of extension at the time that C. Strehlow recorded his data. The particular association of 'emu' and 'camel' appears to be metaphoric. Remember that the sign is based iconically on the movement of the head and neck of the emu as it walks along, and the camel is a long-necked animal which apparently is considered to have similar head movements when it travels along.

I have not collected a current Arrernte sign for 'camel', but Kendon (1988:208) notes that the current Warumungu sign "is a sort of descriptive phrase, indicating the camel's hump". One of the Alyawarr terms for 'camel' is *artep mpwer* (back heap/hump), literally 'hump

back'. In Kukatja one term for 'camel', *murtitikilpa*, means 'knees bump together' and a second, *tjarnapuntu*, means 'back man'. No evidence has yet been uncovered to further connect 'emu' to 'camel', nor do any current linguistic or sign forms suggest a special attention to the neck or neck movement.

As we shall see below, the discussion above has only scratched the surface of the available knowledge of, and associations with, the 'emu'. Among other things, the 'emu' is a prized game animal, its belly feathers are important in ceremonial decoration, and it is considered unique because of the fact that it is the male which looks after the young. Thus, the network of associations which is covered by the 'emu' handsign (cf. Figure 5) is based on a very restricted subset of available cultural connections, and the only association in this network which is well-supported and pervasive is the association of 'emu' with 'plant food eaten by the emu'.

4.4 EVERYDAY LANGUAGE PARALLELS AND EXTENSIONS

In this section we will limit ourselves to exploring only those lexical connections which involve 'emu'. This is done partly because of concerns for space, but is mainly due to the fact that the network represented in Figure 5 is being treated as a radial network centered on 'emu'. Although emus are widespread in Australia, they do not occur everywhere. For instance, they are not part of the traditional culture of the island-dwelling speakers of Kayardild (Evans 1992a). It goes without saying that such factors set natural limits on cross-linguistic comparison. For this investigation, we will focus on data from Arandic and Western Desert languages.

Three lexical connections have already been encountered above: (i) the metaphorically-based use of a compound of 'emu' and 'foot' to name the plant *Goodenia lunata* in Arrernte and Alyawarr; (ii) the use of the same compound ('emu foot') in Western Arrernte to name a key Dreamtime figure who dwells in the sky; and (iii) the metonymically-based use of a compound of 'emu' and 'eat' as an alternative name for the 'bush raisin' (*akatyerre*) in Arrernte.

4.4.1 EMU & OTHER PLANTS AND TREES

In Kukatja there was also a compound which literally meant 'emu foot', *tjina-karlaya* (foot-emu), and which named a plant, in this case *Isotoma luteola*. No information is given to indicate whether this name originated through metaphor or metonymy, but we are told that this term "is not used nowadays on account of the death of a woman with that name". In such cases of taboo, lexical replacement is the norm, and in this instance it appears that the term chosen as the new name for *Isotoma luteola*, *kunakapal(pa)*, continues the association with 'emu' since it also means 'emu egg'.

The reduplication of *karlaya* 'emu' in Kukatja also gives rise to a plant name: *karlaya-karlaya* 'shrub with blue flowers (*Halgania erecta*)'. A note appended to this entry states that the plant is eaten by people, but there is no indication of what the plant's connection to emus is.

The Alyawarr dictionary treats *ankerr* meaning 'emu' and *ankerr* meaning 'coolibah (*Eucalyptus microtheca*, *Eucalyptus intertexta*(?))' as homophones. While this may be the case, the dictionary also notes with respect to *ankerr* 'coolibah' that "[t]he leaves are used in

the cooking of emu". Moreover, one important feature of the 'coolibah' is that it has an edible seed which is considered to be "good, like fat" (Arandic Language Dictionaries Program Notes), and in some other Arandic languages, notably Anmatyerre and Eastern Arrernte, the name for this seed is *arleye*, which also means 'emu'. This striking parallelism suggests that a semantic connection between 'coolibah' and 'emu' seems very strong, although it must be admitted that the semantic factors motivating the connection are still not very clear. Given the prior discussion of ash and native tobacco, it should also be noted that the bark of the coolibah, like the leaves of the ironwood tree, is used to make ashes for mixing with tobacco.

4.4.2 EMU & EMU FEATHERS

The soft, downy white feathers from the belly of the emu are of significant cultural importance in Central Australia. Although these feathers are used in the manufacture of a number of artefacts, including the shoes worn by the dreaded kurdaitchas (traditional assassins), they are particularly associated with ceremonial decoration, especially decorations of the body and artefacts in men's ceremonies. Thus it comes as no surprise to find that one of the terms for 'emu' in Alyawarr, *anhelengkw*, is formed by adding the proprietive suffix *-elengkw* to the root *anha* '1) emu feathers; 2) hat made of emu feathers', and so literally means 'something that has emu feathers'. The same association may also be true of Kukatja where *yarturru* means 'emu feathers' and *yaturrurkulu* is one term for 'emu'. Also note in this connection the Kukatja form *yatu* '1) soft; 2) tired; exhausted' next to another term for emu, *yatula*.

In the Kukatja entry for *karlaya* 'emu' eight synonyms for 'emu' are listed. One of these, *wanyayaru*, is not given its own entry in the dictionary, but it is interesting to note that *wanya* means both 'evil spirit' and 'kurdaitcha man', and *yaru* means 'careful, slow, gentle, soft' (qualities of the kurdaitcha's movements and his shoes). In commenting on Róheim's (1972:670) observation that in Central Australia "[t]he demon and the medicine man are birds of a feather", Morton (1985:144) states:

The emu, too, is a 'bird of a feather', since it is closely associated with sorcery in the minds of Central Australian Aborigines, both mythically, and in terms of the 'emu feet' of the kadaitja. [cf. Spencer & Gillen 1927:417–418, 454–461]

Thus, the putative lexical connection of 'emu' and 'kurdaitcha' in Kukatja seems to have ethnographic support. Moreover, in Alyawarr, the term *apwaylpew*, meaning both 'kurdaitcha' and 'kurdaitcha shoes', appears to be based on the form *apwa* 'emu feathers'.¹⁵ A cultural note appended to *apwaylpew* observes (Green 1992:68): "The shoes are made from emu feathers and look a bit like slippers. They leave no tracks".

4.4.3 EMU & MILKY WAY

The Australia-wide association of 'emu' and 'the Milky Way' was discussed previously. A lexical reflection of this association is found in Alyawarr where the form *arrang* means

¹⁵ In Western Desert languages, kurdaitchas are commonly referred to as *tjina kartpilpa* which literally means 'bound foot'. This again, is a reflex of the fact that kurdaitchas are characterised by wearing emu feather foot coverings. (Indeed, one common English designation for kurdaitchas is 'featherfoot'.)

both ‘emu’ and ‘the Coal Sack and other dark patches in the Milky Way down to Scorpio (which together form a shape like an emu)’.

4.4.5 EMU & BODY PARTS

Two of the nine Kukatja words for ‘emu’ make reference to body parts other than feathers. One, *ngalyapulkuny(pa)*, literally means ‘big forehead’ (*ngalya* ‘forehead’). Given that the handshape of the Arrernte sign which we are investigating is meant to iconically represent the ‘emus’ head, this Kukatja lexicalisation would support a hypothesis that the emu’s head is considered a particularly salient characteristic of the animal and so is a good candidate for metonymically (i.e. synecdochically) referencing the animal in both handsigns and in language. The second term is *tjuntatarrka*, which is a compound of *tjunta* ‘hip; thigh’ and *tarrka* ‘leg, bone’. That the legs are also considered a salient characteristic of the emu (along with its head, its feathers, and its feet) seems to be implied by the following Kukatja example sentence: “[you have] the legs [i.e. *tarrka* - DPW] of an emu! They swore at each other [like this] in the dreamtime. [Such swearing] is not [used] nowadays” (Valiquette 1993:330).

4.5 RESULTS OF CASE STUDY 2

The lexical connections which have been garnered in this investigation are summarised in Figure 7. Note that none of the particular connections to be found in the emu-complex covered by the Arrernte handsign (cf. Figure 5) are repeated in this network. It must be remembered that this investigation draws on a very restricted number of languages and is unlikely to represent anywhere near the full range of particular connections. Still, as Evans (this volume) has emphasised, in attempting to identify parallel patterns and establish general laws of semantic change, the particular associations found in individual languages are not as important as the more general principles which govern such associations.¹⁶ This is also true for the cross-comparison of semiotic systems. As far as the case at hand is concerned, if we consider only those lexical connections which arise out of the notion EMU (including polysemies with ‘emu’), rather than those notions which give rise to EMU (e.g. ‘emu feathers’), then we find a set of lexical associations that very much parallels the network covered by the handsign.

¹⁶ Although, as emphasised in §3.3, local particulars are crucial for understanding how general patterns manifest themselves in actual cultural and linguistic contexts. Such particulars will be necessary for establishing the richest and most accurate reconstructions possible. First, however, we must have some guide as to what cross-linguistic connections can be made, and at what level of granularity, and with what degree of confidence. So, as in all historical endeavours, we seek to distinguish the contingent from the general and demonstrate how unique patterns of language and culture arise from the interaction of (i) natural laws, (ii) widely shared social, cultural and linguistic principles, and (iii) the particular contingencies that affect individual groups at a specific time and place (e.g. cultural contact).

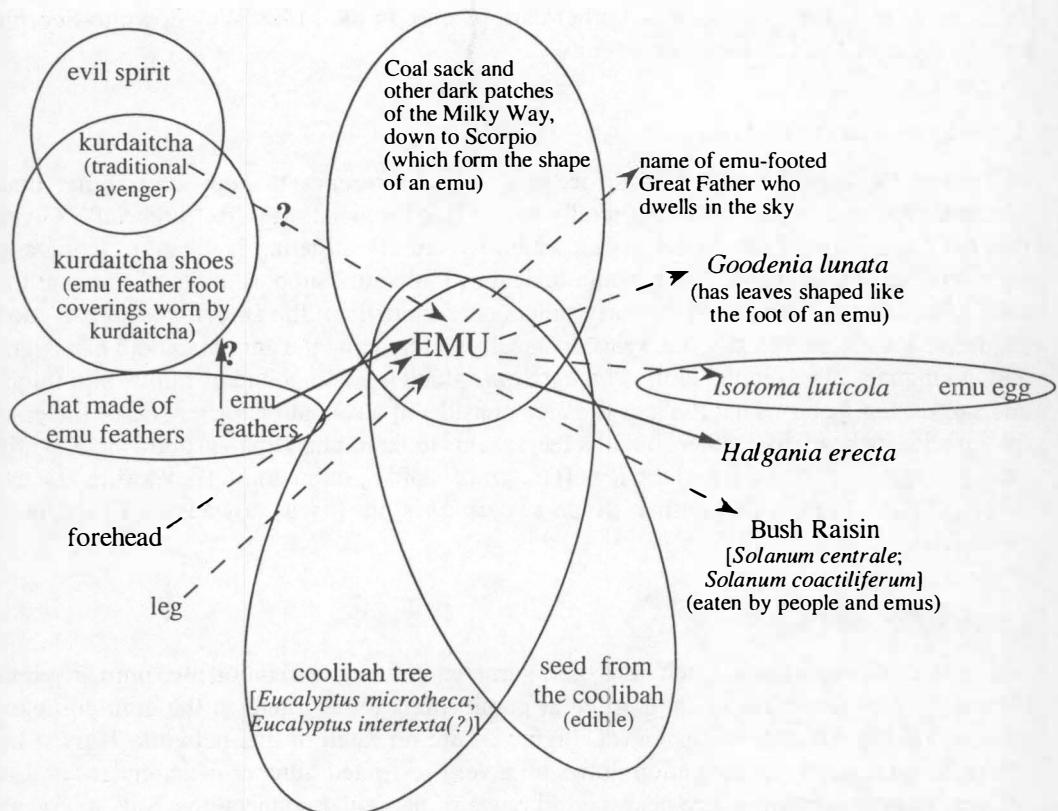


FIGURE 7: ATTESTED LEXICAL CONNECTIONS IN CASE STUDY 2 ('EMU' COMPLEX)

'(x' 'y') = attested polysemy involving 'x' and 'y'
 'x' → 'y' = a word for 'y' derived from a word for 'x'
 'x' → → 'y' = a word for 'x' is an element in a compound word for 'y'

As in the original network, here we find associations to trees, in this case the coolibah, and to four other plants (herbs and bushes). One of these plants, the bush raisin, is known to be eaten by the 'emu', and so we have a metonymic relation of the sort that is clearly established in the original network. To be sure, one of the remaining plants in the diagram of lexical associations is based on metaphor (i.e. '*Goodenia lunata*' which has 'emu foot' leaves), and the connection between 'emu' and the other two plants ('*Isotoma luteola*' and '*Halgania erecta*') is currently unknown. But the primary point is that if the network of associations covered by the handsign were merged with the diagram of attested lexical connections it would merely recapitulate the general types of associations found in a subportion of that lexical network, and the only truly distinct type of association it would add is the metaphorical connection between a traditional animal ('emu') and an introduced animal ('camel').

One unsurprising generalisation that the network of lexical connections in Figure 7 suggests is that terms for parts that saliently characterise a particular animal may be used in forming the name for that animal. In this case, terms for 'emu feathers', 'forehead' and 'leg'

are all used to form words for 'emu'. Thus, most of the associates that give rise to EMU are governed by a general principle (i.e. synecdoche) which is quite distinct from the principles which govern the associations that arise out of EMU.

5. CONCLUSION

This paper has focused on semantic associations. More particularly, it has examined the crucial role which detailed ethnography plays both in establishing plausible semantic associations and in fleshing out the unique local cultural understanding of known universal or areally widespread associations. Further, it has demonstrated, at least in two cases, that significant parallels do exist between those semantic associations that are revealed in the hyperpolysemy of Arrernte handsigns and those semantic associations that are revealed by lexical connections, including polysemy, in everyday languages. These parallels are not exact replications of associations in the two systems, instead each semiotic system reflects its own particularised encapsulation of associations.

Each case study has highlighted different factors and concerns. In one case, the 'woman/sun complex', the form of the hyperpolysemous network was based on a structured parallelism of concepts, while in the second case, the 'emu complex', there was a radial network. In the first case, the structured parallelism required an attention not only to similarities, but also to oppositions. The association of 'sun' and 'Pleiades', for example, was supported by both similarities and oppositions in the mythological/social sphere and in the sphere of the day-to-day world. While both case studies demonstrated how mythic concerns and day-to-day concerns mutually reinforce one another, it was in the first case study where mythic beliefs on their own explained semantic associations like that between 'woman' and 'sun', and between 'girl' and 'the Pleiades'. If this study is representative, then it would suggest that mythic connections on their own (independent of day-to-day connections) may be sufficient to promote hyperpolysemous representation in auxiliary sign systems, but they are less likely to promote polysemy in everyday language, although they may be reflected in other types of lexical connection.

It was also in this first study where an emphasis was placed on the need to examine the particular cultural manifestation of widespread associations. While a conceptual relation between 'sun' and 'woman' is found throughout Australia, and probably reflects some reconstructable aspect of Proto Pama-Nyungan Weltanschauung, such a broadly construed association is skeletal in form and under-explained. Each local cultural group will take such relations and develop its own fleshed-out version of the association and provide particularised explanations which are of local relevance. We must understand this richer ethnographic level if we hope to obtain a better understanding of the historical movement of groups and the diffusion of ideas within Australia, and if we hope to build a cultural reconstruction that goes beyond merely stating that 'sun' and 'woman' are connected in myth because the sun is believed to be a woman. Remember, that even neighbours like the Luritja and the Arrernte had quite distinct twists in otherwise similar accounts.

As for the second case study, it provided a detailed example of the type of sign metonymy explored by Evans (this volume) in which there is a "sharing of names, or at least of roots, between biological entities of patently different classes and even kingdoms, on the grounds that one biological entity signals the presence or availability of another". It was here where we found the association of 'emu' and 'plant food eaten by emu' reflected in three distinct

semiotic systems—everyday language (both in terms of lexical connections and textual description), handsigns, and graphic representation (in the form of sand drawings) (see Figure 6). While the same range of plants was not represented in each semiotic system, the general principle of association was. Similarly, when we looked for everyday lexical parallels of the set of associations represented in the hyperpolysemous network covered by the handsign, none of the specific associations was repeated, but most of the same types and categories of association were. Importantly, since we are dealing with a radial network, it is necessary to mention that the iconicity of the sign form, in representing the head movements of the emu as it walks, may be taken to correspond to the fact that 'emu' is at the centre of the network. Moreover, it was in this study where we needed to distinguish between those lexical connections in which words for 'emu' give rise (through compounding or derivation) to terms for other notions, or are polysemous with those other notions, and those lexical connections in which some terms for other notions give rise to words for 'emu'. As befits the fact that the network is meant to radiate out from 'emu', it was only those lexical connections of the first type which paralleled the semantic associations found in the hyperpolysemous handsign network.

In the introduction, I noted that the approach assumed in this paper was complementary to that pursued by O'Grady. The two approaches should, theoretically, meet in the middle. In providing networks of attested semantic associations which are substantiated through rich ethnographic description, we have semantic tools which can be taken to other Australian languages in order to pursue semantically-motivated cognate searches. Anyone using O'Grady's method can tell us what are the phonologically plausible cognates, and anyone using our method should (eventually) be able to tell someone pursuing O'Grady's method what are semantically plausible cognates. In this sense, these two approaches provide a check on one another. One of O'Grady's (1979:122–123) most famous etymological connections is that between terms for 'ear' and 'ground'. It is not established on the basis of any claim of known semantic connection, but on the basis of at least five parallel associations of form in a number of distinct language groups, and is said to be clinched on the basis of one case where the form in question is very unusual (on statistical grounds) and so is unlikely to be an accidental resemblance given the other parallels. O'Grady notes (1979:123) that "the semantic void which a speaker of a European language such as English conceives of as existing between GROUND and EAR is so great" that it presents a conundrum for reconstruction unless one applies the phonologically-based principles he outlines. Certainly, the now well-attested and ethnographically substantiated association of 'sun' and 'pubic hair' which was documented in this paper is no less strange to English ears than the connection of 'ground' and 'ear'. Still, without the same type of attestation and semantic substantiation, the connection between 'ear' and 'ground' remains perplexing and phonological forms conveying these notions cannot yet be admitted with certainty as semantically plausible cognates. Only with continuing research of the sort outlined in this paper will we be able to resolve this and similar problems with a high degree of certainty. As Meillet (1967:52) noted "[t]he agreement in meaning should be as exact and precise as the agreement in phonological form (according to rules of correspondence)".

To conclude, there are a plethora of further questions which the data and analysis in this paper raise. Among them are issues of cognitive respresentation and lexical access. Do cultural scripts help to organise information encoded in distinct semiotic systems in a parallel fashion? Are handsigns accessed in the same way as lexical items? Does the linguistic lexicon interact directly with a lexicon of handsigns, and if so, how? What are the cognitive

processes underlying translation between distinct semiotic systems? Do the networks of semantic association presented in this paper have any psychological reality? The answers to such questions remain far off, but they bring us back to the recognition that issues of semantic association should not become too abstracted from the individual members of sociocultural groups who internalise, reflect, create and operate with these semantic associations. What we can say with slightly more assurance is that this study helps bring us closer to realising O'Grady's vision of an etymological dictionary of Pama-Nyungan. Moreover, it gives some hints as to how a historical thesaurus of Australian languages might be organised, and what some of its entries might look like. Finally, by recognising the cultural foundations of semantic associations, and by "explicitly articulating semantic analysis to ethnography" (Keesing 1979:27), we move closer to ensuring that our linguistic reconstructions are also an important contribution to cultural reconstruction—a goal which O'Grady has maintained from the very beginning of his own work.

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