

LANGUAGES OF THE CAIRNS RAIN FOREST REGION

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0. INTRODUCTION

This paper begins with a general discussion of lexical diffusion in Australian languages. It then discusses the dialects of about twenty tribes in and around the Cairns rain forest in North Queensland and, by consideration of their grammatical and lexical similarity, attempts to subgroup them. On the basis of tentative dating of certain dialect splits, and of certain phonological changes that have taken place in two of the dialects (Ngadyan and Mbabaram) suggestions are made concerning tribal movements that have taken place within the area. An appendix gives background data on tribal names and boundaries, and identifies previously published vocabularies.¹

It is most fitting that this paper should appear in a Festschrift for Arthur Capell. Dr Capell's enormous contribution to the knowledge and understanding of Australian languages is well known, and it was from reading his articles in *Oceania* that I first became interested in doing fieldwork in Australia. Dr Capell encouraged this ambition, sponsored an application to the Australian Institute of Aboriginal Studies, and suggested the Cairns rain forest region as a likely fertile field for the depth study I was contemplating (Dixon, 1968; forthcoming). But he also insisted that, important as a depth study was, I should pass by no chance of gathering some data - however slight - on any language with which I came into contact; he persuaded me that survey work, on languages soon to become extinct, was also important. Thus the areal study of this paper owes its very existence to Dr Capell's early, tactful advice; in addition, it owes much to his continuing encouragement and guidance.

I am grateful to Kenneth Hale for allowing me to make use of his Dyabugay and Yidin materials; my debt to Hale goes far beyond this -

the major part of my knowledge of the structures of Australian languages, and their likely patterns of change, comes from reading Hale's articles and from private discussion with him.

1. LEXICAL DIFFUSION IN AUSTRALIA

Before the European invasion at the end of the eighteenth century, there were around 700 aboriginal tribes in Australia. Each tribe had its own distinct 'dialect' which normally had large lexical and grammatical similarities with the dialects of surrounding tribes. The existence of extensive 'dialect chains' makes it difficult to decide on exactly how many distinct aboriginal 'languages' there were.

Most Australian dialects are very similar in their phonology, case inflections on nouns and pronouns, pronoun roots, interrogative forms (who, what, when, where), verb conjugations, and basic syntax. This suggests rather strongly that they may be descended from a single ancestor language; the languages in Arnhem Land show most divergence but even these are similar enough for some scholars to have speculated that they may be genetically related to languages in the rest of the continent.

There are fifty or so lexical roots that recur in very many Australian dialects (Capell's 'Common Australian vocabulary' - see Capell, 1956, pp.85-94 and 1962, pp.10-4, and compare with Curr, 1886/7, and Kroeber, 1923). But beyond this short list it is difficult to find any lexical cognates between languages in different parts of the continent. Thus, although phonological reconstruction has proved possible amongst groups of related dialects in smallish areas of the continent (Hale's Proto-Paman, 1964, and O'Grady's Proto-Ngayarda, 1966), there is nowhere near enough lexical data to permit any attempt at phonological reconstruction of proto-Australian. And although almost every point in the grammar of an Australian language is similar to something in the grammar of some other language, these similarities seem almost random, and certainly do not point to any general genetic subgrouping of the languages. For instance, the grammar of Dyirbal, from the Cairns rain forest region, is similar to that of Awabakal in New South Wales (as regards certain locative forms), to Nyigina in northern West Australia (in two demonstrative forms, and one derivational affix), to Narrinyeri in South Australia (in the declension of possessives); and so on.

The aborigines have been in Australia for somewhere of the order of 15,000 years; that is, about three times as long as modern Indo-European languages have taken to evolve from a single ancestor language. With the exception of Arnhem Land (which had contact with traders from

the Celebes, and so on - see Berndt and Berndt, 1964), Australian tribes have had no contact with outside peoples during this period. The people are essentially nomadic, and it is likely that there has been considerable movement of tribes during the 15,000 years. A tribe may have split into two, the parts moved in different directions, one of them merged with a further tribe (when numbers were reduced due to famine, say), and this new tribe might later have split, and so on (see section 3., and Birdsell, 1958). The isolation of Australian tribes from external cultural or linguistic influences may be responsible for the striking similarities in case inflections, verbal conjugations, pronoun roots, and so on, throughout the continent. The pattern of tribal movement, split and merger, over a long period, may be responsible for seemingly random similarities of grammatical detail, as exemplified in the last paragraph.

A feature of Australian languages is their apparently high rate of vocabulary replacement. An account of the vocabulary of the tribe at the junction of the Murray and Darling Rivers, ninety years ago, mentioned 'when anyone dies, named after anything, the name of that thing is at once changed. For instance, the name for water was changed nine times in about five years on account of the death of eight men who bore the name of water. The reason is, the name of the departed is never mentioned from a superstitious notion that the spirit of the departed could immediately appear if mentioned in any way' (Taplin, 1879, p.23). For something to be changed nine times in five years is quite unusual, but there undoubtedly always has been considerable vocabulary replacement, due to this taboo on any common noun similar to a dead person's name, throughout Australia. The new noun, to replace the proscribed one, is likely to be borrowed from the dialect of a neighbouring tribe. (Some tribes, such as the Walbiri in Central Australia and the Tiwi on Bathurst and Melville Islands, have several alternative names for some common objects; one name will be the most frequently used, but if this should be proscribed then one of the other, 'reverse', terms will at once replace it; however this type of synonymy is quite absent from other regions - from the Cape York peninsula, for example). Thus if a tribe splits into two, and the newly-formed tribes move so that they are separated by four or five other tribes, their vocabularies will quickly diverge; as words become taboo in each of the sister dialects they will be replaced with items from neighbouring dialects. The reason for the retention of the fifty or so 'Common Australian' forms in the majority of Australian dialects is not understood; it may be that, for some reason, people are seldom named after certain objects, so that the common nouns referring to these objects are unlikely to be proscribed.

If two dialects have been contiguous for a long enough time, they will have about fifty percent vocabulary in common. That is, if two dialects move into contiguity and at the beginning have no (or very little) vocabulary in common, then - through borrowing from each other to replace proscribed items - the percentage of common vocabulary will build up until it levels off at about fifty percent. On the other hand, if a tribe splits into two and two new tribes remain in contiguity, then they will at first have almost identical vocabularies; as different words become taboo at different times in the two sister dialects, and are replaced from neighbouring dialects, the percentage of common vocabulary will gradually decrease until it levels off at about fifty percent. All this can be seen in detail from a simple, hypothetical example.

Suppose that in a narrow coastal strip, bounded by the sea to one side and a mountain range to the other, there are five dialects: from north to south, A, B, C, D and E. Suppose that each dialect has 50% vocabulary in common with the dialect to its north, and also with the dialect to its south; except that C has only 20% vocabulary in common with B. Suppose that in T years each dialect replaces 1% of its total vocabulary, by borrowing from its neighbours; we would expect each dialect to borrow equally (or almost equally) frequently from north and south. Now of the 1% lost by C one-fifth will be vocabulary that was in common with B; similarly for the 1% lost by B. But of the 1% gained by C, about half is likely to be borrowed from B; and similarly for the 1% gained by B. Thus after T years the vocabulary in common to B and C will be $20 - .2 - .2 + .5 + .5 = 20.6\%$. But for C and D half the proscribed vocabulary will be material that was common to C and D; and half the gain will be new common vocabulary; after T years C and D's common material will be $50 - .5 - .5 + .5 + .5 = 50\%$. The percentage of vocabulary shared by B and C has increased, and will continue to increase until it reaches about 50%; the percentage shared by C and D, being already at the stable 50% level, does not alter.

Consider now the other case: suppose that each dialect shares 50% with its neighbours save for B and C, which this time share 70%. After T years B and C will now share $70 - .7 - .7 + .5 + .5 = 69.6\%$; and the vocabulary shared by these two dialects will continue to drop until it is about fifty percent.²

The arithmetic in the last two paragraphs has been greatly oversimplified; it can be regarded as a first approximation to the full and rather complex mathematical model of a borrowing situation. Normally, of course, we have three-dimensional and not two-dimensional maps; that is, a dialect may border on, and borrow from, three, four or more

(rather than just two) other dialects. Exactly the same result holds: all percentages between contiguous dialects will in time tend towards fifty percent (the rate of change will depend on the rate of borrowing in each direction).

Fifty percent is an 'ideal' equilibrium figure. We would expect in practice two contiguous dialects, that had been borrowing back and forth for sufficient time, to have between forty and sixty percent common vocabulary. Dialects not contiguous but separated by a single dialect (as A and C, for instance, in our coastal strip model) should eventually have 20-30% common vocabulary. Considering the amount of time that aboriginal languages have been occupying Australia we should expect most dialects to show common vocabulary percentages within these ranges; it seems that very many do so. Figures that fall outside the ranges can be significant:

(a) If two contiguous dialects have more than about 60% common vocabulary, then it is rather likely that they are genetically related. (Here, and in the remainder of this paper, 'genetic relation' implies a 'strong' genetic relationship between two dialects - development, fairly recently, from a reconstructable ancestor - over and above the weak genetic relationship that we believe exists between all or most Australian languages - and which may never be provable.)³ That is, tribes speaking these dialects were formed, not too long ago, by the split of a single large tribe. The percentage of common vocabulary between the dialects has been dropping, but has not yet had time to reach the equilibrium figure.

(b) If two contiguous dialects have less than about 40% common vocabulary, then they are probably not genetically related - in the sense described for (a) - and have only been in contiguity for a relatively short time (that is, not long enough to achieve the equilibrium figure).

(c) If two non-contiguous dialects have more than, say, around 40% common vocabulary, then they may well be genetically related, as in case (a). Once sister dialects have moved apart, their common vocabulary is likely to drop to a very low figure (depending on how far apart they are); a figure of 40% indicates that the dialects have not had time totally to obscure their genetic relationship through lexical replacement.

Now it is a basic tenet of comparative linguistics that grammar, and not vocabulary, is the best basis on which to posit genetic relationships;⁴ this is especially so in Australia, where the languages show such a fondness for lexical replacement. Percentages of common vocabulary are at best indicators: they can evoke suspicion of genetic relationship, which should then be checked by comparing the grammars

of the languages. Grammatical change is normally rather slower than lexical replacement, and dialect pairs of types (a) and (c) should show significant grammatical similarity, if they are in fact genetically related.

For contiguous dialects with 40-60% common vocabulary it is impossible, on lexical grounds, to even hazard a guess as to whether (1) they are sister dialects, whose percentage of common vocabulary has in time dropped to the equilibrium level, or (2) the dialects are not recently related, but through borrowing they have achieved an equilibrium figure. We examine in section 2. the case of Yidin and Dyabugay, which have only 40% vocabulary in common but have remarkably similar grammars, evidence that they are certainly sister dialects; they have been separate for long enough to achieve a lexical equilibrium figure, but not for long enough for their grammars to have diverged to such an extent that their genetic relationship is obscured. In the case of Wargamay and Giramay, however, it seems that these have been distinct dialects in contiguity for much longer than Yidin and Dyabugay; they have achieved a lexical equilibrium figure and their grammars show some, but not too much, similarity - it is impossible to tell with certainty whether the grammatical similarity is a genetic residue, or whether it is due to grammatical borrowing and influence, over a very long period of time.

2. LANGUAGE GROUPING IN THE CAIRNS RAIN FOREST REGION

The term 'language' has been used in many different ways. In this section we reserve the term for a group of dialects that have almost identical grammars: so that it is most reasonable to write a single overall grammar for the language, with notes on dialectal variations. When it becomes easier to write separate grammars for two dialects, then we prefer to call the dialects separate languages. Languages which are clearly closely genetically related to each other are said to form a 'language family'. The dialects of tribes in and around the Cairns rain forest region (see map 1) can be grouped into languages:

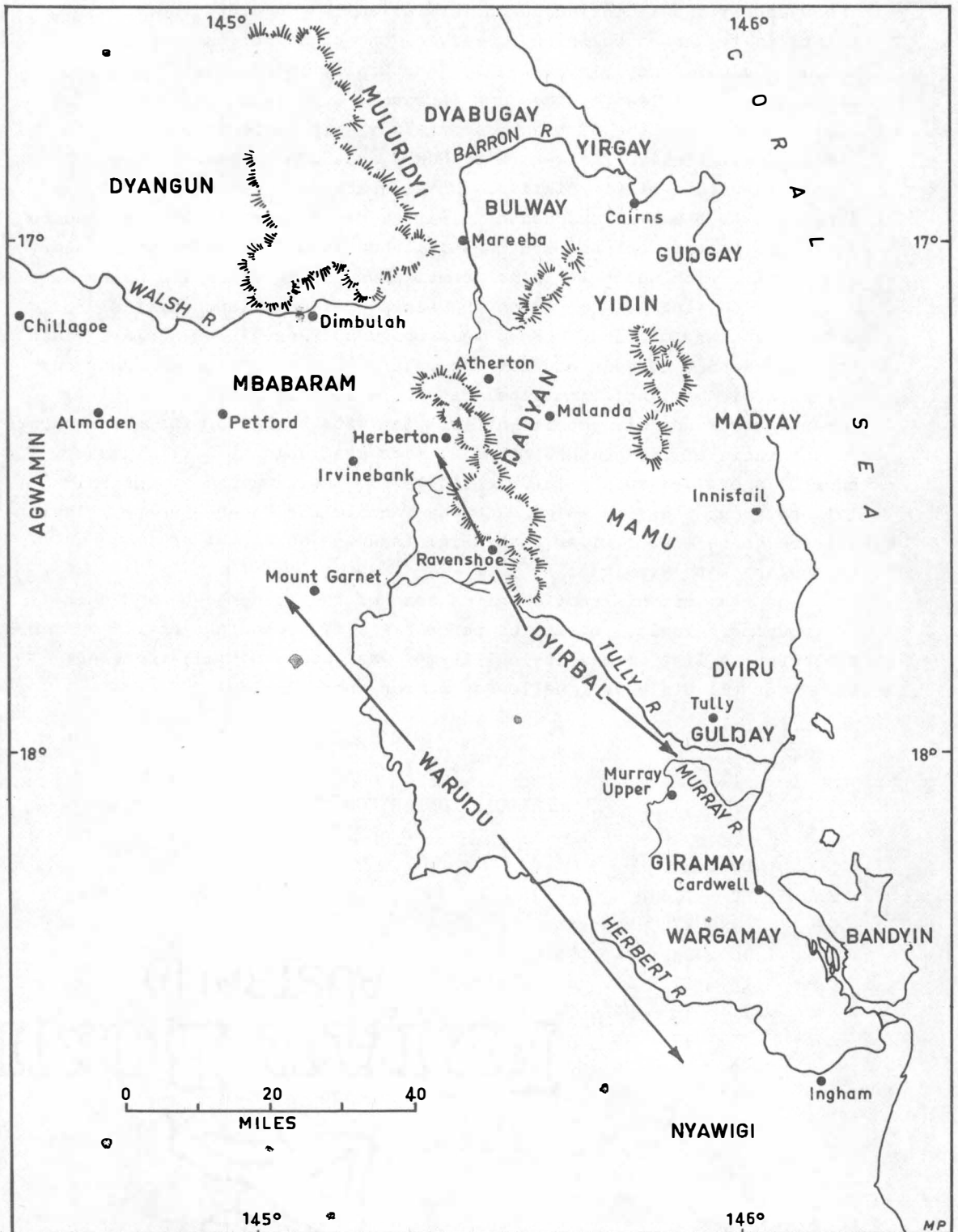
1. Wagaman (Agwamin)-Dyangun-Muluridy
2. Dyabugay-Bulway (and possibly Yirgay) } Dyabugay-Yidin family
3. Yidin-Gungay-Madyay }
4. Mbabaram
5. Dyirbal-Mamu-Ngadyan-Giramay (and the extinct Gulṅay and Dyiru)
6. Wargamay (and possibly the extinct Bandyin)
7. Nyawigi (and possibly the extinct Wulgurukaba)
8. Waruṅu

The Dyabugay and Yidin languages form a family. Recent genetic relationship cannot be shown for any of the other languages. To the north, Gugu-Yalandyi is certainly genetically related to Wagaman, possibly as a dialect of the same language; Gugu-Yalandyi is not included in the scope of the present study - it is the subject of continuing intensive field-work by Henry and Ruth Hershberger, of the Summer Institute of Linguistics. No adequate data is available for languages to the west and south.⁵ Waruṅu may be genetically related to languages to the west and southwest: it has about 45% common vocabulary with Ilba - with which it is not contiguous, being separated by Kutjale according to Tindale's map - on the basis of Tompson and Chatfield's 1886 vocabulary of Ilba.⁶ From Armstrong and Murray's vocabulary (1886) it appears that Bandyin had 60% vocabulary in common with Wargamay and 45% with Giramay; no grammatical data is available from which to investigate Bandyin's genetic affiliation with either of its neighbours.⁷ On the basis of unpublished material made available by N.B. Tindale, and the short vocabulary in Gribble (1932), the language of the Palm Islands group - called Wulgurukaba by Tindale and Mun-ba-rah by Gribble - appears to be most similar to Nyawigi (sharing about 50% of its vocabulary with Nyawigi).

The rest of this section gives some of the evidence behind this subgrouping. Table 1 shows the percentages of vocabulary shared by ten dialects. A list of 221 lexical items⁸ was used - not all items are known for all dialects (the lowest number known is 180).

TABLE 1
LEXICAL COMPARISON

Dyabugay									
40	Yidin								
14	27	Ngadyan							
15	23	70	Mamu						
15	22	62	87	Dyirbal					
11	18	50	70	81	Giramay				
5	12	30	47	53	60	Wargamay			
9	11	13	21	23	24	30	Nyawigi		
14	14	27	43	46	47	46	20	Waruṅu	
9	16	15	17	18	15	9	8	13	Mbabaram



We will first discuss the top eight dialects in the table, returning later to Waruṅu and Mbabaram. These eight dialects are in a roughly north-to-south chain, each dialect being in contiguity with the ones above and below it in the chain.

From the table, Ngadyan, Mamu, Dyirbal and Giramay are seen to have significantly high percentages of common vocabulary, indicating a probable genetic relationship; in fact these four dialects have almost identical grammars and are definitely related (for instance, unlike all other languages of the region each has a system of four noun classes). The Dyabugay-Yidin and Giramay-Wargamay figures are within the equilibrium range: on the lexical count these pairs *might* be genetically related. However the Yidin-Ngadyan and Wargamay-Nyawigi figures are well below the equilibrium range, and these pairs are very unlikely to be genetically related.

The next step is to compare the grammars of the dialects, which should confirm the lack of relationship between Yidin and the Dyirbal group, and between Wargamay and Nyawigi. More crucially, grammatical comparison should indicate whether there is any genetic relationship between Yidin and Dyabugay, and between Giramay and Wargamay.

The writer has very full grammatical information on the Dyirbal dialects, and some data on the morphology and basic syntax of Wargamay and Nyawigi. Hale has written short sketch grammars of Dyabugay and Yidin. On the basis of this we cannot attempt any large-scale syntactic comparison of the dialects, but we can compare their morphologies, and the most basic syntax. Such comparison can take two forms: (1) comparing morphological categories (*qua* their syntactic function), and (2) comparing the realisations of morphological categories. For instance, comparing how many cases (and with what syntactic functions) each dialect has would come under (1); if in addition the actual case inflections are compared it would be a comparison of type (2).

The percentages of grammar common to four of the dialects are shown in tables 2 and 3.⁹ Figures in the tables are rounded off to the nearest 5 (because of the rather subjective nature of deciding on whether certain grammatical features are or are not the same between two dialects).

TABLE 2
COMPARISON OF GRAMMATICAL CATEGORIES

Dyabugay			
90	Yidin		
70	70	Dyirbal	
70	75	80	Wargamay

TABLE 3
COMPARISON OF GRAMMATICAL FORMS

Dyabugay			
60	Yidin		
30	30	Dyirbal	
30	25	45	Wargamay

On the comparison of categories the Dyirbal and Giramay dialects of the Dyirbal language score 96%. It will be seen that even dialects that are quite far apart and certainly unrelated, such as Wargamay and Dyabugay, score 70% in table 1 - this is a measure of the very similar case systems, pronouns, conjugations, and so on, of most Australian languages. A score considerably in excess of 70% appears to be significant: Dyabugay-Yidin score 90% and Dyirbal-Wargamay 80%. On the comparison of forms, the Dyirbal and Giramay dialects score 92% - this is the sort of score that would be required of two dialects if they were to be considered dialects of the same language: all the percentages in table 3 are well below this figure. Just as 70% appeared to be the 'norm' figure in table 2 for any two languages in this region (and possibly for most pairs of Australian languages), so 25-30% appears to be the norm figure in table 3. Again, Dyabugay-Yidin and Dyirbal-Wargamay score significantly higher than the norm. It is on the basis of the 60% Dyabugay-Yidin figure (coupled with their score within the 'equilibrium range' in table 1), that we suggest a genetic relationship between these two languages. Examples of grammatical points on which they agree (and differ from other languages in the region) are: a single case covering allative, locative and instrumental functions; similar complexly determined morphophonological alternants of the ergative case inflection; and absence of a dual in the pronoun system.

The Wargamay case is far more difficult. Wargamay has 60% vocabulary in common with Giramay, and scores of 80 and 45 in tables 2 and 3: scores that are above - but not very far above - the norm. In contrast, Wargamay has only 30% vocabulary in common with Nyawigi, but scores 90 and 70 on grammatical comparisons (1) and (2), scores considerably above the norm. All this suggests that Wargamay is a somewhat exceptional case; on the evidence available we cannot definitely say that Wargamay is genetically related to either the Dyirbal language, or to Nyawigi (Dyirbal and Nyawigi are themselves so very different that there would be no justification for suggesting genetic relationship between all of Dyirbal, Wargamay and Nyawigi).

We have above talked of lexical similarity scores, which involve counting the proportion of nouns, verbs and adjectives (the items available from a maximal 221-word check list) that are held in common by two languages. However, borrowing is likely to involve a higher proportion of nouns than of verbs and adjectives. If we have two pairs of dialects, one pair genetically related and the other not, with the same lexical score, then we would expect the genetically related pair to have a larger number of verb and adjective correspondences - items that have *not* been replaced in the two sister dialects - and the other pair to have more noun correspondences - items that have been borrowed between the two dialects. This is confirmed by dialects from the rain forest region. For instance, the Dyabugay-Yidin lexical score is only half as much again as the Yidin-Ngadyan figure, but there are three times as many verbs common to Dyabugay and Yidin (and not to Ngadyan) as to Yidin and Ngadyan (and not to Dyabugay). And whereas Yidin and Ngadyan have no check-list adjectives in common, Dyabugay and Yidin share four. The 50% lexical score for genetically related dialects Ngadyan and Giramay includes 30 verbs (out of 46 verbs in the check list) whereas the 60% score for Giramay and Wargamay includes only seven verbs; this suggests that Giramay and Wargamay are probably not genetically related. And note that Nyawigi and Wargamay share three verbs and two adjectives from the check-list, whereas Giramay and Wargamay share six verbs and four adjectives (not counting those that are common to all three dialects); there is thus no evidence from this quarter to support a genetic relationship between Wargamay and Nyawigi.¹⁰

The other dialects of the Yidin language - Gungay and Madyay - appear to have been as closely related as the dialects of Dyirbal. On the basis of data collected in 1938 by Tindale, Bulway has 80% vocabulary in common with Dyabugay. All the dialects mentioned so far - with the exception of Nyawigi - were spoken at least partly in the predominantly rain forest region between the dividing range and the east

coast. Waruṅu was spoken over a long tract on top of the range, in contiguity with Wargamay, Giramay and Dyirbal and also, to a lesser extent, with Nyawigi, Mbabaram and probably Wagaman. In table 1 Waruṅu has lexical scores within the equilibrium range with Mamu, Dyirbal, Giramay and Wargamay. The writer has even less grammatical data on Waruṅu than on Wargamay and Nyawigi: not enough on which to base a grammatical similarity count. But on the little that is known Waruṅu is grammatically quite different from Dyirbal and Wargamay; in addition, speakers of Dyirbal always refer to Waruṅu as a very 'difficult' language, far harder for them to speak and understand than Wargamay and Yidin, for example. Waruṅu is probably genetically related to other dialects to the west and south-west (see p.656); it is pretty certainly not related to any of the dialects in the coastal strip.

Mbabaram was spoken in a small area on top of the dividing range. It had most contact with Wagaman, to the west, and Dyanguṅ, to the north. The Muluridyī area extended down to Mareeba, coming between Mbabaram and Dyabugay. Mbabaram also appears to have had some tribal boundaries in common with Ngadyan, Dyirbal and Waruṅu. Mbabaram has in recent times undergone fairly drastic phonological changes, losing initial consonant or consonant-plus-vowel, and final consonant or vowel, from many words; and so on. Whereas all other dialects in the region have thirteen consonants and three vowels together with (except for the Dyirbal group and probably also Waruṅu) significant vowel length, Mbabaram has sixteen consonants and six vowels plus vowel length. Some of the phonological changes are discussed in section 4.

The percentages of cognate vocabulary shared by Mbabaram with the eight dialects in the coastal strip, and with Waruṅu, are given in table 1. In addition, Mbabaram scores 23% with Wagaman, 16% with Dyanguṅ and 14% with Muluridyī. All these scores are very low, *all* well below the equilibrium range. This may have been due to the fact that after Mbabaram had undergone its various phonological changes it was not so readily comprehensible to its neighbours, with the result that they would be unlikely to borrow from it.¹¹ Thus the Mbabaram-Wagaman lexical score could only be increased through Mbabaram borrowing from Wagaman, not vice versa; in such a situation 25%, and not 50%, would be the equilibrium level. (If Mbabaram and Wagaman had 25% common vocabulary and in T years both replaced 1% of their total vocabulary, then the percentage of common vocabulary at the end of T years would be $25 - .25 - .25 + .5 + .0 = 25\%$, on the assumption that Mbabaram borrowed half its new vocabulary from Wagaman.) The most interesting point about table 1 is that Mbabaram has a marginally higher lexical score with Yidin, a language with which it is not contiguous, than it has with contiguous languages such as Waruṅu and Muluridyī.

Grammatical counts have been worked out between Mbabaram and Dyabugay, Yidin, Dyirbal and Wargamay. On category comparison (as in table 2) all the scores are around the 70% 'norm' level. On comparison of grammatical forms (as in table 3) Mbabaram-Dyirbal and Mbabaram-Wargamay were at the norm level of 30%; however, Mbabaram-Dyabugay was 40% and Mbabaram-Yidin 45%, both slightly above the norm. Note that the 45% score for Mbabaram-Yidin is more significant than the 45% for Dyirbal-Wargamay, since Mbabaram and Yidin are - unlike Dyirbal and Wargamay - not contiguous, and the grammatical similarity is thus less likely to be due to morphological borrowing over a long period. However, the grammatical scores are not high enough (especially in view of the low lexical score) for us to be able to posit with confidence a genetic relationship between Mbabaram and Dyabugay-Yidin. We return to the discussion of Mbabaram, and its relationship to surrounding languages, in section 4.

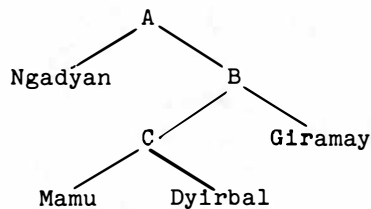
Wagaman has 73% vocabulary in common with Dyangun and 65% with Muluridyî; a dialect recorded independently by both Hale and Dixon, spoken around China Camp and Bloomfield River, and called Gugu-Dyungay by Hale's informant, is very similar to Muluridyî. Gugu-Yalandyî, on the basis of a check-list completed by Henry Hershberger, has 70% vocabulary in common with Muluridyî and 55% with Wagaman. On lexical data alone it seems that these are probably all dialects of a single language. Wagaman has a lexical score of 25% with Dyabugay, 19% with Yidin, 15% with Dyirbal, 11% with Wargamay, 9% with Nyawigî and 15% with Waruṅu. Muluridyî scores 32% with Dyabugay and 28% with Yidin and has scores similar to Wagaman with languages further south. From this it appears rather unlikely that the Wagaman group of dialects is genetically relatable to any of the other dialects considered above.¹² Insufficient grammatical data is to hand for grammatical comparison, which could confirm or deny these suspicions.

3. SPLITTING WITHIN THE DYIRBAL GROUP

Birdsell (1958) has argued that about 500 is the optimum size for a tribal group of hunting and gathering people. If a tribe gets very much larger it is likely to split into two groups, each of which becomes a tribe in its own right. If two nearby tribes have their numbers greatly reduced, for any reason, they are likely to amalgamate, creating a tribe of viable size. Now each tribe has its own 'language'; with tribal split there will also be language split. For a while the speech of sister tribes may be similar enough to be regarded, on the criterion used in this paper, as dialects of a single language; but after a long enough time (even if they do not geographically move apart) they are likely to diverge to such an extent that they must be regarded as distinct languages, although members of the same language family.

From their lexical and grammatical similarity it appears that the dialects of the Dyirbal language are descended from a single ancestor dialect. Ngadyan has been separated from the other dialects for the longest time. The second split involved the breakaway of Giramay; and then finally there was the split into Dyirbal and Mamu. This is illustrated in tree 1.

TREE 1



That the Dyirbal-Mamu split was relatively recent is emphasised by the fact that although there are names for the groups speaking Dyirbal, Ngadyan and Giramay (called Dyirbalŋan, Ngadyandyi and Giramaygan respectively) there is no single name for the tribe which speaks Mamu, only names for the five 'hordes' within the tribe (called Waribara, Dulgubara, Bagirgabara, Dyiŋibara and Mandubara). Proto-Mamu-Dyirbal was pretty certainly called Dyirbal (and the tribe speaking it, Dyirbalŋan). Insufficient data is available on the extinct Gulŋay and Dyiru dialects to suggest the stages at which they split off.

Some lexical items are held in common by the non-contiguous dialects Ngadyan and Giramay, but are not found in Dyirbal and Mamu; such a word would have been present in languages A and B in the tree but replaced in C. In other instances Mamu and Giramay share a word that is not present in Dyirbal: the word would have been in languages B and C but replaced in Dyirbal, after the split with Mamu. This is additional evidence supporting the genetic affiliation of the dialects; in contrast, there are no words common to Ngadyan and Wargamay that are not also shared by Mamu and/or Dyirbal and/or Giramay.

Assuming that each tribe replaces vocabulary at an approximately constant rate, we can calculate, by the technique mentioned in section 1., that the times which elapsed between the Ngadyan split-off, the Giramay split-off, the Mamu-Dyirbal split, and the present day, must be approximately equal.

Unlike most languages of the region, the Dyirbal, Mamu and Giramay dialects have no significant vowel length. Most probably, there was

length at one time (in language A) but this was simply dropped. Thus we have Dyrbal *waŋal* but Nyawigi *wa:ŋal boomerang*. However, Ngadyan has undergone a simple phonological change that has reintroduced significant vowel length into the dialect. Before a consonant or a word boundary a sequence of vowel plus *l*, *r* or *y* is replaced by a long vowel, thus:

$$(1) \quad \left[\begin{array}{c} v \\ \left\{ \begin{array}{l} l \\ r \end{array} \right\} \\ ay \\ uy \end{array} \right] \rightarrow \left[\begin{array}{c} v: \\ a: \\ i: \end{array} \right] / \left\{ \begin{array}{l} -C \\ -\# \end{array} \right\}$$

where *v* indicates any vowel and *C* any consonant. The sequence *-iy-* does not occur except before a vowel. Examples of the change are:

DYIRBAL	NGADYAN	
waguy	wagi:	<i>sand</i>
dʷagal	dʷaga:	<i>cheek</i>
yalgay	ya:ga:	<i>road, track</i>
gibaŋ	giba:	<i>fig tree</i>
biłmban	bi:mban	<i>push</i>

Note that the rule does not apply to sequence of vowel plus *r*.

The most remarkable thing about words that have undergone the long vowel rule, (1), in Ngadyan is that certain inflectional rules operate on the *original* phonological form of the word. Thus, for instance, the ergative-instrumental inflection in all Dyrbal dialects is *-ŋu* following a vowel, a homorganic stop plus *-u* following a nasal, *-dʷu* following *-y*, and so on. Thus the ergative-instrumental form of *baŋgay spear* is in Dyrbal *baŋgaydʷu*. In Ngadyan the ergative-instrumental form of *baŋga: spear* is *baŋga:dʷu*. It appears that in a grammar of Ngadyan we would have to give *baŋgay* as the underlying phonological representation of *baŋga:*; inflectional rules and so on would operate on this form, and the long vowel rule (1) would apply as a late phonological rule.

The long vowel rule applied at a certain stage in the history of Ngadyan. Words that have been borrowed since this time have not undergone the rule (so that no recent loan words involve long vowels). Thus: *gugaŋ black guana*, *duguy kauri pine*, and so on. Now, Dyrbal, Giramay

and Mamu have *guwuy spirit of a dead man*; as would be expected the form in Ngadyan is *guwi:*. When they first encountered white men Mamu speakers imagined them to be reincarnations of their own ancestors, and called them accordingly *guwuy*; Ngadyan borrowed this form. Thus Ngadyan includes both *guwi: spirit of a dead man* and *guwuy white man*, both forms corresponding to Mamu *guwuy*, but the second being borrowed after the time of operation of the long vowel rule.

The writer's Ngadyan corpus¹³ includes 61 words with an underlying sequence vowel plus *y*, *l* or *ɾ*, before a consonant or word boundary. Of these, 44 have undergone the long vowel rule and 17 - later borrowings - have not. Of the 44, 5 also occur in both Dyirbal-Mamu and Yidin, 30 in Dyirbal-Mamu only, 4 in Yidin only and 5 cannot be traced in either Dyirbal-Mamu or Yidin. Of the 17 post-rule borrowings, 4 occur in both Dyirbal-Mamu and Yidin, 5 in Dyirbal-Mamu only, 5 in Yidin only, and 3 cannot be traced in either. Thus we see that since the application of the long-vowel rule, Ngadyan has borrowed about equally from Yidin and from the other Dyirbal dialects, a verification of the general assumption made in section 1. The 4 pre-rule words that occur in Yidin and Ngadyan but not in Dyirbal-Mamu must have been borrowed between Ngadyan and Yidin before the application of the long vowel rule. Most of the 30 pre-rule words found only in Dyirbal-Mamu will be genetic inheritance. The pre-rule items found in Ngadyan, Yidin and Dyirbal-Mamu may have been borrowed by Yidin or Dyirbal-Mamu after the time of the long vowel rule (we have seen that the original form of a word is preserved as its underlying phonological representation in Ngadyan; Yidin and Mamu could thus easily borrow from Ngadyan the original form of the word). From these figures we can, using the technique of section 1., calculate that the long vowel rule must have operated in Ngadyan soon after its split-off from Dyirbal-Mamu-Giramay; earlier than or about the same time as the Giramay split-off. If this is correct it should follow that there are no (or extremely few) words common to Ngadyan and Giramay, but absent from Mamu and Dyirbal, that have not undergone the long vowel rule in Ngadyan. Pre-rule words occurring in only Ngadyan and Giramay would be genetic inheritance from language A in tree 1 (or else borrowings from language B into Ngadyan) that were replaced in language C. A post-rule word occurring in only Ngadyan and Giramay would have to be an item borrowed from C into Ngadyan, that was also in Giramay (the sister language of B), and which was afterwards replaced in both Dyirbal and Mamu - a rather unlikely thing to happen. In fact, all words common to Ngadyan and Giramay and absent from Dyirbal and Mamu have undergone the long-vowel rule, providing some support for the hypothesis of tree 1 and for our attempt at relative dating.

Dialects of Dyirbal and Yidin, and probably all of the other dialects of this region, each had a special 'mother-in-law language', obligatorily used in the presence of certain taboo relatives (see Dixon 1968; forthcoming). The mother-in-law style had grammar and phonology identical with the everyday language but an entirely different vocabulary. The writer has fairly full data (about 500 lexical items) on the mother-in-law styles for the Dyirbal and Mamu dialects and a hundred or so words in Ngadyan mother-in-law. Whereas Dyirbal and Mamu everyday languages have 87% common vocabulary, their mother-in-law styles have only about 50% vocabulary in common. However, Mamu and Ngadyan score 70% for everyday language vocabulary and about the same percentage for mother-in-law.

At first sight, the small percentage of vocabulary common to Dyirbal and Mamu mother-in-law styles seems puzzling. But it must be remembered that although an avoidance style of this type is very common in Australia, only some tribes have developed anything like so extensive an avoidance vocabulary; for instance, Kenneth Hale reports that for Walbiri there are probably less than fifty items that definitely belong to the mother-in-law style. The most likely hypothesis is that, although proto-Dyirbal would have had a limited mother-in-law vocabulary, this has only been expanded to its present size rather recently - in fact, *since* the Dyirbal-Mamu split. The mother-in-law vocabulary extension has taken place independently for Dyirbal and Mamu (the mother-in-law augmentation in Mamu being in fact more intimately connected with that in Ngadyan).¹⁴

Although each dialect has no lexical items in common to its everyday and mother-in-law styles, it is frequently the case that mother-in-law item for one dialect is identical with an everyday language item in a nearby dialect. Thus the name for *blue-tongue lizard* is *badʷiri* in the Mamu everyday and Dyirbal mother-in-law styles, but *dʷidʷan* in Dyirbal everyday and Mamu mother-in-law. *Sand* is *warunʷ* in both Mamu and Dyirbal mother-in-law styles and in Wargamay everyday language. *birgu* is *wife* in Waruṅu everyday language, and covers both *husband* and *wife* in Dyirbal mother-in-law. In a number of instances it appears that Dyirbal mother-in-law has borrowed a term from the everyday style of a tribe to the south, whilst Mamu has borrowed from the north. Thus the word for *body* is *yumal* in both Dyirbal and Mamu everyday styles, but *buba* in Dyirbal mother-in-law and *gula* in Mamu mother-in-law; *buba* is the term in Nyawigi everyday style and *gula* that in everyday Yidin. In connection with this example it is interesting to note that the Ngadyan everyday word is also *yumal*, and not *yuma:*, indicating a post-long-vowel-rule borrowing from Mamu. Now in the process of expanding

its mother-in-law vocabulary Mamu would be likely to take over an everyday language term from the contiguous dialect Ngadyan, if it differed from the Mamu everyday term. It thus seems likely that before its recent borrowing of *yumal* the Ngadyan term for *body* was *gula*, and that this was borrowed for Mamu mother-in-law. But since *yumal* occurs in Mamu, Dyirbal and Giramay, it was probably the term for *body* in proto-Dyirbal (language A in tree 1). We thus have the likelihood that, immediately after its split from Dyirbal-Mamu-Giramay, Ngadyan had the form *yumal*; this was tabooed, and the form *gula* borrowed from Yidin to replace it; Mamu mother-in-law borrowed this form quite recently and even more recently *gula* itself was proscribed, *yumal* being borrowed from Mamu as a replacement.

The Ngadyan long-vowel rule also provides evidence supporting doubtful cognates. For instance, *tongue* is *dʷalanʷ* in Wargamay, Nyawigi and Waruṅu, and in many other Australian languages. In Dyirbal, Mamu and Giramay *tongue* is *dʷalŋgulay*. However in Ngadyan it is *dʷalŋgula:*, with the long vowel rule having applied to the final *-y* but not to the first *-l-*. This suggests that *dʷalŋgulay* is the reduced form of a compound of *dʷalanʷ* with some form *gulay*. At the time of the long vowel rule the form was still *dʷalanʷgulay* in all four dialects (and became *dʷalanʷgula:* in Ngadyan), but since then the second vowel has been deleted and the *nʷ* assimilated to the following *g* (*nʷg* is an allowable cluster at a morpheme boundary but not within a morpheme). This type of truncation has probably been fairly common in the history of Dyirbal and may partly explain the fact that whereas clusters of three consonants are rare in most Australian languages they are quite common in Dyirbal (and in other dialects of the region). The factor motivating truncation is Dyirbal's strong preference for every second syllable to bear stress. That is, it insists on at least one and prefers to have just one (or at any rate, as few as possible) unstressed syllables between each stressed syllable. Each root and most affixes are stressed on the first syllable; Dyirbal has no monosyllabic roots at all, and very few of the most frequent roots are trisyllabic or longer. Thus the truncation above reduced the word for *tongue* from one stressed syllable plus three unstressed syllables, to one stressed and two unstressed. Truncation for stress reasons can be seen taking place in the present-day language. Thus *máyminʷu* is in free variation with *máyiminʷu* *visit in order to be given food or drink*, and *nʷúbaldʷína* with *nʷúbaladʷína* *second person dual accusative pronoun*; in each case the shorter form is in the process of replacing the longer one. Truncation could presumably only take place when an allowable consonant cluster

would result (thus, a vowel could not be deleted between -d- and -g- since clusters consisting of two stops are not permissible in Dyirbal).

4. MBABARAM, AND THE PATTERN OF TRIBAL MOVEMENT IN THE REGION

Fairly recently, Mbabaram has undergone a series of phonological changes. Whereas all the other languages of the region have three vowels: i, a, u, Mbabaram has six, i, ε, a, ɔ, u and the unrounded back vowel ɣ. It has three additional consonants, dental $\underset{d}{d}$ and $\underset{n}{n}$ and the labialised velar g^w (over and above the usual inventory for the region: b, d, dʲ, g, m, n, nʲ, ŋ, l, r, ɾ, w and ɣ).¹⁵ Whereas words in surrounding languages must begin with a single consonant, must have at least two syllables, and cannot end in a stop, in Mbabaram they can begin with a-, with a single consonant or with a homorganic nasal-plus-stop cluster, they can be monosyllabic, and they can end in a stop. Phonological developments which produced these forms include:¹⁶

(ii) *Vowel raising*. An a in the second syllable of a word becomes ɔ if the word-initial consonant is g-, ŋ- or w-; it becomes ε if the word-initial consonant is dʲ- or ɣ- (or, presumably, nʲ-).

(iii) *Initial dropping*. An initial CV-, with a short vowel, is dropped; initial CV:- is replaced by a-.

(iv) *Final dropping*. In many words, final -C, or -V is dropped.

(ii) and (iii) are definite rules, that applied at a certain point in time. Words borrowed since this time have not undergone the rules.

(iv), however, is more in the nature of a general tendency; unlike (ii) and (iii) it does not seem to be applied in any strict manner, and it is applied to some recent borrowings. Examples of the application of the rules are:

gúdaga > dóg	dingo, dog	gúwa > wó	west
wúla- > ló-	(to) die	dʲána- > né-	(to) stand
dʲáwa > wé	mouth	wá:ŋal > aŋál	boomerang
gúyu > yú	fish	ŋáli > lí	we
yí:bar > abér	south	bám̄ba > mbá	belly

and examples of post-rule loans:

gúŋgaga > guŋgág	kookaburra	báŋŋan > baŋán	kangaroo rat
búndinʲ > búndl	grasshopper	búmba > búmba	ashes

It will be seen that the phonological changes are similar to those that have taken place in Northern Paman (Hale, 1964) and in Aranda, although the changes have taken place entirely independently in the three areas.

Cognates have been recognised in surrounding languages for 70 lexical items in Mbabaram (out of a total Mbabaram corpus of 210 lexical words, not counting proper and place names). Of these 51 have undergone rules (ii) and (iii) in Mbabaram, the remaining 19 being post-rule borrowings. Table 4 shows the distribution of these cognates.

TABLE 4
MBABARAM COGNATES

		Dyabugay- Yidin	Wagaman language	Dyirbal language	Waruṅu
pre-rule forms in Mbabaram	cognates found in this language only	6	13	8	2
	cognates found in this and in one or more of the other three languages	24	29	21	12
post-rule forms in Mbabaram	cognates found in this language only	0	6	4	1
	cognates found in this and in one or more of the other three languages	3	9	12	8

Thus it can be seen that there are no post-rule forms that must have been borrowed from Dyabugay-Yidin; the three post-rule forms that occur in Dyabugay-Yidin are also in Dyirbal and Waruṅu. Mbabaram is not at present contiguous to Dyabugay-Yidin; the figures indicate that it has not been contiguous since the time of the vowel-raising and initial-dropping rules. However, the fact that six pre-rule cognates are found only in Dyabugay-Yidin indicates that it probably was contiguous with them at one time.

Mbabaram appears to have replaced about 25-30% of its vocabulary since the vowel-raising and initial-dropping rules. We saw in table 1 that it now has about 16% vocabulary in common with Yidin: it would probably have had around 25% in common at the time of operation of the rules. Now Ngadyan has replaced 25-30% of its vocabulary since its long-vowel rule. Assuming that languages of this region replace vocabulary at about the same rate, this would indicate that these phonological changes in Mbabaram and Ngadyan took place at approximately the same time. We have already mentioned that Ngadyan split off from Dyirbal-Mamu-Giramay only slightly before this time; and also that Mbabaram must have moved out of contiguity with Dyabugay-Yidin just before this time.

Now each tribe of about 500 individuals needs a territory of a certain size, to provide it with sufficient animal and vegetable food. If one tribe increases in size, and splits into two, it must be expanding its tribal territory. And it must be doing this at the expense of some other tribe - that is, it must be pushing some other tribe out of its original territory into some probably less pleasant terrain.

This all suggests¹⁷ that Mbabaram originally occupied a territory within the rain forest, next to Yidin, and possibly between Yidin and proto-Dyirbal,¹⁸ which was in the southern part of the area now covered by Dyirbal dialects, contiguous with Wargamay. The proto-Dyirbal tribe expanded and, in a series of splits, became - counting the extinct Dyiru and Gulṅay - six separate tribes. By the time of the first split, it was already expanding north into Mbabaram territory, pushing Mbabaram before it out of the lush rain forest territory and into a small, arid and rather undersirable territory on top of the dividing range.¹⁹

APPENDIX - BACKGROUND DATA

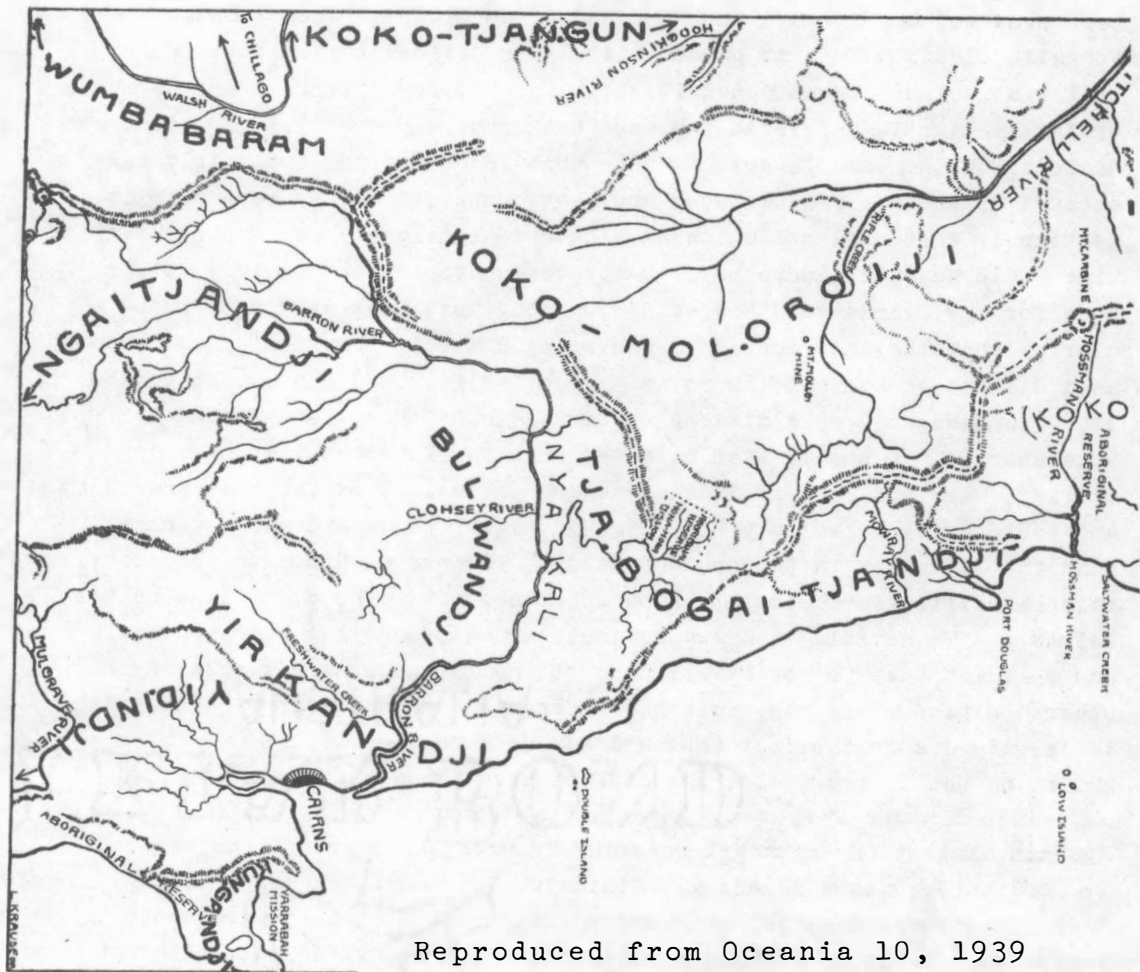
Tindale's (1940) description of tribal locations, with its accompanying map, is on the whole fairly accurate. The northern part of the region under discussion in this paper is the subject of an excellent map in McConnel (1939, pp.68-9). The relevant sections of Tindale's and McConnel's maps are reproduced as maps 2 and 3. Roth provided a good map of the Yirgay, Gungay and Yidin territories (Bulletin 18, Plate XXVII, 1910). Some of the rain forest tribes are misplaced on Sharp's sketch map (1939, p.440).

Nowadays many aborigines are living away from their original territories and have only a hazy idea of what the boundaries were. The only additions/corrections to Tindale's descriptions that the writer has are: The Mbabaram area was much smaller than Tindale states; it did not reach as far as Mareeba in the east, and was bounded on the north by the Walsh River. Muluridyī territory came down much further than Tindale's map indicates, covering the Mareeba area. The Dyirbal area extended down between the Tully and Murray Rivers to a point a few miles above the present settlement of Murray Upper. Giramay territory comprised a narrow strip on the coast, from the Murray River to Cardwell, and a much larger area on top of the range; Wargamay began at Cardwell and extended as far as Ingham. Nyawigi territory extended down to the coast, close to Ingham. Warunu extended as far as Stone River.

Tindale and Birdsell (1941) suggested that the rain forest languages were un-Australian, citing Mbabaram as an example. (In fact Mbabaram is not spoken in the rain forest although, as we have shown above, it probably was at one time). Mbabaram has undergone some rather drastic



Reproduced with permission of N.B. Tindale. "Although the map is substantially correct some minor changes due to further field work will appear in a new edition"



Reproduced from Oceania 10, 1939
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phonological changes and appears on the surface rather odd but - like all the other languages of this region - it is lexically and grammatically quite Australian (see Dixon, 1966a).

A tentative classification of Australian languages has recently been produced by O'Grady, Wurm and Hale (see O'Grady, Voegelin and Voegelin, 1966). This is based entirely on lexical similarity; the criteria include 'cognate density of ...51-70% for different languages or family-like languages of the same subgroup; and over 71% for different dialects of the same language' (note that this does not explicitly take account of whether two dialects are contiguous or not; we have seen in section 1. that dialects which have been in contiguity for a sufficient time would be expected to have 40-60% common vocabulary). It is clear that for the Cairns Rain Forest Region they must have used old vocabularies that they attributed to the wrong dialect, for Nyawigi is grouped as a dialect of Dyirbal (there is in fact only around 20% common vocabulary) and Wagaman as a dialect of Waruṅu (here there is 15% common vocabulary). It should also be noted that the 100-item list used by O'Grady, Wurm and Hale includes some grammatical items (such as pronouns) and would be expected to yield slightly higher cognate density counts than the list used in the present study. The map produced to accompany this classification bears a cartographer's error - the coast line between Cairns and Townsville is drawn entirely wrongly, showing a promontory and an inlet that do not exist; some of the languages are misplaced and others omitted (Hale has explained - personal communication - that this is largely due to the fact that O'Grady sent the map to Hale to check whilst he was in the field, and did not have his notes available).

Tribal names are, where known: the Wagaman tribe speaking the Agwamin dialect; Dyangunbaṗi speaking Dyangun; Dyabugandyi (or, according to McConnel, Dyabugaydyandyi); Yidindyi; Gungandyi; Wanyur speaking Madyay (Wanyur and Madyay were erroneously stated to be two separate languages, in Dixon, 1966a); Ngadyandyi; properly Dyirbalṅan (although some speakers of languages to the north speak of Dyirbaldyi); Malanbara speaking Gulṅay; Dyirubagala speaking Dyiru; Giramaygan; Wargamaygan. There was no single name for the tribe speaking Mamu (see section 3.). The last informant of Mbabaram knew of no distinct tribal name and said they would just be called 'móg mbábaṗam' (móg man).

Sources for the present study were as follows: the writer has a full grammar, 40 texts and a 3,000+ item lexicon for Mamu, Dyirbal and Giramay, and also 500 words in the Mamu and Dyirbal mother-in-law styles; 500 words, a text, notes on points of grammatical difference and 100 mother-in-law words for Ngadyan; 700 words and grammatical notes for Yidin; 150 words for Dyabugay; 150 words for Dyangun; 300 words and

several score sentences for Wagaman; 250 words and a sketch grammar for Mbabaram; around 500 words and grammatical notes in each of Wargamay, Nyawigi and Waruṅu. Four short Wargamay texts, recorded and transcribed by La Mont West, were analysed by the writer and explicated with the aid of the last remaining Wargamay speaker (who himself will not give texts). The main source for Dyabugay and Yidin were grammatical sketches and vocabularies of around 500 items, from Kenneth Hale. The Muluridyī material consists of about 150 words collected by Hale from Johnnie Diamond at Mossman and believed to be Muluridyī; about 150 words collected by Hale from Millie Martin in the 'China Camp dialect' (called by her Gugu-Dyungay - this is Tindale's Jungkurara) that is very similar to the Diamond material; and about 150 words in the 'China Camp dialect' collected by Dixon (at Deeral) from Nicholas Satani. Other speakers of Muluridyī encountered by Dixon who were not good informants emphasised how similar their language was to Dyangun and Wagaman. No speakers have been located for Yirgay (spoken by the Yirgandyi), Bulway (by the Bulwandyi) or Kokopadun - the last is known only from Sharp's and Tindale's maps. (Douglas Seaton, a longtime resident of Cairns who has made a considerable study of the aborigines in the area, considers Yirgay to have been most similar to Dyabugay). After the main comparison had been completed, N.B. Tindale generously made available Xeroxes of all his vocabularies for rain forest languages; these confirmed the results of the study, and provided data for Bulway and the now extinct Wulgurukaba (formerly spoken on Palm Island).

Of these dialects, Dyirbal and Giramay have the best chances for longest survival. There are 30-50 speakers in the Murray Upper/Kennedy area (in addition to a few Dyirbalṅan at Ravenshoe, Herberton and Mount Garnet), and although many children speak predominantly English, in some families there is still emphasis on Dyirbal or Giramay as a first language. There are still large numbers of Yidindyī in the Cairns/Yarrabah/Edmonton/Gordonvale area, but most are very Europeanised; some of the older people are fluent in Yidin but it is doubtful if any children are learning it. There are only a few old speakers remaining for the other Yidin dialects. Dyabugay is spoken by perhaps 50 people formerly at Mona Mona mission and now at Redlynch, and at settlements along the Barron River; few if any children are learning it. Mamu and Ngadyan are each spoken by only half-a-dozen old people. The other dialects are all even nearer extinction: the writer knows of one speaker of Dyangun, two of Wagaman, two of Waruṅu, one of Wargamay, two of Nyawigi and one of Mbabaram; all are over 65.

A substantial amount of accurate information on languages of the area (particularly Ngadyan, Dyirbal, Gulḡay and Gungay) is given in Roth's *North Queensland Ethnography* (1901-10). A number of the vocabularies in Curr's *Australian Race* (1886) are taken from dialects of the region. Davidson (Curr, Vol.II, pp.414-6) and Mowbray (II.402-7) are mainly Dyangun, although they may contain some Muluridyī items. Hodgkinson (II.412-3) is Wagaman. Three vocabularies - Atherton (II.408-11), Edward Curr (II.416-7) and Lukin (II.436-7) - appear to be of Waruḡu; a fourth - Armit (II.440-2) - is either of Waruḡu or of some closely related dialect. Armstrong and Murray (II.418-21) is of Bandyin. Cassady and Johnstone (II.424-31) is of Nyawigi. Stephen (II.422-3) is a mixture of Wargamay, Nyawigi and some Waruḡu, obviously collected from a number of different informants. Hodgkinson (II.432-5) and De La Tour (II.438-9) are not identifiable as any of the dialects dealt with in this study.

Richards (1926) gives a substantial vocabulary of Wakoora, which he says is 'almost identical' to Dyangun. There are Giramay vocabularies by Douglas (1900) - misattributed to A.C. McDougall by Craig (1967) - and Mathew (1926). Mathew also published a vocabulary of Mbabaram - the entries headed 'Walsh River language' in the table on pp.208-72 of his *Eaglehawk and Crow* (1899).²⁰ The linguistic material in Lumholtz (1889) is mostly Wargamay, with a few Nyawigi and Waruḡu words interspersed. There are published vocabularies of Gungay by Gribble (1900, 1912). Some of the reports by Archibald Meston, listed in Craig's (1967) bibliography, appears to contain short vocabularies of dialects in the region.

Nekes and Worms (1953) give some words from Dyirbal, Gulḡay, Ngadyan, Mamu, Yidin and Wanyur and a short text in Mamu (that they mistakenly attribute to Dyirbal). This work - which was done solely by Worms - is extraordinarily inaccurate and misleading; it is in fact rather less satisfactory than the average vocabulary in Curr, sent in by a local policeman or whatever. Worms also recognises a large number of cognates between rain forest languages and languages in South Queensland, New South Wales, South Australia and the Kimberleys - almost all of these are quite spurious (being due to Worms's inaccurate transcription, and lack of any knowledge of comparative linguistics).

Greenway (1963) provides a catalogue of different spellings of the various language and tribal names; the reader should have no difficulties of identification, bearing in mind that b and p, d and t, g and k, j and y are in most cases alternatives and that in a word beginning with yi- or wu- the initial y- or w- may in pronunciation be optionally omitted. Throughout the present study accurate phonemic spellings - with dʲ,

nʷ, ɹ rendered as dy, ny, r respectively - have been preferred over traditional spellings.

Finally, it should be noted that two of the 'tribes' listed in Craig's (1967) excellent bibliography of the region do not in fact exist. 'Wardibara' is almost certainly a corruption of Waribara, the name of one of the five hordes speaking Mamu (see section 3.). And 'Nyirma' is a mishearing of ɲirma, the word for *language* in Dyirbal, Mamu and Ngadyan - the old lady who told La Mont West that she spoke 'ɲirma' is in fact a speaker of Dyirbal (West has acknowledged this error - private communication).

N O T E S

1. Fieldwork in 1963, 1964 and 1967 was supported by the Australian Institute of Aboriginal Studies and the Central Research Fund of the University of London. This paper was written whilst I was Visiting Lecturer and Senior Research Linguist at Harvard University, 1968/9, and was supported in part by NSF Grant-1934. I am grateful to Michael Silverstein, Kenneth Hale and Ives Goddard for their insightful comments on an earlier draft. I am particularly grateful to N.B. Tindale for making available Xeroxes of all his rain forest vocabularies.

2. For instance, if C shares a certain word with D, and the item is proscribed in C, then C presumably *must* borrow from B. Thus it might seem that if C has a higher percentage of vocabulary in common with D than with B, then it is likely to borrow rather more often from B than from D. Accepting this would lead us to conclude that, while the percentage of common vocabulary between two contiguous dialects will always change until it is about 50%, the *rate of change* will depend on how much vocabulary is shared by other languages in the vicinity. Thus, in the model above, if B and C shared more than 50% then we would expect that the smaller the C-D figure the greater the rate of reduction of the B-C figure; if B and C shared less than 50% we would expect that the larger the C-D figure the greater would be the rate of increase of the B-C figure. However, it is by no means certain that the assumption in the second sentence of this note is correct; it seems more likely that, whatever the B-C and C-D figures, C is likely to borrow about half its new vocabulary from B and half from D (some support for this, involving Ngadyan borrowing from Yidin and Mamu, is in section 3.). It should be noted that, if a certain form in B cannot be borrowed into C (because it is identical with the form that has just been tabooed in C, or because it already exists - with a different meaning - in C), then C may borrow a form that has a related meaning in B. For instance, *bungu* is *knee* and *mugu shin* in most rain forest dialects; however, in Nyawigi *bungu* is *shoulder* and *mugu knee*.

3. For instance, we conclude below that Dyabugay and Yidin are genetically related - in the sense used here - but that no 'strong' genetic relationship can be shown for Dyirbal and Yidin. That is, there is no evidence that Dyirbal is any more closely genetically related to Yidin than it is to most other Australian languages - say to the Western Desert language, or to Narrinyeri in South Australia or Gumbaingar in New South Wales.

4. This is a rather glib simplification, although it should not be too misleading in the context of the data available for the present study. More accurately, comparative linguistics deals with any type of *systematic* relationship between items.

5. Nyawigi has about 30% vocabulary in common with the dialect given by Montagu Curr (1886) from the Cleveland Bay region (it is not known which tribe this was taken from).

6. Waruṅu has 24% vocabulary in common with Goa, and Ilba 30% with Goa; sources for Goa are Roth (1897), Curr's vocabulary in *The Australian Race*, Vol.III, pp.14-5 (1886), Lamb (1904) and Dutton (1901). Note also that, on the basis of data collected by Tindale, the vocabulary of Biria is most similar to that of Waruṅu (and is markedly different from Nyawigi).

7. Speakers of Giramay declare that Bandyin was more similar to Wargamay than to Giramay. Where such judgments - from the same informants - were checked out in other instances they were found to imply mainly grammatical similarity.

8. The list comprises 138 nouns; 33 adjectives; 46 verbs; *yesterday*, *tomorrow*, *yes*, *no*. The 'common vocabulary' includes both identical and non-identical but obviously cognate items. With the exception of Mbabaram and Ngadyan, which have undergone phonological changes described below, almost all common vocabulary is identical. Thus the Yidin-Ngadyan count includes 44 identical and only 5 non-identical items, the Wargamay-Giramay count 107 identical and 8 non-identical. Even the non-identical items as a rule differ only slightly; thus we have for *urine* dʷúɖʷur in Dyirbal but dʷúɖʷuɾ in Giramay; for *grasshopper*, búndɪm in Dyabugay, búndɪnʷ in Yidin, Mamu, Dyirbal, Giramay, Wargamay and Waruṅu, búndiŋ in Nyawigi and búndɪ in Mbabaram.

9. For comparison of type 1 (table 2) the writer compared the number and function of certain morphemes. For instance, if language A distinguishes present, past and future tenses then it would score 3 points in comparison with language B, that also distinguishes three tenses; and 2 points in comparison with C that only shows a contrast future, nonfuture. Language D, with a tense system past, nonpast would score only 1 point in comparison with C. Comparison of type 2 (table 3) demanded in addition affixes that were probably cognate, for a score to be registered. About fifty-five grammatical points were compared, involving cases on nouns and pronouns, noun classes, verb conjugations, tenses, positive and negative imperative marking, purposive inflections on verbs, pronoun roots, interrogative roots, etc.: all scores have been converted to percentages in the tables.

10. Publication of more detailed information on the grammatical and lexical similarities between Giramay, Wargamay and Nyawigi is planned for a later date. A final decision as to the genetic affiliation of Wargamay could only be made on the basis of fuller grammatical and lexical data than the writer has so far been able to collect; since both Wargamay and Nyawigi are on the brink of extinction, with very old and difficult last informants (see appendix) it is doubtful whether the required data will ever be obtained.

11. There is no evidence of any recent loans from Mbabaram into Wagaman, Dyangun, Waruṅu or Dyirbal (dialects from which Mbabaram itself has borrowed, since the time of its most important phonological changes).

12. Wagaman and Dyangun have very little vocabulary in common (probably less than 10%) with Gugu-Mini, spoken to the north-west - Gugu-Mini data from the writer's own fieldwork.

13. Excluding words occurring in the mother-in-law style.

14. It is interesting to note that, although Dyirbal and Mamu dialects are closer to each other in grammar and vocabulary than either is to Giramay or Ngadyan, the Mamu tribe appears to have had its closest social associations with the Ngadyandyi, and the Dyirbalṅan with the Giramaygan. There may be a generalisation around here. If a large tribe B is to the south of A and to the north of C, then it may be that the circumstance leading to a split of B into tribes B_N (in the north) and B_S (in the south) is for the northern hordes of B to have developed close social associations with A and the southern hordes close connection with

C - the new tribe B_N will now have rather more dealings with A than with B_S. If the northern hordes of B had closer connections with the southern hordes than with A, then tribe B would be unlikely to split into two. This would explain why Mamu should have more mother-in-law vocabulary in common with Ngadyan than with Dyirbal (mother-in-law vocabulary was greatly increased after the split-off from Dyirbal), although it has more everyday language vocabulary in common with Dyirbal - to which it is grammatically most similar - than with Ngadyan.

15. Earlier reports (Dixon, 1966a, 1966b) did not recognise sufficient phonological distinctions in Mbabaram. Further field work in 1967 provided additional data, supporting the phonology outlined here.

16. These are only *some* of the phonological changes that have taken place in Mbabaram. A full discussion would be out of place here but is planned for later publication (it would discuss the origin of dentals, and of the unrounded back vowel *r*, and also such changes as *gúgu* > *góg*).

17. We would need to study the splitting and movement of Yidin dialects to complete the picture.

18. We are not suggesting that Mbabaram is genetically related to Dyabugay-Yidin - there is insufficient evidence to support such a hypothesis - only that it was once contiguous to these languages.

19. Mbabaram was probably a smallish tribe, which quickly perished with the invasion of European miners - there is today not a single full-blood Mbabaram living. Speakers of Dyirbal, on the other hand, have shown a definite will to survive. Their numbers were greatly reduced from the 1880's on through contraction of European diseases, and murder by European settlers (hundreds of aborigines were shot and poisoned). One group of 30 or so members of the Dyirbal tribe were still living in the dense rain forest around the upper Tully River until about 25 years ago, despite the presence of white settlers in the area for sixty years. Today, the Dyirbaljan talk of increasing their numbers until they are strong enough to expel the white man, and can then resume occupation of their own rightful territory.

20. Mathew (1899, p.226) includes the Mbabaram word for *dog*, *dóg*: he transcribes it as *tok* and adds a question mark in parentheses. As was shown in section 4., *dóg* is in fact an indigenous Mbabaram word - and not a loan from English - that developed by regular sound change from

the form *gúdaga* (*gúdaga* is the term for *dog* in many present-day dialects, such as Yidin).

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