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Linguistic diffusion
in Arnhem Land



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I naturally have many debts to Institute staff in various departments, to Aboriginal informants, and to various persons in Aboriginal communities. These debts are more directly relevant to the grammar-text-dictionary volumes which are being published concurrently, and they are spelled out in detail in those volumes.

I wish to dedicate this work to two of my first teachers at Harvard during my undergraduate career: Einar Haugen, who introduced me to the study of bilingualism and language contact, and Calvert Watkins, who tried to make me into a historical linguist.

ABBREVIATIONS

CA	Common Australian
Du	dual
F	feminine
In	inclusive
M	masculine
Ng	Ngandi
Nu	Nunggubuyu
Pl	Plural
PNgNu	Proto-Ngandi-Nunggubuyu
PWaMaAl	Proto-Warndarang-Mara-Alawa
Ri	Ritharngu
Sg	singular
Wa	Warndarang

Chapter 1

INTRODUCTION

1. GENERAL

Between 1973 and 1977 I have carried out fieldwork on several languages of eastern Arnhem Land, Australia, as a research fellow for the Australian Institute of Aboriginal Studies. During this period I did basic research on Nunggubuyu, Ngandi, Ritharngu, and Warndarang; for each language a grammar, text collection, and dictionary have been completed or are in progress. The present volume is a study of linguistic diffusion among these four languages. Other languages in the area are considered here to a lesser extent; data from them are used here primarily to provide comparative background.

It turns out that the particular area I worked in is extremely favourable to this kind of study. First, because Aboriginal languages and cultures have generally survived in this area longer than in other parts of Australia, it was possible to get the basic descriptive material. Secondly, the languages are quite remote from each other genetically, which makes it relatively easy to distinguish recent diffusional sharings from common retentions. Thirdly, diffusion of all kinds of linguistic features has been very extensive in the area, due mainly to demographic factors such as the rate of interlinguistic marriage.

In other parts of Australia, the languages tend to be much more closely related to each other genetically than they are in this part of Arnhem Land. In many of these areas, moreover, key languages have disappeared before being adequately recorded, or the few surviving informants tend to mix dialects and languages. Therefore it would seem that Arnhem Land is the most suitable laboratory within Australia for the study of diffusion across established language boundaries.

The data presently available are sufficient to justify a volume on the diffusion of structural features of language: phonological systems, grammatical morphemes (affixes, etc.), and morphosyntactic patterns. It is hoped that a second volume, on lexical diffusion, will follow when

more data are available on languages which surround the four languages we are concerned with here.

2. THE YUULNGU LANGUAGES

The language family here termed 'Yuulngu' (yu:lŋu) has become famous in the anthropological literature as the 'Murngin' or 'Wulamba' groups. The term Yuulngu, based on the word for 'human, man, Aboriginal' has been suggested by B. Schebeck and is certainly superior to the others.

There is some question concerning the genetic affiliation of certain languages on the northwestern fringe of the Yuulngu group, on which I have no material. Disregarding these, the languages which belong clearly to the Yuulngu group are these: Nhaangu, Dhaangu, Djaangu, Dhuwal, Dhuwala, Dhay?yi, and Ritharngu. The first six of these are named, by the natives as well as linguists, after the form of the demonstrative 'this' (ŋa:ŋu, ɖa:ŋu, ja:ŋu, ɖuwal, ɖuwal, ɖay?yi). The term Ritharngu is not, properly speaking, a language name, rather a term for one of the social groups (maɟa) which speak the language. Since the term ɟiɟarŋu can be used as a language term, particularly by other language groups such as the Nunggubuyu to the south, and since there is no other suitable language name, I use Ritharngu as the name for the seventh Yuulngu language. In the anthropological literature this is sometimes called the Dhiyakuy (ɟiyakuy) language, but this term was not understood by the speakers of the language itself (perhaps it is used by speakers of other Yuulngu languages to refer to it). The word for 'this' in Ritharngu is yakuy, not *ɟiyakuy, though the latter occurs in the Dhay?yi language as the instrumental case form of ɖay?yi 'this'. To be consistent we could speak of the Yakuy language, but since this term has never been used I will avoid it and use the term Ritharngu instead.

In addition to extensive material on Ritharngu, I have substantial material on Dhuwal. More importantly, I have seen unpublished material (mostly paradigms) on the Yuulngu languages by B. Schebeck, who worked mainly on northern Yuulngu languages which I did not come into contact with.

Comparison of the paradigms shows that most of the morphology is identical except for internal phonological developments in each language, minor analogical reshaping, and minor semantic shifts. The sharings are clearly due to common retention of a proto-system, rather than due to recent diffusion. Consider, for example, the partial case systems (for noun stems) from Schebeck's and my data shown in Table 1.

Table 1 is somewhat oversimplified. Nevertheless, the close genetic relationship which it suggests for the seven languages is confirmed by consideration of verbal paradigms, the form of independent pronouns, and so forth.

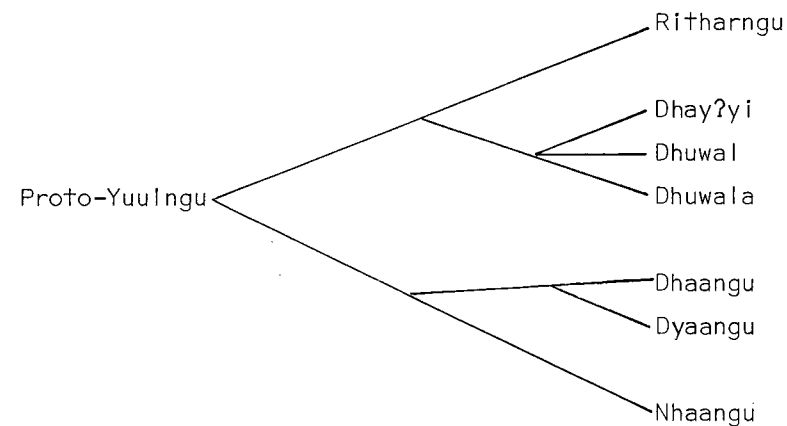
The internal subclassification of the Yuulngu group is not entirely clear at this point. On the basis of an overall comparison of the paradigms available to me, I incline to divide the family into a northern group (Nhaangu, Dhaangu, Dyaangu) and a southern group (Dhuwala, Dhuwal, Dhay?yi, Ritharngu). Within the northern group Dhaangu and

Dyaangu seem to be particularly close; within the southern group Ritharngu seems to be somewhat divergent from the others. Thus the tentative subclassification proposed here is as shown in Figure 1.

TABLE 1

	Dhuwala	Dhuwal	Dhay?yi	Ritharngu	Nhaangu	Dhaangu	Dyaangu
nom	-∅	-∅	-∅	-∅	-∅	-∅	-∅
erg-inst	-ɖu	-ɖu/-y	-ɖu/-y	-ɖu/-y	-ɖu/-yu	-ɖu/-yu	-ɖu/-yu
acc	-ŋa	-ŋa	-ŋa/-ñ	-ŋa	-ŋa	-ŋa/-ñ	-ŋa/-ñ
gen-dat	-gu/-wa	-gu	-gu/-wa	-gu	-gu	-gu	-gu
loc	-ŋuɾa	-ŋuɾ	-ŋuɾ	-ŋaɾa	-ŋa/-la	-ŋa	-ŋa
abl	-ŋuɾu	-ŋuɾ	-ŋuɾ	-ŋuɾu?	-ŋuɾu	-ŋuɾu	-ŋuɾu
all	-lili	-lil	-lil	-li?	-li	-li	-li(i)

FIGURE 1



3. THE PREFIXING LANGUAGES

The term 'prefixing languages' will be applied to the non-Yuulngu languages of Arnhem Land (Nunggubuyu, Ngandi, Warndarang, etc.). This term has been used by Capell as a **typological** label, applied to Aboriginal languages which have pronominal prefixes attached to the verb (the Yuulngu languages lack such prefixes).¹ The term is used in the present work as a **genetic** label, so that we can speak of 'Proto-Prefixing' and the like.

¹A. Capell, *A New Approach to Australian Linguistics*, Sydney: Oceania Linguistic Monographs, no.1, 1966.

The prefixing languages are much less homogeneous than are the Yuulngu languages. It is clear, however, that Ngandi and Nunggubuyu are closely related. Consider, for example, the paradigms for -ma- 'to pick up, to get' in the two languages, shown in Table 2.²

TABLE 2

Nunggubuyu		Ngandi	
past-1	-mi-ñ	past punctual	-ma-y
past-2	-ma-ŋi	past continuous	-ma-ŋi
nonpast-1	-ma-ŋ	future	-mi-ya-ŋ
nonpast-2	-ma-ni	present	-ma-ni
nonpast-3	-mi:-'	potential	-ma-ŋan
evitative	-ma-ŋan	evitative	-ma-yi
		negative stem	-ma-č-

It is possible to derive both attested systems from a single proto-system by means of phonological and analogical developments. Nunggubuyu past-1 -mi-ñ, used in the past punctual, can reflect *-ma-y since Nunggubuyu has analogically extended the allomorph -ñ (found in some Ngandi past punctual forms) at the expense of *-y, and since Nunggubuyu *a can be fronted to i before ñ. Nunggubuyu past-2 -ma-ŋi, used in the past continuous, past potential, and all past negative forms, is obviously identical to Ngandi past continuous -ma-ŋi.

As for the nonpast forms, Nunggubuyu nonpast-1 -ma-ŋ probably reflects *-mi-ya-ŋ, with analogical levelling of the irregular inherited form to -ma-ŋ on the basis of comparison with other simple nonpast-1 forms with suffix -ŋ (found also in some Ngandi verb classes without preceding augments like -ya-). The Nunggubuyu nonpast-1 is the form used in the present negative and in the future punctual, so there is a partial functional overlap with the Ngandi future. The Nunggubuyu nonpast-2 form -ma-ni, used in the present and in the future continuous, is identical to the Ngandi present form -ma-ni. Nunggubuyu nonpast-3 -mi:-', used in the future negative, is historically identical to Ngandi evitative -ma-yi. The evitative is a sort of undesirable potential category, translatable as a 'lest' clause (for example, 'Give it to me, lest I hit you!'). The Nunggubuyu evitative, for its part, is etymologically identical to the Ngandi potential form, hence -ma-ŋan in both languages. The Ngandi negative stem -ma-č- (past -ma-č-ič, present -ma-č-may?, future -ma-č-i) has no parallels in Nunggubuyu, where negation is expressed by means of particles like wa:ri and yagi.

²Most categorial labels in this table and some following ones, for simplicity, omit the term 'positive', which is however to be supplied for combinations not specified as negative. There are minor exceptions but these are not of central importance.

Such comparative analysis shows that Nunggubuyu and Ngandi are genetically close, and it is possible to reconstruct a good deal of the morphological structure of their common ancestor, which we may call Proto-Ngandi-Nunggubuyu (PNgNu). A few morphological sharings may be due to recent diffusion, but most of them are clearly due to common retention.

Although Ngandi and Nunggubuyu do form a subgroup within the prefixing group, it would be misleading to exaggerate their genetic proximity. Both languages, but especially Nunggubuyu, have undergone substantial development since the PNgNu period. The suffixes shown in Table 2, for example, happen to be cognate for the most part (aside from some analogical operations in Nunggubuyu), but the grammatical functions carried out by each suffixal category are rather different from one language to the other. In Ngandi, suffixes by themselves indicate the tense, aspect, mood and negativity of the verb. In Nunggubuyu, on the other hand, the six suffixal categories are tightly interwoven with the use of independent negative particles (yagi in some mood forms, wa:ri in others), and with the choice between two series (A and B) of pronominal prefixes; etymologically, most of the B forms of the prefixes are simply the A forms plus a morpheme whose synchronic base form in an abstract morphophonemic analysis is /-w₂an-/ (W₂ and similar symbols will be explained later). Thus the past-2 form -ma-ŋi, for example, does not tell us whether the verb complex as a whole is past continuous, past potential, past negative, or past potential negative; we have to know whether yagi or wa:ri is present and whether the pronominal prefix is of type A or B. The form ŋawu-ma-ŋi means 'I picked it up.' (past continuous), while ŋangu-ma-ŋi means 'I was going to pick it up.' (past potential), wa:ri ŋangu-ma-ŋi means 'I did not pick it up.' and yagi ŋangu-ma-ŋi means 'I was not going to pick it up.' (past potential negative). The prefixes ŋawu- and ŋangu-, A and B respectively, both indicate 1Sg subject and third person object of noun class ANA_{wu}.

The point is that Ngandi and Nunggubuyu are not mere dialects of each other. The two are quite distinct in many respects, and mutual intelligibility is completely impossible. If anything, the forms shown in Table 2 make the two languages seem closer than they really are, since a cognate verb stem was chosen. A great many high-frequency stems (nouns, verbs, etc.) are in fact not cognate between the two, and even when cognates are at hand they are often obscured by phonological shifts, semantic developments, and the like.

The genetic relationship between PNgNu and Enindhilyagwa, spoken on Groote Eylandt to the east of the Nunggubuyu area, is problematic. Full morphological data on this language are not available to me at this time. Preliminary inspection of data which I collected in two brief sessions suggests that Enindhilyagwa is rather remote from the other prefixing languages, particularly in pronominal and tense-aspect inflection of verbs and in case suffixes. However, there are some similarities between Enindhilyagwa, Nunggubuyu, and Ngandi in the forms of independent pronouns, so perhaps the three are close genetically; in this event, we would have to conclude that Enindhilyagwa has retained archaic independent pronominal forms while innovating very extensively in its verbal and nominal inflection. In this work I will leave open the relationship

of Enindhilyagwa to the other prefixing languages, though it will be an interesting problem for future research.

With the possible exception of Enindhilyagwa, PNgNu is most closely related genetically to several languages to the west and north: Ngalkbon (including Dalabon and Dangbon, perhaps also Buan), Ngalakan, Rembarrnga, Gunwinggu, etc.³ The precise relationships are not clear at this time, and it is likely that other languages on which I have no data at this time are also involved in this group. In most respects the precise relationships are not essential to the material discussed in the present work.

To show the connection between PNgNu and some of these languages to the west and north, compare Table 2 to Table 3.

TABLE 3

Gunwinggu		Ngalkbon	
past punctual	-me-y	past punctual	-me-y
past continuous	-ma-ŋi	past continuous	-ma-ŋiñ
past negative	-ma-yi	evitative	-me-yi or -ma-ŋi
present	-ma-ŋ	present	-ma-ŋ
imperative	-ma-∅	future	-mi-ya-n

It is clear that -me-y in these two languages matches PNgNu *-ma-y (less likely *-me-y); it is not certain whether the shift of /a/ to e in this form is a recent innovation, or an old feature which has been levelled out in Ngandi and Nunggubuyu. Past continuous -ma-ŋi and -ma-ŋiñ in Table 3 correspond to PNgNu *-ma-ŋi. The allomorph -ŋiñ is common in Ngalkbon verbs (and note that in this paradigm it distinguishes the past continuous form from a variant of the evitative, -ma-ŋi); it occurs also in a few Gunwinggu paradigms, while Ngandi and Nunggubuyu show no traces of it.

Gunwinggu -ma-yi and Ngalkbon -me-yi correspond to PNgNu *-ma-yi. The form is found in various negative, potential, and evitative senses; in its negative uses (Gunwinggu, Nunggubuyu) it is accompanied by a negative particle.

The Ngalkbon future form -mi-ya-n matches Ngandi -mi-ya-ŋ except for the final future suffix. While Ngalkbon shows future -ŋ

³Ngalkbon material in this volume is from my own fieldwork. Rembarrnga material is from G. McKay, personal correspondence; McKay's 1975 doctoral dissertation (Australian National University) was not available at the time when this volume was submitted. Ngalakan material from my 1976 fieldwork, postdating the submission of this volume, has been included only where essential. Gunwinggu material is from L. Oates, *A Tentative Description of the Gunwinggu Language*, Sydney: Oceania Linguistic Monographs, no.10, 1964.

generally in its paradigms, Ngandi has future -ŋ in most paradigms while retaining -ŋ in a few; Nunggubuyu allows only -ŋ and -ñ (the latter perhaps from *-ŋ, since it occurs chiefly after i). Ngandi -mi-ya-ŋ could represent *mi-ya-n, with analogical intrusion of the -ŋ future allomorph.

Present -ma-ŋ in Ngalkbon (actually, reduplicated present -ma-ma-ŋ, near-future -ma-ŋ) shows an otherwise unattested suffix -ŋ, while other Ngalkbon verbs show another allomorph, usually -ŋ. Gunwinggu has -ŋ with a few other verbs besides -ma-, but also has stems with present -ŋ. It is likely that there is a connection between present -ŋ in these languages and present -na and -ni in various Ngandi and Nunggubuyu paradigms (-ni with -ma-). Although it looks at first sight as though Gunwinggu and Ngalkbon -ma-ŋ matches Nunggubuyu nonpast-1 (including present negative and future punctual) -ma-ŋ, in fact there may well be no direct connection. If *-ma-ŋ is the oldest present form, it would seem that PNgNu had reshaped it as *-ma-n(i), by analogy to other stems with *-n(i) in this tense; Nunggubuyu -ma-ŋ would then have to be considered an analogically reshaped form of PNgNu future *-mi-ya-ŋ, as I suggested earlier.

Data such as these show that there is a reasonably close relationship between Gunwinggu, Ngalkbon, Ngandi, and Nunggubuyu, and others such as Ngalakan and Rembarrnga can surely be added. It seems that Ngandi and Nunggubuyu (and possibly Enindhilyagwa) form one subgroup within this complex, while Gunwinggu, Ngalkbon, Ngalakan, and Rembarrnga (among others) form another subgroup. A more detailed analysis should be possible in a few years as more data become available.

In addition to these languages, there are also a number of prefixing languages to the south. One important subgroup consists of Warndarang, Mara, and Alawa (along with the extinct and unrecorded Yugul).⁴ Although I agree with M. Sharpe that these languages constitute a genetic subgroup, and hence descend from a proto-language which we may refer to as 'PWaMaAl', it should be made clear that the three attested languages are rather divergent from each other, more so than Ngandi and Nunggubuyu. It is difficult, for example, to reconstruct very much of the morphology of PWaMaAl.

One structural feature found in the three languages is an auxiliary-verb system, whereby only fifteen or twenty stems can be directly inflected; a few of these are used as main verb stems only, others as auxiliaries only (with preposed uninflected main verb), most as either main verb stems or auxiliaries. Thus contrast Nunggubuyu ŋanu-na-ni 'I saw him.' with Warndarang war ŋa-wiŋdi-ma 'I saw him.' In Nunggubuyu (as in Ngandi, Gunwinggu, etc.) the verb is directly inflected, while in Warndarang (as in Mara and Alawa) there is a particle-like main verb (war 'to see') followed by an inflected auxiliary (here -wiŋdi-, which indicates a dative or benefactive relationship).

⁴Data on Warndarang and Mara presented here are from my own fieldwork. Data on Alawa are from M. Sharpe, *Alawa Phonology and Grammar*, Canberra: Australian Institute of Aboriginal Studies, 1972.

However, the actual inventory of inflected verbs in Alawa, Mara, and Warndarang is quite different, suggesting that the three languages may have converged structurally following their breakup. PWaMaAl may have had a larger inventory, which has been independently and to a large extent differently reduced in each of the three languages, so that some old inflected verbs survive only in Alawa, others in Mara, and others in Warndarang.

Still, there is considerable lexical and morphological evidence (for example, the forms of pronominal prefixes added to verbs) suggesting that the three languages are a genetic subgroup, albeit a rather diffuse one, and not all of the sharings can be accounted for as diffusional.

It is difficult to determine the relationship of these languages to those found to the west, for example, Mangarai. More data on these languages will become available in the next few years and the historical picture will then be clarified. To the south, we find the Barkly Tablelands group of languages: Binbin-ga, Ngarndji (Ngewin), Djingili, the extinct and unrecorded Wilangarra, etc. The present evidence suggests that these languages are not closely related genetically to the Warndarang-Mara-Alawa group or other prefixing languages, although the historical position of the Barkly group is difficult to pin down in view of the paucity of morphological machinery in their verbal systems. To the southeast of the Warndarang-Mara-Alawa group, along the Gulf coast, we find languages like Yanyula and Garawa which appear not to be genetically close to them.⁵

The Warndarang-Mara-Alawa group appears to be a distant offshoot of the prefixing languages to the north, such as Nunggubuyu and Ngalkbon. A rigorous demonstration of the genetic relationship cannot be given here, but it can be noted that there are clear genetic affinities among all these languages in the structure of pronominal prefix complexes. In particular, PWaMaAl had transitive prefix complexes involving *-gu- and *-n- as accusative (or, more generally, oblique) case allomorphs, with *-gu- used after a consonant and *-n- after a vowel. This situation is preserved in Alawa, while Mara and Warndarang have lost *-n-, preserving only *-gu- (Mara -gu-, Warndarang -nu- with an unexplained nasalisation). The same system probably underlies Ngandi and Nunggubuyu, since Ngandi has generalised -gu- as a slightly skewed inverse morpheme, while Nunggubuyu has generalised /-N-/ (from *-n-) in the same function. Some other prefixing languages such as Gunwinggu and Rembarnga preserve *-n-, though *-gu- is lost; Ngalkbon, however, has rather thoroughly restructured its pronominal prefix system.⁶

To securely establish the genetic relationship between the Warndarang-Mara-Alawa group and the more northerly prefixing languages, we

⁵The few remarks about Yanyula presented in this work are from J. Kirton, personal communication.

⁶The history of *-n- and *-gu- is described in Part 2 of J. Heath, 'Substantival Hierarchies: Addendum to Silverstein', in R.M.W. Dixon, ed., *Grammatical Categories in Australian Languages*. Canberra: Australian Institute of Aboriginal Studies, 1976.

would need to demonstrate the common origin of their verbal inflectional systems in at least a few cases. This is difficult, since as noted above Warndarang, Mara, and Alawa each preserves only a few directly inflectable verb stems, and those paradigms which have survived have become severely reshaped by analogical innovations, semantic shifts of the inflectional categories, and so forth. However, there are some striking parallels which suffice to establish a genetic relationship which is reasonably close by northern Australian standards. For example, Warndarang has several archaic-looking -CV- inflectable verbs, such as -wa- 'to give', -jV- (citation form -juṛa) used as an auxiliary with several stance verbs, and -nV- (citation form -nuṛa) 'to sit' which match stems in Nunggubuyu and/or Ngandi (cf. Ngandi -wo- 'to give', -dV- 'to stand', -nV- 'to sit'). Some paradigmatic details are also the same, so that -jV- and -nV- in Warndarang have a past continuous suffix -ra (hence -juṛa and -nuṛa) requiring u-vocalism of the root, exactly matching the Ngandi type -du-ḍa 'stands' and -nu-ḍa 'sits' (Warndarang r can match Ngandi ḍ). Nunggubuyu -la-ṛa 'stands' can reflect *-du-ḍa if we posit a somewhat irregular vowel-assimilation.

Mara shows fewer obvious paradigmatic affinities with Nunggubuyu and Ngandi. However, the paradigm of Mara -na- 'to see' is obviously related to those of Ngandi -na- 'to see' and Nunggubuyu -na- 'to see' (Warndarang lacks this root). Consider the partial paradigms in Table 4.

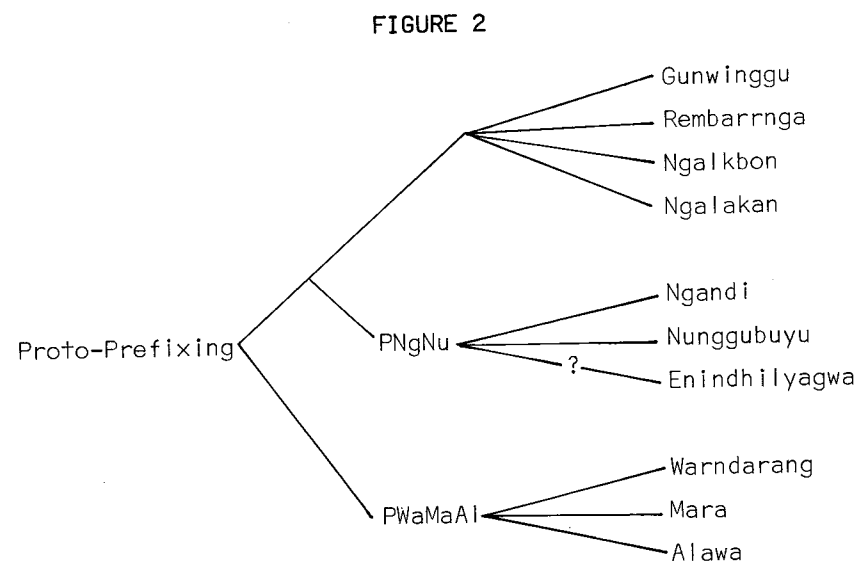
TABLE 4

Mara:	-mi-na-ni	past continuous
	-na-yi	past potential
	-mi-na-jini	present (non-3rd person)
Ngandi:	-ṇa-ni	past continuous
	-ṇa-yi	evitative
	-ṇa-čini	present
Nunggubuyu:	-na-ni	past continuous
	-ni:-∅	future negative
	-na-yi:	present (and future continuous)

Disregarding the prefix -mi- in some Mara categories, the forms shown here are cognate. The three past continuous forms, all with suffix -ni, call for no comment. The correlation between the Mara past potential (used in the past negative, as well as in senses like 'should have'), matching the Ngandi evitative, and Nunggubuyu future negative -ni:-∅ reflects the same *-na-yi. Ngandi -ṇa-čini and Nunggubuyu -na-yi: point to PNgNu *-na-jini (there are no real difficulties in showing how this developed into the two attested forms), and this obviously matches Mara (-mi)-na-jini. These correlations are striking since, except for the ending *-yi (the second form in each of the three mini-paradigms) the suffix allomorphs in question are unproductive, restricted to two or three high-frequency monosyllabic verbs.

It is not yet possible to do a thorough study of the history of verbal inflections among all of these languages, and until this has been done we are not in a position to make definitive statements about genetic subclassification. However, the general lines of the final solution have become fairly clear. The northern prefixing languages — Nunggubuyu, Ngandi, Ngalkbon, Rembarrnga, Ngalakan, Gunwinggu, etc. — appear to form one division within the prefixing group, while the Warndarang-Mara-Alawa group to the south forms another. The two divisions are rather remote from each other genetically, but their genetic connection is assured in that we know they are closer to each other genetically than either is to the Yuulngu group, the Barkly group, Yanyula, etc.

A rough subclassification of the prefixing languages is given in Figure 2.

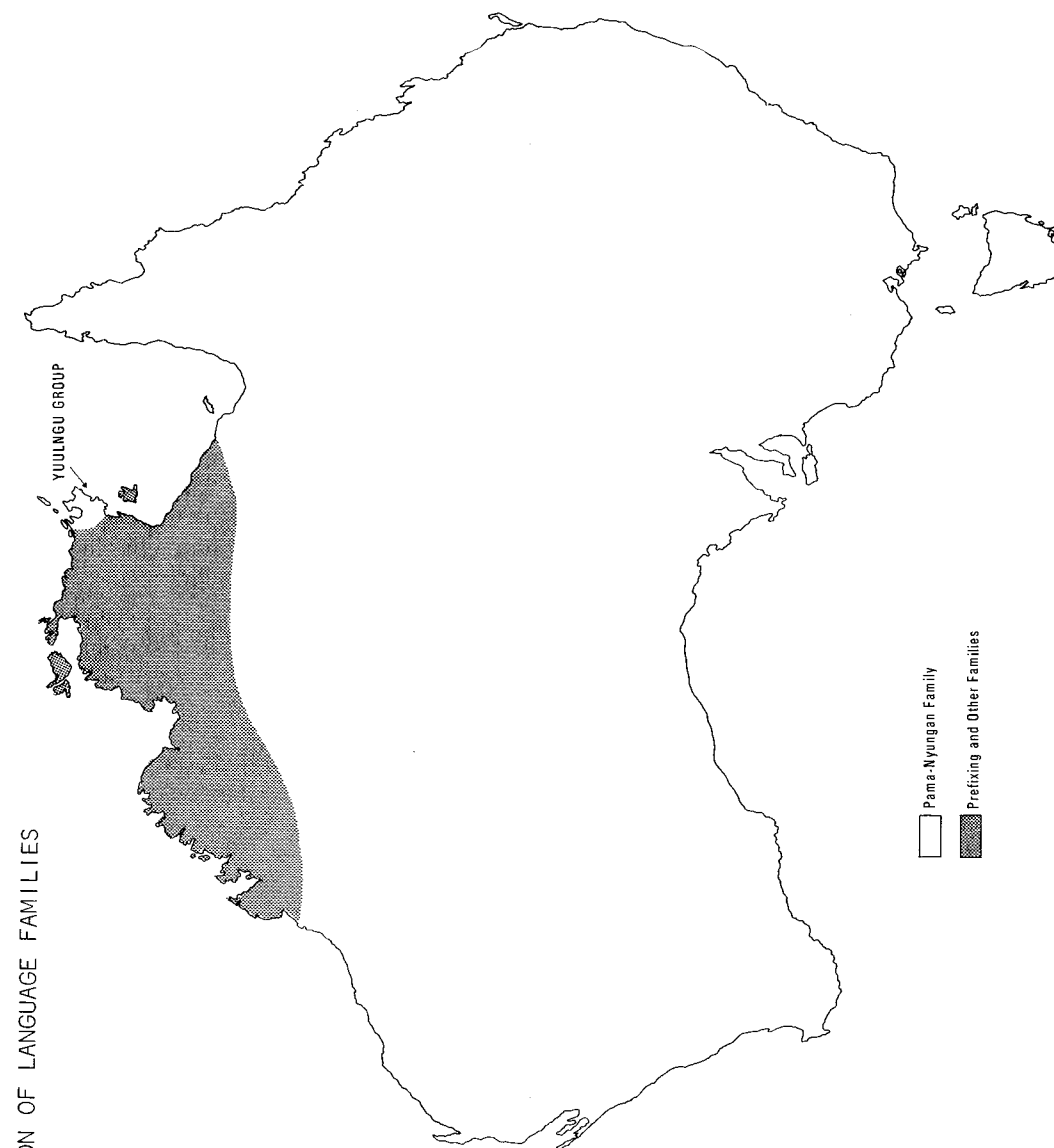


It should again be emphasised that the groups shown here are not exhaustive; there are many other prefixing languages which remain to be fitted into the classification. Some of these may have to be put into some of the subgroups shown in the figure; others will go into new subgroups of their own.

It should also be noted that whereas Proto-Yuulngu was a relatively recent proto-language, Proto-Prefixing was quite ancient. Proto-Yuulngu may have been approximately contemporary to PNgNu, and was probably younger than PWaMaAl.

4. THE CONNECTION BETWEEN THE YUULNGU AND PREFIXING LANGUAGES

There is a growing feeling among Australianists that all Australian languages are genetically related. However, this has not been easy to demonstrate. Only a tiny handful of affixes and lexical items can be reconstructed for Common Australian (CA).



MAP 1 DISTRIBUTION OF LANGUAGE FAMILIES

Within the overall Australian linguistic picture, the prefixing languages of Arnhem Land and the Yuulngu languages are not closely related. Indeed, the two subgroups are as remote from each other genetically as any two subgroups in the continent. It is apparent that the two have come into contact due to migrations, after having evolved quite separately in different parts of the continent.

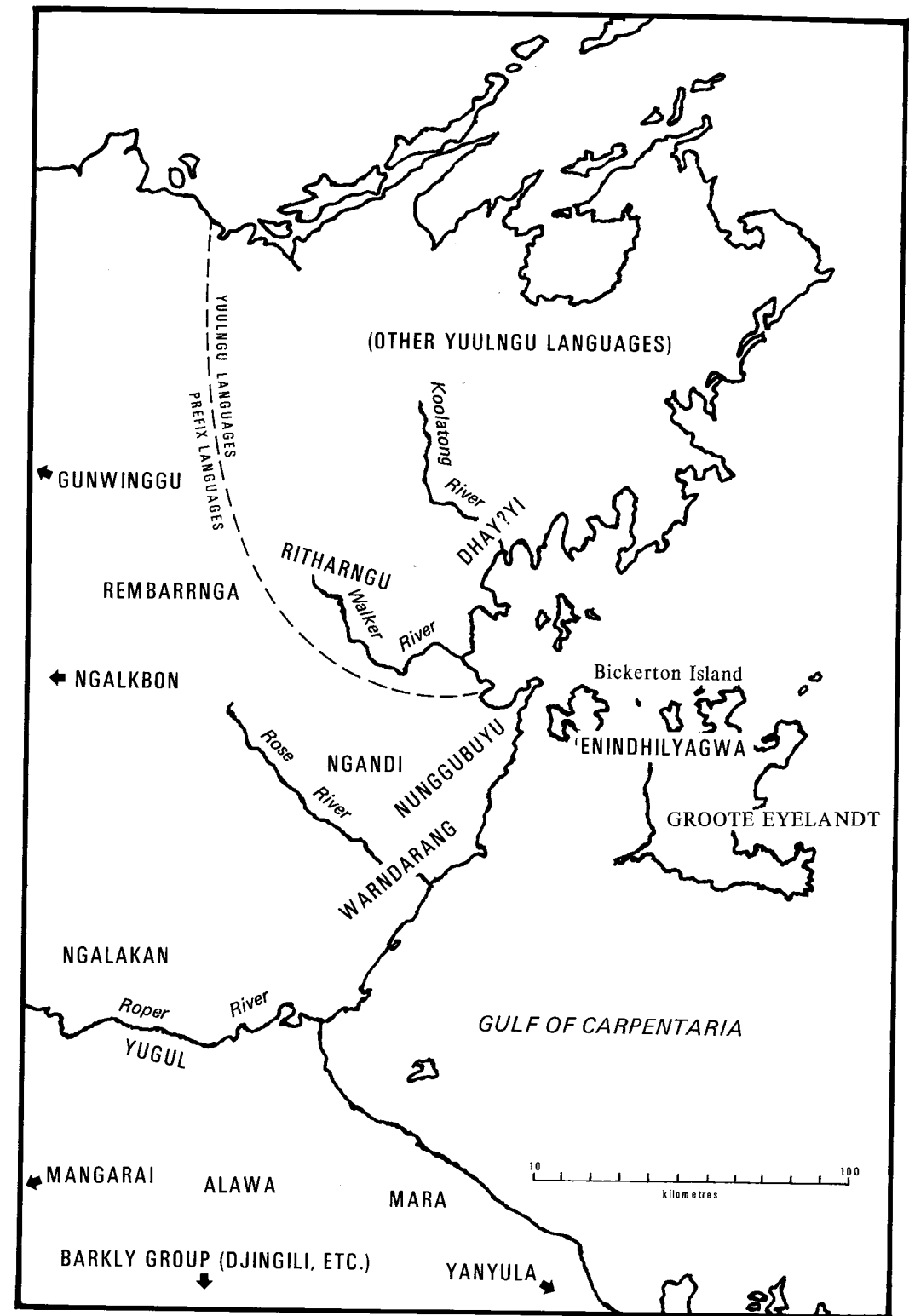
All Australianists who have commented on the problem agree that the Yuulngu group belongs to the Pama-Nyungan family, which includes well over half of all Aboriginal languages. Thus, through some combination of migrations, a Pama-Nyungan enclave has been stranded in northeastern Arnhem Land, separated geographically from the remainder of the Pama-Nyungan group, which stretches from Cape York Peninsula through the rest of Queensland, New South Wales, Victoria, South Australia, and the central and southern portions of the Northern Territory and of Western Australia. This enclave is now surrounded by prefixing languages, which include a number of subfamilies distinct from Pama-Nyungan, as shown in Map 1.

The precise position which the Yuulngu group occupies within the Pama-Nyungan family is difficult to pin down. It has been suggested that the Yuulngu and Western Desert groups have a particular affinity. Since, however, my own competence is limited to languages in the Arnhem Land area and does not encompass the Western Desert group, I am unable to discuss this problem here.

The important point for our purposes is that the Yuulngu and prefixing groups have come together by migrations after having developed separately. By the time they came together, the two groups had diverged structurally and lexically to the point where only a handful of cognate affixes and lexical items could be found, and where even some of these had been obscured by various internal phonological, analogical, and semantic developments. Thus the areal situation approximated the situation where genetically unrelated languages are in contact. It is comparable to the Balkan situation, where Roumanian, South Slavic, Albanian, and Greek have combined to form a Sprachbund; these languages all descend ultimately from Proto-Indo-European, but the relationship is so remote and each language has evolved to such an extent that an areal linguistic study can proceed as if the languages were unrelated.

5. GEOGRAPHICAL RELATIONSHIPS

The approximate position of the language groups of interest to us is shown in Map 2, as it was early in this century just before the missions and other settlements were built. The precise boundaries of the language groups are difficult to pinpoint. Territory was owned not by language groups as such, rather by smaller patrilineal and lineages. It is generally possible to determine the approximate location of each clan's territory, but in some cases it is difficult to determine to which language group a given clan originally belonged. Thus the Warnarang language is extinct, and whereas clans which until recently included old men and women who knew the language describe themselves as Warnarang, others which lost the language several decades ago may call themselves Nunggubuyu or Mara, or may be unsure of their original



MAP 2 LOCATION OF LANGUAGES

linguistic affiliation. This affiliation is of far less importance in defining one's social identity than clan affiliation.

It should also be noted that while Map 1 is fairly accurate with regard to Nunggubuyu, Ngandi, Warndarang, Ritharngu, and Mara, it is probably somewhat inaccurate with respect to other groups such as Ngalakan and Rembarrnga, with whom I have not had direct encounters.

Of particular interest to us are the geographical relationships involving Ngandi and Nunggubuyu. It can be seen that Ngandi is in contact with Ritharngu, one of the Yuulngu languages; this language-pair will be very important for us because of the fact that the two are separated in genetic terms by a tremendous gulf. Ngandi is also in contact with other prefixing languages such as Ngalakan, Nunggubuyu, and Warndarang. Nunggubuyu, for its part, is in contact to some extent with Ritharngu, but also with Dhay?yi, another Yuulngu language. It also adjoins Ngandi and Warndarang on the mainland, and is separated from Enindhilyagwa speakers on Bickerton Island by only a short expanse of sea which can be crossed by boats. We will be very interested in the relationship of Nunggubuyu to Warndarang, since the two are in contact but have a moderately distant genetic relationship within the context of the prefixing group as a whole.

6. DEMOGRAPHY AND INTERMARRIAGE⁷

Map 2 indicates the approximate geographical position of each language group, but does not tell us which groups interacted socially with which others. As it turns out, some geographically close groups had rather little to do with each other, while other groups interacted and intermarried frequently.

One important distinction which the Aborigines make is between 'bottom' (coastal) people and 'top' (inland) people. The Dhay?yi, Nunggubuyu, Warndarang, and Mara are basically bottom people, while the Ritharngu, Ngandi, Ngalakan, and Alawa are top people. Some of the most important social contact was between groups of bottom people (for example, Nunggubuyu and Warndarang), or between groups of top people (for example, Ngandi and Ritharngu).

⁷For a study of genetic variation among some Aboriginal groups, including the Nunggubuyu and others in Arnhem Land, see V. Balakrishnan, L.D. Sanghvi, and R.L. Kirk, *Genetic Diversity among Australian Aborigines*, Canberra: Australian Institute of Aboriginal Studies, 1975. Unfortunately, it is difficult to correlate such human biological results with ethnographic and linguistic data since some language groups are not dealt with in the former. Moreover, the 'tribal' groups which are used as the units of investigation in such works as that just cited are not described in detail. Even to the extent that such tribal groups are a valid unity, with groups like the 'Nunggubuyu' it is important to distinguish the original clearly Nunggubuyu-speaking clans from those which have lost another Aboriginal language and have thus been absorbed into the 'Nunggubuyu' group. Almost half of the people now officially classified as Nunggubuyu, for example, belong to clans which originally spoke other languages as their principal medium of communication.

Thus, quite aside from the abundant evidence that Ngandi and Ritharngu have undergone much mutual diffusion of linguistic features, there is independent ethnographic attestation to the close relationship between the two. A long text by a Ngandi narrator describing the present and past state of Aboriginal ceremonial activity in the area, which will be published in my volume on the Ngandi language, refers constantly to associations between the two groups. He tells how various Ritharngu-speaking clans used to come together with Ngandi clans to hold ceremonies, which in many cases lasted for months at a time. Very little mention is made of Nunggubuyu clans, though the Warndarang are briefly mentioned.

My Ritharngu informants likewise emphasised their close connection with the Ngandi. The Ritharngu, like other Yuulngu groups, have an elaborate ideology of linguistic relationships not found in the groups to the south. Each clan (*maṭa*) is assigned a particular dialect, so that the natives do not usually speak of the Ritharngu language as a whole (covering several *maṭa*, including the *wa:gilak*, *maḍarpa*, etc., as well as the *riṭarngu* proper); rather, they speak of the *wa:gilak* language and so forth.⁸ These dialects were assigned by the dreamtime cult totems, and are inherited patrilineally as part of clan identity.

Moreover, there are myths which account for special relationships among various *maṭa*, even those which speak quite different languages (in the linguist's sense). Thus I have recorded myths where two dreamtime beings belonging to different *maṭa* (for example, *maḍarpa* and *ḍaḷwaṅu*, the latter belonging to the Dhay?yi group) came together and exchanged linguistic rights, so that the present *maḍarpa* people have a secondary right to use the *ḍaḷwaṅu* language and vice versa.

I did not obtain such a myth specifically linking the Ritharngu with the Ngandi. However, I was told by a reliable *maḍarpa* informant (a native Ritharngu speaker) that the Ritharngu, Ngandi, and Rembarrnga were 'company' (that is, had close associations), and that therefore he had no trouble understanding Ngandi and Rembarrnga whereas he could not understand Nunggubuyu or Warndarang. In this native theory it is clear that social interaction, especially when 'chartered' by myth, directly determines multilingual patterns. Ideally, one does not have to learn languages, one inherits them, and this applies to second and third languages as well as to one's native language. Multilingualism is considered to be not a chance by-product of interaction, but rather an aspect of social relationships.

⁸The term 'clan' has been applied in various ways to the Yuulngu group (including the Ritharngu). I am applying it here to the group called *maṭa* in the Yuulngu languages; this is a conceptually salient grouping with important ritual functions, etc., and is associated with a 'dialect' in the native theory. More inclusive groups are the moieties and weakly developed 'phratries' resembling semi-moieties to the south, as described in various papers by Warren Shapiro. There are also groups often smaller than the *maṭa* clans, sometimes called *mala* or *ba:puru* (these are loosely defined terms generally meaning 'group'), which may be the important units for subsistence, marital alliances, etc. These small groups have sometimes been called 'clans' in the anthropological literature, but I will not deal with them here.

As for the Nunggubuyu, it is clear that their most important relationships were with the Warndarang. Several clans which once spoke Warndarang as their primary language have now been absorbed into the Nunggubuyu language group, centred at Numbulwar Mission, and since these people (unlike the Yuulngu groups to the north) do not equate language with clan identity there is no longer any clear consciousness of belonging to the Warndarang 'tribe'. The only way I could find out which language was probably once spoken by a given clan was to ask the oldest living man what his father's primary language was.

The ceremonial life of the Nunggubuyu indicates the extent of dependence on the Warndarang. Not only has the Gunabibi ritual spread north throughout Arnhem Land from the Roper River area via the Warndarang, but the circumcision ceremony has also spread to the Nunggubuyu from the same direction. The Warndarang (and Mara) are recognised by the Nunggubuyu as being the 'bosses' for the circumcision ceremony (Warndarang *mandiwa*, Nunggubuyu *mandiwala*), and whenever possible the Nunggubuyu invite Warndarang men to officiate at the ceremony. In other ceremonies, including the Gunabibi, the Nunggubuyu are fairly self-sufficient, and the Warndarang have no significant ceremonial dependence on the Nunggubuyu.

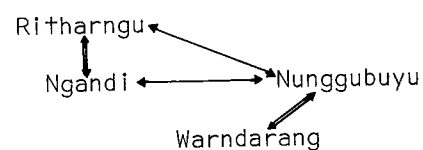
Nunggubuyu informants describe the former relationship between the two groups as generally friendly and close. On the other hand, the Ritharngu were traditional enemies. This is not to say that there was no contact; it is clear that there was some intermarriage, some joint participation in ceremonies, and some trading (for example, stone spears were manufactured by the Ritharngu and traded to the south, in exchange for items such as hook spears made by the Nunggubuyu or Enindhilyagwa). However, there was less interaction between the Nunggubuyu and Ritharngu than there was between the Nunggubuyu and Warndarang.

The Nunggubuyu had a somewhat ambivalent relationship with the Enindhilyagwa. There was a fair amount of contact with Enindhilyagwa speakers on Bickerton Island. However, there was little direct contact with Enindhilyagwa speakers on the more distant Groote Eylandt, and when the Nunggubuyu and Enindhilyagwa were together on Groote Eylandt (about 25 years ago, before Numbulwar Mission was built for the Nunggubuyu) there were so many fights that the Nunggubuyu were forced to leave.

The Nunggubuyu have little to say about their relationship with the Ngandi. The latter seem to have had slightly more social contact with the Warndarang than with the Nunggubuyu.

Therefore the contact relationships of special importance for us are those shown schematically in Figure 3.

FIGURE 3



Note: especially close relationships are shown with a double line.

The average population of language groups in this area was on the order of 150 to 200. The present figure for the Nunggubuyu is nearly 300, but this includes some formerly Warndarang clans which have been absorbed, and also reflects recent population increases. The Nunggubuyu were never depopulated by massacres or epidemics. Counting only the four (or five) original Nunggubuyu clans, the population for this language group was probably between 150 and 200 before European contact.

The Warndarang population is more difficult to assess since this language group has been scattered to a much greater extent than the Nunggubuyu. This is because the Warndarang were affected by the establishment of cattle stations just south and north of the Roper River, as well as the establishment of Roper River Mission (now Ngukurr settlement), which date back to the twenties. However, I would estimate the original Warndarang population at about 150 to 200.

Ngandi, on the other hand, was spoken by a relatively small population. Whereas the Nunggubuyu, Warndarang, and Ritharngu each included four or more clans of fairly good size, the Ngandi group consisted basically of three fairly small clans. A population estimate is difficult since the Ngandi, like the Warndarang, have been scattered for some time. However, a pre-contact population on the order of 60 or 70 persons seems reasonable.

The population of the Ritharngu group is difficult for me to estimate, mainly because I had contact with only a small proportion of it. It is apparent that the Ritharngu are a relatively large group, perhaps on the order of 300 or 400. At any rate, the Ritharngu are a larger group than the Ngandi.

Of the languages less directly involved in this work, we may indicate that the Mara and Alawa seem to have had the same general population size (that is, around 150). Somewhat higher figures may have held for the Ngalakan, Ngalkbon, and Rembarrnga, although I have no reliable figures for these groups and have not contacted them personally. To the north, the Dhay?yi seem to be a fairly large group numbering several hundred. The Enindhilyagwa group is also quite large, probably exceeding 1000 speakers.

Our principal languages (Ritharngu, Nunggubuyu, Warndarang, Ngandi) consist of approximately four or five patrilineal clans each. The average size of a patrilineal clan is about 40 persons, though among the Yuulngu languages this figure may occasionally be much higher (several hundred).

The Ritharngu, Ngandi, and Nunggubuyu have named patrimoieties which are strictly exogamous. The most common marriage is with a classificatory matrilineal second cousin (MMBDD), though alternative marriages such as with FZDDD are also allowed. Because of moiety exogamy and various genealogical restrictions, it is often difficult to find a spouse within one's own language group.

The Warndarang and Mara have named patrilineal semimoieties, called in Warndarang *murunjun*, *mambali*, *wuyal*, and *buḍal*. The first two correspond to the *du:wa* moiety in languages to the north, while the final two correspond to *yiriča*. Despite the terminological differences between the Warndarang and Mara on the one hand and the more northerly prefixing languages on the other, the basic marriage rules are essentially the same.

Under these conditions it was obviously impossible to insist on language-group endogamy. Indeed, I have found no evidence that there is or was any particular normative preference for such endogamy. The language group has no significant political or ritual functions as such, consisting merely of a number of clans which tended to congregate together during part of each year. Particularly in the case of a small language group such as the Ngandi it would have been impossible to avoid a large proportion of interlinguistic marriages.

At this late stage it is unfortunately difficult to produce statistical data on the rate of interlinguistic marriage. The Warndarang and Ngandi have been scattered by European contact since no later than 1920. Although the Ritharngu and Nunggubuyu maintained an approximately traditional existence until around 1950, the very fact that the Ngandi and Warndarang had been affected by post-contact demographic conditions since 1920 had an effect on intermarriage between them and the Ritharngu and Nunggubuyu.

The settling of Aboriginal groups in various missions and settlements, often not corresponding to traditional tribal groupings, has had a major impact on marriage patterns in recent decades. This can largely be attributed to the fact that the groups which have come together at the settlements have in many cases been groups which originally would have had little contact with each other. In addition, the entire system of wife bestowal (and mother-in-law bestowal) has been curtailed under European (including mission) influence.

Nevertheless, it is apparent that interlinguistic marriage in this area is not only common now, but has always been common. Many of the oldest Nunggubuyu men I worked with, for example, had mothers from other language groups (especially Warndarang).

For a small group like the Ngandi, consisting as it did essentially of three small clans, intermarriage with other language groups was especially frequent. Even if there had been an ideological preference for marriage within the language group, demographic vicissitudes and the like would have forced Ngandi men to obtain non-Ngandi wives in a large percentage of cases — and there was no such preference to begin with.

Indeed, in some language groups exogamy has become institutionalised. This applies particularly within the Yuulngu family, where (for example) one large language group, the Dhuwal, consists entirely of clans of the *du:wa* moiety (now totalling more than 1,000 persons). Since intra-moiety marriage was never tolerated, this means that every Dhuwal man had to find a wife from another language group, and hence every Dhuwal child had a non-Dhuwal mother. Other Yuulngu languages show similar imbalances, though not to this extreme extent; the Dhay?yi group includes a large clan of the *yiriča* moiety and a much smaller *du:wa* clan, while the Ritharngu also have more *yiriča* than *du:wa* members.

Each language group corresponded to a group of clans which tended to congregate together during a portion of the year. The most favourable time for congregating was toward the end of the dry season, when large swamps are drying up. These swamps provide abundant vegetable food at this period; the sedge *Eleocharis dulcis*, for example, has edible corms which can be collected en masse. The Nunggubuyu clans

used to come together during the end of the dry season in the general area of the *wurindi* swamp; the Warndarang often congregated at a place called *maņajara* near the Phelp River; for the Ngandi the most common meeting place was *warpani*; I do not know for sure where the Ritharngu congregated, but the places named *du:ñji*, *buņđulum*, and *nuruņupal* have been mentioned as important areas.

Typically, major ceremonies were held during these congregations. There was considerable mobility in the area, and the men organising a ceremony often invited clans from other language groups to attend. Thus the Nunggubuyu and Warndarang often got together, as did the Ngandi and Ritharngu. The constitution of these larger gatherings was not fixed, so that on occasion the Nunggubuyu might attend a ceremony in the Ritharngu area, and so forth. Thus in this area there was considerable social interaction among the various language groups. This naturally facilitated the arranging of interlinguistic marriages.

As generally in Australia, the wife usually joined her husband's group, so if a Ritharngu woman married a Nunggubuyu man she would go to live with the Nunggubuyu. It was thus often the case that a child would grow up as a member of language group X, but with a mother whose native language was Y. In this event the child would normally learn both languages well. He might begin by learning the mother's language, but would also acquire the father's language at an early age. As the child grew up and became a functioning member of his language group, he would naturally tend to use his father's language most, since this was also the language of most other members of the community. Among the Yuulngu groups, including the Ritharngu, this pattern was reinforced by a strong normative insistence that the child use his father's language as his principal medium of communication, at least after a certain age.

Despite this, the individual would always retain a special secondary identification with his mother's language. Although descent is patrilineal, a male EGO has important rights and duties *vis-à-vis* his mother's clan. In ceremonies, for example, men of clan A cannot paint their own totemic designs on their bodies. Instead, men of other clans (B, C, etc.) whose mothers are in clan A perform this duty. Thus a man must devote considerable time in his ritual training to learning the totemic designs for his mother's clan. The term *jungay*, translated 'lawyer' or 'manager', describes a man's status *vis-à-vis* his mother's clan. There are many other ramifications of this relationship outside the narrow area of ritual obligations; major political decisions made by clan A are typically made in consultation with the *jungay* group.

As a result, a man (to a lesser extent, a woman) has a lasting relationship with his mother's clan and thus has many occasions to speak its language. In the Yuulngu group, although EGO must use his father's language as his primary medium according to the norm, he also has a special secondary right over the language of his mother's clan. Since each clan ideally has its own language (despite difficulties in reconciling this with the linguistic reality as observed by the linguist), in the Yuulngu group the mother's clan's language is always considered to be distinct from the father's clan's language, so EGO is **always** normatively bilingual.

It is no longer possible to observe the actual dynamics of bi-

lingualism (code-switching, etc.) under traditional conditions. The settling of various Aboriginal groups in settlements and missions (the most recent of which was established in 1952), and the varying fates of the different languages, have completely altered the original situation. Warndarang is extinct as of 1974, Ngandi is now spoken only by a small number of old and middle-aged persons, while Nunggubuyu has become the standard language at Numbulwar Mission (assimilating some Warndarang clans and a few Ngandi). There is still a fair amount of intercommunity marriage, but in cases where the spouses have different languages there is a strong tendency to use English or Pidgin English as the medium.

It should be emphasised that the diffusion described in this work is not the result of these post-contact disturbances. My Warndarang informant (an old man who died in 1974 at the age of around 70) grew up under approximately traditional conditions as a young boy, but then spent much of his life in cattle stations south of the Roper River. He had much contact with Mara and Alawa speakers, but little with Nunggubuyu speakers during most of his life. Thus the fact that the language shows considerable diffusion from Nunggubuyu indicates that the interference in question was pre-contact. Even though this man was the last Warndarang speaker, he knew the language well and was able to remember obscure paradigms and to give lengthy narrative texts in the language. The very fact that Warndarang had not been in use as a vernacular for 30 years or so before my work with this man probably preserved the language in archaic form instead of resulting in the extensive innovations characteristic of gradual 'language death' in situations where a language is still spoken to some extent.

Similarly, though only a few good speakers of Ngandi remain there can be little doubt that the material I collected was an authentic indication of pre-contact Ngandi. My informants were quite fluent, and there is no indication whatsoever that any important structural borrowings from Ritharngu have occurred in the post-contact period. Nunggubuyu and Ritharngu are viable vernaculars and it can hardly be seriously suggested that either has borrowed from declining languages like Ngandi and Warndarang in recent decades.

This situation contrasts with what is found in some other parts of Australia (for example, parts of Cape York Peninsula), where I am told that some languages and dialects are half-remembered by a few informants who have trouble keeping them apart, so that what the linguist obtains may be a *mélange* of a noun from one language, a verb from a second, and suffixes of a third. This mixing is facilitated not only by the fact of language death, but also by the original similarity among the languages or dialects. In Arnhem Land, on the other hand, not only did I have fluent informants, but the languages are sufficiently remote genetically, and disparate in terms of morphological structure and the like, that recent artificial mixture cannot be taken as a real possibility. The most I will concede is that a very limited amount of recent lexical borrowing (which is outside the scope of this work) may have taken place, especially Ritharngu loans into Ngandi. I emphasise these points so that other Australianists working in less favourable field situations will appreciate that my own situation was much better and that the data dealt with in this work cannot be dismissed as reflecting recent mixing under artificial post-contact conditions.

We may summarise the demographic background as follows. In this part of Arnhem Land a language corresponded basically to a group of patrilineal clans which assembled annually toward the end of the dry season for ecological reasons and in order to hold major ceremonies. There was extensive intermarriage among language groups. There was a fair amount of interaction (especially between the Ritharngu and Ngandi and between the Nunggubuyu and Warndarang) on ceremonial occasions, but in general each language group lived apart, and during the wet season and early dry season the economic and residential unit was the clan or a smaller unit, which of course was a subset of the language group. Exposure to second and third languages was thus primarily through the women who joined the clan as spouses (and later, mothers). The average population for a language group was between 150 and 200 persons, with Ngandi the smallest and Ritharngu probably the largest.

7. AIMS OF THIS STUDY

The goal of this study is to identify and describe a large number of instances of diffusion, direct or indirect, of various aspects of linguistic structure. It is thus fundamentally a case study rather than a general treatise on areal linguistics. However, I will attempt to raise a number of general issues on which the present data have some bearing, and will also discuss a number of methodological points.

Diffusion among the languages in question is not a recent phenomenon. Such reconstructed proto-languages as PNgNu and Proto-Yuulngu show some similarities which suggest that diffusion between them had already taken place. However, for methodological reasons we will concern ourselves mainly with recent diffusion postdating these intermediate proto-languages. By carefully examining a number of instances of demonstrable diffusion, under conditions where we can compare the resulting structure to a prior reconstructed structure, we can put ourselves in a good position to comment on the actual historical processes involved. This is methodologically more satisfactory than merely listing synchronic similarities.

This study presupposes basic comparative reconstruction within each relevant family, although only a portion of this reconstruction will be presented here. The Yuulngu material available to me permits reconstruction of the basic phonological and morphological systems of Proto-Yuulngu, and some of its syntax can also be recovered. This allows us to identify a number of significant innovations in the development of Ritharngu. Similarly, PNgNu can be reconstructed by applying the comparative method to Ngandi and Nunggubuyu, with some problematic matters resolved by wider comparison to other prefixing languages like Ngalkbon. The reconstruction of PWaMaI is less straightforward, since not all descriptive facts on Mara are clear at this point, since all three attested languages seem to have innovated extensively in morphology, and since the time-depth separating them from the proto-language is considerable. However, a number of basic features of PWaMaI can be reconstructed at this point. Therefore for all four of our principal languages we can trace a development from a reconstructed ancestor to the attested language.

This development consists of a combination of internal processes such as all languages undergo through time — phonological changes, analogical restructurings, semantic shifts, etc. — and changes induced by contact with neighbouring languages. In most cases **direct** diffusion, where a word or morpheme from one language is borrowed into another, is easy to identify. However, diffusion can also take an **indirect** form, where one language readjusts its own inherited morphological material in such a way that it moves closer to the neighbouring language structurally. There is no sharp boundary between this indirect diffusion and the usual internal structural changes brought about by analogy, etc. Some phonological and morphosyntactic changes seem to have been due to diffusion, but only at a rather abstract level.

Our object, then, is to detect phonological and morphosyntactic diffusion of both the direct and indirect varieties, and to draw whatever generalisations about them seem possible. In the case of direct borrowing of grammatical morphemes, we want to know whether particular kinds of morphemes but not others have been diffused, and if so we want to know what factors are relevant to this discrepancy. In the case of indirect diffusion, the most important question is to what extent it results in highly specific structural convergence and to what extent it operates on a more general, less tangible level. That is, do we end up with exact structural isomorphism (that is, one-to-one linear intertranslatability of morphemic strings from one language to another), or less specific parallelism? Does the diffusion primarily involve formal patterning (for example, order of elements), or the overall information content of surface structures? For many such questions a satisfactory answer is possible.

In addition to such theoretical questions, however, we will concentrate on developing a methodological framework adequate to the task of handling a Sprachbund where substantial diffusion of grammatical morphemes has occurred. We want to be able to distinguish diffusional sharings from retentionistic ones, in view of the fact that all four languages in question are ultimately genetically related. Moreover, when a diffusional explanation is decided on we still need techniques for determining the direction of the diffusion.

Fortunately, the basic comparative research which has been done within each family provides historical depth which facilitates decisions on these questions. For example, suppose that we have a language family X with daughter languages X_1 , X_2 , and X_3 ; and another family Y with daughter languages Y_1 , Y_2 , and Y_3 . We reconstruct Proto-X and Proto-Y using standard comparative techniques, and find that a morpheme M_1 is reconstructable for Proto-X in function F (for example, ergative case suffix). We can show that M_1 did not occur in Proto-Y; the best way of doing this is to show that some other morpheme M_2 is reconstructable for Proto-Y in the same function F. However, M_1 does occur in Y_1 , which is in close contact with X_1 and which has borrowed other morphemes from it. This strongly suggests that Y_1 has borrowed the morpheme from X_1 , or possibly one of the other languages in the X group.

It may be possible to clearly specify X_1 (rather than X_2 or X_3) as the source of the borrowing. Suppose the Proto-X form of M_1 was $*-ga$, and its reflexes in the daughter languages are $-ka$ (X_1), $-wa$ (X_2), and

$-a$ (X_3). If the form taken by M_1 in language Y_1 is $-ka$, we can be fairly sure that Y_1 borrowed the morpheme from X_1 after $*-ga$ became $-ka$ in this language.

This example is oversimplified and perhaps gives an unrealistic impression of absolute methodological rigor. Nevertheless, it does give an idea of how important the basic comparative background is for any worthwhile study of morphological diffusion.

However, this method is not always applicable. In addition to it, I suggest, we need to develop an explicit method of internal reconstruction similar to that used in historical (especially Indo-European) linguistics, but adapted to fit a diffusional study rather than the study of internal analogical processes. In particular, we want to be able to determine the relative antiquity of shared morphemes in different languages where there is a possibility of diffusion. Thus if M_1 is a morpheme found in languages X_1 and Y_1 , but not in other members of either the X or Y groups and not reconstructable for Proto-X or Proto-Y, we can be fairly sure that diffusion has taken place but we have no comparative evidence bearing on the directionality problem. This may also be the case in dealing with two languages (for example, Ngandi and Nunggubuyu) which are subgrouped together but may also have undergone diffusion since their breakup. If, in the case of X_1 and Y_1 , we can show by internal reconstruction that M_1 is likely to be relatively archaic in X_1 and shows no evidence of being archaic in Y_1 , then we can conclude that X_1 was the probable source language and Y_1 has done the borrowing. Internal reconstruction of this type involves consideration of irregular allomorphic specialisation, unusual functional specialisation and/or restrictions, degree of integration into the morphosyntactic system, and the like.

Thus it should be possible to develop a rigorous methodology for handling direct diffusion of grammatical morphemes. As for indirect diffusion of phonological and morphosyntactic patterns, we have the problem that the developments in question apply to inherited rather than borrowed morphological material, and that the **kinds** of changes which have taken place are often identical to the kinds of changes which are well-attested in Indo-European and other language families where diffusional pressures have played little or no role. Thus the decision whether to claim that a given 'internal' development in Y_1 phonology or syntax has been in some indirect fashion stimulated or triggered by contact with X_1 is not an easy one to make.

What I will try to do in such cases is give a general overview of the various innovations which a given language has undergone since its split from the most recent proto-language. If it can be shown that a considerable proportion of such developments result in convergence on some level of analysis with neighbouring languages, then a strong case can be made for a diffusional explanation of the overall set of changes, and hence for any individual change. On the other hand, if only a small proportion of the developments bring about such structural convergence, we have no right to interpret any individual instances as of diffusional origin. The only exception would be that a particularly unusual development (say, the creation of an uncommon category, such as the originative case category to be described in a later chapter) would require a diffusional explanation if a similar pattern is found in a nearby language.

Thus this work, if successful, will be of some methodological value particularly for the study of diffusion under demographic conditions such as those described above; admittedly, these conditions are rarely met with outside of coastal Australia. The work will also hopefully be of value to general areal linguistics as a case study of what can happen under these peculiar demographic conditions. Because we will be able to document direct morphological diffusion of a kind rarely found except in dialectological contexts, we will be in a uniquely favourable position to observe general tendencies for this kind of diffusion. We can ask, and in many instances answer, specific questions concerning the nature of the phonological, morphological, and semantic factors which determine what kinds of direct morphological diffusion are possible.

Chapter 2

PHONOLOGY

1. PRELIMINARIES

It may be useful to begin with a brief survey of some of the literature on phonological diffusion. For Meillet, the champion of the comparative method in historical linguistics, diffusion was limited to the area of vocabulary, while phonology and morphosyntax formed 'closed systems' which resisted mixture.

La prononciation et la grammaire forment des systèmes fermés; toutes les parties de chacun de ces systèmes sont liées les unes aux autres. Le système phonétique et le système morphologique se prêtent donc peu à recevoir 'des emprunts'.

Au contraire, les mots ne constituent pas un système; tout au plus forment-ils de petits groupes ...; chaque mot existe pour ainsi dire isolément. Aussi peut-on emprunter à des langues étrangères autant de mots que l'on veut; il suffit qu'une langue étrangère ait un prestige ... pour que les emprunts se multiplient.⁹

However, when Meillet said that pronunciation is not diffusible, he was talking about indirect diffusion, where speakers of one language modify the pronunciation of their own inherited words to imitate pronunciation patterns in the other language. Meillet was well aware that when words are borrowed, they may introduce phonemes which did not originally occur in the borrowing language. Thus Meillet's position was that phonological diffusion is the result of direct diffusion of vocabulary rather than the result of indirect diffusion by imitation.

Some members of the Prague school devoted considerable attention to phonological processes associated with lexical borrowing. Some of

⁹A. Meillet, 'Le problème de la parenté des langues'. In *Linguistic historique et linguistique générale*, vol. 1, Paris 1921, p.84. Originally published in 1914.

the most important work was done by Jakobson, who studied the areal distribution of consonant palatalisation and of accent systems in Europe. Jakobson also suggested a number of generalisations which grew out of the structural phonological analysis which he, Trubetzkoy, and others were in the process of developing. Jakobson stressed the importance of the adaptation process by which words from one language were converted into phonological strings which were acceptable in the borrowing language.

La solution la plus simple, et, semble-t-il, la plus usitée, est celle qui consiste à adapter les mots d'origine étrangère aux lois de la structure indigène.¹⁰

Moreover, even when languages undergo some phonological changes due to an influx of loanwords, these changes are likely to be those which are relatively natural given the pre-existing structure, while more severe restructuring is blocked.

La langue n'accepte des éléments de structure étrangers que quand ils correspondent à ses tendances de développement.¹¹

Thus the borrowing of vocabulary was not viewed as a simple mechanical process, but as dependent in a complex fashion on the structure of the source language and especially of the borrowing language. Structural factors determined the receptivity of the borrowing language to particular features in the source language.

Some attention was paid by the Prague school linguists to a variety of social and cultural factors in vocabulary borrowing. Jakobson, for example, noted that loanwords could be fully integrated into the borrowing language and thus no longer distinguishable from inherited vocabulary, or they could be still recognised by speakers as basically foreign words. In the latter case, phonological peculiarities of the loanwords did not affect the basic phonological system of the borrowing language; there was one system for inherited vocabulary, another for foreign words.¹² It was only when such loanwords became an integral part of the lexical stock of the borrowing language that they could bring about reinterpretation of phonological systems.

Ainsi nous voyons que les emprunts par eux-mêmes ne modifient pas la phonologie propre de la langue: ce n'est que leur assimilation qui est capable d'y introduire des éléments nouveaux.¹³

¹⁰R. Jakobson, 'Sur la théorie des affinités phonologiques entre les langues'. In Jakobson, *Selected Writings*, vol.1, The Hague 1962, p.240. Originally published in 1938, revised French edition published 1949.

¹¹*Op. cit.*, p.241.

¹²The term 'synchronically foreign words' has been applied to such cases by J. Vachek, 'On the Interplay of External and Internal Factors in the Development of Language', in B. Malmberg, ed., *Readings in Modern Linguistics*, Stockholm 1972.

¹³Jakobson, *op. cit.*, p.240.

Moreover, phonological idiosyncracies of different languages could acquire conscious symbolic value for their speakers; one group might feel proud of its own phonetic patterns and ridicule those of a nearby language.

A particularly interesting remark was made by V. Mathesius, another member of the Prague school, who observed that loanwords could be systematically kept apart from native vocabulary by retaining, and even generalising, phonetic peculiarities of the former, so that two coexisting systems result. When loanwords show such special features,

... on peut ordinairement constater que le son dont il s'agit ne participe pas aux différences phonologiques et, partant, n'appartient pas au système phonologique. Le changement de k en g, surtout au voisinage de liquides, qui se produit en tchèque populaire uniquement dans les mots étrangers (par ex. *krém, cirkus, bicycl, balkon, plakát*), alors que dans les mots autochtones k demeure dans toutes les positions — à l'exception de la prononciation de mots *kdo, kde, kdy* — une pure sourde (comp. avec les mots étrangers cités ci-dessus les mots tchèques suivants: *krev, pírkó, vyníki, pálka, plakát*), montre bien qu'il existe une sorte de conscience d'une différence entre les éléments indigènes et étrangers.¹⁴

Martinet, though recognising a range of cultural and prosodic factors in phonological change, focused his attention on the analysis of the conflicting structural, functional, and economising factors inherent in particular phonological systems, believing that many phonological changes could be largely explained on the basis of such internal considerations. He inclined toward internal explanations wherever possible, having recourse to diffusional explanations only where no such internal one was available.

Un examen de l'économie du système de la langue où se produit le phénomène étudié pourra souvent permettre d'établir si ce phénomène est dû à une évolution purement locale que justifie pleinement le contexte structural, ou si l'on doit penser au résultat d'interférences parce que le changement ne paraît guère avoir trouvé d'appui dans le système où on le constate.¹⁵

Similarly, Sapir recognised that phonological diffusion was possible, and its implementation not limited to the diffusion of vocabulary, but insisted that such interference was highly constrained by the 'native drift' (that is, inherent developmental tendencies) of the borrowing language.

The result [of 'unconscious stimulus' from language A of a phonological change in language B] would be that both A and B have an important phonetic trait in common. Eventually their phonetic systems, judged as mere assemblages of sounds, might even become

¹⁴V. Mathesius, 'La structure phonologique du tchèque moderne', *Travaux du Cercle Linguistique de Prague* 1(1929), p.68.

¹⁵A. Martinet, *Économie des changements phonétiques*, Berne 1955, p.194.

completely assimilated to each other, though this is an extreme case hardly ever realised in practice. The highly significant thing about such phonetic interinfluencings is the strong tendency of each language to keep its phonetic pattern intact. So long as the respective alignments of the similar sounds is (*sic*) different, so long as they have differing 'values' and 'weights' in the unrelated languages, these languages cannot be said to have diverged materially from the line of their inherent drift. In phonetics, as in vocabulary, we must be careful not to exaggerate the importance of interlinguistic influences.¹⁶

The linguists whom we have cited above are in general agreement that diffusion is a relatively minor factor in phonological change. Phonology is viewed as a closed system, or at least as a highly integrated structure which cannot easily accommodate foreign intrusions. Much of what appears at first sight to be phonological diffusion turns out on closer inspection to be the product of independent drift in the languages involved.

As far as the actual mechanism of phonological diffusion, the authors we have quoted emphasise the importance of direct diffusion of lexical items. The notion of indirect diffusion, whereby a language develops new pronunciation patterns which bring it into line with patterns in a nearby language, and applies these new patterns to its own inherited lexical and morphological material, is adumbrated briefly in some of these authors' works, but is not formulated very precisely or exemplified adequately.

This suggests certain lines of inquiry which can be applied to the Arnhem Land situation. We want to determine to what extent phonological systems have been modified by diffusional pressures, and to what extent the diffusion has been direct or indirect. In the case of indirect diffusion, we would also like to know whether the diffusion has been concrete and highly specific, so that the resulting systems are essentially identical across language boundaries, or whether diffusional pressures have been only one of several sets of factors which have interacted in a complex fashion so that only certain aspects of the resulting structures are identical.

We might also consider the possible contribution of generative phonology to phonological diffusion. This approach views phonological systems, not in terms of surface patterning, but in terms of a collection of transformational (rewrite) rules converting nonsurface representations at various levels of abstraction into progressively more concrete surface representations. Over the years, generative phonologists have gradually retreated from their earlier position that the formal statement of rules goes to the heart of phonological dynamics (synchronically and diachronically). In the last few years they have 'discovered' paradigmatic levelling, recognised that overly abstract analyses are difficult to reconcile with historical change, and conceded that the status of a rule is largely dependent on its concrete

¹⁶E. Sapir, *Language*, New York 1939, p.201.

surface manifestation (hence Kiparsky's notion of 'rule opacity').¹⁷ In other words, generative phonology has been slowly but surely converging with traditional, surface-oriented phonological analysis, though it still prefers to think in terms of rules rather than surface alternations as such whenever this has any possibility of (appearing to) account for the facts.

For the purposes of this work we want to ask whether considering phonological systems as sets of rewrite rules helps us to understand the phonological diffusion which has taken place in the area. For example, have phonological rules **as such** been diffused? If so, what was the historical mechanism underlying this transfer?

2. LEXICAL DIFFUSION

Since I hope to produce a study of lexical diffusion in the area at a later date, I will merely outline its approximate extent here in order to give an idea as to the role of lexical borrowing in phonological diffusion.

The genetic relationships among the languages, especially between the Yuulngu and prefixing groups, are sufficiently remote that we would expect few cognates to occur. There are only about twenty noun and verb stems which are sufficiently widespread in Aboriginal languages to have any chance of being reconstructable for CA. A fair number of these are monosyllabic *CV- verb stems like *bu- 'to hit, to kill'. There are also some noun stems like *maran 'hand' which occur widely, but in almost every such nominal example there are limits to its geographic distribution or other problems which make CA reconstruction uncertain.

The prefixing and Yuulngu groups are genetically distant, and it is probable that the two have come together at some relatively recent period due to migrations. Aside from a small stock of shared retentions from CA, then, vocabulary sharing involving the two groups can only be accounted for as the result of recent diffusion. In fact, we find that Ng and Ri share a very high proportion of noun and verb stems, on the order of 50 per cent of all items attested (around 1,300 items for each language).¹⁸ Even 'core' vocabulary such as is often used in glottochronological investigations has been diffused rather freely. For example, let us consider body-part terms (including terms for bodily substances and secretions), a domain usually rather resistant to borrowing. Of about 70 such terms attested for Ng, eighteen are clearly shared with Ri: shoulder blade, nail, body hair, scrotum, ankle, mouth, flesh, tongue, skin, sinew, wrist, rib, heel/foot, elbow,

¹⁷P. Kiparsky, 'Historical Linguistics', in W.O. Dingwall, ed., *A Survey of Linguistic Science*, College Park, Maryland 1971, pp.621-22.

¹⁸The four major languages will be henceforth abbreviated as Nu (Nunggu-buyu), Ng (Ngandi), Ri (Ritharngu), and Wa (Warndarang). Names of other languages will not be abbreviated, so that 'Ng' will always refer to Ngandi, never to Ngalkbon or Ngalkan.

saliva, bone, navel, sweat. 'Tongue' could possibly be a retention from CA, but I doubt it, and the others are clearly due to recent, local diffusion. The phonological divergences are mainly expectable ones involving slight changes in vowel length and quality, and there are few semantic divergences.

In nominal domains generally, Ng has at least as many sharings with Ri as it does with Nu, though it is incomparably closer to Nu genetically. Some of the Ng-Nu sharings may be diffusional, but many are clearly common retentions from PNgNu, and show various internal phonological and semantic developments (especially in Nu) which show that recent diffusion cannot have been responsible.

Ng and Ri also show many sharings in their stock of verb stems. Some of these are old CA monosyllables like *bu- 'to hit, to kill', and since both languages show paradigmatic irregularities we must take these stems as common retentions from CA. However, even some monosyllabic stems with partly irregular paradigms have been diffused (for example, Ng -do-, Ri du:-, Nu -la- 'to chop').

Ng and Ri also share 100 or more verbs belonging to productive classes of thematic stems which can occur in uninflected 'root forms' serving as abbreviations of fuller forms, and which require a thematising suffix before inflectional suffixes can be added. The thematising suffix itself has been diffused from Ri (-du-, -yu-, etc.) to Ng (-du-), so the entire verb class (its thematising suffix, most of its stems, and its associated morphosyntax) has been borrowed into Ng. Presumably the stems have been borrowed in their simplest shape, the root form, and have then been rethematised independently in the borrowing language.

Because of verbs like these, Ng and Ri share more verb stems than do Ng and Nu. However, the closer genetic relationship between Ng and Nu is brought out by the fact that in other verb classes, which occur only in overtly inflected form and are thus less easily diffused, Ng and Nu share a number of verbs not found in Ri (for example, Ng -waki-, Nu -agi- 'to return'). These typically show internal phonological developments, and sometimes semantic specialisation (hence Ng -gopa- 'to hold', Nu -waba- 'to wrap up') which suggest common retention rather than recent diffusion.

'Cognate' percentages between Ng or Nu and Wa are not so high as between Ng and Ri, even though at least Nu and Wa have been rather closely related areally. I attribute this in large part to structural differences in verbal morphology.¹⁹ Whereas the common possession of a thematising process applying to verbal root forms facilitated diffusion of verbs between Ng and Ri, the considerable structural difference

¹⁹Meillet may be mentioned as one of the first linguists to stress the role of structural factors in inhibiting lexical diffusion:

La grammaire rend parfois les emprunts malaisés: une langue qui, comme le français, a des substantifs sans flexion, mais une conjugaison compliquée, emprunte volontiers des substantifs, mais relativement peu de verbes.

See Meillet, *op. cit.*, p.84.

between the Wa verbal system (based on verbal particles followed by inflected auxiliary verbs) and the corresponding Nu system (with directly inflected stems, most of which have no root form) prevented diffusion of verb stems between the two languages, so that the only sharings are a few old cognate monosyllabic stems (auxiliaries in Wa). Wa and Nu do share, however, a fair number of noun stems, particularly in such domains as flora-fauna, implements, and the like. There has been relatively little diffusion of 'core' nominal vocabulary between the two languages. The total amount of vocabulary sharing between Wa and Nu is far less than the very high figure for Ng and Ri.

Thus the significance of lexical diffusion as a mechanism for phonological change has been much greater in the case of Ng and Ri than in the case of Nu and Wa (or Ng and Wa). Since, as we will show below, Nu has been substantially affected phonologically by contact with Wa, we will have to explain this mainly in terms of indirect diffusion, whereby the pronunciation patterns of one language trigger convergent historical developments in the other.

I should add that I found little evidence for the systematic distinction between native and foreign vocabulary within any given language, along the lines suggested by the quotation from Mathesius in the preceding section. It is true that informants occasionally observed that particular words 'really' belonged to another language although they could be used in the informants' own language. However, in most cases this knowledge was not coded in the phonological form of the words, which was generally compatible with the sound pattern of the borrowing language. Rather, the knowledge was derived from familiarity with the source and borrowing languages and their cultural and environmental background. For example, if language A has three or four synonyms denoting a tree species, and one of the less common synonyms happens to be the common word for that species in another language B, speakers of A may regard their word as basically a B word. Or if languages A and B share a single word referring to a tree species which occurs primarily in the territory of the people speaking B, speakers of A may regard the word as belonging to B.

A possible exception is that Ri words with the vowels e or o (not part of the normal Ri vowel system) may be recognised as foreign on phonological grounds. However, such words are usually assimilated by converting the e or o into a Ri vowel (i, a, u), and if the word is at all common this is likely to happen. No systematic retention of foreign or pseudo-foreign phonological patterning such as reported by Mathesius for colloquial Czech has been observed.²⁰ Thus cultural

²⁰An exception is that Ri speakers do not seem to phonologically integrate terms for subsections (a type of 'marriage class' which the Ri and other Yuulngu groups have taken over from languages in the Katherine and Oenpelli areas), hence *gela*, *goçon*, etc.

It has been claimed by some anthropologists that the subsection system came into the Yuulngu group not from the Oenpelli and Katherine areas to the west and southwest, but rather from the Nunggubuyu to the south. That this is wrong is shown not only by the phono-

(Footnote 20 is continued on next page)

factors as such seem to have played little role in the phonological history of these languages.

3. NGANDI AND RITHARNGU

There has been rather little recent phonological diffusion between Ng and Ri, but this is mainly because Proto-Yuulngu and PNgNu were already basically congruent except in their vowels. The reconstructed consonantal inventory for both proto-languages, and for attested Ng and Ri, is as shown in Figure 4.²¹

FIGURE 4

p	t̪	t	t̠	ɕ	k
b	d̪	d	d̠	j	g
m	(ɲ)	n	ɳ	ɳ̃	ŋ
		l	!		
		r	ɾ		
w				y	ʔ

Interdental ɲ occurs in a number of high-frequency stems and morphemes in Ritharngu and other Yuulngu languages, but is generally restricted to morpheme-initial position. This consonant apparently did not occur in PNgNu; the only Ng example is a recent loan (maga 'heron sp.') from Nu.

In both proto-languages, fortis and lenis stops are distinct only intervocally and in the environment VS__V, where S is a nonnasal sonorant. In other positions only a single series occurs; on phonetic grounds I transcribe such neutral stops as lenis syllable-initially, as fortis syllable-finally.

In addition to the similarity in phonemic inventory, Ng and Ri share most distributional restrictions, and these can in nearly all cases be attributed to the proto-language as well. Thus no word-initial consonant clusters are permitted, and only certain word-final

Footnote 20 continued

logical forms of the terms, which include vowels and consonants not found in Nu, but also by the fact that the Nu do not have subsection terms (though they are aware that western groups have them, and have a general word ma:lg 'subsection, correct marriage classification').

²¹The columns are, from left to right, these: bilabial, interdental, apicoalveolar, retroflexed (apicodomal), laminoalveolar (like English palatoalveolars, but more fronted), and velar. The two rhotics are r, a flap (usually apicoalveolar), and ɾ, a retroflexed glide resembling American English ɾ.

clusters like lk are tolerated. Word-medial clusters are more numerous, and certain triple clusters such as rng are found. Even minor details of which clusters are permitted are usually the same in Ng and Ri. This is due, in part, to massive diffusion of actual lexical items.

There is one respect in which Ri diverges from the other Yuulngu languages but converges with Ng (and Rembarrnga). This does not involve the phonemic inventory as such, rather the distribution of glottal stops. In Ng, the glottal stop ʔ is found chiefly in morpheme-final position, especially at the end of noun stems and thematic verb stems.²² Examples are waʔanʔ 'hill coolibah tree', buruburuʔ 'nearby', bi!ʔ 'sharp point', etc. Final ʔ can follow a sonorant, but not a stop or another ʔ. In stems with final ʔ, this is clearly pronounced both word-finally and presuffixally.

On the other hand, in a Yuulngu language like Dhuwal final glottal stops are used more sparingly, particularly in noun stems (they are common in thematic verb stems, as in Ng). Case suffixes and the like cannot end in glottal stops. Words which end in an underlying glottal often omit it, so that the only reliable way to determine whether a noun stem, for instance, has a final underlying glottal is to examine its form with a suffix (for example, ɳaɳaliʔ-lil 'to the smoke', cf. suffixless ɳaɳali 'smoke').

Ri diverges from this Yuulngu pattern in several respects. First, as in Ng, when a stem ends in a final glottal this is clearly pronounced even in word-final position. Secondly, many suffixes which lack glottals in other Yuulngu languages show a final glottal in Ri, apparently showing a Ri innovation rather than an archaic retention (for example, Ablative -ɳuruʔ, Progressive -kuruʔ). In some cases, as with dyadic dual suffix -kaʔ with kin terms (ba:pa-kaʔ 'father and child' from ba:pa 'father'), the actual suffix has been borrowed from Ng (see Chapter 3, section 9), but in the case suffixes just mentioned the new glottal is attached to an old Yuulngu morpheme which has no cognates or close correlates in Ng.

In general, final glottals in noun stems are more common (as well as more rigorously pronounced) in Ri than in other Yuulngu languages, conforming to the Ng pattern. Compare, for example, Dhuwal manʔjar 'leaves' with Ri manjarʔ and Ng manjarʔ (same gloss); this shows that Ri and Ng share a preference for noun-final glottals and against stem-medial glottals, differing at least statistically in this respect from other Yuulngu languages like Dhuwal. Such Ri stems apparently reflect

²²Glottal stops also occur at the beginning of a few suffixes and postpositions like -ʔwaŋjiʔ 'like'. Rarely they occur stem-medially, as in -gurʔwar-du- 'to shoot'. In the suffix-initial instances the ʔ is always before a consonant, and the ʔ can be thought of as a kind of junctural element.

either straight borrowing from Ng, or at least repronunciation²³ of inherited lexical items on the model of Ng pronunciation.

Although in consonantism Ri and Ng have thus come to the point of complete convergence, their vocalic systems have remained divergent. Ng, like some other prefixing languages (Rembarrnga, etc.), has a five-vowel system with i, e, a, o, u. There is a length contrast, but the total number of stems with long vowels is around a dozen; this list includes a couple of loanwords like ba:guru 'armband' (from Nu), and some monosyllables like da: 'mouth' where length is predictable. Thus for practical purposes we can say that Ng lacks vowel-length contrasts.

On the other hand, Ri and the other Yuulngu languages have three basic qualities (i, a, u) and an important vowel-length contrast in word-initial syllables.²⁴ In subsequent syllables only short vowels occur, so there are six vocalic phonemes in initial syllables and three elsewhere. Some instances of o and e occur in unintegrated loanwords from languages like Ng and Rembarrnga into Ri, but in general Ri speakers integrate such words by converting e into i or a, and converting o into u or a.²⁵

²³By 'repronunciation' I mean the phonological reshaping of a morpheme or stem due to interference from another language or dialect which has a phonologically and semantically similar morpheme or stem; the term 'phonological contamination' could also be used. In a dialectal situation such examples may abound when one dialect attains the status of a national language, as in Italy. See, for example, G.P. Clivio, 'Language Contact in Piedmont: Aspects of Italian Interference in the Sound System of Piedmontese', in E.S. Firchow, *et al.*, eds., *Studies for Einar Haugen*, The Hague 1972, pp.119-131.

Incidentally, Clivio has an interesting theory as to why Piedmontese remained fairly stable for many centuries and only recently has 'decayed' under the influence of standard Italian. He suggests that in earlier periods French and Italian both exerted influence on Piedmontese, and these conflicting pressures in effect cancelled each other out. When French ceased to be a factor, Italian interference on Piedmontese produced rapid changes.

²⁴There are only a handful of minimal pairs involving vowel length, but we may mention wa:ŋa 'camp' and waŋa-Ø 'speaks'.

²⁵It is not certain under exactly what conditions Ng e becomes Ri i instead of a, or Ng o becomes Ri u instead of a. That the rules are perhaps not rigorously determinable is suggested by occasional Ri doublets like ba:gar? and bu:gur? from Ng bo:gor? 'river whistling tree'.

Another problem is that some Ng words borrowed from Ri seem to have replaced Ri i or a with Ng e, and Ri u or a with Ng o instead of the expected diaphonic conversions (Ri i → Ng i, etc.). This makes it very difficult to determine direction of borrowing in many instances, which in turn makes it difficult to find evidence for particular diaphonic conversion rules.

(Footnote 25 is continued on next page)

It would seem, then, that PNgNu and Proto-Yuulngu differed only in two respects: the distribution of *ʔ and the vowel systems. In the first case Ri has innovated to match the Ng pattern, partly by direct diffusion of loanwords, including the repronunciation of shared words on the Ng model. In the case of the vowel systems, Ri and Ng have remained divergent.

Aside from recent, local diffusion in the case of the glottal stops, there has obviously been a long history of diffusion lying behind the congruence in consonantal systems between Proto-Yuulngu and PNgNu. The system shown in Figure 4 is found in the Yuulngu languages and in a block of nearby prefixing languages such as Ng, Ngalkbon, Gunwinggu, and Rembarrnga (it can be reconstructed for Pre-Nu). However, the system is quite different from the consonantal systems of other subgroups in the Pama-Nyungan family to which Yuulngu is related, and from those of other groups of prefixing languages including PwamaAl and its descendants. In particular, the occurrence of two stop series (fortis and lenis) and of the glottal stop is an unusual feature in Australia, and must be considered a local Arnhem Land development. At present I am not prepared to say whether this developed in Yuulngu and spread to the adjacent prefixing languages, or vice versa; in both groups we can find contrasts involving inherited, unborrowed vocabulary so it is clear that both groups have had the system for a considerable time.

Within the prefixing languages, Ng and Nu (as well as Enindhilyagwa) are unusual in having a series of interdental consonants (t, d, sometimes n). This series is missing from other prefixing languages to the north and west (Rembarrnga, Ngalkan, Ngalkbon, Gunwinggu), and also from those to the south (Wa, Mara, Alawa) except in a few nouns (apparently loanwords) with d. The interdental series reappears in Yanyula, further southeast along the Gulf coast, but in view of geographical and genetic distances it is doubtful that we can directly connect these interdentals with those of Nu and Ng.

Interdentals seem to be archaic in the Yuulngu group. The uncommon phoneme n, for example, occurs precisely in high-frequency grammatical morphemes such as na: 'what?' and its derivatives, Accusative -na, Past suffix allomorph -na, and so forth. In some cases, notably verbal suffixes, there are alternations of the type -na/-ña depending on verb class, and it may be that interdental n and lamino-alveolar ñ have split off from a single laminal phoneme (this requires further research utilising other Pama-Nyungan groups to the south). It is possible that d and j (as well as fortis t and ç) have likewise split off from a single laminal type, but I know of no internal Yuulngu evidence for this. Although we thus have hints of how interdentals may have arisen in Yuulngu, they seem to have been firmly established well before the Proto-Yuulngu period.

Footnote 25 continued

The term 'diaphonic', by the way, is taken from the many publications on bilingualism by a teacher of mine, Einar Haugen. I am using the term here in the context of historical processes associated with lexical and other morphemic borrowings.

In the prefixing languages, we have noted that interdentalals occur in Ng (t, d) and Nu (d, l). (Interdental n in these languages is restricted to a couple of flora-fauna terms.) Nu l reflects *d (see Chapter 2, section 4). Thus PNgNu had interdentalals only in the stop series, whereas Proto-Yuulngu also had interdental nasals. In PNgNu the only cases of interdentalals in grammatical affixes turn out to be explainable (on other grounds) as borrowings from Ri; examples are Ng ergative-instrumental -tu (see Chapter 3, section 3), Ng inchoative -ti- (Chapter 3, section 10), and thematising augment -du- (Chapter 3, section 11). Another suffix, Ng denominative verbaliser -da-, may also be borrowed from Ri (which has factitive -ta-), though here the situation is less clearcut.

Quite a few noun and verb stems involving interdentalals are shared between Ri and Ng and/or Nu, and in many such cases it can be shown (largely on distributional grounds) that Ri is the source. Examples are Ng dowo and Nu la:wu 'word, story' from Ri (and 'general Yuulngu da:wu 'word').

However, there are also cases where Ng and/or Nu show interdentalals in inherited stems. For example, compare Ng -du-da 'stands' and Nu -la-ra 'stands' with Wa -ju-ra and Mara -ju-lu (intransitive Aux used chiefly with stance/position verbs and the like). These forms reflect *-Ju-ra or possibly *-Ju-da 'stands', with some kind of laminal stop *J. It is quite possible that Proto-Prefixing had *-ju-ra (*-ju-da) with laminal *j, and that when *j then split up into lamino-alveolar *j and interdental *d in PNgNu the interdental reflex occurred in this particular form. (Nu and Mara also show vocalic assimilation, but in different directions.)²⁶

As in the Yuulngu languages, at this point it is not possible to pinpoint the conditions under which interdentalals split off from lamino-alveolars in PNgNu. In view of the fact that interdentalals do not occur in the neighbouring prefixing languages, it would seem that PNgNu has innovated in developing interdentalals (if there are any indirect arguments for positing them in earlier stages of other prefixing languages, I am unaware of them).²⁷ In view of the fact that the affixes in Ng and Nu which contain interdentalals appear to be all or nearly all borrowings from Ri, and since many nouns and verbs with them likewise seem to have been borrowed from this source, the bulk of the evidence points to the conclusion that interdentalals originated first in Yuulngu and have then spread, by direct as well as indirect diffusion, into PNgNu.

We owe to Martinet the interesting notion of catalyst ('catalyseur phonologique') in the internal phonological history of a language.²⁸

²⁶Ri da:ra- 'to stand' may be a distant cognate of these verbs in the prefixing languages, but probably does not represent recent diffusion.

²⁷At this point we cannot rule out the possibility that some cases of PNgNu *t and *d may have developed out of older apicoalveolar *t and *d.

²⁸Martinet, *op. cit.*, p.90.

If a language has a phone P occurring only in a tiny handful of morphemes, it may stimulate a development whereby new instances of P are generated (for example, by having another phoneme P' merge with it). This is because the sound P is already pronounceable for speakers of this language, so that the shift *P' → P does not create a new sound type. Moreover, precisely because P is originally of low frequency (hence has low functional load), there is little or no functional pressure keeping P and P' distinct.²⁹

Adapting this notion to our present problem, we may observe that the introduction of loanwords (perhaps originally few in number) from some form of Yuulngu into PNgNu would have introduced some interdentalals (*t and *d, probably not *n), especially in noun stems. This meant that interdentalals were now pronounceable in PNgNu, so that there was no constraint against having some instances of inherited laminal *ç or *j becoming interdental *t or *d. However, in other instances these phonemes remained laminoalveolar (the exact conditions for this have not been worked out at this point).

4. NUNGGUBUYU AND WARNDARANG: STOPS

Of the four main languages dealt with here, Nu has undergone by far the most severe phonological (and morphological) changes. The attested Nu data are entirely compatible with the reconstructed consonantal system shown in Figure 4 in the last section; the Nunggubuyu vowel system could likewise be derived from a proto-system like that of Ng (*i, *e, *a, *o, *u). However, a considerable number of phonological developments have converted this Ng-like system into a much different system rather similar to that of Wa.

The two most important changes in the consonantal system have been the loss of the fortis/lenis opposition in stops and the loss of glottal stops. The particular historical change which resulted in the loss of the fortis/lenis opposition was the shift of old fortis to modern simple stops (usually phonetically lenis); old lenis stops in most cases became continuants. Thus, in those positions where fortis and lenis stops contrasted, Nu has undergone the changes shown in Figure 5.³⁰

The changes shown in Figure 5 are, however, somewhat oversimplified. In several instances old fortis *ç has remained fortis; in terms of the new consonantal system I now interpret this sound as a cluster dj.

²⁹We should also observe that when a new phoneme arises in one position (say, word-initial position), it may serve as a catalyst for the development of the same phoneme in other positions.

³⁰Examples of Nu reflexes of PNgNu stems (preserved exactly in Ng) show most of these changes: *-gopa- → -waba- 'to wrap up'; *butalak → wudalag 'ochre'; *gutu? → wudu 'tree sp.'; *mitiwiri? → midiwiri 'possum sp.'; *-waki- → -a:gi- 'to return'; *-maka- → -maga- 'to tell'; *-benna- → -wanna- 'to step on'; *-do- → -la- 'to chop'; *maðakar(i)ç → maraðar(i)j 'dangerous, violent'; *-jok-du- → -yalda- 'to go past'.

(compare Ng -bača- with Nu -w₂adja- 'to hit'). The change *d → r is not uncontestedly attested.

FIGURE 5

*p → b	*b → w ₂
*t → <u>d</u>	* <u>d</u> → <u>l</u>
*t → d	*d → r (?)
*t → <u>ɖ</u>	* <u>ɖ</u> → r
*č → j	*j → y
*k → g	*g → w ₁

Continuants reflecting old lenis stops can undergo a synchronic hardening process which in effect reverses the historical process shown in the figure. The regular hardened forms of Nu continuants are those shown in Figure 6.³¹

FIGURE 6

/w ₂ / → b
/ <u>l</u> / → <u>d</u>
/r/ → d
/ <u>r</u> / → <u>ɖ</u>
/y/ → j
/w ₁ / → g

The environment for hardening is position after a stop or nasal. Thus -w₂adja- 'to hit' forms -lam-badja 'to hit on top of the head', and so forth. Although it might appear that the stops (b, d, etc.) could be taken as synchronically underlying and the continuants as derived, especially since this avoids the problem of having two morphophonemically distinguished w phonemes, this is quite impossible. Not only continuants derived from old lenis stops, but also etymological continuants now show the hardening seen in Figure 6 (for example, nuñ-jama-ñ 'you said' from root -yama-, cf. Ng -yima- 'to say'). Thus there is no morphophonemic difference between derived and etymological continuants which would suggest that the former are still synchronically derived from stops. Moreover, there are now many stops which cannot be lenited, so we have one phoneme whose surface form is always g, a

³¹Examples: simple progressive suffix -w₂aj (-waj, -baj); -la- 'to stand' (-la-, -ga-); locative -ruj (-ruj, -duj); -řuma- 'to go' (-řuma-, -řuma-); relative suffix -yiñun (-yiñun, -jiñun); allative suffix -w₁uy (-wuy, -quy).

phoneme whose surface forms are g or w, but no phoneme w which does not harden to a stop in a hardening environment.³² The first phoneme I represent as /g/, the second as /w₁/, etc. Hence we need two underlying w phonemes, /w₁/ morphophonemically related to g and /w₂/ morphophonemically related to b.

I should add that the hardening of /r/ to d is found with only two morphemes, locative -ruj and the noun rigan 'mother' (mi-digi-j 'mother and children' from /mij-riga-j/). Only a handful of other morphemes begin with r, and these do not harden the r to d.

I should also note that in some instances the change from lenis stops to continuants did not take place, so the result is a stop which is now identical to a stop derived from an old fortis stop. Thus contrast (w)u-banja 'wing' with w₂anja (*banja) 'arm'. The former is a special derivative with one of a set of derivational (not inflectional) noun-class prefixes. Although the prefix (w)u- is etymologically just *gu- (not, for example, *guk-), it and other similar prefixes have the effect of blocking lenition of following lenis stops to continuants, so that synchronically we have either a special morphophonemic hardening rule here, or we have to use base forms like /uD-/ or /ug-/ for the prefix in order to generate the correct surface form.³³

Nevertheless, the shifts shown in Figure 5 do in fact represent the usual fate of old fortis and lenis stops. What I would now claim is that this overall set of shifts was stimulated primarily by contact with Wa, which has no fortis/lenis opposition and whose stops are generally phonetically lenis. Wa speakers trying to speak Nu would have tended to pronounce Pre-Nu fortis stops as lenis stops, and I suggest that this was largely responsible for the shifts on the left-hand side of Figure 5. I am well aware that this type of phonological change is attested in countless languages where diffusion has not played a decisive role. However, since the Nu shift brings the Nu consonantal system into line with the Wa system, since we know that the Nu and Wa groups were closely associated socially, and since in several other respects Wa has exerted indirect (as well as direct) diffusional pressures on Nu, this particular claim seems to me to explain best why Nu rather than another language (Ng, Ngalkbon, Rembarnga) has lost its old fortis stop series.

³²Examples, respectively, are these: -garaja- 'to jump' (never *-war-aja-); -w₁aba- 'to wrap up' (-waba-, -gaba-). No stem or morpheme beginning in w fails to convert this to g (w₁) or b (w₂) when preceded by a stop or nasal. There are some w's which never occur in such a hardening position, so we cannot tell whether they are w₁ or w₂, but this is a neutralised (indeterminate) w rather than a third distinct type of w. Etymological *w is either deleted totally, or becomes one of the new w phonemes (usually w₁).

³³I use /D/ as a morphophonemic symbol for a stop which cannot be specified for point of articulation; it (like other stops) has a hardening effect on a following continuant.

If we think of the lenition of old fortis stops as the earliest shift, we can understand other shifts as readjustments designed to maintain as many as possible of the old oppositions in new form. Martinet's notion of a 'chain reaction' in historical phonology is worth mentioning here.³⁴ As the old fortis stops were gradually being lenited, the old lenis stops were themselves further lenited in many (but not all) cases to continuants. This permitted retention of the old fortis/lenis opposition in a new guise.

From the functional viewpoint, it might be thought that the lenition of lenis stops to continuants was counterproductive, saving the old fortis/lenis opposition only by neutralising the old opposition between lenis stops and continuants. However, the fortis/lenis opposition clearly had greater functional yield, so we can think of a relatively marginal set of oppositions being sacrificed to maintain a more crucial set of oppositions.

Returning to Figure 4, we may observe in this connection that *l did not occur in the proto-language, so the shift from *d to l did not create any new ambiguities. This is significant since *d was very common, so the shift *d → l should be weighted as more important than, for example, the shifts *d → r (if this occurred at all) or *d → ɾ. As for the shifts *b → w₂ and *g → w₁, it would seem at first sight as though they merged *b, *g, and *w into a single surface segment, which could of course result in numerous cases of homophony. However, many cases of old *w (and a few of *w₁ from *g and of *w₂ from *b) have been totally deleted.³⁵ There is thus a synchronic opposition between w and ∅ which partly maintains the old three-way opposition. Moreover, in hardening environments the three-way opposition is maintained in the form g from /w₁/ versus b from /w₂/ versus ∅.³⁶

³⁴Martinet distinguishes push chains (chaînes de propulsion) and drag chains (chaînes de traction). See Martinet, *op. cit.*, p.59. In the present case we are dealing with a push chain. The old fortis stops become lenis, pushing the old lenis stops into continuant status, which in the case of *w has pushed the continuant away from its old status (becoming ∅).

³⁵Examples where *w has been deleted: la:l 'country' (cf. Ng dawal, Ri dawal); li:rj 'wild cassava tree' (cf. Ng diwir?); -a:gi- 'to return' (cf. Ng -waki-); -a:ru- 'to abandon' (cf. Ng -watu-, with irregular t/r correspondence). An example where *g → *w₁ → ∅ is arjambal 'antelope kangaroo' (cf. Ng garčambal, presupposing intermediate Pre-Nu *warjambal). Deletion of *w₂ from older *b is very uncommon except in pronominal prefixes, where for example a second person morpheme *ba- (preserved as ba- in many combinations) shows up as wa- or a- in some combinations.

³⁶Thus consider -w₁aba- 'to wrap up', -w₂anqa- 'to step on', and -a:ru- 'to abandon'. If we prefix /nan-/, marking first singular subject and nonhuman ANAq class object in the future positive (for example), we get nan-gaba-ŋ 'I will wrap it up', nan-banqa-ŋ 'I will step on it', and nan-da:ru-ñ 'I will abandon it'. In the final example d has been inserted; cf. section 10 of this chapter.

Let it be thought that the synchronic hardening of continuants to stops would result in homophony between such synchronically derived stops and synchronic underlying stops (representing old fortis stops), we may mention that in most hardening environments an epenthetic morpheme -ŋu is inserted before an underlying stop. Thus Nu -jura- 'to push' is kept distinct from -yura- 'to transport'; when prefix /nan-/ is added, we get nan-jura-ŋ 'I will push it' versus nan-jura-ŋ 'I will transport it'. This epenthetic morpheme is an innovation in Nu; it may be a specialised form of an oblique-case morpheme *-gu- (in Alawa, Mara, Ng) or *-ŋu- (in Wa) found in pronominal prefix complexes.³⁷

Thus the lenition of old fortis stops seems to have triggered a variety of compensatory phonological developments designed to maintain at least most of the old oppositions so that excessive homophony would not result. To keep the lenis stops apart from the gradually leniting fortis stops, the former were further lenited to become continuants. The loss of *w can be accounted for as a device to keep *w distinct from the new w consonants created by the lenition of *b and *g, since in positions (for example, stem-initial) where a consonant is otherwise obligatory a new ∅, though phonetically null, can be in effect distinctive. The specialisation of -ŋu- as an epenthetic morpheme which prevents the surface neutralisation of hardened continuants with underlying stops can be seen as another readjustment designed to maintain functional oppositions.

The role of diffusional pressures in all of this was limited to the initial tendency to lenite the old fortis stops; as I have suggested, this was probably triggered by the pronunciation patterns of Wa people, who could not easily pronounce the fortis stops. The other Nu shifts have been entirely internal developments, generally interpretable as compensatory readjustments designed to salvage as many as possible of the old functional oppositions.

5. NUNGGUBUYU AND WARNDARANG: GLOTTAL STOPS

We have seen in section 3 of this chapter that Ng has a phonemic glottal stop found chiefly at the end of some noun stems and thematic verb stems: manjar? 'leaves', -dow?-du- 'to strip bark off'. It is also occasionally found suffix-initially before another consonant, as in -?wañji? 'like' (for example, gu-mulmu-?wañji? 'like grass'), and rarely morpheme-medially between two consonants (for example, -gur?war-du- 'to shoot'). Despite its quasi-junctural status, it is not predictable and must be included in base forms.

Nu, on the other hand, has no glottal stop. Where Ng has a glottal, the Nu cognate shows ∅, g, or j. Examples are Ng manjar? and Nu manjar 'leaves', Ng bulu? and Nu wulug 'honey-eating implement', and Ng diwir? and Nu li:rj 'wild cassava tree'. In other cognate sets, Nu g in this position corresponds to Ng k, while Nu j corresponds to Ng č. Examples: Ng jo!k and Nu ja!g 'to go past' (uninflected root form), Ng darpič and

³⁷See Heath, *op. cit.* (footnote 6 to Chapter 1).

Nu *larbij* 'thigh'. We thus have the correspondences shown in Figure 7.

FIGURE 7

Ng		Nu
ʔ	↔	∅
ʔ	↔	g
ʔ	↔	j
k	↔	g
č	↔	j

These correspondences occur in the same basic environment: at the end of a nominal or thematic verbal stem, after a vowel with or without an intervening liquid or semivowel. It should also be noted that the difference between fortis and lenis stops in languages like Ng which distinguish them is neutralised in syllable-final position. We thus seem to have five correspondences for what we would expect to reconstruct as three PNgNu phonemes: *ʔ, *k, and *č.

Since Ng consonantism is generally conservative — that is, very similar to that found in prefixing languages to the north and west — I feel confident that Nu rather than Ng has innovated, specifically by converting PNgNu *ʔ into Nu ∅, g, or j in a somewhat sporadic fashion. Nu g and j created by this shift have merged with Nu g and j from PNgNu *k and *č.

Aside from the comparative evidence suggesting that Ng is conservative, and the general tendency for Nu to reshape its consonantal system (section 4 of this chapter), there are other reasons for taking this position. Although there would be no reason, either structural or diffusional, for Ng to convert some instances of *k and *č into ʔ (as we would have to suppose if Nu, rather than Ng, were taken as conservative), there is a good diffusional reason why Nu should have lost or shifted PNgNu *ʔ. This is simply that Wa, like other languages to the south (Mara, Alawa, etc.) has no phonemic glottal stop, and no consistently pronounced surface glottal stop. Therefore, just as Wa speakers were unable to pronounce Pre-Nu fortis stops (section 4 of this chapter), they could not pronounce Pre-Nu *ʔ, and consequently would have tended either to drop it or to replace it by a more familiar consonant such as g or j.

It may seem strange that *ʔ could become a true stop; the reverse shift would appear more natural. However, it should be emphasised that in these languages syllable-final g and j are unreleased and nearly inaudible, so that their principal acoustic manifestation may be an abrupt cessation of sound somewhat like what is found with final glottal stops. Thus in Nu wulug 'honey-eating implement' it is very difficult for a linguist to hear the final g at all; the most secure way to arrive at a definitive transcription is to see whether following case suffixes take the hardened or simple forms. Since 'to the honey-eating implement' is ama-wulu-guy we know the simple stem is wulug, whereas had we gotten *ama-wulu-wuy we would have transcribed the stem as *wulu. Final j in Nu is similarly very hard to hear, at

least after i or i: and to some extent after liquids, though when it directly follows a, a:, u, or u: it can usually be detected on the basis of formant transitions.

By suggesting, in effect, that the Ng consonants in Figure 4 reflect the PNgNu forms while Nu has innovated, I am forced to conclude that the reflexes of *ʔ in Nu have been sporadic and unpredictable. However, we would have a similar situation if Nu were taken as conservative, since we would then have to explain why *k and *č (Nu g and j) have been treated sporadically in Ng. By this analysis, which I reject, PNgNu *k would become Nu g, but either k or ʔ in Ng, while PNgNu *č (Nu j) would likewise become Ng č or ʔ. Thus both analyses require recognition of irregular sound shifts. Applying strict comparative methods based on neogrammarian assumptions, we should in theory posit five original consonant phonemes to account for the five correspondence sets in Figure 7, but this would be unrealistic since the broader comparative evidence shows that only three consonants (*ʔ, *k, *č) can be reconstructed in this position.

The analysis I have adopted requires us to recognise irregularities in the development of Nu, but some of these are independently motivated anyway and we are therefore innocent of outrageous crimes against methodological principles. Some instances of final g in Nu, whether reflecting PNgNu *ʔ or *k, either alternate with ∅ or have a variant with j, with different informants usually preferring a single form. For example, a mangrove species called *lalgur* (cf. Ng *dalkurk*) by my more reliable informants was pronounced *lalgurg* by some others (the opposition is heard more clearly in case-marked forms like allative ama-*lalgur-wuy* versus ama-*lalgur-guy*). Another example is *na:lij*, variant *na:lij* 'shrub species' (cf. Ng *nalik*). This fluctuation is not very surprising in view of the fact that final g and j are often very difficult to hear in unaffixed forms, as indicated above. It is therefore not unreasonable to suppose that PNgNu *ʔ may have had a sporadic treatment in Nu, becoming g or j in many cases but disappearing entirely in others.

One generalisation we can make is that PNgNu *ʔ at the end of a stem becomes Nu ∅ when directly preceded by a nasal. An example: Ng *walan?* and Nu *wajan* 'hill coolibah tree'. This is simply because the clusters *Ng and *Nj (or *Nk and *Nč), where N is any nasal, are impossible in this position in Nu as in other languages in the area.

The attested Nu consonantal system is shown in Figure 8. Inter-dental n occurs only in three or four flora-fauna terms of uncertain origin. Other than this, the only discrepancy between Nu and Wa is that Nu but not Wa has l (loanwords from Nu into Wa replace Nu l with Wa y). Nu also differs at the morphophonemic level in distinguishing w₁ from w₂, while Wa does not, but at the surface phonemic level Nu and Wa each have only one w. The Nu and Wa system shown here (Figure 8, below) may be contrasted with the system shown in Figure 4, which is attested in Ng and reconstructable for PNgNu.

6. NUNGGUBUYU AND WARNDARANG: VOWELS

The vocalic system of Nu differs from that of Ng in showing only three basic qualities (i, a, u) instead of the five-vowel system

(i, e, a, o, u) found in Ng. Moreover, Nu has a distinction between long and short vowels in nearly all syllabic positions, while Ng has only a handful of stems and morphemes with phonemic long vowels (some of these are loans). Thus, omitting some very marginal phonemes, the basic systems of the two languages are as shown in Figure 9.

FIGURE 8

b	<u>d</u>	d	<u>d</u>	j	g
m	(<u>n</u>)	n	<u>n</u>	ñ	ŋ
	<u>l</u>	l	<u>l</u>		
		r	<u>r</u>		
w				y	

FIGURE 9

Ng			Nu			
i		u	i	u	i:	u:
e		o	a		a:	
		a				

In general, it appears that Ng is the more archaic of the two languages in its vocalic system. The most closely related prefixing languages to the north and west (Rembarrnga, Ngalkbon, etc.) show the same general pattern, although Ngalkbon also has a phonemic ɛ vowel. (Ngalakan has ɛ, but only as a predictable allophone of i, used before r, as in mɛrpara 'child'.) The Nu system has innovated in such a way that its system is exactly identical to the Ri system (where, however, long vowels occur only in word-initial syllables). I think, however, that Wa rather than Ri had the greatest diffusional influence on Nu; Wa has the same basic three qualities but, like Mara and most languages to the south, lacks phonemic vowel length.

The exact history of Nu vowels has yet to be worked out in all details. To do this it would be necessary to identify a large number of stems and other morphemes known to have been inherited from PNgNu without diffusional influences. However, stems found in both Ng and Nu are often amenable to diffusional as well as retentionistic explanations, and even if clearly inherited independently it is sometimes difficult to pin down the original vowel quality since a variety of historical processes (such as fronting of back and low vowels to i under the influence of a neighbouring ɣ or laminoalveolar) have applied in both languages.

In general, it appears that PNgNu squashed its five vowel qualities into the three attested Nu short vowels (u, a, i) by the shifts *e → a and *o → a, though in a few instances we seem to have gotten *e → i and *o → a. The examples involving *o are more numerous than those with the relatively uncommon *e.

Examples of *o (based on Ng o) becoming Nu *a are Ng loŋ and Nu la:ŋ (with secondary monosyllable-lengthening) '(top of) head', Ng

roŋ- and Nu raŋ- (3rd person possessive prefix with kin terms), Ng -do- and Nu -la- 'to chop', Ng -jo!k-du- and Nu -ya!da- 'to go past', Ng -bo:-m and Nu -w₂a-ŋ (with ŋ from word-final *m as usual) 'hit' (past punctual), Ng -ŋo-ŋ and Nu -ŋa-ŋ 'ate', and one or two others. Examples of *e → a are Ng -benŋa- and Nu -w₂anŋa- 'to step on', past continuous forms like Ng maki-ri 'called' (from *make-re, to judge by occasional retentions like causative past continuous -gube-re alongside -gubi-ri) and Nu cognate -maga:- (with deletion of *r and contraction of the resulting vowel-cluster).

Nu long vowels have been created by various processes, including contractions such as *ere → a: just seen, also many instances of *awa → a: and the like. Moreover, we must mention the intrusion into Nu of loanwords with long vowels, especially from Ri (for example, Nu la:wu from Ri da:wu, cf. Ng dowo also from Ri). Nu has also created some long vowels in prefixes and suffixes by more radical truncations. Suffixal examples are dual -w₂a: from *-bula (Ng -pula), -yi: 'like' from *-(?)wañji? (Ng -?wañji?) via intermediate *-w₁i:, etc. Prefixal examples mostly involve a nonsingular morpheme -rV-, as in 3PI → 3PI pronominal prefix wa:- (variant of wara-). In some cases the Nu long vowel is unexplained: wuŋa:ri 'fight', apparently borrowed from Wa wu-ŋari 'fight' (with noun-class prefix wu-).

7. NUNGGUBUYU AND WARNDARANG: SUMMARY

We have seen that the Nu consonantal system has been radically transformed, due ultimately to the lenition of old fortis stops which we attribute to the influence of Wa. It is interesting to note that the readjustments which Nu made in the face of the threatened merger of fortis and lenis stops (the lenition of lenis stops to continuants, the loss of old *w, etc.) in some respects created new discrepancies between Nu and Wa. In particular, the shift *d → l, which enabled Nu speakers to save the old opposition between *t and *d in a new form, created a new phoneme which is found in no other nearby language (except Enindhilyagwa). In particular, it is not found in Wa, and in loans Wa speakers replace Nu l with their y (Nu luni borrowed as Wa yuni 'ochre', Nu liribala borrowed as Wa yiribala 'inside'). Paradoxically, this divergence is ultimately a secondary by-product of a diffusional convergence in the pronunciation of stops.

Similarly, the restructuring of the Nu vowel system need not be taken as reflecting Ri influence, but rather can be adequately understood by taking Wa as the language which exercised the diffusional pressure. This is so even though the resulting Nu system is more similar to the Ri system (which has vowel-length oppositions in word-initial syllables) than to the Wa system (which has no vowel length at all). Although a few Ri loanwords with long vowels have contributed to Nu's stock of stems with long vowels, it may well be that the first long vowels in Nu were those created by the loss of intervocalic *w, whereby for example *awa became a:. Once such contracted long vowels could occur on the surface, they could have acted as catalysts, allowing the incorporation of unaltered Ri loans with long vowels, and stimulating some of the radical truncations seen in suffixes and prefixes. Without such catalysts, Ri loans might well have been

assimilated somehow into the older system of five short vowels, as most Ri loans have been in Ng (which sometimes shows o for Ri a:, and so forth). Thus the loss of intervocalic *w appears to have been crucial, and this loss can best be understood as the final link in a chain reaction of consonantal shifts triggered by the initial lenition of fortis stops caused by the influence of Wa. Thus again we have a case where an initial convergence between Nu and Wa has triggered various secondary readjustments in Nu which have in some respects resulted in new divergences.

A methodological point which might be made here is that the mere cataloguing of synchronic similarities among the languages dealt with here would not bring out the true nature of the diffusional relationships. Superficial inspection of the phonemic systems involved would lead us to link Nu with Ri (and other Yuulngu languages) to a greater extent than is necessary. These two languages both have interdental consonants (Ri t, d, n versus Nu ḏ, ḏ, rarely n), and both have vowel-length distinctions; Ng agrees with them in the first respect but not in the second, while Wa agrees with them in neither respect (disregarding a handful of Wa nouns with d, all probably recent loans). Yet the occurrence of interdentals in Nu reflects ancient diffusion involving PNgNu and Proto-Yuulngu, and so does not indicate recent contact at all, while the fact that Nu has vowel length like Ri is to a large extent historically accidental and is due indirectly to the influence of Wa more than to that of Ri. It is only by actually reconstructing the historical development of the languages, combining the usual comparative reconstruction with a study of diffusional influences and distinguishing various historical periods, that we can appreciate the nature of the historical processes which have operated.

8. A BALKAN PARALLEL: ROUMANIAN CONSONANTS

While the methodological points of the last section are still fresh, I would like to digress briefly to mention a parallel in Balkan areal linguistics to which they might be usefully applied. Roumanian, a Romance language, has been substantially affected in phonology and other grammatical components by contact with certain Slavic languages. In particular, Roumanian has developed a series of palatalised consonants such as p̣ similar to the palatalised series found in some Slavic languages in the area. This has been accomplished partly through lexical diffusion, but also by means of 'internal' phonological developments in Roumanian, so that *lupi becomes lup̣ and so forth.

In addition to this palatalised series, however, Roumanian has also developed a similar rounded (labialised) series, so that for example *lupu becomes lup̣. Thus where Slavic languages basically have a palatalised/plain opposition, Roumanian has a three-way opposition between palatalised, plain, and rounded consonants. The question is, how do we explain this development?

Petrovici, who has done research on the areal influences on Roumanian phonology, suggests that the Roumanian rounded consonants were modelled on an earlier series of rounded consonants in Slavic, which has however been levelled out in the attested Slavic languages,

aside perhaps from a few dialects. The evidence for this rounded series in Slavic seems rather weak, and it is uncertain whether the series was ever well-established. Furthermore, in Roumanian dialects which are still under heavy Slavic influence the rounded series seems to be being phased out, merging with plain consonants. Petrovici's position is stated thus:

La conservation de la valeur phonologique de la labialisation des consonnes ... en roumain constitue une sorte d'archaïsme slave dans la phonétique et la phonologie roumaine. Ce trait conservateur du roumain s'explique par l'affaiblissement de l'action exercée par le slave sur le roumain. Là où le slave a continué à influencer fortement les dialects (*sic*) roumains, les corrélations consonantiques sont en train de disparaître ...³⁸

Since my ignorance of Balkan and Slavic languages is encyclopaedic, I have no wish to become embroiled in this particular problem. I would, however, make the general point that it is not necessary for Petrovici to assume Slavic influence in the creation of the Roumanian rounded series. As the gradual shift from *lupi → lup̣ took place, perhaps partly due to Slavic influence, *lupu might perfectly easily have developed into lup̣ by internal Roumanian developments determined by the general structural parallelism between *lupi and *lupu. That is, the progressive weakening of word-final *i, leading to its incorporation into the preceding consonant as a simple feature, could well have entailed the parallel weakening of *u in the same position, without specific Slavic influence in this latter case. That labialisation has caught on in Roumanian to a greater extent than in Slavic might be explained by the importance of Roumanian desinences in *u which had to be maintained in some form, but perhaps I should leave this issue to the Balkanists.

The methodological point, once again, is that indirect phonological diffusion may be a complex process, involving shifting of phonetic patterns due to foreign influence, but also triggering various internal readjustments determined by structural and functional considerations, particularly when the neutralisation of previously distinct phonemes is threatened. It is unwise to assume that every phonological shift undergone by languages in close areal contact must be conditioned by simple diffusional pressures; we must also consider internal structural and functional pressures in particular phonological systems. It is equally unwise to seize on occasional divergences, such as the development of ḏ in Nu despite its absence in Wa, or the development of Roumanian rounded consonants despite their at best sporadic status in Slavic, as evidence that phonological diffusion has been an unimportant factor — some such divergences may be secondary readjustments directly attributable to earlier shifts brought about by diffusion.

³⁸E. Petrovici, 'Interpénétration d'une phonologie slave et d'une morphologie romane', in *Mélanges linguistiques*, Bucharest 1957, p.85.

9. REDUPLICATION

All four of our main languages have reduplication patterns in both verbal and nominal morphology, although the nominal patterns are of low productivity in some languages. Comparison particularly of Ng and Ri shows evidence of diffusional convergence. Nu is shown to have innovated extensively from an old Ng-like pattern. This time, however, the Nu developments were not heavily influenced by Wa in any obvious fashion; I will suggest that there is a structural reason for this.

In Ritharngu, the usual verbal reduplication is an initial $C_1V_1C_2V_2?$ - type, where V_1 shows the underlying vowel length of the initial vowel of the stem. Thus $da:ra-$ 'to stand' is reduplicated as $/da:ra?-da:ra-/$, surface form $da:ra?-dara-$ after the application of a rule shortening long vowels in noninitial syllables.³⁹ If the verb is monosyllabic but is followed by a syllabic inflectional suffix, the first syllable of the suffix is included in the reduplication, so that $bu-ma\dot{r}a$ 'killed' is reduplicated as $buma?-bu-ma\dot{r}a$.

A different pattern is used for the large class of thematic verbs — those verb stems which occur in an uninflected root form and must be thematised by a suffix ($-du-$, $-yu-$, etc.) before inflectional suffixes can be added. Reduplication is nearly always of the root minus all suffixes, regardless of its canonical shape. Thus $bangu!?-yu-$ 'to return' is reduplicated as $bangu!?-bangu!?-yu-$. In a few cases the thematising suffix is now frozen to the root, which cannot occur in the uninflected form (this is typical of roots ending in \underline{n} and a few other consonants). In this event the reduplication is of the regular type: $mungu-$ ($*mu\dot{n}-gu-$) 'to drink', reduplication $mungu?-mungu-$ (not $*mu\dot{n}-mu\dot{n}-gu-$ as we might once have had).

Only a handful of noun stems can be reduplicated; most examples are of the $C_1V_1C_2V_2-$ type, as in $guya-guya$ or lenited $guya-wuya$ from $guya$ 'fish'.

Verbal reduplication generally indicates repetition, occasionally prolongation or distributivity (multiplicity). Nominal reduplication indicates multiple plurality, and is found chiefly with nonhuman nouns which cannot normally take plural $-wa\check{c}$.

Ng reduplication is essentially identical to the Ri system, with some differences in the distribution of final glottal stops in reduplicative segments. In nonthematic verbs the usual type is $C_1V_1C_2V_2-$ without glottal stop, as in $-rukba-rukba-$ from $-rukba-$ 'to fall'. Thematic forms show the same root-reduplication seen in Ri, hence such examples as $-ju\dot{d}u?-ju\dot{d}u?-du-$ from $-ju\dot{d}u?-du-$ 'to catch fish' and $-\dot{d}ak-\dot{d}ak-du-$ from $-\dot{d}ak-du$ 'to cut'. Nominal reduplication is restricted to a small set of stems: $\underline{d}aku-\underline{d}aku$ 'children' from $\underline{d}aku$ 'child', $wi\dot{r}i?-wi\dot{r}ipu$ 'others' from $wi\dot{r}ipu$ 'other'. Note that the glottal stop occurs in some such

³⁹There is a tendency to shorten word-initial long vowels in words of several syllables, so $\underline{d}ara?-\underline{d}ara-$ is another possible surface form for this reduplication.

examples. The meaning of reduplication in Ng is essentially the same as in Ri.

It is clear that the near-identity between the Ri and Ng reduplication systems cannot be due to chance and must reflect diffusion. The only problem is determining whether we have had recent diffusion involving these two languages specifically, or whether their sharings merely reflect the older and broader diffusional patterning. Since there are indications (see below) that the Ng pattern was inherited from PNGNu (give or take a few glottal stops), more research will be necessary before we can pinpoint the historical processes behind the Ri/Ng sharings.

Nu has innovated extensively in its reduplication patterns, but there are traces of an older Ng-like system. For example, consider Nu $-wul\dot{d}a-$ 'to cut', cognate to Ng $-gulk-\underline{d}u-$ 'to cut', a thematic verb. The reduplicated form in Ng is, of course, $-gulk-gulk-\underline{d}u-$. The Nu stem, however, is now unsegmentable since the root form does not occur, and there is no longer any difference between thematic and nonthematic verbs in reduplication. Thus $-wul\dot{d}a-$ is subject to the productive reduplication rule, which happens to convert this stem into $-wul\dot{d}u-wul\dot{d}a-$. Like the productive rules for nonthematic verbs in Ng and Ri, this reduplication is initial and bisyllabic, but differs in that the second vowel of the reduplicative segment is assimilated in quality to the first (and third), so we have a $C_1V_1C_2V_1-$ type.

A handful of old thematic stems, however, preserve an old root-reduplication, now unsegmentable and treated as a synonym or semantically specialised variant. It happens that $-wul\dot{d}a-$ is one of these stems, so we have a by-form $-wul\dot{g}ul\dot{d}a-$ ($*-gulk-gulk-\underline{d}u-$). This by-form does not function as a variant of the synchronic reduplication $-wul\dot{d}u-wul\dot{d}a-$, but is rather a synonym of $-wul\dot{d}a-$, and can itself be reduplicated now as $-wul\dot{g}u-wul\dot{g}ul\dot{d}a-$. Thus the reduplication of old thematic verbs has been completely assimilated into the productive patterns, but occasional fossils like $-wul\dot{g}ul\dot{d}a-$ betray the former occurrence of Ng-like root-reduplications.

The productive reduplication in Nu has innovated not only by becoming $C_1V_1C_2V_1-$ instead of $C_1V_1C_2V_2-$, but also by developing a monosyllabic form C_1V_1- . This is used when the stem begins with an underlying stop, so that $-garaja-$ 'to leap' reduplicates as $-ga-garaja-$, not as $*-gara-garaja-$. Another difference between Nu and Ng is that whereas in Ng a derivational prefix is usually disregarded so that the reduplication applies to the initial syllables of the stem proper, in Nu the reduplication usually begins with the first derivational prefix (that is, the first prefix other than an inflectional pronominal prefix). Thus compare Ng $\dot{n}ar-mili?-bu-y\dot{d}i-\emptyset$ 'lest you fight' (root $-bu-$) and its reduplication $\dot{n}ar-mili?-buy\dot{d}i-pu-y\dot{d}i-\emptyset$ where derivational prefix $-mili?-$ is disregarded, and Nu $/\eta a-\dot{a}\dot{n}ji-\eta u-bura-a/$ 'I am sitting with (it)' (root $-bura-$) and its reduplication $/\eta a-\dot{a}\dot{n}ja-\dot{a}\dot{n}ji-\eta u-bura-a/$ where comitative derivational prefix $/-\dot{a}\dot{n}ji-/$ gets reduplicated (this Nu example is given in underlying form to avoid discussion of low-level morphophonemic alternations).

Nominal reduplication in Nu is much more common than in Ng or Ri. Plurality is marked for human nouns either by adding a prefix $mij-$ or

by reduplication (but not both), and if adjective-like nouns are counted the majority take reduplication rather than *mij-*. The stem *yiwangu* 'old man' (singular *yiwangu-n̄ng*, dual *yiwangu-wa:*) is one of the few stems which take either plural form, *mi-jiwangu* or *yiwi-yiwangu*. Nominal reduplication is basically the same in form as verbal reduplication, except that the nominal type usually begins with the stem, disregarding derivational prefixes (especially compounding elements).

The numerous phonological and grammatical developments which have taken place in Nu reduplications cannot be explained as due to interference from Wa. In Wa the entire verbal structure is different, being based on verb-like particles ('main verbs') followed by inflected auxiliaries, as in *waṛ ṇa-wiṇḍi-ma* 'I saw him' with *waṛ* 'see' and auxiliary *-wiṇḍi*. The reduplication of this is *waṛ-waṛ ṇa-wiṇḍi-ma*, showing root-reduplication of the 'main verb'. Note that this is parallel to Ng and Ri root-reduplication of thematic verbs; indeed there are general similarities between the Ng and Ri system of thematising verb-like particles (root forms), allowing them to become inflected, and the Wa (also Mara, Alawa) system of adding inflectable auxiliaries.⁴⁰

In the infrequent case where a Wa verb complex consists only of an inflected stem, which then functions semantically as the main verb, reduplication applies to it, as in *wu-ṇala-gaya-ga-ya-∅* 'We will keep taking it.' (root *-ga-*). This example shows bisyllabic reduplication (*-gaya-*), but other examples have the monosyllabic type: *wu-ru-ga-gaya-ma-∅* 'They will hear it.' (root *-gaya-*). Although there is a superficial analogy to the Nu distinction between bisyllabic and monosyllabic reduplications, in Wa the difference is unpredictable and not correlated with the initial consonant of the stem (note that both examples given here have *g*). Moreover, the Wa type is so uncommon (since most verb complexes have a verb-like particle) it could hardly have served as a prototype for the much more productive Nu system.

As far as nominal reduplication is concerned, Wa has a few more examples than Ng or Ri but does not have a type anywhere near as productive as that of Nu. The Wa nominal type seems to be uniformly *C₁V₁C₂V₂* with occasional lenition of stops to continuants (*jawulba* 'old man', multiple plural *jawu-yawulba*). The Wa type differs from Nu in being uniformly bisyllabic, in ending in *V₂* rather than *V₁* (hence not **jawa-yawulba*), and in being much less productive. In these respects the Wa type resembles Ng and Ri more than Nu; Wa lacks the glottal stops found in Ng and Ri but only because *ʔ* is not a Wa phoneme.

Thus it seems that diffusional explanations for the Nu developments are unmotivated, unless later research shows that Enindhilyagwa was somehow involved. The fact that Wa was unable to significantly influence Nu reduplication patterns is, I think, mainly due to the fact that the most important reduplicative type — the verbal one — could not have been diffused because of the sharp difference between the usual verb-complex structures in the two languages.

⁴⁰J. Heath, 'Northeast Arnhem Land Parallels to Mara-Alawic Auxiliaries', in Dixon, ed., *op. cit.* (footnote 6 to Chapter 1).

10. NUNGGUBUYU *g*-INSERTION

In this section I will deal with a possible instance of a phonological rule in Wa having been borrowed by Nu.

In Wa there are certain phonological processes which apply only at the boundary between a verb-like particle ('main verb') and the following inflected auxiliary. This boundary is distinct from both the usual word boundary and the usual word-internal morpheme boundary. The most important rule which applies to this special boundary inserts a stop after a main verb ending in a nasal when the following inflected verb begins with a vowel; this happens only in the case of potential prefix /*u-*/. The stop added is homorganic to the preceding nasal, except that we find *g* rather than expected *j* following *n̄*. Thus the stop inserted is as indicated in Figure 10.

FIGURE 10

<i>b</i>	is inserted following	<i>m</i>
<i>d</i>	is inserted following	<i>n</i>
<i>ɖ</i>	is inserted following	<i>ṇ</i>
<i>g</i>	is inserted following	<i>n̄</i>
<i>g</i>	is inserted following	<i>ṇ</i>

Examples: *n̄im* forms *n̄imb u-ṇa-ga-ya* 'I will make a camp.'; *ḍiwan* produces *ḍiwand u-ṇa-b-iñu* 'I will cook it.'; from *wuñ* we get *wuñg u-∅-ṇaṇi-ma-∅* 'It (sun) will shine.'⁴¹

In Nu there are two separate rules which have some similarity to this Wa process. One is a rule inserting *g*, or sometimes *ṇ*. This rule applies only at a morpheme boundary where a stem (or derivational prefix) beginning in a vowel, usually *a*, is preceded by a morpheme ending in a stop or nasal. For example, the combination /-*ṇaraṇ-abi-*/ 'all to jump' shows up as *-ṇaraṇ-gabi-*. The inserted consonant is *g* after all stops and certain nasals (especially *ṇ*), *ṇ* after other nasals (most instances of *n̄* and *n̄*).

There is little evidence, however, that this Nu velar-insertion rule is due to diffusional pressures, and it can be accounted for satisfactorily as an internal innovation. The stems in question, such as *-abi-* 'to jump', have been produced by the historical deletion of an initial **w*, or less often by deletion of **w₁* lenited from earlier **g*. The prototype of this stem, for example, was **-wopdu-* and is attested without change in Ng.

We know that such lenitions as **g* → *w₁* and **w* → *∅* have been part of a sweeping series of consonantal changes in the history of Nu. Since

⁴¹Obviously, since a phoneme is being inserted at a morpheme boundary, it could be transcribed as part of the first morpheme (as in the transcriptions shown) or as the initial phoneme of the second morpheme. This notational problem is of little importance to us.

stop-lenition of the type *g → w₁ occurred only in intervocalic, word-initial, and certain other positions, it created alternations such as g/w (which I represent as morphophonemic w₁), and there are a number of clear cases where old *w analogically adopted such alternations (hence ablative *-wala, seen also in Ng -wala, shows up in Nu as -w₁ala, hardened form -gala). Stems like *-wabi- would probably have developed into *-(w)abi- in Pre-Nu, with the *w retained only after certain consonants, and thus could easily develop the hardened form -gabi-. Synchronically, we must now assign this stem the base form /-abi-/, and take the surface form -gabi- as reflecting a special rule inserting g. Since there is no particular similarity between this rule and the Wa rule, which applies only after nasals (the Nu rule inserts g most often after stops, often ŋ after nasals), it would be difficult to support a diffusional correlation.

There is, however, another Nu rule which inserts a d under very restricted morphological conditions. One minor example is the plural form mand-irija for the moiety term yirija (base here perhaps /irija/). The main examples, on the other hand, involve pronominal prefix complexes ending in underlying /n/ when followed by a stem or derivational prefix beginning with an underlying vowel. Thus /-abi-/ 'to jump' forms ŋand-a:bi-ñ 'I will jump' from /ŋan-abi-ñ/. Note that the stem-initial vowel has been lengthened in conjunction with d-insertion.

This rule is clearly an innovation postdating the PNgNu period, since as we have just seen stems like -abi- once began with *w, so the forms must have been of the type *ŋan-wabi-ñ without *d. What I think happened here was that the *w was deleted, with compensatory lengthening of the following vowel, hence *ŋan-a:bi-ñ (or *ŋan-a:bi-ñ with *k → *g). I see no other explanation for the lengthening of the vowel. The insertion of d must have taken place at a later period.

It may help us to understand the origin of the d-insertion rule if we point out that it was functionally beneficial, permitting restoration of morphological distinctions which had been neutralised on the surface. This can be seen by examining transitive verb stems beginning in a vowel when preceded by certain pronominal prefixes. For example, consider -a:ru- 'to abandon' and -u-ma-na 'hits, kills'. The forms with d-insertion are of the type ŋand-a:ru-ñ 'I will abandon it.' and ŋand-u:-ma-na 'I will hit it.'. Were it not for d-insertion these would be *ŋan-a:ru-ñ and *ŋan-u:-ma-na. However, these would be homophonous with the actually attested forms ŋana:-'ru-ñ 'I abandoned him/I will abandon him.' from base /ŋanu-a:ru-ñ/ and ŋanu:-'ma-na 'I am hitting him/I will hit him.' from base /ŋanu-u-ma-na/. That is, the prefix /ŋan-/ would be indistinguishable from a different prefix /ŋanu-/ after VV-contraction rules with such vowel-initial stems. By developing the d-insertion rule with the consonant-final prefix type /ŋan-/ and by not using it with vowel-final prefixes like /ŋanu-/, the surface oppositions were restored after being temporarily neutralised (in this environment).

We still have to explain how d-insertion developed in the first place. There is no obvious analogical source for it within Nu itself — no instance where a true *d might have been reinterpreted as a morphophonemically inserted segment, thus permitting the spread of a d-insertion process to other combinations. The form man-dirija, plural

of the moiety term yirija, shows historically secondary d as in the pronominal prefixes just described (the morphemes here are plural *man-, seen also in Ng, and yirija from Ri and Yuulngu yiriča). Therefore this cannot be the prototype for d-insertion in the pronominal prefixes (or if it is, we still have to explain how man-dirija got its d).

It is thus at least conceivable that the Wa rule inserting homorganic stops might have played some role in stimulating the Nu development. The Wa rule applies in a somewhat analogous environment, involving a morpheme boundary near the beginning of a verb complex. As noted above, when the main verb (the verb-particle) ends in n the rule inserts d, as in diwand u-ŋa-b-iñu (cf. above).

I personally doubt that diffusion has been at work here, though. For one thing, there are only three or so Wa main verbs ending in n, none of them terribly frequent in texts, and the insertion of d occurs only in certain rather marked verbal categories (future, some potential forms). We would expect that if a phonological process is going to be diffused it is likely to be a productive one in the source language, rather than an extremely marginal one like this.

Secondly, although we have found difficulties in pinning down an internal analogical source for Nu d-insertion, it may be that we can still attain success with this approach. We have noted that Nu has a g-insertion rule which is somewhat similar to d-insertion in that it converts an underlying /C-V/ sequence at a morpheme boundary into surface C-CV. This may have provided at least a crude analogy from which d-insertion could have developed.

Why, then, did d-insertion develop, instead of simply having g-insertion extend into the pronominal prefix forms (and man-dirija)? Apparently the fact that the morpheme-final segment was *n in these examples (and is fairly uncommon in compounds, and the like, to which g-insertion applies) somehow insured that homorganic d was inserted rather than g. Another consideration may have been that converting stem-initial /-V:/ into /-dV:/ would not cause any mergers with instances of true inherited *-dV: (which were rare, and could not occur in the relevant positions since a rule inserting -nu- before *-dV: would have applied, hence *-nu-dV:). On the other hand, converting *-V: into *-gV: in this position would have produced a merger with forms with underlying *-w₁V:, which does occur in a number of stems.

The origin of d-insertion admittedly remains somewhat mysterious, but languages have been known to do strange things under intense functional pressures to restore threatened oppositions. If the Wa process played any role at all in the Nu development, it did so only by providing a general model which Nu then adapted to its own particular requirements.

At any rate, because of the unusual functional pressures underlying this development, it does not establish rule-borrowing as a regular or recurrent mode of phonological diffusion.

Moreover, even if diffusion is involved here, we can ask whether a rule was borrowed, or whether what was borrowed was a surface alternation (with neither variant given a privileged status as the underlying

form). That is, did the diffusion involve a mode of converting base into surface structures (a rule), or a relationship among surface structures? In both Wa and Nu, the relevant 'rules' effectively describe a situation where vowel-initial allomorphs of a morpheme occur word-initially and after certain consonants such as liquids, but where an additional consonant occurs at the beginning of the morpheme when it is preceded by a morpheme ending in a stop or nasal. It seems to me, then, that any diffusional explanation for Nu d-insertion could be handled just as well in terms of surface patterning instead of by positing rule-borrowing as such.

11. OTHER PHONOLOGICAL RULES: WARNDARANG

Each of our four main languages has seven or eight phonological rules, and in some cases many more, though the exact number depends on how they are formulated. There is often a choice between formulating two separate rules, or combining them into a single rule, perhaps with two subparts. A rough idea of the range of phonological rules found in each language will be given here, in order to determine to what extent evidence for diffusion of phonological rules can be found. In cases of apparent diffusion of such rules, we should ask whether what has been diffused has been a rule as such (that is, a way of converting underlying into surface forms), or whether the diffusion has really been on the level of surface constraints, surface alternations, etc.

For Wa we find the following kinds of rules:

- (a) Stop-lenition in reduplications, of the type -biyi-wiyima from -biyima.
- (b) An alternation of \emptyset and g at the beginning of third person pronominal prefixes, hence a-ja 'He told him.' but raŋ ga-ja 'He speared him.'. The g appears after any stop or nasal in a preceding 'main verb'.
- (c) Stop-insertion after nasals, described in section 10 of this chapter.
- (d) y → j at the beginning of an inflected verb form after a 'main verb' ending in a stop or nasal.
- (e) rr → r (retroflexed glide r deleted after flap r).
- (f) A stop is sporadically nasalised before a nasal, as in gi an-mayi- \emptyset 'they (two) went' with an- from /ad-/.
- (g) A vowel (a, i) becomes u under certain conditions at the end of a long (for example, trisyllabic) prefix complex before an inflected verb, as in ya-lu-ra-ra 'they (plural) came' from /ya-wala-ra-ra/, where -ra- is the root.
- (h) y → \emptyset in a few prefix complexes in the environment ya-___ V-.
- (i) VV-contraction. The following are attested: $V_1V_1 \rightarrow V_1$ (for example, aa → a), Vi → i, ua → u, au → a.
- (j) Word-initial i becomes yi, u becomes wu.
- (k) Word-initial nasal-stop clusters lose the nasal, hence

ndula 'foot' → dula (cf. wu-ndula with noun-class prefix).

We have already discussed (c) in connection with a Nu rule in section 10 of this chapter. Of the other rules, can any be interpreted as instances of true rule borrowing?

To begin with, we should note that several of the rules are clearly manifestations of surface pronunciation constraints, notably (e, i, j, k), so that the language has very little freedom in formulating its rule. Others such as (a, b, c, g) are more abstract rules not closely dependent on surface pronunciation patterns, and perhaps applicable only at certain types of boundary.

Let us now go over each rule in the light of the areal association of Wa with Nu, in contrast to its genetic (as well as areal) association with Mara and Alawa. An areal explanation would be strongly motivated only if Wa can be shown to have diverged from Mara and Alawa and converged with Nu in particular rules.

Wa rule (a) appears to resemble a Nu rule which produces such alternations as -bara-wara- from -bara- 'to be crooked'. However, the Nu rule applies mainly to verb stems of adjectival meaning which also have nominal forms (cf. bara-waru-j 'crooked'). The Wa rule, on the other hand, applies to a few inflected verbs (auxiliaries) and to a few multiple plural reduplications of noun stems. Moreover, Mara has a number of similar stop-continuant alternations in reduplications, hence -jaga-yagayi from a stem meaning 'to take' and so forth, so there is no necessity of connecting the Wa and Nu rules. Moreover, note that the stop-continuant alternations can be described as surface alternations as well as in terms of a rule.

Rule (b) superficially resembles a Nu rule inserting g or ŋ before a stem or derivational prefix beginning in a vowel when the preceding morpheme ends in a stop or nasal; see section 10 of this chapter for examples (-garan-gabi- from -abi-, etc.). However, the Wa rule simply reflects older alternations of the type *wa-/*ga- (now a-/ga-), seen also in cognate prefixes in Mara of the type wu-/gu-, wa-/ga-, etc. Thus a genetic retention rather than a case of diffusion is at hand. Wa has innovated merely in dropping initial *w in such forms; a similar innovation has occurred in Alawa in the cognate prefixes (for example, a-).

Rule (c) has been dealt with above in section 10. It has closer parallels in Mara than in Nu.

Rule (d) resembles a portion of the Nu hardening rule (Figure 5, above), namely y → j. However, the Wa rule is much more restricted than the Nu rule. Moreover, alternations of y and j occur in Mara, Alawa, and various other languages. If diffusion has been at work at all in shaping the Wa rule, we should explain this as diffusion on the level of surface constraints, since clusters with y following a stop or nasal are avoided in Wa (hence absolute suffix -yu has an allomorph -qu after a stop or nasal).

Rule (e) is not found in Nu, where the /rr/ cluster does not occur at any level. A similar rule is found in Ng, but is restricted to a few combinations, and in view of the general lack of phonological diffusion involving Ng and Wa there is little likelihood of diffusion

in this case. The Wa rule is a simple reflection of the fact that the surface cluster *rr̄ would violate the language's pronunciation constraints. That the /r̄/ rather than the /r/ is deleted can be explained on simple functional grounds, since it prevents homophony between wu-ñir-a /u-ñir-ɾa/ 'we will go' and wu-ñi-ɾa 'you will go', etc.

Rule (f) has only partial parallels in Nu, where /j/ in particular is often nasalised before n or another nasal, as in miñ-ɲaɲji /mij-ɲaɲji/ 'girls'. The process is sufficiently natural that no diffusional explanation need be looked for. If diffusion is involved, we observe again that what is really going on is that a surface pronunciation pattern whereby stop-nasal sequences of certain kinds are unstable has been diffused.

Rule (g) has no parallels in Nu or Ng, and can be explained as an internal analogical development based on reinterpretation of forms involving the oblique morpheme -nu- (cf. Mara and Alawa -gu-).

Rule (h) has no close parallels in Nu or Ng, and represents a routine type of haplology, whereby /ya-yV/ becomes /ya-V/ and then contracts further.

Rule (i), VV-contraction, is found in various forms in all of the other languages in the area. This is because all of the languages have a general surface constraint forbidding sequences of vowels. The precise form of the rule differs from one language to another, and in most cases these differences can be explained on functional grounds. That is, in general each language has a VV-contraction rule which results in the fewest cases of surface homophony; Nu, for example, treats clusters like /ui/ in different ways depending on the morphological environment. That all languages share the subrule V₁V₁ → V₁ or (V₁:), hence aa → a (or a:), should hardly surprise anyone. As for the treatment of underlying nongeminate vowel clusters, we may observe that whereas Wa has ua → u and au → a, Nu has ua → a: and au → u: in the majority of instances. Wa Vi → i (that is, ai → i and ui → i) is partly matched by Nu ai → i:, but as just noted Nu treats ui in various ways and the result is u: in the most important combinations. Thus if diffusion has been at work, it is only at the level of surface pronunciation constraints, and certainly not in terms of the actual form of the rule.

Rule (j) has parallels in many languages in the area, but is clearly the result of a surface pronunciation constraint preventing word-initial *i or *u without a preceding phonetic semivowel.

Rule (k) has parallels in Mara, and simply represents a surface pronunciation constraint preventing word-initial nasal-stop clusters (or other consonant clusters, for that matter). The rule is needed also in Nu, but only because Wa ngurya 'excrement' has been borrowed into Nu as mana-nguriya, and Nu needs a rule like (k) to account for the form guriya without noun-class prefix. The Wa rule can certainly not be accounted for in terms of diffusion from Nu.

The general conclusion, then, is that Wa phonological rules have not been directly borrowed from Nu, despite the close Sprachbund relationship between the two languages. In a few instances there is a possibility, but no more than that, that Nu surface pronunciation

patterns have affected Wa surface pronunciation patterns. In this event, if both languages have underlying representations which violate the surface constraints, both need rules to convert these representations into acceptable surface strings. In such cases both languages may end up with partly similar rules (though in VV-contraction, for example, the rules turn out to be highly dissimilar). However, it would be very misleading to suggest that phonological rules as such have been borrowed. At most we could possibly argue that surface alternations have been diffused in some form, and this could be described in terms of phonological rewrite rules if that is what we wish, but rules which are too abstract to result in easily observed surface alternations have not been borrowed.

12. OTHER PHONOLOGICAL RULES: RITHARNGU

Ri is not especially rich in phonological rules, and most of those which are found seem to occur in at least some other Yuulngu languages. The principal rules in Ri are these:

- (a) V-shortening in noninitial syllables, hence da:ra? → da:ra- from /da:ra? → da:ra-/, reduplication of da:ra- 'to stand'.
- (b) Lenition of fortis stops to lenis stops after stops, nasals, or ?, hence /mayan-kuru?/ → mayan-guru? 'along the river'.
- (c) Lenition, usually optional, of lenis stops (b, j, g) to continuants (w, y, w) in suffix-initial position after a vowel or nonnasal sonorant, hence -gu → -wu, etc.
- (d) y → j and r → d after stop or nasal, with or without intervening glottal stop, hence ya → ja in the form waɲan? ja 'hill coolibah tree'.
- (e) Hardening of lenis stops to fortis stops in suffix-initial position after pronouns and interrogative pronouns, hence /ɲara-gu/ → ɲara-ku 'my'.
- (f) Alternations such as -na ~ -na ~ -na depending on the preceding vowel and the lexical class of the preceding verb stem.
- (g) Thematizing augment -du- has phonologically conditioned allomorphs -yu-, -u-, etc.
- (h) ia → iya (semivowel insertion, bleeding the next rule); in one combination similarly ua → uwa.
- (i) VV-contraction, as follows: ai → i, au → u, ua → a.
- (j) V-harmony in a few demonstrative adverbs with following enclitic, hence ɲuɲ?ɲara 'there' → ɲuɲ?ɲiri before di.

Rule (a) reflects a surface constraint against having long vowels in noninitial syllables; this seems to hold for other Yuulngu languages as well.

Rule (b) is likewise a direct result of a constraint which disallows surface clusters of a nasal followed by a fortis stop. This rule and this constraint are found in Ng, but also occur in other

Yuulngu languages. Thus rules (a) and (b) in Ri need not be explained as borrowings from Ng.

Rule (c) applies in one form or another in other Yuulngu languages, and certainly does not occur in Ng, which has tended historically to harden lenis stops to fortis ones in this position, rather than leniting them to continuants as in Ri.

As for rule (d), the $\underline{y} \rightarrow \underline{j}$ part has parallels in other Yuulngu languages and need not be a borrowing from Ng. The only parallel in Ng is a rule $\underline{y} \rightarrow \underline{j}$ following coronal stops (\underline{t} , \underline{t} , and vacuously \check{c}), which cannot be the model for the Ri type. The Ri shift $\underline{r} \rightarrow \underline{d}$ occurs in initially truncated forms of the first singular pronoun (\underline{na}) \underline{ra} -. This is also found elsewhere in the Yuulngu group (specifically: Dhuwal) when this truncation is permitted. The rule $\underline{r} \rightarrow \underline{d}$ does not occur in Ng; there are two examples of the rule in Nu, notably locative $\underline{-ruj}$ ($\underline{-duj}$ after stop or nasal), but the rule in Nu is not productive and is unlikely to have affected Ri phonology since Nu and Ri are generally rather divergent phonologically.

Rule (e) is an old Yuulngu process, and although Ng has certain hardening rules applicable to suffix-initial lenis stops the resemblances between the Ng and Ri rules are so weak that a specific diffusional relationship is very unlikely.

Rule (f) is restricted to a few suffixes, is an old Yuulngu process, and has no parallels in Ng. Rule (g) is at least in part a Ri (or, more generally, southern Yuulngu) innovation, but there is no parallel in Ng. As we will see in the next chapter, Ng actually borrowed the Ri thematising augment, but shows only a single allomorph $\underline{-du}$ -.

Rule (h) is not found in Ng, where the cluster $\underline{/ia/}$ does not occur at any stage.

Rule (i), \underline{VV} -contraction, has only sporadic parallels in Ng, where there are few underlying vowel clusters. The only Ng examples involve the shift $\underline{Vi} \rightarrow \underline{i}$, which is consistent with the Ri subrule $\underline{ai} \rightarrow \underline{i}$. However, this is too little for a convincing claim of a diffusional relationship, especially since the Ri and Ng rules appear to have been inherited from proto-languages, and since the shift $\underline{Vi} \rightarrow \underline{i}$ (instead of $\underline{Vi} \rightarrow \underline{V}$) is functionally motivated in both Ri and Ng. In Ri $\underline{Vi} \rightarrow \underline{i}$ permits surface contrasts of the type $\underline{da:ra-\emptyset}$ 'is standing' versus $\underline{da:r-i}$ / $\underline{da:ra-i}$ / 'will stand', while in Ng it permits overt indication of the reflexive suffix $\underline{-i}$ -, as in $\underline{-\dot{d}ak-\underline{d}-i}$ from $\underline{-\dot{d}ak-\underline{d}u}$ 'to cut'.

Therefore it appears that Ri phonology (in the sense of rewrite rules converting underlying into surface forms) has not been directly affected by contact with Ng, despite the close relationship of the two in terms of phonemic inventory and surface pronunciation constraints.

13. OTHER PHONOLOGICAL RULES: NGANDI

We now examine Ng to see whether its phonological rules have been borrowed from Ri. The major rules are these:

- (a) Alternations of retroflexed and apicoalveolar stops and nasals at the beginning of stems and noninitial prefixes, hence $\underline{a-ni-?}$ 'this' versus $\underline{a-ja-ri-?}$ 'now this', with deictic stem $\underline{/ni-}$.
- (b) Hardening of locative $\underline{-gi}$ to $\underline{-ki}$ and allative $\underline{-gi\check{c}}$ to $\underline{-ki\check{c}}$ after demonstrative pronouns, as in $\underline{gu-na-ri-ki\check{c}}$ 'to that one'.
- (c) Hardening of stem-initial lenis stops to fortis in certain stems only, when preceded by a compounding stem or by a reduplicative segment: $\underline{-do}$ 'to chop' \rightarrow $\underline{-wali-t\check{o}}$ 'to chop wood', $\underline{-bu-y\dot{d}i}$ 'to fight' reduplicated as $\underline{-buy\dot{d}i-pu-y\dot{d}i}$.
- (d) $\underline{y} \rightarrow \underline{j}$ after a coronal stop (\underline{t} , \underline{t} , $\underline{\check{c}}$).
- (e) Fortis stops become lenis after a stop, nasal, or $\underline{?}$.
- (f) Fortis stops become lenis in second and fourth syllables in verbal reduplications: $\underline{-\eta u-\check{c}ini}$ 'eats' \rightarrow $\underline{\eta uji-\eta u-jini}$.
- (g) Fortis stops become lenis in suffix-initial position when the preceding two syllables contain a fortis stop or a 'hard' cluster: ergative $\underline{-tu}$ in $\underline{gu-bi\check{c}iri-\underline{d}u}$ 'file snake'.
- (h) Several rules deleting $\underline{?}$. One accounts for reduplications like $\underline{-bi\check{a}\eta-bi\check{a}\eta-\underline{d}u}$ from $\underline{-bi\check{a}\eta-\underline{d}u}$ 'to lick'; another deletes \underline{i} after a stop; a third, similar to (g), accounts for $\underline{-?wala}$ 'first' in $\underline{\eta aya-tu-wala}$ 'I first'.
- (i) \underline{y} -deletion before \underline{i} in a few combinations like $\underline{\check{n}ar-ima-na-?}$ 'we do' from stem $\underline{-yima}$ -.
- (j) $\underline{r\check{r}} \rightarrow \underline{r}$. Also, deletion of \underline{r} in reduplication of $\underline{-ru\dot{d}u}$ 'to go', hence $\underline{-ru\dot{d}u-\underline{d}u}$ from $\underline{/r\check{r}u\dot{d}u-u\dot{d}u-}$.
- (k) Geminate-cluster contraction: $\underline{C_1C_1} \rightarrow \underline{C_1}$.
- (l) $\underline{\check{n}y} \rightarrow \underline{\check{n}}$.
- (m) \underline{V} -harmony in noun-class prefixes with $\underline{/a/}$ before stems whose first vowel is \underline{o} , hence $\underline{/a-wolo/} \rightarrow \underline{o-wolo}$ 'that'.
- (n) $\underline{V} \rightarrow \underline{i}$ in several combinations before \underline{y} , $\underline{\check{n}}$, $\underline{\check{c}}$, \underline{j} , as in $\underline{-\dot{d}ak-\underline{d}u}$ 'to cut', negative stem $\underline{-\dot{d}ak-\underline{d}i-\check{c}}$ -.
- (o) $\underline{Vi} \rightarrow \underline{i}$.
- (p) Minor rules accounting for a handful of vowel-length alternations.

Rule (a) is not found in Ri since this language has no real alternations involving retroflexion. However, Ng comes close to Ri in its general surface constraints on apicals: both allow retroflexed but not apicoalveolar consonants word-initially (exception: Ri \underline{lili} 'hither') and stem-initially (exception: Ng demonstrative stems). Ng shows more alternations since it but not Ri has elaborate prefixation.

Rule (b) was inherited from PNgNu since there are vestiges in Nu; Ri has no close parallels. Neither does Ri have any parallels to rule (c).

We observed in the preceding section that Ng rule (d) is roughly

similar to a more general rule in Ri. Rules of this sort are common in languages of the area, but there are so many differences in details that a diffusional relationship is uncertain. Moreover, the Ng rule is the result of a surface constraint against clusters such as /ty/, so that even if diffusion from Ri has occurred here it has been at the level of surface constraints.

Rule (e) is found in Ri, other Yuulngu languages, and probably some other prefixing languages to the west and north; it reflects a surface constraint against clusters where a fortis stop follows another stop, a nasal, or ʔ. Diffusion is certainly involved, but again what is diffused is a surface pronunciation pattern, not a rule as such.

The Ng rules (f) and (g) have no parallels in Ri, nor so far as I know in other languages (with the possible exception of Rembarrnga).

The rules mentioned in (h) are lacking in Ri, except for the rule which deletes ʔ after a stop. This is clearly the result of a surface constraint against clusters such as /kʔ/.

The Ng rule (i) has no parallels in Ri. The same is true of rule (j). We have mentioned earlier that rule (j) occurs also in Wa, but concluded that a diffusional relationship was unlikely.

Rule (k) is shared by Ri, but both Ng and Ri inherited such rules from their proto-languages. This type of rule is quite routine, given a surface constraint against geminates, and no diffusional explanation is called for. The rule is also found in Nu, other Yuulngu languages, etc.

I know of no Ri parallels to rule (l), which is a low-level rule calling for no special comment. Rule (m) has no close parallels in Ri, which has a different vowel-system than does Ng. Rule (n) has a number of parallels in Nu, and thus is probably reconstructable at least in embryonic form for PNgNu, and there are no similar rules in Ri. We have commented above on Ng Vi → i and its doubtful connection with Ri VV-contraction. The vowel-length rules referred to in (p) are partly shared by Ri, but this is because both languages have sharp restrictions on long vowels, while preferring CV: to CV in monosyllables with open syllable.

Thus we conclude that Ri has exerted negligible influence on Ng so far as phonological rules are concerned. A few rules are similar or identical in the two languages, but most of these were inherited from the respective proto-languages and thus do not fall within the time span relevant to this study, and/or they are direct reflections of shared surface patterning.

14. OTHER PHONOLOGICAL RULES: NUNGGUBUYU

We saw in several previous sections that Nu has undergone many phonological innovations as the result of its loss of the fortis/lenis opposition in stops. A number of the historical shifts have been context-dependent, resulting in numerous alternations and therefore an abundance of phonological rules. It is not possible to go over all of these, but we may mention several of the more important ones:

- (a) Semivowel-deletion affecting some forms of -w₂u- 'to hit' (→ -u-) and -yi- 'to give' (→ -i-).
- (b) Word-initial u → wu, i → yi.
- (c) w₁ is often deleted intervocally and word-initially, hence /w₁ara-/ → ara-.
- (d) y-insertion in a very few forms like /ni-w₁ara-/ → /ni-ara-/ → ni-yara-.
- (e) w₂ is deleted in a few prefix combinations, hence /ni-w₂an-/ → nin-.
- (f) Lenition of stops to continuants in a few reduplications like -bara-wara- from -bara- 'to be bent'; applies especially to adjective-like verbs.
- (g) Hardening of continuants /w₂, l, r, r̄, y, w₁/ to stops b, d, d̄, d̄, j, g after a stop or nasal, as in case-suffix variants -w₂aj/-baj, -yiñuŋ/-jiñuŋ, etc.
- (h) d-insertion, described in section 10 of this chapter.
- (i) rn → ŋ in a few combinations, hence masculine dual /-r-ni/ → -ŋi in demonstrative pronouns.
- (j) g is deleted before most consonants.
- (k) Flap r is deleted after another liquid, as in /-la:l-ruj/ → -la:l-uj.
- (l) Stops, especially j, may be nasalised before a nasal, as in /mij-ŋa!añji/ → miñ-ŋa!añji 'girls'.
- (m) a or u may become i before y, j, ñ in certain combinations, as in /-maŋda-ñ/ → -maŋdi-ñ 'made'.
- (n) A variety of V-ablaut rules changing the final vowel of a morpheme before particular suffixes, as in /-yambi-/ plus /-ŋ/ → -yamba-ŋ 'will speak'.
- (o) V-shortening rules found in some compounds and reduplications, also before the nonsingular morpheme -rV-.
- (p) V-length shift, only in forms of gu:gu 'water', as in /a-gu:gu/ → a:-gugu.
- (q) Some minor V-lengthening rules applicable to certain prefixes, for example /na-/ → na:- in some combinations.
- (r) VV-contraction, as follows (regular forms only given here): V₁V₁ → V₁:, iV → i:, ua → a:, ui → u:, ai → i:, au → u:.
- (s) Truncation rules: wara- → wa:- in some combinations, etc.

Most of these rules lack close parallels in nearby languages, including Wa, with which Nu has been in the most intensive contact. This remark applies particularly to rules (a), (e), (j), (k), (n), (p), (q), (s).

Rule (b) is also found in Wa, but is clearly the result of a surface constraint which is also applicable to other languages in the area.

Rule (c) corresponds to a historical process deleting *w in some Wa forms. The Wa process has been limited to word-initial position before *a. The Nu process, on the other hand, has applied word-medially as well as word-initially, and before *i as well as *a. Moreover, the historical process deleting *w in Wa has in most cases not left behind any alternations (except of the type a-/ga- in third person pronominal prefixes, where g represents hardened *w), so we could hardly speak of diffusion of a w-deletion rule. The most one could say is that Nu and Wa share a general tendency for *w to be unstable, but this is true to very different degrees in the two languages. Since other languages like Alawa are similar to Wa in this respect, it is unlikely that Wa has been affected by Nu here, and even less likely that Nu has been influenced by Wa.

Rule (d) has no parallels in Wa, and the only language with anything similar is Ri, where ia → iya. However, rule (d) in Nu is of limited applicability, since most underlying ia sequences become i: by rule (r), VV-contraction. Rule (d) applies only when VV-contraction is blocked for some reason, or when the ia sequence is created by rules which follow VV-contraction. Since the development of ia to iya is quite routine in situations where contraction is not possible, and since only a handful of Ri forms are affected by the ia → iya rule in that language, it is very unlikely that diffusion of any kind has been at work in this instance.

We have already observed that rule (f) is sufficiently unlike a superficially similar Wa rule that no diffusional relationship is likely.

Some languages in the area have partial analogues to Nu rule (g), for example various rules of the type y → j in some combinations. However, the Nu rule is much more productive and elaborate than any of these other rules. Moreover, the Nu rule can be explained as the result of the consonantal shifts seen in section 4 of this chapter along with various internal analogical readjustments.

We have dealt with rule (h) in section 10 of this chapter. Rule (i) is also found in the same morphological combinations in Ng (and Enindhilyagwa) and has thus almost certainly been inherited from PNgNu.

Rule (l) is partly similar to a Wa rule. If there is any diffusion here, it is on the level of surface pronunciation patterns which make stop-nasal clusters unstable.

Rule (m) occurs also in Ng, and thus must have been inherited from PNgNu. Since details differ in the two languages, we must assume that both Ng and Nu have elaborated and extended the rule to some extent.

The rules mentioned in (o), shortening vowels in some multisyllabic words such as compounds and reduplications, are in part reflections of the fact that Nu vowel length is very difficult to detect in any position. It is manifested by minor stress, intonation, and length variations, which however are to a large extent levelled out in longer words. There are no parallels to these rules in Wa, which allows long vowels at no level. Superficially similar rules in Ng and Ri differ in

important details (thus Ng allows long vowels in only a handful of morphemes, while Ri allows them in word-initial position only), so there is no clear evidence of a diffusional relationship.

The VV-contraction rule is found in one form or another in all of our languages, and it is probable that an areal pattern is responsible for the absence of surface VV clusters. Nu actually violates this in the case of some recently formed aa clusters (distinct from a:) derived from *awa, but even these are contracted to a: by some speakers. Although we can conclude that diffusion may be involved at the level of surface pronunciation constraints, the actual details of the VV-contraction rules differ substantially from one language to another. For example, Nu differs from Wa, the most closely related language in diffusional matters, in that Nu au → u: and ua → a:, whereas in Wa we find au → a and ua → u. Thus the form of the rule is quite different in the two languages. The Ng rule, whereby Vi → i (examples involve reflexive -i- added to a verb stem), is similar to what happens in Nu, where in this particular reflexive combination we get the same result (elsewhere ai → i: but ui → u: in Nu). However, this is undoubtedly a retention from the proto-language rather than a diffusional sharing, and in any event this rule or subrule is functionally motivated in both languages since it permits overt differentiation of simple and reflexive verb forms. Parallels between Ri and Nu VV-contraction can be found, but since the Ri rule was inherited from Proto-Yuulngu it cannot have been influenced by Nu, while Nu for its part cannot have been influenced by Ri since the Ri rules apply only to a handful of verb forms and since Nu and Ri show little evidence of having influenced each other's phonological systems.

Once again, we must conclude that the system of phonological rules found in Nu has not been elaborated by direct borrowing of rules from any other language. To the extent that there has been any diffusion at all, it has been almost entirely at the level of surface pronunciation patterns. Thus the Nu phonemic system has been rearranged to make it fit in with Wa pronunciation patterns, as we saw in several earlier sections. This resulted in many new alternations requiring us to set up synchronic phonological rules, but in most cases these rules have no close parallels in Wa.

15. SUMMARY

One of the questions we wanted to answer was whether phonological diffusion in the area came about mainly as the result of direct diffusion of loanwords, as Meillet suggested it normally did, or whether it took the form of indirect diffusion of general pronunciation patterns applied by the borrowing language to its own inherited morphemes.

On the whole, indirect rather than direct diffusion seems to have been more important. In the case of Ng and Ri, direct diffusion has been significant in the one recent diffusional innovation — the adoption by Ri of the Ng distributional pattern for glottal stops. However, even in this case Ri has developed glottal stops in a fair number of morphemes (especially case suffixes), though glottal stops are not phonetically obligatory in that position.

Diffusion between Nu and Wa has been primarily of an indirect nature. At an earlier stage, perhaps when the two language groups were just beginning to have a close social relationship, Nu had a number of consonants and vowels which were not present in Wa, such as fortis stops and the glottal stop, and the mid vowels *e and *o. Nu did borrow a fair number of lexical items (chiefly nouns), but this process by itself could not have brought about the innovations which Nu has experienced, since Nu already had every phoneme found in Wa and could thus assimilate Wa loans without altering its own phonemic inventory. Even the relative frequency of Nu phonemes could not have been appreciably altered, since the number of Wa loans in Nu is much smaller than that of Ri loans in Ng, for example. The changes which Nu underwent, then, are similar to the diaphonic rules we find in imperfect bilingualism, where native speakers of one language (Wa) pronounce words in another language (Nu) with their own (Wa) phonetic patterns. Thus Wa speakers might have pronounced Pre-Nu fortis stops as lenis, and would have dropped Pre-Nu *ʔ or shifted it to a more familiar consonant like g or j. What seems to have happened is, in effect, that Nu speakers ended up by adopting Wa diaphonic rules for their own (Nu) language.

The only instance of direct diffusion between Nu and Wa has been the development of d in Wa. However, this phoneme occurs in only a handful of nouns borrowed from Nu, and a number of other loans from Nu have undergone a shift from Nu d to Wa j. Thus direct diffusion has had a negligible effect on Wa, and no effect whatever on Nu.

We have given only brief mention to phonological changes which pre-date our proto-languages. However, we did note that PNgNu developed interdental stops after coming into contact with the Yuulngu languages, and that while many Ng and Nu interdentals are in loanwords there are also some archaic stems and morphemes where interdentals appear to have developed out of old laminals (for example, *ʃ → ʒ). Thus once again we find indirect as well as direct diffusion.

We should also note that whereas direct phonological diffusion by its very nature is usually limited to the introduction of new phonemes and combinations (for example, Wa interdentals in loans from Nu), we have found that indirect diffusion has been at work both in creating new phonemes by phonemic split (*ʃ → ʒ, ʒ), and in reducing phoneme inventories (for example, the loss of the fortis/lenis opposition in Nu).

It is difficult, however, to weigh the relative contribution of direct and indirect diffusion in the introduction of new phonemes. Although in most cases both types of diffusion seem to have been involved, it is not possible to determine which type occurred first. It may be, for example, that in the case of the development of PNgNu interdentals, this proto-language first borrowed some lexical items with *t̪ and *d̪ from Proto-Yuulngu, and then underwent a split *ʃ → ʒ, ʒ affecting its own material. In this event we would have direct diffusion creating infrequent *d̪ and *t̪ phonemes, which could then have acted as catalysts, encouraging the language to internally develop more instances of these phonemes. This point, however, applies only to the addition of new phonemes; so far as reductions in phonemic inventory are concerned, indirect diffusion has certainly been the dominant

factor in the clearest cases we have (Nu consonants and vowels).

Another question is whether diffusion has been highly selective, occurring only when the borrowing language has structural or functional features favouring the particular changes recorded. This was the position of Sapir and Martinet, among others. One problem with this view is that it is sufficiently vague to be applicable ex post facto to virtually any diffusional change. My general conclusion is that inherent 'drift' has played only a marginal role in the developments we have dealt with in this chapter.

For example, we can hardly consider the adoption by Ri of the Ng pattern for the distribution of ʔ as a manifestation of a built-in tendency in Ri. The other Yuulngu languages have not undergone this shift, which seems to have had little effect on the rest of the phonological system and to have had few functional consequences.

The clearly diffusional developments which have affected Nu (the shift of fortis to lenis stops, the loss or shift of *ʔ, the merger of mid vowels *e and *o with *a) are likewise hardly describable as due to inherent developmental tendencies. None of these changes, for example, has occurred in Ng or other prefixing languages to the north and west. Indeed, the Nu developments have required the language to undergo a wholesale restructuring of its entire phonemic system in order to maintain a reasonable number of phonological positions. It could hardly be claimed, for example, that the old fortis-lenis opposition was of low functional yield; the fact that old lenis stops have in most cases become Nu continuants, thus escaping merger with old fortis (now lenis) stops, specifically contradicts this.

Finally, it would be difficult to describe the development of interdentals in PNgNu, or their more marginal introduction into Wa, as a change which was especially encouraged by the pre-existing phonological system of the borrowing language. Interdental stops are not exceptionally common in the languages of the world, and given a prior system with five points of articulation (hence *p, t, t̪, ʃ, k) it would not normally occur to us that the interdental 'slot' was a glaring gap which had to be filled.

In general, then, I do not think that the idea of selectivity in borrowing gets us very far in the area of phonological diffusion. It could perhaps be invoked to explain why Ng retains its five vowels (i, e, a, o, u) despite pressure from Ri (which has i, a, u in long and short varieties). However, Nu started out with the same vowel system and the same lexical and morphological inventory as Ng in the PNgNu period, yet Nu has squeezed its five vowel qualities into three under Wa influence, and has also developed a long-short opposition.

The most important role for internal structural and functional factors, along the lines worked out chiefly by Martinet, has turned out not to be in the selection of which phonological features are borrowed, but rather in determining the internal readjustments which languages have undergone in the wake of a diffusionaly motivated phonological innovation. The Nu evidence in particular shows that Nu was virtually powerless to prevent the reduction of its phonemic inventory to essentially match that available to Wa speakers. However, during the resulting innovations (lenition of old fortis stops, etc.),

and in their immediate aftermath, we have seen that Nu underwent a series of internal readjustments which prevented the complete destruction of the old system of phonological oppositions. These secondary readjustments can only be understood in the context of structural-functional analysis of the sort Martinet envisaged.

The other question we wanted to answer was whether formal generative phonology provides a useful tool in the study of phonological diffusion in the area. However, we have found rather few similarities between Ng and Ri, or between Nu and Wa, in their systems of phonological rules despite the fact that these language pairs have obviously been involved in extensive phonological diffusion, as seen in their convergences in phonemic inventory and sequencing restrictions. In most cases where the language pairs seem to share a phonological rule, or to have similar rules, it turns out that the rules are direct consequences of shared surface pronunciation constraints. For example, Ng and Ri both have rules converting clusters like /mp/ into clusters like mb with lenis instead of fortis stop, but this rule is due to surface constraints which do not allow fortis stops after nasals. Thus it is misleading to speak of diffusion of a phonological rule; we can instead speak of diffusion of surface patterning.

In fact, by looking at surface patterning (phonemic inventory, co-occurrence restrictions, etc.), we find much stronger evidence for diffusion than we find by looking at formal generative systems. It is possible, for example, for two languages to have virtually identical surface pronunciation patterns, but to differ considerably in their phonological rules.⁴² This is because one language might have base forms which are already very close to the surface canons, requiring very few rules to produce surface representations, while the other language might have underlying base forms which differ considerably from the surface forms and require many phonological rules. Such rules, of course, are needed primarily to account for discrepancies between base and surface forms, so that diffusion of surface patterns alone (without corresponding diffusion of base forms) need not result in convergence of the system of rules. Since diffusion of base forms can hardly take place, short of replacing one language by another, diffusion of rules as such is unlikely to be a natural form of phonological diffusion.

Moreover, it is possible for two languages to simultaneously have similar base forms and similar surface structures without identical phonological rules. For example, all of our languages have underlying

⁴²A similar conclusion was reached by Gumperz and Wilson in a study of a contact situation in South Asia:

Work still in progress further indicates that the three local varieties are also identical in phonetics although they have different morphophonemic rules.

See J. Gumperz and R. Wilson, 'Convergence and Creolization: A Case from the Indo-Aryan/Dravidian Border in India', in D. Hymes, ed., *Pidginization and Creolization of Languages*, Cambridge 1971 (paperback edition 1974), p.155.

vowel clusters, but do not permit such clusters on the surface (with marginal exceptions in Nu). However, when we look at the particular forms taken by the VV-contraction rules, we find that in one language /ua/ becomes u, in another a, in a third a:, and so forth. An areal surface canon is at hand here, but languages are granted considerable latitude in how they attain it.

In several of our languages there are specialised phonological rules which occur only at word-internal morpheme boundaries. For example, Ng has several rather peculiar rules affecting suffix-initial stops (k → g, g → k, etc.). These rules have nothing to do with surface pronunciation constraints, since the underlying as well as output forms are perfectly pronounceable (as can be seen by observing that the rules would not have applied in the absence of a morpheme boundary). Thus we have a good test case where there is clearly a phonological rule (that is, a clear surface alternation), but where it does not relate to word-level pronunciation constraints. For example, Ng /gu-na-ri-gi/ 'at that one' would be easily pronounceable, but happens to become gu-na-ri-ki by a special hardening rule converting /g/ into k.

It turns out, however, that this kind of rule has not been diffused. Both Ri and Ng have a number of such rules, but all are inherited from proto-languages or internally developed, with no indication of diffusion of any kind.

The one possible exception to this is the Nu d-insertion rule described in section 10 of this chapter, which may have been stimulated by certain alternations in Wa (though this is far from certain). This example, however, involved the creation of a rule rather dissimilar in form to the Wa model, and applicable only to a very restricted set of morphological combinations. The Nu rule was also created under unusually urgent functional pressures, involving the restoration of important oppositions among various transitive pronominal prefixes.

Of course, we also saw that some diffusion involving the form and meaning of reduplication processes has occurred. However, reduplication is only loosely describable as a phonological rewrite rule in the usual sense; it is not so much a process converting an underlying representation into a surface one as it is a grammatically meaningful mark, roughly comparable to adding a compounding stem. It is also in part iconic, since it indicates repetition (among other things) with verbs and plurality with nouns. For these reasons reduplication rules can be diffused much more readily than ordinary rewrite rules.

Chapter 3

DIRECT DIFFUSION OF MORPHEMES

1. PRELIMINARIES

In this section we deal with the direct diffusion of grammatical morphemes such as prefixes, suffixes, postpositions, independent pronouns, and various demonstrative forms.

Over the years, many linguists have taken strong positions on the resistance of morphology to diffusional pressures. As we saw in Chapter 2, section 1, some of these linguists have likewise asserted that phonological systems were immune to significant diffusional interference. Thus Meillet, while recognising that lexical diffusion could be virtually limitless in a contact situation, insisted that 'la prononciation et la grammaire' were closed systems which could not be penetrated by diffusional borrowings.

Meillet was aware that some direct morphological diffusion had taken place among Indo-European languages, but he insisted that such diffusion had been minimal, and restricted to minor derivational processes.

Il y a aussi des emprunts grammaticaux; mais, comme les emprunts de phonèmes qu'on vient de voir, ils sont liés à des emprunts de mots, et ils concernent ce qu'il y a de moins grammatical dans la grammaire. Il n'y a pas d'exemple qu'une flexion comme celle de *j'aimais, nous aimions* ait passé d'une langue à une autre; on n'emprunte une chose de ce genre que si l'on emprunte tout le système d'un coup, c'est-à-dire si l'on change de langue.⁴³

Thus Meillet would concede that borrowing of morphemes such as English *-ess* in *princess* from French could occur, but only in the form of direct borrowing of morphologically complex words including such morphemes.

⁴³Meillet, *op. cit.* (see footnote 9 to Chapter 2), pp.86-87.

Sapir took a similar position. He had worked intensively on the classification of North American Indian languages, pinpointing genetic relationships and beginning the work of historical reconstruction in several families. He believed that the diffusionist theories which had been invoked by some other linguists to account for synchronic similarities among nearby languages had been overworked, and that in many cases the similarities were due to common retentions from proto-languages rather than to recent areal diffusion.

Even when genetic relationships could not be proven, Sapir inclined toward retentionist explanations. He believed that he had discovered a typology based on the most fundamental organising principles of linguistic structure, and that each type was extremely resistant to change so that a given language might retain its typological status for millennia despite total turnover in its morphemic inventory. Given this strong view on the inherent character of each language, it is not surprising that Sapir suspected that genetic identity was behind many instances of morphological similarity among languages. In cases where such genetic identity cannot be proved.

All we can do is to say that the evidence for relationship is not cumulative enough to make the inference of common origin absolutely necessary. May it not be, then, that many instances of morphological similarity between divergent languages of a restricted area are merely the last vestiges of a community of type and phonetic substance that the destructive work of diverging drifts has now made unrecognisable.⁴⁴

While recognising that some limited morphological diffusion (mostly indirect rather than direct, see Chapter 4) had occurred in certain areas, Sapir minimised its significance. So far as direct diffusion of grammatical morphemes was concerned, Sapir agreed with Meillet that it was limited to minor derivational morphemes of marginal importance to the overall system such as English *-ise* and *-able*.

Such examples as these are hardly true evidences of a morphological influence exerted by one language on another. Setting aside the fact that they belong to the sphere of derivational concepts and do not touch the central morphological problem of the expression of relational ideas, they have added nothing to the structural peculiarities of our language.⁴⁵

By 'relational' as opposed to 'concrete' categories, Sapir means any notions which link the arguments of a sentence to its predication and to the broader discourse context, including (in English) definiteness of NP's, modality (declarative, imperative, etc.), case relations, number (since verbs agree with third person subjects in number), and tense. Thus Sapir is saying that direct diffusion of morphemes is typically limited to derivational (concrete) categories such as agentive and diminutive morphemes.

⁴⁴Sapir, *op. cit.* (see footnote 16 to Chapter 2), p.204.

⁴⁵*Op. cit.*, p.202.

A slightly less severe position against morphological diffusion has been taken by a number of European structural linguists. Thus Vachek, dealing with phonological as well as morphosyntactic diffusion, felt that the internal structure of the (potential) borrowing language acted as a filter, permitting the introduction of only those foreign elements which suited it.

... the influence of external factors upon the development of the structure of language could only assert itself because its assertion was in harmony with the needs and wants of the structure exposed to that influence.⁴⁶

Moreover, the few examples which Vachek gives of morphological diffusion are of the indirect variety, where the borrowing language merely adjusts its own inherited morphemic inventory to suit a morphosyntactic pattern found in an adjoining language. Presumably Vachek would view direct diffusion of bound morphemes as particularly uncommon, although his general structuralist position would seem to leave the door open for direct diffusion in cases where it would enhance or at least be compatible with the structure of the borrowing language. Vachek's position is rather similar to Sapir's, since both view the morphosyntactic apparatus of a language as a finely wrought, delicately balanced structure which would be upset by the intrusion of foreign elements.

Sommerfelt's position was along these same lines. Structural considerations constitute a filter which, though not directly causing internal or diffusional changes, definitely constrain them.

The nature of the linguistic system and the psycho-physiological process are conditions determining the character of the change but they are not its cause.⁴⁷

He went on to say that morphological diffusion is usually of the indirect kind, and that direct diffusion of bound morphemes is rare.

Elsewhere, Sommerfelt noted the occasional borrowing of grammatical morphemes, for example the introduction of English plural -s into Welsh dialects in some borrowings from English, but then also spreading to a few native nouns. His explanation is rather picturesque.

Welsh dialects ... use the English plural ending -s not only in English loan-words but also in some native words. That was possible because Welsh had so many different plural endings that one more or less was of no importance.⁴⁸

Coteanu, describing the Slavic influence on a Roumanian dialect, put more emphasis on what Vachek and Sommerfelt had called 'external' factors. Coteanu says this about the extent of diffusion in the Roumanian case:

⁴⁶Vachek, *op. cit.* (see footnote 12 to Chapter 2), pp.221-222.

⁴⁷A. Sommerfelt, 'External Versus Internal Factors in the Development of Language', *Norsk Tidsskrift for Sprogvidenskap* 19(1960), p.297.

⁴⁸A. Sommerfelt, 'Mixed Languages Versus Remodelled Languages', *Norsk Tidsskrift for Sprogvidenskap* 19(1960), p.324.

Selon nous, cette question ne dépend pas du caractère de la structure grammaticale des langues en contact, mais d'une série de facteurs de nature sociale ...⁴⁹

However, closer inspection shows that Coteanu's position is not sharply different from that of Sapir and the above-quoted structuralists. Coteanu points out that Roumanian has borrowed neuter -o (bur 'good', neuter bur-o) and iterative -vei (cantă 'to sing', iterative cantavei) from Slavic. However, he found no evidence for diffusion of some other morpheme classes, and concluded

Les prépositions, les conjonctions et l'article, en tant qu'outils grammaticaux, passent difficilement d'une langue à une autre.⁵⁰

Coteanu also suggested that much of the Slavic influence on Roumanian had been indirect, and in particular that Roumanian morphology had been **simplified** because of its contact situation. Thus Coteanu's position is not very different from the structuralist position of Vachek and Sommerfelt; all agree that morphosyntactic diffusion is primarily indirect, and that structural considerations determine the **type** of direct and indirect diffusion. Coteanu's divergence from Vachek and Sommerfelt consists solely in his greater emphasis on the degree of social interaction as a determinant of the **extent** of morphosyntactic diffusion.

The most important overall study of morphemic diffusion has been that of Weinreich. He criticises Meillet's extreme anti-diffusionist position on the one hand, Schuchardt's equally extreme position that diffusion is unconstrained on the other hand. Weinreich offers a general analytical framework for studying diffusion, particularly diffusional changes in progress in the speech of bilinguals. He lists a large variety of structural, semantic, socio-demographic, and cultural factors, though without taking a strong position on the relative weight of any particular group of factors. His principal objective was to provide an analytical framework within which questions such as the relative significance of the different factors could be investigated. To this end he tentatively proposed a number of principles which could be tested out in various case studies.

In so far as direct diffusion of bound morphemes is concerned Weinreich notes that minor derivational affixes have generally been more easily diffused than highly bound inflectional affixes. Still, some instances of diffusion of the latter are attested. Weinreich mentions that one Roumanian dialect has converted 1Sg suffix *-u into -um and 2Sg *-i into -iș on the model of Bulgarian, where the corresponding endings in the productive verb class are -am, -iș. Two or three other examples of this type of diffusion are mentioned, but these involve different pairs of languages.⁵¹ Weinreich reports no

⁴⁹I. Coteanu, 'A propos des langues mixtes (sur l'istiro-roumain)', *Mélanges linguistiques*, Bucharest 1957, p.147.

⁵⁰*Op. cit.*, p.133.

⁵¹U. Weinreich, *Languages in Contact*, The Hague 1968, p.32. (Originally published New York 1953.)

instances of a single language adopting large numbers of morphemes from another language. Thus Weinreich's data do not contradict the view that direct diffusion of bound morphemes is extremely restricted.

Weinreich suggests a number of factors which may favour diffusion in particular cases. As I read the relevant passages, which are unfortunately quite brief, Weinreich seems to be making the following claims.⁵²

(a) Morphemic diffusion typically involves replacing a morpheme *M₁ in the borrowing language by a morpheme -M₂ borrowed from another language, rather than the creation of a new morphological category by borrowing -M₂. Thus Welsh borrows plural -s from English, which is understandable in that Welsh and English already shared the notion of a plural category.

Indeed, it stands very much to reason that the transfer of morphemes is facilitated between highly congruent structures; [footnote omitted] for a highly bound morpheme is so dependent on its grammatical function (as opposed to its designative value) that it is useless in an alien system unless there is a ready function for it.⁵³

(b) In morphemic diffusion it is typical for a non-zero morpheme to replace a zero one, or for a long form (for example, -CV) to replace a very short form (for example, -C). The Roumanian example whereby *-u → -um, etc., is mentioned in this connection.

(c) An unbound (free) morpheme is likely to replace a more bound one.

(d) If one language has an array of allomorphs -M_{1a}, -M_{1b}, -M_{1c}, etc., for a particular morpheme, and a neighbouring language has a single allomorph -M₂, diffusion is more likely to go from the second language to the first, with -M₂ replacing the various allomorphs in the first language.

(e) A morpheme whose grammatical function cannot be understood except in the context of a broader morphosyntactic environment is unlikely to be diffused.

Other things being equal, and cultural considerations apart, morphemes with complex grammatical functions seem to be less likely to be transferred by the bilingual than those with simpler functions.⁵⁴

Weinreich's examples suggest that by complex functions he does not mean portmanteau status, but rather functional embeddedness.

(f) Affective morphological and morphophonemic processes, such as the diminutive, are particularly susceptible to diffusion.

⁵²*Op. cit.*, pp.31-37.

⁵³*Op. cit.*, p.33.

⁵⁴*Op. cit.*, p.34.

In section 18 of this chapter I will present a somewhat different analysis of the factors which seem to have been operative in favouring or blocking diffusion of particular kinds of morphemes in Arnhem Land. Although the analytical framework there developed has some general features in common with Weinreich's, the particular factors identified differ in most cases from those proposed by Weinreich. I will briefly indicate here some respects in which Weinreich's principles are contradicted by the Arnhem Land data.

Weinreich's principle (a) suggests that morphemes are usually borrowed in such a way that they replace an old morpheme, formally renewing rather than creating a category. However, we will see below examples where an ergative-instrumental category was created by morphemic diffusion (section 3 of this chapter); where a new genitive-dative-purposive morpheme was borrowed, allowing the old morpheme to survive in a new 'originative' case category (section 6 of this chapter); where a series of new noun-class prefixes for nonhuman nouns was created by morphemic diffusion (section 8 of this chapter); where a new thematising process for verbal 'root forms' was created by diffusion (section 11 of this chapter); and so forth. Thus principle (a) seems to be of very doubtful utility.

Principle (b) is consistent with much of my material, but in most cases where diffusion has resulted in morphemic replacement (rather than creation of a new category) the old morpheme was of the same general phonological shape as the new, borrowed morpheme. Thus ablative *-wala and *-yani seem to have been borrowed back and forth (section 5 of this chapter); inchoative *-ma- is replaced by *-ti- (section 10 of this chapter); etc. In many cases we suspect that morphemic replacement has occurred but we cannot recover the phonological shape of the old morpheme, so principle (b) is merely of speculative value. Moreover, in one case genitive-dative-purposive *-guñuŋ was replaced in its primary function by a new suffix *-gu, which clearly contradicts factor (b).

As for principle (c), we should simply note that nearly all of the cases described in this chapter involve diffusion of bound morphemes rather than unbound ones. A particularly clear counterexample to this principle is the borrowing of negative suffix (or postposition) -?may? into Ri, replacing the unbound negative particle yaka in its primary functions.

Principle (d) is inconsistent with the fact that there are several examples where an allomorph -M_{1a} from among several allomorphs in one language is borrowed into another, either creating a new category, or replacing a morpheme which had a single allomorph (this may survive in an originally secondary function). For example, Ri has genitive-dative-purposive -gu and -nu (and -gu has a surface allomorph -ku determined by a special morphophonemic rule), but -gu was borrowed into Ng (which later hardened *-gu to -ku), relegating the old morpheme -kuñuŋ to a secondary function.

Principle (e) seems to be valid, and will be adopted in the present analysis (section 18 of this chapter).

Principle (f) is consistent with the fact that a diminutive suffix has been diffused, though I doubt that this principle is necessary to explain this fact.

The main problem with Weinreich's framework is that he over-emphasises the significance of the notion of formal renewal. Principles (a-d) essentially boil down to saying that morphemic diffusion is purposive in nature, and is designed to renew a pre-existing grammatical category in such a way that it is expressed by a single morpheme, preferably unbound and highly characterised phonologically. In the Arnhem Land case, formal renewal seems to have played a marginal role. Functional considerations (section 19 of this chapter) seem to have been important only in the creation of new categories, rather than in the formal renewal of pre-existing categories.

2. INTERNAL RECONSTRUCTION

An important tool in the study of morphemic diffusion is an adaptation of the technique of internal reconstruction. This method is, of course, usually applied to the study of the internal evolution of a language, and is especially important in the historical analysis of languages with no close genetic affiliations.

Our adaptation of this method will not emphasise the recovery of precise details in the historical development of particular morphemes. Rather, it will emphasise the recovery of the relative time depth of shared morphemes in different languages. Suppose a morpheme M is found in only two languages (for example, Ng and Ri), and that it cannot have been merely a shared retention. Suppose further that the usual comparative techniques do not establish the origin of the morpheme, hence do not suggest the direction of diffusion. We may then be able to apply internal reconstruction separately to the two languages, in an effort to determine which language has had M the longest. If, for example, we find that M has probably been in Ng for a long period, but appears to be of recent origin in Ri, we strongly suspect that M was borrowed from Ng into Ri.

There are a number of indications of antiquity which can be looked for in connection with a bound grammatical morpheme. To begin with, we look for allomorphic specialisation. If the morpheme M has several allomorphs M_1, M_2 , etc. in one language, but a single allomorph in the second language, this is evidence for M's greater time depth in the first language. Of course, we must exclude surface 'allomorphs' which are automatic results of productive phonological rules. Thus the Ng ergative-instrumental suffix -tu has a lenited variant -du in certain positions, but since this is predictable from regular phonological rules this does not count as allomorphic specialisation for the purposes of evaluating time depth.

It should be noted also that in morphemic diffusion it is often the case that only the most salient allomorph in the source language is borrowed. Thus if we find allomorphs M_1, M_2 , and M_3 in one language and a single allomorph M_4 in the second language, and where M_4 is the regular diaphonic correspondence for the most salient allomorph M_1 in the first language, a good case can be made for the position that M_4 was borrowed from M_1 in the first language. This is especially so if the other allomorphs M_2 and M_3 cannot be shown to have recently split off from M_1 in the development of the first language.

In addition to allomorphic specialisation, we can also consider functional specialisation to be useful evidence for time depth. The idea here is that a borrowed morpheme (and, more generally, an innovative morpheme) usually lacks peculiar functional specialisation, and can thus be labelled with some simple categorical tag (for example, 'past', 'negative', 'plural', 'ergative'). On the other hand, an archaic morpheme may have developed several functional peculiarities. Taking F_1 as the primary function, we can speak of specialisation as taking two forms: new **secondary functions** are added (F_1 plus F_2 , etc.), and/or unexpected **restrictions** are introduced so that certain sub-functions which we would expect the morpheme to fulfil are now carried out by other morphemes (F_1 minus subfunction F_{1a}). Thus in comparing a shared morpheme in two languages, it is not a question of whether in one language it has a broader distribution than in the other. Rather, it is a question of whether the statement of the distribution of the morpheme is more peculiar or complicated (involving special secondary functions and/or special restrictions) in one language than in the other. The idea is that a morpheme with such functional specialisation is likely to be relatively archaic, and that in the course of morphemic diffusion functional simplification is likely to result, so that distributional peculiarities of the morpheme in the source language are levelled out by the borrowing language.

Of course, the notions of allomorphic and functional specialisation are partly inter-related. If a morpheme M has allomorphs M_1, M_2, M_3 in different morphological environments, we could speak of the functional specialisation of each allomorph.

Another indication of relative antiquity of a morpheme is what I will call 'penetration'. For example, a morpheme M which originates as a nominal suffix (for example, a locative case marker) may develop secondary functions as a verbal suffix. In other words, the morpheme has penetrated more deeply into the overall morphological structure of the language. This is really kind of functional specialisation, and suggests that the morpheme has at least fair antiquity within the language. In the borrowing process it may well be that only one major function of the morpheme is adopted by the borrowing language.

3. ERGATIVE-INSTRUMENTAL -du

Comparative analysis shows that at an earlier period a large number of prefixing languages lacked an overt ergative-instrumental case suffix. In other words, so far as the suffixal system was concerned, the nominative (zero) case was used for transitive subject, transitive object, intransitive subject, and (apparently) instrumental. This is still the Nu and Wa situation, except for the optional use of a new instrumental suffix.

It is conceivable that some of these languages had partial distinctions between nominative and ergative-instrumental by using different forms of noun-class prefixes (research on this point is in progress). However, if such a prefixal opposition once existed in all of these languages it has been lost in most of them, probably for some time, and the point remains that ergative-instrumental and nominative became

indistinguishable at some point in the history of several of these languages.

It is probable that this situation arose as the result of the loss of an earlier ergative-instrumental suffix. A suffix *-yi?* is found in a number of prefixing languages just west of our focal area (for example, Rembarnga, Ngalkbon, Ngalkan), and it is quite possible that this was once more widespread.

So far as PwamaAl is concerned, no definitive reconstruction of an ergative-instrumental suffix is possible. Alawa has *-ri* and *-ji/-ñji*, but this is also locative (and the latter is very possibly the original function). Mara has no ergative-instrumental suffix, distinguishing ergative-instrumental from nominative only by noun-class prefix alternations (for example, masculine singular nominative *Ø* vs. non-nominative *na-*), with zero suffix and non-nominative prefix expressing ergative-instrumental. Wa has no distinction at all between nominative and ergative-instrumental.

It is fairly clear, then, that whatever ergative-instrumental suffixes are reconstructed for proto-forms of the prefixing languages, they have been unstable. Some languages like Nu and Wa have tolerated the lack of formal oppositions between transitive subjects and objects, relying on cross-reference with case-marked pronominal prefixes added to verbs; Nu and Wa have, however, developed a new instrumental suffix (see section 4 of this chapter). Other languages have restored the ergative-instrumental category in some fashion. Thus Alawa merges the ergative-instrumental with the locative, thus neutralising one opposition but keeping transitive subjects distinct from objects. Mara has specialised an old masculine noun-class prefix *na-* as an ergative-instrumental prefix (the old sense is retained in pronominal articles, etc.).

Of particular interest to us here is the Ng ergative-instrumental suffix *-tu*, which is predictably lenited to *-du* in some phonologically defined contexts. This is a borrowing from Ri, where *-du* is the predominant ergative-instrumental allomorph. Comparative reconstruction shows that *-du* is archaic in the Yuulngu group, and is certainly reconstructable for Proto-Yuulngu (and even more remote proto-languages). On the other hand, there is no evidence from other prefixing languages suggesting that Ng *-tu* has a long history.

In Ri, the surface allomorphs of the suffix are *-du*, *-y*, *-tu* and *-li*. The *-tu* allomorph can be derived from *-du* by a specialised morphophonemic rule hardening lenis to fortis stops at the beginning of a suffix following a personal or interrogative pronoun. The only combination affected is *na:-tu* 'by what?; by means of what?' since personal pronouns do not use an ergative-instrumental suffix (they have a nominative-accusative system). The hardening rule also applies to genitive-dative-purposive *-gu* (hence *gara-ku* 'of me, for me') and a few other suffixes. Thus the Ri *-du/-tu* alternation need not be an underlying allomorphic variation and does not by itself indicate time depth.

However, the occurrence of *-y* and *-li* as ergative-accusative allomorphs alongside *-du* suggests a certain time depth for each of these allomorphs by our conventions for internal reconstruction. The

-li allomorph is used only with certain kin terms and in *wara-li* 'who? (ergative)'. It is also found in some other Yuulngu languages with a broader distribution.

For all other substantives (nouns and demonstrative pronouns), the allomorphs *-du* and *-y* are used. Allomorph *-y* is possible only after a vowel, while *-du* is optionally used after a vowel and is obligatory after a consonant. In some other Yuulngu languages, such as Dhay?yi, it appears that *-du* is used only after consonants, *-y* only after vowels, so Ri has apparently expanded the distribution of *-du* at the expense of *-y*. Clearly *-du* is the primary allomorph, since it is the only allomorph which is possible with all nouns.

In addition to the allomorphic specialisation found in the Ri suffix, there is also functional specialisation, in that the ergative-instrumental is used with nouns but not with pronouns. In other words, Ri has a split case system like that found in many other Australian languages, though it is generally absent in nominal morphology in the prefixing languages of Arnhem Land.

On the other hand, in Ng we find a single underlying allomorph *-tu*, and no functional specialisation: the suffix is used in pronominal forms like *ɲaya-tu* 'I (ergative)' as well as in nominal forms like *na-diq?-du* 'the woman (ergative)'. There is thus no internal structural evidence suggesting that *-tu* is archaic within Ng, comparable to the abundant evidence (comparative and internal) that Ri *-du/-li/-y* is archaic. Moreover, Ng *-tu* corresponds to the most salient and most common Ri allomorph *-du*, and so can easily be considered a borrowing.

As for the hardening of **-du* to Ng *-tu*, we should recall first of all that underlying *-tu* is lenited to *-du* under a number of phonological conditions: after stops, nasals, or glottal stops, and after a stem which has a fortis stop or hard cluster (like *ʔg*) in the final two syllables. Thus the surface allomorph *-du* is nearly as common as unlenited *-tu*. It could be that **-du* was borrowed as **-du*, but that this was reinterpreted as the lenited form of a base **/-tu/*, so that a surface form *-tu* was created in non-leniting environments. Indeed, even in inherited stems and suffixes Ng often shows hardening of etymological lenis stops to fortis; some synchronic rules of this sort are mentioned briefly in Chapter 2, section 13 (rules b, c). Some instances of hardening of a suffix-initial lenis stop will be mentioned in following sections.

It is most unlikely that Ng *-tu* is based directly on the hardened Ri allomorph *-tu* in *na:-tu* 'by what?'. This allomorph is so uncommon and specialised that it could not have determined the form of the Ng borrowing.

4. INSTRUMENTAL *-miri*

We have seen that a number of prefixing languages at one time lacked an ergative-instrumental affix, or at least that no such affix has had a stable history in these languages.

Nu still has no ergative suffix, and thus does not distinguish

transitive subjects and objects in nominal morphology. However, it does have an instrumental suffix -miri, as in *raṅa-miri* 'by means of the stick (raṅag)'.⁵

This same suffix is found in Wa, as in *wu-ḷiba-miri* 'by means of paperbark'. The Wa case system is very similar to that of Nu, including the lack of a special ergative affix.

Enindhilyagwa instrumental -mira also seems to be related. Most (or all?) words in this language now end with a. Enindhilyagwa also lacks an ergative case affix.

My suggestion is that these instrumental suffixes were borrowed from Ri (and perhaps Dhay?yi), where we find -miri as a nominal suffix deriving a 'having X' noun from another noun ('X'). Presumably Nu borrowed this suffix first, specialising it as an instrumental, then Wa and Enindhilyagwa borrowed it from Nu.

One problem with this suggestion would seem to be the sharp semantic discrepancy between a 'having' derivative and an instrumental case suffix. Indeed, a 'having' derivative is itself syntactically a noun, and can take subsequent suffixes for number and case. Thus Ri *wa:ṅa* 'camp' has a derivative *wa:ṅa-miri* 'having a camp, one who has a camp' (that is, 'a married man'), which can occur in forms like *wa:ṅa-miri-wač-du* with plural -wač- and ergative -du. It would seem, then, that a 'having' derivative would differ from an instrumental case form rather sharply in semantics and even in syntactic status.

However, such forms as *wa:ṅa-miri-wač-du* are in practice a minority, and it is more common to find the simple type *wa:ṅa-miri*. Even when it would be technically possible to add such suffixes as -wač- and -du, they are often omitted. Thus derivatives in -miri are often used in a sort of adverbial function, not clearly functioning as noun phrases on the surface. An example:

motorcar-miri dali wa:ni-na
having a motorcar they went
'They went in a motorcar.'

Here 'having a motorcar' can be construed strictly as a noun in apposition to 'they', and could therefore have taken plural -wač in agreement, but this plural-marking was omitted. The effect of 'having a motorcar' is basically adverbial in sentences like this.

Note moreover that 'motorcar-miri' here could also be taken as an instrumental noun phrase 'by means of a motorcar'. This is not the regular instrumental case form in Ri (cf. ergative-instrumental -du), but in many examples derivatives with -miri come very close to instrumental sense.

Therefore there are no valid semantic objections to claiming that Nu instrumental -miri was borrowed from Ri 'having' derivational suffix -miri. Once we have shown that Nu could have borrowed it from Ri, there is no great difficulty in seeing how Enindhilyagwa and Wa could have borrowed it from Nu.

That this was the actual direction of diffusion is suggested both by comparative and internal reconstruction. The 'having' suffix -miri

is well-established in all Yuulngu languages and is certainly reconstructable for Proto-Yuulngu. On the other hand, in the prefixing languages we find it only in a block of three continuous languages (Nu, Wa, Enindhilyagwa) which do not form a genetic unit. Note particularly that -miri is not found in Ng, despite the fact that Nu and Ng form a close genetic subgroup.

There is also clear internal evidence for the antiquity of Yuulngu -miri. Not only is this a nominal derivational suffix, it also shows up in verbal morphology as the present and future form of the reflexive-reciprocal suffix -mi- (present and future -mi-ri, past -mi-na, etc.). In this use -mi- is regularly preceded by an augment -n-, -na-, etc. In most verb classes the form of this augment is the same as the form of a nominalising suffix (-na-, etc.) used only before spatial case suffixes, as in *bač-u-na-li?* 'to the spearing' (with allative -li?). Thus we could easily imagine an old 'having' derivative of the type *Verb-na-miri, based on a nominalisation in *-na- of a verb stem. In fact, this type occasionally survives, as in *wa:ni-na-miri* 'having going' (that is, 'capable of walking, not crippled').

What presumably happened was that *Verb-na-miri was reinterpreted as a predicative (that is, pure verbal) form, so that 'having hitting' in its use as a predicate nominal ('They are having-hitting.') came to mean 'are fighting'. This de facto verbalisation of what was originally a nominal formation led to the development of a verbal paradigm modelled on that found in other verb classes, hence a past tense form *Verb-na-miri-na, later shortened to Verb-na-mi-na (for example, *waṅa-na-mi-na* 'They speak to each other.').⁵⁵

All of this presupposes very considerable time depth, and since reflexive-reciprocal -mi- is found in all Yuulngu languages these developments must have occurred before the Proto-Yuulngu period. On the other hand, there is no similar evidence for time depth of -miri in Nu, Wa, or Enindhilyagwa. The suffix has one minor functional specialisation in Nu, seen in *ba-gu-miri* 'right there' from *ba-gu* 'there'. However, since nearly all case suffixes in Nu have special functions in demonstrative morphology this particular specialisation is not too surprising.

It is thus fairly certain that Nu, Wa, and Enindhilyagwa have borrowed 'having' suffix -miri from the Yuulngu languages, adopting it as an instrumental suffix to fill a gap left by the absence of a stable instrumental or ergative-instrumental affix in the relevant proto-languages.

5. ABLATIVE -wala

A considerable number of prefixing languages show an ablative suffix *-wala (Nu -wala, Ng -wala, Rembarrnga -wala, Ngalkbon -walun). The

⁵⁵Regarding the loss of *ri in *-miri-na (attested -mi-na, with 'palatalised' variant -mi-ña), note that *galki-(ri-)* 'to fall' shows an intermediate stage where the segment -ri- is retained before palatalised -ña (*galki-ri-ña* 'fell') but is omitted before simple -na (*galki-na*). This suggests that *ri has been gradually deleted before *-na/*-ña, beginning in certain forms and then (with -mi-) spreading to others.

Ngalkbon suffix may have been phonologically reshaped under the influence of the only other bisyllabic case suffix, comitative -dorun, and may thus reflect *-wala like the others.

In these languages *-wala may simply have been inherited separately from the relevant proto-language, although more comparative work may suggest a partly diffusional explanation. It is particularly interesting, however, to note that ablative -wala is also found in Wa. It is missing from Mara and Alawa, with which Wa is subgrouped. Mara has -yani (and -yana, chiefly with place names), and Alawa -yunu is cognate to this; since Alawa frequently shows historically unstable word-final vocalism (cf. feminine suffix allomorph -nuru from *-nara) we should reconstruct *-yani/*-yana for PWaMaAl. This is also found in Ngalkbon (-yen, apparently synonymous with -walun).

Since the distribution of the two ablative suffixes, *-wala and *-yani/*-yen, does not correspond very well with subgroup boundaries, we have a right to suspect diffusion. In particular, it would appear that Wa borrowed -wala from Nu (and perhaps also Ng), since it looks as though PWaMaAl did not have *-wala. This would be the second Nu case suffix borrowed into Wa, the other being instrumental -miri.

The internal structural evidence fits fairly well with this suggested direction of diffusion. In Nu, *-wala has had a rather complex history, involving a split into two suffixes whose synchronic base forms are /-wala/ and /-ala/, respectively. The former is the regular ablative suffix. The latter is found only with demonstrative pronouns and adverbs, and is best described as a centripetal suffix, though its semantic contribution is more complex than this label suggests.

With demonstrative adverbs, /-ala/ indicates direction toward the 'here' of the speech act. Thus with ba-gu 'there' we get ba-ga:-la /ba-gu-ala/, which not only means 'from there' but specifically 'from there toward here'. This type of centripetal adverb, with ba-gu or other locative adverbs translatable 'there', is the usual way of translating English '(to) here' as in 'He ran here.'

With demonstrative pronouns, whether used predicatively ('is here') or attributively ('this'), /-ala/ can mean either that the referent of the pronoun is moving in a centripetal direction, or that the speaker or hearer is moving toward the referent or is likely to do so soon. Thus I can say simply yuwa:-gi 'He is there.', but if the referent is moving toward the speaker and hearer I will usually say yuwa:-gi-la 'He is coming there.', and I will also use this if I am moving toward the referent or if the addressee is. This particular use of /-ala/ might therefore be called 'approximative', since it indicates a reduction in the distance between the referent and a participant in the speech act.

There are some other specialised functions of -wala and -ala in Nu, and in general there is abundant evidence for the time depth of *-wala in this language. In Ng there is also some evidence of time depth. In particular, alongside the usual ablative case suffix -wala we find a special suffix -?wala added to ergative pronouns, translatable as 'first' as in this example:

nama-na-ni ma-wan-gu-?wala
it saw me it first

'It saw me first (i.e. before I saw it).'

On the other hand, in Wa we find no real evidence for the time depth of ablative -wala. Wa, like Ng, has sporadic imitations of the Nu centripetal use of *-wala, but these imitations are of diffusional origin and do not represent internal functional specialisation. Thus the internal structural evidence is compatible with the view that Wa borrowed -wala from Nu.

6. GENITIVE-DATIVE-PURPOSIVE -gu, -yiñun, etc.

The term 'genitive' is used here in its usual adnominal possessive sense. The terms 'dative' and 'purposive' designate case categories which form part of the basic case-frame of a verb. A dative NP is cross-referenced in the verb complex or enclitic complex by a pronominal object-marker, while a purposive NP is not. Another term, 'relative', is used in Ng and Nu for a case category which can be translated 'about, concerning' but can also be genitive; it has a broad usage in Nu (including use as a relative-clause marker and as the regular genitive ending), but a highly restricted one in Ng (where it is used only with nouns after another case suffix).

I will claim that there have been at least two instances of diffusion involving this complex of case categories. First, Ng genitive-dative-purposive -ku was borrowed from Ri -gu, which has the same range of functions. Secondly, the uncommon Ng relative suffix -yiñun was borrowed from Nu relative -yiñun, which is ultimately cognate to another Ng suffix, 'originative' -kuñun.

The demonstration that diffusion has been responsible for these sharings requires a fairly substantial discussion of the history of case suffixes involving these functions, especially in the prefixing languages. In particular, we want to show that Ng -ku cannot have been simply retained from ancestral proto-languages underlying the prefixing group. This is difficult since genitive-dative *-gu is very widespread among Australian languages, so a case could be made that Ng -ku and Ri -gu are simply independent retentions of a single proto-form. Indeed, I will show that Ng does contain a relic of an old suffix *-gu- which is ultimately identical to Ri case suffix -gu. However, I will also show that the Ng reflex of *-gu- has been functionally specialised since ancient times, and thus cannot have been the proto-type for Ng genitive-dative-purposive -ku. I will suggest, then, that the reconstructable genitive-dative-purposive suffixes in the prefixing languages are *-gVn (for example, *-gun) in the north and west (Ngalkbon, Rembarnga, etc.) and *-guñun (in PNgNu), which may be related to each other. Although these may just be extended forms of an older *-gu, the point is that neither *-gVn nor *-guñun can be the direct proto-type for Ng -ku, which therefore must have been borrowed from Ri -gu. I will also show that PNgNu *-guñun, originally perhaps a general genitive-dative-purposive suffix, survives as Ng originative -kuñun (to be explained below) and as Nu relative -yiñun. The latter has been re-borrowed into Ng as a sporadic relative suffix -yiñun.

We will first dispose of Ng -gu-, a reflex of CA genitive-dative *-gu-. This Ng morpheme is now an inverse case-marker in pronominal prefix complexes, hence contrast direct ḡa-ḡa- '1Sg → A' with inverse ḡa-gu-ḡa- 'A → 1Sg', where A is a nonhuman noun class.

I have shown elsewhere (Chapter 1, footnote 6) that the development of dative *-gu- into an inverse morpheme in Ng is the end product of a number of morphological developments. At stage 1, there were nominative-accusative pronominal paradigms including a type *X-n-Y- ('Y → X') with accusative *-n-, and a corresponding nominative-dative type *X-gu-Y- ('Y, for the benefit of X') with dative *-gu-. At stage 2, these two paradigms were squashed together into a single transitive paradigm, with the *X-n-Y- type surviving when *X- ended in a vowel, the *X-gu-Y- type generalising when *X- ended in a consonant. There was now a single paradigm with *-n- and *-gu- as allomorphs of an oblique suffix; perhaps by this stage there was a benefactive prefix used in the dative interpretation or some other device for distinguishing accusative from dative interpretations (cf. Ng ḡa-nu- '1Sg → 3MSg' accusative, versus ḡa-nu-bak- '1Sg, for the benefit of 3MSg' with benefactive -bak-; languages with auxiliary constructions simply use a dative auxiliary verb like 'to give' instead of an accusative one like 'to hit'). At stage 3, the type *X-gu-Y- generalised analogically at the expense of *X-n-Y-, mainly because in several cases *-Y- began with *n or another nasal so that the *-n- morpheme was eliminated by a cluster-contraction rule, resulting in ambiguity between *X-n-Y- and direct *X-Y-.

Stage 2 is represented in Alawa, and seems to have been the situation in the intermediate proto-languages from which all of the prefixing languages mentioned in this work have sprung. Some languages like Nu have generalised the *X-n-Y- type and lost the *X-gu-Y- type, while only the latter type survives in languages like Mara and Wa. Thus stage 2 is a very ancient pattern in the area.

This entire reconstruction merely presupposes an initial situation where *-gu- occurred as a dative morpheme in bound pronominal complexes; it says nothing about the form of the nominal case system. All of the developments, from stage 1 through stage 2 to stage 3, are explainable in terms of the internal development of the transitive pronominal prefix system, requiring no new analogical interaction with the case system of independent nouns. Thus even though Ng -gu- is ultimately cognate to CA genitive-dative *-gu-, it does not indicate that the nominal genitive-dative-purposive suffix was *-gu- or *-ku- in any recent proto-language. Since *-gu- and *-ku- are in fact not found as nominal case suffixes in the prefixing languages of the area, except in Ng and Nu (which are suspected of having borrowed it from Ri), there is no valid evidence suggesting that these suffixes occurred at any recent or intermediate period in these proto-languages. We will show below that other genitive-dative-purposive suffixes can be reconstructed.

Before doing this, however, we will reconstruct the basic system of spatial (concrete) cases for PNgNu. The suggested reconstruction, along with reflexes of each suffix in Ng, is shown in Table 5.

In Nu, not only have there been a number of regular phonological

developments, there have also been some semantic shifts. A new locative suffix -ruj of uncertain origin has displaced the old locative, and some of the other reconstructed suffixes have also shifted in meaning. The attested forms are shown in Table 6.

TABLE 5

	PNgNu	Ng
Locative	*-guy/*-kuy	-gi/-ki
Allative	*-gač/*-kač	-gič/-kič
Ablative	*-wala	-wala
Pergressive	*-bač (*-pač)	-pič

TABLE 6

Locative	-ruj
Allative	-w ₁ uy (*-guy)
Ablative	-w ₁ ala (*-wala)
Simple pergressive	-w ₂ aj (*-bač)
Retrospective pergressive	-w ₁ aj (*-gač)

Thus the old locative is now allative, and the old allative is now a special kind of pergressive. Whereas the simple pergressive is translatable 'through, among' and also as 'in, at' with a term designating a diffuse terrestrial zone (for example, ama-maḡaḡa-baj 'at the beach'), the retrospective pergressive adds the nuance of looking back (hence ama-maḡaḡa-gaj 'back at the beach'). The two Nu pergressives are distinguishable only in their hardened forms, -baj from -w₂aj and -ḡaj from -w₁aj.

A trace of the former locative sense of *-guy/*-kuy survives in Nu. In Ng, the choice between g and k (-gi/-ki, also allative -gič/-kič) is determined morphologically, with the hard form in k used after demonstrative pronouns, hence gu-mulmu-gi 'in the grass' but gu-na-ri-ki 'in that'. Nu has a suffix -ḡi (g here reflects *k), now interpreted as a human singular noun-class suffix, in demonstrative pronouns like ya:-gi 'this one'. Since the special noun-class suffixes with demonstrative pronouns in Nu are clearly innovative, and since there is no obvious analogical source for -ḡi from elsewhere in the morphology, we are forced to conclude that -ḡi has been reinterpreted and must once have had a different function. Since demonstratives like ya:-gi 'this one' are often used predicatively, in which case they function as a kind of locative adverb ('is here'), it is quite possible to see how an old locative ending *-ki could have become Nu noun-class suffix -ḡi. Since *-kuy is another possible proto-form, given the tendency in Nu for *u (and *a) to become i before y, ḡ, or j, we can connect -ḡi (*-kuy) with dative -w₁uy (*-guy), showing the same fortis/lenis alternation attested in Ng in the same morphological contexts. It would be very difficult, on the other hand, to see how

Nu -gi could have evolved out of *-kuy if the latter were originally an allative suffix; reconstructing a locative sense, as in Ng, is much preferable. Thus Nu -w₁uy, which is now allative as an independent case suffix, must have undergone a semantic shift from locative to allative in the relatively recent development of Nu. It has also now acquired dative functions, so it would be more appropriate to label it the allative-dative suffix.

Looking over the PNgNu reconstructions in Table 5 we can see that at least *-guy/*-kuy could be taken as an extended form of the old CA genitive-dative *-gu. However, since as we have seen *-guy/*-kuy was probably locative in PNgNu, not allative-dative as in Nu, there is a semantic difficulty in correlating *-guy/*-kuy with the old genitive-dative suffix. I will leave this question open, but at any rate Ng genitive-dative-purposive -ku does not seem to have any connection with locative -gi/-ki.

The reconstruction given above for PNgNu accounts for the spatial case suffixes, but does not tell us what genitive, dative, or purposive suffixes were available. The relevant attested forms are displayed here in Table 7.

TABLE 7

Ng		Nu	
Genitive-dative-purposive	-ku	Allative-dative	-w ₁ uy
Originative	-kuñuŋ	Purposive	-yunguyun
Relative	-yiñuŋ	Originative	-mira:du
		Relative	-yiñuŋ

We have already seen that Nu allative-dative -w₁uy (from locative *-guy/*-kuy) represents a semantic shift. Of the remaining forms, I want to claim that Ng -ku is a borrowing from Ri, while Nu -kuñuŋ and Nu -yiñuŋ represent an old genitive-dative-purposive suffix *-guñuŋ, now somewhat restricted semantically. Ng -yiñuŋ is a recent borrowing from Nu, while Nu -mira:du is perhaps an obscure derivative of instrumental -miri, and Nu -yunguyun (*-yungu-yun) may also contain *-gu borrowed from Ri.

If we look at other prefixing languages to the north and west, we find a genitive-dative-purposive *-gVn with variable vowel, often *-gun (Ngalkbon -gun/-g+n < *-gun, Gunwinggu -gen < *-gun, Ngalakan -?gVn with V specified by regressive assimilation, Rembarrnga -gan). There is no regular way for this to lose its final nasal, so this *gVn cannot have been the direct proto-type of Ng -ku. The form *guñuŋ, on the other hand, could well be an extended variant of *-gVn (*-gun), perhaps from *-gun-yun with absolute *-yun.⁵⁶

⁵⁶The absolute suffix is not a case marker like the absolutive non-ergative case in Eskimo. Rather, as I use the term in the context of these languages' grammars, the absolute suffix indicates that the NP to which it is added is an independent constituent functioning as an argument (but not predicate) in a sentence. For various vestiges of the absolute in Nu see the discussion of purposive suffix -yunguyun below.

At any rate, Ng -kuñuŋ can derive from PNgNu *-guñuŋ since Ng often hardens suffix-initial lenis stops to fortis ones, as in the case of pergressive -pič from *-bač. On the other hand, Nu -yiñuŋ can derive from PNgNu *-guñuŋ by lenition of *g to *w₁, fronting of *u to i before *ñ, and weakening or palatalisation of *w₁ to y before i, hence *-guñuŋ → *-w₁uñuŋ → *-w₁iñuŋ → -yiñuŋ. All of these changes are well-established on the basis of other evidence.

I suggest that *-guñuŋ was once the regular genitive-dative-purposive suffix in PNgNu, or a slightly earlier form of this proto-language, simply because we know that *-gVn in the other prefixing languages had this broad range of functions, and all of the competing suffixes (Ng -ku, yiñuŋ, Nu -w₁uy, -yunguyun, -mira:du) seem to be recent borrowings, innovations, or semantic shifts, and thus cannot be securely reconstructed in genitive, dative, or purposive function for intermediate proto-languages. In other words, the range of application of *-guñuŋ has been progressively narrowed by competition with these innovative or semantically shifted suffixes. In Ng, -kuñuŋ specialises as an originative, or de-possessive, suffix, used in examples like 'I eat fish from (i.e., provided by) my father.' This particular semantic specialisation was probably influenced by Ri, which inherited an originative suffix (-gunu) from Proto-Yuulngu.

In Nu, -yiñuŋ is still a productive genitive suffix, and is also translatable 'about, concerning' and forms relative clauses when added to a verb; I refer to it as the 'relative' suffix. However, its old dative functions are now taken care of by -w₁uy, and its purposive functions by -yunguyun.

Ng -yiñuŋ is found only rather sporadically, as a sort of relative suffix ('about, concerning') following another case suffix such as genitive-dative-purposive -ku or locative -gi. Examples are very infrequent and it is difficult to pin down the exact semantic nuances of the suffix in Ng. It seems clear to me that Ng -yiñuŋ has been borrowed recently from Nu, after *-guñuŋ became -yiñuŋ through various phonological developments peculiar to Nu.

Ng genitive-dative-purposive -ku, then, seems not to have been simply retained from CA *-gu, since there is no evidence supporting a reconstruction *-gu or *-ku as a nominal case suffix for any recent proto-language in the prefixing group of languages. I can only conclude that it was borrowed from Ri. In this language we find genitive-dative-purposive -gu, with the following allomorphs: -wu optionally after noun stems ending in vowels and some consonants, in free variation with -gu; -gu regularly after noun stems ending in stops, nasals, and some other consonants; -nu or sometimes -ku with personal and interrogative pronouns, where -ku could be derived from underlying /-gu/ by a hardening rule, but where -nu is just a distinct allomorph. Examples: ɖaramu-gu or ɖaramu-wu 'of/for the man', ɖiŋ?-gu 'of/for the woman', ɖara-ku 'of/for me', nu-nu 'of/for you'. With some variation these allomorphs (and others such as -wa) occur in the other Yuulngu languages and are reconstructable for Proto-Yuulngu.

As we would expect, then, Ng has eliminated the complex allomorphy of the suffix(es) in the source language in the course of borrowing the principal allomorph -gu, which Ng hardened to -ku (a process we have

seen in other borrowed and native case suffixes). Moreover, in Ri and other Yuulngu languages we find functional specialisation of a rather unusual kind, in that the future tense suffixes for one class of verb stems are -wu (*-gu), -nu, and -ku (the latter only with ga:- 'to hear'). Since these are precisely the three allomorphs of the genitive-dative-purposive suffix, we can hardly regard the similarity as accidental, and we must conclude that this verb class has formed its future tense with what are etymologically genitive-dative-purposive suffixes. However, this specialisation and morphological penetration in Ri are not matched by Ng -ku, which has no special functions in verbal morphology. In other words, Ng -ku shows no allomorphic or functional specialisation suggestive of great time depth, which is precisely the situation we expect provided Ng -ku is a borrowing from Ri.

Nu purposive -yunguyun is somewhat more problematic. I would take it etymologically as *-yung-gu-yun, with double occurrence of an absolute suffix *-yun (Nu -yun/-ñun, Ng -yun, etc.). This absolute suffix has lost its original function in Nu, and has split up into a number of suffixes with various synchronically unrelated functions. In some other cases it has become fused with another suffix, as in the case of dual allomorph -w2i:yun used with third person kin terms instead of the usual dual suffix -w2a: (hence -w2i:yun is interpretable historically as -w2a: < *-bula plus *-yun). Since this -w2i:yun is added to a form of the kin term ending in -yun/-ñun, marking third person 'possessor' but historically yet another specialised reflex of absolute *-yun, we get sequences like na-ni-ñara-yum-bi:yun/na-ni-ñara-yun-w2i:yun 'his two fathers' where historically -w2a: (earlier *-bula) is sandwiched between two occurrences of the absolute. This is similar to the sequence *-yung-gu-yun which we posit as the proto-type for -yunguyun. Note also that the old genitive-dative-purposive *-guñun in PNgNu is possibly a frozen combination of earlier *-gun-yun, though this is not certain.

The sequence *-yung-gu-yun is rather puzzling, however, since we do not find *-yun becoming attached in this manner to other case suffixes. The only suggestion I can make is that the *-gu- here was borrowed from Ri, as was Ng -ku. From a simple nominal form *N-yun with the absolute suffix, a new form *N-yun-gu might have been created when *-gu was borrowed. However, since the usual position of case suffixes was before rather than after *-yun, the sequence *-yung-gu was irregular and might have become frozen and unsegmentable. The regular absolute *-yun could have been superimposed onto this, creating *-yung-gu-yun. This historical explanation is somewhat clumsy, but it seems to be the only satisfactory one available.

Although not every detail is clear, I feel completely certain that Ng relative -yiñun is a borrowing from Nu, and fairly certain that Ng -ku (and perhaps *-gu- in Nu -yunguyun) is a borrowing from Ri -gu. Thus we have added more instances of direct diffusion of a bound case suffix.

7. DIMINUTIVE -gañan?

A diminutive suffix -gañan? (or a variant thereof) is found in Ri and several prefixing languages; it may well occur in other Yuulngu

languages, but this is not clear at this stage.

In Ri the suffix is -gañan? or -ñañan?, apparently in free variation: yu:tu 'child', yu:tu-gañan? or yu:tu-ñañan? 'small child'. In Ngandi we find -gaña? without the final nasal, as in gu-danda?-gaña? 'small tree'. In Rembarrnga both variants, -gañan? and -gaña?, are found in free variation (McKay, personal communication). In Wa, which has no phonemic glottal stop, we find -gaña, as in wu-balba-gaña 'small river'. In none of these languages does the suffix also appear as an independent adjectival noun 'small'.

Nu adjectival noun w2iñig 'small' is probably related to this set, though there are phonological difficulties. There is an irregular 'reduplicated' plural w2uña:ñun (human mij-buña:ñun). The stem w2iñig (and its plural form) can be used as the second member of a noun-noun compound, as in gałam-biñig 'small egg'. The structural similarity between the use of -w2iñig in this example to the diminutive suffixes in the other languages is clear.

The phonological history of w2iñig can be partially clarified by noting that it has been influenced by another adjectival noun w2irig, also meaning 'small', though less emphatically diminutive than w2iñig. This w2irig is cognate to Ngandi -girikiñ (apparently reduplicated from *-giriñ), an uncommon diminutive suffix. Nu w2irig has an irregular 'reduplicated' plural w2ura:yun.

Suppose that Nu inherited diminutive suffixes *-gaña(ŋ)? and *-giriñ from PNgNu. We can partially explain the development of the former into attested w2iñig by assuming that the vocalism was analogically reshaped to match that of *-giriñ. If the final *ŋ was not pronounced (*-gaña?), then the regular Nu reflex after this vocalic reshaping should be something like *w1iñig, since final *ŋ after a vowel often becomes Nu g. The remaining problem is accounting for why *w1 (alternating with g) became w2 (alternating with b); I have no specific suggestion to make here, but there are cases of fluctuation between w1 and w2 (for example, -w1ayama- or -w2ayama- 'to move along'). Once *-gañan? had become w2iñig, *-giriñ (which should have become *-w1iriñ, or with the same shift w1 → w2 *-w2iriñ) was analogically reshaped as w2irig, adopting the final consonant g from the other form. Somewhere along the line, w2iñig and w2irig came to be used as independent adjectival nouns as well as in diminutive compounds (assuming that Ri, Ng, etc., are conservative in showing -gañan? only in bound combinations).

This discussion suggests that Nu w2iñig is related to -gañan?, etc., though difficulties remain (especially in accounting for the anomalous plural form). It is not yet clear whether the morpheme was borrowed by the prefixing languages from Ri or other Yuulngu languages, or vice versa, and we will need more information on the distribution of the morpheme in other languages before an educated guess can be made.

8. NOUN-CLASS PREFIXES

A number of prefixing languages in north-central and north-western Australia, along with some other groups just to the south (for example, the Barkly Tablelands group), have a system of lexical noun-classes. These are marked by noun-class prefixes in most languages, though the

Barkly group has suffixes, and Nu has developed a special set of suffixes used only with demonstratives. In some languages the noun-class system consists only of a gender-number system for human nouns, with nonhuman nouns either unmarked or merged into one of the human singular categories. Some languages (for example, Nu, Ng, Wa) have more elaborate systems with as many as eleven (Nu) noun classes including some specifically nonhuman classes.

The overall history of these noun-class systems is very difficult to reconstruct for a number of reasons. For one thing, many languages have several morphological series of noun-class affixes, used in different contexts; thus Nu has inflectional noun-class prefixes, derivational noun-class prefixes, noun-class suffixes with demonstratives, noun-class elements in pronominal subject- and object-markers in the verb, and so on. Each such series shows allomorphic variation. Historically, it is difficult to compare one language's noun-class system with another's, because there may be no agreement in the number and usage of different series, and since even if one series in one language can be identified historically with the corresponding series in another language, we would still have to reckon with the fact that each language may have undergone analogical levelling involving interaction among several of its series. Thus the study of the historical development of noun-class prefixes is a treacherous business, requiring careful internal and comparative reconstruction at every stage.

Although the period preceding such proto-languages as PNGu is outside of the time span we are mainly concerned with, it should be indicated that the spread of noun-class systems over much of north-central and north-western Australia may well have been largely accomplished through direct diffusion of the actual affixes, rather than by independent developments in each language group. For example, in languages like Nu, Ng, and Wa there is no internal etymology for any of the noun-class affixes found (except to some extent in the recently developed Nu noun-class suffixes with demonstrative stems, where some of the suffixes are old case endings or the like, now reinterpreted). That is, while in some languages a correlation can be made between some noun-class affixes and particular noun stems (for example, *ma-* as a nonhuman noun-class prefix and a stem like *mayi* meaning 'vegetable food'), this is not possible in Nu, Ng, or Wa. There is consequently a strong probability that the noun-class systems in these languages were borrowed from languages to the west.

Be that as it may, our principal concern here is with recent linguistic history. The main forms of the inflectional noun-class prefixes used with noun stems in Wa, Ng, and Nu are set out in Table 8.⁵⁷

In general, there is little evidence of diffusion among these languages in the human prefixes. Wa MSg *na-* is cognate to Nu *na-*, but since MSg *na-* is found also in Mara and leaves traces in Alawa it can be reconstructed for PWaMaAl as well as for PNGu, and thus probably

⁵⁷The numbering system used here for nonhuman noun classes is different from those systems used elsewhere by myself or by other linguists.

does not constitute recent diffusion. However, the use of Wa *na-* directly attached to nouns in any case category (for example, *na-jawulba* 'the old man') distinguishes Wa from Mara, where MSg nominative *na-* is only used in pronouns and articles (for example, *na-na jawulba* 'the old man', with article stem *-na*). In Mara, *na-* before a noun stem is used in non-nominative cases, and Wa perhaps preserves a trace of an oblique case-marking sense of *na-* in that except with human nouns it is restricted almost entirely to place names (for example, *na-warwar*), which thus constitute nonhuman class I. Therefore it may well be that the influence of Nu has induced Wa to alter the morphosyntactic distribution of *na-*, diverging thus from Mara. This would then be a case of indirect diffusion, rather than of direct (recent) diffusion of the prefix itself.

TABLE 8

		Wa	Ng	Nu
HUMAN:	MSg	<i>na-</i>	<i>ni-</i>	<i>na-</i> (MSg, MDu)
	FSg	<i>ni-</i>	<i>na-</i>	<i>ɲara-</i> (FSg, FDu)
	Du	<i>yiri-</i>	<i>bari-</i> (MDu)	
	Paucal	<i>yili-</i>		
	Pl (3+)	<i>wuru-</i>	<i>ba-</i>	<i>wara-</i>
OTHER:	I	<i>na-</i>	<i>ni-</i>	<i>na-/yi:-</i>
	II	<i>ni-</i>	<i>na-</i>	<i>ɲara-/yi:-</i>
	III	(<i>ɾ</i>) <i>a-</i>	<i>a-</i>	<i>ana-/a-</i>
	IV	<i>wu-</i>	<i>gu-</i>	(= III)
	V	<i>ma-</i>	<i>ma-</i>	<i>mana-/ama-</i>

Similarly, the other human prefixes in Wa (*ni-*, *yiri-*, *yili-*, *wuru-*) are possibly cognate ultimately with Nu and Ng prefixes, but since more obvious cognates in most cases can be found in Mara and Alawa, the Wa prefixes have probably just been retained from the proto-language PWaMaAl rather than having been recently borrowed from Nu or Ng.

The Ng and Nu human prefixes are sufficiently dissimilar to make it unlikely that either has borrowed from the other subsequent to their breakup from PNGu. The plural prefixes *ba-* and *wara-* probably both reflect something like **bar-*, while Ng MDu *bari-* (used only when both referents are male, thus destroying a universal or two!) reflects **bar-ni-* with masculine **-ni-* seen also in Ng MSg *ni-* (retroflexion is predictable word-initially). Ng FSg *na-* may reflect something like **na-* (or possibly **da-*, found in some other prefixing languages, with analogical adoption of initial *n* as in MSg *ni-*). Some of the discrepancies between Ng and Nu reflect different analogical interaction with other series of noun-class affixes within each language.

On the other hand, a good case can be made for diffusion involving the nonhuman prefixes. Classes I and II may be disregarded, since they are infrequent and are closely linked to the MSg and FSg human classes

in all three languages. However, classes III, IV, and V are specifically nonhuman. It would appear likely that Wa has borrowed these prefixes from Ng, or (more likely) from some stage of Pre-Nu preceding certain Nu morphological innovations.

The oldest form for class III was *ra-, seen in Wa (r)a-, Ng a-, and Nu allomorph a-. That the Ng form was once *ra- is shown clearly by the occurrence of -ra- in some pronominal prefix combinations (for example, ra-gu-ra- 'III → 1Sg'), and note also Ri loans such as raṅarač 'snake' from Ng a-ṅarač (earlier *ra-ṅarač) 'snake'. The r in Wa (r)a- is pronounced at least optionally. Nu a-, however, has lost the *r completely. Among cognates in other languages we may mention Yanyula (r)a- with optional r.

Class IV prefixes in Wa, Ng, and Nu reflect *gu-, cf. Gunwinggu gu- and other cognates. Nu has lost *gu- as an inflectional noun-class prefix, but still has /uD-/ (*gu-, via *wu-, with archiphoneme /D/ now needed for morphophonemic purposes only) as a derivational noun-class prefix, and also has -wiu- as a pronominal subject- and object-marker in verbs. Wa wu- may reflect lenition from older *gu- (cf. wuyal, a semioiety term, varying with guyal, which is also found in Mara). However, Wa wu- may also simply have been borrowed from Nu before this language lost *wu- as an inflectional noun-class prefix.

The class V prefixes reflect *ma-, which is also found in numerous languages well to the south and west. Nu allomorph ama- probably reflects *ma- and has been analogically remodelled on the basis of class III a-.

Nu allomorphs ana- (III, IV) and mana- (V) appear to reflect *ran- and *man-, respectively, contrasting with alternatives *ra- and *ma-. Research on the problem of such *-n- (and elsewhere *-gu-) increments to the noun-class prefixes is in progress. It appears now that the *-n- was used chiefly in nominative (intransitive subject, transitive object, sometimes transitive subject) forms, while the forms without *-n- were used in various oblique case categories. Reflexes of this *-n- are rather scattered (Nu, Mara, Ngalakan, Gunwinggu, and others, each with its own twists), and a complete historical study will be postponed for now. Neither Wa nor Ng preserves *-n- (except that Wa has a few noun stems beginning with nd which may contain *-n- historically).

Since we have shown that Pre-Nu at one stage probably had three nonhuman noun-class prefixes — *(r)a-, *wu-, *ma-, and their extensions with *-n- — it seems probable that Wa borrowed these prefixes (in the form without *-n-) from Pre-Nu. It is less likely that Ng was the source, though this cannot be ruled out.

Neither Mara nor Alawa, which are subgrouped with Wa genetically, has any direct or indirect reflex of *(r)a- or *ma-. However, some Mara forms appear to reflect *gu-, the prototype for Pre-Nu *wu-. The forms in question are ga- in the article (n-)ga-na, and the nominal prefixes n- (nominative) and ña- (non-nominative, that is, oblique). The class of nouns using these articles and prefixes consists of non-human nouns, chiefly body-part terms along with a few topographic terms and the word for 'sun'.

The form ña- is etymologically obscure, but nominative n- may be

what is left of *ga-n-, in view of the preservation of ga- with the article stem -na. The shift from *gu- to ga- can be taken either as assimilation in ga-na (*gu-na), or as due to analogy with masculine singular na- and other prefixes with a-vocalism.

The point I want to make is that, even if n- is a reflex of *ga-n- (hence ultimately of *gu-n-), and if *ga-n- or *gu-n- thus goes back to P_{WaMaAl}, it is unlikely that we can get Wa wu- from this. What really seems to have happened is that Wa inherited a Mara-like system with nominative *n- in some body-part terms and the like, but non-nominative *ña- did not survive (if it goes back to the proto-language at all). This *n- was either eliminated by levelling, or (notably when followed by an apical stop) became fused to the stem. Thus contrast Wa (wu-)nd-ula 'leg' with Mara (n-)ḍula (non-nominative ña-yula). So the prefix wu- constitutes a new etymological layer — it is not just a reflex of an inherited morpheme. Neither the phonological form nor the distribution of Wa wu- are accounted for by internal genetic explanations, and since there is not the slightest evidence that *ma- or *(r)a- ever occurred in P_{WaMaAl} we are forced to conclude that Wa has recently borrowed its three nonhuman noun-class prefixes, most probably from Pre-Nu (and if not from there, then from Ng). This diffusionist explanation accounts for every detail of the form and distribution of the Wa prefixes.

9. KIN-TERM DYADIC DUAL SUFFIX -ko?

Some of these languages have a special suffix which, when added to a kin term K, produces a syntactically dual noun meaning 'a pair of relatives, one of whom calls the other K'. Thus in Ng we can form ñara-ko? 'father and son/daughter' from ñara- 'father'. This is distinct from the usual dual (for example, 'two fathers'), which is formed by using the regular dual affixes. I will refer to the Ng suffix -ko? and its correlates elsewhere as a 'dyadic dual' suffix.

As in Ng, the suffix takes the form -ko? in Ngalakan. In Nu, on the other hand, the regular form is -(y)ij. If the proto-form was *-ko?, presumably the most likely reconstruction, we need a derivation *-ko? → *-go? → *wio? → *wioč → *wič → -yij to reach the Nu form. As it turns out, each such step is justified by parallels elsewhere in Nu historical phonology. For example, all suffixes now begin in underlying continuants (or vowels), so we can get from *k to the corresponding continuant *wi, presumably via *g. (This *wi would become hardened to *g after stops and nasals, but the continuant was now the underlying form.) The shift of final *? to *č (that is *j, since *č and *j were not distinct in this position at any stage) also has several parallels, cf. Chapter 2, section 5. Fronting of vowels to *i before a lamino-alveolar consonant is also common in Nu. Finally, *wi is regularly deleted or changed to y before i.

In the Yuulngu languages, the dyadic dual suffix is usually -?mãñji or a phonological variant thereof. In Ri, however, the suffix -mãñji? is found as the regular dual suffix, while -ka? shows up as the dyadic dual suffix: ba:pa-ka? 'father and child'. This has evidently been borrowed from Ng (it cannot, of course, have been borrowed from any recent stage of Nu).

The antiquity of **-ko?* in Nu and Ng is suggested by the fact that in Nu the dyadic dual forms of kin terms are often highly irregular, involving special suppletive roots distinct from the usual form of the kin term, etc. Thus we have *baba* or *ni-ñara* 'father' (the former stem used in vocatives and the first person possessive forms, the latter in second and third person forms), but 'father and son/daughter' is *awañ-ñij*. It is conceivable that *awañ-* is ultimately related to *baba*, but the formation is clearly thoroughly irregular.

Aside from the above considerations (which in themselves are more than sufficient to demonstrate that the prefixing languages are the source, and Ri the borrower, in this instance), we may note that the shift *-ko?* → *-ka?* is expected in going from Ng to Ri, while if Ng had borrowed Ri *-ka?* we would have expected Ng **-ka?* instead of attested *-ko?*.

10. INCHOATIVE *-ti-*

In the Yuulngu languages, *-ti-* is a derivational suffix which is added to nouns (including 'adjectives') to form intransitive verbs. If N is the noun, the verb N-*ti-* means 'to be/become N', and therefore *-ti-* can be referred to as the 'inchoative' verbalising suffix (this term has been used by B. Schebeck). An example is Ri *ða:l* 'strong, firm', inchoative *ða:l-ti-* 'to be/become strong, firm'.

Ri also has a number of irregularities, where it appears that **-ti-* has weakened to **-yi-* and has then contracted with the final vowel of the preceding stem. The best example is *miḍiku?-nu* 'bad' (with adjectival suffix *-nu*), inchoative *miḍiki-* 'to be bad' (from **miḍiku-ti-* or the like). Another example is *maṛaṇi-* 'to be full', where however the independent noun stem is unattested.

The inchoative form in *-ti-* has a rather unusual set of inflectional endings in Ri and other Yuulngu languages, and it is partly by examining inflectional paradigms that forms like *miḍiki-* and *maṛaṇi-* can be identified as old inchoatives. The present form is *-ti-ri*, the past *-ti-na* or *-ti-ña*, and the future form is *-ti-i* / *ti-i*.

In particular, present ending *-ri* is otherwise found only with reflexive-reciprocal *-mi-* (actually, *-mi-ri* can be future as well as present). As suggested in section 4 of this chapter, *-mi-ri* was once a single morpheme **-miri* which has now been reinterpreted and resegmented. It is similarly likely that *-ti-ri* was once a single morpheme **tiri*, and indeed forms of this sort are found elsewhere in Australia, often with reflexive and/or reciprocal meaning. In some other languages we find just *-ri-* in this function.

Although there is a semantic discrepancy between an inchoative and a reflexive-reciprocal suffix, both are derivational suffixes creating intransitive verbs. It might well be that the Yuulngu reflexive-reciprocal with *-mi-* has displaced *-ti-* from its original function, whereupon it shifted into its attested inchoative verbalising function.

At any rate, there is ample comparative evidence that *-ti-* has a long history in the Yuulngu languages, and probably in the Pama-Nyungan

family more generally. It is apparently found in all Yuulngu languages, and shows occasional formal irregularities in cases like *miḍiki-* and *maṛaṇi-*.

Ng has borrowed inchoative *-ti-* from Ri, so that we now find examples like Ng *bir* 'many', inchoative *-bir-ti-* 'to be many'. There is no evidence that Ng *-ti-* can have been retained from a proto-language such as PNgNu. Nu has an inchoative suffix *-ma-*, hence *-ṛungal-ma-* 'to become big'. Since this *-ma-* is also found in Rembarrnga, which is on the opposite side of Ng from Nu, and since a cognate *-ma-* is also found among the Wa-Mara-Alawa group, it is clear that all relevant proto-languages in the prefixing group have had **-ma-* instead of **-ti-*. The only possible cognate of Ri *-ti-* shows up in prefixing languages as a reciprocal suffix (Ng *-ydi-* and other allomorphs, Nu *-ñji-* < **-ydi-*, Wa *-yi* or archaic allomorph *-ji-*), and it is not possible to explain Ng inchoative *-ti-* as a development from its reciprocal *-ydi-* for phonological reasons.

As for internal structural evidence, we may merely note that Ng inchoative *-ti-* (unlike its inherited reciprocal suffix *-ydi-*) has no unusual allomorphic alternations, and no particular functional specialisation. There is thus no structural indication that inchoative *-ti-* has any time depth in Ng.

The only remaining problem is how Ng integrated forms with the borrowed suffix *-ti-* into its inflectional system. What happened was that Ng did not borrow Ri inflectional endings, but rather substituted its own endings. Thus while *-ti-* in Ri has present *-ti-ri* and past *-ti-na*, Ng has present *-ti-na*, past punctual *-ti-ñ*, past continuous *-ti-ni*, and so forth. The inflectional endings are identical to those used with other stems ending in *i*, including reflexives in *-i-*, reciprocals in *-ydi-*, and simple stems like *-waki-* 'to return'.

Leaving out morpheme breaks (which in this case have no phonological manifestation), Ng speakers were confronted with the following Ri forms: present *-tiri*, past *-tina* or *-tiña*, and future *-ti*. It would have been conceivable for Ng to borrow the inchoative suffix as *-tiri-* or *-tina-*, for example, reinterpreting one of the Ri inflected forms as a unit derivational suffix. In fact, however, Ng took the suffix over as *-ti-*, in effect reproducing the correct Ri morpheme-boundary analysis (*-ti-ri*, *-ti-na*, etc.). Two factors may be mentioned in accounting for this: (a) Ri future *-ti* might have been taken by Ng speakers as representing the minimal form of the inchoative suffix; (b) Ri past tense *-tina* (*-ti-na*) has an ending *-na* which looks superficially like Ng present ending *-na*, so that Ng speakers would have tended to segment *-tina* as *-ti-na* (as indeed Ri speakers do).

11. THEMATISING AUGMENT *-du-*

In the Yuulngu languages, the most productive verb class is one which allows verb roots to occur in a totally uninflected 'root form', which can be used as an abbreviation of a longer verb form in discourse, is sometimes used as a rude imperative, and so forth. An example is Ri *bangu!* 'to return'. The most common canonical shapes for such roots are CVC and CVCVC, where the medial and final C's may be clusters. A

great many such roots end in glottal stops provided this is phonologically possible (glottal stops cannot follow stops, but can follow vowels and sonorants). In some cases a root of this verb class is clearly related to a noun or particle, and in such cases the verb root may show a final glottal not found in the simple stem, hence ba:nu 'rejected, not wanted' (as interjection: 'Get rid of it!'), verbal root form ba:nu?.

Such verbs can be inflected, but before this can be done they must be thematised by adding a thematic suffix. In some northern Yuulngu languages it appears that -du- is the regular form of the thematising augment. In Ri we find a number of allomorphs, including -du- after coronal stops and nasals, -yu- after vowels and some liquids, and others. All of these may have developed from *-du-; we find y in some other morphemes as a weakened form of earlier *d, for example (cf. guda!?-yu- 'to cook', variant guya!?-yu-). Thus bangu!? in Ri has inflected forms like past bangu!?-yu-na and future bangu!?-yu-ru. The form *bangu!?-yu with the thematiser but without an inflectional suffix does not occur. Under certain syllabic conditions the thematiser may be elided, so that past bangu!?-yu-na is optionally reduced to bangu!?-na, but this is impossible before some inflectional suffixes (for example, present -n and future -ru), and even in the past form is impossible with certain verb roots (for example, muṅ-gu- 'to drink', where the thematiser, here -gu-, is no longer easily segmentable from the root).

This thematising process was borrowed from Ri into PNgNu. It is now fully productive in Ng, but has been analogically levelled out to a large extent in Nu. Since the actual thematising augment -du- is found in Ng, and in vestigial form in Nu, it is clear that direct diffusion has taken place. The augment -du- does not occur in any other prefixing languages in the area. What look at first sight like parallels in other prefixing languages like Rembarrnga turn out to be reflexes of a verb *-dV- (*-di-, *-du-, etc.) 'to stand', which can occasionally be used as a kind of auxiliary stem with a preceding particle in a compound construction. This stem *-dV- is also found in Ng and Nu, where it is entirely distinct from the thematiser -du- and has a totally different paradigm. The thematiser -du- thus occurs only in Ng and Nu among the prefixing languages of the area.

In Ng, the thematiser takes the form -du- and shows no allomorphic variation. As in Ri, verb stems of this class can occur in the uninflected root form, so that Ng -ḍak-du- 'to cut' occurs in the root form ḍak. As in Ri, these roots can be inflected, but only after the thematiser -du- is added, hence past punctual -ḍak-d-i /-ḍak-du-y/, past continuous -ḍak-du-ṅi, etc. In Ng the thematiser is never elided, so there are no parallels to Ri bangu!?-na 'returned' from fuller bangu!?-yu-na.

In Ri, verbs of this class take a special root-reduplication unlike the usual verbal reduplication pattern. The same special root-reduplication is found in Ng, hence -ḍak-ḍak-du-ṅi, etc. In Ri, two or three stems in other classes which do not have a regular root form have special suppletive root forms, hence ma:ra- 'to get' shows an uninflectable root form bat. Some of these special suppletive root forms occur also in Ng, so that -ma- 'to get' (perhaps distantly related to Ri

ma:ra-) shows this same root form bat. In both Ri and Ng, the class of verbs which take thematiser -du- is the largest, most productive verb class in the language.

There are yet other similarities between the Ng and Ri thematic verb classes, but we have seen enough to persuade ourselves that Ng has borrowed -du-, its special reduplication pattern, its associated morphosyntax, etc. We should also mention that a great many verbs in the thematic class are shared by the two languages.

Nu presently has only a vestigial thematising process. Root forms are no longer productively related to simple thematic verb stems. There are root forms for some twenty or thirty verbs, but the root forms are now strictly interjection-like, added mainly for stylistic force. The root forms are in many cases suppletive, or at least phonologically divergent; in some cases, like -ya!ḍa- (*-jo!k-du-) 'to go past', root form ja!ḡ, the simple stem has undergone phonological changes (mostly lenition in one form or another) which the emphatically pronounced root forms have escaped.

As suggested by the transcription -ya!ḍa- instead of *-ya!-ḍa-, in many cases an old thematic form *-CVC-du- or the like is now an unsegmentable unit. The old root-reduplication (for example, *-CVC-CVC-du-) has been replaced by the regular verbal reduplication patterns, so that -ya!ḍa- is now reduplicated as -ya!ḍa-ya!ḍa-. There are occasional vestiges of the old *-CVC-CVC-du- reduplication, but they are generally now treated as distinct from the *-CVC-du- stem and can themselves be reduplicated regularly; hence -w₁ulḡulḡa- (*-gulk-gulk-du-) 'to cut', synchronically a near synonym of -w₁ulḡa- (*-gulk-du-), cf. their respective reduplications -w₁ulḡu-wulḡulḡa- and -w₁ulḡu-wulḡa- (see Chapter 2, section 9).

These facts show that the thematiser *-du- occurred in PNgNu, and that the formation is still productive in Ng but has become fossilised in Nu. Since the formation is found in all of the Yuulngu languages, and shows some internal evidence of being archaic in these languages, but is found in only two adjoining prefixing languages, it seems clear that PNgNu borrowed it from the Yuulngu group rather than vice versa. I can see no explanation for how *-du- could have originated through internal historical processes in PNgNu.

The remaining question is how speakers of PNgNu incorporated *-du- into their language. That is, how did they segment the morpheme as *-du-, and then how did they choose inflectional suffixes for forms with this morpheme?

If we take Ri as reasonably archaic in its inflection of -du-, which seems reasonable on the basis of the comparative inflectional material available to me, there were the following inflectional forms: past *-duna, present *-dun, future *-duru (medial morpheme breaks omitted). The morpheme break between the root and the thematiser was sharp, since the roots often occurred in the uninflected root form, so there were clear contrasts of the type *R-duna, *R-dun, etc. We still have to show, however, how PNgNu speakers segmented the morpheme as *-du-, rather than taking the thematiser as *-duna-, *-dun-, or *-duru-.

In the first place, the canons of PNgNu required verb stems to end

in a vowel, so the morpheme could not have been borrowed as **-dun-*. There were at least two reasons why it was borrowed as **-du-* rather than as **-duna-* or **-duru-*. For one thing, the past form **R-duna* ended in a syllable **na* which resembled the PNGu present ending **-na* (Ng *-na*, Nu *-na*), which was used after stems ending in **i* or **u*. Thus **R-duna* might easily have been segmented as **R-du-na* by PNGu speakers, as well as by the Yuulngu speakers themselves. Secondly, PNGu already had some roughly similar verbal derivational suffixes and 'auxiliary' verbs, the predominant canonical shape of which was **-CV-* rather than **-CVCV-*. Among the auxiliaries we may mention **-ma-* 'to get', *-dV-* (**-di-*, **-du-*) 'to stand', **-bu-* 'to hit', and **-ga-* 'to carry', and since these were added to otherwise uninflectable verb-like particles (for example, Ng *-bit-bu-* 'to climb' with particle *-bit-*) there was a fairly close parallel functionally as well as phonologically to the thematic forms in **-du-*.

The inflectional endings used with *-du-* are essentially identical to those used with the Ng stems *-ma-* 'to get, to pick up' and *-do-* 'to chop'. Moreover, the same endings are used with denominatives and some other verbs apparently in all cases based on another thematic suffix **-da-* (or **-ta-*). It is not certain at this point whether **-da-* is an old PNGu morpheme (unfortunately, Nu does not distinguish **-da-* from **-du-*, which is now found with a-vocalism). If it is old, then it is undoubtedly the direct source for the paradigm of *-du-*. If **-da-* itself was a borrowing from Yuulngu factitive *-ta-*, then we simply say that the paradigms for both **-da-* and *-du-* in Ng are derived from those of *-ma-* and *-do-* with only minor changes.

We can thus explain how **-du-* acquired its inflectional paradigm in PNGu. It would be more difficult to explain how Yuulngu *-du-* got its paradigm if we considered it a borrowing from the prefixing languages. Yuulngu *-du-* shares its paradigm essentially with a small group of stems ending in *a* (for example *nupa-* 'to follow'), but it seems puzzling why this particular class should have assimilated thematic stems with **-du-*. It seems clear that Yuulngu *-du-* is ancient, on a variety of grounds.

12. COMITATIVE *baṭa-*, *ṛay-*

Two derivational prefixes roughly describable as 'comitative' (that is implying or specifying the existence of a NP in an accompanying sense or the like) are shared by Ng and Ri. In Ng the forms are *baṭa-* and *ri-*, while in Ri we find *baṭa-* and *ṛay-/yay-*.

In Ng, both prefixes are used with verb stems. The prefix *baṭa-* does not change the voice category (intransitive, transitive) of the verb, and the comitative NP is not pronominally cross-referenced in it. From *ṇi-ṇ-i:* 'he sat' we get *ṇi-baṭa-ṇ-i:* 'He sat with (it).'

The other use of this prefix in Ng is in nominal 'having' derivatives, where it typically co-occurs with suffix *-wič*, as in *baṭa-waṭu-wič* 'having a dog'.

The prefix *ri-* is added to intransitive motion verbs to create surface transitives where the object is essentially the thing transported: *ṇi-bolk-d-i* 'He came out.', *ṇiya-ri-bolk-d-i* 'He brought it

out, He came out with it.' Here there is pronominal cross-reference for the 'comitative' object.

Ri has exact correlates of the verbal uses of *baṭa-* and *ri-*, hence *baṭa-ṇina-* 'to sit with (it)', *ṛay-bangu!?-yu-* or *yay-bangu!?-yu-* 'to bring back, to come back with'.

There is a kind of parallel to the nominal derivational use of Ng *baṭa-* in Ri. However, where Ng uses *baṭa-* as a prefix, Ri has a suffix *-baṭa-ṇu* (including the common adjectival ending *-ṇu*), meaning roughly '(rightful) owner of'. An example is *ḍiṇ?baṭa-ṇu* 'rightful owner of woman' (that is 'proper husband', as opposed to wife-stealer or eloper). We do not find Ri *baṭa-* in the ordinary Ri 'having' construction with suffix *-miri* (*ḍiṇ?-miri* 'having a woman, married man').

It is not entirely certain whether Ng or Ri is the source for this obviously diffusional set. The form *baṭa-* is quite widespread (Rembarrnga *baṭa-*, etc., in the prefixing group, while Yuulngu languages like Yuulngu we at least find the *-baṭa-ṇu* nominal derivatives), making it difficult to pin down its origin. On the other hand, it does seem that Ng *ri-* and Rembarrnga *re-* make it at least fairly likely that this set originated in the prefixing languages; Ri *ṛay-* or *yay-* do not occur in my Dhuwal material, and it is possible that Ri is the only Yuulngu language to share this prefix with the prefixing languages.

The phonology of this set is a little troublesome. Perhaps Ri *ṛay-* was a direct imitation of Rembarrnga *re-*, though I must say there are no other examples known to me where Ri (which lacks the *e* phoneme) has borrowed **e* as *ay*. Perhaps Ng *ri-* reflects **rey-* or **ray-* (there are other examples of **Vy* becoming Ng *i*), either of which could be borrowed into Ri as *ṛay-*. The *yay-* variant in Ri probably reflects the general instability of initial **r* in Ri (there are several other instances where **r* has become *y* in this position, and Ri has some other doublets like *ṛānbulu* and *yanbulu* 'palm sp.' I concede that this apparent allomorphic specialisation normally indicates reasonable time depth, and this does not agree well with the view that Ri is the borrowing language here, but even so the evidence available now seems to point to a borrowing from the prefixing languages into Ri rather than vice versa.

13. *malk-* 'times', *bala-* 'side'

Two special compounding elements creating 'nouns' which are generally used as adverbs are shared by several languages in the area.

A morpheme *malk-* 'times' forms such adverbs when attached to a quantifying noun stem in Ng, Ri, and Nu (at least). Examples are Ng *malk-yapan?* 'twice' from *yapan?* 'two', and Ri *malk-bulal-miri* 'twice' from *bulal-* 'two' (as noun *bulal-mañji?* with dual suffix *-mañji?*). Note that Ri usually adds proprietative *-miri* 'having' in this construction (see section 4 of this chapter).

In Nu we find forms like *mal-bula-wa:* 'twice' from *w₂ula-wa:* 'two' (with dual *-w₂a:*). The base form for the first morpheme in Nu can be represented as */malD-/*, where */D/* is an unspecified stop which is needed for morphophonemic purposes; one could also write this as */malg-/*,

but the stop is always deleted and thus cannot be specifically identified as /g/ synchronically.

A morpheme *bala-* 'side' is found in compounds with a following noun in Ng and Ri. For example, in Ng we get *bala-warjak* 'bad (i.e., left-hand) side' from *warjak* 'bad'. In Ri we get forms like *bala-wiřipu* 'other side' from *wiřipu* 'other'.

Until it is known in what other Yuulngu and prefixing languages these elements occur, I will not take a position on the direction of diffusion.

14. *-?wañji?* 'like'

A suffix or postposition *-?wañji?* added to nouns and translatable as 'like, similar to' is found in Ng and Ri. Examples are Ng *a-wařu-?wañji?* 'like a dog', Ri *bakara-?wañji?* 'like a tortoise'.

At first sight, the functional equivalent in Nu, a suffix *-yi:*, seems to be historically unrelated. However, in fact this could reflect **-?wañji?* and thus be cognate to the Ng suffix. Nu always loses morpheme-initial glottal stop, and often syllable-final glottal stop as well, so we are left with **-wañji*. Nu can get *-yi:* from this by the following steps: **-wañji* → **-w₁i:* → *yi:*. The first step, contraction of a bisyllabic suffix **-C₁V₁C₂V₂* to a monosyllabic form **-C₁V₂:*, is also seen in dual *-w₂a:* from **-bula* and in some other examples. If the **w* survived at all, it would most likely become morphophonemic **w₁* (that is, would alternate with **g* rather than with **b*), as in the case of ablative *-w₁ala* from **-wala*. The assimilation of **w₁* to *y* before *i* is seen also in dyadic dual *-(y)ij* from intermediate proto-type **-w₁ij* and in some other examples. Thus Ng *-?wañji?* and Nu *-yi:* could both derive from a PNgNu form **-?wañji?*. It is, of course, impossible to account for Nu *-yi:* as a recent borrowing from Ng or Ri.

In this light I am inclined to regard Ri *-?wañji?* as a borrowing from Ng or from PNgNu. This suffix did not turn up in my Dhuwal fieldwork, for example, and in the Yuulngu group it may therefore be restricted to Ri. Dhuwal has a particle *nakun* 'like; as well as' which is found also in Ri (*nakana* or *nakanaŋ*); in the latter language it competes with *-?wañji?* and sometimes co-occurs with it. This suggests that *nakun* and its variants are old in Yuulngu, and that the intrusion of *-?wañji?* into Ri has brought about a decline in productivity of the old particle, exactly as has happened with negative elements in Ri, to which we now turn.

15. NEGATIVE *-?may?*

One of the few important borrowings from Ng into Ri is a negative suffix *-?may?*. In Ng this can be used after a noun or other non-verbal constituent, as in *a-wařu-?may?* 'not a dog'. However, it is most common in verbal morphology. Each verb has a negative stem with suffix *-č-*, to which is added one of three special negative endings: past *-ič*, present *-?may?* (→ *-may?* by a rule deleting glottal stops after a stop), or future *-i*. For example, *-wařu-* 'to abandon' forms past negative

-wařu-j-ič, present negative *-wařu-č-may?*, and future negative *-wařu-j-i* (with *-j-* from */-č-* in the first and third examples).

In Ri, *-?may?* is used as in Ng with non-verbal constituents, hence *wařu-?may?* 'not a dog'. With verbs, it differs from Ng *-?may?* in being used in all tense-mood inflections, and instead of being added to a special negative stem is simply superimposed upon an ordinary (positive) verb form. Thus *da:ra-* 'to stand' forms past *da:ra-na*, present *da:ra-Ø*, and future *da:r-i*, and each of these is negatived by adding *-?may?* (*da:ra-na-?may?*, *da:ra-Ø-?may?*, *da:r-i-?may?*).

There are several reasons for thinking that Ri borrowed the suffix from Ng rather than vice versa. To begin with, the fact that Ng *-?may?* is restricted to the present tense, while Ri *-?may?* is used in all tenses, means that the Ng suffix shows a functional restriction not found in Ri. It is typical of borrowings to eliminate minor restrictions and other functional specialisations, so it would be natural to regard Ri as the borrowing language in this instance. Note also that Ri negative forms are based directly on the corresponding positive forms, whereas Ng has a complex system of special negative forms which suggests a fair degree of antiquity for this system.

The view that Ri rather than Ng has been the borrowing language is supported by comparative evidence within the Yuulngu group. Only Ri has *-?may?*, while other Yuulngu languages have independent negative particles usually based on a stem *yaka*. Thus corresponding to Ri Verb-*?may?* we find combinations like *baynu* Verb or *yaka* Verb in Dhuwal, *Dhay?yi*, etc.

Indeed, this *yaka* survives in Ri in two forms. The simple form *yaka* is used in prohibitives (negative imperatives) of the type *yaka ni: wa:n-i* 'Don't go!' (Neg you go). This contrasts with the usual future negative type *wa:n-i-?may?* *ni:* 'You will not go.' The stem *yaka* also survives in the nominal form *yaka-nu* (with 'adjectival' *-nu*), translatable as 'nothing' or 'no-one' at times, but used more generally as an emphatic negative particle.

What seems to have happened, then, is that Ri inherited negative **yaka* from Proto-Yuulngu. It has borrowed *-?may?* from Ng in the productive verbal negative form, and in the simple negative type *wařu-?may?* 'not a dog' with non-verbal constituents. It retains *yaka* only in its formerly secondary functions. Thus Ri now distinguishes a prohibitive with *yaka* from an ordinary future negative with *-?may?*, resulting in a useful surface opposition which may not otherwise have been possible (Ri cannot distinguish positive imperatives from positive future forms). It also keeps *yaka-nu* in some emphatic functions not carried out by *-?may?*.

The origin of Ng *-?may?* in the prefixing languages is difficult to pin down exactly, although several prefixing languages have tantalisingly similar negative morphemes. Ngalkbon, for example, has negative *mak*, usually preposed to the verb. Nu independent negative particles *wa:ri* (actual) and *yagi* (potential) are unrelated, but Nu also has some unusual negative endings with predicate nominals: past *-ma:*, present *-maga:*, future *-mi*. The past and future forms are interpretable as forms of inchoative verbaliser *-ma-*, but the present tense form is anomalous (from *-ma-* we would expect **-ma-ŋ* rather than *-maga:*). It

is possible that these endings have a complex history, involving partial reinterpretation of a negative ending beginning with *-ma... as a form of inchoative -ma-, with some consequent reshaping of the different forms. It is even conceivable that future -mi is a re-interpreted *-?may?, since such a form could become Nu -mi by regular phonological changes.

Although the details are obscure, there is at least some hope of taking Ng -?may? as an archaic, inherited morpheme. This is not possible for Ri -?may? in the absence of this suffix in the rest of the Yuulngu group and in the absence of internal structural evidence for time depth of this morpheme.

16. POSTPOSITIONS -?niri?, -bugi? 'only'

Most languages in the area have a handful of postposed forms (final suffixes or enclitics) which can be added to any of several word-classes. The morphemes -?wañji? and -?may? discussed in preceding sections can be considered to belong to this group.

In addition to these, Ng has -?niri? 'as well as, also', -bugi? 'only, still', and -burkayi 'really, very much'. At least the first two of these are found in other languages in the area as well.

In Ri we find -?niri? in a somewhat different sense, 'only, just'. Thus contrast Ng ni-munuma-?niri? 'as well as Munuma (man's name)' with Ri munuma-?niri? 'only Munuma'. In Rembarrnga, we find -nere? (not *-?nere?) in the sense 'only' (McKay, personal communication), agreeing with the Ri sense. Nu and Wa show no related postpositions. It is unclear whether Yuulngu and/or prefixing languages further north have related forms, and therefore the directionality problem is up in the air at this point.

Ng -bugi? 'only, just' is matched by Nu -w2ugij and Wa -bugi in the same meaning. Ri has -buki? in this meaning, though since this competes semantically with -?niri? it is not very common.

The phonological problem here is that we would expect Ng to have *-buki? (as in Ri) instead of attested -bugi?. The Nu form -w2ugij would be a regular reflex of *-buki?, but because of lenition rules it would be difficult to derive -w2ugij from PNgNu *-bugi?. Wa, like Nu, has no k/g opposition, so its form -bugi could have been derived or borrowed from either *-buki? or *-bugi?. Ri -buki? has consonantism clashing with that of Ng -bugi?, since no matter which way the borrowing went we would expect the two languages to agree in the consonants.

Perhaps PNgNu did in fact have *-buki?. This would account for the Nu form with no difficulties. This *-buki? may have been borrowed from a Yuulngu postposition which is reflected in Ri -buki?. More likely, Ri -buki? was borrowed from PNgNu *-buki? (I suggest this since in other cases where Ri and Ng share a postposition, notably -?may? and -?wañji?, it is probable that Ng is the source and Ri the borrowing language). Ng then unexpectedly converted *-buki? into -bugi?, either due to partial interference from Nu -w2ugij (hardened form -bugij) or due to some obscure factor discouraging fortis stops in suffix-medial position. Wa -bugi, if it is a borrowing, could have been taken over from PNgNu *-buki? or from Ng -bugi?.

17. MORPHEMES RESISTING DIFFUSION

In the following section (18) we will try to make some generalisations about which kinds of bound grammatical morphemes have been susceptible to diffusion. To lay groundwork for this, in the present section we will mention some of the more important types of grammatical morphemes which seem not to have been diffused.

One very important class of morphemes which have not been diffused are verbal inflectional suffixes, which mark tense, aspect, and sometimes other categories such as mood and negativity. In Nu, Ng, and Ri there are numerous verb classes, each with a characteristic paradigm distinguishing from about five to ten inflectional categories. There are also several irregular verbs in each language, including especially a number of high-frequency stems of the shape CV- or CV:-.

There is thus a considerable amount of morphological detail in verbal inflection in each language, with each inflectional category typically showing numerous allomorphs, each found in one or more verb-class paradigms. However, there is no clear evidence that any direct diffusion of actual inflectional endings has occurred. As we have seen, even when Ng borrowed inchoative verbaliser -ti- and thematising augment -du- from Ri, it did not borrow their Ri inflectional endings, but instead substituted Ng inflections adopted from pre-existing Ng paradigms.

The same is true in instances where a verb stem has been diffused. The set consisting of Ri du:-, Ng -do-, and Nu -la- 'to chop' is clearly diffusional in nature since cognates cannot be found outside of Arnhem Land. In Ng and Nu, the stem has a paradigm similar to that of -ma- 'to pick up, to get' (for example, past punctual *-do-y, past continuous *-do-ni, present *-do-ni in PNgNu). In Ri, on the other hand, it has a defective paradigm; so far as this paradigm goes it is related to that of thematic verbs with -du- (for example, past du:-ni, present du:-n). In general, then, inflectional verb suffixes have been highly resistant to diffusion.

In Wa, verbal inflection is messy and in parts fragmented, since only a handful of stems are directly inflectable (others are used in auxiliary constructions). Several of the inflectable stems are defective, so that a complete auxiliary paradigm may have to be pieced together with bits from several defective paradigms. So far as I can determine, there has been no direct diffusion of inflectional endings from Nu into Wa. Thus, although Wa has been closer areally to Nu than to a language like Alawa, we find substantially more affinities between Wa and Alawa inflection than between Wa and Nu. This indicates that Wa inflectional verbal morphology has been derived from PWaMaAl, with many internal analogical developments but no indication of direct diffusional interference.

Another important class of affixes which have resisted diffusion are verbal pronominal prefixes. In the prefixing languages, finite verb forms require a prefix or prefix complex specifying pronominal categories of the subject and object, hence Nu na-nu-na-ni 'I saw him.' ('I-him-see-past'), Ng na-nu-na-ni 'I saw him.', Wa gara-ya-Ø 'It bit me.' ('3Sg/1Sg-bite-past').

Such prefixes are not found in the Yuulngu languages, so of course

no direct diffusion involving them has occurred between Ri and Ng or Nu. The question is then whether any diffusion has occurred among the prefixing languages themselves.

So far as I can determine, no clear instances of diffusion can be cited. There are some similarities between Nu and Wa, for example, but it seems likely that all of this can be explained in terms of common retention from a distant proto-language. The similarities between Nu and Wa are much less striking than those between Nu and Ng, or between Wa and Mara and Alawa. In other words, the closest similarities are among languages with close genetic, rather than areal, affinities.

Some remarks should also be made about independent pronouns and demonstratives. Ri has essentially inherited the Proto-Yuulngu system of independent pronouns, with minor analogical changes. The only important innovation is third plural pronoun *gali*, which is not found in this sense in other Yuulngu languages, though a stem *da:li* 'group' in some of these languages may be the proto-type of the Ri form. This innovation has nothing to do with diffusion from Ng or Nu, and is just a manifestation of a general Yuulngu tendency for the third plural pronoun to be unstable (cf. Dhay?yi wuru, Dhuwal walal, etc.).

Nu and Ng (and also, to some extent, Enindhilyagwa) have clear similarities in some pronominal forms, but these are clearly due to shared retentions from PNgNu. On the other hand, despite the close areal relationship between Nu and Wa there is no evidence for diffusion of pronouns. For example, compare Wa 1Sg *ŋaŋa*, 1DuIn *ñaña*, and 2Sg *ñiñu* with Nu 1Sg *ŋaya*, 1DuIn *naga-wa:*, and 2Sg *nagaŋ*.

The only possible diffusion involving independent pronouns may be in the third person forms, which in Nu, Ng, and Wa consist of a noun-class prefix followed by a pronominal stem. This stem takes the following form with these third person pronouns: Nu *-gu-*, Ng *-wan*, Wa *-iwa*. Examples: Nu *ma-gu-ru*, Ng *ma-wan*, Wa *m-iwa/ma-iwa/*. It is conceivable, though unlikely at this point, that the Wa stem is a borrowing from the Ng stem. If so, we would want to claim that the Wa stem shape *-iwa*, rather than **-wa*, reflects analogical reinterpretation of third masculine singular **ŋi-wa* and third feminine singular **ŋi-wa* as *ŋ-iwa/ŋa-iwa/* and *ŋ-iwa/ŋi-iwa/*, respectively; the former might have been borrowed from Ng *ŋi-wan*, creating a discrepancy between the inherited Wa masculine prefix *ŋa-* and the new form **ŋi-*, resolved by attributing the **i* in the latter to the following stem. Then the stem shape *-iwa* could have spread, ousting earlier **-wa*. I should stress that this historical explanation is highly tentative at this time.

With this possible exception, there has been no significant diffusion involving independent pronouns, and we must conclude that these forms have been highly resistant to borrowing.

Demonstrative stems have been highly unstable in the area. Ri differs substantially from other Yuulngu languages in its array of demonstrative pronouns and adverbs. The Ng and Nu systems show no apparent cognate stems, unless Nu immediate (mid-distant) stem *da-* is related to Ng nonproximate stem *-na-* (perhaps from **-da-*, with consonant reshaped by analogy from the other stem, proximate *-ni-*). The full set of Nu stems is proximate *ya:-*, immediate *da-*, distant *yuwa:-*, distant anaphoric *ba-*, and Ng clearly lacks cognates of the

first, third, and fourth of these; it also lacks a cognate of Nu suffix *-u*, which adds a concrete nuance to the immediate or distant anaphoric stems. Similarly, Wa stems (proximate *-na-*, nonproximate *-ni-*) diverge sharply from Mara and Alawa forms. All in all, then, even genetically closely related languages seem to show few or no cognates in their demonstrative stems, so that we must assume especially rapid innovation in the history of demonstratives in each language.

This instability does not seem to have been due to diffusional interaction, however. The tantalising similarity between the Wa and Ng systems, with *-ni-* and *-na-* as the two basic stems and with various derivational suffixes added to them for more specific deictic and anaphoric senses, becomes less attractive when we realise that in Wa *-na-* is proximate and *-ni-* nonproximate (in the few contrastive environments), while in Ng the semantic opposition is reversed. The Nu and Ri innovations seem to have no diffusional basis. In general, then, there is no proof of any diffusion of demonstrative stems, and even if the Wa-Ng correlation turns out to have a partially diffusional basis we must conclude that borrowing has been a minor factor in the evolution of these demonstrative systems.

Various adverbial types based on demonstrative stems (for example, 'there', 'that way', 'to there', 'from there', 'on that side', 'that kind of thing', 'just past there') abound in each language. However, I cannot cite a single clear instance of direct diffusion of such a form. This contrasts sharply with what happens to cardinal direction adverbs ('north', 'south', 'east', 'west', 'up, uphill', 'down', 'downhill'), which have been freely diffused throughout the area. Thus Nu has borrowed *argaŋi* 'west' and even its special allative form *argaŋi-ñi* 'westward' from Wa, where *-ñi-* is productive as an allative ending with cardinal direction adverbs. Ri and Ng share terms for 'west' (Ng *ŋaŋi*, Ri *ŋaŋi*), 'south' (Ng *ba:gay*, Ri *bakay*), 'east' (Ng *rawara*, Ri *rawaraŋ*), 'north' (Ng *ŋuri*, Ri *ŋuruŋuy*), and 'up, uphill' (Ng *garwar*, Ri *garwar*). Yet there has been no diffusion between these two languages affecting any of the adverbial types based on demonstrative stems.

The grammatical morphemes and stems (the latter including pronominal and demonstrative stems) which have been most resistant to diffusion are therefore these: (a) verbal inflectional suffixes; (b) pronominal prefixes and prefix complexes added to verbs; (c) independent pronouns; (d) demonstrative stems; (e) adverbial forms based on demonstrative stems.

There are some other types of morphemes for which we have not documented instances of direct diffusion, but none of them qualify as clear cases of resistance to diffusion. Beginning with nominal morphology, we should mention number, and human noun-class affixes.

As for number affixes, in section 9 of this chapter I indicated that Ri *-ka?*, a dyadic dual ending, was borrowed from Ng *-ko?*. As for the usual nominal number markers, the problem is that in the prefixing languages the human noun-class prefix system includes at least some number-marking. In Wa this system includes the only number-marking found, while in Ng and Nu number is marked by a combination of

noun-class prefixes and special number suffixes, notably dual *-bula (Ng -pula, Nu -w₂a:). The history of this dual ending is too complex to go into here, but since Yuulngu languages have bulal- as the numeral stem 'two' (cf. also Nu -w₂ula-, but unrelated *yapan?* in Ng) a diffusional history of some sort cannot be ruled out. Moreover, a reduplication pattern indicating multiple plurality is found in Ri, Ng, and other nearby languages (Chapter 2, section 9). Thus it cannot be stated with any confidence that number-markers have been particularly immune to diffusion.

We have not dealt in any detail with human noun-class prefixes. The Yuulngu languages lack such prefixes, so there is no question of diffusion between them and the prefixing languages. Ng and Nu seem to have inherited a PNgNu system of human noun-class prefixes, though each language has innovated to some extent. Wa, which as we saw in section 8 of this chapter has probably borrowed a full set of non-human prefixes from Ng or Pre-Nu, has a system of human prefixes (masculine *na-*, feminine *ni-*, dual *yiri-*, plural *wulu-*, with variant vocalism in pronominal forms) which is sufficiently unlike the Ng and Nu systems (for example, Nu masculine *na-*, feminine *nara-*, plural *wara-*) to rule out extensive borrowing. Most of the Wa prefixes have at least possible internal etymological sources, though there are many problems and we cannot rule out some borrowing, especially in singular forms.

As for verbal morphology, we have already dealt with inflectional suffixes and pronominal prefix complexes, so we are left now with derivational morphemes. Derivational prefixes can be borrowed (section 12 of this chapter), though the number of clear instances documented is not great. Derivational suffixes like the causative, reflexive, and reciprocal, which are interposed between the verb root and the inflectional suffix, have not been diffused between the Yuulngu and prefixing groups, unless Ri factitive *-ta-* ('causative' of denominative inchoative verbs with *-ti-*) is related to Ng *-ta-/da-*, a verbal thematic suffix which forms some active denominative verbs like *-golč-a- (*-golč-da-)* 'to poison fish' from *golč* 'tree sp. whose wood is used in poisoning fish'.

Ng and Nu have inherited reflexive *-i- (Ng *-i-*, Nu *-i-*) and reciprocal *-ydi- (Ng *-ydi-*, Nu *-ñji-*) from PNgNu. Wa reflexive *-i-* and reciprocal *-yi-* (*-ji-* in some archaic forms), are related, but it is not clear at the moment whether these sharings are diffusional or retentionistic; it would be prudent for the time being to consider them common retentions. Therefore we can make no strong statements concerning the diffusability or resistance to diffusion of such derivational suffixes.

18. ANALYSIS

We now have a reasonable idea of what kinds of bound morphemes have been diffused and which have not. There are still some uncertain types (for example, reflexive, reciprocal, and causative derivational verbal suffixes), but leaving these classes aside we have the situation shown in Table 9.

TABLE 9

Diffusible	Nondiffusible
case affixes	independent pronouns
number affix	bound pronominals
noun-class affixes	verbal inflectional affixes
diminutive affix	demonstrative stems
derivational verbal affixes	demonstrative adverbs
negative affix	
other postpositions	
inchoative verbaliser	
thematizing augment	
special compound initials	

In order to make sense out of this lineup, we need to recognise a number of factors which have favoured or inhibited diffusion. One way to approach this problem would be to suggest an inherent hierarchy of diffusability based on the semantic and grammatical character of each type of morpheme. Just as it was believed for many years that numerals and certain other types of lexical items were especially resistant to diffusion, it could be proposed that there is something inherent about the semantics of the elements listed in the 'nondiffusible' column which makes them invulnerable to borrowing.

Unfortunately, this approach really amounts to saying that these elements have not been diffused because they are nondiffusible; that is, it does not help us understand why they have not been borrowed. Moreover, it is doubtful whether such a universal hierarchy based solely on semantic features can be supported; I suspect that one would find considerable variation along these lines in different areas of the world. For example, in Arnhem Land we have found numerous examples of borrowing of case suffixes, whereas in European languages this is one of the rarest kinds of direct morphemic diffusion.

Instead of simply constructing a hierarchy which cannot explain what is going on, let us try to conceive of various phonological, semantic, and other features which might favour or impede direct morphemic diffusion. In my view, the factors suggested in Table 10 provide a satisfactory framework for accounting for the Arnhem Land facts which I have detailed.

TABLE 10

Factors favouring diffusability	Factors impeding diffusability
syllabicity	nonsyllabicity
sharpness of boundaries	haziness of boundaries
unifunctionality	portmanteau status
categorial clarity	categorial opacity
analogical freedom	analogical subordination

By syllabicity we mean that the bound morpheme is independently pronounceable in a form which satisfies the canons of the borrowing language as a syllable or sequence of syllables. The important thing is pronounceability, not syllabicity in and of itself.⁵⁸

The notion of sharpness of morpheme and/or word boundaries flanking the morpheme to be borrowed needs further refinement. Basically, the criterion I have in mind is contrast with zero. That is, if a stem X can occur in isolation, and can also occur in a combination X-Y (or Y-X) with some bound morpheme Y, then the morpheme boundary between X and Y is sharp. Note that the paradigmatic opposition X:X-Y insures the sharpness of the syntagmatic contrast between X and Y in the composite form X-Y. In cases where X cannot occur in the isolation form, but only occurs in a series of combinations X-Y₁, X-Y₂, etc., the morpheme boundary between X and the suffixes is not as sharp as it would be if there were an unmarked form X. In the series X-Y₁, X-Y₂, the morpheme boundary must be **abstracted** from a paradigm, whereas in the opposition of X to X-Y the segmentation is sharply and unmistakably drawn.

As a secondary indication of sharp boundaries, we can accept any phonological features which are typical of morpheme boundaries alone. In Ng and Ri, for example, glottal stops occur chiefly word-finally and at the boundary between noun stems or thematic verb stems and following suffixes. Thus a glottal stop could be taken as evidence for sharp boundaries in other cases as well. However, contrast with zero is the most useful criterion for sharpness of boundaries and we will stick to it to the extent possible.

By unifunctionality I mean that the morpheme in question has a single function; the most useful symptom of this is that we can find a simple categorial label for it from our normal terminological inventory. Thus an ergative affix is unifunctional, as is a plural affix, but an affix simultaneously ergative and plural would be a portmanteau morpheme (bi- or multifunctional). Unifunctionality does not necessarily mean, in this context, that the morpheme has no secondary functions in specialised environments, but rather that in its most salient uses it has a single predominant function.

By categorial clarity I mean that the morpheme can be labelled (for example, as ergative) without having to examine the broader

⁵⁸Actually, some diffusible morphemes begin with fortis stops (for example, Ri *-kaʔ* from Ng *-koʔ*, the kin-term dyadic dual suffix), or with a sequence *ʔC* (for example, Ri negative *-ʔmayʔ* from Ng *-ʔmayʔ*). These initial segments are not pronounceable as such (since only phonetically lenis stops occur word-initially, and no initial clusters are permitted). However, there are simple ways to convert these into pronounceable sequences: a fortis stop is pronounced as a lenis stop, and an initial prenasal glottal stop is deleted. On the other hand, when the morpheme is of the canonical shape *-C*, for example, there is no phonological process found in the language which could convert it into an independently pronounceable form (for example, there are no productive epenthesis rules applicable to such a morpheme).

morphosyntactic environment in which it occurs. For example, one of the inflectional suffix categories in Nu verbs is 'past-2', which can be specified more clearly as past continuous, past negative, past potential, or past negative potential only by considering the entire verb complex, including the choice between two types of pronominal prefix and the presence or absence of negative particles. Thus a past-2 suffix must be characterised as opaque. On the other hand, Ng verbal suffixes are more clear categorially, since a particular suffix by itself specifies the verb as past continuous (positive) or the like without reference to prefixes or particles.

By analogical freedom and subordination I mean the absence or presence of unidirectional synchronic analogical pressure from another morpheme class. For example, verbal inflectional suffixes (tense, aspect, etc.) are in general analogically free, since there is no other class of morphemes which exerts any particular analogical influence on them. Their historical development can be understood in terms of various analogical and other changes which operate **within** the system of inflectional suffixes, not in terms of changes responding to influences from other morphemic systems in the same language.

Similarly, case suffixes form a relatively closed system which develops in each language according to its own internal tendencies, plus diffusional interference from the corresponding systems in adjoining languages. In general, language-internal analogical operations radiating from other morphemic systems and affecting the system of case suffixes do not occur.

The suggestion is that in situations where a morphemic system is analogically subordinated to another morphemic system in the same language, this will hinder diffusional intrusions from other languages into the subordinated system. I am thinking particularly of the relationship between independent pronouns and the various types of bound pronominals (subject- and object-marking pronominal prefix complexes in verbs, pronominal possessive affixes added to nouns in those few languages where such affixes occur, etc.). Since the bound pronominals are subject to constant analogical influence from the system of independent pronouns, direct diffusion of bound pronominals is hindered, since as a rule such diffusion would result in greater formal divergence between the independent and bound pronominals. This hindrance would not apply in the accidental case where the diffused bound pronominal happened to result in greater formal symmetry between the independent and bound systems in the borrowing language.

In addition to this independent/bound analogical pressure, we should also mention the relationship between simple and derived forms (*formes de fondation* and *formes fondées* in Kurylowicz's terminology).⁵⁹ Given a stem X and a derivative X-Y (or Y-X), for example a simple demonstrative stem and a derived adverbial (for example, 'this' versus 'from here'), we can see that there is synchronic analogical influence emanating from the simple form and applying to the derived form.

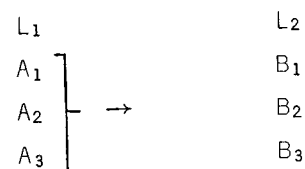
⁵⁹J. Kurylowicz, 'La nature des procès dits analogiques', in E. Hamp, et al., eds., *Readings in Linguistics II*, Chicago 1966, pp.158-174.

The directions of analogical influence posited here, independent \rightarrow bound and simple \rightarrow derived, are the primary directions of analogical change in historical linguistics. The historical development of pronominal systems (for example, Romance, Uto-Aztecan) can be seen as a constant process of creating or reshaping bound pronominals on the analogy of independent pronouns, which in the most extreme instances involves the replacement of an old bound series by a new bound series which is simply an old independent series having attached itself to verbs or other constituents as affixes or clitics. There is very little analogical development in the other direction, whereby independent pronouns are analogically reshaped on the basis of patterns derived from bound pronominal systems.

Similarly, the analogical primacy of X over its derivative X-Y has been stressed explicitly by Kurylowicz and other historical linguists. Thus in pronominal inflection the third singular, as the unmarked category, is the fulcrum of analogical restructuring in a great many cases. That is, in the event of an initial system with 3Sg X-Y₁, 2Sg X-Y₂, 1Sg X-Y₃, and so forth where all suffixes are nonzero, X-Y₁ can be reinterpreted as a unit Z, whereupon 2Sg X-Y₂ is reshaped as Z-Y₂ (that is, X-Y₁-Y₂), 1Sg X-Y₃ is reshaped as Z-Y₃ (X-Y₁-Y₃), and so forth.⁶⁰ In general, when the structurally primary (unmarked) form of a noun stem is reshaped or reinterpreted, this reshaping is likely to be analogically carried through all of its inflections and derivatives.

So far as diffusion is concerned, the claim being made here can be illustrated diagrammatically. Suppose two languages in contact, L₁ and L₂, have corresponding closed morphemic systems each of which is free from synchronic analogical pressure from other morphemic systems in the same language. This situation is represented in Figure 11.

FIGURE 11



Here there is no special obstacle preventing diffusion of a morpheme, say A₁, from L₁ to L₂, either replacing an inherited morpheme B₁ or filling a functional gap.

On the other hand, consider the situation where the morphemes B₁, B₂, and B₃ are analogically subordinated to other morphemes in their own language, as shown in Figure 12.

FIGURE 12



Here the intrusion of a morpheme A₁ into L₂ would disrupt the analogical relationship between B₁ and C₁, except in the atypical and accidental case where A₁ happens to already be in the appropriate formal relationship to C₁ in the other language. Aside from this atypical case, the situation shown in Figure 12 should discourage direct morphemic diffusion.

Let us see, then, how the analytical factors suggested in Table 10 handle the distinction between diffusible and nondiffusible morpheme types in Table 9.

So far as syllabicity is concerned, we find that all diffusible morpheme types are syllabic (-tu-, -ku-, -miri-, -wala-, -ko?, -gañan?, bala-, ray-, -ti-, -du-, malk-, bala-). The only apparent exceptions are such suffixes and postpositions as negative -?may? which begin with a sequence of glottal stop plus consonant. Here, however, the ? tends to pattern as a junctural element, so such counterexamples are not convincing. The important point is that we do not find diffusion of morphemes of the shape -C, for example.

The diffusible morphemes generally show sharp morpheme boundaries, as manifested primarily by contrasts of the sort X versus X-Y, where Y is the bound morpheme. Case suffixes contrast with zero because each language has an important nominative case with zero suffix (that is, with no suffix). The dyadic dual suffix contrasts with zero in both the source language Ng (bari-ñara 'your two fathers', bari-ñara-ko? 'father and child') and in the recipient language Ri (ba:pa 'father', ba:pa-ka? 'father and child'). Noun-class prefixes contrast with zero since they are optional. The diminutive suffix contrasts with zero since there is no obligatory morpheme in its 'slot'. Derivational verbal affixes (for example, the comitative prefixes) contrast with zero in underived forms. The negative suffix -?may? contrasts with zero in the source language Ng when it is used with nonverbal constituents, and contrasts with zero in the borrowing language Ri in all cases. Postpositions like -?ñiri? and -bugi? are optional and thus contrast with zero. Compounding initials like malk- and bala- forms derivatives which contrast with simple nominal (adjectival) stems, so these initials likewise contrast with zero.

The only two problems are with thematising augment -du- and inchoative verbaliser -ti-. In both cases the initial boundary is sharp, since we get contrasts in Ri of the types V versus V-du-X (V is a verb root, X an inflectional suffix), and N versus N-ti-X (N is a noun stem).

In the case of -du-, there is no simple contrast between V and *V-du, since the latter form does not occur in the source language, Ri. Instead there is a contrast between V and V-du-X, and our analytical framework would lead us to suspect that the second morpheme boundary in

⁶⁰C. Watkins, *Indo-European Origins of the Celtic Verb*, vol. 1, Dublin 1962, begins with a discussion of the role of the third singular in paradigmatic restructuring.

V-du-X was rather hazy, though the first was sharp. In the case of -ti-, we could invoke the future form -t-i /-ti-i/, which can be re-interpreted as -ti-∅ (that is, -ti), so we could think of a contrast of the type N versus V-ti (future). However, since the future is a rather marked category it might be best not to attribute to it such importance.

As we have seen, the boundary before -du- and -ti- is made sharp by contrast with the uninflected form V or N, while the boundary following -du- or -ti- is somewhat hazier. By our criteria, we might suspect that these morphemes could only be diffused with great difficulty. However, I have shown in sections 10 and 11 of this chapter that there are particular circumstances which favoured the segmentation of the morphemes in question as -du- and -ti-, such as the similarity between Ri inflectional endings like past -na and Ng endings like present -na, and also the existence in Ng (the borrowing language) of a pattern favouring -CV- as the canonical shape for thematising verbal suffixes. Thus, while the diffusion of -du- and -ti- at first sight appears inconsistent with the notion of sharpness of morpheme boundaries which we have suggested as a factor favouring diffusability, actually this is not the case; we merely need to recognise that contrast with zero is not the only criterion for determining the sharpness of morpheme boundaries.

The third factor we suggested was unfunctionality of the morpheme to be diffused, at least in its most salient or most accessible occurrences in the source language. This criterion is satisfied by the majority of the diffusable morphemes mentioned in Table 9.

Two apparent counter-examples are the ergative-instrumental and genitive-dative-purposive case suffixes, borrowed from Ri into Ng. As the hyphenated labels suggest, these suffixes are multifunctional. However, the crucial point to be made here is that the different senses of each suffix are syntactically distinguishable; a given occurrence of the ergative-instrumental suffix, for example, is either ergative or instrumental but not simultaneously both. The suffix is thus not a portmanteau, jointly indicating two categories, as it would be if it were an ergative-plural suffix. Moreover, especially in the case of the genitive-dative-purposive, the several senses are closely linked semantically.

None of the diffusable morphemes is especially opaque in the sense that its sense can only be determined by examining the broader morpho-syntactic context. Each such morpheme can be assigned a simple categorical label like 'ergative-instrumental' or 'negative'. Of course, some of the diffusable morphemes can be described as 'abstract' or 'relational', but this is not the same as the notion of opacity which I had in mind. To repeat, opacity is here defined as the situation where two or more grammatical morphemes must be simultaneously examined before a specific categorial label can be assigned to either morpheme or to their combination. Such 'relational' morphemes as inchoative verbaliser -ti- and thematising augment -du- are not opaque in this sense.

The final factor which we suggest has favoured diffusability is analogical freedom. The diffusable morphemes listed in Table 9 seem to me to be independent of synchronic analogical influence from other

morpheme classes in the same languages. The only possible counter-examples might be number-markers, which could be thought of as analogically subordinated to quantifying nouns, and the diminutive suffix, which might be thought to be analogically subordinated to noun stems meaning 'small'. However, these lines of analogical influence are probably weak. The kin-term dyadic dual suffix, Ri -ka? from Ng -ko?, would seem to be less subject to such analogical influence from a numeral like 'two' than the regular nominal dual suffix (cf. Nu -w₂ula- 'two' < *-bula, regular nominal dual suffix -w₂a: < *-bula). As for the diminutive, in most languages (for example, Ng, Ri, Wa) the diminutive suffix is unrelated to the adjectival noun 'small', and in the one case (Nu) where the two are related it seems that the word 'small' has been analogically replaced by the diminutive morpheme rather than vice versa. Thus in no case of a diffusable morpheme is there empirical evidence for a substantial analogical subordination to some other morpheme or stem.

We have shown, then, that the diffusable morphemes appear to satisfy all five criteria (syllabicity, sharpness of boundaries, unfunctionality, categorial clarity, analogical freedom) suggested in Table 10. We now consider the morphemes which have been especially resistant to diffusion.

Let us begin with verbal inflectional suffixes (marking tense, aspect, mood, negativity), which have been totally immune from diffusion so far as we can tell in this area. These suffixes are often non-syllabic (for example, -n, -n, -m), though some of them are syllabic. Since very few inflectional paradigms have a true -∅ suffix, even in unmarked categories like the present positive, the morpheme boundaries are abstract rather than sharp. This is particularly true when ablaut and other changes affecting stem-final vowels are considered. For example, Nu 'to make' forms past-1 -maṅdiñ, past-2 -maṅdani, nonpast-1 -maṅdan, nonpast-2 -maṅdi:, nonpast-3 -maṅdi, evitative -maṅdagan. Is the stem -maṅd-, -maṅda-, or -maṅdi-? In the analysis I use, the stem is -maṅda-, becoming -maṅdi- before past-1 -ñ by a morphologically restricted fronting rule a → i, combining with nonpast-2 /-i/ to form -maṅdi:- by contraction of ai to i:, and combining with nonpast-3 /i-∅/ (that is ablaut of stem-final vowel to i, with zero suffix) to form -maṅdi-∅ (an alternative is to set up nonpast-3 suffix /-y/ and allow fronting /ay/ → /iy/, whereupon final /y/ would automatically be deleted). This is probably as close as we can come to the 'ideal' solution, using essentially generative phonological assumptions, but the morpheme boundaries are quite hazy on the surface.

Moreover, many inflectional verbal suffixes are portmanteau or opaque. For example, the nonpast-3 category in Nu is marked as non-past, potential (that is, future), and negative. The Nu past-1 is specified as past, actual (nonpotential), positive, and punctual. Thus Nu inflectional categories are often portmanteaus. This is true in the other languages as well, though not to the same extent. As for opacity, we should mention that in Nu and Wa there are inflectional suffix categories which make sense only in the light of other morphemes such as prefixes and particles. This is why we have to use abstract labels like 'past-2' in Nu inflectional morphology; this particular category can be past continuous, past negative, past potential, or past

negative potential, depending on which prefixes and negative particles are present in the verb complex. Similarly, Wa has a continuous suffix category which can be past or future (but not present), depending on whether a potential (future) prefix is also present; a number of other suffixal syncretisms of this sort are found in many other Wa paradigms. However, in Ng and Ri the inflectional suffixes are usually clear rather than opaque.

Although inflectional suffixes are not analogically subordinate, we have seen that they are in several other respects characterised by features shown in Table 10 as impeding diffusability (nonsyllabicity, haziness of boundaries, portmanteau or opaque quality). I would suggest that the most important factor has been haziness of boundaries, since this applies to virtually all inflectional suffixes in these languages, whereas the other factors are applicable to only certain of the suffixes.

Let us move on to the bound pronominal systems. Ri, as we will see in the next chapter, has developed a series of subject- and object-marking enclitics, which are just reduced forms of the independent pronouns and are thus clearly analogically subordinated to them. In the prefixing languages, we find a system of subject- and object-marking pronominal prefixes attached to verbs and other predicative elements.

As we have seen, even among the prefixing languages it seems that no diffusion of actual pronominal prefixes has occurred. This can be explained by noting that such prefixes and prefix complexes are characterised by several features which we suggest have impeded diffusability.

Most pronominal prefixes are syllabic, so this factor does not impede their diffusability. However, it can be argued that the morpheme boundaries between prefix complexes and the following morphemes (stems or derivational prefixes) are not sharply drawn. In most prefixing languages there is no \emptyset - pronominal prefix, or if there is such a prefix it is a semantically highly marked transitive prefix which cannot have played an important analogical role in sharpening the morpheme boundaries after the more common prefix complexes. Thus Wa has no \emptyset - prefix, while Nu has \emptyset - only in the very uncommon transitive combination where subject and object are both in certain nonhuman noun-classes, while Ng has \emptyset - only in certain 3Sg \rightarrow 3Sg transitive combinations where both subject and object are human (3FSg \rightarrow 3FSg, 3FSg \rightarrow 3MSg, sometimes 3MSg \rightarrow 3FSg, but not 3MSg \rightarrow 3MSg). Thus at the most the \emptyset - prefix could conceivably play a role in sharpening the boundary between a transitive pronominal prefix complex and a following transitive verb stem.

A number of pronominal prefixes, especially transitives, are portmanteaus even under the most abstract analysis. Thus Nu 3PI \rightarrow 1Sg *gambambi-* (one of two forms) can be analysed as /*ŋa-N-w₂an-w₂i-*/ ('1Sg-Inverse-B-3PI', where the B morpheme marks this as distinct from the other 3PI \rightarrow 1Sg combination, which I call A) under an ambitious and abstract analysis involving a 'deep' phonological analysis. However, even with this kind of analysis we will be stuck with numerous portmanteau morphemes, such as \emptyset - (nonhuman \rightarrow nonhuman) and (*w*)*a-* (one of two 1 \rightarrow 2Sg forms). If the abstract analysis of combinations like

gambambi- is rejected as synchronically unrealistic, then the number of portmanteau morphemes skyrockets. Although Nu is particularly rich in irregular and semi-irregular prefix combinations, they can also be found in Ng and Wa.

It should also be noted that in Nu there are two forms, A and B, for each intransitive and transitive combination. These are used in different tense-aspect-mood-negativity combinations, and so the choice between A and B forms, along with the choice of suffixal inflections and the presence or absence of negative particles form an overall functional system which specifies tense-aspect-mood-negativity categories of verb complexes. This feature is not found in Wa and Ng.

Finally, we should mention that bound pronominal systems like this are generally analogically subordinated to independent pronoun systems. Thus in those languages which have acquired noun-class systems with independent nouns and pronouns, the pronominal prefix system has in some instances been reshaped to include noun-class marking for third person pronominals (Nu, Ng), though this has not happened in Wa where much of the noun-class system seems to have been recently borrowed. Thus there are a number of factors which together can account for the failure of pronominal prefixes to be diffused across language boundaries.

This account takes care of pronominal prefixes with verbs, and the systems of bound pronominal possessives found in some of these languages (notably with kin terms). However, we still have to explain the status of the independent pronouns.

In general, the factors hindering diffusability seem only weakly applicable to independent pronouns. They are syllabic, are categorially clear rather than opaque, and are analogically free (except to the limited extent that analogical back-formation pressures can be recognised). The morpheme and word boundaries flanking independent pronouns are generally sharp, since derivatives and inflected forms of the type X-Y contrast with the simple nominative type X, which not only clarifies the segmentable status of affixes Y but also that of the pronominal stem X. Pronouns can be said to be portmanteau only in the trivial sense that 2Sg, for example, can be decomposed into a person element (2) and a number element (Sg), and so forth, by componential analysis. However, since roughly the same pronominal categories are found in each language, this portmanteau status would not seem to be significant in blocking diffusion.⁶¹

One thing which should be mentioned is that independent pronouns are not especially common in the prefixing languages at least. Because

⁶¹For a possible case of diffusion of independent pronouns among Australian languages see R.M.W. Dixon, 'Tribes, languages and other boundaries in northeast Queensland'. In N. Peterson, ed., *Tribes and Boundaries in Australia*, Canberra, Australian Institute of Aboriginal Studies, 1976, pp.207-238. The relevant passage is pp. 224-225. I am told by E. Hamp that a Slavic first singular pronoun may have been borrowed from Iranian.

verbs and other predicative elements have obligatory subject- and object-marking pronominal prefixes, independent nominative, ergative, and accusative pronouns would be generally redundant and thus restricted to emphatic status. Indeed, special derivatives of pronouns stressing a change in the subject NP, or other focal NP, of one clause as opposed to the preceding clause are more common in Ng and Nu than simple nominative pronouns. For example, Nu *ni-ga:-'yuj /ni-ga-ayuj/ 'as for him'* is more common than *ni-ga 'he, him'*. Pronouns are also common in spatial cases as in Nu *ni-ga-wi-wuy 'to him'* where there are no alternative means of expressing the pronominal category. Thus pronouns occur chiefly in derivatives and in nonzero case forms, and this may have had some negative effect on the diffusability of the simple pronouns.

However, these considerations do not suffice to rule out the possibility of diffusion of independent pronouns. It would seem, for example, that such diffusion would be more likely to occur than diffusion of bound pronominal prefixes, or of inflectional verbal suffixes, for example. Although no clear examples of borrowing of independent pronouns occur in the area investigated here, we should certainly keep our eyes open for possible instances as we obtain data from other languages in the same general region.

Demonstrative stems are another class of grammatical morphemes which seem not to have been easily diffused. One feature about demonstrative pronouns in Nu, Ng, and Wa is that whereas in nouns it is possible to omit noun-class prefixes, with demonstratives they are obligatory. Thus while any noun can occur in the simple form N, as opposed to forms with noun-class prefix X-N, a demonstrative stem D occurs **only** in the combination X-D. Thus the morpheme boundary must be abstracted by examining an array of several such forms X₁-D, X₂-D, X₃-D, etc., with different noun-class prefixes. Since the stem D is always part of a conglomerate structure, and the morpheme breaks are not as sharp as they would otherwise be, it would seem that they should be relatively unlikely to be directly diffused.

Moreover, even the simplest demonstrative forms can often be analysed into several elements, quite aside from noun-class prefixes. Thus in Nu we find four demonstrative stems (*ya:-, da-, yuwa:-, ba-*), but two of these (*da-, ba-*) occur frequently in combination with a concretising suffix /-u/. Similarly, Ng has only two stems (*-ni-, -na-*), but there is always a suffix of some sort (*-ʔ, -ri, -ñ*) adding various deictic and anaphoric nuances. The situation is similar in Wa, where we find stems *-na-* and *-ni-* (only *-ni-* in demonstrative pronouns, both in adverbial forms), along with a number of suffixes (*-ñi, -ya, etc.*); there is also a prefix *a-* similar in function to Nu suffix /-u/. Ri has perhaps the simplest forms of all, but even in this language we can decompose stems like proximate *yaku(y) 'this'* into several morphemes (*ya-kuy* or *ya-ku-y*), and even the nominative forms are often accompanied by half-fused enclitics like *di* and *ya*. Because of this morphological complexity it might have been rather difficult to directly borrow a demonstrative stem from one language into another.

Demonstrative adverbs are generally derived from these stems by adding special 'case' affixes, producing locative and other adverbial

forms ('here', 'from here', 'on this side', 'to here', 'this kind of thing', etc.). The forms are often rather obscure, so that Nu *buguni 'to there'* is relatable to the stem *ba-* only with some phonological difficulties (hence *bu-guni*), but in other cases the relationship is more transparent (*ba-gu 'there'*, *ba-ga:-'la 'from there'*, etc.) and even in the obscure type there is always at least some phonological similarity to the basic stem. Thus it is possible to consider all demonstrative adverbials as analogically subordinated to the stem (as manifested especially in the demonstrative pronouns). This provides an explanation for why such demonstrative adverbs have been extremely resistant to direct diffusion.

It would be somewhat presumptuous to attempt a formal 'factor analysis' of the characteristics mentioned in Table 10 as they apply to the array of diffusable and nondiffusable morphemes shown in Table 9. This is because the data are quite finite, not lending themselves to a rigorous statistical analysis, and also because some of the factors are subjective and cannot be applied in a simplistic fashion to all types of morphemes.

However, it does appear that the inventory of factors in Table 10 is on the right track. The morphemes which have been diffused have in nearly every case been characterisable in terms of the factors favouring diffusability shown in the table. The morpheme classes which have been particularly resistant to diffusion have turned out to have one or more characteristics from among the list of factors impeding diffusability in the table.

19. FUNCTIONAL CONSIDERATIONS

In the preceding section we described a number of what might be called 'structural' factors favouring or impeding the diffusability of morphemes, based mainly on formal and analogical characteristics. The factors favouring diffusability may be seen as constituting a filter, so that morphemes not satisfying the various conditions favouring diffusability are impeded from being borrowed. However, in claiming that a morphemic class such as case suffixes is subject to diffusion, we of course do not claim that every such affix has been freely diffused across language boundaries. Only certain morphemes of each such morphemic class have in fact been diffused. The thought arises that perhaps the choice of the particular morphemes which have been diffused is based on functional considerations; only those morphemes have actually been diffused which contribute something to the borrowing language which was previously lacking. In this approach, morphemic borrowing is viewed in its therapeutic aspect. Borrowings are interpreted as devices to fill functional gaps, to create or renew useful distinctions, to establish a more symmetrical system, and so forth. Let us see whether this functional approach can be usefully applied.

In the case of ergative-instrumental and instrumental suffixes which have been borrowed (Ng *-tu* from Ri *-du*, Nu *-miri* from Ri and Dhay?yi *-miri*), a good functional case can be supported. It appears that no stable case-markers for these categories occurred in PNgNu. Nu still lacks an ergative case, thus confusing transitive subjects

with objects in nominal morphology; the same is true of Wa, while Mara can be shown to have innovated in specialising its most common ergative-instrumental prefix pa- (formerly a noun-class prefix). Thus the introduction of a borrowed ergative-instrumental suffix into Ng, and of an instrumental suffix into Nu (and from it into Wa and Enindhilyagwa) can be thought of as therapeutic developments.

The introduction of Ri genitive-dative-purposive -gu into Ng as -ku, on the other hand, has no obvious functional basis. It is true that the old suffix *-guñun occurs in Ng as originative -kuñun, so we could say that the introduction of -ku permitted an opposition between the genitive-dative-purposive and the originative. However, the latter is an unusual case category, whose existence has probably been inspired indirectly by Ri (which inherited such a category from Proto-Yuulngu), and we would hardly look upon PNgNu as unbalanced simply because the originative category was not yet present. Similarly, the distribution of the two ablative suffixes, *-wala and *-yani, suggests diffusion since neither distribution correlates with genetic subdivisions, but there is no obvious functional explanation for why a given language should have replaced *-yani by *-wala or vice versa.

Diminutive -gañan? and its other variants express a useful grammatical category. However, we do not know whether diffusion created the diminutive category in the borrowing languages, or whether it merely replaced an older diminutive with another. Moreover, the borrowing languages must have had adjectival nouns meaning 'small' all along, and since several languages (Ri, Ng, Nu, though only rarely Wa) have noun-adjective compounding processes they could have formed the equivalent of a diminutive by making compounds like 'river-small'.

Noun-class prefixes are potentially very useful in discourse, particularly in cross-reference and anaphora. Because of the elaborate systems found in Nu, Ng, and Wa, it is often possible to refer to a particular referent merely by using a class-specified pronoun, since the addressee can often deduce the referent from the context together with the noun-class specification. However, Wa has borrowed the noun-class system from Ng or Pre-Nu without adapting it as well to its own morphosyntax as Ng and Nu have. In particular, Wa has not introduced noun-class specification into its system of pronominal prefixes used with verbs. Thus while Nu can express, with a single verb form, something like 'It(class III) saw him(MSg)', Wa verb forms can only express things like '3Sg saw 3Sg', where no gender or noun-class marking is possible. Wa does use noun-class marking effectively to link 'adjectives' to the correct nouns, and with independent pronouns and demonstratives, but has not taken advantage of all the functional possibilities for noun-class prefix systems. It is not clear whether the attested Wa noun-class system is worth its 'cost' by its rather limited functional contribution.

The introduction of the dyadic dual suffix -ka? into Ri (from Ng -ko?) could perhaps be described as a useful development. It permits the distinction between ba:pa-mañji? 'two fathers' (simple dual of 'father') and ba:pa-ka? 'father and child' (reciprocal-dyad dual). However, other Yuulngu languages like Dhuwal already have ways to make this distinction, using inherited affixes, so Ri may simply have replaced an old affix by a new one.

The introduction of inchoative verbaliser -ti- from Ri into Ng made no functional contribution, since it merely replaced an old verbaliser *-ma-, attested in Nu and Rembarrnga. The suggestion that the borrowing was helpful, in that this *-ma- might have been confused with *-ma- 'to pick up, to get' (Ng -ma-, Nu -ma-, etc.) does not carry much conviction since the two have quite different paradigms in Nu and since *-ma- 'to pick up, to get' would be used with a preceding noun stem only in compounds of the type Nu -lañ-ma- 'to get firewood', which would have transitive pronominal prefix complexes (for example, Nu pa-wu-lañ-ma-ni 'I used to get firewood') contrasting with the intransitive prefixes used with inchoative *-ma- (for example, Nu pa-rungal-ma-ni 'I became big'). The fact that both inchoative -ma- and the transitive verb -ma- are still productive in Nu suggests that there was no real clash favouring replacing one of them in PNgNu.

The borrowing of thematising augment -du- from Ri into PNgNu can be seen as functionally motivated to some extent. It is possible that -du- essentially replaced an older thematising process, involving intransitive *-ma- (retained in this function in Ngalakan, for example), thus helping to create an opposition between thematising -du- and de-adjectival inchoative senses of *-ma- (this opposition survives in Nu, while as just noted Ng has replaced *-ma- in this function by -ti-). However, this functional specialisation probably had little beneficial effect, since the two original uses of *-ma- (thematiser, de-adjectival inchoative) are unlikely to have been confused.

The diffusion of elements like comitative bata- and ray-, negative -?may?, and other postpositions such as -?wañji? 'like' and -?niri? 'only', can be seen as of possible functional benefit to the borrowing languages. However, in several cases such morphemes undoubtedly just replaced a pre-existing element, so that the resulting system was the functional equivalent of the old system. In the case of negative -?may?, borrowed into Ri from Ng, it is true that we do get a distinction between a future negative with -?may? and a prohibitive with the old negative particle yaka. However, it is very questionable whether the borrowing was 'designed' to produce this distinction; I rather suspect that -?may? was initially borrowed in forms with nonverbal constituents, where the segmentability and status of -?may? was clearest in the source language, Ng. As for -?wañji?, we can simply note that Ri now has the luxury of having both -?wañji? (borrowed from Ng) and the particle nakana(n) (inherited from Proto-Yuulngu), showing no sharp difference in meaning, so that the borrowing of -?wañji? has not contributed anything new and has merely succeeded in complicating the formal apparatus of the language.

In general, then, while functional considerations can play a role in particular instances — especially when it can be shown that the borrowing language initially had some sort of functional gap or problematic homophony — on the whole they do not account for very much of the morphemic diffusion we have described. Contact among these languages has been sufficiently intense that some morphemes have been diffused with little regard for their functional potential in the borrowing languages.

20. EVALUATION OF INTERNAL RECONSTRUCTION METHODS

Before closing this chapter, I would like once again to emphasise the utility, and indeed indispensability, of internal reconstruction as a technique in investigating direct morphemic diffusion. In virtually every case where this technique was simultaneously applicable with the usual comparative methods, the two were in general agreement as to the direction of diffusion.

For example, in several instances where several lines of reasoning pointed to language X as the source and to language Y as the borrower, we found that the source language had several allomorphs whereas the borrowing language had only one: Ng ergative-instrumental -tu from Ri -du/-tu/-y/-li, Ng genitive-dative-purposive -ku from Ri -gu/-ku/-nu, PNgNu thematising augment *-du- from Yuulngu -du-/-yu-/-u- (these are the Ri forms). In some instances we found similarly that the source language had special functional restrictions and/or special secondary functions. Hence Ng has an overall ergative-instrumental suffix, whereas Ri (the source) restricts this category to nouns (not pronouns); Ng borrowed the Ri genitive-dative-purposive suffix, but in Ri the same allomorphs are also used as future tense suffixes with one verb class and this secondary function was not adopted by Ng; some restrictions on the use of Ng negative -?may? in particular tense categories with verbs were eliminated when the morpheme was borrowed into Ri.

Internal reconstruction of time depth is particularly viable and useful in the case of diffusion of grammatical morphemes and will prove much less feasible in treating lexical diffusion, since noun and verb stems typically have a single allomorph and since semantic multifunctionality with such stems may be quite spontaneous and need not presuppose much time depth. However, internal reconstruction for noun and verb stems may be possible to some extent if archaic, unproductive inflectional classes can be identified.

Chapter 4

INDIRECT MORPHOSYNTACTIC DIFFUSION

1. PRELIMINARIES

It is important to specify at the outset exactly what is meant by 'indirect' diffusion in this chapter. It will be recalled that in phonology we have used the term 'direct' diffusion to refer to phonological changes resulting from the introduction of loanwords, while 'indirect' diffusion has been used to describe instances of apparently internal phonological shifts involving inherited morphemes and stems when such shifts have been influenced by the phonological structure of a foreign model and when they result in structural convergence between the innovating language and the model language.

In morphosyntax, by 'direct' diffusion we have meant the borrowing of actual morphemes, as dealt with in the preceding chapter. By 'indirect' diffusion, as described in the present chapter, we mean a process whereby one language rearranges its inherited words and morphemes under the influence of a foreign model, so that structural convergence results. Indirect diffusion thus involves patterns, while direct diffusion involves actual morphemes.

Indirect diffusion in this sense should be distinguished from internal, secondary readjustments within a language which result from diffusion. In Chapter 2, for example, we saw that Nu has undergone a number of secondary readjustments which are best understood as by-products of shifts determined by (indirect and direct) diffusional pressures. I have not referred to such secondary adjustments as instances of 'indirect diffusion', since they are not diffusional at all, and may even result in new divergences.

Consider also the case of Arabic and Persian. Modern Persian contains a great many Arabic loanwords, including many verbs. Most of these verbs, however, were borrowed in their nominalised form, since for structural reasons it would have been impossible for Persian to borrow Arabic inflectable stems. As a secondary by-product of this diffusion of nominalised verbs, Persian developed an elaborate system

of auxiliary verbs, permitting the nominalised verbs to be conjugated. Although this Persian development was clearly caused by the influx of Arabic loans, I would not refer to this as 'indirect diffusion' in the sense this term is being used in here. This development is a secondary by-product, but is not diffusional at all, and has resulted in an important structural divergence between Persian and Arabic.⁶²

As we have seen, some linguists earlier in this century (for example, Meillet and Sapir) minimised the possibility of any type of significant morphosyntactic diffusion, whether direct or indirect (see Chapter 3, section 1). Sapir comments as follows:

We may ... recognize that certain languages have, in all probability, taken on structural features owing to the suggestive influence of neighboring languages. An examination of such cases [footnote omitted] however, almost invariably reveals the significant fact that they are but superficial additions on the morphological kernel of the language. So long as such direct historical testimony as we have gives us no really convincing examples of profound morphological influence by diffusion, we shall do well not to put too much reliance in diffusion theories.⁶³

The kinds of examples of 'suggestive influence' (that is, indirect diffusion) which Sapir recognised included these:

... the presence of postpositions in Upper Chinook, a feature that is clearly due to the influence of neighboring Sahaptin languages; or the use by Takelma of instrumental prefixes, which are likely to have been suggested by neighboring 'Hokan' languages (Shasta, Karok).⁶⁴

These examples show that Sapir was willing to recognise diffusional influence only in cases where the attested structures were congruent formally and functionally. Thus Chinook has converged with Sahaptin in developing postpositions (a formally defined morpheme class), presumably with the same range of functions, while Takelma has developed a morpheme class which contains prefixes (formally defined) which indicate instrumental (functionally defined) categories.

In many instances where other linguists had scented indirect morphosyntactic diffusion, linguists like Meillet and Sapir were inclined to regard the responsible innovations as internal developments determined by 'drift', or as reflecting recurrent typological features which required no diffusional explanation. Meillet presumably would have insisted that indirect diffusionist explanations could only be securely established when the attested structures had no close genetic affiliation and when the structural similarities were highly specific and unusual (concordances singulières).⁶⁵

⁶²See, for example, Z. Telegdi, 'Remarques sur les emprunts arabes en persan', *Acta Linguistica (Hungarica)* 23 (1973), pp.51-58.

⁶³Sapir, *op. cit.* (see Chapter 2, footnote 16), pp.205-206.

⁶⁴*Op. cit.*, p.206 footnote.

⁶⁵Meillet generally used this expression in discussions of valid evidence for genetic relationships, but the notion is of course also applicable to diffusional relationships.

In subsequent decades many linguists have modified the somewhat extreme Meillet-Sapir position on indirect diffusion in morphosyntax. Even some linguists who firmly believed that direct diffusion of grammatical morphemes is virtually impossible agreed that indirect diffusion is an important process. One such linguist was Sommerfelt:

I think ... that the usual form of grammatical influence from language on language inside a cultural area is not one of direct borrowing of elements but an adaptation of native elements to correspond to the model of the language which exercises the cultural influence.⁶⁶

Much of the work that has been done on some of the best-known Sprachbunde (the Balkans, South Asia, etc.) has focused heavily on indirect diffusion, mainly because there is little direct diffusion to report. Sandfeld, whose summary of areal linguistics in the Balkans is an important classic of areal linguistics, observed numerous instances of morphosyntactic convergence among the languages, although each language generally retained its own morphological material (Roumanian used Romance morphology, Bulgarian used Slavic morphology, etc.).

... on est frappé que bien souvent c'est seulement le lexique et la flexion qui changent et que la manière de s'exprimer reste essentiellement la même sur tout le territoire couvert par ces langues. On ne tardera pas à se convaincre que ces langues sont animées d'un seul et même esprit, comme on aurait dit autrefois.⁶⁷

The most important morphosyntactic convergences which Sandfeld describes in his book are these: (a) the postposition of the article; (b) the disappearance of a productive syntactic infinitive; (c) creation of a periphrastic future tense form including the verb 'to want' as an auxiliary; (d) the occurrence of a single case form used both as genitive and dative.

Sandfeld's principal theoretical interest was not, however, the structural analysis of the indirect diffusional process. Having identified diffusional convergences, he was less interested in probing their structural aspects than in determining the direction of diffusion. His conclusion was that most of the important morphosyntactic developments shared by the Balkan languages originated in Greek, the dominant language of higher culture in the area, and had trickled down to the less prestigious languages. Much subsequent work on Balkan linguistics has focused on the directionality problem, though some have disputed Sandfeld's position that Greek has been decisive in most of the developments.⁶⁸

⁶⁶Sommerfelt, 'External Versus Internal ...' (see footnote 47, Chapter 3), p.311.

⁶⁷K. Sandfeld, *Linguistique balkanique: problèmes et résultats*, Paris 1930, pp.6-7.

⁶⁸See, for example, E. Seidel, 'Probleme und Methoden der Balkanlinguistik', in *Omagiu lui Iorgu Iordan*, Bucharest 1958, pp.775-788.

Because Sandfeld's interest was not primarily in structural considerations, he did not provide us with an explicit theory of what kinds of indirect morphosyntactic diffusion are possible, nor did he give us explicit indications of how diffusional sharings are identified (that is, distinguished from accidental typological similarities). The examples of morphosyntactic diffusion which he described, as listed above, seem to involve a combination of formal similarities (thus the article is **postposed**) and functional ones (for example, coalescence of the genitive and dative case categories).

Another notorious Sprachbund is South Asia, especially India.⁶⁹ Not only are there a number of widespread features permitting the delineation of a broad, somewhat internally diversified Indian linguistic area, there are also a number of well-documented local Sprachbunde. A particularly interesting study is that of Gumperz and Wilson, who describe a village where Marathi, Kannada, and Urdu are spoken.

The authors show that the local variants of the three languages have been modified in such a way that 'the codes used in code-switching situations in Kupwar have a *single surface structure*'⁷⁰ (their italics). Gumperz and Wilson give examples of sentences in the three languages showing the same structure, down to the last details of morpheme order.

The sentences in this example are lexically distinct in almost every respect, yet they have identical grammatical categories and identical constituent structures ... It is possible to translate one sentence into the other by simple morph for morph substitution.⁷¹

Despite the total indirect diffusion which has occurred in this village, direct diffusion has been limited. Although 'content words' have been diffused to a considerable extent, grammatical morphemes have in general not been diffused systematically. Although recordings of actual speech reveals numerous instances of morphological interference (for example direct borrowing of a dative suffix or a past tense suffix

⁶⁹For a general overview of South Asia as a linguistic area (that is, an area where numerous morphosyntactic patterns are shared) see C.P. Masica, *Defining a Linguistic Area: South Asia*, Chicago 1976. Masica's study offers an interesting methodological difference from the present work. His study embraces hundreds of languages, so that his correlations are of a statistical magnitude which excludes explanations based on coincidental convergences. However, to do this he has to sacrifice depth of coverage of particular languages, and specifically defers the study of the actual historical developments which have produced the attested similarities (p. xii).

Much of the pioneering work on areal linguistics in South Asia has been done by Murray Emeneau; see, for example, his 'India as a Linguistic Area', *Language* 32 (1956), pp.3-16. John Gumperz has also worked extensively in this area; see reference below.

⁷⁰Gumperz and Wilson, *op. cit.* (see footnote 42, Chapter 2), p.155.

⁷¹*Op. cit.*, p.155.

from one language into another), the natives avoid such mixing in careful speech, apparently because there are cultural pressures favouring the maintenance of each language in reasonably unadulterated form.⁷²

In contrast to other borrowings which were freely elicited, items like the above, when heard on tape, were regarded as wrong or funny by natives. They were not repeated voluntarily. Such paradigmatically structured inflectional morphs seem to be at the core of the native speakers (*sic*) perception of what constitute 'different languages'.⁷³

It would therefore seem that the dominance of indirect as opposed to direct morphosyntactic diffusion in this situation is due not to linguistic structural factors, but rather to the cultural constraint against mixing languages, as manifested chiefly in inflectional morphology.

Another point made by Gumperz and Wilson is that contact has had a levelling effect, resulting in simpler, more regular surface structures.

... almost all the changes can be interpreted as reductions or generalizations that simplify surface structure in relation to underlying categories and relationships.⁷⁴

This is explained by suggesting that one-to-one morphemic inter-translatibility has not merely been a passive by-product of contact, but has been actively sought after by the languages, as it were. In order to enable speakers to translate morpheme by morpheme, it has been necessary for minor complications in the initial form of each language to be eliminated. Thus Gumperz and Wilson perceive a connection between their contact situation and the process of pidginisation.

The simplifying aspect of language contact has also been emphasised by other writers. Coteanu, for example, observed that Roumanian dialects had tended to become simpler morphologically in close contact with Slavic dialects, even though these Slavic dialects were themselves morphologically complex. The implicit suggestion behind this is that contact by its very nature encourages simplification.⁷⁵

This position was explicitly formulated by Vogt:

⁷²Marathi is generally used as an official or public language, and is 'socially neutral' since it is the home-group language of very few persons in the village. The home-group language, usually Kannada or Urdu, is used in the home, in rituals, etc., and helps emphasise 'the separateness of the home environment and of the home-group...' (*op. cit.*, pp.152-153).

⁷³*Op. cit.*, pp.161-162.

⁷⁴*Op. cit.*, p.164.

⁷⁵Coteanu says this: 'Éviter les complications morphologiques est une caractéristique de l'évolution des langues mixtes ...', *op. cit.* (see footnote 49, Chapter 3), p.143.

On observe souvent qu'une langue, ou un patois, perd des distinctions formelles, dans des circonstances qui rendent l'hypothèse d'influence étrangère assez naturelle. Mais la création de nouvelles catégories morphologiques au sens étroit du mot sous l'influence d'un autre système semble se présenter assez rarement.⁷⁶

The comments and quotations presented so far in this section suggest various ways of approaching the problem of indirect morphosyntactic diffusion. On the methodological side, we need ways to distinguish indirect diffusion from accidental sharing of widespread typological features. On the substantive and analytical side, we want to know on what level the diffusion has taken place, and what its overall consequences have been for the innovating languages. We also should compare the general extent of direct and indirect morphosyntactic diffusion to see how Arnhem Land compares with South Asia.

So far as methodology is concerned, there are two rather obvious criteria which can be applied. First, we would agree with Meillet that an unusual convergence (concordance singulière) — that is, the sharing of a typologically rare category or syntactic feature — is much better as an indication of indirect diffusion than is the sharing of a recurrent feature. In the latter case it is very difficult to decide whether diffusion or natural drift has been involved.

Secondly, we can make a fairly good case for indirect diffusion even of typologically common features provided we can show that a **whole series** of innovations in one language can be attributed to diffusional influence. To this end, I will show in the following sections that the several important morphosyntactic innovations in Ri can **all** be interpreted as reflecting indirect diffusion from Ng. Having demonstrated a general pattern of indirect diffusion, the arguments in favour of diffusionist versus accidental-convergence explanations for each particular innovation are strengthened. On the other hand, if we found that of several major innovations only one could be explained as diffusional, we would be inclined to doubt even this one instance since no overall pattern of diffusion would have been established.

The substantive and analytical framework which we will adopt will of course be closely linked with the methodological position just outlined. The analysis of which kinds of diffusion have taken place depends crucially on how liberal we are in recognising diffusional interaction.

There are basically three substantive questions which should be asked. First, we want to know whether diffusion has been on the purely functional level (for example, diffusion of certain grammatical categories regardless of the manner of formal expression), the purely

⁷⁶Vogt, *Actes du VI^e Congrès International des Linguistes*, Paris 1948, p.39 (reply to the question: 'Dans quelles conditions et dans quelles limites peut s'exercer sur le système morphologique d'une langue l'action du système morphologique d'une autre langue?').

formal level (for example, diffusion of a preference for suffixes as opposed to prefixes, without consideration of the categories expressed thereby), or a combined formal-functional level (for example, diffusion of a preference for suffixation, not prefixation, of a particular functionally defined class of morphemes). I will suggest that the functional level has been most significant in indirect morphosyntactic diffusion in Arnhem Land, and that so far as the formal level has been involved at all it involves rather abstract formal features not tied down to precise morpheme-order patterns.

A second substantive question is whether indirect diffusion in this area has had a simplifying and regularising effect (as suggested by Gumperz and Wilson, Coteanu, Vogt, etc.), has had a complicating effect, or has been somewhere in between. I will suggest that no significant simplification has resulted from indirect diffusion in these languages.

Finally, there is the question whether indirect diffusion has been significantly more extensive, less extensive, or about equally extensive to direct diffusion of grammatical morphemes as described in Chapter 3. I will indicate that both kinds of diffusion have been extensive and that no simple hierarchy such as proposed by Gumperz and Wilson for their particular case study can be supported for the Arnhem Land area.

2. RITHARNGU: ENCLITIC PRONOMINALS

Perhaps the single most significant morphosyntactic innovation in Ri has been the development of a series of enclitic pronouns marking the category of subject and object. These enclitics are identical to the corresponding full independent pronouns, except that in some cases the initial syllable may be dropped. Thus while 2Sg ni takes the same form as an independent pronoun or an enclitic, 1Sg na is usually truncated to ra in enclitic function.

These pronominals are sentence enclitics; that is, they occur directly after the first constituent in the clause, regardless of what word class this belongs to. For example, consider enclitic ra in the following two examples, which are synonymous except perhaps for minor differences in focus:

gudarpuy	ra	wa:n-i
tomorrow	I	will go
wa:n-i	ra	gudarpuy
will go	I	tomorrow

In a transitive sentence there is usually an accusative enclitic followed by a nominative (subject) enclitic:

na:-wala	ña	ra
saw	him	I

Pronominal enclitics are generally obligatory even when a subject or object NP is present in the clause; in this event the pronominals cross-reference the NP's and may be redundant:

na:-wala dali-ña gay diŋ?-wač-ŋa ɖaramu-y
saw them he the women (acc) man (erg)

The man saw the women.

In effect, here we have a nuclear clause *na:-wala dali-ña gay 'He saw them.'* which is elaborated by the addition of full NP's.

The only time when pronominal enclitics are not required is when there is a full independent pronoun in the clause, normally clause-initial with enclitic particle *ya*, here emphatic in function:

ɣara ya wa:n-i guɖarpuy
I will go tomorrow

I will go tomorrow.

Note that we do not get **ɣara ya ra wa:n-i guɖarpuy* with 1Sg enclitic *ra* in addition to the 1Sg independent pronoun *ɣara*.

In transitive clauses, usually only one clause-initial emphatic pronoun can occur, so the other pronominal follows it as an enclitic:

ɣara ya ña na:-wala
I him saw

I saw him.

Thus, while it would not be true to say that **enclitic** pronominals are obligatory, we can state that some pronominal element (usually enclitic) is obligatory in normal speech for subject, and in transitive clauses also for object.

This enclitic system is not found in the other Yuulngu languages, since their pronominals are essentially independent pronouns which can occur in various positions in the clause, like other NP's. When the subject and/or object take the form of a full NP containing a noun stem, this is only occasionally cross-referenced by a pronoun. Thus an intransitive clause in Dhuwal usually takes the form Noun + Verb or Pronoun + Verb, and only rarely takes the Ri-type form Noun + (coreferential) Pronoun + Verb. In discourse where the same NP turns up in several juxtaposed clauses, in its noninitial occurrences it is often deleted totally, hence *'The man sat down, then the man went'* is likely to end up in the structure Noun + Verb₁ (*sat*), Verb₂ (*went*) with no surface manifestation of *'man'* in the second clause at all. In Ri we would usually get Noun + Verb₁, Verb₂ + Pronoun for this sequence in normal speech.

It is quite likely, then, that Ri has innovated in developing its enclitic pronominal system (the forms in which are obviously derived from full independent pronouns, sometimes with the first syllable omitted). Was this a diffusional or an internal development? I suggest it reflects the influence of the prefixing languages such as Ng.

In these languages, like Ri but unlike other Yuulngu languages, there are obligatory pronominals in all normal verbal clauses (even verbal root forms often take pronominals). Whereas Ri has sentence enclitics, Ng and Nu have pronominal subject- and object-marking prefixes attached to the verb (or, in some cases, to a predicative

adjective or the like). Thus in Ng *na-nu-na-čini 'I see him'* we find 1Sg *na-* and 3MSg *-nu-* just before the verb root *-na-* 'to see'. The corresponding Nu form is *na-nu-na-yi:*.

There is no striking formal congruence between the Ri and Nu/Ng systems in their expression of pronominal categories. Ri has sentence enclitics which are omitted when an emphatic independent pronoun occurs; Nu and Ng have verbal prefixes which are obligatory even when an emphatic independent pronoun is used. In Ri the enclitic and independent pronouns are formally identical, except for some initial-syllable dropping in the former, while in Nu and Ng the forms of the pronominal prefixes differ significantly from the forms of independent pronouns.

Nevertheless, if we look to a more abstract level we can see that diffusion has been involved. Ri has not copied the morpheme-order of Nu and Ng clauses, but has adopted from them (specifically, from Ng) an important pattern. The significant point about the Ri innovation is that it produced a situation where pronominals are obligatory for subject and object even when full NP's are present in the same clause. This permits a kind of construction whereby a nuclear clause (verb plus pronominals) is then **expanded** by adding NP's providing fuller specification of the subject and object. Since the NP's are not an essential part of this nuclear clause, they are often added as 'afterthoughts' following a pause: *'He went, the man.'* (Ng *ŋi-riɖ-i, ŋi-yul-yung*; Ri *wa:ni-na gay, ɖaramu ya*). This afterthought construction is less common in other Yuulngu languages such as Dhuwal, where NP's are less often cross-referenced by pronouns and are thus more tightly integrated into the clause.

Moreover, Ri (like Ng and Nu, unlike Dhuwal) normally shows at least complete nuclear clauses, even in discourse contexts where Dhuwal would omit pronominals entirely. In Dhuwal discourse one often finds clauses like *marči-n 'went'*, with the subject unspecified, so that one has to determine it from discourse context. This ellipsis is rare in Ri, so we usually get something like *wa:ni-na gay 'He went.'* or *wa:ni-na ra 'I went.'* with the subject specified. In this respect Ri is similar to Ng and Nu, which ordinarily do not permit ellipsis of pronominal specification.

We therefore have to look beyond mere morpheme-ordering in order to detect the presence of diffused patterning here. Ri has borrowed a functional principle — the obligatory presence of pronominals in most clause types — and concomitantly a kind of choppy discourse organisation involving 'afterthought' constructions.

3. RITHARNGU: SUBORDINATED CLAUSES

Another very striking divergence between Ri and all other Yuulngu languages is the type of subordinated clauses in use. All Yuulngu languages have some sort of nominalisation or infinitive, which in Ri involves a suffix *-rawu* added to an augmented form of the verb (for example, Verb-n-*rawu*, Verb-*na-rawu*). This infinitive is nonfinite (that is it does not take the usual clausal adjuncts like nominative, ergative, or accusative NP's). If the subject and/or object are

expressed, they generally show up in genitive form as surface 'possessors' of the nominalised verb, or also occur in some local case such as ablative.

In other Yuulngu languages, the infinitive is used in a variety of subordinated constructions. In addition to purposive clauses and some types of complement clauses, they are used as relative clauses and even in clause-internal transformations such as partial equivalents to the English passive rule.⁷⁷

In Ri, on the other hand, the infinitive in *-rawu* is used only as a purposive clause or, with a few matrix verbs like *wana-* 'to tell' (as in 'I told him to go. '), as a complement clause. It functions essentially like a dative NP, and indeed *-rawu* (nominaliser **-ra-* plus genitive-dative-purposive **-gu*) contains a frozen dative morpheme. Even in these uses, it is apparently always possible to replace the infinitive clause with a complete finite clause in the potential mood:

wa:ni-na ra # nan-gu la-n-rawu
went I his spearing

I went (in order) to spear him. (infinitive)

wa:ni-na ra # la-n-gu-wa ña ra
went I would have speared him

I went (in order) to spear him. (potential clause)

In the latter example, the purposive clause is formally a complete main clause meaning 'I would have speared him.' or the like. There is no overt subordination of this clause to the preceding one, as there is in the first example.

Because in Ri infinitives compete with finite clause types, their productivity is restricted. Moreover, whereas other Yuulngu languages use some form of them nonfinite infinitive type for most relative clauses (and some types of gerundial), Ri instead has a clause type with suffix *-nu* added to the verb in a finite clause which, without *-nu*, would be an ordinary main clause:

wa:ni-na-gu ra bangu!?
having gone I return

Having gone, I returned. I who had gone, returned.

yu:l-gu, nuku di nu nay ni:na-Ø-gu, ...
man that now he who sits

The man who is sitting there now ...

It appears that Ri has developed this clause type, found nowhere else in the Yuulngu group, by expanding the use of a suffix *-nu* used chiefly with adjectives and a few other nouns in the other Yuulngu

languages (for example the very term *yu:l-gu* 'man, person, Aboriginal').⁷⁸

The alternative would be to assume that Ri alone has retained an old Proto-Yuulngu clause type with **-nu*, while the other languages have developed or extended an originally very restricted infinitive clause type. It seems odd, however, that this putative development should have taken place even in languages like Dhuwal which are subgrouped with Ri, as well as in languages like Dhaangu which are not. It is also odd that a highly productive clause-type in **-nu* would not even have left a trace in the six or so Yuulngu languages other than Ri; if this were the basic Proto-Yuulngu subordinated clause form we would expect at least residual occurrences of it in some minor syntactic constructions in these six languages. In the view adopted here, Ri *-nu* clauses are an innovation, but we do recognise the residual occurrence of the older infinitive type, in somewhat more restricted functions than are posited for it in Proto-Yuulngu.

Moreover, in the position taken here we can account for the innovation in Ri by recognising diffusional influence from Ng. In this language, there is a subordinating prefix *-ga-* used with finite clauses (which without *-ga-* would be normal main clauses), in the same range of functions (relative clauses, certain types of gerundial) seen with Ri *-nu*. Example: *ni-ri-d-i* 'he went', but *ni-ga-ri-d-i* 'the one who went; He, having gone, ...' (Ng verbs with *-ga-* are also used in certain clause-internal focus constructions; these have parallels in Ri but *-nu* is not involved.)

Hence both Ng and Ri have a clause type consisting of a single affix attached to the verb of an otherwise complete main clause, with nominal case-marking and pronominal prefixation exactly as in main clauses (unlike the situation with Yuulngu infinitives), in a similar range of subordinated functions. It appears that this convergence is due chiefly to developments in Ri rather than Ng, since other prefixing languages like Nu and Ngalakan are typologically similar to Ng in avoiding nonfinite infinitives (though I know of no certain cognates of Ng *-ga-* in these languages, unless Ngalakan subordinating suffix *-qVn* is related).

Again, if the diffusionist explanation is accepted we must observe that the diffusion has operated on a level more abstract than that of morpheme-order rules. Where Ng has a prefix, Ri has a suffix. The diffusion has worked on the levels of function (for example, semantic range of the construction types) and of abstract rather than concrete form (the notion of finite, main-like clause being significant whereas precise order of morphemes is not).

4. RITHARNGU: VERBAL CATEGORIES

This section will be somewhat speculative since I do not yet have satisfactory information concerning the verbal inflectional systems of

⁷⁷B. Schebeck, 'Thangu and Atjnjamathanha'. In R.M.W. Dixon, ed., *op. cit.* (footnote 6 to Chapter 1), pp.516-550.

⁷⁸B. Schebeck, 'Yuulngu'. In R.M.W. Dixon, ed., *op. cit.*, pp.352-382 (see especially p.360).

all Yuulngu languages. For the purpose of this section I will use Dhuwal, which I do have such information for, as representative of the main block of Yuulngu languages, and will discuss respects in which Ri diverges from the Dhuwal pattern in the context of possible diffusion from Ng and other prefixing languages.

The inflectional categories of Dhuwal (Djambarpuyngu dialect) are essentially as shown in Table 11.

TABLE 11

Category	Example
past simple	bu-mar 'killed'
past continuous	bu-na 'killed'
present	bu-ma ka 'is killing'
future	bu-ma yur 'will kill'
	{ bu-ma tu
imperative	bu-nu 'kill!'

Note that there is a single present/future inflection form, which is disambiguated by the use of particles ka and yur (or tu). The corresponding negative forms are constructed simply by adding negative particles baygu or yaka (the latter especially in negative imperatives).

Consider now the categories of the verbal system in Ri, shown in Table 12.

TABLE 12

Category	Example
past simple	bu-mara 'killed'
past continuous	bu-na 'killed'
present	bu-ma 'is killing'
future/imperative	bu-nu 'will kill; kill!'
potential	bu-w-a

These are negated simply by adding negative -?may?, except that the negative imperative is formed with negative particle yaka.

Except for bu-w-a, the Ri forms are cognate to the Dhuwal forms. The semantics of the past simple and past continuous (of which the former is less marked and more common) is roughly the same in the two languages, and in both there are some verb classes which do not make the distinction, so Ri has not diverged in this respect. However, whereas Dhuwal bu-nu is used chiefly as an imperative (though it is also used sporadically as an indicative, indicating normative behaviour patterns as in describing abstract kinship duties), while in Ri it is also the regular future form. If this is a Ri innovation, it conforms to the pattern found in Ng and Nu whereby there is a single form for

future and imperative (which are thus, in most cases, formally indistinguishable).

Concomitantly, the form bu-ma is restricted in Ri to the present tense. The present/future syncretism in Dhuwal, which is usually but not rigorously disambiguated by the free particles, would have been counter to the Ng/Nu pattern whereby present and future are clearly distinct inflectional categories. Again, if Ri has innovated in restricting bu-ma to the present tense, this can be seen as having a diffusional basis.

Finally, Ri has a (past) potential form, here bu-w-a, which can be translated as 'should have killed', 'would have killed', or the like. It is also used in both parts of the past contrary-to-fact conditional construction (for example, 'If he had come, I would have killed him.'). This category is missing from Dhuwal, which generally uses the past continuous (bu-na) in this instance.

If the (past) potential category in Ri is an innovation, again we can detect the influence of Ng and other prefixing languages (Nu, Ngalakan, etc.), which have the same kind of category and likewise use it in past contrary-to-fact conditionals. As for the particular formal expression of the Ri (past) potential, it is usually formed by adding a suffix /-a/, of unclear etymology, to the future/imperative (that is the nonpast potential) form. For the stem bu-, it happens that one future/imperative allomorph -nu is used in the simple form, while another allomorph /-wu-/ is used in the form with /-a/, while in most other verb classes the same allomorph is used with or without /-a/. Thus the (past) potential in Ri is the only inflectional form which is morphologically composite, with one suffix superimposed upon a pre-existing inflectional form; this can perhaps be taken as evidence for its secondary origin.

Disregarding negative forms (which in Ng involve mergers of some positive categories), the resulting Ri inflectional system is more similar to that of Ng than to that of Dhuwal. The chief differences are (a) that Ri has not developed an evitative form (though it has a construction, with enclitic particle ta? 'for a while', which approximates the Ng construction), and (b) that the past simple/past continuous opposition in Ri does not quite match the Ng past punctual/past continuous opposition (Ri also merges the two in some verb classes, while Ng does not).

The claims made in this section are, to repeat, contingent on the validity of our assumption that Dhuwal is representative of other Yuulngu languages and of Proto-Yuulngu. This has not yet been established conclusively.

5. NGANDI: THE ORIGINATIVE CASE

The originative case, a category found in Ng and in the Yuulngu languages, indicates the provider (usually human) of a commodity. In Ng the originative suffix is -kuñun, reflecting PNgNu *-guñun and corresponding to Nu relative (including genitive) -yiñun. As we saw in section 6 of Chapter 3, *-guñun was probably at one time a general genitive-dative-purposive suffix, like *-gVn or *-gun found in

prefixing languages to the west and north, but has been reduced to a narrower range of functions in Ng and Nu. In Ng, -kuñun has been displaced from its originally primary functions by the suffix -ku, borrowed from Ri. In Nu, it has been displaced from some of its functions by purposive -yunguyun, possibly a borrowing from Ri, and by dative-allative -wuy, an inherited suffix which has shifted its functions.

The originative case is an unusual category, and so far as I know is missing from other prefixing languages in the area, except that Nu -mira:du is a partial parallel. It is doubtful, then, that Ng -kuñun can be explained as having formally renewed an old category.

I suggest, then, that the specialisation of Ng -kuñun as an originative suffix constituted the creation of a new category in that language, and that this development was stimulated by indirect diffusion from Ri and other Yuulngu languages, which have inherited an originative suffix (Ri -gunu) from Proto-Yuulngu. That is, by borrowing genitive-dative-purposive -ku from Ri -gu to replace -kuñun in its traditional uses, and by specialising -kuñun as an originative suffix, Ng arrives at a case system more exactly congruent to that of Ri.

6. NUNGGUBUYU: CASE SUFFIXES

As shown in sections 4 and 6 of Chapter 3, Nu has undergone a great many changes in the forms and categories in its case system. Although many of these changes can only be accounted for as internal developments, certain changes can perhaps be explained as partial convergences with Wa to the south.

In particular, as we have seen in section 6 of Chapter 3, Nu inherited a genitive-dative-purposive suffix *-guñun (or at least a suffix which still had most of these functions), and so far as we can tell it did not inherit an originative suffix. Corresponding to the single, wide-ranging suffix *-guñun we now find several suffixes: allative-dative -wuy (replacing *-guñun in its dative functions), purposive -yunguyun, relative (including genitive) -yiñun, and the very rare originative -mira:du. Here -yiñun is the reflex of *-guñun, -wuy is a semantically shifted (formerly locative) suffix, -yunguyun may be a borrowing from Ri (section 6, Chapter 3), and -mira:du is perhaps an extended form of instrumental -miri.

In effect, then, Nu has broken up the old genitive-dative-purposive category into several formally distinct categories. This complication of the case system can perhaps be attributed to the influence of Wa, which distinguishes dative, purposive, and genitive forms. The dative takes the unmarked nominative form, but is marked in the verb by the combination of a pronominal object-marker and the benefactive prefix ma-. The purposive is expressed by a nominal case suffix -ni (also found in Mara). The genitive is expressed by adding a possessive postposition like a-gi 'his, her, its', with optional juxtaposition of the nominal possessor in nominative form: wu-yilba a-gi 'its burrow', wu-yilba a-gi ra-waḍabir 'the goanna's burrow'.

Since this Wa pattern seems to have been inherited, it looks as though Nu has innovated to convert its system into one more closely

congruent to the Wa system. To do this, Nu has had to complicate rather than reduce its system of categorial oppositions. The one discrepancy of any importance between the two languages in the cases we have considered is that Nu but not Wa has an originative suffix -mira:du. Two points about this should be noted: first, the Nu originative is much less common than that of Ng or Ri; second, the creation of the Nu originative can perhaps be seen as reflecting indirect diffusion from Ng and Ri. Thus all of the Nu developments involving the categories considered here can be understood as reflecting, or at least as consistent with, indirect diffusional pressures — primarily from Wa, to a lesser extent from Ng and Ri.

7. NUNGGUBUYU AND WARNDARANG: VERBAL ASPECT

Virtually all prefixing languages in the area have a punctual/continuous aspectual opposition in verbs in the past positive actual (but not in the past negative or past positive potential). This is not the result of a recent convergence, and it is evident that this pattern was also typical of various recent proto-languages within this group of languages.

Nu and Wa seem to be the only two prefixing languages in the area which have expanded the aspectual system so that a punctual/continuous opposition now occurs also in the future positive. Although this generalisation is a rather common type of morphological change, the fact that it has occurred in this area only in two adjacent languages suggests that diffusional interaction has played a triggering role.

It is not possible to determine which language extended the aspectual opposition to the future positive first. In Nu, which inherited a future form with suffix *-ŋ (Nu -ŋ or -ñ), a new future form based on the present positive form has sprung up. Nu has two series of pronominal prefixes, A and B, which are used in different tense-aspect-mood-negativity combinations, so that A is used in the past positive actual, B in the past negative and past positive potential, etc. Nu has taken advantage of this to split the old present form (for example, -na-yi: 'sees' from *-na-jini) into a present form with A prefix (for example, ŋawu-na-yi: 'I see it.') and a future continuous with B prefix (for example, ŋangu-na-yi: 'I will be seeing it.'). The latter combination contrasts with the old future in *-ŋ, which has been reinterpreted as specifically punctual (for example, ŋangu-na-ŋ 'I will see it.');

A somewhat parallel development has taken place in Wa. In the past positive, there is a punctual and a continuous form (for example, -ga-ñi and -ga-ya, respectively, with transitive auxiliary -ga-). The present tense form ends in -ni (-gi-ni). What appears to be the inherited future form has a suffix -iñu (or -ñu with obligatory fronting of the preceding vowel), and requires potential prefix wu- (wu-ŋa-g-iñu 'I will do it.'). To create a new future continuous, Wa simply uses the past continuous form (-ga-ya) with this potential prefix (hence ŋa-ga-ya 'I used to do it.' versus wu-ŋa-ga-ya 'I will be doing it.'). The form with -iñu is now punctual.

It should be noted that the precise mechanism for the creation of

the new future continuous form was different in the two languages. Nu built its new form from the present form, while Wa built its form from the past continuous. Thus, looking at the attested morphological structures from a purely formal point of view, we see a discrepancy in that Nu uses the same suffixal category ('nonpast-2') for the present positive and future positive continuous, while Wa uses a single suffixal category for the past positive continuous and future positive continuous. We may add that Nu also has 'neutralised' such suffixal oppositions as that between future positive punctual and present negative (both with -ŋ and -ñ), and that between past positive continuous and past negative, which result in additional formal divergences from Wa. However, Nu keeps these 'neutralised' categories apart by using negative particles, by taking advantage of the opposition between A and B pronominal series, etc.

Thus there is very little similarity between the Nu and Wa verbal systems if we look at one formally defined morpheme class at a time. The system of suffixal oppositions is quite different; the choice between Nu A and B pronominal series does not coincide with the present versus absence of Wa potential prefix wu-; Nu has two different independent negative particles, while Wa has a single basic negative prefix plus a somewhat redundant third person negative morpheme. If one looks at the formal structures in this way, not only do we not find one-to-one morphemic intertranslatability as in South Asia, we do not find the slightest resemblance between the two languages.

On the other hand, if we look at the overall system of verbal categories expressed in each language (for example, past positive punctual, past positive continuous, etc.), we find a fairly close convergence. The identity is not complete by any means, but it does appear that the major innovations in the recent history of both languages have tended to reduce rather than exacerbate the discrepancies. In particular, we have shown that Nu and Wa have both developed an aspectual opposition in the future positive — a development which has not occurred in Mara or Alawa to the south, in Ri to the north, or in Ng, Ngalkbon, Rembarrnga, Gunwinggu, or other languages to the west and northwest. If diffusion has taken place, as I think it has (though I respect the right of readers to remain unconvinced in this instance), it has operated on the functional level. Nu and Wa have converged, not in the formal structure of verb complexes, but rather in the overall system of tense-aspect-mood-negativity categorial oppositions.

8. WARNDARANG: ABSOLUTE NOUNS

Ng and Nu have a nominal category, marked by a suffix -yũ (with various allomorphs in Nu), which I call 'absolute'. This category cuts across case categories, and essentially what it does is to indicate or emphasise that the noun or pronoun in question is an autonomous (that is, not incorporated) nonpredicative constituent within a sentence. This sense is seen clearly in Ng, where (however) the suffix is often omitted. In Nu, the suffix has become specialised in various ways in different contexts (for example, with kin terms is now a third person possessive marker, with other nouns marks human singular, with independent pronouns emphasises a shift in discourse topic, etc.), but retains essentially

its old function with demonstrative pronouns. The most common reflexes of this suffix in Nu are -yũ and -ñũ (only the former occurs with demonstrative pronouns). In its most common function (human singular), there is a tendency to use the -ñũ allomorph after stems ending in u, although there are other conflicting tendencies and it is best to list the relevant allomorph in dictionary entries.

In the Mara language, which is separated from Nu by Wa, we find a locative/allative suffix -yu(r), as in *ña-ɾadbur-yu(r)* 'at/to the camp'. This patterns like any other case suffix.

In Wa we find a suffix -yu/-ñũ/-gu/-u (allomorphs phonologically conditioned, -gu and -u probably identical in base forms) which is used much like Ng -yũ and is thus best referred to as the 'absolute' suffix (as in Nu, it also indicates third person possessor with kin terms). What seems to have happened is that Wa inherited a locative suffix *-yu from P_{Wa}MaAl, but has specialised it phonologically and functionally, under the influence of Ng and probably also of earlier stages of Nu where *-yũ/*-ñũ was still essentially a true absolute suffix.

The evidence for this is that, whereas in Nu and Ng the absolute cuts across case categories and shows no evidence of ever having been involved in the case-marking system, in Wa there are distributional peculiarities of -yu/-ñũ/-gu/-u which betray its recent shift from (locative) case-marker to absolute marker. The Wa suffix can be used in the zero nominative case, but with nonzero case suffixes it cannot be used. There is one telltale exception: with locative -yaŋa (without apparent P_{Wa}MaAl etymology) the absolute suffix **must** be used. Thus from *wu-balba* 'tree' we get simple nominative *wu-balba*, absolute nominative *wu-balba-ñũ*, ablative *wu-balba-wala*, purposive *wu-balba-ni*, but locative *wu-balba-ñũ-yaŋa*.

Evidently, Wa -yu/-ñũ/-gu/-u was originally a locative case suffix which, because of its phonological similarity to the Ng and Pre-Nu absolute suffixes, was partially reinterpreted. It then spread to the suffixless nominative as a genuine absolute suffix, though it has not been able to penetrate into the other nonzero case categories. Because this was no longer a reliable marker of locative case, a new locative suffix has been created (-yaŋa), resulting in the sequence -yu-yaŋa (-ñũ-yaŋa, etc.) which is synchronically puzzling but historically revealing.

As in Nu, the Wa absolute suffix has acquired the third singular possessive sense with kin terms (*ña-bijaja-ñũ* 'his/their mother's father'), even though in Wa this is redundant (*ña-bijaja* 'my/our mother's father' and *∅-bijaja* 'your mother's father' would be distinct from *ña-bijaja-ñũ* even without -ñũ, since only the latter form has regular noun-class prefix, here MSg ña-). In this use, of course, the absolute occurs in all case categories so the restrictions mentioned above do not apply.

It is even possible that the allomorphs found in Wa, such as -ñũ in particular, reflect diffusion from Nu where we find -ñũ alongside -yũ. There are some similarities in the allomorphic distributions, since Wa -ñũ is used after a and u while -yu occurs after i, and this approximates at least the broad patterns of the more irregular allomorphic rules in Nu. However, Mara -yu(r) regularly becomes -ñũ(r)

after some consonants, so Wa may simply have slightly rearranged the distribution of archaic allomorphs (rather than creating new allomorphs on the Nu pattern).

9. SUMMARY

A more detailed study of indirect morphosyntactic diffusion would be desirable. However, one problem is that it is very difficult to reconstruct exact morphosyntactic structures for the proto-languages, so it is not always possible to determine which features of a given language are recent innovations. Since our emphasis throughout this book has been on documenting clear cases of recent innovation, and assessing these in a diffusionist perspective, we have had to restrict our attention in this chapter to a few selected instances where recent innovations have clearly occurred.

As comparison of the grammars will show, there is considerable morphosyntactic congruence among these languages. The pronominal systems are basically identical in structure (except for the absence of noun-classes in the Yuulngu group), differing in such minor respects as whether there is a special first person inclusive trial form. The demonstrative systems are also similar, involving a basic deictic opposition proximate/immediate/distant, with the superimposition upon this of a deictic/anaphoric opposition at least in the distant category. Demonstrative adverbs typically include locative, allative, and ablative types, as well as special forms translatable as '(on) *this side*', '*this kind of thing*', etc. Thus there is reasonable congruence at the functional level, though formal analysis shows that the demonstrative oppositions, for example, are expressed in rather different ways in different languages (for example, Nu has four demonstrative stems, two of which can co-occur with a concretising suffix; Ng has two demonstrative stems but several suffixes, resulting in an overall system functionally comparable to that of Nu; Wa has basically two demonstrative stems, plus another defective one, and several suffixes and prefixes, again producing a system formally divergent from but functionally comparable to that of Nu).

So far as syntax is concerned, we may note that word order is rather free in all languages, with nonverbal constituents taking clause-initial position for emphasis (there are also special topic-switching pronominal formations in each language). None of the languages has a productive agentive or passive participial formation, or a productive action nominalisation process; Ri is the only language in the area with a syntactic infinitive, but as we have seen in section 3 of this chapter it has declined. Discourse in all of the languages consists primarily of juxtaposition of formally complete clauses, with only occasional formal subordination (typically by simply adding a subordinating morpheme to a complete finite clause). The syntactic uses of (past and present) potential verb forms, for example in both clauses of a contrary-to-fact conditional, or in the translation equivalents of purposive clauses, are very similar from one language to another. Causal clauses in these languages are complete clauses plus a particle or sentence enclitic translatable '*because*' (*yamba* in Nu and Ri, occasionally in Ng, *aru* in Wa and sometimes in Ng, showing clearly diffusional distributions

cutting across genetic divisions). An unusual kind of case-spreading transformation, converting '*to my house*' into '*to me, to the house*' where the possessor becomes an appositive NP with the same (spatial) case as the possessed noun rather than taking a genitive suffix, is found in several languages in the area (for example, Nu and Ri).

These similarities are mentioned here mainly to indicate that the few instances of indirect morphosyntactic diffusion described in the preceding sections have not exhausted the synchronic similarities, but have instead merely scratched the surface. That only a few instances have been discussed in detail here is due to our methodological insistence on dealing with recent, local innovations which are relatively accessible to study, rather than just listing a large number of synchronic similarities. Many of the similarities just listed are found in a number of other Australian languages and may therefore reflect diffusion on a much larger geographical scale and during a much larger time span than those considered here. We can say very little about directionality, the actual processes which have resulted in the similarities, etc., so we will not discuss these instances of diffusion in detail here.

Despite all of these diffusional sharings, recent and ancient, each language preserves its own particular characteristics. Particularly when we compare the formal structure of words (nouns, verbs, demonstratives, etc.) or of tightly knit phrases (for example, Wa auxiliary verb complexes), we find very little similarity from one language to another.

This is consistent with the conclusions drawn in sections 1-7 of this chapter, where we showed that the indirect morphosyntactic diffusion which has occurred recently and which can be identified at this time has been mostly of a functional nature, so that the languages have converged in the kinds of morphological categories recognised and so forth, with little regard to the precise formal mechanics for expressing them. What formal patterns have been diffused have been abstract and general, involving such notions as the difference between finite and nominalised clauses in subordination, rather than minor formal details of morpheme order and the like.

Another substantive question raised in section 1 of this chapter is whether indirect diffusion has had a simplifying and regularising effect, as in pidginisation. So far as I can see, despite considerable recent diffusional pressures none of the languages in our area has become simpler or more regular than the proto-languages which we can reconstruct. All of the languages are somewhat weak in complex syntax, but this was probably true of the proto-languages in most cases, so diffusion has produced no recent simplification. As for the basic morphology and morphophonemics of the attested languages, I doubt that anyone who attempts to wade through my grammars will conclude that the languages are especially simple or transparent. All of the languages have a number of verb classes with entirely different paradigms, as well as a number of irregular verbs with special paradigms of their own. Nu in particular has an immensely complicated morphology, with the most elaborate noun-class system in Australia, an abundance of verb classes and irregular verbs, an incredibly complex demonstrative system including all kinds of adverbial formations, and a system of

pronominal prefix complexes added to verbs comprising hundreds of intransitive and transitive combinations and requiring sophisticated techniques of morphophonemic and structural analysis (for example, a direct-inverse process) to analyse them. Both in morphophonemics and morphological structure Nu seems to have become considerably more complicated than PNgnu.

We have described in some detail a number of particular instances of indirect morphosyntactic diffusion which have resulted in the addition of new features rather than in reduction of complexity. Ri now distinguishes independent and enclitic pronouns where Proto-Yuulngu had just an independent series; it has a distinction between clauses with subordinator -nu and infinitive clauses with -rawu, where Proto-Yuulngu probably only had the type with -rawu; Ng now has an originative case category which PNgNu lacked; Nu now has several case suffixes corresponding to what was once a single genitive-dative-purposive suffix; etc. It is clear from these developments that indirect diffusion has not resulted in any net simplification or regularisation. I would not go so far as to claim that it has had an overall complicating effect, since it could be that some diffusionally inspired reductions have escaped my notice since features which have been lost in several languages are very difficult to reconstruct for the proto-languages. However, we can certainly conclude that contact has not led to general simplification or regularisation in this area.

There remains the question of whether direct morphemic diffusion, or indirect morphosyntactic diffusion, has been quantitatively greater in this area. Despite the difficulties in quantifying these processes in any meaningful sense, we can still compare the Arnhem Land situation with other Sprachbunde like the Balkans and South Asia. In all three areas, indirect morphosyntactic diffusion has been extensive, though it has reached its extreme in South Asia. However, while direct morphemic diffusion has been quite restricted (for example, a few minor derivational affixes) in the Balkans and South Asia, it has been quite extensive in Arnhem Land as was shown in Chapter 3. In the Arnhem Land situation we cannot make any radical quantitative distinction between direct and indirect diffusion; both have been extensive, though neither has been entirely unconstrained.

Chapter 5

CONCLUSION

1. GENERAL

In Chapter 2, I showed that phonological diffusion in the area has been both direct and indirect in some instances (especially in the creation of new phonemes, or redistribution of old ones), exclusively indirect in others (especially in the loss of old phonemic oppositions). In the case of Ng and Ri, the relevant proto-languages were already so close phonologically that there was little potential for further convergence, but Ri did move toward Ng (and Rembarrnga) in its distribution of glottal stops, though Ri and Ng maintain their distinct vowel systems. In the case of Nu and Wa, the more complex phonemic system (Pre-Nu) was reduced to the simpler system of Wa by the loss of the old fortis stop series, the loss of *ʔ, and the loss of mid vowels *e and *o (these losses took the form of mergers with other phonemes, or occasionally total deletion in the case of *ʔ). The initial diffusional pressures of Wa on Nu in this respect triggered off a series of compensatory readjustments in Nu which had the effect of maintaining most of the old functional oppositions; in the course of this readjustment process the new phoneme ɿ was created, and a new series of phonemic long vowels was created, both of which resulted in divergences from the Wa pattern. The point was made that analysis of the actual historical processes brings out the diffusional influence of Wa on Nu much better than does simple listing of attested synchronic similarities.

The other point was that generative phonology does not provide a useful analytical framework for describing diffusional changes in phonology in these languages. Since generative phonology describes the relation between surface strings and (putative) underlying representations, but does not directly describe overall surface patterning, it could be useful in a diffusional study only if it could be shown that phonological rules as such (that is, ways of converting underlying into surface strings) have been directly borrowed. Except for reduplication rules, and one doubtful example of a d-insertion rule in Nu, there is little evidence for the diffusion of rules in this sense. Even in

situations where two languages have converged almost exactly in overall word-level phonemic and distributional patterning, showing clear diffusional interaction, the set of phonological rules in the two is usually vastly different; the only shared rules are low-level rules closely dependent on surface constraints, and even these rules (for example, VV-contraction rules) are often quite different in form. The reduplication and *d*-insertion rules, moreover, can be looked at as instances where a surface alternation (that is, a relationship among different surface structures, rather than between underlying and surface strings as such) has been reproduced in one language on the model of another language.

Probably the most theoretically interesting chapter in this book is Chapter 3, which describes a considerable number of instances where a bound grammatical morpheme has been borrowed. Whereas in most other Sprachbunde, even well-known ones like the Balkans and the Indo-European/Dravidian border in South Asia, very little of such direct morphemic diffusion is reported, in Arnhem Land we have found an established pattern of such diffusion. The sheer number of clear instances where a morpheme has been diffused has permitted at least a rough analysis of the factors facilitating and obstructing diffusion. A number of factors of various sorts (phonological, paradigmatic, analogical, etc.) have been identified as useful in this respect; others, including crude functional considerations, have been found unworkable.

In the course of Chapter 3, I also stressed methodological issues. As in Chapter 2, emphasis was placed on demonstrable recent innovations of a diffusional nature, rather than on just listing synchronic parallels. In some cases it was necessary to delve into philological trivia in order to establish comparative background necessary to rule out a retentionist explanation for particular sharings of morphemes. Moreover, a flexible technique of internal reconstruction, aimed chiefly at identifying archaic versus new morphemes, proved very useful.

In Chapter 4, I tried to show that indirect morphosyntactic diffusion in the area has occurred, but has often resulted in functional convergence (so that the basic morphological categories and other functional features of one language are replicated in another) rather than exact one-to-one morphemic intertranslatability. It was also shown that indirect diffusion of this sort has not had a levelling effect, resulting in progressive simplification and morphophonemic regularisation of the affected languages. Instead, such indirect diffusion has in numerous instances resulted in the creation of new morphological categories, new syntactic construction types, and so forth, and overall has had no simplifying effect.

2. LINGUISTIC DIFFUSION AND SPEECH COMMUNITIES

As we have seen, the most striking difference between Arnhem Land and the South Asian situation described by Gumperz and Wilson is that in the former we find substantial direct borrowing of grammatical morphemes along with relatively mild and diffuse indirect morphosyntactic diffusion, whereas in the latter we find very little direct morphemic diffusion but maximal indirect diffusion resulting in exact surface

morphosyntactic congruity. Let us see if we can interpret these differences in the context of the different kinds of bilingualism practised in these speech communities.

In the case of Marathi, Kannada, and Urdu in the village studied by Gumperz and Wilson, the languages are sharply stratified and hence functionally specialised. Marathi is used in various public situations and as a general *lingua franca*, while the home-group language (usually Urdu or Kannada) is restricted to more familiar situations. Consequently, virtually all members of the community acquire a good speaking competence in Marathi and one other language, and usually moderate speaking competence and good comprehension of the third language. Code-switching is a constant concomitant of moving from one speech situation into another. Moreover, in some situations code-switching within a single conversation is reported as frequent, especially when the situation is ambivalent (as when two persons who would normally use a shared home-group language are conversing on a subject usually talked about in Marathi):

As far as can be determined, almost all local men are bi- or multi-lingual. Marathi serves as the main local medium of inter-group communication. Jains, for example, use it in talking to their Muslim or untouchable field hands. We furthermore have recorded conversations where Jains discussing business affairs seem to be switching freely between Kannada and Marathi.⁷⁹

The development of isomorphism in surface structures in the local varieties of the three languages can be understood in this light. Since all members of the community engage in constant code-switching, indirect morphosyntactic diffusion has naturally been extensive, so that speakers in effect have only to learn a single grammar. The three languages are kept distinct by using different lexical items and grammatical morphemes. Were it not for the pressures favouring keeping the languages distinct, as sociolinguistic indexes related to the stratification of groups and domains, it is likely that one language (Marathi?) would have won out entirely.

The levelling effect noted by Gumperz and Wilson, whereby most morphological innovations have resulted in greater allomorphic and categorial simplicity and regularity, results from the strong tendency toward surface-structure isomorphism. If, for a given grammatical category, Marathi has two allomorphs M_1 and M_2 , while Kannada and Urdu each have a single allomorph, the most natural way to achieve isomorphism is for Marathi to level out its allomorphic alternation, perhaps generalising M_1 . It would be more difficult to achieve isomorphism in the other possible fashion, whereby Kannada and Urdu would acquire an allomorphic alternation parallel to that found in Marathi. Aside from the fact that this approach would require two languages to innovate, instead of just one, it would have to face the problem that there may be no obvious source for the required new allomorphs in Kannada and Urdu. Borrowing of an allomorph from Marathi would be

⁷⁹Gumperz and Wilson, *op. cit.* (see footnote 42 to Chapter 2), pp.152-153.

discouraged, since we have seen that speakers try to keep the languages distinct and especially avoid mixing of grammatical morphemes.

Thus the situation described by Gumperz and Wilson, though exceptionally interesting, is by no means typical of all contact situations, and it is important not to base a putatively universal model of linguistic diffusion on it. The purely linguistic (structural) factors bearing on diffusion have been seriously interfered with by the social pressures favouring maintenance of a trilingual speech community which might otherwise not have survived, and discouraging direct morphemic diffusion which might otherwise have occurred. This has had the effect of making certain kinds of diffusion more prominent than others.

In the Arnhem Land situation, social pressures of this sort have been quite weak. Language is of little importance in defining one's social identity among the Nu, Ng, Wa, and other groups of prefixing languages (although nowadays the surviving languages are becoming symbols of the opposition Aboriginal/White). The Ri and other Yuulngu groups are an exception, since each maṭa (clan) is associated with and partially defined by a particular dialect in the native theory. However, this native theory works on a highly abstract level and seems to have had no important effect 'on the ground' — the norm/reality gap is especially glaring here. The theory that each maṭa has a particular dialect is directly contradicted by the fact that several maṭa groups speak the same language with no regular phonological or other differences, and that some maṭa groups are divided into several subclans which speak mutually unintelligible languages.

Moreover, as we have seen in Chapter 1, each language corresponds roughly to a group of clans which habitually congregated to form a single community during part of the year. In each such community there was one dominant language, along with minor languages spoken by imported wives and by any visitors who happened to be present. Within the clans and smaller units, which were the usual subsistence units during the wet season and early dry season when the larger congregations had to split up, there was likewise a single dominant language which was the native language of all men and children and which imported wives typically had some competence in.

Although it is not possible to observe the extent of code-switching in this reconstructed pre-contact situation, we must suppose that it was less extensive than in the South Asian situation described by Gumperz and Wilson. Although a man might acquire reasonable competence in one or two languages other than his native one, he was likely to use them only in certain situations. If his mother came from a different language group (which was often, though by no means always, the case), he might use her language when speaking to her, though they could use the father's language if the mother had learned it well. Other languages might be used when visiting other communities or when speaking with visitors, during ceremonial occasions. On the whole, though, the need for bi- or multilingual competence was more restricted than in the South Asian situation, and a man might well go for several months during the wet season and early dry season without speaking a second language.

These differences are reflected in the kinds of linguistic diffusion attested. While in the South Asian case direct morphemic diffusion

was rare because of pressures to keep the languages distinct in Arnhem Land there are abundant instances of such diffusion. Whereas in the South Asian case indirect morphosyntactic diffusion has been maximal, in Arnhem Land it has been fairly substantial but far from complete, and we do not find one-to-one morphemic intertranslatability or even a strong tendency in this direction: this is presumably due to the lesser extent of code-switching, especially on a day-to-day basis or within single conversations.

Because there seem to have been no major social or cultural factors affecting linguistic diffusion in Arnhem Land (other than, of course, the basic demographic facts), the present study is useful since it suggests what kinds of diffusion are possible when linguistic structural (and functional) factors are primary. The linguistic systems have been in close contact, but there have been no particularly strong cultural factors favouring or inhibiting particular kinds of diffusion.

This is not to say that the Arnhem Land case is a more typical example of diffusion than the South Asian one and that it therefore ought to become a model. Indeed, the Arnhem Land situation is unusual, since in a great many contact situations there are cultural factors such as stratification, language loyalty, frequent code-switching, and the like. What the Arnhem Land case does provide, however, is an indication of what kinds of diffusion can take place in the absence of important interfering cultural factors of this sort. While not representative of all contact situations, the Arnhem Land case is valuable **analytically**, since in the absence of certain factors which are present in most other cases we can focus on the nature of the remaining (structural) factors.

3. DIRECTIONS OF DIFFUSION

We have seen that the primary avenues of diffusion have been between Ng and Ri, and between Nu and Wa. We will now examine both of these pairs of languages to see whether diffusion has been asymmetrical or roughly even.

Ng has borrowed more actual morphemes from Ri than Ri has from Ng, so far as can be determined at present. Ng has borrowed its ergative-instrumental suffix *-tu*, its genitive-dative-purposive suffix *-ku*, its inchoative verbaliser *-ti-*, and its thematising suffix *-du-* (though at least this last instance predated PNgNu and is thus not a recent borrowing). Ri has borrowed from Ng negative suffix *-?may?* and the kin-term dyadic dual suffix *-ka?*. Not only have the Ri → Ng borrowings been more numerous, they have also been more significant structurally. However, there are also several sharings where directionality is not yet clear: diminutive *-gañan?*, comitative *baṭa-* and *ray-*, various compound-ing initials and postpositions, etc.

Indirect phonological diffusion has not been substantial between Ri and Ng in recent periods, but the one important development involved replication in Ri of the Ng pattern for glottal stops. Indirect morphosyntactic diffusion has worked in the same direction in several instances (notably the development of Ri enclitics and subordinated clause types), but there are examples of its operation in the opposite direction (hence Ng develops an originative case category).

The overall diffusion between Ng and Ri has therefore been roughly even. However, before a final decision on this point is reached it will be necessary to expand our horizons somewhat and assess the importance of diffusion between Ng and Ri and other languages which we have not considered in detail in this work. For example, some of the indirect phonological and morphosyntactic diffusion resulting in Ri innovations may not have been modelled solely on Ng, but simultaneously on Ng and Rembarnga, with which Ri has also been in contact and which has inherited many of the same structural features seen in Ng. In this event we may eventually have to downgrade the influence of Ng on Ri to some extent, so that the overall diffusion will appear to have been slightly asymmetrical, with the bulk of borrowings going from Ri into Ng. This would be in accord with the fact that the Ri language group is substantially larger in demographic terms than the Ng group.

In the case of Nu and Wa, the direct morphemic diffusion has been mostly from Nu to Wa rather than vice versa. We may mention instrumental suffix *-miri* and the noun-class prefix system, and perhaps ablative suffix *-wala*.

On the other hand, indirect phonological diffusion has been mainly from Wa to Nu, since Nu has gone from a phonemic system like that of Ng (and Ri) to a system very similar to that of Wa. As for indirect morphosyntactic diffusion, it is difficult to establish clear cases and even more difficult to establish directionality at this stage, so no position will be taken here on this.

I am inclined to think that Nu has exerted more influence on Wa than vice versa in overall diffusional terms. The fact that the Nu phonemic system has been adapted to the Wa system, rather than vice versa, can be explained in structural terms: the inherited Pre-Nu system was more complex, including several oppositions not found in Wa, and was simplified so that the attested Nu system is basically the same as the Wa system. Moreover, future research may show that Enindhilyagwa in addition to Wa has exerted simplifying influence on Nu, so the role of Wa in this process may have to be weakened somewhat. On the other hand, Wa has borrowed several suffixes from Nu while apparently no productive suffixes have been borrowed in the other direction, and since no simple structural explanation for this can be advanced I feel that we should recognise the somewhat greater diffusional influence of Nu on Wa. However, since the number of such borrowings is limited we should perhaps not make too much of this.

All of these conclusions are tentative, and must be continually reassessed in the light of future research covering a broader range of languages in the area.

4. PROSPECTS FOR GENETIC CLASSIFICATION

The question arises whether linguistic diffusion such as has been described here is likely to make genetic classifications of these languages difficult. Fortunately, in the particular area I have worked on it is possible to determine genetic relationships to a reasonable degree of precision, and thus to distinguish inherited from diffused sharings to a considerable extent.

However, this is true mainly because of the great time depth separating such groups as the Yuulngu and prefixing families of languages (for example, Ri and Ng). There has been considerable diffusion of various kinds back and forth between these groups, but the relevant intermediate proto-languages were so dissimilar that diffusion has not totally obscured the genetic relationships. For all of the respects in which Ng and Ri have converged, one glance at the verbal paradigms, for example, tells us immediately that Ng is closely subgrouped with Nu, while Ri belongs with the other Yuulngu languages. Similarly, Nu and Wa share many features, but examination of verbal paradigms and to some extent pronominal prefix paradigms shows that Wa is closer to Mara and Alawa than to Nu and Ng.

Unfortunately, this favourable result may only have been made possible by the great time depth involved in certain language-group boundaries, and I cannot say that the results would be so favourable elsewhere in Australia. In eastern Arnhem Land the genetic distances from one language to another are probably greater than those found in any other part of Australia. In these other areas, then, even if linguists are able to obtain reliable descriptive data on all relevant languages in an area (which is impossible in most areas because of the extinction of crucial languages which were never adequately recorded), because the languages are so close genetically it may be impossible to clearly distinguish diffusional from inherited sharings, and it may thus be difficult to work out the precise genetic relationships.

What the Arnhem Land case study shows is that considerable (though not totally unconstrained) diffusion can occur, given certain demographic conditions, even across well-established language boundaries representing exceptional time depth. It stands to reason that in areas where the same demographic conditions are found, and where there are no exceptional cultural factors inhibiting diffusion, we should expect even greater diffusion among languages which have only recently diverged and which therefore have basically similar structures to start with. If Ng can borrow a number of bound grammatical morphemes from Ri, and Wa from Nu, then in areas with less genetic distance among the languages (for example Cape York Peninsula, perhaps the Kimberleys, etc.) we should expect considerable morphemic diffusion as well. Thus in many cases where a morpheme is shared by two languages which are known to be fairly close genetically, a diffusional explanation as well as a retentionist one is plausible. It would be very dangerous to arbitrarily assume that in such situations the retentionist explanation is to be automatically preferred. The best evidence for a retentionist explanation would be the demonstration that the shared morpheme has undergone separate phonological development in both languages, and/or has undergone semantic shifts, since such arguments may rule out the possibility of recent diffusion. However, where the two languages have the same phonologically specified morpheme in the same function, and where the morpheme satisfies the kinds of factors favouring diffusability described in section 18 of Chapter 3, a diffusional explanation for the sharing may be just as likely as the retentionist one.

Having made these methodological remarks, I must nevertheless leave the final decision on such matters to specialists in the different areas. It would be unreasonable to suppose that the Arnhem Land

situation is exactly replicated in other parts of Australia. I am not even certain to what extent the demographic facts are the same as those found elsewhere, and in particular it seems that in much of central Australia (for example, the territory of the Warlbiri, Aranda, Western Desert, and other language groups) we find different patterns whereby the language groups included a thousand or so persons each (not two hundred) and where interlinguistic marriage rates were low (for example ten per cent). One would expect considerably less linguistic diffusion under these conditions, and it would be wrong to use the Arnhem Land case study presented here as a model applicable to this part of Australia. To what extent Arnhem Land demographic patterns are replicated in other regions in Australia remains to be seen, but I would think that approximately the same patterns should be found in Cape York, the Kimberleys, and some other coastal and subcoastal regions.

Although in some of these areas diffusion may be difficult to disentangle from inherited sharings, I do not want to condemn attempts at genetic subgrouping, either at the local or continent-wide levels. The key to such classification is, of course, historical morphology (and to some extent morphosyntax) as well as morphophonemics. If, as appears to be the case in Arnhem Land, some classes of morphemes (for example, inflectional verbal suffixes, pronominal prefix complexes, etc.) turn out to have been particularly resistant to diffusion, then we can base a genetic classification on a careful historical reconstruction of such morphemic subsystems, beginning with relatively well-defined sub-groups and perhaps eventually reaching the continent-wide level. Verbal inflection may well be the single most useful material for such research, since pronominal prefix complexes have a complicated history due to analogical interaction with independent and perhaps clitic pronouns, and may have been variously reshaped or simplified depending on the fate of noun-class prefixes. Independent pronouns may also be useful, but must be used with caution since some diffusion of them seems to have occurred (we do not yet know how substantial this diffusion has been). Demonstratives may also have been fairly resistant to diffusion, but are usually subject to rapid internal turnover and thus may not be of much use for reconstructions beyond a certain time depth; in the Arnhem Land languages dealt with here the demonstrative stems are often totally different even between closely related languages.

The prospects for comparative reconstruction and for genetic classification are thus reasonably good, provided we carefully distinguish diffusion from inheritance and concentrate on those morphological domains least subject to diffusional turnover. We are relatively well-off in those areas where such domains, especially verbal inflection, involve numerous paradigms (one for each verb class or irregular verb) each of which has numerous affixes. This is certainly the case in Arnhem Land, in the Yuulngu as well as prefixing groups. There is reasonable complexity in many other parts of Australia. However, there are unfortunately some areas (for example, the Barkly Tablelands) where the system of inflectable verbs has been reduced to a handful of opaque 'auxiliaries' which are difficult to segment and analyse synchronically, let alone to work into historical reconstructions. Therefore the prospects for comparative reconstruction differ from one part of Australia to another simply because of features of the linguistic structures at hand.

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