

△ STUDIES IN LANGUAGE CHANGE

THE NON-PAMA-NYUNGAN LANGUAGES OF NORTHERN AUSTRALIA

*Comparative studies of the continent's
most linguistically complex region*



Edited by
NICHOLAS EVANS

THE NON-PAMA-NYUNGAN LANGUAGES OF NORTHERN AUSTRALIA
Comparative studies of the continent's most linguistically complex region

EDITED BY
Nicholas Evans

Xa
14 490

MARK HARR

1 Introduction

This paper aims to se
Gunwinyguan phonolog
The database for the en
provides a rough estimat
brackets):

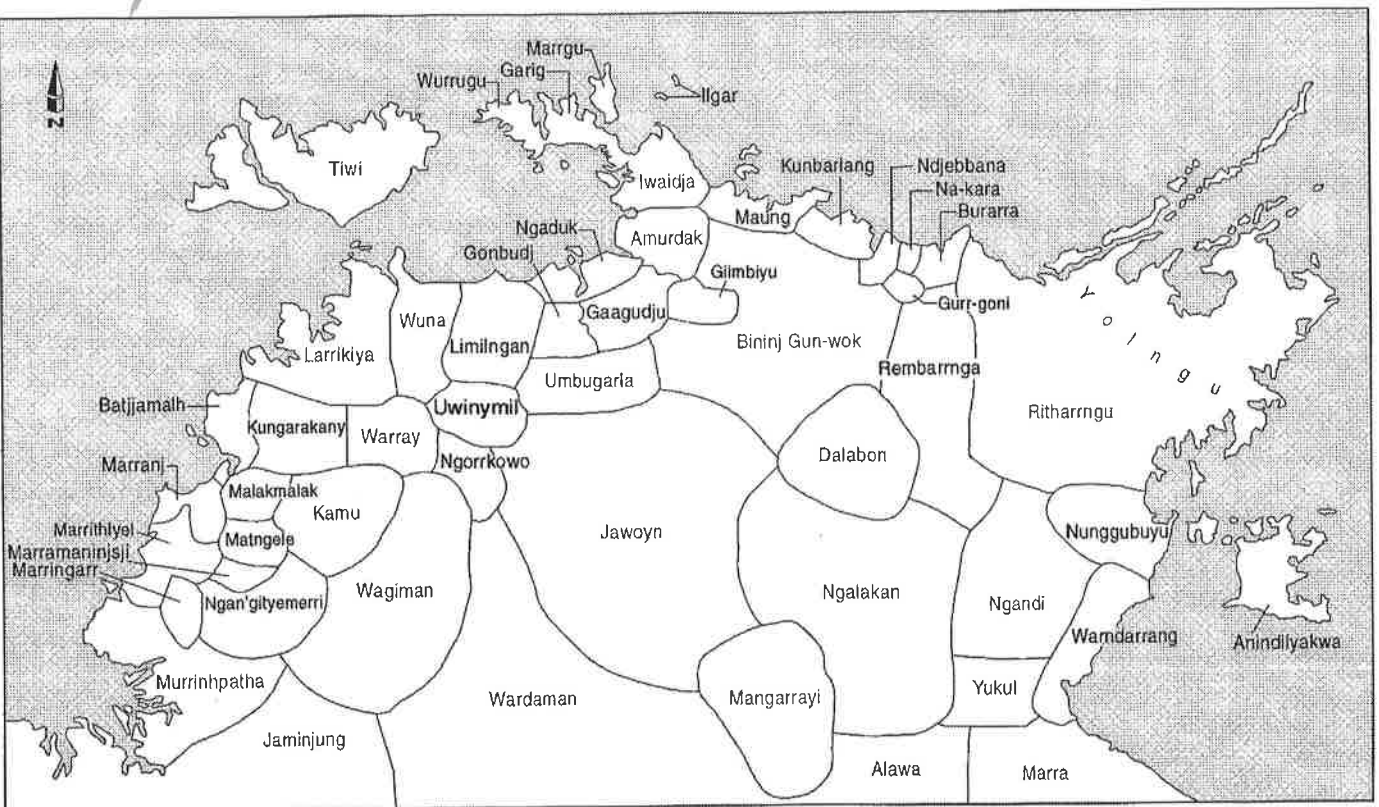
Bininj Gun-wok 5
(Kamu 800), (Jami
1100, Ngandi 130
Wardarrang 800),

Obviously the considerat
variations in quantity a
limitations, it was possi
similar forms across the

There are a number
dictionaries listed abov
Gunwinyguan language
practical orthography, is

Most descriptions of th
commonly termed for
geminate. Consequent
segmental inventory of a

Nicholas Evans, ed. *The non-Pama-Ny
comparative studies of the continent's
Canberra: Pacific Linguistics, 2003.
Copyright in this edition is vested with P*



Map 3: Languages of the Top End

8 *An initial reconstruction of Proto Gunwinyguan phonology*

MARK HARVEY

1 Introduction

This paper aims to set out a number of the principal issues in the reconstruction of Proto Gunwinyguan phonology, and to suggest some possible resolutions for questions that arise. The database for the ensuing discussion consisted of the following dictionaries (the number provides a rough estimate of the number of roots listed, with non-Gunwinyguan languages in brackets):

Bininj Gun-wok 5000, Dalabon 1000, (Kungarakany 500), Jawoyn 2000, (Kamu 800), (Jaminjung 2000), Mangarrayi 2000, (Matngele 800), Ngalakgan 1100, Ngandi 1300, Nunggubuyu 5000, (Wagiman 1500, Wardaman 2000, Warndarrang 800), Warray 1100.

Obviously the considerable variation in the size and quality of these dictionaries, and the variations in quantity and quality limit the comprehensiveness of coverage. Despite these limitations, it was possible to assemble a reasonably large number of sets of suggestively similar forms across the various languages. These sets are listed in the Appendix.

There are a number of points to be noted about this database assembled from the dictionaries listed above. Firstly it is helpful to set out the phonemic inventories of the Gunwinyguan languages and their neighbours. The maximal inventory, in a standardised practical orthography, is set out in Tables 1a and 1b.¹

¹ Most descriptions of the segmental inventories of Gunwinyguan languages list two series of stops, most commonly termed fortis and lenis. I do not list two series of stops, because I analyse the fortis stops as geminates. Consequently, they are members of the class of consonant clusters, and not part of the segmental inventory of any of the languages.

Nicholas Evans, ed. *The non-Pama-Nyungan languages of northern Australia: comparative studies of the continent's most linguistically complex region*, 205–268. Canberra: Pacific Linguistics, 2003.

Copyright in this edition is vested with Pacific Linguistics

Table 1a: Maximal phonemic inventory — consonants

	Labial	Alveolar	Retroflex	Dental	Palatal	Velar	Glottal
Stop	<i>p</i>	<i>t</i>	<i>ɾ</i>	<i>th</i>	<i>c</i>	<i>k</i>	<i>q</i>
Nasal	<i>m</i>	<i>n</i>	<i>ɳ</i>	<i>nh</i>	<i>ny</i>	<i>ng</i>	
Lateral		<i>l</i>	<i>ɾl</i>	<i>lh</i>	<i>ly</i>		
Tap/trill		<i>rr</i>					
Approximant	<i>w</i>		<i>r</i>		<i>y</i>		

Table 1b: Maximal phonemic inventory — vowels

	Front [−round]	Front [+round]	Central	Back
High	<i>i</i>			<i>u</i>
Mid	<i>e</i>	<i>æ</i>	ɿ	<i>o</i>
Low			<i>a</i>	

The language-specific variations from this maximal inventory are:

- (a) The Dentals are found only in Ngandi, Nunggubuyu, and the Yolngu languages.
- (b) There is no glottal stop in Matngele, Nunggubuyu, Wardaman, or Wardarrang.
- (c) Nunggubuyu and the Yolngu languages have only the three cardinal vowels.
- (d) The /v/ vowel occurs only in Dalabon and Rembarrnga. In Dalabon, it is a high central vowel. In Rembarrnga, it appears to be a schwa.
- (e) The palatal lateral /ly/ is found only in Wardaman, Kamu and Matngele.
- (f) The front rounded vowel /œ/ occurs only in Kamu and Matngele. These two languages also lack /o/.

Apart from phonological patterns, it is also useful to consider the part-of-speech categorisations that characterise the Gunwinyguan languages and their neighbours. Among these languages, there is a primary division of roots into four main part-of-speech classes: verbs, coverbs, nominals, and particles. These four part-of-speech classes show the following characteristics.

VERBS. Verb roots combine with suffixes to form complex paradigms which convey information as to tense, mood, and aspect. These paradigms frequently show a high degree of surface morphological opacity. Verbs most commonly appear in compounds with coverbs, as the second member of the compound. In this compounding function, verbs do not normally convey any lexical information, but rather convey information as to tense, mood, and aspect only. Most verbs can however, function independently, and when they do so, they have a lexical meaning. The class of verb roots is closed.

COVERBS. Coverb roots convey nearly all the 'lexical' verbal meanings. Coverbs do not however inflect for tense or mood, and thus they are distinguished from verbs. Coverbs are distinguished from nominals by the fact that they cannot, by themselves, be predicational in introductory indicative text. They must be combined with a verb, in order to construct a

predicate in this construction. Modifiers are also constructed with coverbs, but the predicate is open.

NOMINALS. The nominal roots are predicational, but they do not function from coverbs by themselves in introductory indicative text. They must be combined with a verb, in order to construct a

PARTICLES. The particles are used to

This paper is primarily concerned with the coverbs. Though the coverbs are independent of the compounds with the Gunwinyguan languages, they show cognacy. In the complex paradigm of the verb paradigm, the coverbs are used to

With each set of coverbs, there is a set of proto-forms assigned to each factor among the factors. This factor discusses extensive cognacy in the languages of the area. The area allows for borrowing of a part of the ownership of a part of the factors appear to be that borrowing is likely to be

However, Healey

morphological categories to borrowing (1977: 100). The system of verbal volume). Given the volume, the verbal common set would appear to be that there is a good coverb evident motivation

- (1) *worrowk-
worrowk-1

- (2) *war-pu- 'war-pu- (1)

Correspondence between the coverbs and the verbs is proposed that its widespread borrowing is comparatively limited

predicate in this context. The formal status of the combinations of coverbs and verbs varies considerably. Most commonly the two appear in a coverb+verb compound. However, there are also constructions where the two appear as independent words. The class of coverb roots is open.

NOMINALS. The class of nominal roots is a default class. It includes all roots which are predicational, but neither verb nor coverb roots. Nominals are specifically distinguished from coverbs by the fact that they may, by themselves, be predicational in introductory indicative text. The class of nominal roots is open.

PARTICLES. The class of particles includes all non-predicational morphemes.

This paper is primarily concerned with material from the two open classes: nominals and coverbs. Though coverbs are most commonly compounded with verbs, I consider coverbs independently of the compound structure. This is chiefly because the verbs appearing in compounds with a particular coverb are generally not cognate among the various Gunwinyguan languages. There are a few cases where the whole coverb+verb compound shows cognacy. In these cases, I include the verb in the reconstruction. Verb roots and their complex paradigms are examined in Alpher, Evans and Harvey (this volume). Material from the verb paradigms will however be used where it is required in this paper.

With each set of correspondences, I provide a reconstructed proto-form. However, I do not thereby wish to suggest that all of these sets consist of cognate reflexes descended from proto-forms assignable to a particular ancestral proto-language. Borrowing is obviously a factor among the Gunwinyguan languages, as it is universally. Heath (1978a:29-32) discusses extensive borrowing, including borrowing of bound morphemes, between various of the languages of south-eastern Arnhem Land. He argues that the social structures of this area allow for borrowing, especially the norm of multilingualism, and the fact that common ownership of a particular language variety is not a basis for social action. Given that these factors appear to have characterised Australia generally, Heath (1978a:139-146) argues that borrowing is likely to be an issue of concern across Australia.

However, Heath does not argue that borrowing is equally probable across all morphological categories. He argues that verbal suffixal paradigms are particularly resistant to borrowing (1978a:146). The strongest evidence for the Gunwinyguan family comes from the system of verbal suffixal paradigms reconstructed in Alpher, Evans and Harvey (this volume). Given this, the match between the group of languages identified as Gunwinyguan by verbal commonalities, and the group of languages found in a particular correspondence set would appear to be a factor of relevance in determining the likelihood of borrowing. If there is a good correlation between the two groups, then there would not appear to be any evident motivation for analysing the correspondence set as involving extensive borrowing.

- (1) **worrok-* 'to jump': BGW *worrokworrok-*, D *worrok-*, Ja *worrok-*, Ngai *worrok-*, Ngan *worrok-*, R *worrok-*
- (2) **war-pu-* 'to sing (tr)': BGW *wa-pu-*, Ja *war-wu-*, Ngai *war-pu-*, Ngan *war-pu-*, R *war-pu-* (Ritharrngu *war-pu-*)

Correspondence set (2) shows borrowing into Ritharrngu. However, there is no reason to propose that its widespread distribution across the Gunwinyguan languages reflects widespread borrowing. Most of the correspondence sets in the Appendix have a comparatively limited geographical range. There are only a small number of widespread

correspondence sets. Consequently, there is no evidence that widespread, serial borrowing has been an extensive phenomenon.

If a correspondence set does not show a close correlation with the group of languages identified as Gunwinyguan by verbal suffixing commonalities, then there are two immediate hypotheses. One is that the correspondence set reflects borrowing. The other is that the distribution of the correspondence set reflects inheritance from a more ancient proto-form, ancestral to pGN. In the case of borrowing, a contiguous geographical distribution is predicted. In the case of inheritance from a more ancient proto-form, geographical discontinuities are highly likely, though not required.

Geographical continuity is another factor of general relevance in considering the probabilities of borrowing. Geographical discontinuities are most unlikely to be explicable in terms of borrowing. There are a number of correspondence sets for body-part nominals, some discontinuous, whose distribution does reflect inheritance from a more ancient proto-form, as they have reflexes among the Pama-Nyungan languages.

- (3) *-*thala* 'mouth': D *italy*, Ngai *-cala*, R *itala*, W *-cili* (Warumungu *cala*), ?Ngan-*thaa*, ?Nu *lha-*, (?Ritharrngu *thaa*)

Apart from *-*thala* 'mouth', this set of body-part nominals also includes **cakku* 'left hand', **tharr* 'thigh', and **thiw* 'liver'.

There are, however, other widespread but contiguous correspondence sets whose distribution does appear to reflect borrowing, and not inheritance from a more ancient proto-form. For nominals, at least, these correspondence sets are concentrated in certain cultural/semantic domains. The names of ceremonies are a paradigm example. The ceremony name *mardayin*, for example, is found in virtually every language of Arnhem Land. Terms for ceremonial participants and ceremonial objects also show distributions, which do not correlate with the Gunwinyguan family, as determined by verbal inflections.

- (4) **mululuk* 'initiate': Ja *mululuk*, M *mululuk* 'young child', W *mululuk* (Kamu *mululuk*, Wagiman *mululuk*, Wardaman *mululuk*)
- (5) **karlampa* 'headband': BGW *karlampa*, Ja *karlampa*, W *karlampa*(ng) (Gaagudju *karlampa*, Kamu *karlampang*, Kungarakany *karlampa*, Jaminjung *karlampang*, Larrakia *karlampa*, Matngele *karlampang*, Wardaman *karlampang*)

The names of some non-ceremonial material objects also show a lack of correlation.

- (6) **ciminnrri* 'knife': BGW *ciminni*, Ja *ciminnrri*, Ngan *ciminnrriq* 'spike of dugong spear', Nu *ciminnrri* 'spike of dugong spear', R *ciminnrriq* 'spike of fish spear', (Jaminjung *ciminnrri* 'knife', Ritharrngu *ciminnrriq* 'spike of dugong spear', Wagiman *ciminnrri* 'knife', Wardaman *ciminnrri* 'knife', Wardarrang *ciminnrri* 'spike of dugong spear')

- (7) **karlarr* 'dilly bag': M *karlarr*, W *karle* (Kamu *karlarr*, Jaminjung *karlarr* 'large fishing net', Matngele *kararr*, Wagiman *karlarr*, Wardaman *karlarr*)

There are a number of cases where the names of natural species also fail to show a correlation.

- (8) **calarr* 'centipede': BGW *calarr*, Ja *calarr*, W *cale* (Kungarakany *celerr*, Kamu *cererr*, Jaminjung *calarrin*, Matngele *cererr*, Nungali *-yalarru*, Wagiman *telerrin*, Wardaman *calarrin*)

- (9) **cirripiyuk*
cirripiyuk,
Wardarran

- (10) **karnralapp*
karnralappu
(Ritharrngu
Wardarran)

Some names for ca

- (11) **parlparl*
(Matngele
parlparlpan)

On the other hand
nominals fail to sho

- (12) **parang* 'c
R *parng* 'bi

- (13) **colang* 'rip

- (14) **mak* 'goo
W *-muk* (K

Correspondence set

- (15) **kurlak* 'sk
warrikurlat

- (16) **kurrac* 'b
kurraacnyin

- (17) **peremelk*
Ngai *perem*

The few cases wh
correlation, appear
discussed.

This explanatio
with the correspon
and none have ref
examination of th
indicating the mo
exercise, and I do r

Therefore, in t
comparatively lim
probable in certain
of ceremonies and
is a loan. There a
correlation with the

- (9) **cirripiyuk* 'whistleduck': BGW *curripiyuk*, Ja *cirriwiyuk*, M *cirripiyuk*, Ngan *cirripiyuk*, W *cirripiyuk* (Kungarakany *cirripiyuk*, Marra *cirripiyu*, Ritharrngu, Warndarrang *cirripiyuk*)
- (10) **karnrtalppurru* 'female kangaroo': BGW *karnrtalppurru*, Ja *karnrtalppurru*, Ngan *karnrtalppurru*, Ngan *karnrtalppurru*, Nu *arnrtalppurru*, R *karnrtalppurru* (Ritharrngu *karnrtalppurru*, Marra *karnrtalppurru*, Wardaman *karnrtalwu*, Warndarrang *karnrtalppurru*)

Some names for categories of the landscape also fail to show a correlation.

- (11) **parlpparl* 'flat (ground)': Ja *perlperlmi*, M *perlperl*, W *parlpparl* 'flat hard rock' (Matngele *parlparl*, Ngaliwurru *parlparlma*, Wagiman *perlperl-in*, Wardaman *parlparlpan ~ perlperl-in*)

On the other hand, there are no examples, where correspondence sets for 'adjectival' nominals fail to show a correlation.

- (12) **-parang* 'cheeky': BGW *-pang*, D *parng*, Ja *-parang*, Ngan *-parng* 'bitter, sour', R *parng* 'bitter, salty', Uw *-poreng*, W *-pulang*
- (13) **colang* 'ripe, cooked': BGW *corleng*, Ja *colang*, M *curlak*, Nu *lharang*, W *colong*
- (14) **-mak* 'good': Ja *-mak*, May *-mak*, Ngan *-maq*, Ngan *-maak*, R *-maq*, Uw *-mok*, W *-muk* (Kungarakany *-mek*)

Correspondence sets for body-part nominals generally show a clear correlation.

- (15) **kurlak* 'skin': BGW *-kurlaq*, D *kulaq*, Ngan *-kurlaq*, Ngan *kurlaq*, Nu *makurlak*, warrikurlak 'bark' R *kurlaq* (Ritharrngu *kurlaq*)
- (16) **kurrac* 'blood': BGW *-kurrac* (avoidance term), D *kurrac*, Ja *-kurrac*, M *kurracnyin*, Ngan *kurrac*, W *kurrac*
- (17) **-peremelk* 'shoulder blade': BGW *perimelq* 'kangaroo shoulder blade', Ja *-peremelk*, Ngan *peremelk*, Ngan *peremelk*, Nu *wirimil*, W *-pimek*

The few cases where correspondence sets for body-part nominals do not show a clear correlation, appear to involve inheritance from a more ancient proto-form, as previously discussed.

This explanation, of inheritance from a more ancient proto-form, has much less force with the correspondence sets in (4)–(11). All of these are contiguous correspondence sets, and none have reflexes among the Pama-Nyungan languages. It also seems likely that an examination of the semantic domains characterising coverbs might also be fruitful in indicating the most likely areas of borrowing. However, this is a much more complex exercise, and I do not examine this issue here.

Therefore, in terms of an initial overview, the evidence for borrowing appears to be comparatively limited across the Gunwinyguan family. Borrowing appears to be most probable in certain nominal domains. The mere fact that a nominal belongs to the domains of ceremonies and related matters, material objects, or natural species does not prove that it is a loan. There are some material object, and natural species names, which show a strong correlation with the group of languages identified as Gunwinyguan by verbal commonalities.

- (18) **pornrok* 'woomera': BGW *pornrok*, D *pornrok*, Ngal *pornrok*, Ngan *pornrok*, Nu *warnrak*, R *pornrok* (Kungarakany *pornrok*, Ritharrngu *parnrak*)

- (19) **yawok* 'yam sp.': BGW *yawok*, Ja *yawk*, D *yawok*, Ngal *yawok*, W *yawuk*

It seems most likely that these are pGN forms. However, care must be taken with terms from these domains. As a hypothetical example, there might be a number of correspondence sets which appeared to establish a lamino-dental lateral */lh/, as a distinctive segment. If the great majority of these correspondence sets were in the domains of ceremonies and related matters, material objects, or natural species, and the correspondence sets did not generally show a good correlation with Gunwinyguan, as defined by verbal commonalities, then the correspondence set would be less secure as a reflection of a reconstructable phoneme and an explanation in terms of borrowing would seem plausible.

With these cautions noted, my procedure in this paper has been inclusive, because of the difficulty of verifying loan status, and my list of preliminary 'cognates' in the Appendix does not in general distinguish words whose limited occurrence or areal properties suggest they are either loans or local innovations. This is because

- (a) not all the evidence is in yet, and a word just in one language or a small area may yet turn out to be archaic, descending from pG, if non-Gunwinyguan cognates are eventually found.
- (b) the same logic goes for reconstructed forms attested only in a likely subgroup (e.g. Warray-Jawoyn, or Ngalakgan-Rembarrnga); they are simply started and the task of determining the level of the reconstruction is left for subsequent investigation.
- (c) however, I note forms that are aberrant in their correspondences, to aid future investigators in identifying and accounting for them.

2 The Proto Gunwinyguan phonemic inventory

On the basis of the correspondence sets in the Appendix, I reconstruct the phonemic inventory for pGN as set out in Tables 2a and 2b. The majority of these proto-phonemes are uncontroversial as the languages show great consistency in their reflexes. Only those areas which are reasonably open to debate are examined further in this paper.

Table 2a: Reconstructed pGN phonemic inventory — consonants

	Labial	Alveolar	Retroflex	Laminal	Palatal	Velar	Glottal
Lenis Stop	<i>b</i>	<i>d</i>	<i>r</i>	<i>th</i>	<i>j</i>	<i>g</i>	<i>q</i>
Nasal	<i>m</i>	<i>n</i>	<i>mn</i>		<i>ny</i>	<i>ng</i>	
Lateral		<i>l</i>	<i>rl</i>				
Tap/Trill		<i>rr</i>					
Approximant	<i>w</i>		<i>r</i>		<i>y</i>		

3 Specific p

3.1 The gemin

All the Gunw contrast between the fortis–lenis c 1975, 1980; Me opposition phonol the contrast. All contrast is not a contrasts in voice

Rather the pri stops are consi argued that this l geminate and sing evidence requiring the contrast as on Diachronically antiquity in pGN. systematically bet

Table

Ngandi
Nungubuyu

As Heath argues, t lenition chain:

Geminate > s

It would therefore the proto-language generally show co geminates belong to Some widespread o

Table 2b: Reconstructed pGN phonemic inventory — vowels

	Front	Central	Back
High	<i>i</i>		<i>u</i>
Mid	<i>e</i>		<i>o</i>
Low		<i>a</i>	

3 Specific phonological contrasts

3.1 The geminate–singleton (fortis–lenis) contrast

All the Gunwinyguan languages, save Mangarrayi and Nunggubuyu, show an apparent contrast between two series of stops. The exact synchronic nature in phonological terms of the fortis–lenis contrast is the subject of some debate (Butcher n.d.; Jaeger 1983; McKay 1975, 1980; Merlan 1983:2–6; Baker 1999). While, there is debate as to the nature of the opposition phonologically, there is general agreement on the principal phonetic parameters of the contrast. All analysts are agreed that for the Gunwinyguan languages at least, the contrast is not a laryngeal contrast. There is no correlation between the stop contrast and contrasts in voice onset timing, or creaky voice, or any other laryngeal factor.

Rather the principal perceptible phonetic parameter is a difference in length. The fortis stops are consistently and significantly longer than the lenis stops. McKay (1975:17–21) has argued that this length contrast should be interpreted phonologically as a contrast between geminate and single stops. This is the standard analysis of a length contrast. As there is no evidence requiring the adoption of any other less usual analysis, I follow McKay and treat the contrast as one of geminate vs single stops.

Diachronically, the contrast between geminate and singleton appears to be of some antiquity in pGN. Heath (1978a:37–41) states that the correspondence sets in Table 3 hold systematically between Nunggubuyu and Ngandi.

Table 3: Systematic correspondence sets for Nunggubuyu and Ngandi
(Heath 1978a:37–41)

Ngandi	<i>p</i>	<i>rt</i>	<i>th</i>	<i>c</i>	<i>k</i>	<i>pp</i>	<i>tt</i>	<i>trrt</i>	<i>thth</i>	<i>cc</i>	<i>kk</i>
Nunggubuyu	<i>w</i>	<i>r</i>	<i>lh</i>	<i>y</i>	<i>w</i>	<i>p</i>	<i>t</i>	<i>rt</i>	<i>th</i>	<i>c</i>	<i>k</i>

As Heath argues, these correspondence sets are presumably to be understood in terms of the lenition chain:

Geminate > Singleton > Approximant

It would therefore appear that the geminate vs singleton contrast should be reconstructed for the proto-language ancestral to Nunggubuyu and Ngandi. The Gunwinyguan languages generally show consistency in their correspondences involving geminates, providing that geminates belong to the class of permitted clusters in the particular Gunwinyguan language. Some widespread or discontinuous correspondence sets are listed in (20)–(24).

- (20) **cakku* 'left hand': M *cakuyaku*, BGW -*cakku*, Ngai -(*pala*)-*cakku*, Nu *palacaku*? (Wagiman -*caku*)
- (21) **ka(k)kak* 'parallel grandparent': BGW *kakkak* 'parallel grandparent, focally MM', D *kakkak* 'MM', Ja *kakak* 'MM', M *kakak* MM, Ngan *kokkok* 'MM', R *kakkak* 'parallel grandparent, focally MM', ?W *kakkak* 'close non-mariageable cross-cousin' (Marra *kaka*, Wardarrang *kaka*)
- (22) **kappay* 'ironwood': D *kappay* 'ironwood wax', M *kappay* 'ironwood wax' BGW *kappay* 'hard, ironwood wax' (Gaagudju *kaapay* 'ironwood')
- (23) **kappurula* 'blind': D *kappurula*, Ja *kappurula*, BGW *kappurula*, Ngai *kappurula*, Ngan *kappurulaq*, R *kappurula*
- (24) **pokko* 'spear': D *pokko*, Ja *pokko*, BGW *pokko*, Ngan *pokkoq*, W *pukku* (Ritharrngu *pakkaq*)

There are some examples of singleton correspondences, where a geminate would be predicted, as in the Jawoyn form *kakak* 'MM'. There are also occasional correspondence sets which show considerable irregularity.

- (25) **parra(k)karl* 'spear tree': D *parrakarl* 'Bambusa arnhemicus', Ja *parrakarl*, M *parrakarl*, BGW *parrakarl*, Ngai *parrakarlq*, Ngan *parrakarlq*, W *parra(k)karl* (Alawa, Jamunjung, Wagiman, Wardaman *parrakarl*)

However, given the general consistency of geminate vs singleton correspondences, I reconstruct geminates as part of the consonant cluster inventory of pGN.

3.2 The alveolar-retroflex contrast

All of the Gunwinyguan languages contrast alveolar and retroflex apicals in morpheme-medial and -final positions. It appears that this contrast should be reconstructed for pGN. The best evidence for reconstruction of the contrast is provided by the two correspondence sets in (26) and (27).

- (26) **kanam* 'ear': BGW -*kanem*, D *kanvm*, Ngai -*kanam*, Ngan -*kanam*, R *kanam*, W -*kanim* (Wardarrang *wanam*)
- (27) **marnak* 'arm': Ja -*marnak* 'arm', R *marnak* 'arm', W -*murnak* 'shoulder'

The correspondence set for **kanam* 'ear' is both widespread and discontinuous. The Waray correspondent -*ganim* is isolated, as the intervening languages lack correspondents. The second correspondence set for **marnak* 'upper arm' is similarly discontinuous, with the languages intervening between Jawoyn and Rembarrnga lacking correspondents. These two correspondence sets would therefore appear to establish a contrast between **n* and **rn* in pGN.

There is also evidence for a contrast with the laterals. As with the nasals, the discontinuous correspondence sets in (30) and (32) provide the strongest evidence for reconstruction of the contrast.

² The Nungubuyu form *palacaku* is most probably a borrowing as it fails to show lenition of the intervocalic /c/, which should have lenited to /y/ (Heath 1978a:38).

- (28) **thala* 'Nu *lha*
- (29) **walam* 'walelem
- (30) **parlan*
- (31) **yarlarr*-*yarlarr*
- (32) **wulkan*
- (33) **kurlak* 'warrikurl

The evidence is l names in (34) and

- (34) **cotet* 'na
- (35) **korrtol*
- (36) **mot* 'to
- (37) **martman*

However, the cor are not the only alveolar vs retrof is altogether imp showing fewer p there are a few ce

Another fact the impossibility the correspondence s appear to be any reflexes, whereas sets where there i

- (38) **colang/c* W *colong*

This militates to relatively uncom therefore reconstr

The contrast b the other apical c double contrast, it established and m

- (39) **rerr* 'cam

- (28) *-*thala* 'mouth': D *talv*, Ngal -*cala*, R *tala*, W -*cili* (Warumungu *cala*), ?Ngal -*thaa*, ?Nu *lha*- (?Ritharrngu *thaa*)
- (29) *-*walam* 'south': BGW *walam* 'west', D *walvm*, Ja *walam*, Ngal *walam*, R *walam*, W *walalem*
- (30) *-*parlan*- 'nearly': D *parlan*-, W *parlan*-
- (31) *-*yarlarr*- 'to disperse': BGW *yarlarr*-, D *yarlarr*-, Ja *yarlarr*-, Ngal *yarlarr*-, Ngal *yarlarr*-
- (32) *-*wulkan* 'sibling': D *wulkan* 'younger sibling', W -*wulkan*
- (33) *-*kurlak* 'skin': BGW -*kurlaq*, D *kulaq*, Ngal -*kurlaq*, Ngal *kurlaq*, Nu *makurlak*, warrikurlak 'bark' R *kurlaq* (Ritharrngu *kurlaq*)

The evidence is less strong for a contrast in the stops. The distribution of the natural species names in (34) and (35) could involve borrowing.

- (34) *-*cotet* 'nail-tailed wallaby': BGW *cotet*, D *cotet*, Ja *cotet*
- (35) *-*kortrtol* 'owl sp.': BGW *kortrtol*, D *kortrtol*, Ja *kortrtol*, W *kortrtol*
- (36) *-*mot*- 'to be quiet': BGW *mot*-, Ja *mot*-, Ngal *mot*-, W *mot*- (Kungarakany *mot*-)
- (37) *-*martmart*- 'to shine': Ja *martmart*-, Ngal *martmart*-, W *martmart*-

However, the correspondence sets for the apical stops, and the nature of their distribution, are not the only factors to be considered in determining whether or not to reconstruct an alveolar vs retroflex contrast. If the contrast is well supported for nasals and laterals, then it is altogether improbable that it did not also manifest in the stops. There are no cases of stops showing fewer place of articulation contrasts than nasals among Australian languages, but there are a few cases of the reverse (Hamilton 1996:58–60).

Another factor favouring the reconstruction of an alveolar vs retroflex contrast is the impossibility of predicting the reflexes, which are generally consistent within a correspondence set. If only a single apical series was reconstructed, then there does not appear to be any way of explaining why (26), (28), and (36) consistently show alveolar reflexes, whereas (27), (31), and (37) consistently show retroflex reflexes. There are some sets where there is a variation between in correspondences between alveolars and retroflexes.

- (38) *-*colang/corlang* 'ripe, cooked': BGW *corleng*, Ja *colang*, M *curlak*, Nu *lharang*, W *colong*

This militates to some degree against reconstruction of the contrast. However this is relatively uncommon, and does not constitute serious evidence against reconstruction. I therefore reconstruct an apical contrast for stops and laterals in pGN.

The contrast between the alveolar tap /rr/ and the retroflex approximant /r/ differs from the other apical contrasts in that there is additionally a contrast in sonority class. Given this double contrast, it is unsurprising to find that the distinction between the two segments is well established and may be reconstructed for pGN

- (39) *-*rerr* 'camp': BGW *ret*, Ja *rlerr* (*rlert*- in compounds), Ngal *rerre*, Ngal *rerr*, W *rle*

Nu *palacaku*²

focally MM',
M', R *kakkak*
ageable cross-

and wax' BGW

appurla, Ngal

ku (Ritharrngu

ate would be
correspondence

Ja *parrakkarl*,
V *parra(k)karl*

spendences, I

in morpheme-
ected for pGN.
correspondence

m, R *kanam*,
ulder'

The Warray
pondents. The
ous, with the
ts. These two
*n and *m in

nasals, the
evidence for

lenition of the

- (40) **ngerrq*- 'to breathe, to have a breath, to have a rest': BGW *ngerrq*-, D *ngerrq-wolwol*- 'to be short-winded', Ja *ngerrq*-, M *ngirrq*- 'to breathe', Ngai *ngerrq*-, R *ngerrnger*- 'to get puffed', W *ngelingq*- 'to breathe' (Riharrngu *ngirrq*- 'to breathe')
- (41) **werrq*- 'to vomit': BGW *wel(r)q*-, Ja *werrq*-, Ngai *werrq*-, Ngan *werrq*-, W *werrq*-(Wagiman *we*, Wardaman *we-mi-yi*-)

While it appears that the reconstruction of an apical contrast in morpheme-medial and -final position is well supported, the situation is rather different for morpheme-initial position. In Jawoyn (Merlan n.d.), Ngalakgan (Merlan 1983:9-10), and Warray (Harvey n.d.) all prefix and root-initial apicals are retroflex, whereas suffix-initial apicals are alveolar. In Ngandi (Heath 1978b:9-10) all root- and word-initial apicals are retroflex, while initial apicals in suffixes and non-word-initial prefixs are alveolar. In Nunggubuyu (Heath 1984:18) and Rembarnga (McKay 1975:14), there is a contrast between alveolars and retroflexes morpheme-initially. However, this contrast bears hardly any load. Most occurrences of initial retroflexes are conditioned by an initial retroflex in the following syllable. Nunggubuyu (Heath 1982) shows a less regular distribution. Nearly all morpheme-initial apical stops and laterals are retroflex. However, the majority of morpheme-initial apical nasals are alveolar.

It does not therefore appear that the initial apical contrast, where it does occur, is of a substantive nature. Consequently, I do not reconstruct a contrast in morpheme-initial position for pGN. I use archiphoneme symbols for initial apicals in roots and prefixes. Suffix-initially, I reconstruct alveolars.

3.3 Initial /l/ and initial /r/

A contiguous bloc of Gunwinyguan languages: Jawoyn, Mangarrayi, and Warray, do not permit /r/ in either word- or root-initial position. In these languages, initial **r* and initial **L* are both reflexed as /l/. The other GN languages permit /r/ and /L/ both word- and root-initially. Correspondence sets involving these other languages show either /r/ or /L/ consistently in initial position.

- (42) **Leppal* 'spotted bream': D *rleppal*, Ja *rleppal*, M *rlipal*, Ngai *rleppal*, Ngan *rleppal* (Riharrngu *rlipal*)

- (43) **rerr* 'camp': BGW *ret*, Ja *rlerr* (*rlert*- in compounds), Ngai *rerre*, Ngan *rerr*, W *rl*

It would appear therefore that a contrast between initial **r* and initial **L* should be reconstructed for pGN. This contrast has later been neutralised through a phonotactic restriction against word- and root-initial /r/. There is evidence from Wagiman which suggests that the restriction was probably firstly against word-initial /r/, and that this restriction was later extended to root-initial /r/. Verb roots in Wagiman (44) synchronically show a variation between initial /l/ and initial /r/.

- | | | | |
|------|--------------------|------------------------|--------------------|
| (44) | Null prefix | Consonant-final prefix | Vowel-final prefix |
| | <i>Ø-le-na</i> | <i>ngan-le-na</i> | <i>nga-re-na</i> |
| | 3sg>3sg-spear-Past | 3sg>1sg-spear-Past | 1sg>3sg-spear-Past |

This variation is word-initial and Warray, this restr

3.4 The lamina

Although there variety in corres confined to morp

A large numb Nu reflexes, whe

- (45) **cang-ka*
cang-ka

- (46) **ceny* 'fis

- (47) **cak* 'ant

These corresponc

However, oth range of corresf following corresf

- (48) **thangku*
thangku

- (49) **tiw* 'liv

- (50) **thulu* 'co

The proto-phone presumably **th* proto-phoneme, quite different s

This variation is most directly explained as having arisen from restrictions against /r/ in word-initial and postconsonantal positions. However, unlike Jawoyn, Mangarrayi, and Warray, this restriction has not been extended to root-initial position.

3.4 The laminal stops

Although there is evidence for two reconstructable laminal series, there is considerable variety in correspondences involving laminal stops. These variations are almost entirely confined to morpheme-initial position, and chiefly word- and root-initial position.

A large number of correspondence sets have a palatal stop in all languages, except that Nu reflexes, where they exist, have a palatal glide:

- (45) **cang-ka-* 'to hunt': BGW *cang-ka-*, D *cang-ka-*, Ja *cang-ka-*, M *cang-ka-*, Ngai *cang-ka-*
- (46) **ceny* 'fish': BGW *ceny*, D *ceny*, Ngai *ceny*, Ngan *ceny*, R *ceny*
- (47) **cak* 'ant sp.': Ja *cak*, BGW *cak*, Ngan *caq*, Nu *yaak*

These correspondence sets are presumably to be reconstructed with *c.

However, other sets involve a range of segments, as summarised in Table 4. This is the range of correspondences found with verb roots (Alpher, Evans & Harvey this volume). The following correspondence sets illustrate this range in nominals.

- (48) **thangku* 'meat': Ngai *cangku*, Ngan *thangku*, Nu *lhangu*, R *tangu* (Ritharmgu *thaangu*)
- (49) **thiw* 'liver': BGW *-tiw*, Ngai *-ciwi*, Ngan *-thiw*, Uw *-ti*, W *-ci*
- (50) **thulu* 'corroboree': BGW *tule*, D *tulu*, Ngai *culu-we* 'to sing', Ngan *-thulu*, R *tulu*

Table 4: Reflexes of reconstructed */th/

pGN	*/th/
Bininj Gun-wok	/t/
Dalabon	/t/
Jawoyn	/c/
Mangarrayi	/c/
Ngalakgan	/c/
Ngandi	/th/
Nunggubuyu	/lh/
Rembarrnga	/t/
Uwinymil	/t/
Warray	/c/

The proto-phoneme to be reconstructed for the divergent set of correspondences in Table 4 is presumably **th*. It is not plausible to reconstruct this set with an apical stop as the proto-phoneme, since correspondence sets reflecting an apical stop involve a further and quite different set of reflexes.

- (51) **-Tak* 'pelvis': BGW *-tak* 'pelvis' ~ *rak-mo* 'hipbone, pelvis', D *rak-mo* 'hipbone', Ja *-rak* 'anus', Nu *riak* 'hipbone', W *-rek* 'anus, bottom'
- (52) **Tilq-* 'to paint': BGW *tilq-*, D *ritilq-*, Ja *ritilq-*, M *ril-*, W *ritilq-* (Wagiman *tilq*, Wardaman *ritilma*)
- (53) **Towk-* 'to burst': BGW *towk-* 'to go off [a gun]', D *rtowk-*, Ja *rtowk-*, M *rtawk*, R *rtow-* 'to go bang' (Wagiman *towk*)
- (54) **Tulq* 'branches used as camouflage': BGW *wulk* 'tree', D *wulq* 'tree', Ngan *ritulq*, Nu *rituul*, R *wulq* (Ritharnngu *rituulq*)

The **th* segment had a phonotactically restricted distribution in pGN, with nearly all examples being word-initial. The only widespread medial correspondence set is the verbal inchoative suffix **-thi* (Alpher, Evans & Harvey this volume), where **th* is morpheme-initial. It may also be noted that there is no evidence for a dental nasal **nh*.

There are some correspondence sets which show irregularity in the reflexes of **c* and **th*. These irregularities occur between, and even within, languages. Irregularities between languages are illustrated in the following examples.

- (55) **thenge* 'foot': BGW *-tenge*, D *tengv*, Ngan *theng*, R *canga* (Wardaman *-ceng*)
- (56) **culng* 'dust': BGW *-culng*, D *culng*, Ja *caculng*, R *turlng*
- (57) **cele* 'urine': BGW *-tile*, Ngai *cele*, R *cala*
- (58) **colang/corlang* 'ripe, cooked': BGW *corleng*, Ja *colang*, M *curlak*, Nu *tharang*, W *colong*

In (55), the weight of numbers favours the reconstruction of an initial **th*, but Rembarnga has a /c/ reflex. In (56), the weight of numbers favours the reconstruction of an initial **c*, but Rembarnga has a /t/ reflex. In (57), the Bininj Gun-wok /t/ and Rembarnga /c/ reflexes are incompatible with one another. In (58), the Bininj Gun-wok /c/ and Nunggubuyu /lh/ reflexes are incompatible with one another. In none of these correspondence sets does it appear likely that borrowing is a factor. Many of the forms show other phonological differences, in addition to the variation in the place of the initial coronal consonant. Bininj Gun-wok and Dalabon provide an example of language-internal inconsistency.

- (59) **-tharr* 'thigh, leg' (PPN **DHarra* 'thigh'): BGW *-lat*, D *tarru*, Ja *-carr*, W *-ce* (Kamu *cerri*, Malak-Malak *cet*, Mangele *cerri*) ?M *catpa*, ?Ngai *carrpic*, ?Ngan *tharrpic*, ?Nu *tharrpic*, ?R *tarrama* (?Wandarrang *yarrpic*)
- (60) **-cat-mo* 'thigh bone': BGW *-cat-mo* 'marrow in kangaroo thigh bone', D *cat-mo*, Ja *-cat-mo*, W *-cat-mu*

The form for 'thigh, leg' is presumably to be reconstructed with an initial **th*, particularly if the questionable forms are in fact reflexes. However, in Dalabon and Bininj Gun-wok, the compound form 'thigh bone' shows a /c/ reflex.

The reflexes of **c* and **th* are generally consistent, however, and consequently I reconstruct both laminal stops. The irregularities in reflexes are not entirely unexpected, particularly between /t/ and /c/ reflexes. There are phonetic motivations for irregular variation between /t/ and /c/ in prevocalic position, particularly word-initial position. These motivations come from the conflict between articulatory and perceptual considerations.

From an articulatory point of view, the favoured segments for stop replacement are those that are most similar to the original. If articulatory considerations are taken into account, the replacement of a palatal stop by a dental is more likely than the replacement of a dental by a palatal.

Heath (1978a: 11) notes that the replacement of a dental by a palatal is more likely than the replacement of a palatal by a dental in Nunggubuyu.

There are a number of examples of this in Nunggubuyu.

- (61) Verbs: **th* tell off' (A)
- (62) Verbal suffix
- (63) Body-part

Although there are a number of examples of **th* in Nunggubuyu, this could well be a distribution of intervocalically sibilant stops. Gunwinyguan languages have an undifferentiated dental/alveolar in languages where these positions by

I do not, however, presently be fully sets across Austronesian languages. An older contrast seems preferable supported. It may well be supported as well as well supported as

Nonetheless, it is no evident although there are no apical contrasts of alveolar vs retroflex. On the other hand, there are various laminal a

From an articulatory perspective, alveolars are the least complex and therefore most favoured segments generally (Hamilton 1996:8–10). From a perceptual perspective, palatal stops appear to have more robust release cues than other kinds of coronal stops and are therefore favoured over them when there is no preceding vowel (Hamilton 1996:12–16, 51). If articulatory considerations are favoured in a language, then this would lead to the replacement of palatal stops by alveolar stops. On the other hand, if perceptual considerations are favoured, then this would lead to the replacement of alveolar stops by palatal stops.

Heath (1978a:35–36) argues that the dentals in Ngandi and Nunggubuyu are reflexes of an original undifferentiated laminal stop **TH*. He proposes that the dental reflexes reflect an indirect diffusion, assimilating the Ngandi and Nunggubuyu phonological systems towards those of the Yolngu languages, where the dentals appear to have been contrastive segments for a considerable time. Under Heath's analysis, this diffusion is of some antiquity as the dentals in Nunggubuyu show the effects of lenition: **thh* > *th*, and **th* > *lh*.

There are a number of correspondence sets involving **th* which are of considerable antiquity.

- (61) Verbs: **tha* 'to stand up', **thi* 'to be standing', *tho* 'to chop', **thowi* 'to die', *thu* 'to tell off' (Alpher, Evans & Harvey this volume)
- (62) Verbal suffixes: **-thi* 'inchoative' (Alpher, Evans & Harvey this volume)
- (63) Body-part Nouns: **thala* 'mouth', **tharr* 'thigh', **thenge* 'foot', **thiw* 'liver'

Although there are many correspondence sets with initial **c*, they have a more skewed distribution across word classes: none are verb roots. At the same time there are hardly any examples of **th* in intervocalic position: **ngathlu* 'cycad' is the only plausible example, but this could well be a loan (it is also found in the Yolngu languages). The highly skewed distribution of evidently older forms in favour of **th* verb-root initially and **c* intervocalically suggests another hypothesis as to the history of laminal stops among the Gunwinyguan language. It suggests that the reflexes in Table 5 are the original reflexes of an undifferentiated laminal stop **TH* in word- and morpheme-initial position. In those languages where **TH* had apical or dental reflexes, the palatals were later introduced into these positions by loans and indirect diffusion.

I do not, however, adopt this hypothesis, for two reasons. Firstly, the hypothesis cannot presently be fully evaluated, because there has only been limited research on correspondence sets across Australia. It might be that further research will provide convincing examples of an older contrast between **c* and **th*. Secondly, given that this is an initial reconstruction, it seems preferable to set out all contrasts which appear, initially, to be reasonably well supported. It may be that further research will show that some of these contrasts are not as well supported as they might initially appear.

Nonetheless, it must be recognised that the contrast between the two laminal stops is not as well supported as other similar contrasts, such as the contrast between the apicals. There is no evident alternative hypothesis to an original contrast between the apicals in pGN, though there are some irregularities in the reflexes of this contrast. It may be that there was no apical contrast in pGN, but if so, an explanation for the reasonably consistent distribution of alveolar vs retroflex reflexes remains to be provided. With the laminal contrast, on the other hand, there is a plausible alternative hypothesis which explains the distribution of the various laminal and apical reflexes.

3.5 The glottal stop

A phonemic glottal stop is an areal feature of the languages of the Top End. It occurs in all of the Gunwinyguan languages, except Nungubuyu, and in the Yolngu languages. In all of the languages in which it occurs glottal stop has a very restricted distribution both phonologically and morphologically. It occurs only in syllable-final position, and is usually found at a morphological boundary. Its commonest position of occurrence is as the final segment in coverb roots. The majority of coverb roots, which would otherwise be sonorant-final, have glottal stop as their final segment. Coverb roots are generally consistent in either having or not having a glottal stop as their final segment.

- (64) **ca(p)pul*- 'to smoke (tr): D *cappul*-, Ja *cappul*-, M *capul*-, U_w *capul*-, W *capul*- (Wagiman *tapulp* ~ *tappul*, Wardaman *capulma*)
- (65) **ngallrrq*- 'out/up': BGW *ngarrq*- 'to get out', Ngai *ngalq*- 'to climb/go up', Ngai *ngalq*- 'to go up', R *ngalq*- 'to climb/go up', W *ngalq*- 'to come/get out/up'
- (66) **corrng*- 'to straighten, to stretch': BGW *corrng*-, D *corrng*-, Ja *corrng*-, M *carrng*-, Ngai *corrng*-, R *corrng*-, W *cung*- (Wagiman *corrng*-)
- (67) **mirrngq*- 'to be hot': BGW *mirrq*-, D *mirrngmirrng*-, Ja *mirrngq*-, W *mirrngq*- (Kamu *mirrngq*, Wagiman *mirrngq*)

Given the consistency and unpredictability of the contrast between /q/ and Ø finally in coverb roots, **q* must be reconstructed as a contrastive segment within the inventory of pGN. Nonetheless, its distribution, both synchronic and diachronic, is evidently very different from that of other segments in the inventory. Following Trubetzkoy (1969:275–279), the glottal stop can be analysed as a boundary signal, both synchronically and apparently in pGN.

This boundary-signal function relates to a derivational function that appears to be reconstructable for glottal stop. In a number of GN languages, the glottal stop appears in verbalising compounds, suffixed to the root which is being verbalised.

MANGARRAYI

- (a) Transitivity of non-verbal predicate: *rranginy* 'clean', *rranginy-q-ma* 'to make clean' (Merlan 1982:184);
- (b) Coverbalisation of loans: *paynim* 'find [Kriol]', *paynim-q-ma* 'to find' (Merlan 1982:129);

Paradigm of (-)*ma*: (-)*ma-ny* 'pp', (-)*ma-ri* 'pl', (-)*ma-Ø* 'PRES' [also functions as independent verb meaning 'to do, to say']

BININJ GUN-WOK

- (a) Call someone by kin term X: *cakerr* 'younger brother', *cakerr-q-me* 'call someone younger brother'
- (b) Transitivity of non-verbal predicate: *kele* 'fear', *kele-q-me* 'to frighten someone'
- (c) Coverbalisation of loans: *worrigin* 'work [Kriol/English]', *workim-q-me* 'to work [Gundjimi dialect of Bininj Gun-wok]'
- (d) Coverbalisation of phrases: *kak* 'night', *poken* 'two', *nga-kak-poken-q-me* 'I will stay two nights'

Paradigm of -*me*: -*mi-ny* 'pp', -*me-ni* 'pl', -*me-n* 'NP' [otherwise functions as inchoative]

NGALAKGAN

- (a) Call so
(b) Coverb
(c) Coverb
(d) Coverb
- Paradigm of

NGANDI

- (a) Call so
call so
(b) Coverb
Harvey
- Paradigm of

REMBARRNGA

- (a) Coverb
someh
(b) Coverb
paring
- Paradigm of
Paradigm of
Paradigm of

WARRAY

- (a) Transi
someon
(b) Coverb
- Paradigm of

There are two re
verbalised, rath
auxiliaries form
auxiliaries other
coverb root and
suffixed to the c
In a number
been an import
common to all i
complex materi
material is unus
which are themse

NGALAKGAN

- (a) Call someone by kin term X: *mokkol* 'father', *mokkol-q* 'to call someone father'
 - (b) Coverbalisation of loans: *cartim* 'start', *cartim-q-mi*
 - (c) Coverbalisation of verbs: *yini* 'to do, to say', *yini-q-mi* 'to do thus, to say'
 - (d) Coverbalisation of non-verbal predicate: *yukka* 'front', *yukka-q-mi* 'to go in front'
- Paradigm of *-mi*: *-mi-ny* 'PP', *-me-riny* ~ *-mi-yiny* 'PI', *-Ø* 'PRES' [occurs as an auxiliary]

NGANDI

- (a) Call someone by kin term X: *yalngunyca* 'daughter's child', *yalngunyca-q-thu* 'to call someone daughter's child' (Heath 1978b:41)
 - (b) Coverbalisation of verbs: see discussion of **ya-ma* 'to tell off' in Alpher, Evans and Harvey
- Paradigm of *-thu*: *-thi* 'PP', *-thu-ngi* 'PI', *-thu-ng* 'FUT' [occurs as an auxiliary]

REMBARRNGA

- (a) Coverbalisation of non-verbal predicates: *kiyang* 'long', *kiyang-q-mi* 'to make something long' (McKay 1975:98)
 - (b) Coverbalisation of verbs: *paringanv* 'hang up-Infinitive', *paringanv-q-ka* ~ *paringanv-q-wa* 'to cause to be hanging up' (McKay 1975:159-162)
- Paradigm of *-mi*: *-mi-ny* 'PP', *-mvrn* 'PI', *-Ø* 'PRES' [occurs as an auxiliary]
- Paradigm of *-ka*: *-ka-nginy* 'PP', *-ka-niny* 'PI', *-ka-n* 'PRES' [also means 'to take']
- Paradigm of *-wa*: *-wa-Ø* 'PP', *-wa-niny* 'PI', *-wa-n* 'PRES' [occurs as an auxiliary]

WARRAY

- (a) Transitivity of non-verbal predicate: *lurra* 'back', *lurra-q-ma* 'to bring someone/thing back.'
 - (b) Coverbalisation of loans: *ropim* 'rob [Kriol/English]', *ropim-q-ma* 'to rob'
- Paradigm of *-ma*: *-mi-ny* 'PP', *-ma-rl-any* 'PI', *-ma-rl* 'NP' [occurs as an auxiliary]

There are two reasons for reconstructing the glottal as a suffix **-q* to the root which is being verbalised, rather than as an initial segment of the verbalising auxiliary. Firstly, the auxiliaries form a disparate set, which do not derive from a common ancestor, and all of the auxiliaries otherwise appear without the glottal stop. Secondly, in Mangarrayi, when the coverb root and auxiliary appear as independent phonological words, the glottal stop is suffixed to the coverb root and not attached to the auxiliary.

In a number of its uses, the **-q* suffix has a transitivity function, and this may have been an important component of the original meaning of the suffix. The one element common to all its uses is that it derives a coverb root, in some cases from morphologically complex material. This ability to derive a coverb root from morphologically complex material is unusual. Most morphemes which derive root-level forms attach only to items which are themselves root-level morphemes.

The historical relation between this derivational function of the glottal stop and its appearance as the final segment of many coverb roots is uncertain. Coverb roots show distinctive phonotactic patternings in all languages which have this part-of-speech category (see Merlan 1982:126–128 for a discussion of Mangarrayi — the general issues raised here are applicable to all languages with coverb roots).

It may be that in some very early proto-form, preceding pGN, the coverb class was a marginal part-of-speech class, derived by the suffixation of the glottal stop, a segment which did not otherwise appear in the inventory of the language. As the coverb class became more significant, the derivational function of the glottal stop was lost in more and more cases. Alternatively, it may be that the common appearance of the glottal stop as the final segment of coverb roots is to be reconstructed as a part of the generally marked phonotactics of the coverb root class. At some stage in pGN, speakers adapted this particular distinctive pattern as a morphological derivation.

Whatever the relationship, the glottal stop can be reconstructed for both functions in pGN. As with some other proto-phenemes, there are some examples of irregular correspondences in coverbs, involving the glottal stop. In some sets, it alternates with a dorsal or labial stop, or with \emptyset .

- (68) **pirrq*- 'to clean': BGW *pirrp*, D *pirrq*, Ja *pirrq*, W *pirrq*-
 (69) **Lowkq*- 'to prise off': D *rlowk*-, Ja *rlowk*-, M *rlowq*-
 (70) **purrrq*- 'to slap one's thighs': BGW *purrrq*- 'to clap', Ja *purrrq*-, M *purrrpurrrq*- 'to clap hands, slap time', W *purrrq*- (Kamu *pul*, Wagiman *purrrq*, Wardaman *purrrma* 'to beat leg')

This does not reflect a general instability in the diachrony of the glottal stop, but rather isolated irregularities in particular languages.

The situation with glottal stop finally in nominal roots is very different from that of coverb roots. Correspondence sets involving a final glottal stop in nominal roots show inconsistency across the GN languages. In considering the status of glottal stop in nominal roots, it is firstly necessary to take note of a significant areal division in the patterning of the glottal stop. The western bloc of GN languages with a phonemic glottal stop: Jawoyn, Mangarrayi, and Warray do not permit it finally in nominal roots. The eastern languages, on the other hand, do permit glottal stop finally in nominal roots, and it shows a reasonably high frequency of occurrence in this position. However, even among the eastern languages, the correspondence sets show great inconsistency. Consider the pairs in Table 5 from Ngalakgan and Ngandi.

Table 5: Inconsistency in Ngalakgan–Ngandi /q/ correspondence sets

	Ngalakgan	Ngandi	
\emptyset : q	<i>parnarr</i>	<i>parnarrq</i>	'Owenia vernicosa'
q: q	<i>pirrq</i>	<i>pirrq</i>	'sharp point'
k: q	<i>currerk</i>	<i>currerrq</i>	'bowerbird'
q: k	<i>marrawq</i>	<i>marrawk</i>	'friarbird'

As illustrated, m
 \emptyset . Further, thes
 randomly involve

- (71) **parnarr*
 Nu *parna*

- (72) **currerk*
currerrq,
currerr)

The consistency (c
 and * \emptyset should re
 reconstructed, on
 way of explainin
 languages, consis

The glottal sto
 from the proto-fc
 of the glottal stop
 making function
 in this function t
 to sonorant-final
 glottal stops are
 unsurprising. As

Therefore, I d
 only cases where
 languages show e
 being reconstruct
 complex interact
 1991). This reco

3.6 The mid v

There is good

- (73) **peremelh*
 'to vomit'

- (74) **tho*- 'to
 give'

The widespread
 diffusion of the
 positing **e* and *
 degree of consist

As illustrated, many correspondence sets involving the glottal stop also involve either /k/ or Ø. Further, these correspondence sets consistently involve either /k/ or Ø. They do not randomly involve both /k/ and Ø.

(71) **parnarr* 'Owenia vernicosa': Ja *parnarr*, M *parnarr*, Ngal *parnarr*, Ngal *parnarrq*, Nu *parnarr*, ?R *ngarnarr* (Marra, Wardaman, Wamdararrang *parnarr*)

(72) **currerrk* 'bowerbird': D *currerrk*, Ja *currerrk*, M *currerrkmin*, Ngal *currerrk*, Ngal *currerrq*, W *cuyek* (Kungarakany *cororrkme*, Ritharrngu *curirrq*, Wamdararrang *curirrr*)

The consistency of /k/ or Ø, as opposed to the inconsistency of the glottal stop, argues that *k and *Ø should respectively be reconstructed, and not the glottal stop. If the glottal stop were reconstructed, on the basis of forms in particular eastern languages, then there would be no way of explaining why the other languages, both other eastern languages and the western languages, consistently show either /k/ or Ø.

The glottal stop appearing finally in nominal roots in the eastern languages does not derive from the proto-forms. Rather, it derives from an extension of the boundary marking function of the glottal stop. As we have seen, the glottal stop can be reconstructed with a boundary-marking function for the coverb class. The eastern languages have extended the glottal stop in this function to the other major open class: the nominals. The glottal stop has been added to sonorant-final roots in some cases. It has replaced /k/ in some cases. The dorsal and glottal stops are perceptually very similar as codas, and substitutions between the two are unsurprising. As we have seen, this substitution is also found with coverb roots (70).

Therefore, I do not, in general, reconstruct the glottal stop finally in nominal roots. The only cases where I do reconstruct it are when correspondence sets involving only the eastern languages show a consistent final glottal stop. There are also a few examples of glottal stop being reconstructable at reduplication boundaries. Synchronically, the glottal stop shows a complex interaction with the phonology of reduplication in most GN languages (Harvey 1991). This reconstruction does not examine reduplication.

3.6 The mid vowels

There is good evidence that the mid vowels are to be reconstructed for pGN.

(73) **peremelk* 'shoulderblade', **ngerq*- 'to breathe', **ngey* 'name', **rerr* 'camp', **werq*- 'to vomit'

(74) **tho*- 'to strike', **colang* 'ripe', **corrng*- 'to stretch', **not*- 'to be quiet', **wo*- 'to give'

The widespread distribution of these correspondence sets, and the relative resistance to diffusion of the lexical domains to which they belong, provide reasonable evidence for positing *e and *o as contrastive pGN phonemes. This viewpoint is supported by the high degree of consistency of mid-vowel correspondences in cognate sets.

4 Language specific sound changes

4.1 Biniŋ Gun-Wok

*rr > l / _ #

*-purr 'hand' > -pit, *carr 'thigh' > -tat, *mumurr 'fly sp.' > mumut, *rnorr 'stinking' > nut, *terr 'camp' > ret, *yarr 'yabby' > yat

Exceptions

*karnamarr 'black cockatoo' > karnamarr, *calarr 'centipede' > calarr, *cenkererr 'grevillea sp.' > cenkererr, *cularr 'goanna sp.' > cularr, *warppurr 'pubic tassel' > warppurr, *yipalirr 'dillybag' > yipalirr, *ngal-yurr 'lightning' > al-yurr 'Leichhardt's grasshopper (signals lightning)'

This change results from the elimination of an earlier morphophonemic alternation between /r/ and /l/ root-finally. Historically the /l/ final forms occurred when the root was compounded, and the /r/ final forms elsewhere. This alternation is still preserved in Jawoyn (-carr/cat- 'thigh', -rnorr/rnot- 'stinking', rterr/rlet- 'camp'). It can also be reconstructed for Warray, though it is now obscured by other sound changes (-ce/cat- 'thigh'). It may be noted that the alternation appears to have been restricted to monosyllabic roots, allowing for the reduplicated form *mumurr 'fly'. The motivations for this restriction remain to be established.

*r > Ø / _ C, a_a

*parang 'cheeky' > pang, *paporong 'wallaby sp.' > patpong, *pork 'track' > -pok, *carang 'dreaming' > cang, *corq- 'to cough' > coq-, *merk 'tick' > mek, *-ngerrg 'pouch' > -ngeng, *ngerrg- 'to breathe' > ngeg-, *war-pu- 'to sing (tr)' > wa-pu-, *werq- 'to vomit' > we(r)q-

Preservation of /r/

*rtorok 'tree sp.' > torok, *caingerecngerec 'green tree frog' > caingerecngerec, *cenkererr 'grevillea sp.' > cenkererr, *waral 'spirit' > waral, *waran 'snake sp.' > waran, *warow- 'to toss' > warow-, *wirik 'possum' > wi/wirik

Synchronically, the realisation patterns of the apical vocoid /r/ present considerable complexities in Biniŋ Gun-wok (Evans 2003). There is variation in both the appearance and the localisation of this segment. For example, Evans (2003) states that he has recorded weg- 'to vomit' as [req- ~ weq- ~ werq-], and berk 'death adder' as [brek ~ berek ~ bek-]. Evans proposes that these patterns are to be understood in terms of /r/ attaching to the syllable rather than the skeleton. Evans also notes that younger speakers produce fewer /r/ forms than older speakers. Further, Evans (2003) states that there is a correspondence between initial /r/ in the eastern dialects of Biniŋ Gun-wok and initial /y/ in the western dialects. Overall it appears that there has been a drift towards the elimination of /r/ in certain positions in Biniŋ Gun-wok. A similar drift is evident in Warray (§4.7).

*a > e

*patca 'to hit' > pacece, *parla 'vagina' > parte, *canak 'yam sp.' > canek, *kanam 'ear' > -kanem, *karra 'shin' > karre, *punykarrang 'wet season' > pangkerreng, *-kuyang 'tall' > -kuyeng, *col/rang 'ripe' > corleng, *morna 'to carry on shoulder' > morre-ma-, *war(a) 'bad' > warre, *welang 'successful hunter' > weleng

This change occurs dorsal coda. The

*karrang 'mot
carna 'saliva',

There is also one e
*thulu 'corrobo

4.2 Dalabon

Shift of unstressed

*partrii 'march
*karnreken 'd
karrpvrk, *kuu
canvk, *thenge
'paw', *marne
walvm, *yakk
yekky

This change is cor
remain to be esta
vowel is of necess

*ngerrg 'heart' >

4.3 Jawoyn

Lenition of Media

*-pa 'collective
*pirii 'beeswax
'dream', > puw
*kariap 'spider
*kurrang(yi) 'c
cawiny, *cartu
'flover insect'
cowong, *cuket
'friar bird' >
*mogurrgur 'c
sp.' > warawic,

Exceptions

*pa(p)pa 'siblin
*karterre 'bee
*karrartaria 'b
cateie, *cacak
coolamon' > m

This change occurs in unstressed, and usually final, syllables which are either open or have a dorsal coda. There are a number of cases where it has not applied.

*karrang 'mother' > karrang, *kut/rtang(yi) 'clever fellow' > kurtangyi, *carnarr > carna 'saliva', *cangarak > cangarak 'chin'

There is also one example of it applying to a /u/ vowel.

*thulu 'corroboree' > tule

4.2 Dalabon

Shift of unstressed [-back] vowels to high central *v*.

*partri 'marchfly' > partrv 'mosquito', *karta 'maybe' > kartv, *kanam 'ear' > kanvm, *karnrteken 'dingo' > karnrvkvn, *kanga 'belly' > kangv, *karpil/rlk/q 'yam sp.' > karpvrlk, *kurrumara 'corpse' > kurrmvra, *cala 'mouth' > talv, *canak 'yam sp.' > canvk, *thenge 'foot' > tengv, *cirrpili 'bony bream' > cirrpvlv, *langa 'hand' > langv 'paw', *marne- 'benefactive' > marnv-, *rangem 'male' > rangvm, *walam 'south' > walvm, *yakki 'nothing' > yakkv, *yappanq 'two' > yappvinq, *yekke 'cold weather' > yekkv

This change is commonly attested in Dalabon. The precise factors conditioning the reduction remain to be established. There is one example of reduction in a monosyllable, where the vowel is of necessity stressed.

*ngerq 'heart' > ngvrk

4.3 Jawoyn

Lenition of Medial Singleton Stops

*-pa 'collective' > -wa, *-pa 'perlative' > -pa/-wa, *parraca 'kookaburra' > parraya, *piri 'beeswax' > piri, *picip- 'to squeeze' > piyip-, *purta 'plant sp.' > pura, *pukurr 'dream' > puwurr, *punupun 'file snake' > punuwun, *rtewiew 'dollar bird' > rteworewo, *kartap 'spider' > karap, *kiik- 'to tickle' > kirik-, *kicak 'some/everything' > kiyak, *kurtang(yi) 'clever fellow' > kurang, *kurtuk 'black' > kurukkuruk, *capiny 'foreskin' > cawiny, *cartuk 'red apple' > caruk, *cakorlk 'gudgeon sp.' > caworlk, *carrapuyyuy 'floater insect' > carrawuyyuy, *cirrpiyuk 'whistleduck' > cirrwiyyuk, *cokong 'aunt' > cowong, *cukerre 'female black kangaroo' > cuwerre, *Lagi 'to throw' > rlayi, *martawk 'frier bird' > marawk, *martayin 'ceremony' > marayin, *melp- 'mud' > melwe, *mogurgurr 'clan' > mowurrwurr, *warracan 'turtle sp.' > warrayan, *wartapic 'tree sp.' > warawic, *war-pu- 'to sing (tr)' > war-wu-, *wocal 'black plum' > woyal

Exceptions

*pa(p)pa 'sibling' > papa, *pucuq- 'to twist' > pucuq-, *Tapi 'block tobacco' > rtapi, *karterre 'bee sp.' > karterre, *kartukartu 'women (avoidance term)' > kartukartu, *karrartarta 'breastplate' > karrartarta, *cipak 'fish' > capak-, *cateyey 'grasshopper' > catete, *cacak 'palm sp.' > cacak, *cotet 'nail-tailed wallaby' > cotet, *martu 'deep coolamon' > martu, *malawiriwiri 'hawk sp.' > malawiriwiri, *nga(c)ci- 'to sneeze' >

*mnorr 'stinking' >

calarr, *cenkererr
rr 'pubic tassel' >
-yurr 'Leichhardt's'

alternation between
then the root was
reserved in Jawoyn
to be reconstructed
(high'). It may be
roots, allowing for
ion remain to be

k 'track' > -pok,
> mek, *ngerng
> wa-pu-, *werq-

catngerecngerec,
n 'snake sp.' >

ent considerable
appearance and
as recorded weq-
k ~ berk ~ bek].
attaching to the
fewer /r/ forms
evidence between
western dialects.
ertain positions

, *kanam 'ear'
pangkerreng,
on shoulder' >

ngaci, **ngarier* 'fishing line' > *ngarier*, **walapi* 'fishnet' > *walapi*, **yipalirr* 'dillybag' > *yipalirr*

The lenition appears to have taken place in the environment of a preceding sonorant and a following vowel. There do not appear to be any phonological factors differentiating the group of correspondence sets which involve lenition from the set of correspondences which do not involve lenition. The fact that the group of lenition sets involves a larger number of forms and a wider range of lexical domains argues that it represents an inherited correspondence set in Jawoyn. Nearly all terms in the other group of correspondence sets refer to natural species or material objects, which suggests that this correspondence has arisen through the diffusion of these terms into Jawoyn.

4.4 Mangarrayi

*Nasal > Stop/_#

This change is only attested in a small number of vocabulary items.

**pam* 'head' > *pap*, **polo/ung* 'rainbow serpent' > *polokpan*, **karnpany* 'palm sp.' > *karnpac*, **calng* 'spinfex' > *calk*, *-*colang* 'ripe' > *-*curlak*, **mariny* 'girl' > *-*marric*, **wam* 'sugarbag' > *wap*

However, it is attested in the verbal paradigms. As such, it would appear to be an old change within Mangarrayi.

**po-m* 'hit-PP' > *pu-P*, **wa-m* 'follow-PP' > *wa-P*, **thu-ny* 'tell off-PP' > *cu-C*, **thu-ng* 'tell off-NP' > *cu-k*

The nasal-stop correspondence is not attested with apicals, and this includes the verbal paradigms. In a number of these paradigms, a Non-Past suffix *-*n* can be reconstructed. This reconstructed *-*n* corresponds to /n/ in Mangarrayi (**pu-n* 'hit-NP' > *pu-n*, **wa-n* 'follow-NP' > *wa-n* 'visit-NP' Alpher, Evans and Harvey this volume).

The Mid Vowels

The mid vowels do not occur in bound morphemes, personal pronouns, deictics, or verb roots in Mangarrayi. They are found in nominal roots and coverb roots and a few particles and interjections (Merlan 1982:181). Even within these open lexical classes, which do permit the mid vowels, there are a number of correspondence sets where Mangarrayi has a high or a low vowel as a reflex of a historical mid vowel.

**e* > *i*

**Ieq* 'to pinch' > *riq*, **kenykeny* 'skink sp.' > *kingykin*, **Leppal* 'spotted bream' > *rlpal*, **lerrq* 'to light a fire' > *rlirr* 'to burn too much', **melang* 'light' > *mling*, **mel/rleny* > *mliriny* 'nose', **mol/rlerreny* > *mliririny* 'large bones of arm and leg', **ngerq* 'to breathe' > *ngirq*, **welek* 'to swallow' > *wirlig*

**e* > *e*

**Iewew* 'dollar bird' > *rieworewan*, **curretk* 'bowerbird' > *curretknin*, **merlmerlini* 'prickle heat stick' > *merlmerlinin*, **men* 'to watch' > *men-*, **ngalelek* 'white corella' > *ngelele*

**o* > *a*

**rowk-* 'to buy
'back' > *-*kan*
'stinking' > *m*

**o* > *u*

**po/yq* > *pu*
bones of arm

**o* > *o*

**polo/ung* 'ra
congo, **corl*
**mornrie* 'pow

4.5 Ngandi

Fortition of **y* >

This change is or

**pu-y* 'smell' >

However, **ngey*
(it occurs only in
old. On initial ex
accordance with
reasons for not
involving Ngandi

(75)

**palkkia*
sp. (Ng
Ngal, N
Ngan),
(D, Ngag

If a developmen
correspondence
**ngey* 'name', th
remains the seco
lenition is not o
which is entirely
nominals and no
that such a leni
reason why it sh

On the othe
Gunwinyguan la
morpheme-final
forms of **rr* fin

*o > a

*rtowk- 'to burst' > riawk, ?*rtor 'viscera' > rtara 'stomach', ?*korraq- > karrq-, *korlo 'back' > -karla, *corring- 'to stretch' > carrng-, *Lorrk 'to be cold' > rlarrk, *Norr 'stinking' > rnatnarr

*o > u

?*poyq- > puyq- 'to show', -colang 'ripe' > -curlak, *mol/rlerreny > mulirriny 'large bones of arm and leg', *No-ma- 'to smell (tr)' > rnuma

*o > o

*polo/ung 'rainbow' > polokpan, *polyong 'to camp out' > polyong, *conggo 'bee sp.' > conggo, *corlwana 'female kangaroo' > corlwana, *Lowk/q 'to prise off' > rlowq-, *mornrte 'power/poison' > mornrte, *morropporl 'catfish' > morropporl

4.5 Ngandi

Fortition of *y > c

This change is only attested in three correspondence sets.

*puy- 'smell' > puc-, *koy(ng) 'soup' > koc, *-ngey 'name' > ngic-

However, *ngey 'name' has a very widespread distribution, and *puy- 'smell' is discontinuous (it occurs only in Ngandi and Warray). Therefore the correspondence may be analysed as old. On initial examination, it might appear that a lenition of *c > y/_+ should be posited in accordance with the usual historical preference for lenition. There are however at least two reasons for not positing this course of development. Firstly, there are a number of sets involving Ngandi, which show /c/ - /c/ correspondences:

- (75) *palkkic 'wallaby' (D, M, Ngan, R), *pirtic*- 'nearly' (Ngal, Ngan, R), *Turic 'bird sp.' (Ngal, Ngan), *mic 'louse' (Ngal, Ngan, Nu, R), *monic- 'secretly' (BGW, Ngal, Ngan, R), *muc 'rainbow' (BGW, Ngal, Ngan [Rith]), *wac- 'both' (Ngal, Ngan), *werec* 'rainbow fish' (D, Ja, Ngan, R [Rith]), *wor(o)cwor(o)c 'cockroach' (D, Ngan [Rith])

If a development of *c > y/_+ is posited, then it would be necessary to account for these correspondence sets. Given that these correspondence sets are less widespread than that of *ngey 'name', they could be accounted for in terms of borrowing. However, there still remains the second reason for not positing a lenition: its lack of plausibility. Morpheme-final lenition is not otherwise an attested process in any Gunwinyguan language. It is a process which is entirely contrary to their preference for roots from the two major open classes, nominals and non-finite verbs, to have closed final syllables. Further, even if it was allowed that such a lenition had exceptionally taken place, there does not appear to be any good reason why it should have been limited to the palatal stop.

On the other hand, fortitions in morpheme-final position are attested among the Gunwinyguan languages. Jawoyn, Bininj Gun-wok, and Warray show a fortition of *rr > t in morpheme-final position. As discussed in (§4.1), this fortition originated in the compounded forms of *rr final roots, and in Bininj Gun-wok it then spread to the free forms. The roots

*yipalirr 'dillybag'

ng sonorant and a
differentiating the
dissondences which
larger number of
nents an inherited
irrespondence sets
irrespondence has

any 'palm sp.' >
'girl' > -marric,

be an old change

> cu-c, *thu-ng

cludes the verbal
be reconstructed.

> pu-n, *wa-n

deictics, or verb
l a few particles
asses, which do
angarrayi has a

otted bream' >
light' > miling,
arm and leg',

1, *merlmerlmi
white corella' >

puc 'smell' and *ngic* 'name' only occur as compound forms in Ngandi. As such the Ngandi fortition is entirely parallel to the fortition found in Jawoyn, Bining Gun-wok, and Warray.

4.6 Rembarrnga

Reduction of unstressed vowels.

**partti* 'marchfly' > *partw(q)*, **pe/irke/iq* 'green plum' > *purkv/iq*, **karnreken* 'dingo' > *karnrvkvvn*, **kingkirn* 'catfish sp.' > *kvrnqkvrrnq*, **kutiapiriq* 'bird sp.' > *kutappvrlq*, **cliwirn* 'Capparis umbonata' > *clivwvrn*, **Langa* 'hand' > *langv*, **malawitiwiti* 'hawk' > *malawvrvwvrv*, **ngurniq* 'firestick' > *ngurnvq*

This change appears to be less common in Rembarrnga, than in the neighbouring Dalabon. As with Dalabon, the factors conditioning the reduction remain to be established.

Vowel Breaking

There are a number of examples in Rembarrnga where vowels have disyllabic Vy/wV reflexes.

**pon* 'Dalabon' > *puwan*, **kony* 'kangaroo (generic)' > *kuweny*, *kog* 'eye' > *kuwaq*, **kom* 'back of neck' > *kuwam*, **thelng* 'tongue' > *tiyalng*, **me/ok* 'sore' > *moyok*, **ngo/urk* 'rib' > *ngorrok* 'rib part', **nguk* 'guts' > *nguwag*

**po-Ø* 'hit-PP' > *pu-wa*, **wa-ny* 'follow-PP' > *wawi-ny*, **me-Ø* 'get-PP' > *mi-ya*, **me-n-iny* 'become-PI' > *miya-n-iny*, **me-n* 'become-NP' > *miya-n-a* 'become-FUT', **Ne-ng-iny* 'cook-PI' > *niya-nginy*, **Ne-ng* 'cook-NP' > *niya-ng-a-ra* 'cook-FUT'
nga 'hear' > *ngawa*

This vowel breaking process appears to have been motivated by two phonological preferences: the avoidance of monosyllabic word forms, and the avoidance of mid vowels. Consequently, monosyllabic words with a mid vowel were most likely to be affected by this process. Monosyllabic forms involving the high vowels or the low vowel were not generally affected. Neither were polysyllabic forms generally affected.

4.7 Warray

Deletion of Liquids in coda positions

Warray shows a general pattern of deletion of liquids in coda positions. The tap /r/ and the laterals /l/ and /rl/ show slightly different deletion patterns. The tap is deleted on a more extensive scale.

*Vrr > *e/ _C*, #

**parrparr* 'to shake' > *pepe*, **pemarrk* 'dew' > *pinek*, **calarr* 'centipede' > *cale*, **tharr* 'thigh' > *-ce*, **currerrk* 'bowerbird' > *cuyek*, **karnamarr* 'black cockatoo' > *kurneme*, **kariarr* 'dillybag' > *karle*, **karrk* 'spider web' > *kek*, **ken/morr* 'mucus' > *kine*, **kernng(e)* 'new' > *-keng*, **me/irrk* 'chest' > *-mek*, **ngarrk* 'I, me' > *ngek*, **rerr* 'camp' > *rle*, **warlarrk* 'to wash' > *wurlek*, **warlppurr* 'pubic tassel' > *warlpepe*, **wetperr* 'yam sp.' > *wipe*, **wurk* 'fire' > *wek*

Exceptions

**cirrk* 'woom' > *cirrk*
 **ngat/rerr* 'if' > *ngat/rerr*

This change has coronal vowels t u/ > /e/. The s
 **corrrng* 'to stre
 (the /u/ vowel re
 by a more limite

*Lateral > Ø/ _C
 **peremelk* 'sh
kupam, **-can*
 glider' > *rlam*
wekmu, **yilk*

Elimination of /r/

The apical ap
 Gun-wok (§4.1),
 positions and bet

*r > Ø

**peremelk* 'sh
rtiiri, **karack*

*r > y

**-Tor* 'heart' >

*r > /rl/

**parang* 'chee
 ?**mork* 'grub,
wurl

Preservation of /r/

**puran* 'boom
 **ngerrg* 'to bre

Vowel raising and

Warray shows

*a > e

**-pa* 'collectiv

*a > i

**-kanam* 'ear'

Exceptions

**cirrk* 'woomera' > *cirrk*, **cirrng*- 'to sneeze' > *cirnga*-, **corrng*- 'to stretch' > *cung*-, **ngat/rterr* 'fishing line' > *ngiterr*, **yawarr*- 'to rustle' > *yawarr*-

This change has two components. One component involves an assimilation of the non-coronal vowels to a following [+coronal] /r/ in coda position, thereby producing /e/ (ie /a, o, u/ > /e/). The second component is deletion of /r/ in coda position. The development of **corrng*- 'to stretch' > *cung*- is irregular. It shows the second component, but not the first (the /u/ vowel reflects vowel raising → C following). The deletion of coda /r/ is paralleled by a more limited deletion of the laterals in coda position.

*Lateral > Ø/_C[syll]

**peremelk* 'shoulder blade' > -*pimek*, **pilkpilk* 'galah' > *pekpek*, **kul(p)pam* 'lots' > *kupam*, **-camkalk* 'jaw' > -*camk/ngak*, **conpolk* 'rotten' > *conpok*, **Lampalk* 'sugar glider' > *rlambak*, **morkl*- 'secretly' > *mok*-, **-walk* 'little' > -*wak*, **welkmo* 'firestick' > *wekmu*, **yilk* > -*yik* 'alive'

Elimination of /r/

The apical approximant /r/ shows a highly irregular pattern of development. As in Bininj Gun-wok (§4.1), this pattern appears to reflect a drift towards the elimination of /r/ in coda positions and between identical vowels.

*r > Ø

**peremelk* 'shoulder blade' > -*pimek*, **purq*- 'to swell' > *puq*-, **Tiqitiri(ny)*- 'to itch' > *rtiit*-, **-karackarac* 'clean' > -*kackac*, **werq*- 'to vomit' > *weq*-

*r > y

**-Tor* 'heart' > -*toy*, **curerrk* 'bowerbird' > *cuyek*

*r > l/r

parang* 'cheeky' > *pulang*, **pura*- 'to make' > *pula*-, **Tum-mira* 'tears' > *rtum-mila*, ?mork* 'grub, fly' > *ngukmurk* 'blowfly' [ʔnguk 'guts, faeces' + **mork*], ?**wor* 'urine' > *wurl*

Preservation of /r/

**puran* 'boomerang' > *puran*, **Tark* 'white' > *rturk*, **ngar* 'hair' > -*ngar* 'fur, body hair', **ngerq*- 'to breathe' > *nge/irq*-, **ngoro* 'ankle' > -*nguru*

Vowel raising and fronting

Warray shows a complicated set of vowel raisings.

*a > e

**-pa* 'collective' > -*pa/-pe*, **-Tak* 'pelvis' > -*riek* 'anus, bottom'

*a > i

**-kanam* 'ear' > -*kanim*, **-thala* 'mouth' > -*cili*, **wak* 'water' > *wik*