35 *Where have all the onsets gone? Initial consonant loss in Australian Aboriginal languages*

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1. The question[1]

The unmarked or most natural syllable type in spoken languages is thought to be CV, a single consonant, the onset of the syllable, followed by a vowel, the nucleus of the syllable (see Jakobson 1962:526). In many Australian Aboriginal languages however, consonants have been lost from the beginning of words, leaving vowel-initial syllables, as schematised in (1).

(1) Initial C-loss: $*C > \emptyset \; / \; _{Word}[\_$

The basic question addressed in this paper is why consonants have been lost from the beginning of words in so many Australian languages. What conditioning factors give rise to vowel-initial words?

1 This is a revised and shortened version of a talk first given at the 1995 Australian Linguistic Society Meeting at The Australian National University, Canberra, and later at the Linguistic Society of America Annual Meeting in San Diego, January 1996, and the Phonetics and Historical Linguistics Mini-Symposium at the University of California, Berkeley, April 1996. I am grateful to the editors, especially Barry Alpher, and to Ian Maddieson and John Ohala for discussion and comments on earlier drafts. This research was supported by an Australian Research Council large grant and by a Stanford Women's Fellowship granted by the University of Western Australia. IPA symbols are used throughout for the presentation of data and sound changes. Voiceless stop symbols are used in languages without a voicing contrast. Language names are written in the standard orthographies.

Jane Simpson, David Nash, Mary Laughren, Peter Austin, Barry Alpher, eds,
Forty years on: Ken Hale and Australian languages, 481–492.
Canberra: Pacific Linguistics, 2001.

2. Exemplification

Ken Hale was the first person to identify initial consonant loss as a regular sound change in Australia. Over fifty Australian Aboriginal languages show evidence of the basic sound change shown in (1), first formalised by Hale (1964) in his comparative study of the Northern Paman languages. Subsequent studies of initial consonant loss include Alpher (1976) for the Cape York languages, Hercus (1979) for Arabana-Wangganguru, and Dixon's (1980, 7.1) survey. (A complete listing of languages with data sources is given in the Appendix.) Initial C-loss is not limited to any single genetic or areal group of languages within Australia; it occurs in western, central and eastern Pama-Nyungan languages, and in non-Pama-Nyungan languages as well. Examples from three distinct geographic regions are shown in (2)–(4).

(2) Northern Paman C-loss (Hale 1964, 1976a, 1976b)

proto-Paman	Mpalitjanh	Yinwum	Mbiywom	Gloss
*kalka	aka	ika	ilka	'spear'
*maji	aji	aji	aji	'vegetable food'
*juku	uku	uku	tjü	'tree'

(3) Arandic C-loss (Hale 1962, Koch 1997)

pre-Arandic–Western Desert	Eastern/Central Arrernte	Gloss
*kaɭaja	aɭeje	'emu'
*muɲa	iŋwe	'night'
*walaja	alaje	'sea'

(4) Nhanta C-loss (Blevins and Marmion 1994, Blevins 1999)

proto-Pama-Nyungan	Nhanta	Gloss
*paca-	aɟa-	'to bite'
*paɳḏi	aɳḏi-	'to smell'
*piri	iri	'nail, claw'
*puma-	uma-	'to hit'

3. Some answers

There is mounting evidence that regular sound change occurs when, due to perceptual properties of the acoustic signal, a string is given a phonological analysis which differs from its historical source (Ohala 1974, 1981, 1993; Blevins and Garrett 1998). For rule (1), this means that the cues once associated with the initial consonant are no longer perceptually recoverable, or are associated with the following vowel, or are associated with prosodic word-initial position. In all three instances, the word is reanalysed as vowel-initial.

3.1 Segmentally conditioned C–loss

Certain consonants have intrinsically weak perceptual cues in word-initial position. Weak (nonstrident) fricatives include the voiced velar fricative (5a), the voiceless dental fricative

(5b), and the voiceless bilabial fricative (5c).[2] It is quite possible that the weak noise associated with these sounds was interpreted as light breathiness associated with prosodic word-initial position or with laryngeal initiation of word-initial vowels. Glides also have intrinsically weak perceptual cues in word-initial position, where the slow VC transition distinctive of these segments, an important perceptual cue, is absent. It is not surprising then to find unconditioned glide loss (5d). Finally, similarity between voiced fricative or glide formant structure and that of the following homorganic vowel allows the listener to reinterpret perceptual properties of the former onset as part of the following vowel (5e–h). The phonetic account of the rules in (5e) also explains the many Australian languages where there is not necessarily glide loss, but where there is no possible phonological contrast between *ji* vs. *i* and *wu* vs. *u*. Rules (5e–f) were likely restricted to utterance-initial position, a restriction discussed further in §4. The symbol 'N' in (5g–h) represents a nasal glide. Of the nasals, the velar is the weakest, occurring, in many languages, like Japanese, as a true glide.[3] From a purely phonetic perspective then, all of the regular sound changes in (5) can be understood in terms of the intrinsically weak perceptual cues of the consonants in these particular environments.

(5) Loss of initial Cs with intrinsically weak perceptual cues

a.	*g > *ɣ > Ø / $_{\text{Word}}$[_	Adnyamathanha
b.	*t̪ > *θ > Ø / $_{\text{Word}}$[_	Kalkatungu[4]
c.	*p > *ɸ > Ø / $_{\text{Word}}$[_	Nhanta
d.	*j > Ø / $_{\text{Word}}$[_	Luritja
e.	*j > Ø / $_{\text{Word}}$[_ i , *w> Ø / $_{\text{Word}}$[_u	Western Desert
f.	*g > *ɣ > Ø / $_{\text{Word}}$[_ a	Yaygir[5]

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2 The lenition of *g to *ɣ in Adnyamathanha as an intermediate stage receives indirect support from parallel lenition of *b > β and *d̪ > j. If we do not posit an intermediate frication phase in (5c), then the fact that bilabial stops typically have weaker bursts and shorter voice onset times than stops at other points of articulation may also be relevant.

3 Note that in (5g) we must assume that it is the relatively small distance between the first two formants (presumably due to coarticulation) which is interpreted as a feature of the following vowel, whereas in (5h) it is the (relatively) low first formant of the nasal glide which is reinterpreted as a feature of the following high vowel. Though this study is restricted to initial C-loss, similar phonetic factors are involved in word-initial lenitions which occur in many of the languages classified with 'sporadic' C-loss in the Appendix.

4 Blake (1979b:132–3) suggests that C-loss in Kalkatungu is sporadic. If we discard *wu/u* and *yi/i* forms, which are due to the noncontrastive nature of glides in this position, we are left with *a*-initial (and C-initial) words, the majority of which show evidence of *t̪ > Ø: Kalkatungu *arrkun* and Mayi-Yapi *tharrkun* 'a fight' (Blake 1979b:133); Kalkatungu *arra* and Yalarnnga *tharrV* 'where'; Kalkatungu *artii* 'to alight, put down', cf. *maka-thartii* 'to put down'; Kalkatungu *ara* 'enter; set (of sun)', Ngawun and Mayi-Kulan *thara* 'stand'; Kalkatungu *almi* 'squeeze', Ngawun *thalmirra* 'bring'; Kalkatungu *ari(rli)* and Pitta-Pitta *thaji* 'eat'; Kalkatungu *rntuu* and Yalarnnga *tharntu* 'hole'. Comparative data are from Breen (1981, 1990) and Blake (1979a, 1979b).

5 Crowley (1979:370) notes that [i,u,a] all occur initially, but that it is doubtful there is a contrast between *i* and *yi* and between *wu* and *u*. Looking just at *a*-initial forms, we find that nearly all have *g*-initial cognates in neighbouring languages: Yaygir *aba:la* and Gumbaynggir *gaba:la* 'west (loc)', Gunggari *gaba- ~aba-* 'that, there'; Yaygir *abi* and Gumbaynggir *ga:bi* 'wallaby', Nunagal *gabi* 'possum'; Yaygir *alga ~ algi* 'cut, hit, kill', Goeng Goeng and Bandjalang *galga-*, Gidabal *galga-* 'chop'; Yaygir *aygi* and Gumbaynggir *gaygi* 'cut'; Yaygir *angga:li* and Gumbaynggir *gangga:li* 'shout', Gunggari *ganggali-* 'call'; Yaygir *arugurum* and Gumbaynggir *galugun* 'one', Kabi Kabi and

g. *ŋ > (*N) > Ø / Word[_a Arabana
h. *ŋ > (*N) > Ø / Word[_i Baagandji

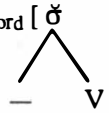
3.2 Stress-conditioned C–loss

Stress shift from the initial syllable to a following syllable has given rise to unstressed (unaccented) or reduced initial syllables in some languages. The direct association of initial C-loss with stress shift was first suggested by Hale (1964:256): "Most conspicuous among the many developments which characterise Northern Paman reflection of Proto Paman is the reduction of initial syllables (*CV_1) by loss of initial consonants (*C) and loss or other reduction of immediately following vowels (*V_1). Associated with initial reduction, and at least partially responsible for it, is a shift of primary stress . . . from the initial to the second syllable."

Reduced syllables are shorter than other syllables. Shortening or compression of the syllable can result in undershoot of consonantal gestures, so that stops are realised as flaps or glides. Initial nasals and glides may be shortened to the point where phonetic cues for place and manner are difficult to perceive. Languages where stress has shifted from first to second syllable, leaving unstressed initial syllables, include Mpalitjanh, Yinwum, Linngithigh, Anguthimri, Ngkoth, Mbiywom, Rimanggudinhma, Umbuygamu, Lamalama, Kuku-Thaypan, Mbabaram, Agwamin, Wamin, Yanga, Mbara, Ogunyjan, Olgol, Oykangand, Arrernte and Nganyaywana. In all of these languages, I propose the sequence of rules in (6), where C-loss in (6b) can be understood in terms of the intrinsically weak perceptual cues of consonants in reduced syllables.[6]

(6)a. Stress shift: *[σσ̆. . . > [σ̆σ. . .

b. C–loss: *C > Ø / Word [σ̆



For nearly all of these languages, the sequence of sound changes in (6) is well attested. One exception is Nganyaywana (Crowley 1976:25) where: "The rules for stress placement are largely unknown, but the Nganjaywana forms in the Court notebooks carry stress on the first syllable—how general this rule is, is not known." Forms cited with stress from Court are *'kjaja* 'food' (cf. Djangadi *wigaj*) and *'gwa:Na* 'child' (cf. Yugambal *gugaNa*). These are consistent with a stress-shift analysis, since the first syllable has been lost in its entirety. I suggest, then, that in pre-Nganyaywana stress shifted from the first to second syllable. This stress shift appears to be incipient in neighbouring Baanbay (Gumbaynggir), where stress falls on a long vowel if there is one, otherwise on the leftmost VG-rime, and if there are no long vowel or VG-rimes, then stress is initial, *except that in words of two or more syllables,*

Wakka Wakka *garu-* 'self, one'; Yaygir *a:gal* and Gumbaynggir *ga:gal* 'sea'; Yaygir *aluga* and Gumbaynggir *galu:ga* 'kangaroo rat' (Crowley 1979:371); Yaygir *alina* 'wind', Darumbal *gali* 'rain'. Holmer (1983:183) describes a similar sound change in progress in Gunggari: "It should be noticed that *g* has a particularly weak articulation and is often suppressed, even initially: *amu* for *gamu* 'water', etc." Gumbaynggir data is from Eades (1979); other comparanda are from Holmer (1983).

6 Other properties associated with stress-conditioned C-loss are (i) loss of vowel-length contrasts in initial syllables, (ii) common subsequent loss/shift of unstressed initial-vowel features and (iii) common subsequent loss of unstressed initial vowel.

the second syllable can be stressed (Eades 1979:268; Crowley 1976:19). Another questionable case is the Ogunyjan and Oykangand-Olgol group, languages which constitute a Sprachbund known as 'Kunjen'. Alpher (1976:86–7) argues that a stress-shift analysis of Ogunyjan and Oykangand-Olgol is not possible, since, in these languages, V_2 has been reduced or deleted in open syllables, and in Ogunyjan, V_2 has also been reduced in closed syllables. If V_2 was stressed, reduction and deletion would be unexpected. Alpher also cites Sommer's description of Uw-El sister dialects of Oykangand-Olgol, which are also initial dropping without exception, and which differ from Oykangand only in having initial (V_1) stress on all roots. The Olgol recorded by Rigsby, on the other hand, shows consistent stress on V_2. I suggest that what makes Oykangand-Olgol different is not that stress-shift never occurred, but that in most dialects, after conditioning intitial C-loss, stress shifted back to the initial syllable. The Olgol recorded by Rigsby would constitute a conservative dialect, both in terms of stress pattern, and in terms of retention of V_2. That such a stress-shift could have taken place is acknowledged by Alpher himself (1976:87): "It is possible, but not probable, that stress in Uw-El shifted to the second syllable and then (through contact with Yir-Yoront) shifted back to the first syllable after initial-dropping had taken place".

Perhaps the strongest evidence for a link between stress shift and initial C-loss is found in Kurtjar, a Norman Pama language, and its sister language Kuthant (Black 1980). Black (1980:206) suggests that C-loss may have only occurred in stems of the form CVCVC or longer. Alpher (1976 and pers. comm.) points out that, in other forms, final vowel-loss would result in monosyllables which would resist stress shift. So we expect to find differences between suffixed CVCV- stems, which should show stress shift and C-loss, and unsuffixed CVCV stems, with final V-loss, no stress shift, and no C-loss. Though the majority of stems in both languages are consistently C- or V-initial due to apparent levelling, doublets do occur. Compare Kurtjar *a:ɣ* 'mouth' with *ða:ɣ* 'opening', both from **tya:wa*. The word for 'opening' was arguably unsuffixed, with 'mouth' occurring with a regular suffix. A similar case is Kurtjar *lβu:w* 'dark' vs. *wulβuw* 'night', where the second form was conceivably an old locative, with the suffix now frozen on the original stem form as well.

4. Remaining problems

The segmental and prosodic conditioning factors for weakening of perceptual cues of consonants in word-initial position outlined in §3 account for a great majority of Australian languages with the sound change in (1). However, there are additional languages for which the most important identifiable conditioning factor for C-loss is utterance-initial position. Utterance- or phrase-initial consonant weakening and loss has been observed as a nondistinctive property of natural speech in Worora, Wajarri, Nhanta, Warlpiri, and Yir-Yoront. Utterance-initial cases of historical C-loss are apparent in Arabana, Baagandji, Maljangaba, Yadliyawara, Nhanta, Nyungar, Warumungu, Yir-Yoront, and Burarra.[7]

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7 In Diyari, Dyirbal, Guugu Yimidhirr and Ngalakan, the small set of vowel-initial words are always phrase-initial, though, in most cases, comparative evidence is lacking to demonstrate loss of initial *C. Vowel-initial words are Ngalakan *alako* 'by and by', *alaŋga* 'directly', *alki?* 'still, yet', *aŋa* 'but' and *aɲɟi* 'and, now'; Dyirbal *aɲɟa* 'particle marking topic, action or quality as new'; Guugu-Yimidhirr *a* 'particle signifying agreement', *awuun* 'that's the one!'; Diyari *adu* 'hello', *aji* 'hey!', *a?aji* 'no, that's not correct'. Ngalakan *aɲɟi* and Dyirbal *aɲɟa* appear to be cognate with Gupapuyngu *ŋaɲɟa* 'or, but' and Yir-Yoront (*ŋ*)*aɲt*, leading Alpher (1991:130) to suggest proto-Pama-Nyungan **(ŋ)aɲɟa*. Compare Diyari *a?aji* with Old Arabana **ŋaraji* 'yes', modern Arabana *araji*.

In (7), we show a slightly modified version of (1) for these languages. In some languages, like Warumungu, initial loss (of *ŋ and *j) has occurred in all pronouns, elements which (synchronically) appear initially or in second position. In other languages, like Arabana (8), a combination of exclamations, vocatives, and pronouns shows the C-loss pattern, strengthening the view that loss of *ŋ before *a* in this language occurred primarily in utterance-initial position. Notice, in particular, the contrast between *ama* 'mother' (used as a vocative) and *ŋama* 'milk', both from **ŋama*.

(7) Utterance/phrase-initial C-loss: *C > Ø / $_{\text{Phrase}}$[_

(8) Utterance-initial C-loss in Arabana

Archaic	Modern
ŋaṉṯa	aṉṯa 'I'
ŋaraji	araji 'yes'
ŋaɭa	aɭa 'true'
ŋaɲanaa	aɲa 'father (vocative)'
ŋama	ama 'mother (vocative)', but cf. ŋama 'milk'

A preliminary phonetic explanation for utterance-initial C-loss is relatively straightforward. Unlike the phrase-medial position, where a possible preceding vowel-final word places the word-initial C in a V_V context, preceding vowels are never present in utterance-initial position. In general then, the utterance-initial position provides fewer perceptual cues to consonant identity than other positions, all else being equal. For cases like Arabana, with loss of the intrinsically weak velar nasal *ŋ* before *a*, a homorganic vowel, intrinsic weakness of consonantal cues (see §3.1) is further diminished by the complete absence of VC transition cues.

However, other cases of utterance-initial loss do not appear to involve intrinsically weak consonants, suggesting that part of the phonetic explanation of utterance-initial loss has yet to be discovered. For example, in Nhanta, *u̪t̪u* 'dog (vocative)' from **t̪u̪t̪u*, has exceptional loss of initial **t̪*. Elsewhere in word-initial position, **t̪* is preserved (*t̪alaɲu* 'tongue', *t̪ayiri* 'snake', *t̪iraa* 'yellowtail (fish)', *t̪uri* 'sun', *t̪uɖaru* 'song', etc.) suggesting that utterance-initial position itself somehow leads to diminished perceptual cues of otherwise intrinsically strong consonants. Several possibilities present themselves.

One possibility is that the default setting for the oral tract on initiation of speech is 'open'. The interaction between this default setting and the articulatory requirements of initial consonants could result in undershoot of articulatory gestures, resulting in short flaps or glides with the intrinsically weak profiles outlined in §3.1 and §3.2 then leading to loss.

Another possibility is that audible ingressive breathing phrase-initially could result in reduction or elimination of perceptual cues. Consider, for example, a word like Old Arabana *ŋaɭa* produced with audible ingressive airflow at initiation. The breathy noise associated with the ingressive intake of air eliminates modal voicing and the nasal formant structure associated with it, making the nasal perceptually irrecoverable.

A third possibility for dealing with languages where C-loss is limited to words which appear in utterance-initial position (including possibly those mentioned in footnote 5), appeals to the 'minimization of effort' principle. This principle demands minimal articulatory effort, but is normally checked by a demand to maximise distinctiveness. However, in words with predictable distribution and/or segmental content, distinctiveness is not an issue, and the minimisation effect wins out.

Finally, and perhaps most worthy of further investigation, is the possibility that a general phonetic property makes word or utterance-initial consonants in many Australian languages of shorter duration than word-initial consonants in other languages. I have in mind Pama-Nyungan languages which show both word-initial stressed syllables and post-tonic gemination of consonants, for example Umpila (Harris and O'Grady 1976), the Wik languages and Kuuk-Thaayorre (Barry Alpher, pers. comm.), Warumungu (Simpson 1996), and Nhanta (Blevins 1999), where the historical length contrast has been phonologised. Local and Simpson (1999) demonstrate that the phonetic implementation of (sonorant) gemination in Malayalam nouns involves not only a length contrast in the medial consonant, but durational differences in surrounding vowels, as well as durational differences in word-initial consonants. Of direct relevance is the finding that initial consonants (the onsets of syllables closed by geminates) are significantly shorter in nouns with medial geminate laterals than in those with medial nongeminates.[8] If word-initial stress in many Australian languages is associated with lengthening of the tonic vowel or post-tonic consonant, and if absolute constraints on syllable length exist, then this rhyme-internal lengthening could be associated with compensatory word-initial C-shortening, or compression, whose phonetic effects would include articulatory undershoot resulting in lenition and loss. Only this last explanation can account for the otherwise coincidental occurrence of segmentally conditioned, stress-conditioned, and utterance-initial conditioned C-loss in the Aboriginal languages of Australia.

Appendix: Languages with evidence of word-initial C-loss

(listed alphabetically within genetic/areal groupings)

Classification:

invariable	=	all *C_1 lost
weak	=	all *C_1 of a particular phonological class lost
utterance	=	*C_1 lost from words of lexical or syntactic syntactic categories with a tendency to occur phrase-initially or to occur as single-word utterances
sporadic	=	*C_1 lost (and lenited) in words of no obvious phonological or grammatical class

Northern Paman (all with stress shift)

Anguthimri	invariable	Crowley (1981)
Atampaya	sporadic	Crowley (1983)
Linngithigh	invariable	Hale (1964, 1976a)
Luthigh	invariable	Hale (1964, 1976a)
Mbiywom	invariable	Hale (1964, 1976a)
Mpalitjanh	invariable	Hale (1964, 1976a)
Ngkoth	invariable	Hale (1964, 1976a)
Uradhi	sporadic	Hale (1964, 1976b), Crowley (1983)
Wuthathi	sporadic	Alpher (1976), Crowley (1983)

8 The authors also note that their results accord with a durational interpretation of Balasubramanian's (1972) airflow data for Tamil.

Yaraikana	sporadic	Crowley (1983)
Yinwum	invariable	Hale (1964, 1976a)
Other Paman		
Agwamin	invariable	Sutton (1976)
Barrow Point Lg.	sporadic	Alpher (1976) (pers. comm. from John Haviland *via* Bruce Rigsby)
Flinders Island Lg.	sporadic	Alpher (1976: pers. comm. from Bruce Rigsby), Thompson (1976)
Guugu Yimidhirr	utterance (v. fn.5)	Haviland (1979)
Kuku-Thaypan	invariable	Rigsby (1976)
Kurtjar (Kunggara)	sporadic	Black (1980)
Kuthant	sporadic	Black (1980)
Kuuku-Yaʔu	sporadic	Hale (1976c), Thompson (1976)
Lamalama	invariable	Laycock (1969), Alpher (1976: pers. comm. from Bruce Rigsby)
Mbabaram	invariable	Sutton (1976), Dixon (1980)
Mbara	invariable	Sutton (1976)
Ogunyjan	invariable (v. fn.4)	Sommer (1969), Alpher (pers. comm.)
Olgol	invariable (v. fn.4)	Sommer (1969), Alpher (pers. comm.)
Oykangand	invariable (v. fn.4)	Sommer (1969), Alpher (pers. comm.)
Rimanggudinhma	invariable	Alpher 1976 (pers. comm. from Bruce Rigsby)
Umbindhamu	sporadic	Laycock (1969), Alpher (1976: pers. comm. from Bruce Rigsby)
Umbuygamu	invariable	Alpher (1976: pers. comm. from Bruce Rigsby)
Umpila	sporadic	Hale (1976c), O'Grady (1976)
Wamin	invariable	Sutton (1976)
Yanga	invariable	Sutton (1976)
Yir-Yoront	utterance, weak	Alpher (1991 and pers. comm.)
Arandic (all with stress shift)		Hale (1962), Koch (1997), Breen (this volume), Koch (this volume)
Alyawarr	invariable	Hale (1962), Koch (1997)
Antekerrepenh	invariable	Hale (1962), Koch (1997)
Anmatyerre	invariable	Hale (1962), Koch (1997)
Arrernte	invariable	Hale (1962), Koch (1997)
Kaytetye	invariable	Hale (1962), Koch (1997)

New England Languages		Crowley (1976, 1979)
Nganyaywana	invariable	Crowley (1976, 1979)
Yaygir	weak	Crowley (1976, 1979)
Yugambal	sporadic	Dixon (1980:198, 43)
South Australian Languages		
Adnyamathanha	weak	Hercus (1979), Tunbridge (1991)
Arabana	utterance	Hercus (1994)
Baagandji	weak/utterance	Hercus (1982)
Barngarla	weak	Schürmann (1844)
Maljangaba	weak/utterance	Hercus (1979)
Yadliyawara	weak/utterance	Hercus (1979)
Western Desert (in dialects which bordered Arabana)		
Luritja	weak	Hansen and Hansen (1992)
Pitjantjatjara	weak	Goddard (1992)
Yankunytjatjara	weak	Goddard (1985, 1992)
Other Pama-Nyungan		
Diyari	utterance (v. fn. 5)	Austin (1981)
Dyirbal	utterance (v. fn.5)	Dixon (1972)
Gunggari	weak, sporadic	Holmer (1983); Breen (1973)
Nhanta	weak, utterance	Blevins and Marmion (1994), Blevins (1999)
Nyungar	utterance/ŋ	Moore (1842)
Kalkatungu	weak, sporadic	Blake (1979b)
Warlpiri	utterance	(Mary Laughren, pers. comm.)
Warumungu	sporadic	Simpson (1996)
Wajarri	utterance/ŋ	(observed by the author)
Non Pama-Nyungan		
Burarra	utterance, sporadic	Glasgow (1984, 1994)
Ngalakan	utterance (v. fn.5)	Merlan (1983)
Worora	utterance/ŋ	(observed by the author)

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