

Linguistic prehistory of the Australian boab

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Boabs, a close relation of the African baobabs, are found only in the Kimberley region of Western Australia and a region close by in the Northern Territory. Here several of the words for the boab tree and its parts are examined with special emphasis on loanwords which cross language family boundaries going in a west-east direction. It is proposed that this linguistic diffusion may reflect dispersal of the tree into new areas on the east, in relatively recent times. On the other hand another recent diffusion from the west of new salient functions of the boab fruit spread a new term to central Kimberley where boabs are known to have been present and used by humans for many thousands of years.

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1. Introduction¹

The boab (*Adansonia gregorii*) is a mysterious tree, relatively closely related to the baobabs of Africa (2 other species) and Madagascar (6 other species). In Australia

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it is only found in the Kimberley region of northern Western Australia and closely adjacent parts of the Northern Territory. It is not a Gondwanan relic but may have arrived in Australia sometime over the Pliocene-Pleistocene. An estimate based on genetic distance from the African species is around 15 million years ago (Baum et al 1998). There is considerable controversy about the story of the arrival of the boab in Australia² but linguistics cannot tell us anything about this in such deep time prehistory.

In the Kimberley region there is archaeological evidence for the boab's presence and use by humans dating back nearly 40,000 years (O'Connor 1995; Frawley & O'Connor 2010). One of the mysteries is why it is confined to this relatively restricted area of north-western Australia, when there are no very obvious environmental limits on it becoming established outside that region. This is a question of palaeobotany and palaeoecology which we as linguists again cannot hope to answer.

Linguistics however can provide some evidence relating to its presence and use in the past few thousand years, beyond which our etymologies and reconstructions of word forms fail us. Within this recent time-frame, we are able to tap into evidence of the origin and age of words for boabs. Some of these in the north Kimberley are probably reconstructable to two proto-languages (proto-Worrorran and proto-Jarragan). The south and east however are dominated by three other word forms - loanwords which travelled west to east, crossing language family boundaries in a relatively recent period.

Using evidence about the cultural uses and significance of the plant, we propose a hypothesis about why words for it diffused in this way.

2. The boab and its uses by humans

The boab tree and its fruit have a number of traditional uses (Wickens & Lowe 2008; Lowe 1998) including:

² Jack Pettigrew and colleagues (e.g. Vickers & Pettigrew n.d.) argue for an arrival of boabs together with the first wave of humans migrating to northern Australia from Africa 60-70000 years ago. However, the evidence for this claim is weak.

- *Food/medicine:* The pith is high in Vitamin C and can be made into a refreshing drink when soaked in water. The seeds are roasted. Roots are eaten raw.
- *Source of water:* The roots are water-rich and the tree stores water in its trunk
- *Artefacts:* The bark may be used for making string, and the pods ('nuts') are carved (probably a more recent use).

The boab had considerable mythological significance in various areas. It is regarded as a manifestation of a *Wanjina* (creator being) in the Worrorrnan area of the North Kimberley and there is a story in which a female Wanjina opens a split in her trunk (her vagina) and traps two boys inside. Rock art showing anthropomorphic boabs with large breasts and the top branches as a headdress are found in the Central Kimberley in Bunuba country and around Kununurra in Miriwoong country (Kim Akerman p.c.). To the east in Ngarinyman and Jaminjung /Ngaliwurru country there is an association between boabs and the goanna dreaming. While this material may be of significance in tracing the prehistory of boabs and words for them, for reasons of space this will have to be postponed for a separate publication.

3. The languages of the Kimberley and words for 'boab'

We analysed word forms for *A. gregorii* in the Indigenous languages of the Kimberley and adjacent areas to the east in the Northern Territory. These include two subgroups of the Pama-Nyungan family (PNy) in the south, Marrngu and Ngumpin-Yapa, and five non-Pama-Nyungan (nPNy) families in the north, from west to east: Nyulnyulan, Worrorrnan, Bunuban, Jarragan, and Mirndi (Figure 1)³.

³ Base map by Mark Harvey http://www1.aiatsis.gov.au/aseda/802_Harvey/MH_NPN%20Families.png. There are also words for boab in Wati (Western Desert) dialects to the south, and in some other non-Pama-Nyungan languages to the east and north-east of those families mentioned. These languages are outside the area where boabs grow generally, although people are familiar with them and their 'nuts' (pods).

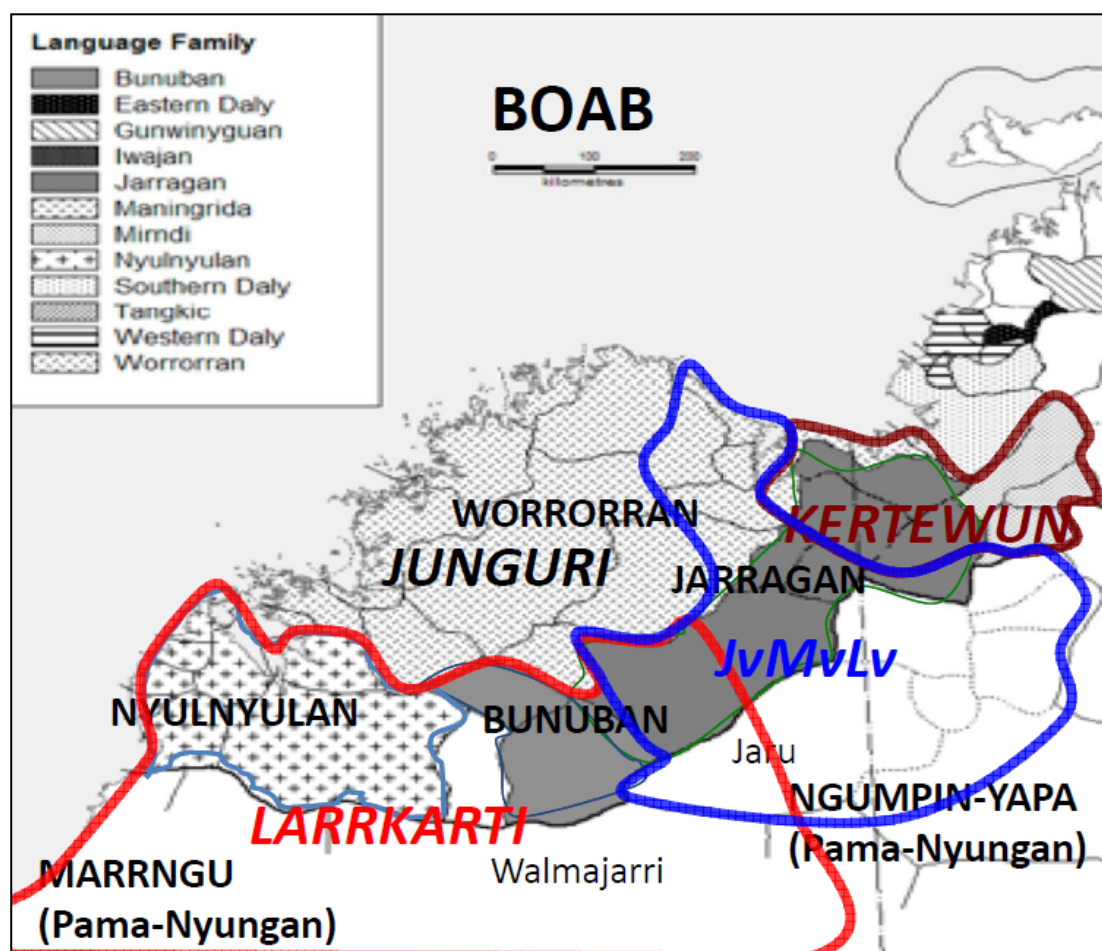


Figure 1. Kimberley languages and words for 'boab'⁴

The nPNy families and PNy subgroups are clearly distinguished from each other by the linguistic comparative method and measures of difference in vocabulary (see the Neighbour-Joining Analysis in McGregor & Rumsey 2009: 14).

Two of the five nPNy families have one dominant word each for *A. Gregorii* which is not borrowed from another family. Worrوران (northern) has the term *junguri*, and Jarragan (southern) has *jumulu*. These are reconstructable as proto-words for *A. Gregorii* in the respective languages families. However, these families have additional word forms which are distinct from descendants of the main protoforms. Northern Worrوران has the forms *potkurri* and *wajarr* in Wunambal, with the latter also found in Wurla and borrowed into Bunuba; and northern

⁴ The generic vowel symbol 'v' reflects the vowel variation between u and a found in north and south Jarragan languages respectively and loans from these into Ngumpin and Worrوران languages respectively (see section 5.3).

Jarragan has *kertenun* in Gajirrabeng and Miriwoong, with forms subsequently borrowed to the east. The highest diversity of word forms is found across the northern coastal areas encompassing the Worrوران family, followed by some diversity in northeast Kimberley covered by the Jarragan family.

While the boab word forms *junguri* and *potkurri* do not extend beyond northern Worrوران languages, the source form *wajarr* diffused southwards into Bunuban languages. The southern Jarragan source form *jumulu* spread into Kwini, a northern Worrوران language, and became modified as *jamula* and other variants as it diffused to the east and south into the Ngumpin sub-group of PNY languages.

4. Diffusion of loanwords

The diffusion of loanwords frequently goes hand in hand with diffusion of concepts, practices and things named or associated with the loanword. In the case of boab loanwords one possibility is that the loanword diffuses with the first dispersion of the tree into a new area. This is a possibility in some of the peripheral regions of the boab where dispersal has been happening in relatively recent times. However as already mentioned there is archaeological evidence of boab going back 40,000 years in the central Kimberley, so it is impossible that the recent loanwords in these areas could have accompanied the first arrival of the boab.

In the latter case there are several alternative scenarios. The new loanword could have named a newly arriving variety of the species with properties or functions which made it salient and worthy of a newly imported term. The old term then would be demoted in the taxonomy and eventually disappear. This is a relatively common process, as described by Sapir (1916: 74, n. 1) for ‘hemp’ in Europe. The loanword might stress a new ritual or mythological aspect of the plant, rather than a new variety or function. This may have been the case with the boab as mentioned above but not fully discussed in this paper.

Considering the linguistic aspects of loanwords, the most persuasive evidence for borrowing and its direction is of two kinds:

1. a word form which has a different meaning in the origin language which can be shown to have a plausible semantic relationship to the meaning of the loanword elsewhere;
2. a word form which is analysable in the origin language into more than one morpheme with a meaning as a whole plausibly related to the meaning of the loanword elsewhere.

In northeast Kimberley, the word form *kertewun*, probably related to the word for ‘egg’, no doubt based on properties (e.g. shape) of the boab seed pod, diffused from northern Jarragan languages into western Mirndi. This is likely to be the first word for boab in western Mirndi, paralleling the dispersal of the species by humans.

The word form for the edible pith of the fruit, *jang-nge*, becoming *jangi* in languages to the east, is also borrowed from the Miriwoong language of northern Jarragan; the term is analysable into two morphemes, with the word as a whole meaning ‘for eating’, which reflects the value of the boab fruit. It is plausible that terms with a general meaning such as ‘for eating’ had a wider range of application in the source language than ‘boab (fruit)’, but in the languages these terms were borrowed into they received a more restricted interpretation (see footnote 5). In the case of Ngarinyman (Ngumpin-PNy subgroup), the loanword for the boab tree is from northern Jarragan (*jamulang*), and the term for the edible pith of the fruit (*jangi*) is also from northern Jarragan (*jang-nge*).

The above examples of loanword diffusion in the east appear to be linked to relatively recent spread of the boab predominantly by humans transporting and perhaps giving others the pods and either defecating seeds after consuming the pith, or deliberately planting or discarding the seeds. The meanings of the source words relate to the shape of the pod or the prime new function ‘eating’. These two loanwords are analysed in more detail in sections 5 and 6.

The most striking evidence of loanword diffusion is for the word form, *larrkarti*, which comes from an area outside the main bioregions where boabs occur but is used to denote the boab tree in the languages the term was borrowed into (or parts of the boab tree, see below). Analysability of the word into two morphemes

suggests that it originates from the languages of the Marrngu (PNy) subgroup on the southwestern periphery of the Kimberley. The word as a whole means ‘that which splits open’, which could refer either to the hollow openings in the trunk of old boab trees or to the nature of the fruit pods. These have a tendency to be ‘dehiscent’ like many other pods of plants, that is, to split into two. These issues are further explored together with some related linguistic issues about the word form *larrkarti* and its variants in Section 6. This is a major loanword crossing from west into central and parts of south-east Kimberley where there is little doubt that the boab was already established for many thousands of years, in contrast to the two eastern loanwords discussed above. This situation brings into the picture the alternative scenarios outlined above, that there were several waves of spread of boab trees with different functions involved allied to this loanword diffusion.

5. Eastward borrowing into the Northern Territory: recent dispersal of the boab

5.1 *Kertewun*

The term for the boab (and its ‘nut’) in Gajirrabeng (Northern Jarragan) is *kertewun*. This is closely related to the term for ‘egg’ in Jarragan cf. Gajirrabeng *kertewul-ng*; Kija *kerewul*. The Medial Lenition sound change *rt>r is regular in Jarragan languages like Kija, south of Gajirrabeng.

The form for ‘boab’ found in northern Jarragan (Gajirrabeng) *kertewun* is found in West Mirndi to its east as *kuruwuny* with *rt>r lenition as noted for the word for egg, and the change central vowel e>u as Mirndi lacks the central vowel. West Mirndi does not have lenition, so it is likely the lenition occurred in a southern Jarragan language with regular lenition and the word was borrowed east from there. This could have been Miriwoong or one of the probably closely related languages to the east, Jiyilawung and Nyiwanawu (McConvell 2009), subsequently replaced by Ngarinyman in the late nineteenth century.

The West Mirndi Jaminjung/Ngaliwurru form (Schultze-Berndt 2003: 34) *kuruwuny* also has final *-ny* instead of *-l* recorded for the ‘egg’ words in Jarragan or *-n* from the ‘boab’ words in Jarragan (final *-ng* following the *l* in Gajirrabeng is a general nominal suffix). *-ny* is a feminine suffix in Miriwoong, and it is probably

that *-l-ny* was reduced to *-ny*. Grammatical gender of this type is not found in West Mirndi and word final *-l-ny* is not permitted. It is possible that the final cluster *-l-ny* also yielded *-n* in the Gajarrabeng word for boab (i.e. ‘boab’ was the feminine form of ‘egg’) but this is conjectural.

The boab ‘nut’ has the shape of an egg, its shell breaks in a similar way, and it has a white edible substance inside. The innovation is based then on the properties of the fruit pod, whereas the other and probably older word for boab in Jarragan, *jumulu*, has no known other source meaning and focuses on the tree. We shall see repeated below this trend for new boab loanwords to be centred on the ‘nut’, and its food value in particular. Kija was not affected by the replacement of the original ‘boab’ word by a formation from ‘egg’ but instead borrowed another major ‘boab’ loanword from the west, *larrkarti* (see section 6).

In another West Mirndi language to the east of Jaminjung/Ngaliwurru, Nungali, the form of the boab word is *muruwun*. Nungali alone of this subgroup of languages has retained ancestral noun-class/gender prefixes, including *mV- the vegetable class marker. This prefix has been added to what is in this case a loanword from Jarragan, *kuruwun*, and a regular sound change of medial lenition *k>w in this context follows. It is notable that the final consonant is *-n* as in the loan source. The next neighbouring language of a different non-Pama-Nyungan family to the east, Wardaman, also has *muruwun* ‘boab’ clearly a loanword from Nungali as Wardaman has none of the relevant morphology and sound changes which created this word.

5.2 *Jangi*

The Miriwoong word for ‘edible white part of the boab nut’ i.e. the pith, is:

Jang – *nge -ng*

eat KIND NOMINAL SUFFIX

i.e. the edible thing.

The coverb in Miriwoong for ‘eat’ is *janguruk*, which is formed from *jang*. *Jang* is the coverb for ‘eat’ in Kija; in Gajirrabeng *jang* means ‘chew’ and *jangap* (with a regular continuative suffix) ‘eat’.⁵

The term for edible pith of the boab to the east of Jarragan, in Ngarinyman (Widitjburru et al. 2009: 21) is *jangi*. This word is not parsible into a morpheme for ‘eat’ and a suffix as it is in the borrowing source Miriwoong (or a closely related Jarragan language). A sequence of two velar nasals (*ng-ng*) is not permissible in Ngarinyman and has been reduced to a single *ng*. These features point clearly to its origin in Jarragan and its easterly diffusion.

Jangi in Jaminjung/Ngaliwurru to the north of Ngarinyman is glossed ‘boab tree fruit’ (Schultze-Berndt 2003: 39) rather than the pith alone. Given the original meaning in Jarragan this would seem to represent a later metonymic extension.

5.3 *Jamulang*

Jamulang is the Ngarinyman word for boab tree and seems to be related to the Southern Jarragan form *jumulu* found also as *jumulu-ny* with a masculine suffix in Kija. The incorporation of the Northern Jarragan nominal suffix *-ng* into the word *jamulang* points clearly to it being a loanword from the west. The source is not to be found in recent accounts of Northern Jarragan languages where the form *kertewe-* has taken over, so either this form was borrowed into Ngarinyman before this innovation was completed in Northern Jarragan or *jamulang* was present and available for diffusion in one of the now extinct north-eastern Jarragan languages whose country was later occupied by the Ngarinyman.

In the Gurindji dictionary (Meakins et al. 2013: 102) the form *jimulung* is recorded, noting that Gurindji country is largely outside the area where boabs currently grow. This has the *-ng* suffix indicating that the loan source is Northern Jarragan

⁵ One anonymous reviewer has remarked that it is surprising that a general term such as ‘edible thing’ is only used for a specific type of food, viz. the boab pith. The semantic shift from ‘edible part’ used pragmatically in the context of boab to name the boab nut pith is an example of semantic narrowing in borrowing (McConvell and Ponsonnet 2013).

but the first and third vowels are different. Jaru also has a form with differing vowels, *jamarlu*.

One possibility that could be mentioned here, is that the variable vowel in the first syllable could be related to the variable vowel in the forms of the masculine gender prefix in subsection terms in the region, usually *ja-* but commonly *ju-* before a following syllable with *u* (e.g. *jupurru*, *jungurra* two subsections). This type of vowel harmony is present in the Southern Jarragan form *jumulu*, but not in the proposed Northern Jarragan loan source *jamula*. This may be just a phonological phenomenon, but if the *ja-/ju-* is to be equated with the masculine prefix then all kinds of issues are raised which lie beyond the purview of this paper, such as the original meaning of the root-*mulV* (similar to proto-Jarragan **murl* ‘eye’ in line with the common polysemy in Australian languages between ‘eye’, ‘fruit’ and ‘seed’ cf. Brown & Witkowski 1983).

6. *Larrkarti* from the west across the Kimberley: a new variety or use?

6.1 *The analysis of the etymon in Marrngu*

The term *larrkarti* with some minor variants to be discussed is the most widespread word for the boab tree, and also in many cases the ‘nut’, across a large part of the Kimberley, from the south-west to Jaru in the south east, and to Kija, where it means only ‘boab nut’, not the tree.

As noted the most persuasive type of evidence for origin and direction of a loanword is analysability into a regular multimorphemic structure in the origin language of what appears as monomorphemic in the receiving language(s). This is the situation with the item *larrkarti*. In Karajarri, a Marrngu (PNy) language spoken south of Broome, there is a coverb *larr* meaning ‘cut down the middle lengthwise’ (K. McKelson n.d.fieldnotes). The language also has a suffix *-karti* meaning ‘side’. The combination *larrkarti* means ‘the split side’. How this is related to the boab will be discussed below.

The coverb *larr* is also found in the neighbouring Marrngu language Mangala (where *larr-pu* ‘split – hit’ means ‘to split’) and in a number of other Pama-Nyungan languages in the region, leading to the inference that it has a western

Pama-Nyungan inherited origin. *Larrka* in Mangala is also a coverb meaning ‘open’. (Wangka Maya 2013). This appears to be derived from *larr* but detail of the process is not clear. There is a suffix *-ti* in Karajarri as recorded by Nekes and Worms (2006 McGregor ed.) e.g. *lakarr-ti* ‘a climber’ from the coverb *lakarr* ‘climb’. So a possible alternative analysis, if *larrka* ‘open’ were also in Karajarri, would be *larrka+ti* ‘open+ AGENT’. However, apart from the absence of documentation of *larrka* in Karajarri, there are at least two drawbacks to this solution. The suffix *-ti* is not recorded as having a retroflex initial and is clearly cognate with Mangala *-yiti* ‘agentive suffix’ which does not have a retroflex *-ti*. Further, all the examples of *-ti* in Nekes and Worms refer to human agents performing the coverb action, whereas as will be discussed, with *larrkarti* it is a matter of an inanimate item.

Hence the preferred etymology of *larrkarti* is that from Karajarri, meaning ‘split side’. There are different possible interpretations of this. A myth has already been mentioned where a boab Wanjina woman opens a split in her side, and splitting of the trunk of boabs with a hollow inside can be observed. It is not particularly common however.

A superior interpretation is that *larrkarti* ‘split side’ refers to the way the boab pod (‘nut’) splits, particularly the division of the pith into two halves (thanks to Pat Lowe and Kim Akerman for discussion of this). The pod is not fully ‘dehiscent’ in the sense that it naturally breaks into two even sides along a dividing seam or can easily be broken into two. The pod skin is thin and can be brittle so can crack unevenly rather than neatly into two. However the pith and the seeds in it, which is the food part of the plant, does display two clear halves when split.

6.2 Possible alternative origin in Nyulnyulan

A possible problem with the location of the origin of the loanword in Marrngu languages is that these languages lie on the very south-western edge of the current distribution of boabs, where there are rather few growing apparently. Why would a new name arise in that kind of marginal environment and spread so widely? We return to this question in the Conclusions section, but here we deal with the

possibility that the origin of *larrkarti* could have been in Nyulnyulan rather than Marrngu.

The Nyulnyulan family of languages lies just north of Karajarri and Mangala of the Marrngu subgroup of Pama-Nyungan. There is, and has been over a long period, significant interaction between these groups and a high level of loanwords at least in some domains between them, especially Marrngu into Nyulnyulan. Neither original component of *larrkarti* is common in Nyulnyulan languages as they are in Marrngu, but *-karti* is found in Yawuru ('side' Hosokawa n.d., 1991) and not in Nyulnyul. *Larr* is not found in Yawuru, but may be in Nyulnyul although it is recorded as having a final glide *r* and the meaning 'tear' (presumably 'rip') (McGregor 2011 Vol.2: 788).

6.3 *Paths of spread of larrkarti*

The word form spread north into Nyulnyulan, eastern and western Worroran nPNy families, and into other PNy subgroups (Ngumpin) to the east.

Given that *larrkarti* is borrowed into the Bunuba language vocabulary with the meaning 'boab tree', the diffusion of this word form may have occurred over the same period as in the rise of boab pod deposits between 1800 and 1200 years ago in the archaeological record at the Bunuba (Carpenter's Gap) rock shelter site (Frawley & O'Connor 2010). The wider adoption of this word form may have also arisen due to the greater use of boab fruit by Marrngu-PNy subgroup and their increased mobility and social interaction with Ngumpin-PNy subgroups to the east, and with nPNy language speakers such as Ungarinyin (eastern Worroran), Unggumi (western Worroran), Bunuba (Bunuban), and Kija (southern Jarragan).

6.4 *Sound changes*

The etymon *larrkarti* has generally been borrowed without much change across a wide area. This tends to suggest relatively recent borrowing. For instance on the eastern side of the distribution of *larrkarti*, the word has entered Kija (in the meaning 'boab pod') without lenition of **rt* to *r*, which affects a significant

amount of Kija vocabulary. This indicates that it is a relatively recent loanword, for instance after the adoption of subsections in which **ja-pangarti* became *jawangari* in Kija with **rt* leniting to *r*. We are unable yet to date these changes but there is potential for this using ‘linguistic stratigraphy’ (McConvell and Smith 2003).

In Unggumi and Bunuba, however, this change **rt>r* has occurred. Bunuba has no sign of such historical lenition in its inherited vocabulary so lenition in *larrrkari* must have occurred in some other language and been borrowed into Bunuba. Some other borrowed items in Bunuban languages are affected by such lenition including **rt>r*, for instance Gooniyandi *jilywiri* ‘guts’ borrowed from Walmajarri *jilpirti*. Since Unggumi as a Worroran language also does not have evidence of medial lenition, the source of this lenition may be some Nyulnyulan language. There are reports of a language Tjaba⁶ in the Fitzroy Crossing area up to the mid-twentieth century, which is not one of those described. This language could be the source of this lenition, but this requires further research.

In Nyulnyul a couple of regular sound changes affect **larrkarti*, in this order (Bowern 2004: 16, fn. 15)

1. Regressive vowel harmony > **larrkirti*
2. Final vowel deletion > *larrkirt*

These changes can be used to provide a ‘linguistic stratigraphy’ of loanwords and sound change in Nyulnyul which may be able to be calibrated to yield an absolute chronology from historical or archaeological dates. For instance the term *jimpil* ‘quartzite or glass spear point’ which derives from *jimpila*, has change 2, final vowel deletion, which has continued quite late affecting some European-derived material culture. On the other hand *jimpil* has not undergone change 1 or it would appear as *jimpal*. Kim Akerman (p.c) estimates that the Nyulnyul would have entered the trade in *jimpila* in the early to mid-nineteenth century. *Larrkarti*, which underwent both sound changes, must have entered the Nyulnyul area in the

⁶Tindale’s Catalogue of Australian Tribes <http://archives.samuseum.sa.gov.au/tindaletribes/njiken.htm>

This is said to be a variety of Nyikena (Nyikina) but there is no specific evidence for this. It seems unlikely that Tjaba is a medial leniting language as the ethnonym has a medial ‘p’, but Tindale also notes that the name is an exonym used by the Punaba (= Bunaba).

southern Dampier Peninsula before this time. This observation about linguistic stratigraphy may have implications for determining the date of arrival of the boab in the Dampier Peninsula.

7. Conclusions

There are three areas to be distinguished among the terms for the boab:

1. The old heartland of the boab in the Worrorran family where there are inherited terms such as *junguri* and some local variants;
2. An area in the East Kimberley where terms drawn from old Jarragan inheritances and innovations became loanwords which travelled east into the Northern Territory, and;
3. An area in the south and west where a term *larrkarti* originated in the Kimberley south-west periphery in Marrngu and travelled north and east.

There is little doubt that boabs have been in the Kimberley for many thousands of years. Archaeological evidence suggests that human use of the boab fruits increased in the last two millennia in the Central Kimberley. This may be related to the spread of a new variety of the boab associated with linguistic diffusion 3, which was easier to deal with and perhaps better to eat. A clue to this advantage may lie in the original meaning of the term *larrkarti* ‘split side’, which we have interpreted as referring to properties of the ‘nut’ rather than of the tree trunk, or other features of the plant. However, we currently have no independent botanical or genetic evidence to support this claim. A possible reason why this word originated in an area on the western periphery of the region where boabs grow today is that the Pama-Nyungan languages of the south-western Kimberley, such as Karajarri, were only moving into the region in the last couple of thousand years and speakers of them first encountered this unusual and useful tree and its fruit in that recent period, and coined the word. However to motivate the subsequent wide diffusion of the word from the south-west other explanations in terms of new practical or symbolic functions as discussed above are necessary.

In contrast with the diffusion 3 which must have replaced earlier boab words, diffusion 2 east into the Northern Territory could well have accompanied the first

dispersal of the boab into new territory. No doubt this dispersal was heavily dependent on the agency of humans, not only transporting the contents of the pods in their stomachs, but carrying the pods, consuming and exchanging them in new areas. The words which accompanied this dispersal speak strongly of the properties of the fruit pod, and the edibility of its contents.

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