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Tony Jefferies

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Modelling prehistory from language distribution: the Karnic example

Tony Jefferies
Australian National University

1. Introduction

Languages do not spread in a vacuum. They are not self-contained linguistic events but contingent on the history or prehistory more broadly, as Heggarty (2015:600) describes it, the result of:

[p]rocesses in the real-world context – demographic growth or collapse, migrations, conquest, or more subtle socio-political and cultural changes – are the cause; they alone determine entirely the linguistic effects of divergence, diversity and convergence.

Echoes of this indissoluble relationship are seen in the current debate in historical linguistics between Tree and Wave theories, some of which focuses on the distribution of Karnic languages, traditionally spoken in far north-eastern South Australia and south-west Queensland. The former model emphasises the separation of languages and dialects from one another, while the latter one argues for their continued and variable interaction over time. While both models acknowledge a place for the same linguistic phenomena, most notably diffusion, the role these play in the reconstruction of linguistic prehistory in each model is very different. The Tree Model sees diffusion as extrinsic to the determination of subgroup interrelationships; it is critical to the construction of Wave models. The Tree Model emphasises the divergence of related language entities; the Wave model is built on a probability of on-going and changeable interrelationships within the sub-group, as well as the possibility of relationships with unrelated languages. Thus the two models can be seen as different interpretations of the same set of facts; their interpretation of linguistic prehistory differs as do their implications for prehistory generally. The question becomes which model more accurately, or more fully, reflects prehistory. This chapter will argue that other

sources of anthropological knowledge – archaeology, molecular genetics and ethnography – are an invaluable, even necessary, addition to the historical linguist’s arsenal in the quest for language reconstruction. In fact, linguistic models can run the risk of over-simplification if extra-linguistic factors are not taken into account.

2. The Karnic subgroup

As Bown (2009:346) describes it, the Karnic subgroup is ‘complex’; ‘[i]t is not an area where a single method will give uncontroversial results’. Two issues have dogged understanding of the Karnic phylogenetic interrelationship: the status of a number of languages that border the more recognised languages of Karnic, and the variable and complex interrelationship of the languages and dialects thought to comprise the subgroup itself. Resolution of the former question is hampered by poor data, perhaps permanently so. The second has a history of conflicting interpretation (Austin 1990; Hercus 1994; Bown 2009; Breen 2007). While few historical linguists would doubt that Karnic is indeed a subgroup, it has not lent itself to grouping in the conventional Tree Model; as Bown (2009:347) has it:

the disagreement about the internal structure of ‘core’ Karnic implies that something other than a family tree may be more useful to model the history of these languages.

One factor can be ruled out in determining what that model might be: diffusion from external languages (Bown 2001:249-50). These appear to have had little influence on Karnic, which possesses within itself a raft of commonalities, but few pervasive innovations. In general, ‘we need a more explicit model of areal linguistics for subgroups like Karnic, beyond claims of “intense diffusion”’ (Bown 2009:344). However, proposals about what that alternative model might be have been few. In keeping with the Wave Model, Francois (2015:170-1) sees Karnic as exemplifying ‘linkage’, a situation which arises:

[w]hen a dialect continuum... evolves in such a way that its members lose mutual intelligibility [and] thus consists of separate modern languages which are all related and linked together by intersecting layers of innovations

Bown (2009:343-4) alone offers a linguistic theory tied to specified historical events to explain the inconsistencies in Karnic interrelationships, drawing on dialect theory to suggest that the ‘fringe’ or ‘peripheral’ languages of Karnic, not those geographically peripheral but ‘those which do not participate in all the changes which the central (core) languages of the area undergo’ will reflect ‘an earlier dialect area’. Consistent with the Wave Model, therefore, there is an ‘intense’ diffusion, not external or cross-linguistic diffusion but rather internal diffusion within the evolving dialects, and later, languages, that are now thought to comprise the Karnic subgroup.

3. The role of theory

If the multidisciplinary investigation suggested above was merely the collation and analysis of the data available from all quarters then we might regard the process as relatively simple. However, matters are considerably more complex. The material needs to be viewed in a context, which can only be provided by theory – the sort of parallel history familiar to us from Europe and other continents is unavailable. Language interrelationships interpreted to have occurred over 1,000 years will have quite different implications for prehistory than if the time range is thought to have been ten times that figure. Estimates of diachronic change in language interrelationships remain a contentious issue; the one attempt to institute a calculus of change, glottochronology, is now largely discredited. Archaeology provides fixed dates but a different problem arises: what is the relationship between material remains and language, or, indeed, between material remains and prehistory? Progress can only be made if the nettle is grasped and a hypothesis advanced. Here, that hypothesis is demic migratory expansion, i.e., the proposal that Australian language spread has occurred ‘carried in the mouths of its speakers’ (Diebold 1960). This hypothesis comes with a number of ineluctable propositions, foremost of which is that migratory expansion will have occurred in the Late Holocene, i.e., over a period of the last 2,000 or so years. One fortuitous corollary is that demic migratory expansion will have been in progress up until the advent of European colonization and beyond. Therefore, the social institutions and relationships observable ethnographically ought to have resulted from the seminal changes hypothesised to have characterised the Australian Late Holocene.

3.1 Demic Migratory Expansion

Demic migration is the movement not of individuals or small groups away from the society or community in which they originated, i.e., severance of ties, but the expansion of a population from within its borders to occupy new territory. The populations in question are those that speak a particular language, and so demic migration correlates directly with phylogenetic language expansion. For that reason I refer to populations undergoing demic expansion as *linguo-ethnicities*. Two historical factors are at work: those that separate linguo-ethnicities into distinct social entities, like phylogenetic diversification of the original proto-language; and those that work to preserve cultural commonality and continued social interaction. To the extent the latter applies to a demic migratory population, its linguistic history will be consistent with the Wave Model. However, it should not be assumed demic migration implies in any sense a centrally-directed population expansion, nor should it be concluded that there was no consciousness of common identity and that this solidarity may not have been efficacious in the expansionary process. A demic migration history is likely to have involved various and successive beginnings, hiatuses, progressive departures from a number of different loci, new or perhaps renewed

contact within the linguo-ethnicity, as well as possible encounters with different linguo-ethnicities, either those similarly expanding or pre-resident populations. There is also a strong correlation between language distribution and topography and environment. Many subgroup distributions map, if not perfectly, then in a way that can hardly be accidental, onto geographical features. In Australia, the most readily observable of these are the river systems of the interior.

3.2 Karnic Migratory Expansion: hypothesis and predictions

The complete or partial distribution of languages over river systems is not uncommon in Australia, either inland or along the coast. Karnic is no exception, transposing over much of the Lake Eyre drainage. It is surmised that the progressive occupation of the Lake Eyre drainage was the demographic driver of Karnic expansion and that it originated in the better-resourced north and spread progressively south; the final movement was the occupation of the region around Lake Eyre. The greater complexity of language in the north, a well-resourced region with a larger population, and perhaps the competition for resources with neighbouring linguo-ethnicities that this might imply, point to the north as the probable locus of expansion. The harsher environment of the Lake Eyre region is less likely to produce the demographic prerequisites necessary for the initiation of demic expansion. It is consistent with a fragment of a Diyari legend recorded by Howitt (1904:45; also Horne & Aiston 1924:170):

In former times, according to Dieri traditions, their forefathers held the country now occupied by the Wongkanguru, by whom they were thrust out – the Wongkanguru having been themselves expelled from their country by the Wonkatyeri, who had been driven out by the Wonkamala.

Several linguistic and cultural predictions can be made on the basis of demic migration theory:

1. Karnic speakers in the first instance possessed some economic and perhaps technological advantages that allowed them to occupy and successfully utilize the Lake Eyre basin in a way previously not possible;
2. evidence for a substrate component in Karnic should exist, given the probability the region had some resident population prior to Karnic expansion;
3. there ought to be evidence for high levels of external borrowing in some Karnic languages, consistent with them having been in prolonged contact with other language-speakers as a result of demic expansion; and
4. there should be evidence within Karnic-speaking groups of high levels of social interaction, also consistent as an outcome of demic migration.

4. Topography and environment

Pivotal to understanding Karnic prehistory is the unremitting harshness of the Lake Eyre Basin environment. Contrary to somewhat stereotyped ideas of ‘foraging’ economies, it is Karnic speakers’ singular adaptation to this environment that identifies their distinct cultural character. Presumably the social and economic innovations that enabled Karnic speakers to thrive in this environment were also those that enabled their occupation of it, and hence the spread and diversification of their language in the first place. Smith (2013:7) describes this ‘arid rivers’ region as:

a large ephemeral riverine system [...] These arid rivers intermittently transfer large flows of slow-moving floodwaters from the desert margins towards Lake Eyre, which is the terminus for this vast internal drainage system

As a consequence, periodic floods can:

reactivate a network of channels, swamps and floodplains, gradually inundating an area larger than Germany. In the lower part of the catchment, these intermittent flows create a sharp contrast between the transient richness of the floodplains and some of the most arid sandridge country in Australia

Neither catastrophic droughts nor equally disastrous floods were unknown to the peoples of this region of Australia. Unlike much of the desert and arid centre of the continent, water rather than fire is the ‘circuit-breaker’ of the Lake Eyre ecosystem. According to Smith (2013:8):

In general terms, the Spinifex ecosystems of the western half of the desert are rejuvenated by fire, and those in the eastern part of the desert are rejuvenated by water (in the form of excessive floods).

4.1 Environment and demography: water

Throughout the Lake Eyre system water is the essential item around which all life gravitated. Elkin (1931:49) noted of the Diyari:

The kind of country in which they live and travel can be estimated from the fact that one never asks the name of a person’s camp or *ngura*, but of his water, *kapi*. Man is tied from his birth to his death to the rockholes and soaks, and to the tracks between them, and so too were the heroes of mythology

Roth (1897:133) described the association of Karnic-speakers with their environment as follows:

The importance of water both in the neighbourhood of the camp and along the different lines of travel will explain in some measure how it happens that, except in the case of a mountain or some markedly elevated ridge, all geographical location is indicated among these different peoples by words denoting creeks, rivers, waterholes, lakes or springs

Duncan-Kemp (1961:15) noted also the central importance of permanent waters in this region:

like the Georgina, the Mulligan has waterholes three to fifteen miles long, five to six hundred yards across, and twenty-five to forty feet deep, and never known to be dry, not even during the most severe and prolonged drought.

Waterholes, springs, rockholes, swamps, soaks and other reserves of water were themselves subject to great seasonal fluctuation: in the midst of a great drought for example it may be that only certain major waterholes remained and here these societies would have to gather until the landscape was replenished.

4.2 Environment and demography: subsistence

It is not simply the necessity of water in the first instance that drove patterns of Karnic demography but that life in general must inevitably be drawn to water. Waterholes were more vital to hunting and fishing than they were as a supply of water. Water could be obtained from a variety of sources including ground water from digging often quite deep and elaborate wells in suitable locations in river and creek beds. Surface water, however, was required to attract game, the trapping and ambushing of which seems to have constituted Karnic-speakers' primary hunting technique. The environment through which these rivers flowed was economically unprepossessing, as Taylor (1994:7) notes:

Topographically the landscape is characterized by treeless herblands and open woodlands in which *Acacia* species dominate with varied tussock grasses as an understory. The more varied plant communities lining watercourses stand out in relief against the major landforms.

The river systems, usually dry themselves but containing intermittent waterholes, some permanent and large, others seasonal, divided a landscape that was generally undistinguished in terms of the wildlife it supported. Rather than pursuing game over generally very hot and barren country, it was far more economical in energy expenditure to trap game as it came to drink, as it inevitably did.

These rivers also ran seasonally after the summer rains and provided a windfall of fish and aquatic life at that time. Roth (1897:94-95) describes complex and specialised nets. Roth (1897:95) also noted the use of dams or weirs employed to catch fish. Fish, besides providing a period of seasonal plenty, could also be converted into a storable product that, according to Duncan-Kemp (1934:147), possessed not only survival value but trade and ceremonial prestige as well. A great many varieties of amphibious and bird life were also caught in the proximity of the limited sources of surface water, where of course they were compelled to gather for survival in the arid environment. These included many species of birds, for the capture of which were employed a number of specialised nets and hunting techniques. Kangaroos, emus, and plains turkeys were often caught close to water and by employing techniques that required the co-operative endeavour of a party of people. Emus were trapped by being driven

into nets or into waterholes (Roth (1897:96-97) or by the *yel-ka yel-ka* ‘alley way’ technique, whereby they were lured into a blind bush-lined avenue. Similarly, Roth (1897:100) describes how kangaroos were trapped:

In other cases they may be caught in nets, which are quickly rigged up along their beaten tracks to water with exactly the same contrivance and method as that employed in catching emus. Occasionally they may be driven into an enclosure formed of three nets fixed in the position somewhat of the three sides of a square.

Pits were also extensively used to trap large game (Roth 1897:97). Roth’s descriptions indicate that hunting and fishing were calculated activities focused on the exploitation of particular habitats, usually those centred on the waterholes and swamps of otherwise dry river beds. This was a form of hunting more reliant on doing the round of one’s traps and snares or constructing ambushes of one sort or another, and examining micro-environments for signs of game from a sedentary base than of launching unpredictable hunting expeditions. There is evidence of considerable investment in infrastructure: the building and repair of dams and weirs, the digging of pits with the construction of associated fences, and the manufacture of nets, some of which could be 7 feet (2.15 metres) wide and over 120 feet (37 metres) long (Roth 1897:96-97). It is apparent also that for large game, and large amounts of game, hunting, in particular, was a collective activity, usually involving nets and often involving groups comprising the whole community. Given these environmental constraints – why chase game all over the countryside when you can sit by the water and have the game come to you? – and the necessity, often, of employing a large number of people in the activity, a relatively sedentary mode of life far more logically applied to Karnic speakers than the more mobile life of desert peoples in Central Australia.

4.3 Environment and demography: residence and habitation

Roth (1897:105-107) describes three types of Pitta-Pitta habitation, ‘each of them designed for different purposes’: the *koo-rou-i*, the *un-na-kud-ye*, and the *win-ji win-ji*. With the exception of the *win-ji win-ji*, familiar in many Aboriginal cultures as the bough shelter – sometimes used by the Pitta-Pitta as an annex to their main dwelling – these habitations are notable for their robust and complex structure. The *koo-rou-i*, ‘designed for withstanding rain’ was constructed of layers of grass tussocks and mud applied over a wooden frame, sometimes with two entrances and built on high ground to assist drainage. Roth (1897:106) describes the *un-na-kud-ye* as:

constructed similarly to the *kooroui* with the additional feature of the floor lowered beneath the ground

and having a fire:

kindled inside the corner opposite the door, with the result that by sundown, when the embers are removed, the place is quite warm enough to sleep in.

This complexity of construction implies a degree of sedentariness. The *koo-rou-i* as described by Roth was built for the wet months, January through to March, and was obviously intended as the permanent dwelling for a family during that period. Similarly, the *un-na-kud-ye* ‘was designed especially for warmth, and for use in the winter months’, from May through to August. For at least two substantial periods of the year, the wet season and winter, altogether about six months, life was largely sedentary, for northern Karnic speakers at least.

4.4 Demography and social organization

The layout of the land itself in this region tells the story: it consists of a myriad of creeks and river systems all of which for the greater part of the year are dry. Life is conducted along these watercourses and revolves around them. In each of these small self-contained river systems, centring on the few main sources of permanent water, there dwelt a particular group of the Karnic-speaking peoples. In the more northern extent of Karnic the areas occupied by these groups were smaller. According to Roth (1897:41): the Boulia District ‘comprises in all a score or so of tribes, each having its head centre or chief encampment’. The economic lives of Karnic-speakers could be reconstructed as centring on large camps associated with permanent waterholes with smaller groups travelling to and residing on smaller waterholes and surface water locations as the seasons permitted. From these bases women would sally forth to exploit the seed-bearing grasses and bushes of the plains, providing the carbohydrate staple. As surface waters shrank, as inevitably they did, the population would be drawn in from these outer-lying places to Roth’s ‘head-centres’. These ‘head centres’ and ‘chief encampments’ described by Roth (1897:133) were, in fact, the major waterholes around which life for these local groups revolved. Karnic-speakers were essentially riverine societies, reasonably sedentary but locked into a regional network of associations.

4.5 Trade and Manufacture

The Karnic-speakers of the Eyre Basin deserve special attention concerning trade for two reasons:

- the implications of trade for social organization in this region, the fact that the economies of all these small, largely sedentary, and somewhat isolated groups were dependent on the goods they could obtain from their neighbours near and far, and that this interwovenness made for a culture impossible otherwise; and
- the sheer sophistication of the manufacture and trade of this region, knowledge of which has only recently been revealed in archaeological work (see Smith 2013).

According to (Taylor 1994:9), individuals and families belonging to one encampment would set out on trading journeys following recognized watercourses during the winter. Such journeys might take several weeks or even several months.

Roth (1897:134-35) provides an extensive description of the scope of this trade and some of the articles traded. What is remarkable about these quite extensive itineraries is not only the ground covered but the range of absolutely indispensable materials and items that were brought from some other locality back to the various 'head encampments'. Karnic speakers' ability to intensively utilize their riverine environments hinged on the multiplicity of local raw materials and specialized manufactured products that they were able to obtain by trade from across the region. Chief among these were grindstones traded and transported across vast distances and essential for the preparation of grain staples (Smith 2013:197, 282; Roth 1897:91-92, 104; McBryde 1987). The trade in some of the essential items in this region was unlike the chain of 'individual gift exchange' usual in Aboriginal Australia, but was the 'long transfer' of goods over 400-500 km via organised expeditions mounted specifically to acquire red ochre, *pituri* 'native tobacco', grinding slabs and stone axe heads. These involved exchange on a corporate rather than an individual level, and the direct transfer of goods over long distances rather than a chain of small transactions. They are also distinctive in their large scale (see Smith 2013:271). The trade in *pituri* (a prized narcotic that grew only in small circumscribed locations), for example, involved expeditions of 'thirty to fifty Diyari, Yandruwantha or Wangkangurru men', each of whom returned from their journey to the location where *pituri* grew, 'fully loaded with 70lb (32 kg) of dried *pituri*.' A typical expedition could traverse an 800-1,200 km round trip (Smith 2013:293). Associated with the sheer commitment of time and energy to these enterprises is the negotiation and reciprocity that allowed them to flourish, and the politics usually only implied in the sources. According to Howitt (1904:713), '[e]ach man carried back either a slab of stone or lump of red ochre on his head', with 'some kind of permit from the intervening tribes' (Smith 2013:284).

5. Implications for linguistic prehistory

Two seemingly contradictory tendencies reveal themselves in the ethnography of Karnic speakers:

1. the confinement of communities, sometimes quite small, to equally confined territories, often no more than a waterhole on a river or tributary and perhaps some subsidiary waterholes; and
2. the broad and seemingly unconstrained relationship of these communities to an overarching regional society.

Is this arrangement of social organization connected to, or actually conducive to, the hypothesised expansion of Karnic speakers into the Lake Eyre Basin? The first point to be hypothesised is that the Karnic speakers described in the ethnography were the people who migrated into the Lake Eyre Basin sometime in the Mid-Late Holocene, beginning perhaps 2,000 years B.P. I would argue,

with Lourandos (1997), that it was their economic, technological and social life that enabled Karnic speakers to occupy this region in the first place – if perhaps only in its nascent form. In other words, the sophistication of these cultural attributes allowed Karnic speakers to out-compete whoever may have occupied the region formerly and, in fact, to have made a workable success of life in this difficult and harsh place.

There are no smoking guns in this type of research. There are instances of inter-disciplinary correspondence that strongly point to a specific set of circumstances that are consistent with a prehistory of phylogenetic migratory expansion. Among the most salient I would claim are the following.

Firstly, migration probably occurred not in a single wave but in a series of movements, interspersed with hiatuses, with also variable routes of migration proceeding from different loci. This would account partially for the grouping of discontinuous blocs of Karnic languages such as Arabana-Wangkangurru and Pitta-Pitta (Bower 2009:339). If migration has proceeded from the north, following down the main river systems, and this occurred not as one movement but in successive and variable waves, then there would have been competition for the best resources, that is, the largest and most permanent waters, with overpowered communities being forced to content themselves with smaller, less abundant and more remote waterholes located further up the tributaries of the major rivers. Such a distribution is inferred although not directly stated in both Roth (1897) and Duncan-Kemp (1934). Were this to have been historically the case – given that these individual communities could not have been self-replicating and were therefore by necessity part of a web of social interaction that included the acquisition of wives from one's neighbours – then it is probable this history finds expression in language by the sort of convergence usually identified in coastal communities (Sutton 1991:62; Greenhill 2015:570). That is, while shared morphosyntax facilitated communication between these communities, identity was preserved through the 'emblematic' retention of distinctive vocabulary. The language situation, therefore, may have resembled more that described by Francois (2015) for Vanuatu, namely small speech communities each of whose language represents a distinct and variable history within Karnic expansion.

Secondly, we find high levels of borrowing, particularly instances of conceptual borrowing. Pakendorf (2007:24) calls this 'schematic copying' or 'the transfer of linguistic patterns', i.e. typically, 'the adoption of morphosyntactic and syntactic structures, combined with the retention by the host language of its own morphemes and lexemes'. Such borrowing points to prolonged and intense contact between speakers of different languages (Heath 1978; Harvey 2011). Koch (2014:51) describes instances of semantic borrowing 'that signal kinship relations between the referents' (Hercus & White 1973), and the diffusion of a distinctive form of noun-compounding:

even though the elements are not cognate and the languages belong to different genetic groups: Diyari and Arabana-Wangkangurru are in different subgroups of the Karnic family, and Kuyani and Adnyamathanha belong to the Thura-Yura family

Austin et al (1976:63-4) conclude: ‘there has been linguistic borrowing at some time in the past, not of lexical items but of a semantic concept’. Given the distribution of Diyari and Arabana-Wangkangurru at the posited southern extremity of Karnic expansion, it is likely this diffusion has resulted from contact between migrating Karnic speakers and Thura-Yura speakers who were either already in situ or perhaps at the farthest extent of their own demic expansion.

At the projected extremity of Karnic expansion were the southernmost groups such as Diyari and Arabana-Wangkangurru. Hercus (1994:12) remarks that ‘strong convergence has made the Lake Eyre Basin so pronounced as a linguistic area that it is easy to assume the Lake languages to be much more closely related than they really are.’ This would imply Karnic speakers arrived in the region in successive waves – much as described by Howitt (1904:45) – with close interaction having produced the grammatical convergence noted above. It is probable that the Karnic speakers of the immediate Lake Eyre region co-operated closely to ensure their survival against hostile neighbours. This is borne out by:

- instances of cooperation in access to resources described by Smith (2013:298);
- the existence of ‘messmates’; and
- Sutton’s (1991:53) recount of Siebert’s Lake Eyre genealogies in which ‘[t]he majority of marriages (nine out of fourteen) were linguistically exogamous’, and of 34 cases, ‘only four took their father’s language (when different from that of their mother’s)’.

All of this points to a strong communalization of these Karnic speakers.

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