

Station Camps: Identifying the archaeological evidence for continuity and change in post-contact Aboriginal sites in the south Kimberley, Western Australia

Pamela A. Smith

Since the passing of the *Native Title Act 1993* requiring Native Title claimants to provide evidence of cultural continuity throughout the post-contact period, Australian archaeologists have been seeking new ways in which archaeological models can be most effectively applied when working with Native Title claimants (Lilley 2000). One outcome of this revision is that earlier models of post-contact, or frontier archaeology which focused on the processes of colonisation and dispossession are being revised to provide evidence that meets the requirements of the *Native Title Act 1993* and, in particular, a clause in the 1998 amendment of that Act requiring Native Title applicants to (i) be identifiable with the Aboriginal people of the claim area at sovereignty and (ii) be able to demonstrate whether 'the community has maintained connection with the land by observing, as far as practicable, traditional customs, laws and practices of its predecessors'.

The interpretation of archaeological evidence in order specifically to demonstrate the extent to which 'traditional customs, laws and practices' have been maintained represents a significant shift in the archaeological debate in Australia and one that has been recognized by Mr Justice Lee:

Excavation of archaeological sites has shown continuity of use of particular areas of land prior to, and after, European colonization, the latter being demonstrated by artefacts such as tools or trade items fashioned from materials introduced by Europeans. For example, metal and glass have been found in the upper levels of the excavated soil. The archaeological evidence so gathered, when coupled with ethnographic material, is able to identify sites as places of continuing ceremonial or mythological significance.

(Federal Court of Australia 1998 Ben Ward and Ors v State of Western Australia & Ors (1998) 1478 FCA (24 November 1998); see also Fullagar and Head 2000)

This statement also confirms that Native Title law recognises the dynamic nature of Aboriginal culture and acknowledges that communities maintain the customs, laws and practices of their predecessors through the processes of adaptation and change (Harrison 2000a; McDonald 2000:55; Veth 2000).

Whilst it is generally acknowledged that archaeological models alone cannot provide insights into the tensions of the Australian frontier and the post-contact period (see Lilley 2000; Torrence and Clark 2000), models do exist within ethnoarchaeology that challenge perceptions that the relevance of archaeological evidence in Native Title is secondary to that of anthropology (Fullagar and Head 2000; Harrison 2000a; McDonald 2000; Murray 1996, 2000).

The wider study from which this paper is derived sought to test a methodology to analyse cultural change through time and

to contribute to the debate regarding uses of archaeological processes in proving Native Title (Smith 2000). In that study it was argued that the Nyininy¹ regarded themselves as having no choice but to share their country with the colonising pastoralists and their cattle. It was shown that the seasonal round of working with cattle provided the Nyininy (and many of their neighbours who settled at the station) with a lifestyle that enabled them both to maintain and readily to adapt their pre-contact culture. The pastoralists, having incorporated the Traditional Owners into the bottom rung of their hierarchical economic structure early in the twentieth century, regarded themselves as supporting a dependent Aboriginal population until the mid-1970s. Through the use of mid-range theory these two world views, together with the ebb and flow of the processes of cultural change, adaptation and continuity were able to be linked to the archaeological evidence in order to situate the site formation processes within a context of socio-economic change (see also Jones 1997).

The aim of this paper is to present and compare the analyses of artefacts located in three surface assemblages on Gordon Downs Station in the southeast Kimberley Region, Western Australia (Smith 1999, 2000). These assemblages represent clearly defined Aboriginal camping areas adjacent to the station homestead and the occupation dates for each camp broadly reflect three differing post-contact periods. By comparing changes in the artefact types from the three periods evidence is derived about the changing uses of tools and the adaptation of new materials in this region.

The model described here addresses both changes in material culture through time and the identification of elements of cultural change and continuity by linking the function of artefacts to their socio-economic contexts. The study is based on the ethnoarchaeological model developed by Thomas (1983) to analyse and interpret cultural change during the proto-historic period in three Shoshonean communities in the Great Basin, U.S.A. In the ethnoarchaeological study from which this paper is derived (Smith 2000), the archaeological data are linked to the ethnographic evidence provided by people who had lived in these station camps and who now live in Halls Creek or Kundat Djaru (Ringer Soak) Community.

The study area and contact history

The study area is the upper Sturt Creek Basin in the southeast Kimberley region of Western Australia (Figure 1) and members of the Nyininy language group are the traditional land-owning group for much of this region (Tsunoda 1981). Although no comprehensive archaeological study of pre-contact sites has been undertaken in the area, some limited recording of the locations of pre-contact sites along the Sturt Creek was undertaken by Veth (1980) and a

¹ Nyininy is a dialect of Jaru and speakers of this language group are the Traditional Owners of much of the study area (Tsunoda 1981).

number of additional locations were noted by Smith (2000). In 1953 Tindale (1953-54) noted the concentration of sites along the creek and the absence of sites on the adjacent Denison Plains. Cane (1984, 1987, 1989) documented many pre-contact living/activity areas and the associated culture of people belonging to the Pintubi and Gugadja linguistic groups adjacent to the southern boundary of the study area. These people have much in common with the Jaru.

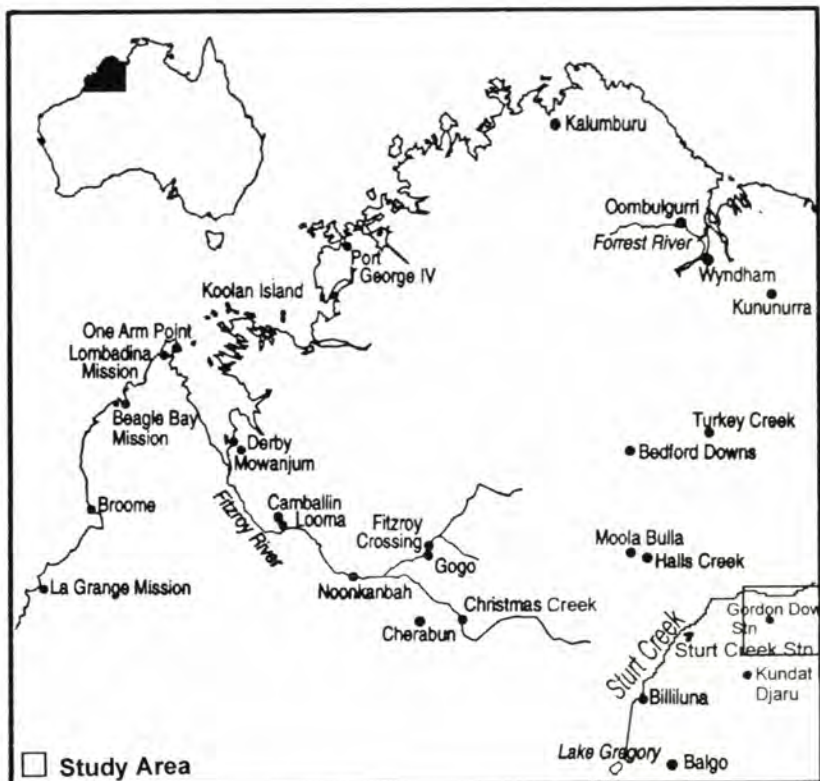


Figure 1 Map of the Study Area

The first recorded official expedition of exploration to the southeast Kimberley was that of the North Australian Exploring Expedition. This expedition, led by Augustus Charles Gregory, the Surveyor General of Queensland, was financed by the Colonial Office. Gregory's objective was to explore the interior of northern Australia and he and his party set out from the mouth of the Victoria River, Northern Territory, in September 1855. The expedition spent three months following the Victoria River to its source and found much of the country to be rugged and lacking good pasture. Whilst exploring the Hooker Creek they identified the headwaters of another creek system which a group followed whilst the rest camped at their previously established depot (Gregory 1884:132-141). They mapped the entire length of the river system to where it emptied into a broad, shallow salt water lake (Lake Gregory, shown on early maps as Gregory's Salt Lake) on the northern margins of the Great Sandy Desert. They named the river system the Sturt Creek. Despite Gregory's reports of good pasture the Sturt Creek was a series of pools and the reports were not sufficiently favourable to attract pastoralists to the region. A further 30 years were to elapse before the first colonists arrived.

In 1879-80 Alexander Forrest led a well planned and successful expedition to the Kimberley financed by the

colonial government of Western Australia. His primary objective was to report on the suitability of the country for sheep and cattle. From the west coast he crossed the Kimberley following the well watered valleys of the Fitzroy, Ord and Negri Rivers which he described as "the most splendid grassy plain it has ever been my lot to see" (cited in Bolton 1958:32).

His overly enthusiastic reports stimulated the immediate settlement of the East Kimberley region by pastoralists. The government gazetted the Kimberley Land Regulations in 1881 and by the end of 1882 more than forty-four million acres had been granted to seventy-seven people, one third of which was leased to five people (Pedersen and Woorunmurra 1995:23). The massive cattle drives from the eastern States began immediately and between 1882 and 1885 thousands of head of cattle passed through Queensland and the Northern Territory destined for the Kimberley.

Nat Buchanan was the first of the overlanders to have an impact on the study area and during the 1880s and 1890s he, together with his son, his brother and his brothers-in-law had taken up pastoral leases which formed a continuous family holding of 2,222,000 acres and included the Soakage Creek outstation² (Clement and Bridge 1990: 115).

These pastoralists and the Australian Investment Agency (Vestey's), who purchased the pastoral lease in 1914, adopted a policy of encouraging Aboriginal camps close to the station homestead to provide a source of free labour while also shooting the "myalls", or those who maintained a traditional lifestyle in the bush and who were perceived as competing with the cattle for water (Buchanan 1933; Buchanan 1996; Traditional Owner pers. com.). As such, it

was safer for Aboriginal people to live at the station than in the bush and by the 1930s most Nyininy speakers from the upper Sturt Creek basin were living in the station camps on Gordon Downs, Sturt Creek and Birrundudu Stations (Smith 2001a).

Period 1	Period 2	Period 3	Period 4
Pre-1880s	1880s-1920s	1920s-1960s	1960s-1970s
Traditional lifestyle - hunting and gathering	Chaos period - invasion and colonisation	"Station Times" 1 - pre-wages work for rations	"Station Times" 2 - small disposable incomes

Table 1 The classification of time periods used in this study

Station life during the 1940s and 1950s was researched and documented by Micha, a German anthropologist who lived on the station in 1959 and 1960 (Micha 1961). His records and the oral histories of elders now living in Ringer Soak community, 8 km from the Gordon Downs homestead,

² Soakage Creek was renamed Gordon Downs Station, probably during the first decade of the twentieth century.

provided much of the information about the 'station times' referred to here.

Three post-contact phases

Three post-contact phases have been identified for the study area prior to 1980 based on information from the above contact history. These periods, together with the pre-invasion period, are shown in Table 1.

I refer to the period following the invasion and colonisation of the south Kimberley from the last decade of the nineteenth century to the 1920s as Period 2, or the Chaos period; it has also been referred to as the "killing times" by local Aboriginal people and more euphemistically as the "period of pacification" by the pastoralists and government agencies. This was followed by the "station times" which I subdivide into the third and fourth periods, the third being prior to Aboriginal people receiving a disposable income in the early 1960s (see Smith 2001b). By the 1920s pastoral leases had established an annual routine and most traditional owners were living in the station camps and had been incorporated into the cattle industry as unpaid labour working in return for rations. The fourth is the second half of the

as continuing to be embedded in notions of cyclic time incorporating life and death and the annual seasons at one level, while being dynamic and responding to the rapid processes of socio-economic change.

Method

The three camp sites discussed in this paper were located and recorded when the post-contact Aboriginal living areas in the vicinity of the Gordon Downs Station homestead were surveyed as part of a wider study. These station camps were visited on several occasions over four years with senior members of the Kundat Djaru community and their knowledge provided the basis for the identification of living areas and the functions of some artefacts.

Archaeological survey

Initially the station homestead and all identified living areas were surveyed. 20m x 20m grids³ of 1m squares were then laid across each living area to record the locations and spatial distributions of artefacts and features such as hearths, activity areas and shelters (Figure 2). All artefacts were photographed and recorded.

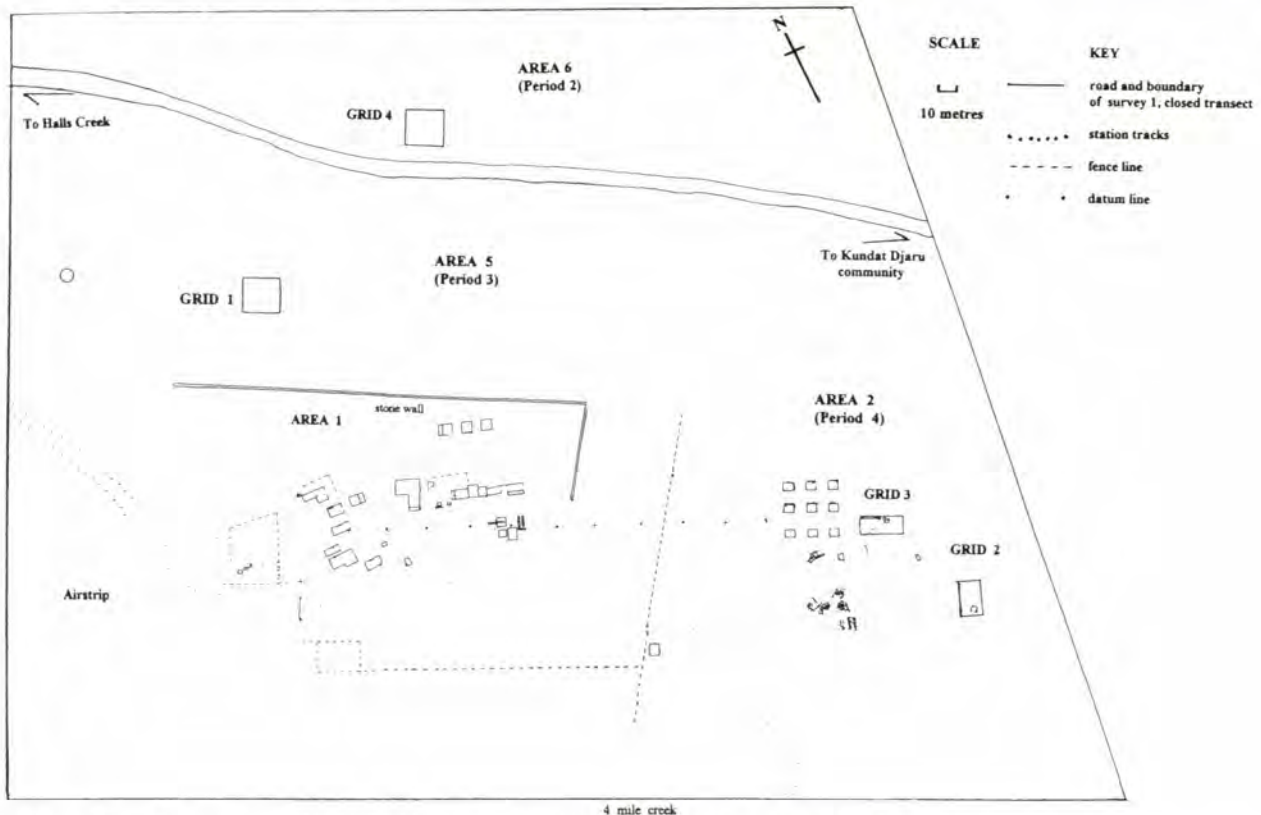


Figure 2 Plan of the survey area, showing the locations of the grids dated to each of the three time periods.

"station times", the 1960s and 1970s when a small wage was paid to workers. By 1980 all Aboriginal people living in the camps had been evicted and forced to move to fringe camps in Halls Creek; in the same year an excision was successfully sought by these same people on crown land at Ringer Soak (Kimberley Land Council 1995).

This division of time is based on clearly defined historical events imposed on the Traditional Owners by the increasingly dominant Anglo-European colonisers. In this model time is represented as a linear progression of events which heralded changes in the socio-economic circumstances of the Nyininy people. For the Nyininy, this historical period is best described

A total of 720 artefacts were recorded within grids which were ascribed to Periods 2 (grid 4), 3 (grid 1) and 4 (grids 2 and 3). Of these artefacts, 16% were from Period 2, 35% from Period 3 and 49% from Period 4. Artefact assemblages dated to each of these periods reflect Aboriginal material culture at differing periods of rapid social and economic change. All three post-contact periods include artefacts embedded in traditional Aboriginal culture as well as Western manufactured articles.

³ The 20m x 20m area for Period 4 was recorded as two 20m x 10m grids.

Artefact analysis and dating

All artefacts were recorded *in situ* and a representative sample of artefacts was collected for analysis in the laboratory. Those not collected were duplicates of those collected, for example, many tin food containers were identical. The identification of lithic and glass tools was based on McCarthy (1967), Flenniken and White (1985), Kamminga (1985) and with the assistance of Phil Czerwinski and Neale Draper. Discussions with Franz Micha and Kim Akerman also provided information which assisted in reconstructing some formation process for each camping area. Ethnographic evidence provided by the Traditional Owners was the source of much of the information on which functional associations were based.

Dating of the site was based on an analysis of Western material culture linked to the ethnographic evidence. Metal containers were especially useful for dating (Anson 1983; Ritchie 1986). For example, whilst the dates of manufacture of some tin cans recorded in Period 3 were able to be established, Micha and former station manager, Stan Jones, reported that the site was not occupied after the late 1950s. This provided a time-frame of maximum and minimum dates within which the site was most likely to have been occupied.

The presence of large metal containers, flour drums and 44 gallon drums in particular, in Period 4 were also important dating indicators. Most glass, both artefacts and debitage, was not useful for dating as it was highly fragmented thick base glass of bottles, although broad dates were possible.

Discussion

In Figure 3 the percentages of artefacts recorded for Periods 2, 3 and 4 are classified by function. The combined percentage of Western manufactured articles recorded in Period 2 is 38%, largely comprising discarded tin food containers in the storage category; this increased to 71% in Period 3 again largely because of an increase in tin food containers, some utensils and structural materials used in building shelters. The accumulation of plastic material, discarded garments, motor vehicle parts, torches, 44 gallon drums, aerosol cans and flour drums during Period 4 indicates a rapid incorporation of mass produced products into everyday use from the 1960s. This was the period when social security benefits provided small amounts of disposable income for the first time and a few employees received a small wage. The large number of engraving tools

recorded in Periods 2 and 3 are an indication that wooden artefacts were being manufactured during these periods. Artefacts believed to have been associated with trade and traditional ceremonial activities were recorded in all three post-contact periods (Traditional Owners pers. com.). In Period 2, 62% of artefacts were traditional-type tools (glass and chalcedony flaked artefacts), this reduced to 29% in Period 3 and to 9% in Period 4.

In Figure 4 the total number of artefacts recorded for each period is categorised by material. The comparison of materials used in each period illustrates the increased use of Western manufactured materials, in particular glass and metal and the continued use of lithic materials into the 1960s.

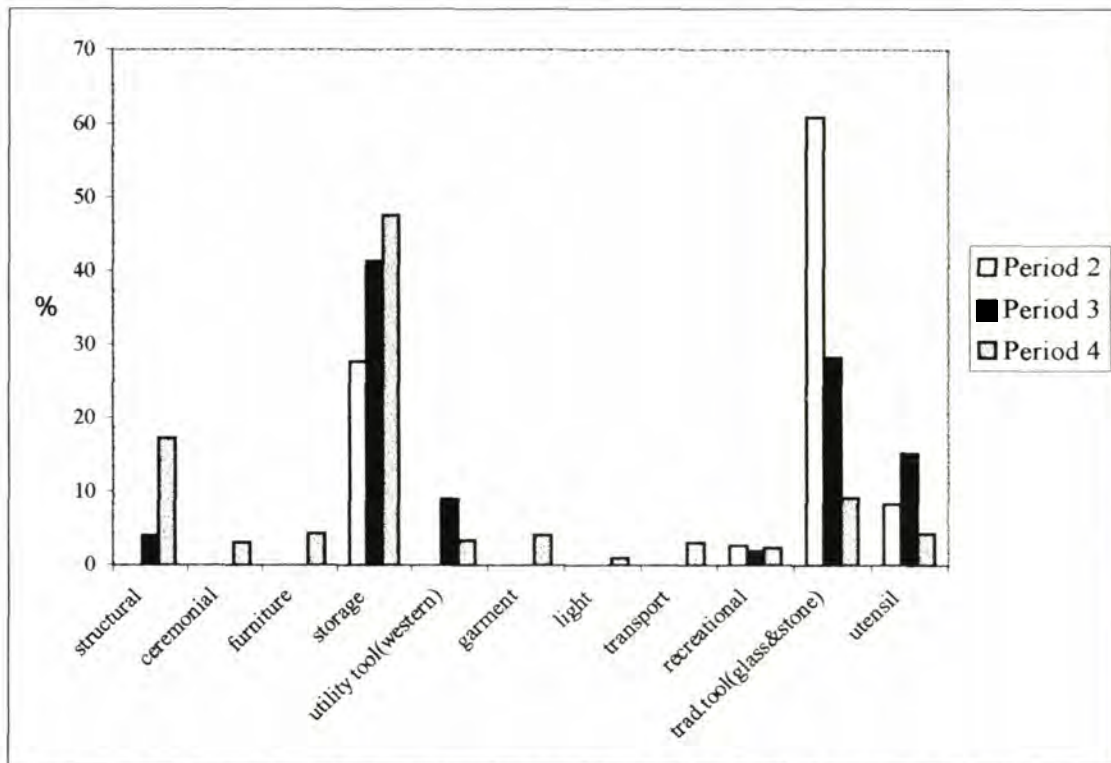


Figure 3 Classification of artefacts by function, expressed as a percent of the total number of artefacts for that period.

Lithic materials

The source of raw material for most stone tools recorded in each post-contact sample is believed to have been the chalcedonic quarry approximately 4-5km from the Gordon Downs homestead. Although exact dating of stone tools is not possible, most were in association with dateable artefacts and/or associated with activity areas, hearths or shelters, dating is based on these associations.

Period 2. Chalcedonic cores and core fragments of both pyramidal blade and multi-directional forms, utilized flakes, blades and point pre-forms dominated the artefact record in Period 2 (McCarthy 1967; Flennikan and White 1985).

Many flakes were multiple use tools with several working edges including beaked edges and had been used for repeated specialised functions such as engraving and wood working. Almost all were types used by men (Binford and O'Connell 1984, Traditional Owner pers. com.). Two wood working tools recorded at this site are illustrated in Figure 5. They are artefact #GD0604.514, a scraper/chisel with a broad flat base, and artefact #GD0604.504, an awl.

Period 3. The number of utilized cores and flaked stone tools declined dramatically in Period 3 when they were largely

replaced by flaked glass tools.

Period 4. As with Period 3, the number of utilized cores and flaked stone tools amounted to a small number of the total artefacts recorded in Period 4. Again, all are of the same material found at the quarries 4-5km from the homestead. Only one stone artefact, a small flake with edge wear and retouch (artefact GD#0202.221) was recorded in Grid 02. In Grid 03 a small tool man-u-facturing site was recorded. This contained two

multidirectional cores, a quantity of debitage and a multidirectional core fragment with a serrated heavy-duty, utilized cutting edge (artefact GD#0203.886) of the type used to butcher and dismember large animals. Included in Grid 03 was a well curated and beautifully made small cutting tool (artefact GD#0203.887). This had been taken off a core by a burin blow to the shoulder to create a thin concave sliver which may have been heat treated. This appeared to have been used for engraving and as a utility blade with three defined working edges.

All stone artefacts from Periods 3 and 4 were multidirectional reduction forms and, although the number of artefacts is small, the absence of chalcedony tools using the pyramidal reduction is interpreted as meaning that they were not manufactured or widely used after glass and metal became readily available. The continued use of selected utilized flakes is believed to be an indication of the use of stone for specialised tasks associated with ceremonies (Traditional Owner pers. com.).

The comparison of stone tools from each of Periods 2, 3 and 4 shows evidence both of cultural continuity and of adaptation. It also illustrates how one technology, the pyramidal blade form, appears to have become redundant in Period 3. This form was used to manufacture blades and points. It is possible that the functions of such blades were fulfilled by metal as it became

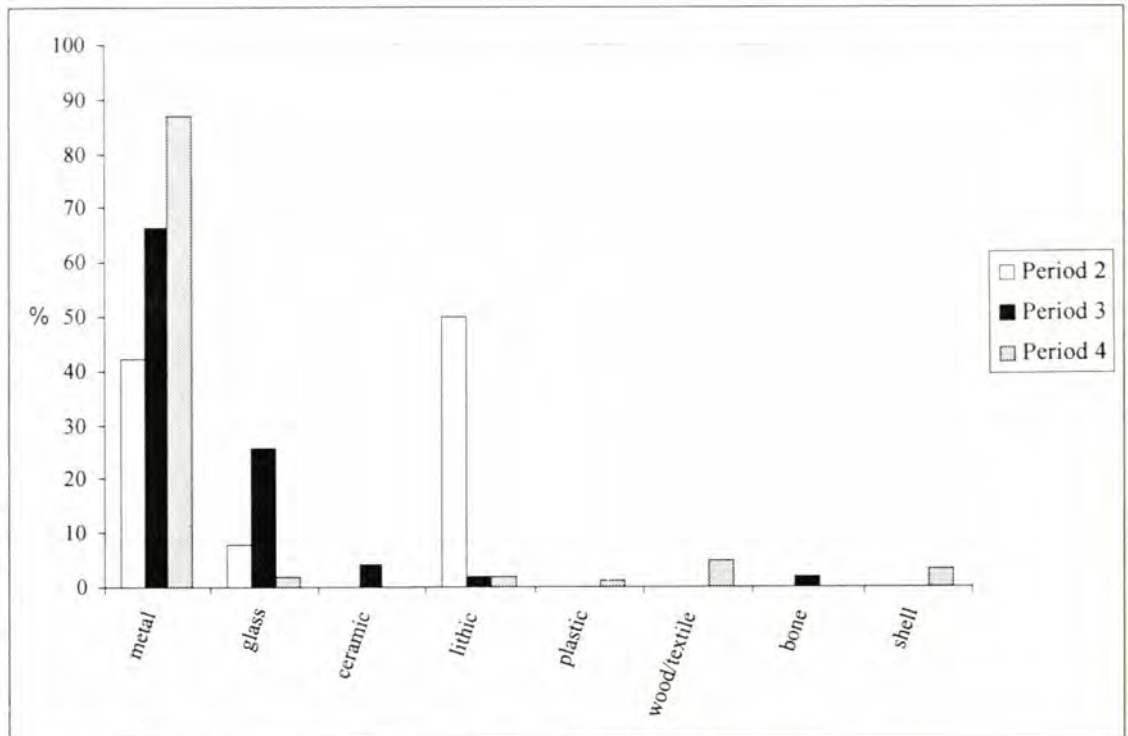


Figure 4 Analysis of artefacts by material for each post-contact period (by % of artefacts in each period).

available, as a metal spear point and several metal cutting tools were recorded in Periods 3 and 4 and local supplies of chalcedony were available. If this did occur, as the results suggest, then one form of stone tool technology was retained whilst another was not.

Metal

Food cans were seldom found on stations prior to the days when trucks first brought stores to the camps. Until the end of the 1930s supplies came by camel and the food taken to remote stations was invariably flour, dried vegetables like blue boiler peas, sugar, tea and rice packed in calico bags; tinned food was heavy compared to these and almost never transported to remote areas (Traditional Owner pers. com.). Unlike metal containers, calico bags have not survived in the archaeological record.

Period 2. In Period 2, 42% of recorded artefacts were of metal. They were tobacco tins, wax vesta boxes and food tins.



Figure 5 Artefact #GD0604.514 (left) and artefact #GD0604.504 (right)

Period 3. Discarded metal artefacts had replaced stone tools as the most commonly encountered artefact in Period 3. They included tobacco tins, wax vesta boxes, wire used for billy handles and fire hooks, food containers, fabricated cutting tools and cut metal fragments. Metal cutting tools had replaced stone cutting tools by the beginning of this period. The wax vesta tins and tobacco tins were the most useful artefacts for dating the earlier sites (Anson 1983; Ritchie 1986).

Period 4. Nearly all (87%) of artefacts in Period 4 were of metal, again reflecting the time when Aboriginal people had small disposable incomes and road transport had greatly



Figure 6 A child's pull along toy made from tobacco tins and golden syrup tins C.1959 (photo by F. Micha)

improved. Of these artefacts, 44 gallon drums and flour drums predominate.

Metal was highly valued as a raw material and was recycled for use in a wide range of secondary functions. Metal food containers of varying sizes were recorded as recycled artefacts. Only one was recorded during Period 2, but many were recorded during Periods 3 and 4. They were most frequently modified by the addition of a wire handle and recycled as a billy can used for a variety of tasks depending on its size. Such tasks included making and drinking tea, carrying small fruits and seeds and for carrying



Figure 7 A shelter in the Aboriginal camp at Gordon Downs C.1960 (photo by F. Micha)

water to the camp. Whilst the can was performing a new function as a billy, most of its uses were to replace functions formerly fulfilled by coolamon, the carefully manufactured wooden bowls used for a variety of functions. Billies were, and are today, personal possessions and many are likely to have been taken when the camp sites moved.

All artefacts identified as toys were either whole or half round tobacco tins with holes punched through the middle. These punctured tobacco tins were puzzling until a pull-along child's toy made from a tobacco tin was found, as illustrated in Figure 6. Such toys were identified in each of the three periods.

Larger recycled metal containers were predominately kerosene tins, flour drums and 44 gallon drums. Kerosene tins were recorded only in Periods 2 and 3 and these too were used mainly for storage and for carrying water and food. Figure 7 illustrates a shelter in the Gordon Downs camp (C.1960) with a range of billies made from recycled metal containers ready for use.

Flour drums and 44 gallon drums were recorded only in Period 4. The most frequent use made of 44 gallon drums was as sheet metal to construct shelters. Each sheet was made by removing the top and bottom of a drum and slitting the cylinder down the side before flattening it out. Larger drums were converted into stoves and were also used to collect soak water.

Recycled flour drums appeared in the early 1960s and represent the first recorded items of domestic furniture in the camps. They were used as benches, seats, storage containers, water carriers and structural supports, to name a few.

Metal was also recycled to make a range of tools. Examples from Period 3 include a knife and a possible meat cleaver. A metal spear point cut from a carefully selected metal sheet with a reinforcing seam in the centre is illustrated in Figure 8. Spinifex resin was identified by Richard Fullagar where the point had been hafted. This point was recorded in Period 4 (Area 2) and is one of several examples of the adaptation of Western manufactured material for traditional style hunting and gathering.

Glass

Period 2. Three glass artefacts were recorded within Grid 4 and were traditional-type tools made by replicating methods used for stone reduction. Each had been carefully crafted from thick glass, two from the bases of bottles and one from a thick glass ashtray. All three were multi-directional core fragments and were excellent examples of cores used for flake production (Flenniken and White 1985:138). An example of each type is illustrated in Figure 9, they are artefact #GD0604.612, an engraving tool and artefact #GD0604.525, a carefully curated multi-use tool showing a groove typical of tools used for shaving a small shaft.

Artefact #0604.612 is an example of a utilized core tool that has been produced from the thick base glass of an early beer bottle, with clear imperfections in the manufacturer's mould. It has five working edges for distinct tasks. Each end has been used as an awl and the middle section has been used for wood shaving, possibly a spear shaft.

The three glass core tools recorded represent early examples of cultural continuity during Period 2 at Gordon Downs station. The thick glass provided an excellent medium for transferring the technology used in lithic reduction to the manufacture of traditional-type glass tools and the multidirectional reduction process used was very similar to that used on stone. No glass debitage was recorded within Grid 04. As there was no debitage associated with the three tools recorded and only a small amount of glass debitage nearby, it is most likely that the bottle glass was quarried and reduced at the homestead dump (see Binford and O'Connell 1984). As each piece was highly curated it is believed that good bottle glass was valued. The household dump for this period was not able to be located.

Period 3. Apart from a small quantity of broken bottle glass (squares Q3, T4, I9, O18), all glass scatters were associated with tool manufacturing sites. Glass cores and flakes, almost all of thick glass and most from the bases of bottles, suggested that, again, the glass had been carefully selected for the purpose of manufacturing tools (refer to Harrison 2000b) for a discussion on regional variations in glass selected for manufacturing tools).

Glass fragments identified were from beer bottles (2 scatters) and a tomato sauce bottle (Rosella brand). The reduction process was well illustrated by glass fragments from the sauce bottle (artefacts #GD0501.031-#GD0501.040). Of ten fragments, four had been knapped and all were associated with base glass. First stage reduction had taken place elsewhere (the rubbish dump?) and the second and/or third stage reduction was at the camp. Three of the four flakes show remarkable similarities. The method used on this particular scatter was also an excellent example of the maintenance of cultural continuity and replicated methods used in producing the multi-directional core forms recorded in Period 2.

No scatter of glass was sufficiently large to represent a complete bottle. 78% of the glass was unable to be identified

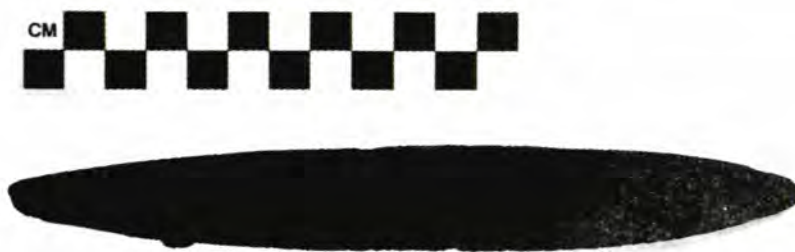


Figure 8 Metal spear point. Note how the metal has been carefully selected with the ridge of metal providing reinforcing through the centre of the point.

because it had been removed from its original context and usually only the base glass was present, although three necks were recorded. No evidence was found of tools manufactured from the body of bottles. 66% of the glass tools, which included utilized core fragments and flakes, had at least one beaked edge and several were multiple beaked edge flakes (Kamminga

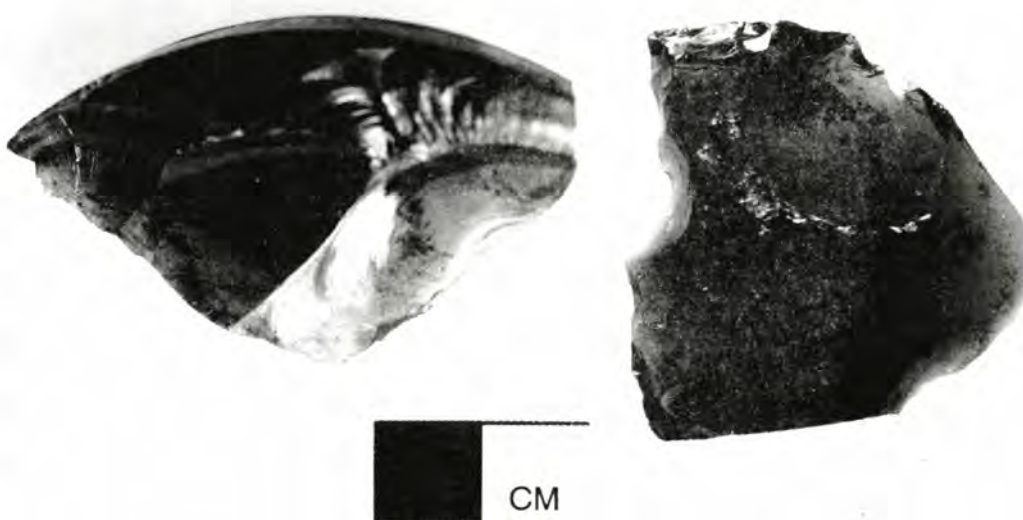


Figure 9 Artefact #GD0604.612 (left) and artefact #GD0604.525 (right)

1985). The extremely high number of beaked edge flakes indicates that repetitive knapping technique was used; a heavy impact blow reduced the flake, possibly resting on an anvil to take the bite out and create engraving edges. It is most likely that engraving and wood working were being carried out at this site, activities associated with men (Flennikan and White 1985).

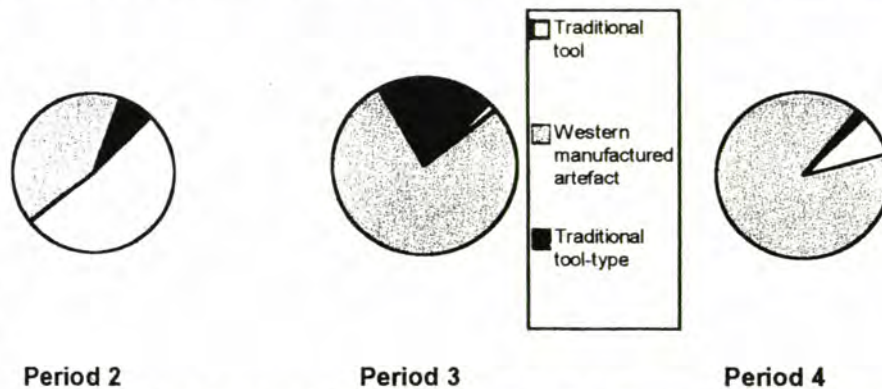


Figure 10 Artefacts from Periods 2, 3 and 4 grouped by (i) traditional artefact (using traditional materials), (ii) Western manufactured artefact and (iii) traditional artefact type (recycled from Western manufactured artefacts).

Period 4. The broken glass appeared to have been 3 broken glass events rather than glass which had been selected for tool manufacture and brought to the site. Three flakes may have been knapped, but did not appear to have been utilized.

Other materials

A cache of eleven pieces of eroding pearl shell was recorded in a shelter dated to Period 4 (Grid 2). Pearl shell is a valuable commodity in this region and may have been used for either ceremonial purposes or trade. The pearl shell had originated from the west Kimberley coast (a west Kimberley pearl trader identified the shell as originating from the 80 mile beach region, south of Broome) and this camp at Gordon Downs had been on an important traditional and post-contact trade route (Akerman 1994).

The remaining minor categories of materials include 4 fragments of ceramic ware in Period 3, plastic in the form of sheeting used in the shelter in Period 4, and textiles representing discarded clothing and shoe fragments also in Period 4.

Conclusions

The technological transition from artefacts associated with a traditional hunting and gathering lifestyle to Western manufactured products associated with less mobile lifestyle in a cattle station camp is shown in Figure 10. The use of Western manufactured materials to manufacture traditional artefact types took place mainly during Period 3 when utilized glass cores and flakes were represented. The exceptions were 3 glass tools in Period 2 and one metal spear point and chalcedony cores and flakes in Period 4. It was predicted that glass tool manufacturing sites would be recorded in Period 2, but although three glass tools were recorded, no glass tool manufacturing sites were found. This may mean that Grid 4 was not a typical site or that these artefacts were deposited at a later time.

The analysis of the glass artefacts and the comparison between the time periods has demonstrated how stone tool technology was successfully transferred to glass. It has also been possible to identify approximately when some changes in artefact type and function occurred. For example, the high number of beaked engraving tools in Period 3 is believed to have been associated with the production of wooden artefacts for trade. This site was on the route of the first track across the Tanami, the only route between the Kimberley region and Central Australia until the 1960s, and the few passing vehicles facilitated trade along a traditional trade route and provided opportunities to sell artefacts to white travellers (Micha pers. com.).

Stone tool types, as expected, are most prevalent in Period 2 and two forms of cores were identified, multi-directional and pyramidal. Of these two forms, only tools manufactured by multi-directional reduction method were recorded in Period 4 at the end of the "station times" and, based on information from the traditional owners, it is believed that their main function was ceremonial (Traditional Owners pers. com.). As chalcedony was readily available from nearby quarries, it is speculated that the reason why the pyramidal blade reduction form was not recorded after Period 2 was that cutting tools had been replaced by glass and metal forms.

Although most of the functional categories allocated to the artefacts in Figure 3 did change from traditional artefact types to Western manufactured artefacts between Period 1 and Period 4, artefacts in the ceremonial category appear to have been the same or similar and are important evidence of cultural

continuity. Artefacts in this category in Period 4 were the chalcedony tools believed to have been manufactured for ceremonial purposes and the pearl shell, known to have been traded into the area for both trade and ceremonial uses (Micha 1970; Akerman 1994).

The analysis of the recycled artefacts provides evidence of continuity with traditional culture and illustrates the choices that were made when new technologies and methods were adopted. The use of recycled glass and metal for traditional-tool types provides evidence of traditional cultural activities adapting to new materials, whilst at the same time non-traditional tools, such as the knife and the meat cleaver, were also being manufactured by recycling processes.

This comparative ethnoarchaeological model has revealed changes and adaptations in the use of material culture through three post-contact periods and has provided evidence about the choices that Aboriginal people made when selecting new materials as they became available. It has also demonstrated how a sample of cultural continuities, discontinuities and examples of adaptation to changing socio-economic circumstances are able to be identified in the archaeological record and interpreted with the assistance of the Traditional Owners, documented histories and other ethnographic sources.

The data presented in this study is considered to be relevant to the upper Sturt Creek area only. The comparative model used, however, presents a strategy that archaeologists may find useful when working with Native Title claimants to prove their connections to their 'country' and to demonstrate that traditional customs, laws and practices have been maintained throughout the post-contact period and through the pre-contact period where the archaeological evidence is available.

Acknowledgements

Members of the Kundat Djaru community, several of whom have now passed away, generously shared their knowledge and made this study possible. In particular, I thank Robert Rallah, Peter Gordon, Albert Young, Mary Seela and Judy Tchooga. I also thank Ian McNiven for his insightful comments as a referee, Richard Smith and Donald Pate for their support and advice, Phil Czerwinski and Neale Draper for assisting with the analysis of the stone and glass tools, Matt Schlitz for photographing the artefacts, Dr Franz Micha for his assistance with the anthropological interpretations and for making his photographs available for publication, Kim Akerman for providing many insights into camp life and for the use of his personal library and an anonymous referee for useful comments.

A Flinders University Research Grant provided much of the funding for this research which was undertaken as a part of my PhD research project.

References

- Akerman, K. with Stanton, J. 1994 *Riji and Jakoli: Kimberley Pearlshell in Aboriginal Australia*. Darwin: Northern Territory Museum of Arts and Science. Monograph Series 4.
- Anson, D. 1983 Typology and seriation of tin wax vesta matchboxes from central Otago: A new method of dating historic sites in New Zealand. *New Zealand Journal of Archaeology*, 5: 115-138.
- Binford, L.R. and O'Connell, J.F. 1984 An Alyawara Day: The stone quarry. *Journal of Anthropological Research*, 40:406-432.

- Bolton, G.C. 1958 *Alexander Forrest, His Life and Times*. Melbourne: Melbourne University Press.
- Buchanan, B. 1996 *In the Tracks of Old Bluey*. Rockhampton: Central Queensland University Press.
- Buchanan, G. 1933 *Packhorse and Waterhole, with the First Overlanders to the Kimberley*. Sydney: Angus and Robertson.
- Cane, S.B. 1984 Desert Camps: A Case Study of Stone Artefacts and Aboriginal Behaviour in the Western Desert. Unpublished PhD Thesis. Department of Prehistory, Australian National University, Canberra.
- Cane, S.B. 1987 Australian Aboriginal subsistence in the Western Desert, *Human Ecology*, 15:391-434.
- Cane, S.B. 1989 Australian Aboriginal seed grinding and its archaeological records: A case study from the Western Desert. In D.R.Harris and G.C.Hillman (eds) *Foraging and Farming: The Evolution of Plant Exploitations*, pp. 99-119. London: Unwin Hyman.
- Clement, C. and Bridge, P. (eds) 1990 *Kimberley Scenes. Sagas of Australia's Last Frontier*. Perth: Hesperian Press.
- Fledden, J.J. and White, J.P. 1985 Australian flaked stone tools: A technological perspective, *Records of the Australian Museum*, 36:131-151.
- Fullagar, R. and Head, L. 2000 Archaeology and Native Title in Australia: national and local perspectives. In I. Lilley (ed.) *Native Title and the Transformation of Archaeology in the Postcolonial World*, pp.24-34. Sydney: University of Sydney.
- Gregory, A.C. 1884 *Journals of Australian Exploration*. Brisbane: James C. Beal, Government Printer.
- Harrison, R. 2000a Challenging the 'authenticity' of antiquity: contact archaeology and Native Title in Australia. In I. Lilley (ed.) *Native Title and the Transformation of Archaeology in the Postcolonial World*, pp.35-53. Oceania Monograph 50. Sydney: University of Sydney.
- Harrison, R. 2000b 'Nowadays with glass': regional variation in Aboriginal bottle glass artefacts from Western Australia. *Archaeology in Oceania*, 35: 34-47.
- Jones, S. 1997 *The Archaeology of Ethnicity: Constructing Identities in the Past and Present*. New York: Routledge.
- Kamminga, J. 1985 The pirri graver. *Australian Aboriginal Studies*, 2: 2-25.
- Kimberley Land Council. 1995 Kundat Djaru Community Plan. Kundat Djaru Community Office, Western Australia.
- Lilley, I. (ed.) 2000 *Native Title and the Transformation of Archaeology in the Postcolonial World*. Oceania Monograph 50. Sydney: University of Sydney.
- McCarthy, F.D. 1967 *Australian Aboriginal Stone Implements, including bone, shell and teeth implements*. Sydney: Trustees of the Australian Museum.
- McDonald, J. 2000 Archaeology, rock art, ethnicity and Native Title. In I. Lilley (ed.) *Native Title and the Transformation of Archaeology in the Postcolonial World*, pp.54-64. Oceania Monograph 50. Sydney: University of Sydney.
- Micha, F.J. 1961 Eingeborene als arbeitskrafte auf den viehstationen der sudostlichen Kimberley, vornehmlich auf Gordon Downs station. *Herman Trimborn zum 60. Geburtstag*, pp.65-93. Braunschweig: Albert Limbach Verlag.
- Micha, F.J. 1970 Trade and change in Australian Aboriginal cultures: Australian Aboriginal trade as an expression of close culture contact and as a mediator of culture change. In A.R. Pilling and R.A. Waterman (eds) *Diprotodon to Dtribalization. Studies of Change Among Australian Aborigines*, pp.285-313. East Lansing: Michigan State University Press.
- Murray, T. 1996 Towards a post-Mabo archaeology of Australia. In B. Attwood (ed.) *In the Age of Mabo*, pp.73-87. Sydney: Allen and Unwin.
- Murray, T. 2000 Conjectural histories: some archaeological and historical consequences of Indigenous dispossession in Australia. In I. Lilley (ed.) *Native Title and the Transformation of Archaeology in the Postcolonial World*, pp.65-76. Oceania Monograph 50. Sydney: University of Sydney.
- Pedersen, H. and Woorunmurra, B. 1995 *Jandamarra and the Bunuba Resistance*. Broome: Magabala Books.
- Ritchie, N.A. 1986 Archaeology and History of the Chinese in Southern New Zealand During the Nineteenth Century. Unpublished PhD Thesis, Department of Anthropology, University of Otago, New Zealand.
- Smith, P.A. 1999 Station Camps: Identifying the evidence for continuity and change in the south Kimberley, W.A. Australian Association of Archaeologists, Conference, December 1999, Mandurah, W.A.
- Smith, P.A. 2000 Station camps: The Ethnoarchaeology of Cultural Change in the Post-contact Period in the Southeast Kimberley Region of Western Australia. Unpublished PhD Thesis, Department of Archaeology, Flinders University, Adelaide.
- Smith, P.A. 2001a Into the Kimberley: The Invasion of the Sturt Creek Basin (Kimberley region, W.A.) and evidence of Aboriginal resistance. *Aboriginal History* 24: 62-75.
- Smith P.A. 2001b Station camps: legislation, labour relations and rations on pastoral leases in the Kimberley region, Western Australia. *Aboriginal History* 24: 77-99.
- Thomas, D.H. 1983 *The Archaeology of Monitor Valley. Volume I. Epistemology*. Washington: American Museum of Natural History. *Anthropological Papers of the American Museum of Natural History New York*, 58 (1).
- Tindale, N.B. 1953-4 *Expedition of University of California. Los Angeles and University of Adelaide 1953-4*. Journals of N.B Tindale, Volumes 1-4. Adelaide: Archives of the South Australian Museum.
- Torrence, R. and Clarke, A. 2000 *The Archaeology of Difference: Negotiating cross-cultural engagements in Oceania*. One World Archaeology 38. London: Routledge.
- Tsunoda, T. 1981 *The Djaru Language of Kimberley, Western Australia*. Canberra: Research School of Pacific Studies, Australian National University. *Pacific Linguistics Series B - no.78*
- Veth, P.M. 1980 Sturt Creek Survey. Unpublished preliminary Field Report.
- Veth, P.M. 2000 The contemporary voice of archaeology and its relevance to Native Title. In I. Lilley (ed.) *Native Title and the Transformation of Archaeology in the Postcolonial World*, pp.78-87. Oceania Monograph 50. Sydney: University of Sydney.

