JOURNAL OF THE
ANTHROPOLOGICAL SOCIETY OF
SOUTH AUSTRALIA

Special Edition
Material Culture Studies

VOLUME 36 – DECEMBER 2012

EDITORS
Amy Roberts and Peter Sutton
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ISSN1034-4438
TOOLKIT TALK: AN INVESTIGATION INTO THE ORIGINS OF THE TOOLKIT IN ARCHAEOLOGY AND ITS APPLICABILITY TO AUSTRALIAN INDIGENOUS ARCHAEOLOGY

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Abstract

The use of the term ‘toolkit’ to describe aspects of lithic assemblages has been widespread since it was introduced into the archaeological lexicon in the 1960s. The history of the concept, which emerged from the analysis of European Mousterian assemblages by Binford and Bordes, is traced from its roots to the present day. In Australia it has become a generalised term which has been used to explain the complete range of technologies available to a culture, as well as defining strategies for risk management and mobility. This paper argues that the concept of a lithic toolkit may apply in a European context but has limited applicability to Australian lithic assemblages.

Introduction

This paper has its origins in an article by Ron Hewitt (1976) who found a lithic cache at Lake Hanson near Woomera on the Arcoona Plateau in South Australia. Woomera and the surrounding areas are part of the traditional country of the Kokatha people (Hewitt 1976:48). The cache contained 105 stone artefacts, mainly adzes (tulas), engravers and points, which Hewitt interpreted as a woodworking kit. Hewitt, an amateur archaeologist and collector from the Woomera area, donated much of his collection to the South Australian Museum during the 1970s, however the aforementioned cache was not located amongst the Museum’s collections and it is possible that Hewitt later gave it to a representative of the Kokatha people (Ron Hewitt pers. comm.). The cache would have been
identifiable by the principal material used in its making – oolitic chert. During an analysis of Hewitt’s collections it became evident that oolitic chert was an extremely rare material in the Woomera region, highlighting the uniqueness of the cache itself.

Given that the cache could not be located during my analysis of the Hewitt collection it is not the focus of this paper. Instead, this article traces the origins of the toolkit concept from its American and European roots in the 1960s to its current usage in the Australian archaeological literature as a term to describe Indigenous lithic assemblages.

One issue I raise in this paper is that the concept of the toolkit is a relatively modern one, even in Western society. The Oxford English Dictionary (1933) records the term kit, when associated with tools during the industrial era of mid-19th century Europe, as a place in the workshop where a cobbler’s tools were kept. These days the term toolkit relates more to specific discrete entities, or collections, of tools carried around by tradespeople to facilitate quite specific tasks. The toolkit of a house painter, for example, is quite a different set of tools to those of a diesel mechanic or plumber, illustrating that one cannot talk about toolkits without also talking about function; the two are mutually dependent. In archaeology the concept was not fully utilised until the 1960s when Lewis and Sally Binford claimed to find toolkits in European and Near Eastern lithic assemblages from Mousterian (Neanderthal) collections (Binford and Binford 1966:292). Since then, despite vigorous questioning of the Binfords’ results by others, the concept of lithic toolkits has been adopted by a number of archaeologists as an unquestionable given (i.e., Banks 2009; Kuhn 1994; McCarthy 1976:19).

My analysis of Hewitt’s collection, in search of the elusive toolkit, and subsequent research into the origins of the toolkit concept, has prompted me to question the appropriateness of a relatively modern Western concept as a framework for understanding Australian Aboriginal lithic assemblages. As a result I suggest that we are at risk of misleading ourselves and others by suggesting that in the pre-colonial past Aboriginal people used function-specific discrete assemblages of stone tools called ‘lithic toolkits’ that fit the European concept. Had they existed they would surely have been described ethnographically and found archaeologically. I believe
that neither scenario has occurred, and as such argue that the continued use of the concept in Australian archaeology is now inappropriate. Consider this statement from Fredrick McCarthy (1976:19):

The tool kit used by Western Desert Aborigines (Tindale 1941) included a crude handaxe for detaching slabs from trees, and for rough shaping of them into weapons and other objects; hafted stone chisels for general woodworking; large hafted knives for domestic use; wooden wedges and stone hammers; and two sacred tools used by men – a hafted flake for engraving spearthrowers and ritual boards, and a knife for body scars and circumcision.

This account of an Aboriginal toolkit appeared in the second edition of McCarthy’s anthology of *Australian lithics, Australian Aboriginal Stone Implements, including Bone, Shell and Teeth Implements*, the first edition being in 1967. McCarthy included a few additional pieces of information which were not available for the first edition; one being this description of the toolkit used by Western Desert Aboriginal people which had been inserted between two paragraphs on page 19, in a sub-chapter of the introduction under the title ‘Uses’. McCarthy’s reference in this statement refers to Tindale’s (1941) work with Western Desert Aboriginal people: not their toolkits; Tindale makes no mention of these toolkits. Where this toolkit was found or kept by its owners is not mentioned by McCarthy, and no further discussion of it occurs in the book.

While John Mulvaney used the term toolkit in both his 1969 and 1975 editions of *The Prehistory of Australia* in general terms, this aforementioned quote from McCarthy was the first in Australian archaeological literature to give a precise itemised description of an Aboriginal toolkit. It appeared ten years after the concept was applied to European lithic technology by Lewis and Sally Binford, but differed dramatically from the Binfords’ original definition of a toolkit as a function-specific entity. Furthermore, McCarthy’s Aboriginal toolkit has never been found as an archaeological entity or mentioned ethnographically. It does not include other stone implements that were used by Aboriginal men and women such as grinding stones, scrapers and other unhafted tools. It also intimates that this was the only toolkit used by Aboriginal people of the Western Desert, and that
everybody had the same one. Clearly this was not the case as this toolkit is quite gender specific, covers a multitude of tasks, and would have been too unwieldy for one person to carry with them. So the questions that arise from McCarthy’s statement are: Why did he include this section in his later edition? What new research had been done in the previous ten years to legitimise the toolkit concept? Is the concept relevant to Aboriginal Australians, and do these toolkits actually exist? The reason why these questions are still relevant today is because of the influence McCarthy’s work has had on contemporary archaeological thinking around Indigenous lithics (Khan 1993).

In this paper I address these questions by discussing the origins of the toolkit concept in world archaeology, and provide a brief critical overview of the use of the concept in Australia. Later I argue why the toolkit concept is inappropriate within Indigenous Australian archaeological contexts.

The International Context

In the 1960s American archaeologists Lewis and Sally Binford revealed toolkits within European and Near Eastern Mousterian (Neanderthal) lithic assemblages during a series of statistical experiments. This paper traces their argument as it developed in conjunction with ongoing counter arguments from others, in particular François Bordes (Bordes and de Sonneville-Bordes 1970).

Bordes (1953) introduced new standards of description and comparison into archeological analysis that were described by Dibble and McPherron (2006:783) as one of the most important contributions to palaeolithic archaeology in the mid-20th century. Bordes’ objective comparison methodology of Mousterian artefacts initially classified these assemblages, in 1953, into six groups which he later condensed into four typological units in 1961 (Binford and Binford 1966:238). They are:
The Mousterian of Acheulian Tradition (M.T.A.): Characterised by the presence of handaxes, numerous side-scrapers, denticulates and backed knives;

Typical Mousterian: Like M.T.A., but with reduced frequencies of handaxes and knives;

Denticulate Mousterian: 80% denticulates and notched tools; no handaxes or backed knives; and

Charentian Mousterian: Subdivided into two types - Quina and Ferrassie; characterised by few or no handaxes or backed knives, as well as very high frequencies of side-scrapers.

Bordes’ use of cumulative frequencies allowed him to trace the relatively minor fluctuations of artefact types in the different Mousterian assemblages based upon the presence, absence and frequency of particular artefacts – typical backed knives, Quina scrapers and handaxes (Bordes and de Sonneville-Bordes 1970:66).

Assemblage variation in lithic assemblages, as developed by Bordes, was also becoming the focus of interest for a group of academics based at Chicago University in the early 1960s. Anthropologists, F. Clark Howell and Leslie G. Freeman, were involved in re-evaluating assemblage variation at Lower and Middle Pleistocene sites in Europe, and had already discussed the idea that these prehistoric sites may contain toolkits (Freeman 1966; Howell 1964). Howell’s (1966:182) concentration on the differences manifest at Acheulian (Homo erectus) sites from the United Kingdom raised questions for him about the nature of artefact relationships within assemblages, and Freeman’s (1966:232) factor analysis of Mousterian sites from Spain and France advanced the possibility of assemblage variation being more than just industrial evolution or cultural influence, but rather toolkits which reflected different activities.

Lewis and Sally Binford agreed with Freeman arguing that the Mousterian facies did not represent cultural variations, as maintained by Bordes, but were toolkits aimed at performing different tasks at different times and places, depending upon seasonal variations (Binford and Binford 1966:292; Holdaway and Stern 2004:50). In 1968 Sally Binford developed toolkit categorisations defined by the artefacts’ presumed functional attributes (Binford 1968:52).
The Binfords’ use of statistics to determine toolkit structures was derived from a theory of ‘multivariate causation’ which states that the “determinants of any given situation are multiple and may be linked” (Binford and Binford 1966:241). Their analysis, which was based upon ‘functional variability’ produced five multivariate factor groups, each with their own list of tool types (Binford and Binford 1966:259), which the Binfords stated were “sub-units of artefacts which we can infer were used in a related set of activities” (Binford and Binford 1966:292). These five factors were later refined into functionally distinct toolkits by Binford (1968:52). They are (abbreviated here):

- Activities carried out around the home-based manufacturing of secondary tools and hide finishing (borers, becs, end scrapers, burins, and naturally backed knives);
- Hunting and butchering tools (points and side scrapers of all types);
- Food preparation (backed knives, naturally backed knives, end notched pieces, typical and atypical Levallois flakes and unretouched blades);
- Processing of plant material (denticulates and notched tools, scrapers with abrupt retouch, raclettes, truncated flakes); and
- Specialised hunting and butchering (elongated Mousterian points, discs, scrapers on the ventral surface, typical burins and unretouched blades).

Binford and Binford (1966:292) made two main points about their analysis of the Mousterian complex:

- The use of multivariate statistics allowed the partitioning of Mousterian assemblages into subunits of artefacts which could reasonably be interpreted as representing toolkits for the performance of different sets of tasks; and
- These subunits of artefacts vary independently of one another and may be combined in numerous ways.

The differences in approach between the Binfords’ multivariate factors and Bordes’ cultural assemblages can be summarised as functional groupings versus typological frequencies. Bordes’ assemblages were purely determined by the frequency of particular tool types (mainly handaxes), whereas the Binfords had grouped tool types, based upon functional interpretation, using statistical methods (Binford and Binford 1966:244).

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Another difference in approach emerged later, when Bordes used an analysis of reindeer teeth and antlers from Mousterian sites to conclude that the sites were permanently occupied all year round (Bordes 1961:806; Bordes and de Sonneville-Bordes 1970:66). Binford’s (1973) toolkit variability rationale was based upon his view of the character of Mousterian life which relied on mobility as a major survival strategy. Mobility assumes seasonal activities at different places, ensuring the need for a more complex set of tools related to spatial and temporal variations (Binford 1973:238). Although Binford rejected Bordes’ assertions that Mousterian culture could affect assemblage variability, Bordes never argued against the existence of toolkits as a component of lithic assemblages (Bordes 1961:804; Bordes and de Sonneville-Bordes 1970). It seems that their differences lay in their theories about Mousterian life, with Bordes advocating assemblage variation due to changing cultures, living sedentary lifestyles, but responding to seasonal and environmental changes, whereas Binford (1973:227; 1980:26) saw a culturally continuous group, perpetually on the move, and responding to environmental changes which were reflected in their varying toolkits.

Lewis Binford’s (1977) study of contemporary Nunamiut people in Alaska during 47 hunting trips reinforced theories he developed around expedient and curated technologies, in which toolkits are generally composed of curated tools. He suggested that, on these trips, expedient tools (non toolkit types) were discarded at a higher rate than curated tools. This theory, developed from contemporary Nunamuit behaviour, has consequently been adapted to prehistoric European sites where discarded expedient tools also formed the majority of debris at lithic assemblage sites (Binford 1977, 1979). The irony of these cultural, spatial and temporal discrepancies was not lost on Binford who gallantly tried to fend off the growing criticism of his methods (Binford 1982), some of which I address here.

Binford’s use of highly complex statistical analysis to ‘find’ toolkits within lithic assemblages meant that they really only existed on paper, and consequently resulted in him never being able to offer any empirical evidence for their physical existence (Dibble 1991:240). Some argued that these concepts were not particularly useful for archaeologists because toolkits,
being utility rich, were not usually abandoned at their place of use (Simek 1984:3), and theoretically were never abandoned at all until they became useless, rendering them unrecognisable as a toolkit. Others have argued that Binford’s analysis was misguided because he had used data (Bordes’ types) which were never intended to be analysed as functional types (Grace 1989:155). Independent use-wear analyses on Middle Palaeolithic assemblages by Beyries (1988) and Dibble and Rolland (1992) revealed that the tool types described by Binford and Binford had no direct relationship to their use (Holdaway and Stern 2004:51). A high number of the artefacts, when tested, showed no use at all, and most of the used tools, regardless of type, had been used to work wood, although a few had been used for butchery and hunting (Beyries 1988:214). Further analysis of stone tool edge resharpening by Dibble and Rolland (1992) revealed that many of Bordes’ types were actually the same tool in different stages of resharpening, and therefore not different cultural types at all.

However, whilst evidence against the existence of archaeological toolkits was building in some areas, other experimental analyses on toolkit composition were adding legitimacy to the concept. In the late 1970s for example Cahen, Keeley and Noten (1979) re-fitted a late Upper Palaeolithic stone assemblage at Meer, Belgium, in order to analyse toolkits within lithic assemblages. This consisted of reassembling various artefacts, including tools, flakes and fragments that had been knapped from the same block at the same time, with the outcome of being able to calculate more accurately the ratio between ‘expedient’ artefacts (opportunistic implements made for immediate tasks) and ‘curated’ ones (tools kept for many tasks) (Cahen et al. 1979:662). Their argument that curated artefacts are tools commonly used together, and thus represented a toolkit (Cahen et al. 1979:662), was dependent upon Binford’s (1973) ‘functional’ argument which was developed during his research with Nunamiut communities (Binford 1977, 1979). Cahen et al.’s (1979) refitting demonstrated several stages of utilisation, transformation (reduction) and series preparation for specialised activities in particular locations. It also showed that the predominant artefacts at the site were expedient tools which, counter to Binford’s theory, suggested assemblages in the Upper
Palaeolithic contained toolkits that were not necessarily comprised of only curated tools (Cahen et al. 1979:671).

In 2009 W.E. Banks went to the trouble of making cast resin models of artefacts from Solutré in France to determine if use-wear on the experimental models could be matched to the originals. Solutré is a complex site that covers a range of eras including Aurignacian (around 35,000 BP), Gravettian (28,000 BP), Solutrenian (17,000 BP) and Magdelanian (12,000 BP), and each layer had a different tool assemblage structure. He conducted analysis of use-wear signatures to determine how artefacts were used, and how the composition of curated toolkits are structured over time. Banks (2009:31) concluded that:

Curated toolkits are dominated by tools that can perform a variety of tasks, are easily and efficiently maintained, are made in advance of their anticipated use, are transported from place to place over the course of their life, and may well be recycled into functionally different tools prior to their eventual discard. One must keep in mind that a toolkit may have started out as one that was composed of small functionally specific tools. However the actual realised needs and uses of the toolkit may not have mirrored those that were originally anticipated, and functionally specific tools had to be used in an improvised manner in some scenarios over a long period of time.

In this sense the toolkit takes a side-step from the Binford model and becomes a flexible entity, which started life as a planned grouping of functionally specific tools, but was superseded by tools that were capable of being multi-functional or improvisational. Banks (2009:31) went on to hypothesise that: “If a curated toolkit was to be abandoned or lost shortly after its creation, and recovered archaeologically, then one might be able to demonstrate that Kuhn’s predictions are accurate.” Kuhn’s (1994) ideas about efficient tool design predicted how mobility affects the kind of toolkit a person took with them (see also Clarkson 2007; Shott 1986, 1989). He argued that mobile populations needed tools that were not only light and efficient to transport but also multifunctional, whilst having an optimum ratio of size to effectiveness (mass/utility). He proposed that a common behaviour of mobile populations is the need for expediently manufactured and curated tools, including cores, that can be cached at frequently visited places (Kuhn 1994:427).
Both Banks and Kuhn perceived toolkits as actual entities which people carried around with them while traveling from place to place or caching at strategic places for future use. Some caches identified as discrete toolkits have recently been excavated and reported on from North America and Alaska (Hurst 2006:101; Odess and Rasic 2007).

**Australian Toolkits**

In contrast to these cache and toolkit interpretations from America I have found no evidence of an Aboriginal lithic toolkit having been excavated and described in Australian archaeological literature (other than Hewitt’s [1976] Lake Hanson cache) and no such description in Australian ethnographic literature. Even though many of the early writers such as Roth (1897, 1904), Spencer and Gillen (1899), Horne and Aiston (1924), Aiston (1928), Basedow (1925), Howchin (1934), McConnel (1957) and Thomson (1983) have described stone tool production in detail, none of them mentioned toolkits in their research. One possible reason for this is that the term ‘toolkit’ did not appear to be in the vocabulary of archaeologists and ethnographers until the 1960s. Norman Tindale (1965:161) used ‘stock-in-trade’ as a collective noun for an assemblage, and Howchin oscillated between ‘stock-in-trade’ and ‘outfit’ (Howchin 1934:v). Aiston (1928:130) regarded tools such as the knife, the pirri point, the scraper, and the tula as part of ‘a series’ that showed an evolution from the simple flake. We only see the term toolkit as a reference to stone tool assemblages being used in archaeological texts after the Bordes/Binford debate in the 1960s. Mulvaney’s and McCarthy’s books on Australian Aboriginal stone implements in the late 1960s and 1970s are examples of this (McCarthy 1976:19; Mulvaney 1969:166 & 212; 1975:137 & 152).

One notable exception is from the Victorian anthropologist H.R. Balfour (1951:273) who described a specialised mobile kit that is carried by the men of the Worora tribe from the Kimberley district of Western Australia when they go hunting. A wallet made of paper bark and lined with bird down contained a hardwood stick, a small piece of sandstone, four pointed kangaroo bones, a partially made biface point, a number of completed spear points, a sinew, gum from the...
bloodwood tree and string made from the inner bark of a boabab tree (Balfour 1951:273). This is a maintenance kit for repairing spears and sharpening stone tips damaged during a hunting trip, and is a more legitimate contender for a toolkit than Mulvaney’s (1969:69; 1975:74), which consisted chiefly of wooden items such as spears, spear throwers and boomerangs which are arguably weapons or implements, but not tools.

The challenge for later researchers had been how to fit rigid European toolkit theory into their work on Aboriginal Australians who, as I argue later, practiced a flexible system of tool technology. Some examples of how this has been achieved are detailed below. The ‘new toolkit’ (Hiscock 1994:271; Johnson 1979:144) of the mid-Holocene was defined by the introduction of a range of small tools such as points, backed blades and tulas commonly known as the ‘small tool tradition’. This toolkit included elements that have been contentiously interpreted as non-functional or stylistic, as well as being more efficient in food procurement (Hiscock 1994:272; Mulvaney 1977). Clarkson (2007:162) also refers to the ‘new toolkit’ that was developed in Wardaman Country between 3500 and 2000 years ago which was “made to last and continue to perform for an unknown duration.” Jones (1977:202) described the Tasmanian toolkit as the simplest in the world, being the “irreducible minimum for the long term survival of a human society in Australian conditions.” Like Mulvaney’s, this toolkit also included non-tools such as spears, throwing sticks and trapping devices, as well as grinding and pounding stones. Cane’s (1984:276) interviews with Aboriginal people of the Western Desert about their stone artefacts led him to suggest that un-retouched flakes, of which 98.9% were considered rubbish, were an unimportant component of the Aboriginal toolkit. Law (2005:92) used Kuhn’s (1990) geometric index of unifacial (stone tool) reduction (GIUR) and perimeter-reduction index (PRI) to characterise provisioning strategies of late Holocene populations as risk reducing: mobile foraging groups utilised a mobile toolkit consisting of backed artefacts, tulas, points and high quality retouched flakes. Hiscock and Attenbrow (2005b:139) have suggested specific stone engineering strategies that prolong the usefulness of the material at hand as ways of enhancing the readiness of the toolkit.
Despite the term ‘toolkit’ being traditionally used to describe an organised, linked and specialised set of tools that have been produced for specific tasks, each of these Australian applications of the toolkit concept are quite different, suggesting a range of ideas and functions which reflect both specific and general use. These examples demonstrate that the way the toolkit concept is used in Australian archaeology has, by necessity, become a flexible concept and as a result no longer reflects its original meaning as defined by the Binfords (1966; 1968) and does not relate to Banks (2009) and Kuhn’s (1994) concept of the individual toolkit.

If one was going to look for such a lithic toolkit in Australia one would have to be able to demonstrate that each item in the kit was related to the other by temporal, spatial and functional analysis. Many assemblages encountered by Australian archaeologists are surface scatters that have been deposited over very long periods of time (Mulvaney and Kamminga 1999:19), suggesting that lithic toolkits will not be found there. A stratified archaeological deposit that can provide unambiguous chronological data would need to be analysed and a detailed use-wear analysis of the artefacts conducted to determine their use within a function specific toolkit. Lastly, the data would have to be subjected to multivariate statistical analysis to establish the functional groupings, which in Binford’s approach, revealed the toolkits.

One type of assemblage that could be similar to both Binford’s original concept of a toolkit as a function specific entity, and the common understanding of a toolkit - a discrete entity of tools assembled by one person for a profession or trade - is a cache of tools. Cache finds in Australia are rare compared to North America, where over 100 have already been recorded in the Southern Plains alone up until 2006 (Hurst 2006:101). Hewitt’s (1976) cache from Arcoona Plateau in South Australia, and Hiscock’s (1988) cache from the Boulia District of Queensland, are two assemblages that comply to Hiscock’s definition of a cache (see Hiscock 1988:67) that have been analysed and reported on in detail by archaeologists in Australia.Cached items (and toolkits) from Wardaman Country rockshelters in Northern Australia have been discussed by Clarkson (2007:495; 2008) in relation to provisioning behaviours (Clarkson 2007:24), but unfortunately no analysis of
their composition has been provided and so they cannot be commented on. Both Hiscock’s and Hewitt’s caches fulfill Banks’ (2009) scenario of being cached hoards that contain unused artefacts, and therefore reveal stages of manufacture which Hiscock (1988:60) claims are often lost to archaeologists who find mainly used artefacts. Hiscock (1988:60) interpreted the Boulia District cache as storage for future barter, whereas Hewitt (1976:29) regarded the Lake Hanson cache as a comprehensive woodworking kit. Hewitt’s claim may be legitimate, but the Lake Hanson cache consisted of tool types made from raw materials rarely found in other local sites (Hayward 2010:99; Hewitt 1976:31) and were therefore possibly reserved for specific cultural tasks (Hayward 2010:102), or as Hewitt also suggested, a trade parcel or tribal stockpile (Hewitt 1976:48).

Stone tool technologies were used by Australian Indigenous populations for a number of years after colonisation, which offered overseas researchers, such as Gould and Hayden, the opportunity to study stone tool use first-hand through ethnography; but herein lies a well-known problem. Ethnographic insights only relate to the state of stone tool technology since the arrival of Europeans (Castañeda 2008:29; Hollowell and Nicholas 2008), whereas most collected archaeological assemblages date back much earlier. Ethnographic descriptions, as well as having a Eurocentric bias (Sheridan 1979:12) also tend to describe a highly flexible and unstructured approach to tool use and function (e.g., Gould et al. 1971:163; Hayden 1977:178), whereas archaeologists who study reduction sequences in stone tool assemblages see knapping events as being highly structured (Hiscock 2004; Moore 2003:24). Another factor is that many Australian Aboriginal people were seasonally mobile (Gould 1980; Hiscock 2008:200), and so the notion of an Australian ‘toolkit’ has to include both sedentary and non-sedentary behaviour, and become something that is portable, flexible, and therefore multifunctional (Hiscock 1994, 2006), whereas Mousterian assemblages came from sedentary or semi-sedentary sites that were occupied almost all year round (Bordes and de Sonneville-Bordes 1970:65; Lev et al. 2005:482) and seemed to have specific functions, according to the Binfords.
Aboriginal Australia was never the same, or even similar to, Pleistocene Alaska or Mousterian Europe and there should be no expectation that similar assemblages will be found here. Gould et al.’s (1971:167) attempts to compare Australian Aboriginal stone artefact types with similar Mousterian types showed some similar use-wear patterns on some scrapers, and some marked differences on most other types, and given the differences his analysis was inconclusive. The environmental and cultural effects on technological development in Australia were unique compared to anywhere else in the world (see Bordes and de Sonneville-Bordes 1970:64; Clarkson 2007:159) and therefore the parameters used by Binford’s analysis cannot be replicated here. Bordes and de Sonneville-Bordes (1970:64) have warned of the risks of comparing assemblages from places of enormous cultural, temporal and ecological difference so it is not surprising that culturally specific concepts such as ‘toolkit’ may not have worldwide applicability.

Conclusions

I have demonstrated that the concept of archaeological toolkits emerged in the mid 1960s from Mousterian sites occupied by Neanderthals for several thousand years. Lewis and Sally Binford’s (1966; 1968) thesis was that variability within those assemblages could be described as ‘functional variability’, which they formulated by measuring the frequency of tool types within each factor (toolkit). The Binfords’ initial analysis of toolkit structure was achieved through the use of multivariate statistics, and their characterisation of toolkits as “subunits of artefacts which vary independently of one another and may be combined in numerous ways” (Binford and Binford 1966:292) indicated that there are no set parameters that can be applied to toolkit recognition, and that sophisticated computations are needed to find them. More recently use-wear and residue analysis has been widely used to minimise the functional ambiguity of artefacts, and in so doing demonstrate the misuse of functional typologies, and in one case discredit Binford’s toolkit theories (Beyries 1988). Binford’s idea that toolkits are comprised of curated (and therefore usable) artefacts, suggested to others that they will not therefore be found in discard assemblages or activity sites.
(Odess and Rasic 2007:691; Simek 1984:3). This begs the question; where will they be found?

Despite growing doubts in some circles about the validity of toolkits as archaeological entities some researchers went on to develop experimental analyses that supported the concept. It arrived in Australia by the early 1970s, where it has been used to describe a range of attributes relating to Aboriginal stone artefact studies ever since. In the few years it took to arrive here the original concept had evolved into a term that encapsulated all tool types regardless of function, material or gender. Ethnographic accounts of stone tool manufacture and use in Australia have emphasised a flexible approach by Aboriginal people which allowed for artefacts to have multiple functions. This flexible nature of lithic use in Australia, and the increased understanding of stone reduction methods that document both form and function variation during the life of an artefact, means that Australian lithics are not analogous to the function specific toolkits as described by the Binfords.

In Australia attempts to locate and define such toolkits have been elusive. McCarthy’s (1976) Western Desert Aboriginal toolkit as described at the beginning of this paper is actually nothing more than a list of implements used by some Indigenous people, and as a complete entity has never been archaeologically recorded. One entity or cache that has been found in Australia that was classified as a lithic woodworking kit (Hewitt 1976) was more than likely stashed for specific ceremonial use and not general woodworking (Hayward 2010:102). The types of implements used by Indigenous people for food procurement were mainly wooden items such as spears, spear throwers, boomerangs and containers, all of which do not survive long as archaeological entities. The stone tools used to make these wooden items, and the stone points used for spear tips in Northern Australia which do have an archaeological life, have never been described ethnographically as toolkits, indicating that they were never considered by their users as being such an entity. They were, however, part of a flexible technological process that allowed implements to be multi and trans-functional, and as such do not fit into the restrictive constraints of a toolkit.
Although lithic toolkits are alive and well in the imagination of Australian archaeologists, ethnographic and archaeological evidence indicates they do not exist. If they do, they have either not yet been found, or are extremely rare. The continuing use of the concept perpetuates a 1970s myth that Indigenous Australians owned and utilised discrete, function specific entities known as toolkits.

Acknowledgements

This paper is derived from my honours research ‘Toolkits and Utility in Australian Lithics’ which was undertaken at Flinders University in 2010. I acknowledge the support and input of my supervisor Dr Alice Gorman and the assistance of Dr Keryn Walshe from the South Australian Museum for her help with accessing various lithic assemblages. I would also like to thank Ron and Joyce Hewitt who shared many stories of their days at Woomera and allowed me access to their private archives. Thanks also for the useful comments from Dr Susanne Schech and the reviewers of this paper including Dr Michael Morrison, Professor Peter Sutton and Dr Amy Roberts.

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