Ethnography and Prehistoric Archaeology in Australia

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After a review of ethnographic approaches to Australian archaeology, this paper discusses food exchanges as an example of how Aboriginal society organizes production and social reproduction in gender specific terms. This goes well beyond the orthodoxy that men hunt and women gather. Evidence that food and other exchanges are reflected in the contemporary archaeological record is presented together with an outline of a debate between Gould and Binford about this issue. The structuring of production and exchange along gender lines in Aboriginal society is so pervasive that some form of patterning along these lines is to be expected. This is the case even in archaeological sites of long occupation where the original layout of household structures may have been destroyed. Exchanges at the individual and household level should also be preserved in the form of reduction sequences, stone raw materials and small refuse items such as chipping debris and bone fragments.

INTRODUCTION

The joining of ethnography with archaeology by the use of either direct historical or general comparative approaches is territory that has been well worked over by archaeologists (Fletcher 1992, Gould and Watson 1982, Murray and Walker 1988, Smith 1992, Wylie 1982). In order to bring ethnographic and archaeological observations into some form of convergence, Smith (1992:26), following an argument developed by Binford (1981), suggests that we differentiate between ethnographic time, the observation of contemporary events and episodes over a short period of time, and archaeological time, the study of patterns produced over long intervals (cf., Dunnell’s [1982] “space-like” and “time-like” frames). Fletcher (1992:36) argues that a better understanding of the archaeological past will only emerge when we accept that there was a hierarchy of processes operating at differing scales and rates over different magnitudes of time. Similarly, structural archaeologists work on the assumption that the repetition of short term events responsible for the building up of the archaeological record are themselves ordered by structures, which like Braudel’s longue durée (Sherratt 1992:139–140), can take on an independent temporal existence that is amenable to archaeological analysis.

Fletcher (1989:68–72) has suggested that archaeology can make a distinctive contribution to social theory not by copying theories from sister disciplines such as biology, history, anthropology, or sociology but rather by developing its own theoretical approach to the relationship between the active and material components of human behaviour and how these find form in the archaeological record. It was the pursuit of this goal that sent archaeologists out to study extant societies in order to make systematic observations of archaeologically relevant variables (Gould 1980, Gould and Watson 1982).

Archaeologists studying the long time period of Australian archaeology and those involved in ethnoarchaeological studies of settlements, technology, and subsistence have seen their respective approaches as being either in conflict or competition (Hiscock 1983). While Smith (1992) and Fletcher...
(1992) suggest that archaeological and ethnoarchaeological studies should be seen as complementary parts of an analytic hierarchy, others argue that the archaeological record is the product of an infinitely variable set of ecological, behavioral, depositional, and erosional processes. Consequently, they claim the record is not amenable to interpretive theories based on short term observations of individuals, or their interactions with one another and with the ecological systems of which they are a part (Murray 1987, Stern 1994:102). Stern (1994:101), following Walker and Bambach (1971), suggests that the accumulation of sediments and cultural remains at archaeological sites produces “time averaged” assemblages or composites which span long periods of time. Neither the original community structure nor short term relationships between community structure and ecological fluctuations can be discerned from this record, but only persistent, long term trends. While Stern is talking about the interpretations of the Middle Pleistocene archaeological record in Africa, she (1994:96) makes it clear that her comments apply to any part of the archaeological record that involves behavioural or ecological processes preserved over periods of 1000 to 10,000 years. Her strictures are equally applicable to the Australian past whether distant or recent. This is grist to the mill of Australian archaeologists who are suspicious of ethnographic explanations and rarely use ethnographic information to create hypotheses against which their data might be interpreted.

Murray and Walker (1988:249) argue that the production of archaeological knowledge cannot exist without the use of some form of analogical reasoning. They differ from many archaeologists in that they believe the interpretation of the archaeological record cannot be based on so-called “commonsense.” Similarly, Binford (1991:277) stresses that ethnoarchaeological observations must be transformed into models of behaviour before they can assist archaeological interpretation.

This paper examines ethnographic approaches to Australian prehistoric archaeology. Observations of Aboriginal food exchanges are discussed and compared with the archaeological analysis of contemporary Aboriginal camp sites. A degree of correlation between gender-based exchanges and the location and contents of household camps is demonstrated. While it is generally acknowledged that the archaeological record will reflect both technological and gender considerations, it is concluded that this is also true of exchange relationships.

ETHNOGRAPHIC APPROACHES TO AUSTRALIAN ARCHAEOLOGY

Ethnographic approaches to prehistoric archaeology in Australia have a long history. In a formal sense they began in the 1920s with Norman Tindale’s exemplary ethnographic work (1925), and that of others sponsored by the Anthropological Board of South Australia. To these can be added D.F. Thomson’s (1939) work in northern Australia, some of which tried to relate seasonal movements with changes in material culture. In 1965, Tindale (p. 162) argued that continued excavation in rock-shelters would provide only an incomplete picture of the Aboriginal past.

It is high time that at least a few archaeologists should … emerge from their cave holes to study at first hand the data provided by living peoples.

There was a call for research on the open sites Aborigines used as campsites and for the incorporation of a sense of ethnographic “reality” into archaeological explanations (Gould 1982, Peterson 1968, 1971, Thomson 1939). It was not until the period 1960–1973 that using ethnohistorical or ethnographic accounts to flesh out and understand the archaeological record became more common. In general, the early attempts (Allen 1968, 1972, Hiatt 1965, Peter-
son 1971, 1973, White 1967a, 1967b, White and Peterson 1971) concentrated on regional or seasonal differences in diet, campsite location and material culture and stone tool-use and manufacture. The archaeological correlates of observed ethnographic behaviours remained poorly developed in these works though Allen (1972) developed models of optimising gathering strategies and camp-site location for the Darling River Valley with which the archaeological data from a regional survey was compared. Hayden as part of his ethnoarchaeological study (1979) included the mapping and excavation of Western Desert camp sites for which he had observational and informant data and thus directly brought ethnographic and archaeological analysis together. The emphasis on the ethnographic study of diet, seasonal changes in camp site locality and collecting behavior, and group size as an aid to archaeology has continued through to the present (Cane 1984, Gould 1980, Peterson and Long 1986) though few works have matched the duration and comprehensiveness of Meehan’s (1982) study of Gidjingali diet and behaviour. The ethnographic team of Betty Meehan and Rhys Jones had the advantage of being able to study both women’s and men’s activities simultaneously. While the analysis of the sexual differentiation of social roles and the division of labor and equipment has long been a focus of Australian anthropology, until recently, few detailed studies of the social relations of production have been carried out (see du Cros and Smith 1993). Peterson’s (1968) emphasis on women’s use of mortars and pestles and their association with individual households at semipermanent wet season camps in northern Australia, and Hamilton’s (1980–1981) study of dual social systems, technologies, and rituals in the Western Desert are notable exceptions.

Given the large number of stone artifacts and their durability through the thousands of years of Australian prehistory, it is perhaps inevitable that much of the emphasis on processes and variability in the Australian archaeological record would concentrate on the manufacture and use of stone tools, use-wear analysis, and the rationing of raw-materials (Hayden 1979, Hiscock 1986, Kamminga 1982).

Useful information about Aboriginal material culture was assembled by D. S. Davidson between 1929 and 1951 (e.g., Davidson 1934). Anderson (1988:129–132) notes that studies of Australian Aboriginal economy between the 1920s and 1960s largely took an atheoretical attitude and confined their comments to descriptions of material culture and food getting techniques. After this time, however, with the demise of museum approaches to material culture and technology, even such narrowly focussed studies were rarely carried out. This has left a marked gap in our knowledge of the interaction between social, material and technical factors, though these have begun to be addressed again more recently (Cundy 1989, Morwood 1987). There have been a number of ethnographic studies of open campsites and settlement patterns. This has proved to be a more straightforward task than the archaeological study of open sites though these too are new being regularly studied in semi-arid and arid Australia and in parts of Northern Australia (H. Allen 1989, 1990, Gould 1982, Smith 1986). There has also been an attempt to define the range of camps used by Aboriginal foragers, such as the “dinnertime” camps defined by Meehan (1988) as locations close to food source where foraging parties might consume up to 75% of food collected before they returned to the home base with what was left. Meehan (1988:179) sets out the characteristics of both home bases and dinnertime camps. She notes in addition the existence of overnight camps and processing sites. Her approach is similar to that of Binford (1982) who partially adopted Stanner’s (1965) terminology and isolated annual
ranges, residential camps and special use areas. In 1986 (p. 37), Peterson suggested that the home range of a band could be approximated by linking the base camps used during a single year together with satellite overnight camps. Anderson and Robbins (1988) have mapped clan estates and provide an analysis of traditional (precontact) and contemporary camping places for the Bloomfield River area of northern Queensland. Apart from Meehan and Jones’ studies, there have been few serious attempts at mapping the location and contents of camps used over an entire year. Similarly, archaeological surveys have rarely been informed by ethnographic analysis, thereby missing a process that might broaden the concept of “minimum archaeological-stratigraphic units” (Stern 1994:93) in terms of an expected scale of interacting social units.

Advances in the study of hunter-gatherer foraging, diet, and mobility patterns have been made through the study of human evolutionary ecology, particularly in the application of optimisation theory (Smith and Winterhalder 1992, Kaplan and Hill 1992). An area of increasing interest is the role of sharing in the interaction between individuals and groups, whether work based, domestic or residential (Hawkes 1992, Hill and Kaplan 1993). Exchanges of food and other valuables play a significant role in the articulation and objectification of kin, residential, and hierarchical relationships in Aboriginal society. Furthermore, it will be shown below that sharing and exchange relationships are encapsulated within the archaeological record.

FOOD EXCHANGES IN ABORIGINAL AUSTRALIA

Farjan (1993:3) makes the point that production should be understood as the total process of constructing the social person and society itself, including material subsistence and technology. Following from this, she argues that exchange is a part of this process, one that is motivated by the disequilibrium created by the division of labour. Rather than isolating acts of exchange and looking only at exchanged objects, it is necessary to widen the context of analysis by seeing all exchanges as moments in an overarching concept of social production and reproduction. Exchange is central to Aboriginal economic and social life and its’ meaning cannot be reduced to individual transactions. Allen (1996c) has attempted to provide a unified explanation of trade, exchange, and sharing, one that is capable of joining domestic, local and long distance exchanges into a single field of study without losing sight of the social and historical specificity of any particular form. Evolutionary studies of sharing and social storage complement this approach. Relationships between production and exchange in Aboriginal Australia are further explored in Allen (1995, 1996a, 1996b).

Given our present knowledge of Aboriginal society, it can be predicted that the social relations of production will be drawn along the lines of sex and age. The sexual division of labor is seen not only in terms of the equipment used and (to a certain extent) the foods gathered, but also in the different manner in which the proceeds of women’s and men’s labor are treated. The small animals, shellfish and vegetable foods gathered by the women are informally shared while any large game, or any category of animal food brought in by the young men in quantity, is strictly divided between in-laws and seniors.

Strathern (1985:197), following Woodburn (1982) and Collier and Rosaldo (1981), sees both women’s sharing of food with relatives and the men’s provision of food to in-laws as part of an immediate-exchange or bridesservice economy.

The logic of direct-exchange is that only a woman can be exchanged for a woman. The logic of bridesservice, concomitantly, is that only labor can be exchanged for labor. Asymmetries
come from unequal value being put on the products of labor (men's game and women's gathered food . . .) . . . The services and gifts a groom tenders to his in-laws only represent his continuing claims in his wife—his labor in performing or obtaining them cannot be detached from these affinal relationships. . . . In these band/communal/immediate-return/brideservice systems, items do not come to stand for labor and do not come to stand for persons.

Meggitt (1962:280) documents that a man must make gifts of food and give support to his wife’s father (often a classificatory mother’s brother) and also to his wife’s mother’s brother, who plays a significant role in circumcision and subincision ceremonies. Shapiro (1979:97) adds,

We thus presumably have a conceptual equivalence, based on equivalence of exchange amongst a series of objects: gifts = females = human lives = boy’s foreskin = wilyaru initiation . . . the agents in this exchange scheme are said to be matrilineal groups, not ritual lodges, even for sacred activities such as circumcision.

Peterson (1970, 1986), Shapiro (1973:380) and Goodale 1971:43) document that, in order to fulfill these requirements, the young men usually take up residence in the camp of their parents-in-law. This contributes to the presence of nonlandowners in most Aboriginal camps who freely make use of the products of the land. When the time came for a young man and his wife to leave his father-in-law’s camp, he might be given sacred boards in appreciation of his long term contribution. Myers (1988:70) comments,

His possessing the board from the host country was a recognition of his prolonged residence and shared identity with the people of the country, converting residence and cooperation through time into an identity projected into land ownership.

As well as involving brideservice commitments, the exchanges between a man and his matriline in the Western Desert join the ritual and secular worlds together and begin to take on the appearances of bridewealth controlled by the seniors (Myers 1988:58, see also Peterson 1969:31),

Among the Pintupi, boards are frequently exchanged as a result of bestowals between a man and his male in-laws . A young man must consequently rely on elder male relatives to supply him with sacred objects for marriage so that he may begin fulfilling his obligations

Strict controls on ritual knowledge and membership of landowning lodges turn these into property rights for which payments of food must be made. Tonkinson (1988:157) notes, that in the Mardujarra case, the authority of the older men comes from their

. . . monopoly of esoteric knowledge, which will be transmitted only if young men conform to the dictates of the Law, and are willing to hunt meat in continuing reciprocal payment for the major secrets that are progressively being revealed to them.

Altman (1984:183) noted that the men were eager to hunt and take part in this process because success in hunting was associated with the attainment of secular adulthood through marriage, as well as upward mobility to higher grades of ritual knowledge. Exchanges of meat evened out the food supply, but the process was directional with food going from younger active households to older less productive ones. In household clusters, junior households did not directly receive game from outside the cluster, but received it via the senior man, who, while he might not have shot any game himself, was both the recipient of a substantial proportion of meat and a central figure in its redistribution (Altman 1987:142). Sackett (1979:242) similarly has documented the continuing importance of male hunting and distribution of meat to elders. He observes that hunting is for men linked with rituals allowing them to
achieve prominence and establish their position *vis-a-vis* that of the women, and notes that hunters ignored or wasted nonprestigious food items in the often forlorn hope of capturing a large kangaroo.

Tonkinson (1988) claims that given the ethos of mutuality and individual autonomy there are few inequalities among the Western Desert Mardujarra. This egalitarianism emerges in the treatment of the dead in the Western Desert where people are buried in shallow graves with little subsequent ceremony. Hamilton (1980–1981) also notes that with marked female autonomy in subsistence and rituals, the structural and ideological dominance of men over women found elsewhere in Aboriginal Australia had not become a reality in the Western Desert. Given the low rates of polygyny, and women’s access to ritual property such as stories and painted designs which they can sell, Western Desert women are apparently better off than their northern sisters. Despite this ethos of equality, women in the Western Desert were still excluded from many of the exchanges within the domestic and ritual sphere which are publically acknowledged as being central to the reproduction of Western Desert society.† Neither was the burden of food gathering always equably shared even if, at the end of the day, the calorific returns from male and female production approached equal proportions (Altman 1984:185–186). Hawkes and O’Connell (1981:623) note that Alyawara women often spent 4 or 5 h a day, and occasionally as many as 10 h, collecting and processing seed foods. Hamilton (1980–1981:14) records that, in contrast to all other subsistence tasks, grinding grass-seed was seen as arduous, and that, when important ceremonies were in progress, the women’s product in the form of baked grass-seed cakes was appropriated by the men.²

In Arnhem Land, as men become more senior, they attain a higher level of ritual knowledge, have access to more wives and female labor, and receive more gifts of food. For the most part senior men act as a focus of redistribution, sharing wives, and ritual knowledge with younger brothers. Keen (1982), however, has documented that the eastern Arnhem Land Yolngu elders are able to manipulate the system to their own advantage gaining from 5 to 10 wives and establishing a rapidly growing clan at the expense of their younger brothers. Finally, Hamilton (1982:101) notes that in eastern Arnhem Land, considerable labour is employed in commemorating men of renown, who receive elaborate funeral ceremonies involving double disposal, painted grave posts, and hollow-log coffins. It seems unlikely that the presence of elaborate funeral ceremonies in eastern Arnhem Land is entirely unrelated to the greater opportunities there for individuals to manipulate their control of ritual knowledge and access to food gifts.³ It should be noted that Collier and Rosaldo (1981:323) place the gerontocratic societies of Eastern Arnhem Land at the inegalitarian extreme of their bridieservice type.

THE ARCHAEOLOGICAL IMPRINT OF FOOD EXCHANGES AND THE GOULD-BINFORD DIALOGUE

As noted previously, as part of his (1979) examination of Aboriginal tool use and discard patterns at campsites in the Western Desert, Hayden excavated open areas of two campsites (10 m² and 25 m² respectively) for which he had ethnographic evidence. He was able to locate hearths, sleeping places, activity areas and bone scatters. Gargett and Hayden (1991) was reworked the original field data in terms of households, kin relationships and sharing. They identified hearths, roasting pits, refuse concentrations, artifact clusters and other structures as lasting evidence from which interhousehold spacing, sleeping/eating areas, and related activity areas might be reconstructed, concluding (1991:30),

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† See Note section at end of paper for all footnotes.
Sharing between individuals and families is a common thread in relationships that display the most predictable spatial patterning. Sharing not only influences how far apart people choose to live, but it also determines whom they live near.

A similar study was carried out by O’Connell (1987) amongst Alyawara people in central Australia. Contemporary Alyawara settlements are large (1–10 ha) and contain 20–200 people. Settlements, however, can be broken up into family and single sex households. He identified household activity areas consisting of shelters, other structures, hearths, and a refuse disposal zone. Surrounding these were special activity areas such as roasting pits, auto repair stations, and defecation areas. From this pattern of structures, hearths and refuse, O’Connell (1987:89–90) concluded that household clusters could be identified archaeologically, at least for sites with a short and uncomplicated settlement history. Such household clusters provide an indirect reflection of social relationships at the settlement. In any settlement, especially the larger ones, there may be one or two households located so far away from their nearest neighbors as to be isolated, that is, to have no close neighbors. There are most often senior men’s households, but may occasionally be nuclear family or women’s households (O’Connell 1987:101–102).

The position of individual households within a settlement is a function of social relationships. People usually camp nearest those individuals to whom they are most closely related. A tally of kin ties among 95 nearest neighbour households in five settlements shows that primary consanguinal links are present in 64% of all possible pairs. Close classificatory equivalents (e.g., parent’s siblings or first-generation parallel cousins) account for an additional 19%. In most of the remaining cases, pairs consist of people living near their closest relatives in the settlement.

O’Connell further concluded that the volume of interhousehold sharing, particularly between adult women, but also significantly between adult men, was an important determinant of interhousehold distance. Although O’Connell’s and Hayden’s data could be used to predict the spatial nature of the archaeological record on stratified open sites, to date this has not been done.

Gould (Gould and Watson 1982:366), on the basis of 70 observations he made in the Western Desert, noted that Aboriginal men divided large kangaroos into the same nine portions regardless of how many people participated in the hunt or who they were, how far they travelled, the number of animals killed, the time of the year, the relative abundance or scarcity of game, or the number of people waiting back in camp. He concluded that while ecoutilitarian explanations accounted for most aspects of the butchering and consumption of meat, the strict adherence to a fixed pattern of initial division was best explained by reference to social obligations involving kin-based sharing of food. Similarly, O’Connell and Marshall (1989) in their study of kangaroo body part transport among the Alyawara found that once killed, the kangaroos were either cooked and butchered in the field or brought back intact to the settlement for processing. The body parts that were either cooked and eaten in the field or left there were the viscera, skull, tail, feet, and forelimbs. Instead of taking the opportunity to maximize their personal nutritional benefit by eating the best parts in the bush, where competition was lowest, the hunters consumed only the lowest ranked or most perishable items. The highest ranked body parts, the rear legs, were always brought back to the camp (O’Connell and Marshall 1989:402) where, as noted above, they would be given to in-laws or senior adults.

Questions regarding the social division of large game have surfaced in an argument between Richard Gould and Lewis Binford (Binford 1984, 1987, 1991, Gould and Watson 1982, Gould and Yellen 1987, 1991) about the effect that organizationally significant behaviours might have on the structure of archaeological sites. The differences between the two positions concerns,
among other things, the role of sharing, butchery practices, camp household spacing, and predation. Binford (1984:237) argues that the archaeological record rather than idiosyncratic behaviour, is the subject of his research. He portrays Gould’s ethnoarchaeological approach, which relies on analogy (Wylie 1982), as only being able to infer, rather than demonstrate, the effects of cultural behavior on the archaeological record. On the other hand, Gould (Gould and Watson 1982:366–70) wishes to discount an ecoutilitarian explanation for Ngatatjara (Western Desert) butchery patterns in order to demonstrate that such behaviour is “anomalous.”

Binford, in his analysis of Alyawara residential structures (1987:474–475), identifies male and female activity areas. He explains the scatter of bone fragments on Alec’s Gurlander “B” site not a result of distinctive butchering and sharing practices but rather as the outcome of processing, consuming, and disposing of carcasses. Nonetheless, Binford (1987:456–60) accounts for the presence of kangaroo heads and lower rear legs in terms of a hunter keeping the marginal parts for himself (Alec as a hunter of kangaroos), and the presence of pelvic parts and lumbar vertebrae of domestic species because Alec was the recipient of gifts of high quality food parts whenever domestic animals were slaughtered. Binford (1987:474) noted that the most distinctive characteristics of the men’s zone were the presence of automobile parts, oil cans and grindstones used in making pigments for rituals. There has been a renaissance in men’s business in Aboriginal Australia involving both ceremonies and hunting using guns and four-wheel drive vehicles (Altman 1984:189, 1987:89, Sackett 1979). Binford’s analysis of bone fragments is a demonstration of the impact of this renaissance on the structure of contemporary camps.

Binford believes that the division of labor is biologically and functionally determined. Consequently, he is able to accept that a sexually division of activities might structure archaeological remains while denying a similar role to Ngatatjara butchery patterns which he identifies as a social behavior. Neither Gould nor Binford fully perceived that the division of large game is only one of the many ways in which Aboriginal society makes use of gender differentiation to organize production and social reproduction. Merlan (1988:57) provides two insights into this process. First, she notes that intrinsic gender differences are ascribed to different domains of activity and space, especially in production and ritual. Second, she points out (1988:55) that biological age has little to do with concepts of social maturity and that the achievement of adulthood is a dimension of gender identity that is overtly manipulated through marriage or initiation. Marriage and children mark the achievement of adult status for women, and the relationships between parents, in-laws, siblings and children are encapsulated in the free sharing of the food a woman has gathered. Males participate in a different, parallel economy termed a “dual social system” by Hamilton (1980–1981). Male adult status is demonstrated through marriage and (eventually) full participation in the ritual life of the group. The animals hunted by the young men are used as payments to their in-laws as brideprice and also to their seniors for property in the form of ritual knowledge. Gender is hence a more pervasive aspect of Aboriginal life and society than is acknowledged by the conventional archaeological acceptance of an economic division of labor.

While the North American protagonists in the site structure debate argue about the details, all accept that sharing and exchanges of food in hunting and gathering societies play a prominent role in the patterning of the archaeological record (Binford 1984:255). Most of the authors discussed here (Binford 1991:271, Gould and Yellen 1991:292–293, Gargett and Hayden
treat sharing as a discrete phenomenon, generally as a risk-minimizing strategy (Smith 1988). However, as we have seen food exchanges fulfill other functions as well. They organize hierarchical relations between men and women, and juniors and seniors, and also assist the maintenance of cohesive residential groups.

There is mounting evidence that different societies use age, sex, and residence after marriage to organize settlements and activities and, furthermore, that these variations are reflected in the short-term archaeological record. Archaeologists interested in small-scale processes have enthusiastically embraced “household archaeology” as a way of studying domestic groups and families (Smith 1992:30–31, Tringham 1991). O’Connell (1987:104) concluded that patterns in site structure will only be identified in relatively large scale exposures, at or beyond the largest now undertaken on hunter–gatherer sites, and, that the data most likely to be informative with respect to site structures are very small refuse items, such as chipping debris, small bone fragments, and plant macrofossils, which can often be found in primary context. Peterson (1971:246) similarly advocates that the open sites, distributed over an area larger than that used by a band, should be located and their internal layout including the location of artifacts especially mortars and pestles should be plotted.

In hunter–gatherer archaeology, where permanent houses are generally absent, single occupation sites are likely to be archaeologically invisible, while multiple occupations might make the isolation of single households impossible. Processual and evolutionary archaeologists are pessimistic about the ability to incorporate the insights gained from ethnography into more conventional archaeological analyses. O’Connell (1987:96), Smith (1992), and Binford (1984:246) predict that long site occupancy, or frequent exchanges of food would result in a breakdown of any patterns. In the Australian context, these problems are discussed, but not overcome, by Gargett and Hayden (1991:30), O’Connell (1987:90–91) and Peterson (1971:242).

Smith discusses the problem of the reuse of structures and the difficulty of archaeologically isolating single household units. Developing a concept similar to Stern’s time averaged assemblages discussed previously, Smith advocates the use of a household series to bridge the gap between ethnographic observations and the reality of processes involved in the formation of archaeological sites. A household series is defined as a sequence of households inhabiting a given structure over more than a single generation (Smith 1992:30). It might be possible to set out conceptual units for open archaeological sites that are similarly responsive to the problems of reuse and postdepositional processes. Interestingly enough, Myers (1982:192) concluded that the structure of Pintupi (Western Desert) society as a regional system would only materialise over time. Hunter–gatherer social groups, above the level of the household, might not have an existence independent of repeatedly used camping places where connections between households are demonstrated by multiple instances of sharing, a reversal of the “Pompeii premise” so elegantly criticized by Binford (1981). Single-period sites, thought to be more reflective of hunter–gatherer social reality, might not provide as true an indication of Aboriginal social organization as do reoccupied sites.

“TIME-LIKE” STUDIES IN AUSTRALIAN ARCHAEOLOGY

While some Anthropologists have been arguing over the meaning of observable, discrete events, the archaeological time component of Australian archaeology has involved the establishment of a reliable chronology of settlement and of broad
changes of artifact technology. These remain the central preoccupations of the discipline. Excavation strategies consistent with this programme have necessarily relied on the collection of small samples obtained by trenching deeply stratified rock-shelter sites which are sometimes hundreds of kilometers apart. Most recently, attention has been devoted to the establishment of the date of initial human occupation of the Australian continent, of particular region (such as Tasmania and New Guinea) or of particular habitats (highland, cool temperature and arid areas) (J. Allen 1989, Allen et al., 1988, Cosgrove 1989, Roberts et al., 1990, Smith 1987). The major weaknesses of time-like approaches to Australian archaeology have been at the conceptual and explanatory level. The complexity of the continent’s archaeology has been reduced to culture historic sequences of technological or cultural stages. Change, or its absence, has been explained in unidimensional terms invoking processes such as isolation, invention, adaptation, migration, diffusion, or reaction to environmental circumstances (Allen and Barton 1989:15–20, 131-7).

It has been claimed that the earliest stone tools from Australia and New Guinea belonged to a single technological complex, the “Australian core tool and scraper tradition” which varied little over 8.5 million km² and 50,000 years (Jones 1979;455–457). There has been only limited exploration of possible regional differences within this tradition over time and space (Allen and Barton 1989:108–113, Allen et al., 1989:552–554, Lampert 1981) and less regarding the mechanisms by which this uniformity, in the face of environmental and other changes, might have been maintained (see Godwin 1991 for a discussion of Pleistocene information systems as open but ineffective). Few, if any, consistent, long term trends have been isolated from this record.

A major, if controversial, division of Australian prehistory is marked by the shift-over, at ca. 5000 B.P., from the “Core tool and scraper” artifact tradition to the “Small tool” tradition. Jones (1979:456–457), who sees this change as being a less than radical one, comments,

Within the assemblages of the Australian Core Tool and Scraper Tradition, seen over a period of some 25,000 years and on a continent-wide scale, there was a very slow developmental pattern. As time proceeded there was a general diminution in the total size of tools, though the worked edges themselves tended to remain more constant. . . . These reflect a process towards greater efficiency which can be measured in terms of the average length of working edge per unit weight of tool, . . . Such a process in mid-Recent times was augmented and probably accelerated by the appearance of new suites of what are loosely referred to as “small tools” which were added onto the old stone technology. These stone tools consisted variously of backed microliths, adze flakes, unifacial and bifacial points etc, which were differentially distributed across the continent but which all reflected the same technological advances—namely a transformation in the methods of hafting of the stone bits to their wooden handles.

While this view is now somewhat dated, similar ideas of a more recent vintage are common. Bowdler and O’Connor (1991:54 & 61) argue that a good case can be made that the mid-Holocene archaeological record, dating no earlier than 4,500 B.P., shows the appearance of a loose package of events consisting of the invention and/or introduction of new, generally small, stone tool types, and the introduction of the dog.

Leaving aside the questions as to whether its archaeological manifestations possess anything beyond a superficial unity, explanations for the appearance and spread of the Small tool tradition have been limited. Apart from dating, the major explanatory concerns have been, first, whether or not the source of the [idea for these] tools were internal or external, and secondly, given that the technology [conceived as spear points and barbs] cannot be demonstrated to be functionally more efficient than the existing wooden spears, whether it should best be interpreted as a stylistic phenom-
enon (White and O’Connell 1982:121 & 124). Recently Hiscock (1994) has suggested that the Small tool tradition should be seen as a risk-minimizing strategy, one that assisted highly mobile Australian hunter-gatherers to cope with Holocene environmental changes and to colonize previously unoccupied landscapes.

Hamilton (1980–1981:8) argues that archaeological patterns which are visible over the long term in Australian prehistory have been structured by kinship and gender relationships (see also Conkey and Gero 1991). Hamilton’s years of field work in north and central Australia led to an interest in an ethnographically informed archaeology. She makes the point that in the Western Desert many of the hafted implements archaeologists associate with the Small tool tradition could be used only by the men. The women, in general, used only hand-held stone implements.

This suggests that the technological apparatus and skills used by women for the manufacture of their wooden implements is a continuation of the older ‘core tool and scraper’ tradition. . . . The spear-thrower, with its associated adze-stone, perhaps represents a more recent innovation, one which was not made available to the women. It seems likely . . . that technological innovations in lithic industries adhered solely among men. Women continued the older traditions in technology, as . . . they continued the older ritual traditions, not because they are innately ‘conservative’ but because innovations in both areas are introduced and elaborated within the context of exclusively male rituals.

Hamilton’s observations here draw attention to the fact that the introduction of new stone tools takes place either within an established cultural context or the tools themselves might indicate the creation of a new cultural context.

Explorations of gender issues in Australian archaeology are most notable because of their rarity (Bird, 1993:22, Bowdler 1976 is an exception). The assumptions that “man” was the sole marker and user of stone artifacts has been recently criticised (Bird 1993, Gero 1991), as has the tendency to naively extrapolate contemporary ethnographic models of gender activities back onto the past. Simple assumptions that only men hunt and only women gather are readily falsified by observations to the contrary both from Australia and elsewhere (Bird 1993:23, McKell 1993:116). These have also put paid to the notion that women are biologically incapable of hunting. The stringency of these criticisms has had a further impact on questions of exactly when and where ethnographic analogies might usefully be used in interpreting archaeological situations. Such caveats should not be taken too far, however. As Catherine Berndt noted nearly 25 years ago, Aboriginal informants are clear about the ideological role material items play in their society.

Up to a point, a digging stick looks rather like a spear. But the differences between them, though apparently small, are crucial—both structurally (how they are made, what they look like) and functionally (what they are expected to do). In spite of what they have in common, they are not to be confused. And the Aborigines, while acknowledging their common qualities, did not confuse them, any more than they confused the sex referents that these tools, or weapons, symbolized (Berndt 1970:46).

THE NORTH AUSTRALIAN LITHIC SEQUENCE AND INTERPRETATIONS BASED ON HISTORICALLY OBSERVABLE PROCESSES

With the connections between gender, economy and technology in mind, it is time to turn to an archaeological problem. A lithic sequence from northern Australian sites (in an area from the Kimberleys to the Gulf of Carpentaria, north of the 20° South parallel) is shown on Table 1 below. Depending on whether one accepts the currently available Thermoluminescence and Optical Dates or not, the north Australian lithic sequence begins either close to 60,000 B.P. (Roberts et al., 1994) or 35,000 B.P. (J. Allen, 1989) and ends during the early part of the present century. The generalized se-
sequence offered here, however, differs in a number of significant ways from the conventional Core tool/Small tool model.

If the Core tool and scraper tradition existed at all in this part of Australia, it is limited to the earliest part of the sequence, prior to 18,000 B.P. However, archaeological samples for this time period are minuscule and are in sufficient for any certain identification of the assemblages involved beyond the comment that they include cores, large flakes and polished stone axes. Through the Late Pleistocene to the mid-Holocene (ca. 18,000–5,000 B.P.), rock shelters contain large numbers of small flakes, ground pieces of ochre and few if any definable core tools or scrapers. After 5,000 B.P., small bifacial and unifacial spear points and flake adzes dominate much of the recent archaeological record (Allen and Barton 1989:119–127). The dating of this change, and of the technology involved in point production, which concerns both flaking techniques and changes in raw materials, is variable across north Australia. Small projectile points are illustrated in Fig. 1, and their archaeological distribution is shown in Fig. 2. In the western Arnhem Land sites, changes in the numbers of small points at different sites suggests shifts in centers of production with large scale production phasing out after ca. 1500 B.P. During the more recent past, large unifacial blades, a few small projectile points and use polished flakes occur in archaeological situations that are associated with the formation of freshwater wetlands. Further to the east, in the Kimberleys, pressure flaked bifacially worked “Kimberley points” were produced, with Davidson (1935) documenting their active spread into areas where large blades were also used as spear points.

Stone projectile points are closely associated with light weight, high velocity reed spears propelled by a spearthrower (Smith and Cundy 1985:36, Cundy 1989). A direct association between the first occurrence of small projectile points and the introduction of a new spear/spearthrower technology is not entirely robust, however, for while the small projectile points require a high velocity spear/spearthrower technology, the reverse is not necessarily the case. Wooden points, which are either unbarbed or barbed with small simple flakes, can serve equally well and the changeover to a spearthrower-based technology might have occurred earlier than the change to stone point production.

The reeds for these spears and the raw materials for stone point manufacture do not occur within the same ecological zones in Arnhem Land. Ethnographic accounts suggest the men spent a considerable time manufacturing spears and trading them for reeds and other materials in secular, intraregional trading networks (Allen 1996a, Berndt 1951:160–171, Love 1936:74–76, Kapirigi in Jones 1985:167). Tacon (1991:198–189) draws on an ethnographic analogy from eastern Arnhem Land, to argue that the small projectile points, being manufac-

<table>
<thead>
<tr>
<th>Lithics</th>
<th>Time period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bifacially pressure flaked points spread from Kimberleys eastward, large blades, flake adzes, quartz flakes, use polished flakes</td>
<td>ca. 300 B.P.–A.D. 1935</td>
</tr>
<tr>
<td>Large blades, quartz flakes, flake adzes, use polished flakes, fewer small bifacial and unifacial points</td>
<td>ca. 1,500–300 B.P.</td>
</tr>
<tr>
<td>Small bifacial and unifacial points, flake adzes</td>
<td>ca. 5,000–1,500 B.P.</td>
</tr>
<tr>
<td>Small quartz and chert flakes, polished stone axes</td>
<td>ca. 18,000–5,000 B.P.</td>
</tr>
<tr>
<td>Quartzite flakes, cores with ?utilisation or retouch, polished stone axes</td>
<td>ca. 60,000 or 35,000–18,000 B.P.</td>
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tured from rocks of an iridescent nature, were charged with spiritual power. There is no direct evidence that these small points were curated in any special manner on the archaeological sites of western Arnhem Land where they occur on everyday living sites. The presence of small points in rock-shelters mixed with shellfish and other midden debris suggests that these points did not have the same restricted associations as they do elsewhere in Australia today. The evidence remains somewhat ambiguous, however, as there is more than one way in which male and female activities might be segregated, possibly by using the same space at different times. At Ngarradj Warde Djobkeng, the levels with stone points have been mixed by the repetitive use of a large earth oven, a practice associated with the cooking of kangaroos, certainly a male task at present.

A comparison between the archaeological occurrences of large blades and small unifacial and bifacial points (Allen 1996a) presents a number of interesting differences (Figs. 2 and 4). In western Arnhem Land, large blades occur in both everyday and secluded, possibly ritual, contents. Further to the east, they were manufactured until the 1950’s at the Ngilipitji quarry, an area imbued with high ritual significance (Jones and White 1988:56). Wrapped in bundles protected by paperback, they were traded from Ngilipitji as part of a ceremonial exchange network that reached across Arnhem Land and into central Australia (Thomson 1949). In Arnhmen Land, large blades were used as tips for both hunting and duelling spears. Unlike the small unifacial and bifacial points, however, which had a restricted archaeological distribution, these large blades spread far beyond the area where they were used as spear points (Fig. 4). In both northern and central Aus-
Australia, large blades have become part of extensive ceremonial exchange networks. However, in the center, they are not used on spears but rather were exchanged between the men, hidden from the women, and curated in a manner that prevented them from being incorporated into domestic archaeological contexts. Blade quarries are relatively common across northern and central Australia (Figs. 3 and 4) and smaller blades had an everyday use as men’s or women’s knives and spoons.

A number of spear and spearthrower technological complexes were distributed across northern Australia. Cundy (1989) documents highly variable spear forms using iron-headed shovel nosed points, stone points (either large blades or small points), wooden heads either plain or solidly barbed or with stone, bone or wooden barbs attached, sting-ray barbs, or steel or bone prongs. He notes that many of the complex and multiple barbed spears were used for rituals or fighting only, while most of the hunting was carried out with spears with simple iron, stone or wooden points. Cylindrical spearthrowers have the widest distribution, but the restriction of more specialised forms to particular localities demonstrate that northern Australia was a center of innovation of new forms of spears and spearthrowers. The multiple forms of stone projectile points of northern Australia and their complex archaeological relationships, which includes the evidence of the rock art, shows, first, that this area has been a center of innovation in spear technology over the past 5,000 years, and second, that the meaning and circumstances behind the spread and use of these stone points has varied in time and place.

Tacon and Chippendale (1994:15) link the change to small point production at ca. 5,000 B.P. with the appearance of painted...
scenes of hooked sticks/spearthrowers, barbed spears and battle scenes on the walls of the Arnhem Land rockshelters. They go on to argue that changes in the rock art between 6,000 and 4,000 B.P. suggest a shift from small skirmishes to more highly organized conflicts involving dozens of men, the beginning of a centralized clan social structure and an ideological system similar to that of present-day Aboriginal society. In a similar fashion, Allen (1996a) concluded that the extensive but recent distribution of large blades was the indirect evidence for a marked increase in social interaction and ceremonial exchange networks joining northern and central Australia. These remain interesting hypotheses which can be tested against other findings.

CONCLUSION

The “time-like” archaeological approaches pursued up until now in northern Australia demonstrate lithic reduction evidence, new varieties of stone projectile points, and increasingly complex archaeological relationships shown by the distribution of these points within archaeological sites and across wide areas of northern and central Australia. These stone projectile points simultaneously manifest both technological and ideological factors.
If it is appropriate to assume that the connection drawn between spear technology and male activities can be projected onto the archaeological record, then the presence of stone projectile points marks the time that it is possible to identify a gendered structure to that record. The evidence of different curatorial practices and archaeological distributions concerning small unifacial and bifacial points and large blades suggests that these meanings and exchange relationships have changed over time.

It cannot be assumed, however, that gender and exchange relationships are absent from the earlier parts of the northern Australian record. If the small flakes produced between 18,000 and 5,000 B.P. were used as spear points and barbs, there is likely to be both functional and technological continuities represented in the later shift to unifacial and bifacial points (Cundy 1990). At Ingaladdi, Cundy attributes changes in artifact reduction patterns, dated to this time period, to on-site and off-site production strategies and the opening and closing of access to raw materials, a scenario in which exchange relationships are implicated. What changed at 5,000 B.P., however, was the introduction and spread of more standardised stone production techniques, a change that made these processes archaeologically more visible. Goodwin (1991) associates these changes with the need to mark social boundaries where certain individuals controlled access to information.

Extracting reliable information from archaeological materials is so difficult that interpretive aids including ethnography should only be abandoned when they can be demonstrated to be of no use. The single stipulation must be that any interpretation has to be answerable to the rules of evidence and inference (Kosso 1991:625). On the other hand, the naive use of ethnogra-

**FIG. 4.** The archaeological and ethnographic distribution of large blades.
phy can no longer be countenanced. Anthropological observations and theories have to be reshaped so that they suit the analysis of human action revealed in the archaeological record (Murray and Walker 1988:254). These findings mirror those Kent (1993:374) has derived from her study of variability in Kalahari faunal assemblages.

The data on sharing and faunal remain assemblages appear to be consistent—in different situations, in different time periods, and in different environments, sharing patterns among many hunter–gatherers impact faunal remain assemblages in archaeologically visible ways. Given this, sharing needs to be taken into consideration when interpreting variability between faunal assemblages from different sites and/or time periods, just as transport costs, bone density, element fragmentation, scavenger disturbance, and more ecological, taphonomic, and economic factors are routinely considered in most modern studies of faunal assemblages.

Her conclusions are similar to those of O’Connell (1987) and Cundy (1990) that even where the original layout of household structures has been destroyed evidence of exchanges will be preserved in reduction sequences, the distribution of stone raw materials and small refuse items such as chipping debris and bone fragments. Searching for Pompeii situations (the elusive “single period” site) or projecting precise ethnographic models of sharing and exchange back onto the archaeological record are unlikely to be effective strategies. This is not to say that in the Australian case it is not entirely appropriate to interrogate the record for patterns which might be reflective of exchanges or gender relationships. There is not necessity, however, to decide in advance the specific form these relationships might take.

For many years Australian archaeologists have complained about the preoccupation of social anthropologists with the social rather than the economic life of Aboriginal communities. In the meantime, a new generation of ethnographers and ethnoarchaeologists have been gathering information about production, settlement organizations, site location, and exchange for contemporary Aboriginal societies. This information relates directly to many archaeological concerns. Even if knowledge of the remote past is restricted to stone artifacts, it is hard to envisage an accurate historical account of change over time for Australia that entirely ignores the multiplicity of processes visible today. This information is pertinent not only for generating middle-range theory applicable to Australian sites but also to challenge generalizations from overseas many of which are based on inadequate data.

The development of new approaches to site surveying and the collection of data from larger excavation areas will complement and enrich the current “deep site” excavation strategy. Such studies would seem capable of articulating and integrating much of the information collected by presently disparate branches of our discipline—technological studies, use-wear studies, ecological approaches, art studies, artifact studies, and, finally, settlement approaches—into a more satisfying final product than we are capable of at present. Neither should the interaction between ethnography and archaeology be unidirectional. As Shott (1992:859 & 862) notes, archaeology has a role to play in the evaluation of ethnological theory. This is particularly true in demonstrating a time depth for the complex and dynamic changes that are a part of the prehistory of many hunter gatherer societies which have, until recently, been regarded as timeless and unchanging.

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NOTES

1 Differences in female status in the Western Desert versus that in Arnhem Land have emerged in the market sales of Aboriginal art. Western Desert women have access to stories and designs and actively participate in the production of highly priced paintings (Johnson 1990:17). In Arnhem Land, women are restricted to producing low priced craft items while the men produce bark paintings and objects which yield the highest returns (Kubota 1991:31–46).

2 Hamilton (1982:106–7) argues that Western Desert societies are going through an ideological change which shifts rights to land and group membership from a place-based to a father-based system, a change that has implications for the nature of rights held by men over women. The men continue to claim that
their ritual manipulations are the sole determinant of human production and social reproduction thus denying the female contribution to both.

3 Gosden (1989) and Arnold (1993) usefully discuss that control of labour and production together with resulting debt relationships are significant factors in the emergence of ranked societies.

4 Gifts of food to in-laws are socially required. Dussart (1992:346) documents that widows at Yuendumu preferred to escape this burden by not remarrying, even though the elder males put pressure on their sisters to remarry to strengthen their claims on new, younger spouses.

5 Outside the area of northern Australia, unifacial points, and occasionally a few bifacial points, occur in sites such as Devon Downs and Fromm’s Landing, where they are dated between 3,500 and 4,500 B.P. but not more recently. Large numbers of unifacial points have been recovered from undated surface deposits near Lake Eyre. The archaeological determinants of these southern Australian points and their relationship with the bifacial and unifacial points of northern Australia is unknown. Figure 2 shows the area where small bifacial and unifacial points occur together in defined archaeological contexts and apart from marking single archaeological locations ignores the southern distribution (see also Smith and Cundy 1985).

6 Smith (1988:332–341) has documented an increase in site usage in central Australia after 1400 B.P. and concluded that there may have been a recent increase in Central Australian populations associated with the use of cereal resources and ceremonial sites.