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‘Complexity’ and the Australian continental narrative: Themes in the archaeology of Holocene Australia

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Abstract

Accounts of long-term cultural change in Australia have emphasised the late Holocene as the period when ‘complexity’ emerged amongst foragers in Australia, associated with increased economic productivity, reduced mobility, population growth, intensified social relations and cosmological elaboration. These reconfigurations have often been interpreted as the result of continent-wide trajectories which began in the mid-Holocene, often termed ‘intensification’. These approaches have been found wanting as they homogenise diverse records of human adaptation into a single account which inexorably leads to the ethnographic present. The archaeological record tells a rather different story with fluctuating occupational intensity and even regional abandonments featuring in well-documented archaeological records. Instead, variability documented in the ethnographic and archaeological records can be understood as a product of local adaptations reflecting the operation of historically situated systems of social organisation in diverse environmental settings.

Keywords: complexity; resource intensification; taphonomy; sampling

1. Introduction

It has been nearly 30 years since Harry Lourandos (1983) published an influential paper promoting a radical re-orientation in our approaches to understanding the recent Australian archaeological past. Lourandos’ work inspired a generation of scholars to challenge prevailing frameworks which encouraged a more static view of the Aboriginal past, instead promoting internal social factors as the primary agent of cultural change. Over the last three decades, an enormous body of field research, aided by developments and refinements in technical methods, has exponentially expanded our knowledge of the human story in Australia (see Hiscock, 2008 for a review). This increase in knowledge, however, has not provided any definitive overall models. In this paper, I review and reflect on recent directions in Australian archaeology and the theoretical and methodological hurdles that continue to constrain our understandings of Holocene Australia.

2. The continental narrative

It has frequently been argued that the antecedents of the complex mosaic of recent Aboriginal societies encountered by Europeans can be traced to archaeological trajectories with origins in the mid-to-late Holocene (e.g. David, 2002; Lourandos, 1997; Walters, 1992). Until comparatively recently, the first 50,000 years or so of the human story in Australia has been characterised as relatively stable and unchanging (see Hiscock, 2008; Lourandos, 1997). In contrast, the mid-to-late Holocene is associated with fundamental structural changes in the archaeological record, including: increases in the rates of site establishment and use (Fig. 1), evidenced by increases in discard of cultural materials, particularly stone artefacts, across the landscape and at long-term occupation sites; changes in stone artefact technologies, rock art styles and fishing technologies; the appearance of new sites types, such as fish traps (Fig. 2) and shell mounds (Fig. 3) across northern Australia and villages and ritual facilities in Torres Strait; the increased use of some marginal landscapes, such as offshore islands, rainforests and the arid zone; changes in resource use, including the intensive utilisation of new foods such as cycads, cereals and some marine resources; evidence for long-distance exchange networks; an increase in the establishment of bounded cemeteries; and increased external contact, evidenced by the introduction of the dingo, fishhooks and some forms of watercraft (e.g. Beaton, 1982; Bowdler, 1981; Cosgrove et al., 2007; David, 2002; Flood, 1980, 1999; Flood et al., 1987; Godwin, 1997; Haberle et al.; 2010; Lourandos, 1980, 1983, 1985, 1988, 1993, 1997; Lourandos and Ross, 1994; Mulvaney, 1969; Smith, 1986; White and O'Connell, 1982).

These changes have been variously explained by one or a combination of five main arguments:

- as an artefact of site preservation factors, including differential destruction and visibility (e.g. Bird, 1992, 1995; Fanning and Holdaway, 2001; Godfrey, 1989; Head, 1983; Holdaway et al., 2008, 2009; O'Connor and Sullivan, 1994; Rowland, 1983, 1989);
- as a product of environmental factors, particularly resource productivity and availability (e.g. Bailey, 1983; Beaton, 1985; Morwood, 1987; Rowland, 1983, 1989, 1999; Walters, 1989);
- as a consequence of population growth and changes in demographic structure (e.g. Beaton, 1985, 1990; Hall and Hiscock, 1988; Hughes and Lampert, 1982; Lampert and Hughes, 1974);
- as related to the introduction and/or development of new technologies (e.g. Beaton, 1985; Sullivan, 1987; Vanderwal, 1978); and
- as associated with changes in social structure, especially trends towards socio-economic intensification (e.g. Barker, 1996; David, 2002; Lourandos, 1997).

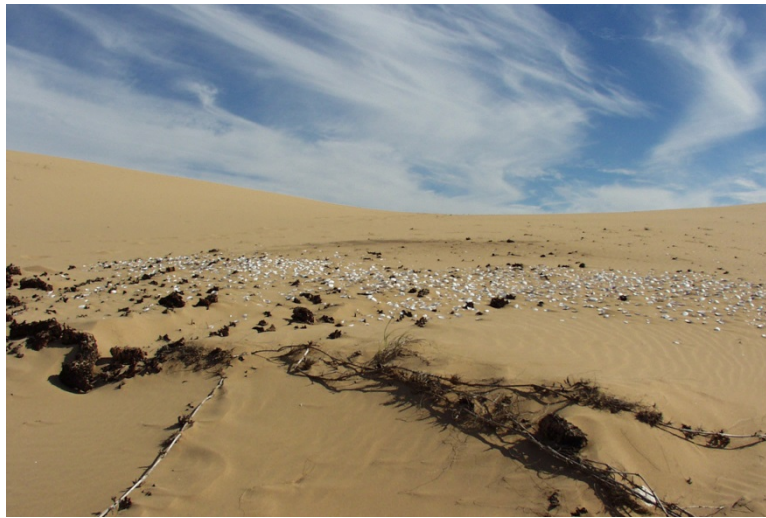


Fig. 1 Typical late Holocene shell midden scatter in central Queensland (Photograph: Sean Ulm).



Fig. 2 Fish traps off southwest corner of Bentinck Island, Gulf of Carpentaria (Photograph: Richard Robins, Negative 5681).



Fig. 3 Large shell mound at Weipa, note person dwarfed in foreground (Photograph: Michael Morrison).

To put these arguments into perspective, it must be remembered that an Australian ‘deep past’ has only been widely accepted since the 1960s, on the basis of pioneering excavations conducted by Mulvaney in the Central Queensland Highlands (Mulvaney and Joyce, 1965). In fact, much of the enduring framework of Australian archaeology was mapped out by the early 1970s (e.g. Mulvaney, 1969; Mulvaney and Golson, 1971). Although major recent change was recognised and discussed by others (e.g. Hale and Tindale, 1930; Hallam, 1977; Hughes and Lampert, 1982; Jones, 1977; Lampert and Hughes, 1974; Mulvaney, 1961, 1969; White, 1971), serious consideration of the late Holocene archaeological record is often treated as synonymous with the work of Lourandos (e.g. 1980, 1983, 1985, 1988, 1997) who focussed critical attention on issues of Holocene change in what became known as the ‘Intensification Debate’ (Lourandos and Ross, 1994). Lourandos’ major works have had a significant impact on the acknowledgement of dynamism in Australian archaeology and have been seminal in stimulating new research directions.

Employing a socially-oriented approach, Lourandos pointed to a wide range of changes in the archaeological record of the last 5000 years and linked these to continent-wide processes of socio-economic intensification which resulted in trajectories towards more intensive production and productivity in Aboriginal societies (see also Barker, 1996; David, 2002; Williams, 1988). Lourandos (1997) argued that changes in demographic structure (including absolute changes in numbers, densities and distributions) created competitive and complex relationships between groups providing the stimulus for intensified food production to underwrite large-scale intergroup gatherings and intensified exchange networks to regulate increasingly closed and bounded social entities. The increasing competitiveness inherent in the system is seen to have placed demands on Aboriginal economies promoting “a dynamic and complex set of socio-demographic and land use patterns” (Lourandos, 1997, p. 318) providing a positive feedback loop towards more intensive production and further elaboration of social complexity. These patterns were not seen to have occurred in only certain parts of Australia, but rather diverse sequences from across the 7,700,000km² continent were melded together to argue that these trends were part of a continent-wide process. It was even hinted that these Australia-wide processes may have been in some way linked to what were seen as parallel processes taking place amongst horticulturalists in Papua New Guinea to the north:

By all indications intensification of social and economic relations would appear to have been increasingly taking place during the Holocene period on the Australian mainland, the process being *nipped in the bud* by the coming of the Europeans (Lourandos, 1983, p. 92, my emphasis).

Since the early 1980s, socio-economic intensification arguments, both explicit and implicit, have increasingly been incorporated into normative accounts of Australian archaeology (Lourandos and Ross, 1994) and understanding “the acceleration of Aboriginal technologies on the eve of European settlement” (National Curriculum Board, 2009, p. 15) is even embedded in the new Australian national history curriculum. However, by emphasising supraregional trajectories of change, some advocates of intensification devalued the importance of local and subregional trajectories as a primary locus of change, instead amalgamating diverse sequences from widely separated regions to define overarching patterns. Lourandos’ (especially 1997) schema in effect homogenised distinct local and regional trajectories into generic patterns which fail to adequately contextualise sequences within local frameworks. Instead, trajectories are modelled on gross characteristics of the archaeological record, which tend to homogenise significant regional variability, emphasising widespread cultural continuities within changing structures. Lourandos clearly sees “distinct regional and local signatures” as firmly embedded in “patterns on a general continental scale” (1997, p. 306). The problem is that such higher-order archaeological syntheses are necessarily selective and

emphasise similarities rather than differences, resulting in “the distortion of an archaeological record of variation in adaptive responses into a record of homogeneous response” (Claassen, 1991, p. 249). As Frankel (1995, p. 654) has argued, individual “sites and regions each have a particular, and not necessarily related, history of environmentally and historically contingent developments”. Regional cultural trajectories need to be disarticulated from the ‘continental narrative’ (Frankel, 1993, p. 31) to enable independent characterisation of local behavioural variability. In effect, the limits of archaeological variability, or at least their interpretation, have been predetermined by expectations deriving from the continental narrative. A corollary of this is that regional sample inadequacy has often been transcended by invoking the continental narrative: the region is not seen as separate from the whole and so can be explained in terms of the whole rather than the part.

At the heart of this problem is our inability to recognise and account for the diversity of cultural and historical trajectories evident in the archaeological record. For example, in synthesising evidence for distinctly different Holocene trajectories for nine major regions across northern Australia, Lourandos (1997, p. 166) concluded that:

Evidence for more significant socio-cultural and demographic changes appears during the late Holocene, from around 4000 or so years ago, increasing after about 3000 years, and particularly in the last 1500 years or so.

It is difficult to reconcile this abstract statement with the detailed information presented for each of the regions in previous pages (Lourandos, 1997, pp. 126–165). For example, the site of Mickey Springs 34 in the upper Flinders River region, demonstrates increases in the rate of stone artefact deposition after 8000 BP and most intensive occupation after 3400 BP (Lourandos, 1997, p. 132). On the Keppel Islands off the central Queensland coast, seven of the eight excavated sites were only occupied after 1200 BP, with greatest intensity of occupation after 700 BP (Lourandos, 1997, pp. 138-139). For the Alligator Rivers region of Arnhem Land, Lourandos goes to some lengths to argue that “fairly steady socio-cultural and demographic changes (including possible increases in population) took place from around 6000 BP and continued more or less up to the historical period” (1997, p. 152). In the Central Queensland Highlands Lourandos (1997, p. 169) concedes “a notable alteration in pattern” where “late Holocene cultural changes are followed by apparent reversals in site use after about 2000 years ago”. In such generalised chronologies asynchronicity of several millennia in the timing of regional changes become insignificant. By (re)moving to this very abstract synthetic level, unique regional patterns and trajectories are made insignificant by the continental narrative.

3. Challenges for the continental narrative

Recent detailed studies across Australia demonstrate a more complex view of the human past than has been allowed by the conventional continental narrative – increasingly different sites, places, landscapes and regions have been found to have been used differentially through time (e.g. Allen, 1996; Barker, 2004; Carter, 2002; Cosgrove, 1995; David and Chant, 1995; McNiven, 2003; Morwood and Hobbs, 1995; O’Connor, 1999; Smith, 1993; Ulm and Hall, 1996; Veitch, 1996; Veth, 1993) (Fig. 4).

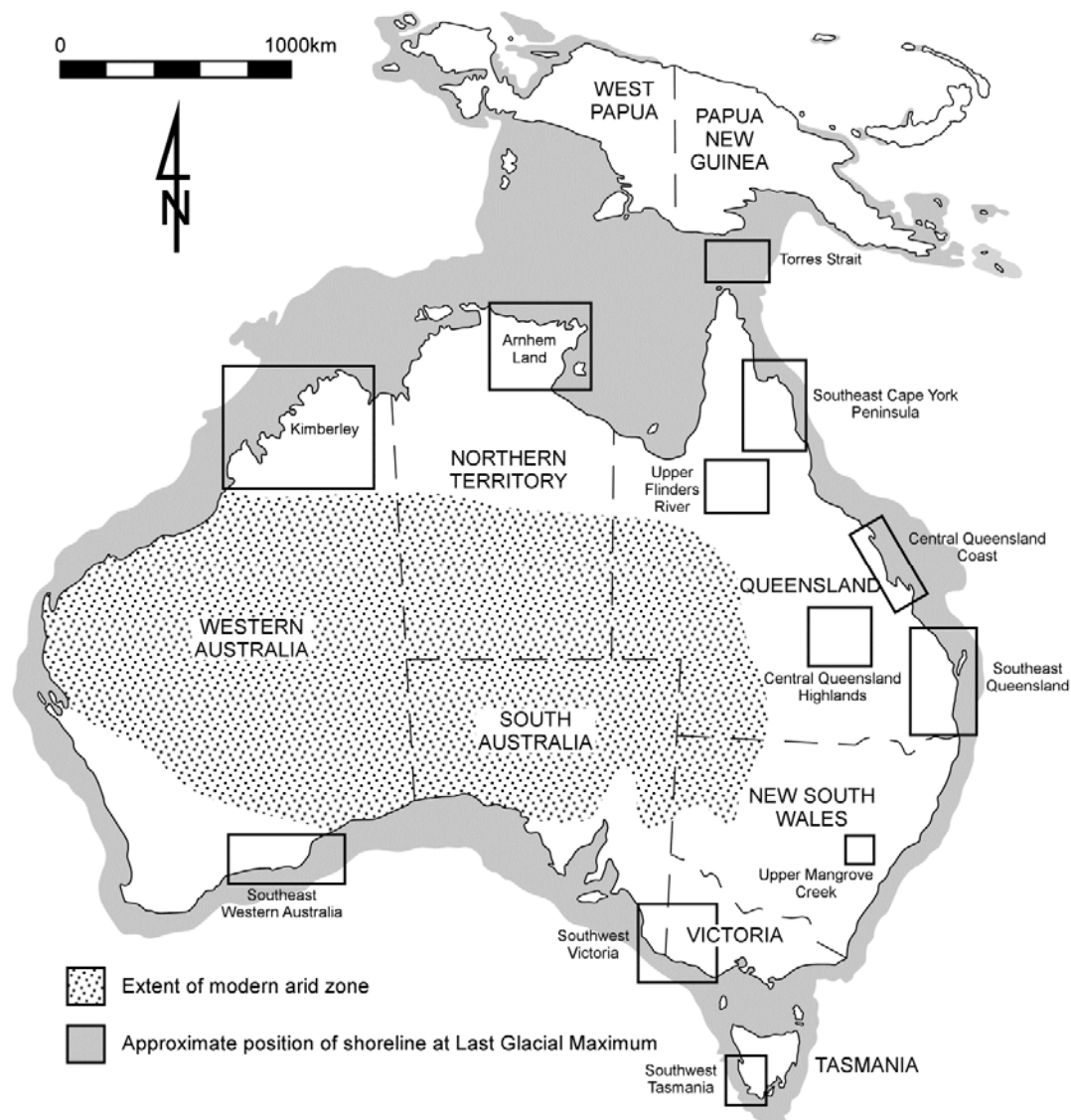


Fig. 4 The Australian region, showing regional study areas mentioned in the text (after Allen and O’Connell, 1995, p. vi).

Fundamental elements of our understanding of the mid-to-late Holocene have been challenged in recent years as well. The eel trapping systems and swamp management facilities in southwest Victoria, central to Lourandos’ original arguments (1980, 1983), have been found to date to before 6500 BP rather than the late Holocene, as was originally thought (McNiven et al., 2012). Backed stone implements, once thought to be exclusively a post-4500 BP innovation across the southern two-thirds of the continent (e.g. Bowdler and O’Connor, 1991; White and O’Connell, 1982) have been identified in late Pleistocene deposits in northern Australia (Slack et al., 2004) and early Holocene deposits in southeast Australia (Hiscock and Attenbrow, 1998). Grindstones implicated in widespread (re)occupation of the arid zone during the late Holocene have been recovered from deposits dating to the late Pleistocene (Fullagar and Field, 1997; cf. David, 2002; Smith, 1986). Complex food processing techniques for toxic *Macrozamia* plants, once exclusively associated with the late Holocene (Beaton, 1982), have been discovered in terminal Pleistocene deposits in southeast Western Australia (Smith, 1996). Detailed analysis of *Macrozamia* macrobotanical assemblages from sites in Central Queensland, argued to be evidence of large-scale ceremonial feasting in the late Holocene (Beaton, 1982), have shown that the small assemblages are consistent with “intermittent low-intensity, subsistence use of seeds and plants by small groups within a broad based hunter-gatherer subsistence strategy” (Asmussen,

2008, p. 99). In central Australia the Pleistocene occupation of desert areas has challenged the status of these environments as marginal landscapes, only occupied during the late Holocene (Smith, 1993; Veth, 1993). Central Australian engravings, once thought to relate to early low-intensity open alliance networks, now appear to overlap, both stylistically and chronologically, with highly regionalised recent painted art, challenging the conventional temporal distinction of these types and their associated behaviours (Ross, 2002; see also David, 2002, pp. 181-185). A late antiquity for marine fishing and simple linear increases posited for marine fish deposition rates in southeast Queensland (Walters, 1989) are now considered to be unsustainable (Ulm, 2002; Ulm and Vale, 2006). Patterns of decreasing stone artefact discard at some sites after c.1000 BP have been identified in the upper Mangrove Creek region (Attenbrow, 2006) and in the Hunter Valley to the north of Mangrove Creek (Hiscock, 1986). Detailed studies in many regions show regional abandonments or extended periods of much reduced occupation, including Ngarrabullgan in southeast Cape York Peninsula from c.600 BP (David and Wilson, 1999), the Curtis Coast in central Queensland from c.2000 to c.1000 BP (Ulm, 2006) and the Great Sandy Region in southeast Queensland from c.2300 to 900 BP (McNiven, 1992, p. 12). These findings run counter to orthodox accounts of late Holocene culture change which emphasise undifferentiated cumulative trajectories towards increased occupation.

Regional findings which appear at odds with the continental narrative have prompted archaeologists to return to detailed local level chronology-building and to examine basic assumptions underlying abstract synthetic studies at the continental level (e.g. Bird and Frankel, 1991; Cosgove et al., 2007; Fanning and Holdaway, 2001; Hiscock and Attenbrow, 1998; Holdaway et al., 1998; Holdaway et al., 2002; Ulm and Hall, 1996). This shift to a conceptual emphasis on local and regional historical archaeological and environmental histories requires an equivalent shift to the finer-grained methodologies needed to provide resolution of these issues. Three fundamental concerns continue to be important in this regard: chronological control, sampling and taphonomy. Control of time is, of course, critical to the validity of our constructions of the past and, at a very basic level, accurate site chronologies are required to provide the framework within which the study of culture change can begin. A second set of concerns can be subsumed under the heading of sampling. Despite the routine investigation of a wide range of site types in Australia (e.g. shell middens, stone artefact scatters, rock art sites etc), understanding is largely based on narratives developed from a handful of deeply stratified rockshelter deposits. The third issue of taphonomy revolves around processes of differential preservation and post-depositional modification of archaeological materials, particularly with those processes impacting site integrity. Methodological advances to address all three issues are critical to the continuing development of our understanding of Holocene Australia.

4. Refining mid-to-late Holocene chronologies

Establishing secure regional chronologies remains a fundamental key to building meaningful accounts of intra- and inter-regional sequences in Australia. In the absence of unambiguous time-marking artefacts (e.g. metals, ceramics etc) and well-resolved strata across much of Australia, radiocarbon dates are almost universally employed in Australia as the basis for periodising site components and defining regional chronologies. Previously employed relative chronologies based on assumed changes in stone artefact technologies (e.g. Ross, 1981) have been shown to be erroneous or dubious at best (Hiscock and Attenbrow, 1998). Large sequences of radiocarbon dates are now routinely used to compare cultural chronologies at the local, regional and continental scales (e.g. Bird and Frankel, 1991; Holdaway and Porch, 1995; Johnson and Brook, 2011; Lourandos and David, 1998; Smith et al., 2008; Ulm and Hall, 1996; Williams et al., 2010). Assessment of the validity of individual dates and suites of dates has therefore become increasingly important as cultural chronologies are progressively refined and higher resolution understandings sought for particular archaeological questions.

At a very basic level the low number of ages available for archaeological sites in Australia impacts on our confidence in chronologies. Radiocarbon sampling regimes frequently target only basal deposits, inhibiting our understanding of the chronology of other parts of occupational sequences, especially hiatuses and terminations (David, 2002:37; Smith and Sharp, 1993; Ulm and Hall, 1996). In fact, in the widespread absence of termination dates it is common practice to assume that sites are continuously occupied until truncation by European invasion. The small number of dates available also tends to encourage views of occupational continuity rather than discontinuities in sequences. If sites prove to be of Pleistocene antiquity they tend to be subject to more extensive dating than mid-to-late Holocene sites.

Williams (2012) provides a useful illustration of the potential impact of sample selection for radiocarbon dating and the number of determinations on the identification of the age-spans of occupation deposits. Too few dates or dates clustered around certain parts of the sequence will not be representative of the sequence as a whole, leading to an inability to differentiate occupation periods from periods of abandonment. There is also a distinct bias in dating rockshelters over open archaeological deposits. These biases are evident in the central and northern Australian age dataset, the only large-scale synthesis of dates available for Australia covering the northern two-thirds of the continent (Williams, 2012). Overall, dated archaeological sites have an average of 3.1 dates/site. Sites dating to the Pleistocene, however, have an average of 7.6 dates/site versus Holocene sites which average 2.4 dates/site. Rockshelters are preferentially dated, with an average of 4.3 dates/site. When these biases are combined rockshelters dating to the Pleistocene have an average of 10.1 dates/site whereas open sites dating to the Holocene have an average of 2.1 dates/site (Table 1). The basic structure of the dated site dataset also exhibits a strong geographical bias towards the eastern seaboard (Fig. 5). A related problem is that the chronology of many critical sequences remains poorly understood. In particular, few assemblages are dated to the early to mid-Holocene (10,000–5000 BP). In fact, out of the 2970 radiocarbon dates available in the Williams (2012) dataset, only 325 dates (10.9%) from 157 sites (16.6%) fall into this interval. As Lourandos (1988, p. 160) noted, if we are to develop an understanding of the changes evident in the mid-to-late Holocene we must first address the terminal Pleistocene and early Holocene period as a critical interval to assess the distinctiveness or otherwise of these later Holocene changes.

In some areas and for some time periods this situation is changing, with a small number of researchers recognising the limitations imposed on our understanding of Holocene sequences by low resolution chronologies (e.g. David et al., 2007; Holdaway et al., 2008, 2009; McNiven et al., 2009). David (2002), for example, has attempted to address this situation in southeast Cape York Peninsula by obtaining large sequences of radiocarbon dates, especially accelerator mass spectrometry determinations, based on charcoal samples. He has also implemented a thorough sampling program to date terminal occupation deposits. As a result of this approach he was able to demonstrate abandonment of the Ngarrabullgan area around 600 BP (David and Wilson, 1999).

Table 1 Average number of dates/site for various subsets of the radiocarbon dates available for archaeological sites in central and northern Australia presented by Williams (2012).

| Sample | Dates (n) | Sites (n) | Average Dates/Site |
|-------------------------------|-----------|-----------|--------------------|
| All Sites | 2970 | 946 | 3.13 |
| Pleistocene Sites | 1019 | 134 | 7.60 |
| Holocene Sites | 1951 | 812 | 2.40 |
| Rockshelter Sites | 1421 | 332 | 4.28 |
| Open Sites | 1549 | 614 | 2.52 |
| Pleistocene Rockshelter Sites | 645 | 64 | 10.08 |
| Holocene Open Sites | 1175 | 548 | 2.14 |

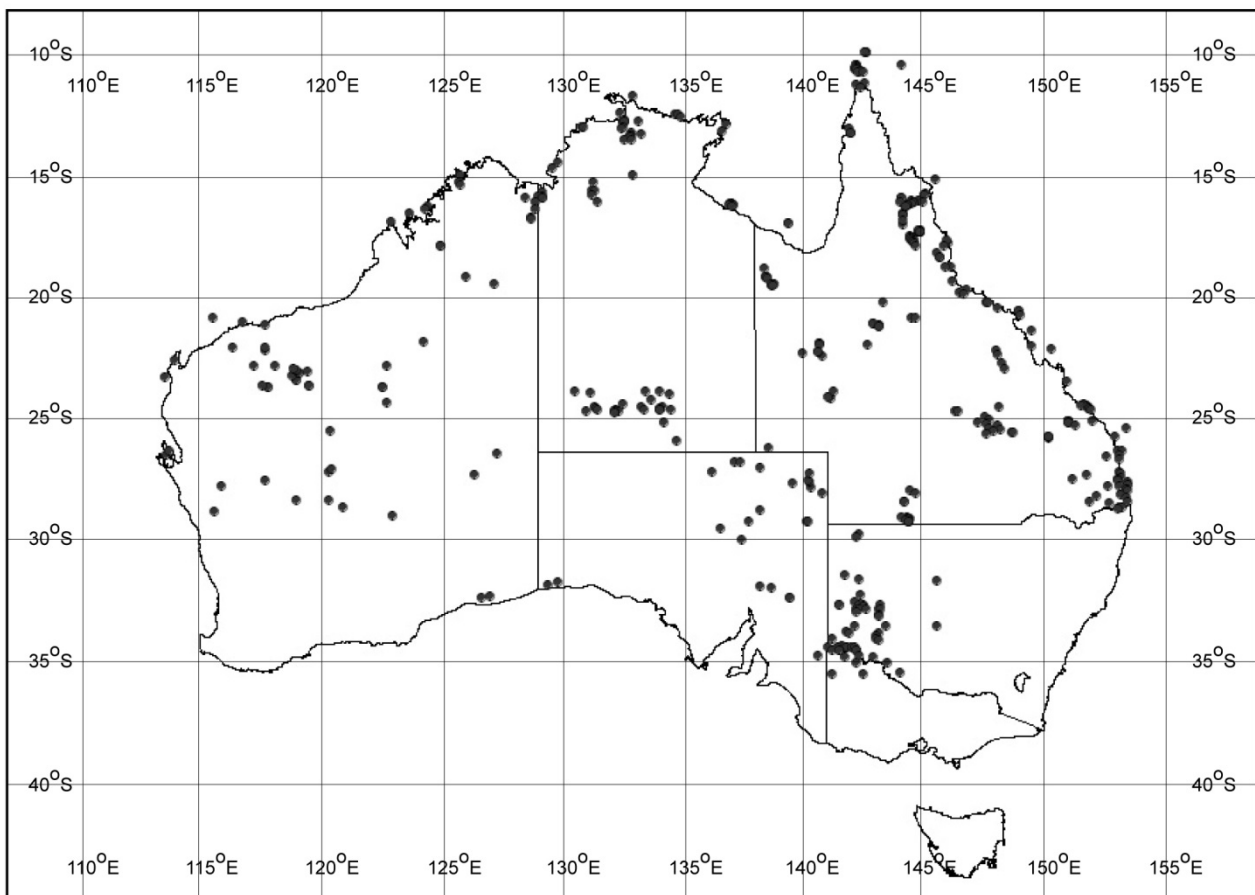


Fig. 5 Distribution of dated archaeological sites in central and northern Australia (Williams, 2012). Note that the dataset presented by Williams (2012) does not extend to southeast Australia or Tasmania or the extreme corner of southwest Australia.

5. Some sampling issues: Rockshelters versus open sites

Archaeology in Australia, as elsewhere, has been dominated by excavations of deeply stratified rockshelter deposits which have provided the chronological framework for our understanding of the continent's human past. Even in coastal Australia, where the recent archaeological record is dominated by shell middens, accounts remain based on rockshelter sequences (e.g. Barker, 2004; Hall, 1999; Hiscock, 1988; Lourandos, 1997; Mulvaney and Kamminga, 1999; Sim and Wallis, 2008).

This general focus on limited numbers of intensively investigated sites and a limited range of site types inhibits our ability to develop sophisticated understandings of temporal and spatial variability in past Aboriginal lifeways. Some analyses have completely excluded the consideration of open sites. Lourandos and David (1998, p. 109), for example, discounted open sites from a broad consideration of regional trends across several regions of northern Australia. In a related study, David (2002, p. 117) only used rockshelter data to investigate regional occupation trends in north Queensland, while acknowledging that "other kinds of sites should also be considered if we wish to address overall regional occupational trends". Recently, Johnson and Brook (2011) again relied exclusively on rockshelters as "durable archaeological sites" in attempting to model ancient population dynamics. Other examples abound in the Australian archaeological literature. Langley et al. (2011) note that this is a particular problem as "habitable rockshelters are typically uncommon in most regions" leading to further skewing of the known archaeological record.

A major limitation of this approach is that rockshelter deposits are heavily biased in favour of the limited range of behaviours likely to have taken place in rockshelter contexts. Ethnographic and ethnoarchaeological studies have demonstrated the limited functionality of rockshelter sites (e.g. Attenbrow, 2006; Binford, 1978; Goldberg and Macphail, 2006; Gorecki, 1991; Nicholson and Cane, 1991; Parkington and Mills, 1991). Walthall's (1998, p. 226) wideranging review concluded that 'habitation of rockshelters by mobile hunter-gatherers was structured and that the activities conducted within them were highly standardized. Use of these shelters was normally confined to periods of inclement weather, either cold and/or wet seasons. The residential use of such sites was generally of brief duration and confined to occupations by either male hunters or family-based foraging groups'. Therefore, rockshelter assemblages are likely to overrepresent activities of males and small groups.

Our confidence in the accuracy and replicability of regional cultural sequences must be reduced when only very limited numbers of sites, or site types, and very limited sampling of archaeological materials, provide the basis for constructions of regional (pre)histories.

6. Some taphonomic issues: Rockshelters versus open sites

The rationale for the bias towards rockshelters in regions dominated by open sites is rarely made explicit. When it is acknowledged at all, anecdotal claims are frequently cited, concerning the lack of integrity perceived to be inherent in open sites. Indeed, Lourandos (1996, p. 18) has argued that rockshelter deposits provide a 'sounder' dataset as they "are not subject to the same degree of post-depositional modification as open sites". Frankel (1993, p. 26) has similarly argued that only "caves or shelters have the potential for showing continuity or discontinuity of use". Implicit in this argument is the notion that rockshelter deposits are somehow exempt from post-depositional modification, such as that documented for open deposits,

particularly those located in coastal landforms (e.g. Lourandos, 1996, 1997). As Hofman (1992, p. 5) has argued, however, virtually “all archaeological collections were once surface deposits, and any argument or assumption that buried assemblages are more suitable or reliable for behavioural analyses must be demonstrated”. Walthall (1998, p. 225) and others (e.g. Collins, 1991) have also pointed out that rockshelter deposits may, in fact, be prone to post-depositional modification because the “restricted space within a rockshelter, combined with frequently long and intense periods of use, means that such sites are subject to postdepositional disturbance”. Williams (2012) also makes the important point that rockshelters and open sites are not discrete categories, with rockshelter deposits frequently extending beyond the dripline of the shelter.

In a study of rockshelters and adjacent sand sheets in the east Kimberley region of northwest Australia Ward (2004; Ward et al., 2006) found that occupation sequences of rockshelters were younger (<10,000 BP) than the open sand sheets (<18,000 BP), demonstrating that in this region open sandy environments provide better preservation conditions and longer records of human occupation than rockshelters. Ward et al. (2006) note that the same pattern has been reported elsewhere (Morwood 1981), but that few excavations extending beyond the dripline of rockshelters have included comparisons of deposits recovered inside and outside rockshelters.

Several studies have demonstrated that a high degree of post-depositional movement of cultural material between stratigraphic units can occur without damaging the physical appearance of strata or strata boundaries (e.g. Hofman, 1986, 1992; Villa, 1982). In Australia, conjoin analyses undertaken on stone artefact assemblages from well-stratified sandstone rockshelters in the Central Queensland Highlands by Stern (1980) and Richardson (1992, 1996) found significant vertical and horizontal movement of conjoining artefacts, despite apparently well-defined stratigraphic sequences. O’Connell and Allen (1998:139) have also argued that termites may have been a significant agent in modifying sediments in early rockshelter sites. These findings call into question basic assumptions about the integrity of the rockshelter deposits which form the basis of our understanding of the archaeology of Australia.

Another continuing problem is that interpretations based on evidence collected from open, especially coastal, sites have been heavily criticised over the last two decades, owing to presumed uncertainties in site preservation related largely to erosional processes (e.g. Bird, 1992, 1995; Godfrey, 1989; Head, 1983, 1986, 1987; O’Connor and Sullivan, 1994; Rowland, 1983). Geomorphological processes, especially erosion and the possible impact of sea-level change on the representation of archaeological materials, have featured prominently in discussions of many regions, such as Arnhem Land, southeast Queensland and southwest Victoria. The problem is particularly acute in areas without major rock formations close to the coast and with a dominance of sandy sediments. Such factors have obvious implications for the representation of coastal archaeological sites pre-dating the end of major sea-level change in the mid-Holocene: the archaeological record will be truncated and biased towards the last 5000 years or so. Yet over the last 4000 years the dominant coastal landscape processes in southern Queensland appear to have been toward progradation of the shoreline rather than recession. Clearly, it is essential in this context to have control of landscape formation processes in any area where open sites are to be discovered and interpreted.

Recent landscape approaches, employing a wide range of archaeological and environmental data, have begun to explicitly redress some of these problems, particularly in arid areas. For example, Holdaway and Fanning (Fanning and Holdaway, 2001; Holdaway et al., 1998, 2002, 2008, 2009) adopted a conjunctive approach employing detailed archaeological recording with modelling of geomorphic landscape dynamics in arid western New South Wales. They found major discontinuities in the regional sedimentary record indicating erosion and general instability of land surfaces prior to 2,000 years ago (see also Robins, 1999). The clear implication is that any archaeological record of Aboriginal occupation of this area prior to this time has been destroyed.

It is worth reiterating the point that every archaeological site is different and the monolithic categories of 'open' and 'closed' sites that we have and continue to employ in analyses may have outlived their usefulness. I am not suggesting that we stop excavating and using rockshelter sites to build regional chronologies, but that we need to subject them to the same scrutiny as routinely applied to open sites to demonstrate rather than assume integrity. In any case, as Ward (2004) notes, the interpretation of rockshelter sequences is limited without reference to broader contextual stratigraphy: trends observed in rockshelters may simply represent changes in the way rockshelters are used through space and time rather than changes in regional occupation (cf. Parkington 1989).

7. Discussion

Despite the amount of research undertaken over the last three decades, it is still not possible to integrate our understandings of the Holocene on a continental scale, at any but the most abstract level. Few regions have sufficient data to attempt the construction of meaningful local archaeological sequences. Major gaps remain in our understanding of the Holocene period owing to an uneven geographic spread of research, biases towards particular site types, and the limitations of conventional methodologies. Large areas of Australia remain virtually unknown archaeologically, especially beyond the southeast corner of the continent (Fig. 5). The patchy distribution of studies has encouraged the identification of continuities between widely separated sites and regions, rather than at scales appropriate to the delineation of both continuities and discontinuities at the local level. Although there is a clear disjunction in the archaeological trajectories of many regions between 5000 and 1000 years ago, our ability to understand these changes remains hampered by the limitations of inadequate sampling and chronological control on the one hand, and the abstract explanatory framework adopted on the other. The continental narrative is important in providing a general heuristic framework but its validity is dependent on data accuracy and the strength of explanatory models. As it is, the continental narrative emerges as a conceptually inadequate framework that actually works to downplay temporal and spatial diversity, diverting attention from the particularity of regionally-specific historical trajectories and archaeological signatures. Obviously, at a continental scale, no historical trajectory is autonomous or exists in isolation, but rather is defined in part by external relationships. This interconnectedness presents opportunities as the subject of study in its own right and not used to justify homogenising Indigenous Australian histories into a single historical trajectory. An alternative approach emphasising the diversity of regional archaeological and environmental records is much to be preferred. The major task ahead therefore remains a basic one: to construct and compare detailed individual site sequences from a range of site types, at the local and regional level, to establish the existence of trends independent of site-specific taphonomic and/or environmental factors. As Frankel (1993, p. 31) suggested nearly two decades ago, '[p]erhaps we should work outward to the broad picture from accumulated data and concepts developed in detailed local sequences ... [rather than] [s]hort-term, or broad-scale research projects [that] can only lead to large-scale narrative'.

Hiscock (2008), in particular, has championed the case for understanding regional diversity in terms of an Australian past comprising a mosaic of independent cultural trajectories based on continuous adjustments to local physical and social extingencies. Hiscock (2008) demonstrates through numerous examples that patterns inferred from the Holocene record do not clearly stand out from those documented in the Pleistocene (see also papers in Allen and O'Connell, 1995). Indeed we should not expect all people to behave in the same way during all periods in the past. Population density, historical contingency, environment and economy all shape human societies in profound ways, giving rise to the immense cultural diversity documented throughout human history. These factors were likely to have been strong shaping influences in the cultural differences expressed in the archaeological record across Sahul in space and time.

When we talk about groups responding to local environmental and social contexts, what we really mean is that these groups are historically situated – they have a past which impacts, directs and constrains the decisions available to these groups. This is where the more particularistic arguments for local level adaptations creating the diversity of economies observed through space and time fail to satisfy. Regions do not somehow exist as autonomous entities unrelated to other groups, historical trajectories or traditions. As McAnany and Yoffee (2010, p. 13) note, history and context does matter when we try to understand vectors of change. It is very clear that social networks connected Aboriginal people from one side of the vast Australian continent to the other and to New Guinea across Torres Strait (e.g. Keen, 1997; Lawrence, 1994; McBryde, 1978; Mulvaney, 1976). Behaviours embedded in material and information exchange are critical for linking people more effectively to their technology and environment. But one of the curious things here is that these symbolic behaviours, while historically situated, are rarely autochthonous. Rather behaviours can move great distances from the original physical and social environments in which they emerged to engender what I like to think of as wider trajectories of behavioural change. Obviously we need to reassess, if not downright reject, essentialising grand narratives, but we also need to resist extreme relativism. Aboriginal societies were and are intimately connected not only to their environment, but to each other. What happens in one group in one time and place does not happen in isolation.

Rosenswig's (2010) concept of Early Formative Mesoamerica as an archipelago of complex societies is useful here. In heterogeneous landscapes resources are not distributed evenly. Although no two local social configurations are identical, we know that landscapes with higher population densities were underwritten by higher rainfall and by extension higher bioproductivity (Birdsell, 1953). Therefore we might conceive of a landscape in which at any point in time there might be a range of higher-density populations distributed across resource-rich areas separated by lower-density populations. Not every society needs to be complex and we should not have the expectation that this will be the case. This is not denying anyone agency or ability; it simply recognises the fact that different people developed different ways of living to meet particular needs in particular circumstances shaped by what came before (i.e. historical contingency).

8. Conclusion

Holocene period archaeology in Australia has experienced a major shift in the last decade in the appreciation of the complexity of temporal and spatial diversity. Accumulating regional archaeological and palaeoenvironmental datasets, coupled with refinements in technical methods, provides the potential for disentangling local and regional variability from amorphous “long-term, continental narrative and description” (Frankel 1993, p. 31). This careful documentation of variability will present multiple opportunities to test explanations posited for Holocene (and Pleistocene) changes and address the current absence of robust data available to demonstrate the relative diversity, complexity and/or uniformity of

Holocene archaeological records within and between regions. We need to be mindful to not let the peculiarities of intra-regional variability distract us from the connections between regions. An exciting challenge in the coming decades will involve the construction of detailed regional archaeological and palaeoenvironmental sequences, and the re-examination of regional datasets, with a view to describing and explicating the complexity and diversity of the archaeological record. Not only will detailed regional studies provide more accurate accounts of the past and more strongly situate people in the context of landscape, but also they will contribute to a more informed, robust and useful archaeology.

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