Dating the Dreaming? Creation of Myths and Rituals for Mounds along the Northern Australian Coastline

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Shell mounds ceased to be built in many parts of coastal northern Australia about 800–600 years ago. They are the subject of stories told by Aboriginal people and some have been incorporated in ritual and political activities during the last 150 years. These understandings emerged only after termination of the economic and environmental system that created them, 800–600 years ago, in a number of widely separated coastal regions. Modern stories and treatments of these mounds by Aboriginal people concern modern or near-modern practices. Modern views of the mounds, their mythological and ritual associations, may be explained by reference to the socioeconomic transitions seen in the archaeological record; but the recent cultural, social and symbolic statements about these places cannot inform us of the process or ideology concerned with the formation of the mounds. Many Aboriginal communities over the last half a millennium actively formed understandings of new landscapes and systems of land use. Attempts to impose historic ideologies and cosmologies on earlier times fail to acknowledge the magnitude and rate of economic and ideological change on the tropical coastline of Australia.

Large shell mounds found along the coastline of northern Australia have long posed problems for interpretations of pre-European Aboriginal life. Thousands of shell mounds have been recorded in different regions of the tropical coast. They are highly variable in size. While some mounds are small, others are enormous, more than 10 m in height, 100 m long, and 10,000 m^3 in volume. These mounds share a number of features: they are often dominated by molluscs of the species *Anadara granosa*, occur in clusters, are located away from the current shore in places where *Anadara* are not abundant today, and are late Holocene but older than 600–800 years. This chronology places all *Anadara* mound building firmly in the prehistoric period of Australia, more than 150 years ago, raising questions about the relationship between these prehistoric features and the ethnographic depictions of Aboriginal life during the historical period of the last 150 years. Previous archaeological research has often imposed ideologies and cosmologies on prehistoric mound builders. In contrast, this article will argue that, over the last 600–800 years, those ideologies and cosmologies of historic times, including mythologies, associated with mounds have been formed by Aboriginal people negotiating new understandings of changed landscapes and altered systems of land use.

For more than three decades these spectacular mounds of shell have demanded an explanation and, in their search for answers, archaeologists have been much troubled. Archaeological investigations into Australian shell mounds have cycled through a number of analytical frameworks, each prompting animated debate. Our concern, in reviewing the changing theoretical interests of archaeologists studying shell mounds in northern Australia, is to highlight the ways in which all previous research frameworks have evoked images of historical Aboriginal life in explanations of the prehistoric relics. It should be noted that previous research into shell mounds has often been constrained not only by the physical difficulties of digging into them but also by the wishes

Cambridge Archaeological Journal 16:2, 209–22
doi:10.1017/S0959774306000126 Printed in the United Kingdom.

of traditional custodians who have felt that some mounds should not be excavated and, as a result, very little excavation and analysis of Australian mounds has occurred. Somewhat ironically it may be said that the social and symbolic importance of shell mounds for modern Aboriginal people has influenced not only archaeological interpretations but also aspects of archaeological fieldwork and analysis.

The initial focus was on establishing the environmental context of the mounds and the nature of the prehistoric economy of which they are partial reflections. These studies demonstrated the temporal range of mound building, the regional variations in their age and composition, the kinds of environments that were exploited, and the regularities in the phenomenon across much of the continent (Bailey 1977; 1999; Beaton 1985; Burns 1999; Cribb 1991; 1996; Faulkner & Clarke 2004; Hiscock 1997; 1999). From Peterson (1973) onwards, archaeologists argued that mounds were the debris of Aboriginal activities and were either middens directly indicating diet and, or, reflected the purposeful construction of mounds as campsites or localities for collecting plant foods. Ethnographic observations were often used to support these propositions (Cribb 1991; 1996; Meehan 1982; 1988; Roberts 1994), even though no Aboriginal people built mounds or even used them much in the historic period.

Ethnographic information was also employed in the archaeological debates about the next research focus, namely the quest to describe the formation processes involved in the creation of the northern Australian shell mounds. This agenda was initiated by Stone (1989), who forcefully argued that shell mounds were never made by people but were merely the incubation devices of nesting scrub-fowl (*Megapodius reinwardt*), which could be observed to build large mounds today. This idea was founded not only on observations of middens and scrub-fowl mounds near Darwin, but also on reports of stories held by Aboriginal people about the mounds. Stone cited examples in which shell mounds were special places in Aboriginal creation stories or were said by Aboriginal people to be created naturally by animals such as the scrub-fowl. Debate ensued between Stone (1991; 1993; 1995) and other archaeologists (Bailey 1991; 1994; Bailey *et al.* 1994; Bird 1992; Hiscock & Hughes 2001; Mitchell 1993; O'Connor & Sullivan 1994; Roberts 1994; Rowland 1994). The result was the current understanding that, whilst earlier discussions of agents of mound formation had indeed been naive, there were sound grounds for distinguishing mounds resulting from human activity from scrub-fowl mounds, and that although some natural mounds had been incorrectly identified as humanly made, most archaeological shell mounds were certainly anthropogenic.

The most recent analytical perspective among archaeologists investigating northern Australian shell mounds has been social in focus. Papers have focused on exploring the role of mounds within the ritual and social life of recent Aboriginal peoples, and examining what that might indicate about the accumulation and use of mounds during prehistoric times (Bourke 2005; Morrison 2003; also Cribb 1986a,b). These investigations have argued that the primary reason shell mounds exist in Australia is not ecological or economic but social, suggesting that mounds were created because of their role in ritual, ceremony and negotiation of territory. These arguments have drawn heavily on historical and anthropological descriptions of Aboriginal peoples' perception of place and their connection to religious and political beliefs, implying that sufficient continuity exists over several thousand years to justify the analogical use of post-contact ethnography. Curiously, these studies have implied that modern social and ideological uses of shell mounds can be used to inform archaeologists of the reasons for the existence of mounds, but the question of what cessation of shell mound building might mean for the continuation or transformation of religious and social practices and beliefs has not been adequately examined.

Our concern in this article is to explore the implications of the termination of shell-mound building, rather than to focus on the lives of the people whose behaviour resulted in the mounds. Our interest is to offer a new proposition to resolve the central tension in studies of the Australian shell mounds, namely how can we conceive of the relationship between the formation of ancient mounds and the lives and belief systems of more recent people (and likely descendants of the builders) living in the same region but not making mounds. As we have pointed out, each of the three archaeological approaches described above has sometimes employed post-European contact historical records of Aboriginal life, particularly political or religious views and perceptions of place, to offer explanations for the existence of ancient, pre-European shell mounds. In this article, we reverse this conventional use of archaeological and ethnographic information, and argue that the changes revealed in the archaeological record can be used as the basis for understanding the creation of elements of the cosmology, landscape perceptions and cultural construction of territory that existed along the northern coastline during the historic period. We begin this process by outlining the archaeological evidence on Australian shell mounds.

https://doi.org/10.1017/S0959774306000126 Published online by Cambridge University Press

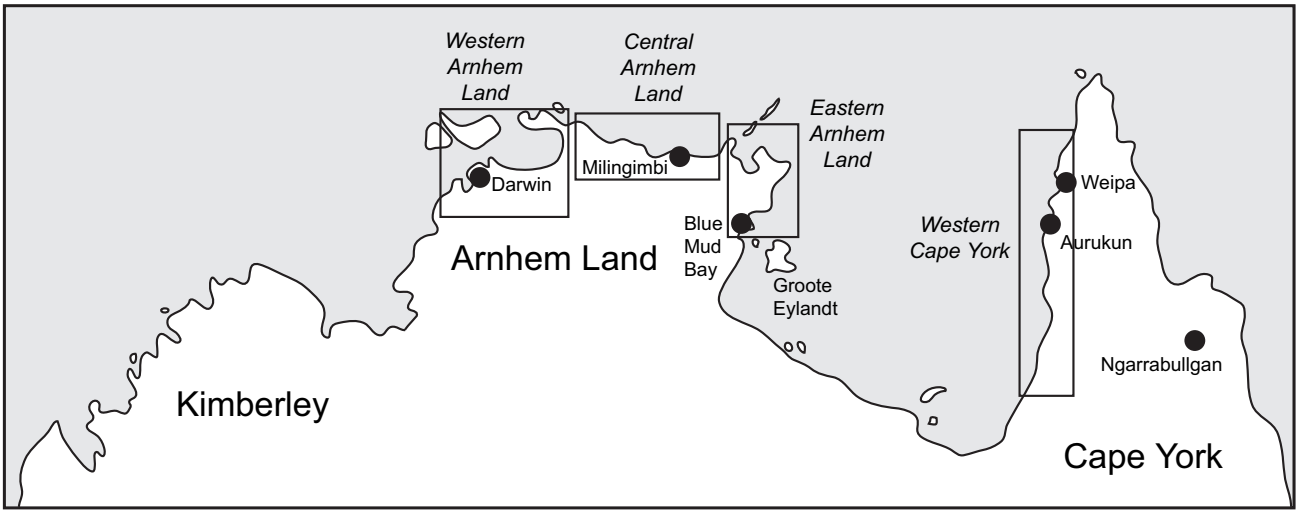

Figure 1. *Map of regions and locations mentioned in the text.*

Coastal regions compared

For our purposes here, we discuss four landscapes stretching over more than 2000 kilometres and representing a substantial proportion of those tropical coastal areas where mounds are found in Australia (Fig. 1). Shell mounds are also found in the Kimberley region to the west and on the eastern side of the Cape York Peninsula but, since those display somewhat different patterns and have not been central in discussions of Aboriginal stories about mounds, we have not included them in our study.

All of the mounds discussed here are conical piles or steep ridges of shell that might represent elongation of a conical pile. The mounds may also contain sediment, artefacts, vertebrate animal bone and ash in small amounts. As discussed above, Stone (1989) proposed that shell and earth mounds recorded in tropical Australia do not have a human origin. While this may sometimes be the case, there is little doubt that most shell mounds discussed by archaeologists today are the result of human disposal. Shells, artefacts and bones in the mounds that are not found around the mounds shows that the piles have not simply been scraped up by birds, while the presence of hearths, forest animals and artefacts throughout the mounds show that humans have used them (see Bailey 1991; 1994; Burns 1994; Mitchell 1993). Our review of the regions is structured from west to east.

In Western Arnhem Land, the largest number of shell mounds has been found in the Darwin region, where more than one hundred have been recorded and more than ten excavated (Bourke 2000; 2005; Burns 1999; Hiscock 1997; Hiscock & Hughes 2001). Most are dominated by the bivalve *Anadara granosa*, although many taxa of shell have been reported. Mound size is extremely variable, the length ranging from 1 m to over 90 m, and thickness ranging from 20 cm to more than 5 m. Some are extremely large, over 1000 m^2 and more than 3 m high. Most of those are located away from the current coast, from 50–100 m to more than 5 km, with many positioned on salt flats, chenier ridges, laterite slopes, benches overlooking mangroves and within or at the edge of the open eucalypt woodlands on the laterite surface (Fig. 2). In some cases, shell mounds are found up to 20 m above sea level (Hiscock 1997). Shell mounds that are currently away from the coast have had their setting altered by deposition of sediment to form flood plains, particularly across the mouth of the Howard River east of Darwin (Bourke 2000; 2005). Radiocarbon analyses of shell and charcoal have given estimates between about 1800 and 600 years ago, and this chronology has been accepted as the period in which *Anadara* was harvested in large numbers and the mounds formed (Bourke 2000; 2005; Hiscock 1997). Large *Anadara* beds, requiring open silty beaches, no longer exist in the region and the coast is now densely lined with mangroves (Hiscock 1997).

Central Arnhem Land also contains large numbers of *Anadara*-dominated shell mounds but published records are concentrated on the coastal areas near Milingimbi. Lloyd Warner's (1969) excavations of mounds near Milingimbi in the 1920s were followed in the 1940s by McCarthy & Setzler's (1960) excavations of Macassar Well mound, Wallaby Mound, and a Garki mound. Mulvaney (1981) radiocarbon dated these sites to between 1000 and 2500 years bp. Later, broad-scale surveys of the area by Roberts (1991; 1994) provided contexts for the earlier excavations. These

https://doi.org/10.1017/S0959774306000126 Published online by Cambridge University Press

Figure 2. *A 7-m-high shell mound located on a laterite ridge approximately 1000 m from the current coast at Hope Inlet near Darwin in Western Arnhem Land. (Photograph by Peter Hiscock.)*

mounds varied in size, but some were estimated at more than 6 m high, although historic mining of the mounds made estimates difficult. Like the mounds in the Darwin region, those in the Milingimbi region are found in different environmental contexts, including sand ridges, flood plains and higher lateritic surfaces. Although these mounds have not been described in detail, they are broadly similar in landscape position, size, composition and age to those from other regions in Arnhem Land.

In Eastern Arnhem Land, recent archaeological research on the Point Blane Peninsula, at an area called Blue Mud Bay, has demonstrated a pattern of *Anadara*-dominated mound distribution similar to that found in the Darwin Harbour area (Faulkner & Clarke 2004). Sixty mounds have been recorded along the margin of the Durabudboi River wetland system. Size varies, in area from 22 m^2 to 2300 m^2, and in height from 0.3 m to 3 m. All of the mounds are situated between 1 and 7 km from the present coastline, on the saltflats and along an extensive laterite ridge bordering the wetlands (see Fig. 3). These locations reflect the varying ages of the mounds within a changing environment. Nine radiocarbon-dated mounds on the margin of the Durabudboi wetlands indicate that the *Anadara* mounds formed between about 2400 years ago and 700–500 years ago (Faulkner & Clarke 2004, 28). These mounds were built before the wetlands formed, at a time when the landscape was dominated by a shallow marine embayment containing silty intertidal beaches and large beds of *Anadara* and other molluscs. During the mid to late Holocene, this area was considerably altered by sedimentation and was slowly transformed from a shallow embayment to an extensive freshwater wetland system and expansive saltflats. This transformation left few habitats for *Anadara granosa* and, like many regions across northern Australia, mangroves are common in the Blue Mud Bay area today.

On the western side of Cape York, a large number of *Anadara* mounds exist, although the best records we have come from the districts around two townships in this isolated region, Weipa and Aurukun. In the vicinity of Weipa, more than five hundred mounds exist on and adjacent to the floodplains of rivers flowing into Albatross Bay (Bailey 1999; Bailey *et al.* 1994). Size is highly variable, but the largest are more than 10 m high and contain approximately 10,000 metric tons of shell (Bailey 1999). Radiocarbon dates obtained from these mounds indicate that almost all were being formed only between 2700 and 700 years ago. Slightly younger radiocarbon dates have been reported from surface samples at two mounds in the Weipa area, but the best interpretation of those samples remains unclear and they may or may not indicate a recent phase of *Anadara* harvesting (Bailey 1994; Bailey *et al.* 1994). These mounds are positioned variously on sand cheniers, beach ridges, tidal salt or mud flats, and on the flank of a bauxite or laterite plateau. As in many other coastal landscapes in northern Australia, extensive progradation of silt flats and beach ridges has occurred following sea-level rise and, in the Weipa area, seaward progradation of land has often occurred in the last 3000 years (Bailey *et al.* 1994, 74). As a result, most mounds are located far inland from the current coast. For example, the twenty mounds making up the M37 group near the Hey River are located 2.5–3 km inland, and most of those mounds are on the edge of or within woodland and sitting on gently rising laterite slopes. Further south, in the vicinity of Aurukun, similar spatial and chronological patterns have been observed by Cribb (1986a,b; 1996; Cribb *et al.* 1988) who has recorded more than 30 *Anadara*-dominated mounds near the Love River. These shell mounds have sizes and positions broadly comparable with the better studied ones reported from the Weipa area.

Of course, across such a vast area, the mounds in these four regions display many minor points of difference, including the species of shell that make up minor components, the abundance of artefacts

https://doi.org/10.1017/S0959774306000126 Published online by Cambridge University Press

Figure 3. *A 1.1-m-high shell mound (BMB054) located on a laterite ridge approximately 1500 m from the current coast at Burpilingbuy in Eastern Arnhem Land. (Photograph by Pat Faulkner.)*

and vertebrate fauna, the kinds of archaeological sites found in the same landscape, and the precise dates established for the initiation and termination of mound building. Nevertheless, the similarities between these disparate regions in the spatial and temporal patterns of the *Anadara*-dominated mounds are noteworthy. As we have summarized, the building of mounds in each began more than 2000 years ago, as Aboriginal people intensively exploited large beds of *Anadara*, and ended about 800–600 years ago following coastal progradation, bay infilling and, in many areas, the development of mangrove-lined beaches. We argue that the formation of shell mounds found in numerous parts of northern coastal Australia reflect an intricate relationship between Aboriginal foraging and the environment, and that neither the prehistoric economy nor its environmental setting survived until the historic period.

Following the marine transgression, there was progressive progradation of land by sedimentation along the northern coast from terrestrial sources such as rivers and marine sources (Chappell 1982, 71). As a result, many of the shallow bays were gradually filled to form freshwater wetlands and salt or mudflat areas. Acknowledging regional variations, the model of estuarine evolution and Holocene deposition demonstrated for the Alligator Rivers region is thought to apply to many river systems across north Australia, although there are differences in the intensity of sedimentation and the timing of the transitions (Chappell 1990, 73; Woodroffe 1995, 80; Woodroffe *et al.* 1998). As a result, many coastal areas gradually developed the optimal conditions for *Anadara*, an intertidal species living on large estuarine mudflats with relatively low salinity. *Anadara granosa* thrives under comparatively calm conditions, especially in shallow inlets or bays and, in an optimal habitat, can form large dense beds representing a substantial biomass. It is clear that, for a period, such conditions were common, that *Anadara* could be collected in extraordinary quantities, and that the mounds were the consequence of that economy.

Those environmental conditions lasted for only a limited time and the subsequent environmental transition from shallow embayments and open beaches, with large mudflats containing massive *Anadara* beds, to mangrove-lined coasts and freshwater wetlands around 800 to 600 years ago, involved alterations in economy and land use. Where mounds had formed, there was a shift in the economic focus, from molluscan resources to a diverse set of terrestrial and aquatic resources available in the wetland areas. We argue that this raises very significant questions, of how alterations of coastal land use were accommodated within perceptions of the changed landscape, whether cosmology and social or political associations within the landscape had been transformed, and whether altered land use is implicated in any change of the patterns of belief and social activity. To explore this issue, we examine observed and inferred relationships between mounds and the cosmology and ritual and political uses of mounds during the historic period.

Mythology, ritual and mounds

In those regions for which we have summarized the archaeology of shell mounds, there are descriptions of Aboriginal mythology and ritual activities during the historical period. Some of the stories and cultural events relate to shell mounds or the places in which shell mounds are found. In the following review, we

https://doi.org/10.1017/S0959774306000126 Published online by Cambridge University Press

use the terms myth and ritual to define the specific kinds of historic stories and events that archaeologists have drawn upon in their discussions of mounds. When stories incorporate the archaeological shell mounds in contemporary understandings of the landscape, by offering explanations for the creation and operation of shell mounds within the social and religious world of Aboriginal people, we have termed these 'myths'. When activities at these places were formalized and related to religious and cosmological views, we have termed them 'rituals'. Both of these usages approximate implicit conventions employed in the literature on Australian shell mounds by many archaeologists, although we acknowledge the growing view that such labels should perhaps be avoided because of their ambiguity and problematic connotations (David 2002). A short summary of some of the reported myths and rituals associated with shell mounds across northern Australia, and the uses to which archaeologists have put that information, are provided here. Again our review moves from west to east.

For the Darwin area, a lack of detailed ethnography makes statements of the connection between mythology and places very imprecise. Generalized statements of the existence of cosmologies describing the activities of totemic ancestors are provided in the historical sources (Parkhouse 1895; Spencer 1914), as they are for all regions in Arnhem Land. However, there is no ethnographic evidence directly connecting these beings to places with shell mounds. Bourke has tried to develop such a connection by cleverly weaving ethnohistoric threads together. Her argument is that elsewhere in northern Australia there are hints that molluscs such as *Anadara* were involved in rituals (Elkin 1978; Frazer 1937) and may have provided an economic basis for congregations during ceremonies (Bourke 2005, 44). Noting that, during the historic period, the Larrakia people of Darwin had some kind of ceremonies, Bourke (2005, 42) suggested that shell mounds might be campsites used at ceremonial gatherings and that some of the circular shell middens in the Darwin region may have a morphological similarity with artificial rings of earth that were used in ceremonial activities in some other parts of Australia. Although these inferences may be correct, the links between known mounds and hypothesized ceremonies are tenuous, and the shell rings and clusters of debris have many possible explanations (Jones 1980). In particular, Bourke fails to acknowledge that there is strong circumstantial evidence that rings of shell debris were created by military activities in World War Two (Hiscock & Hughes 2001). In the absence of ethnographic information, the nature of any stories about or ritual use of places containing shell mounds in the Darwin region remains uncertain. Other regions in northern Australia have much more specific and direct evidence of the stories and views associated with shell mounds.

For central Arnhem Land, in the vicinity of Milingimbi, Roberts (1991) has summarized the variety of stories associated with shell mounds. He inferred regularity in the perceptions of mounds, with many smaller ones being recognized as humanly created middens but larger ones having a mythological description and significance. In this region, Aboriginal people linked larger mounds to creation events in the Dreamtime. Elsewhere in central Arnhem Land, in the Blyth River area, the integration of archaeological places into a system of myths about ancestral beings has also been reported (Brockwell & Meehan in press; Jones 1990). However, it also seems that some Aboriginal people held that some mounds were neither middens nor places created by ancestral beings, but were natural. For example, Peterson (1973, 186) reported that people at Glyde River in central Arnhem Land did not recognize mounds as the results of human activity but typically regarded them as natural formations. Somewhat similarly, in reference to the Garrki mounds on the central Arnhem Land coast, Stone (1989, 63) cites a description of the knowledge of elder David Burrumarra in the 1980s:

> He is adamant that humans had nothing to do with their construction. He said that the scrub-fowl rake up whatever is there. 'We had nothing to do with them' he said. But the crunch is this. He said 'if we made them, why isn't there any mythology or story connected to our making them?' For everything the Yolngu do, from the smallest things to the largest, have ancestral stories attached to them.

Absence of creation stories connected to shell mounds is even more pronounced in the Blue Mud Bay area of Eastern Arnhem Land, where Yolngu informants state that the mounds on the Point Blane peninsula have no contemporary mythological connections. People today focus their foraging on the recently formed Durabudboi wetlands, and that landscape is also the focus of mythology. Creation stories and mythology for this area typically involve motifs that refer to animals and landscape features that arrived there during the formation of those wetlands — such as stories about the ancestral crocodile of the Madarrpa clan. This broad correspondence between contemporary pattern of resource use and present-day mythology helps to make sense of the current views about shell mounds, which are located on the eastern margin of the Durabudboi

River flood plain, away from wetland resources and in places little used by local people today. This shows that absence of contemporary myths attached to the mounds reflects lack of contemporary concern for that part of the region.

Although stories were not associated with Blue Mud Bay *Anadara* mounds during the twentieth century, this situation may not be permanent. We draw attention to the current production of stories by local Aboriginal people based in Yilpara, the small township on the Blane Peninsula. The archaeological investigations of shell mounds in the Blue Mud Bay region were undertaken with the active participation of Aboriginal people living in Yilpara and nearby settlements (Faulkner & Clarke 2004). Before archaeological research commenced in this area, shell mounds were not regarded as significant or noteworthy places in the landscape. Aboriginal people contributing to the archaeological investigations began visiting the location of Faulkner's surveys and excavations of shell mounds, and they began to ponder and discuss why such features existed. The initial proposition advocated during the 2000–2001 field seasons was that the mounds must be natural, resulting from either storm or animal activity. However, debates with the archaeologists about the origins of the mounds, and particularly the presence of stone artefacts within excavated mounds, persuaded Aboriginal people that humans were responsible for the piles of shell. Once a human origin was widely accepted, new interpretations congruent with present beliefs of the community began to be advocated. For example, two of the dominant stories being attached to the mounds were that the sites had been created during the 'Noah time', a reference to the world forming/reshaping flood described in the Bible, or alternatively that the mounds had not been built by Aboriginal people but may have been created by beings described as previous occupants of the area (Djambawa Marawili pers. comm. 2000). These stories produced during the archaeological fieldwork are examples of the formation of narratives in modern Aboriginal communities in response to a need to explain the creation of landscape features.

On Cape York, it is clear that a number of well-known mounds have mythological and ritual associations in historic times. Positioned on relic land surfaces set back from the coast in the area of the Love River, near Aurukun, steep-sided conical *Anadara* mounds were described in the early twentieth century as being made by the two sisters, creators of Aboriginal people, who in the local Dreaming narratives lived like men, hunting and fishing. In this story, the distribution of shell mounds was said to represent the places where the sisters had camped as they journeyed north (McConnel 1957). Elsewhere in the Aurukun region, *Anadara* mounds with an elongated sinuous rather than conical shape, positioned on relic early Holocene dunes far from the modern coast, were associated with stories that may be a transformation of the myth of the two sisters. These mounds visible today were described in the twentieth century as having been created through the writhing of two gigantic carpet snakes who travelled across this landscape in primeval times, piling up shells with the power of their coils (McConnel 1957). Similar stories were told to Cribb (1986b; 1996; Cribb *et al.* 1988) when he worked near the Love River later in the century. Hence it seems that in historic times *Anadara* shell mounds are discussed by Aboriginal people on Cape York as places where ancestral beings camped during the formation of the world. This cosmological ascription may also have operated to define, authenticate and legitimize right of access to land, because Cribb (1996) has observed that mounds are employed to designate custodianship and may perhaps be thought of as territorial symbols. Morrison (2003) has added to this hypothesized connection between mounds and the politics of resource access. He claimed that the location and function of shell mounds reflected the operation of politics through lineage structures.

> People had differing levels of access to different areas and it was kinship and marriage that largely determined this. These complex systems entirely structured land use, and the very existence of alliance systems is viewed here as a factor that potentially influenced the nature of shell mound gatherings. As such, variations in relations between alliance systems, as well as changes in the way alliances were constructed in relation to the physical landscape must also have influenced where the mound gatherings were held, and over a long period where mounds occur today. (Morrison 2003, 6)

In ways such as this, archaeologists have been using ethnography or historical records of activities and beliefs to interpret the origin and accumulation of shell mounds, employing the ethnography as evidence that mound accumulation occurred for, or as a principal consequence of, Aboriginal social activities. The implication is that shell-mound building was a result of activities driven by the builders' cosmological beliefs and the political and social implementation of those beliefs through ceremonial events.

While an imposition of historical uses of and views about mounds onto the archaeological materials, as processes that could explain the mounds, has been very attractive to a number of archaeologists, we argue that the approach has problems. For example,

https://doi.org/10.1017/S0959774306000126 Published online by Cambridge University Press

the use of ethnographic information about land tenure and associated politics must deal with the likelihood that historically known land use was different from patterns 2500–600 years ago, something reflected in the economic differences suggested by the mounds themselves and by the different environment in which foragers operated at that time. If our archaeological depiction of the ancient environment and economy is correct, it may be 'disassociated' from, and not directly explicable in terms of, the historic economy, which operated within the constraints and opportunities of the modern environment.

The difference between the archaeological reconstructions of mound formation and the substance of historic Aboriginal perceptions of mounds might be thought of as another disjunction. It might be thought curious that if shell mounds were built through feasting associated with ceremonies of the kind held in the historic period this is not the content of stories attached to mounds. A further curiosity is that a diversity of stories was told of mounds in historic times. Perhaps this variety of stories suggests that some mounds were formed in association with ceremonies while others were not, in which case the use of a single ethnographic analogue is problematic. Alternatively, if the production of mounds typically shared the same social purpose, as researchers such as Bourke and Morrison imply, how do we account for the multiple transformations of knowledge about mound use, into mythologies about a variety of ancestral beings, into stories of biblical events, into stories about natural creations by birds or other animals, into stories of foraging debris without ceremonies and so on? Archaeologists such as Stone (1989) have accepted Aboriginal stories about shell mounds too literally, as stories about the way the mounds were built, but we argue that they should be understood as metaphors constructed by and functioning within the historic social systems of Aboriginal people. From this viewpoint, it becomes profitable to rethink the relationship between the ethnographic stories and the activities by which the mounds formed.

Mythologizing the shell mounds

We propose a new way of depicting the connection between current Aboriginal uses and understandings of the mounds and the prehistoric context of mound formation. This depiction involves a model that proposes not only the likely process for the emergence of the diverse myths and rituals historically attached to shell mounds but also the likely maximum antiquity for the Aboriginal perceptions of shell mounds that were recorded in the last two centuries. Since many of the northern shell mounds have associated Dreamtime narratives, our model acts to describe the time depth and process by which those particular stories emerged. Our starting point is to recognize the linkage between two phenomena we have reviewed: firstly, the defunct economic and social system that was responsible for creating the mounds, and secondly the variety of the mounds, and, in many instances, mythologized and ritualized understanding of them by historic Aboriginal people.

As we have explained, the mounds were built in, and represent the use of, environments that no longer exist, by foragers who were perhaps employing an economic system that has no exact historical proxy in northern Australia. Rich open-beach shores and embayments that were extraordinarily productive came into being in several different regions along the north coast at least 2500–2000 years ago. Molluscs, predominantly *Anadara granosa*, were harvested intensively from these beaches by foragers for a limited time. During the mound-building period, it is conceivable that not only the economic system but also the configuration of social relations, even the construction of social identity, may have been different from that recorded historically. Even the nature of totemic ideology, known to have altered in historic times through the incorporation of Macassan influences (McKnight 1976; Swain 1993), may have been different. Of course, we cannot specify the nature of belief systems during this phase, but we suggest that people conceived of their world and their social relationships in the light of those now extinct ecosystems in which they lived. We have argued that this economic system and the mound builders' cosmology ended abruptly some 800–600 years ago when the environment on which it was based disappeared when a combination of seaward progradation and the development of thick mangrove fringes destroyed the *Anadara* habitat. Thus we suggest that the shell mounds studied by archaeologists represent an economy that relates to a way of life different from those observed during the last two centuries.

We propose that the changes to the coastal landscape, and related reorientations of foraging strategies and redefinitions of Aboriginal conceptual relationships to the landscape, help to account for the nature and variety of mythological and ritual associations recorded for shell mounds in the historic period. In particular, we hypothesize that the nature of mythology attached to many mounds, in which they were not recognized as the debris of foragers but were described as the work of non-human entities and, or,

of supernatural events, can be attributed to the lack of connection between the archaeological debris and the historical economy or ideology of place. Following the disappearance of the *Anadara*-rich shores, the groups in each region reorganized their foraging practices and settlement pattern to exploit the other productive landscapes that remained or emerged 800–600 years ago, such as freshwater wetlands. At the same time, changes to the environment transformed the mounds to inland sites. Shell mounds are often located in areas which have subsequently had substantial sediment build-ups and filling in of embayments along prograding coasts. In some regions, a few mounds are now located kilometres inland from the coast, and many shell mounds are found more than 100–200 metres from today's beaches, in barren plains or on higher ground and on the edge of, or within, open woodlands. Hence, in historic times, shell mounds frequently appear alien to their salt flat or woodland settings. In addition, we suggest that the environmental changes were such that shell mounds were often left in what are now relatively resource-poor localities that may have been little visited. There are some obvious exceptions to this, such as mounds adjacent to freshwater wetlands and mounds on which plant or animal resources remained available, but the modern location of shell mounds away from productive shorelines is common. In any case, our model explains that, in these new environments, foragers with a new economic focus, and perhaps a new outlook on the landscape, encountered shell mounds in a seemingly inexplicable context. Among foragers who no longer created mounded shell debris, possibly ten or even twenty generations after the environment changed, we might expect either disinterest in these anomalous features or else puzzlement. Where foragers responded with disinterest, few place names or myths might have attached to the sites. Where foragers were intensively exploiting areas containing mounds and were puzzled by the alienness of these features, an interpretation congruent with their observations and new concept of the land might be developed, resulting in the diversity of place names and stories about the mounds observed historically. This process would explain, for example, the assertion that humanly built mounds in the vine thicket environment that today contains mound-building megapodes were built by those birds. The same process of interpreting new lands or anomalous features can explain the attachment of elaborate creation stories to these phenomena. Additionally, the nature of those creation narratives, whether they invoke Dreamtime spirits or supernatural events from the Bible, reflects the period and cultural context in which the narrative was produced. Furthermore, prominent landscape features, to which important myths had been attached, might be used to construct — perhaps anchor — territorial concepts in the transformed landscape.

In this way, we propose that the historically recorded understandings of the mounds probably emerged only after the termination of the economic and environmental system that created them, as these relic structures were reconceptualized by people with transformed economies and views about the land. During the last 800–600 years, when shell mounds represented features foreign in the bush setting, the myths about and uses of these sites came to reflect the concerns, perceptions and ideology of historic and proto-historic Aboriginal people. The nature of the stories assigned to these places is likely to be different from the processes and context of mound building and to be associated with more recent social and economic concerns.

Transformations in images of landscape

Our conclusion that the social mapping and meaning of relict features on Australia's north coast may have acquired their modern mythological configurations and ritual roles only within the last 800–600 years is congruent with the time depth for aspects of cosmology reconstructed in studies of different landscape features of northern Australia. A few examples can demonstrate this.

On Groote Eylandt (Fig. 1), Annie Clarke recorded and excavated a series of middens known to Aboriginal people from the Angurugu and Umbakumba communities. The shell middens she excavated were on the present coast, usually on beaches above the high tide mark, and were considered by local people to be 'old people camps'. Clarke (2002, 260) noted that these middens were spatially associated with debris such as glass and pottery from Macassan occupation, known to be less than 350 years old. All radiocarbon dates from sites in these landscape settings returned modern ages (Clarke 1994). In contrast, Clarke also undertook surveys away from the current coastline, in the foothills of the island, little used by contemporary indigenous people. In this landscape, she found sites not known by local Aboriginal people. Basal radiocarbon samples at two excavated sites returned age estimates of 1230±60 BP (ANU–8316) for a midden of marine shells in the Ararrkba rockshelter and 2260±140 BP (ANU–8985) in the Angwurrkburna rockshelter (Clarke 2002, 261). Aboriginal people had no oral traditions about these sites: they were not part of

https://doi.org/10.1017/S0959774306000126 Published online by Cambridge University Press

the remembered landscape. These findings indicate that the cultural landscape of Aborigines living today on Groote Eylandt, those places named and with a history of occupation are those near existing beaches and which date to the last 500 years, particularly the period of Macassan visits.

In the Blyth River region of central Arnhem Land, Meehan (1982), Jones (1990) and others have documented the existence of a landscape containing an intricate layering of named places, and religious stories describing the cosmology of historic An-barra people. Brockwell & Meehan (in press) have now described the chronology of this landscape and its archaeological evidence for occupation. Their conclusion is that the creation of the historic religious landscape is surprisingly recent. Much of the coastal landscape was created only 2000–1400 years ago and the nature of the economy altered about 800 years ago when molluscs from open sandy and silty beaches disappear from the archaeological sites and freshwater foods such as turtle begin being intensively harvested. The emergence of the complex social and ideological structure of historic An-barra life, at least along the present coast, must have emerged within the last 1400 years, and perhaps only in the past 800.

Even away from the coast in northern Australia, archaeological studies have identified substantial alterations to the mythology of place, focused on abandoned landscapes. The most famous example is the remarkable study by Bruno David (David & Lourandos 1997; 1999; Fullagar & David 1997) at Ngarrabullgan, a large table-top mountain on Cape York that was used intensively from at least 5000 years ago until about 900–600 years ago. Present-day Djungan people believe that an evil spirit inhabits the mountain top, and avoid the mountain when exploiting the area. David & Wilson (1999) have hypothesized that the current Djungan Dreaming mythology emerged 600 years ago as part of a redefinition of Aboriginal views of their world and in association with an alteration in the pattern of regional land use.

Each of these examples demonstrates re-mapping and reconceptualization of the landscape, and creation or transformation of the stories and activities associated with particular localities, during the last millennium. We suggest that these examples of the formation or transformation of cosmologies, and the cultural redescription and relabelling of landscapes, share with our study of shell mounds the pattern that the perceptions of territory held historically by Aboriginal people arose largely from recent social and economic concerns rather than the continuation of views of great antiquity. This proposition has significant implications for archaeological investigations in the Australian context.

Discussion

Swain (1993) has pointed out that a number of twentieth-century Aboriginal myths on the Australian north coast, and elsewhere, can be interpreted as having been constructed during the historic period as a means of exploring new elements in their environment. Swain focused on the intrusion of Macassan fishermen, from the Indonesian islands, into the Australian coast for several months each year from the early eighteenth century onwards, seasonal visits that modified the economy (Thomson 1949) as well as the ideological system of Aboriginal people. He suggests that the stories and myths that emerged constitute numerous metaphors referring to the contested coastal landscape in which Aboriginals found themselves following the arrival of the Macassans. This is one of many examples of the construction and transformation of myths during the historic period in response to change in Aboriginal life. Our model is based on the proposition that this use of myth and story to comprehend and reflect on new and unresolved aspects in life and land use, is not new, but that myth and descriptions of landscape had this role during prehistoric times. We hypothesize that the use of myth to reconcile disharmonious phenomena in their social or physical environment is a mechanism long used by Aboriginal people, although the structure and content of the stories may have changed. We therefore propose that, in this way, myths about shell mounds are not literal references to historical events but were actually a way of harmonizing these alien and inexplicable landscape features within modern foraging and social practice.

Our inference is that myths about the archaeological shell mounds in northern Australia are a reflection of relatively recent needs to articulate, and thereby give meaning to, social and physical disjunctions, and are not preserved statements about the origin of the anomalies. This study is part of an ongoing and widespread reconsideration of the articulation of ancient Australian economic and land-use patterns visible archaeologically with ethnographic social and ideological systems (e.g. David 2002; David *et al.* 1990; 1994; McNiven *et al.* 1992; Taçon 1994; Taçon *et al.* 1996). As we have discussed, the findings from a number of studies carried out in northern Australia over the last decade have yielded similar evidence of both the recentness of major changes in land use and the construction of images of the landscape. David (2002) has argued that popular notions of a

https://doi.org/10.1017/S0959774306000126 Published online by Cambridge University Press

great antiquity for Dreamings, as they were known historically, do not have a substantial evidential basis, and derive principally from preconceptions of a static Aboriginal culture. Archaeological evidence is increasingly demonstrating the falseness of propositions that Aboriginal world views were unchanging, over even short periods, by identifying numerous examples of cosmological transformations during the last millennium. This study has added to the evidence for the nature and context of alterations in Aboriginal cosmology.

In this review of the archaeological patterning of shell mounds in several areas of northern Australia, we have hypothesized that the modern coastal landscape has only formed recently, and that its formation was accompanied by not only a reorganization of the economic system for exploiting the new landscape but also by the development of the historically recorded meanings of the new landscape embedded in names, mythology and ritual associations. In particular, we have focused on the variety of meanings that were created for the visible and environmentally anomalous relics that archaeologists recognize as shell mounds. We argue that these meanings probably emerged after the cessation of the economic and environmental system that created those places, once they represented features alien to the modern bush setting. Our proposition, that people may construct their understandings of their own past through engagement with phenomena in their landscape, as they reconceptualize relic cultural elements in ways congruent with the experienced present, is one that has been explored elsewhere (e.g. Bradley 2002); but in the Australian context this conclusion has intriguing implications.

Modern stories and treatments of these mounds by Aboriginal people tell us about modern or near modern social practices, not the activities in place when the mounds began to form. While it is obvious that the foraging in the modern terrestrial and freshwater wetlands surrounding relic marine middens does not inform us of the economics of marine mollusc collecting in different conditions, we assert that it also follows that the names and modern stories for these mounds do not directly inform us of the ideologies and activities of the mound builders. Consequently, we date the emergence of the ideational system, in its current form and in respect of these relict coastal environments and cultural features, to approximately 800–600 years ago in a number of widely separated coastal regions. The use of historically recorded stories, including Dreamtime narratives, to explain the *Anadara* mounds may therefore be to impose modern beliefs on reconstructions of the ancestral societies. Literal invocation of modern origin stories to interpret clearly anthropogenic mounds as a product of birds, or imposition of modern relationships between territorial and religious conceptions of the landscape and shell mounds in order to infer the reasons that mounds were created, make little allowance for the magnitude and rate of economic and ideological change.

Furthermore, for the northern coast of Australia, we have argued that the similarity in the timing of change in economy and ideology corresponds to alterations of the landscape over large areas. The likelihood of an environmental trigger is indicated by contemporaneity of the termination of shell-mound building in the widely separated coasts of Arnhem Land and Cape York, on the mainland and on islands, and in the territory of both Pama-Nyungan and non-Pama-Nyungan speakers. However, if, as we have argued, the consequence of environmental shifts was not only economic restructuring but also the emergence of new social and religious frameworks, then the spread of these modified cultural systems and ideologies need not have been limited to the coastline. We hesitate to assert a causal link between the social and economic changes on the northern coast and the reorganization of views reported by David & Wilson (1999) from inland Cape York, although the similarity of timing is intriguing. Note that other social or ideological changes probably happened in northern Australia at approximately the same time. For example, McConvell (1996; 1997) has estimated, on the basis of linguistic changes, that the subsection form of kinship classification and associated ideologies and language shifts emerged near (but not perhaps at) the northern coast less than 1000 years ago and has been spreading since that time. We mention these hints of changed forms of social organization, land use and cosmology within the last millennium merely to emphasize that there may have been widespread alterations to Aboriginal social systems in a short space of time prior to European contact. The cultural shifts we mention may have been connected or alternatively may have occurred independently in a number of regions, perhaps with a common trigger. What is clear is that rapid change may be indicated archaeologically by inferences of reorientation and redefinition of cultural images and altered treatment of the landscape.

Conclusion

Our model of the reconceptualization of these relic archaeological features in an altered landscape leads

https://doi.org/10.1017/S0959774306000126 Published online by Cambridge University Press

us to conclude that the modern views of *Anadara* mounds, their mythological and ritual associations, may be explained by reference to the socioeconomic transitions seen in the archaeological record; but the recent cultural, social and symbolic statements of these places cannot inform us of the process or ideology of the formation of *Anadara* mounds. Consequently, our argument is congruent with, and lends support to, David & Wilson's warning (1999, 185) about naive invocations of Aboriginal ethnography to illuminate and explicate archaeological evidence of events in the recent past: 'The changing nature of people's relationship with place during relatively recent times forces us to consider the inappropriateness of imposing modern or recent meanings to understand the significance of past cultural constructs'. That problem of the uncritical imposition of ethnographic information as a way of deriving social and symbolic meaning is illustrated by our model for the mythological and ritual interpretations of shell mounds, which suggests that we have evidence for discontinuity in representations and a remapping of religion, territoriality and stories on the altered landscape. Inferences of possible ideological and social change late in Australian prehistory are, of course, exciting, but with that excitement comes the recognition that rapid change complicates attempts to use historic relationships of people with places for interpreting the archaeological reflections of the lives of earlier peoples.

Acknowledgements

We thank Bruno David, Ian McNiven, Nicolas Peterson and an unnamed referee for their constructive comments on this article.

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