The *Journal of the Anthropological Society of South Australia* is the official publication of the Anthropological Society of South Australia. It is a refereed journal that has been published since 1963. A list of recent peer reviewers can be found on the Society's website [http://www.anthropologysocietysa.com](http://www.anthropologysocietysa.com). The journal primarily provides a forum for researchers of Indigenous Australian anthropology, archaeology, history and linguistics although broader topics related to all of these disciplines may also be included.

Contributions accepted include: articles (5000-8000 words), short reports (1000-3000 words), obituaries (500-2000 words), thesis abstracts (200-500 words) and book reviews (500-2000 words). Notes to contributors are available through the Society's website.

Should you wish to submit a paper to the journal please direct your enquiries to the secretary of the Anthropological Society of South Australia (current contact details can be found on the Society's website).

The journal is free for current members of the Anthropological Society of South Australia. Subscription application/renewal forms are also available through the Society's website.

**Anthropological Society of South Australia Committee**

President: Dr Keryn Walshe (South Australian Museum)
Secretary (Webmaster/Listserve Manager): Dr Amy Roberts (Flinders University)
Treasurer: Mr Tom Gara (Native Title Section – Crown Solicitor’s Office – South Australia)
Councillor: Professor Peter Sutton (University of Adelaide/South Australian Museum)
Councillor: Dr Alice Gorman (Flinders University)
Councillor: Mr Kim McCaul
Councillor: Mr Chris Nobbs (South Australian Museum)
Councillor: Ms Caroline Rola

The views expressed in this journal are not necessarily those of the Anthropological Society of South Australia or the Editors.

© Anthropological Society of South Australia 2012

ISSN1034-4438
SIGNIFICANCE OF BALER SHELL (*MELO*) AT OLYMPIC DAM, SOUTH AUSTRALIA

Sarah Robertson¹

¹ Huonbrook Environment and Heritage Pty Ltd, PO Box 97, Moruya, NSW 2537, Australia

Abstract

During archaeological recording at Olympic Dam, South Australia, a fragment of shell from the gastropod genus *Melo* was discovered on a surface artefact scatter. Ethnographically baler shell was reported to have been traded into northern South Australia from either the western aspect of Cape York or Princess Charlotte Bay. Once it reached the interior of Australia its ceremonial value increased, and it was used to make pendants worn by boys. Baler shell has been reported from near Lake Eyre and from the Flinders Ranges, but not previously from the Olympic Dam area. The morphology of the shell fragment reported here does not permit species identification or interpretation of its function. An AMS date on the shell demonstrated that it could not have reached the Olympic Dam area prior to 127-239 cal BP.

Introduction

Since archaeological assessments for the construction and proposed expansion of the Olympic Dam mine in arid northeast South Australia began in 1980, more than 600km² of this sand and gibber desert region have been surveyed systematically and approximately 16,500 sites have been identified (Hughes *et al.* 2011:21). Both the survey and salvage phases of the Olympic Dam project have demonstrated that a wide range of stone artefacts and implements (including pirri points, backed artefacts and tulas) were manufactured and used within this region, with most of the surface archaeological material dating back to the last 5000 years (Hughes *et al.* 2011).

It was during the investigations of a site at Olympic Dam that a fragment of marine shell was encountered in association with a large dense surface artefact scatter. Further investigation confirmed that it was a piece of *Melo*, a genus of gastropod commonly referred to as baler shell. There are five species of
Melo that occur around the coastline of Australia. Melo amphora, perhaps the best known of the species, lives within littoral and sublittoral zones with a distribution in Australia restricted to the coastline across the northern half of the country (Western Australia and Queensland) (Poutiers 1998:597; Smith and Veth 2004). Also relevant to this discussion is Melo miltonis, which is found in the south of Western Australia and also in South Australia (Cotton 1936:507). Species of Melo occur within the intertidal zone and as such on occasion are washed intact onto beaches where they can be easily collected (Cotton 1936). This is especially the case for the northern species. The discovery at Olympic Dam is the first archaeological evidence of baler shell in this region. Furthermore, as a diverse range of stone is locally available for stone artefact manufacture, the shell also provides possible archaeological evidence for trade in this specific region.

Ethnographic Evidence for Trade of Melo

Ethnographically Melo amphora is recorded to have been distributed to inland Australia via specific trade routes. The western aspect of Cape York was observed to be an origin for the trade of Melo into South Australia (Mulvaney 1976:84), and baler shell modified into rounded discs were traded from Princess Charlotte Bay south towards Normanton in Queensland (Hale and Tindale 1934:99; McCarthy 1939:417). In northern Queensland the shell was commonly used in spear throwers and as pendants for both men and women. Anthropologists have suggested that the further inland the shell was traded, the greater the significance it acquired (Mountford and Harvey 1938:129, 133). They reported that the Dieri of far northeastern South Australia used baler shell as part of male initiation ceremonies and also for witchcraft in much the same manner as a pointing bone (Mountford and Harvey 1938:128).

There are no previous archaeological or ethnographic reports of the use of Melo in the Olympic Dam region or the nearby sand deserts. The closest reports of baler shell are from north of Lake Eyre (Museum of Australia information labels) and from Nepabunna in the Flinders Ranges (Mountford and Harvey 1938). Kokotha people report that further away, at Indulkana in northern South Australia, baler shell is still used in initiation and marriage ceremonies, with the shell traded from the vicinity of
Port Hedland in Western Australia. In 1949 the shell was observed to be an important component of ceremonies of the Kuyani and Adnyamathanha at Nepabunna\(^1\) in the northern Flinders Ranges, where it was worn as a pendant (makilya) by young boys shortly before their time to become men. Today Kuyani people believe baler shell was traded from near Weipa in northern Queensland. Members of both Kuyani and Kokotha groups state that items such as Parachilna ochre and wild fruit were traded from South Australia back to Queensland and Western Australia.

**Archaeological Evidence for Trade of Melo**

Although there are numerous ethnographic accounts of baler shell being traded into South Australia, archaeological evidence demonstrating the longevity of these trade networks is lacking. Dates on *Melo* from archaeological deposits indicate that it was being used and/or traded short distances inland as early as 28,000 BP in the west Kimberley (O’Connor 1999:60, 121) and in the terminal Pleistocene (12,400 BP) at Noala Cave in Western Australia (Bowdler 1990; O’Connor and Veth 2000). But with increasing distance from the coastline of northern Western Australia the number of archaeological sites containing fragments of *Melo* rapidly declines, in all probability as a consequence of the poor preservation of organic material within arid environments. The oldest recorded inland date for *Melo* is 2260 cal BP at Kurtararra Well #1 in the Great Sandy Desert, Western Australia (Smith and Veth 2004:37). Baler shell has been reported infrequently at sites in South Australia. Southern baler shell, *Melo miltonis*, was found at large coastal sites on the Anxious Coast of South Australia (Nicholson and Cane 1991:7).

---

\(^1\) Photographs of these taken by Mountford from a ceremony in 1938-39 near Nepabunna are held in the collection of his photographs in the Library of South Australia, and sketches of the pendants are contained in Tunbridge (1988).
Archaeological Context of *Melo* at Olympic Dam

The site on which the fragment of baler shell was found is on an east-west aligned isolated sand dune on a gibber plain, near a large canegrass swamp which is immediately north of the dune. The surface artefact scatter covers an area approximately 120m x 80m with an estimated density of 49 artefacts/m². As well as unmodified flakes it contains all types of backed artefacts, pirri points, other retouched flakes, cores, hammerstones, anvils and grinding flats. It also includes 7 knapping floors, on 4 of which backed artefacts were made. A silcrete backed artefact knapping floor is present on the western rim of the deflation hollow close to where the *Melo* fragment and two fragments of emu shell were found.

The fragment of *Melo* shell is 65mm x 30mm with a maximum thickness of 2.15mm. It is semi-circular with one very straight side that was probably snapped then slightly weathered. There is a distinctive repair line on the outer surface of the shell which indicates that it is molluscan rather than crab or eggshell. A series of parallel stress lines on the interior surface of the shell are characteristic of the species *Melo*, but there are no diagnostic features that would identify it beyond the genus level.

The outer surface of the shell is bleached white with a slight polish to it, while the inner surface retains a yellow colour and a fresher appearance. Under microscopic examination a series of deep and discontinuous horizontally and vertically oriented striations can be seen etched into the outer surface of the shell. These are unlikely to be natural in origin because growth lines are shallow, continuous, and occur in only one orientation (Dr John Healy, malacologist, pers. comm.). Together, these factors suggest that the outer surface of the shell has been deliberately abraded, possibly to remove the very outermost surface to reveal the white surface underneath.

It is also likely that the margin of the shell has been worked. Natural fractures in shell produce an irregular, jagged edge still evident after taphonomic smoothing by sand and water. The smooth semi-circular margin of this shell is far too regular to be a natural break, though the sharp linear margin of the shell is characteristic of a break or split.
Figure 1 Exterior surface of *Melo* fragment. Horizontal and vertical striations are evident at the top left hand corner of the shell. Scale in cm.

Figure 2 Interior surface of *Melo* fragment, which has a fresher appearance than the exterior. Scale in cm.
The discontinuous vertical and horizontal striations are particularly concentrated at the rounded corners of the shell.

**AMS Dating**

A sample of the shell submitted to the Australian National University Radiocarbon Dating Centre for AMS dating (Sample ANU-S 26838) returned an uncalibrated date of 590 ± 25 years. Using the marine calibration factor of 09.14c the calibrated age of the shell is 127-239 years BP (Fallon et al. 2010; Reimer et al. 2009). It is important to note that this period between about 130 and 240 years ago is when the shellfish died. Although it is impossible to determine how long after the Melo died its shell entered the trade network, this indicates the earliest possible date for the trading of this baler shell to the Olympic Dam region.

Despite the physical association between the Melo and the artefact scatter, the functional relationship between the two is unclear. The shell could not have arrived in this sand desert area more than 240 years ago, while the presence of large numbers of backed artefacts and pirri points on this site probably indicates occupation of the site at least 1500 to 3000 years ago (Hiscock 2008; Hughes et al. 2011). The shell therefore need not be contemporaneous with the backed artefact knapping floors close to where it was found, or with many of the other
artefacts in the scatter. Rather it is probable that the shell and 
the artefacts are in apparent association due to wind deflation of 
the surface sand through which the shell has been let-down onto 
an earlier artefact scatter.

The prevailing climate at Olympic Dam is one of 
variable, rare high intensity rainfalls and prolonged very hot dry 
periods. Organic preservation is very poor, and virtually no bone 
or shell remains on the exposed well-drained surfaces for more 
than a few years, and no organic materials have been collected 
from any of the sites during the salvage program (Hughes et al. 
2011). This raises the question of how an organic artefact has 
 survived for up to 240 years within such an environment. The 
surface sand on these dunes moves during high winds and there 
is a slight gradual shift from west to east. The shell was 
recovered from the western rim of the deflation hollow and it is 
possible that it has become exposed only recently as a result of 
this sand movement.

The shell may have survived if it was covered rapidly by 
a layer of sand after deposition. Alternatively, the shell may have 
been deposited only recently at the site after being stored 
elsewhere for some time. Due to their ceremonial significance in 
inland Australia, baler shells were reported to have been curated 
carefully and to have remained in circulation for up to 100 years 
(Smith and Veth 2004). Storage as a keepsake or for its 
ceremonial value would have protected the shell from the harsh 
 arid environment and would explain the relatively fresh 
appearance of its underside.

**Significance of Melo at Olympic Dam**

Although the fragment of *Melo* provides no indication of its 
provenance, it is nonetheless significant as it provides evidence 
of trade in this region. Regardless of the source, the shell was 
traded or carried hundreds if not thousands of kilometres to 
arrive at Olympic Dam. Ethnographic reports suggest that the 
shell is most likely *Melo amphora* from western Cape York 
approximately 2100km from Olympic Dam. Shells were also 
traded from Princess Charlotte Bay, around 1500km from 
Olympic Dam, though possibly not into South Australia.
Members of the traditional owner communities – Barngala, Kokatha, Kuyani – have suggested that the Port Hedland region, 2200km away, is also a strong possibility. If the shell had been sourced relatively locally (from Spencer Gulf) it would be *Melo miltonis* and could have been carried to Olympic Dam, a distance of approximately 500km. If this is the case, it casts doubt on existing assumptions regarding the trade of these types of artefacts and understanding of the nature of coastal/desert relationships. The longevity of the trade networks reported in the ethnographic literature is unknown. It has been proposed that the trade of incised pearl pendants from Western Australia into central Australia was in fact a post-contact phenomenon that arose after greater numbers of women than men were killed by smallpox. The pendants were considered to be imbued with magical powers to assist men with securing a wife (Akerman and Stanton 1994; Hiscock 2008:16). It is unknown whether baler shell had a similar association, although it was reported to have ‘magical’ properties (Mountford and Harvey 1938:128), but the fact that it has been dated to the post-contact period does not help to extend the known longevity of the trade network.

Issues of provenance aside, this shell also provides evidence that the site on which it was found was being used relatively recently. It has been difficult previously to obtain an accurate indication of recent occupation within the region because the only archaeological evidence comes from surface scatters of stone artefacts on sand dunes, which cannot be dated directly. The shell fragment therefore provides evidence of late occupation or visits in the region, and demonstrates that this site at least was still being used or visited in the post-contact period.

Conclusions

It has been reported that the primary use of baler shell in interior Australia was as pendants where their function was ceremonial. Examination of the *Melo* fragment from Olympic Dam suggests that one of the margins had been deliberately modified to produce an oval shape, though there is no evidence of this fragment having been pierced. Rather it appears to have been snapped and later weathered. It is possible that the shell is
debitage produced during pendant manufacture, but that seems unlikely as no further pieces of the shell could be located.

Although species identification was not possible, stable isotope analysis could possibly be used to test ethnographic accounts of trade routes into South Australia from northern Queensland or Western Australia, but this would require a study of both this and other shell samples from the Lake Eyre region, and would require a more intensive study than this brief investigation. Speciation and/or stable isotope analysis of pendants held within museum collections would help to develop a more comprehensive picture of trade routes into South Australia.

Nevertheless the shell is significant because it can be present in the region only as a consequence of being carried by a traveller from either the tropical or southern coast, or through trade. It therefore provides a date for the antiquity of baler shell trade into the Olympic Dam region and tangible evidence of long-distance trade in the harsh arid landscape of the South Australian desert.

Acknowledgments

This study formed part of the archaeological salvage and research program being conducted by HEH Pty Ltd for BHP Billiton. I thank them for supporting this investigation. Although people from the Aboriginal communities near Olympic Dam are naturally reluctant to talk about details of ceremonies, Glen Wingfield and Mick McKenzie as representatives of the Kokatha and Kuyani communities respectively discussed the use of baler shell by their communities and confirmed that the information about its use in ceremonies remained broadly similar at least until the middle of last century. I am grateful to them for their discussions and advice. I would also like to thank Dr John Healy and Mr Darryl Potter (Queensland Museum) for access to the museum collection of *Melo* and discussion of shell structure in volute and other large Australian gastropod shells.
References


