Gunumbah: Archaeological and Aboriginal meanings at a quarry site on Moreton Island, southeast Queensland

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Abstract

Cape Moreton - Gunumbah - on Moreton Island, Queensland, is an area of high cultural value to the Ngugi traditional owners, and has considerable archaeological significance. The extensive area of stone outcrops is the largest raw material source for stone artefact manufacture in Moreton Bay, yet there is no evidence for extraction activities or stone working associated directly with the outcrops. Stone working is only visible at two nearby workshop sites. Furthermore, the area is made up of multiple outcrops of different raw material types. Each quarry is owned by a particular family, and the quarries were a major focus for trade on Moreton Island. Significant places close to the quarries imposed restrictions on access to the stone and obliged visitors to behave in accordance with Ngugi Law. Although several archaeologists have analysed the Cape Moreton stone outcrops, the full meaning of Gunumbah can only be determined by including Aboriginal knowledge of the entire place.

Introduction

In 1993, Hiscock and Mitchell wrote one of the most in-depth analyses of research into Australian Aboriginal stone and ochre quarry sites. They focused on the wealth of technological data that quarries and associated workshops can provide to the archaeological researcher (cf. Hiscock and Clarkson 2000). They also criticised the very descriptive approaches of earlier studies that gave pre-eminence to chemical characterisations of raw materials, thereby reducing analyses of quarries to sourcing studies and the documentation of stone tool distributions in the landscape (eg. Earle and Ericson 1977; Harding 1978). Such studies, Hiscock and Mitchell argued, provide little information about activities that occurred at the site itself. Similar concerns were raised by Reid (1998) and McLaren (2002), who echoed Hiscock and Mitchell's (1993) plea for more rigorous research into technological behaviour at extraction and reduction sites.

But quarries are more than just the locales of raw material extraction and technological reduction. Quarries are central to the social, economic and cultural life of the people within whose territory they occur, as Torrence (1986:165) has observed:

> … quarries and mines have usually been considered as individual sites totally divorced from the remainder of the economic system. … As a consequence, the failure of scholars to place these sites in a wider framework has meant that one of the major potential strengths of research at lithic sources, the reconstruction of prehistoric exchange systems, has not yet been fully realized.

Over recent years several authors have demonstrated the important social and cultural place of quarries and production sites. Although many of these studies emphasise the economic role of trade and exchange (Ericson 1984; Findlow and Bolognese 1984; Gramly 1984; Luedtke 1984; Torrence 1984; Cottrell 1985; Bamforth 1990), others have demonstrated the broad social and cultural frameworks that are needed for a full understanding of the workings of quarries and workshop sites (Gould 1977, 1980; McBryde 1978, 1984a, 1984b; Gould and Saggers 1985; Torrence 1986; Jones and White 1988; Paton 1994; Mulvaney 2001).

In this paper we present the results of a re-examination of a quarry on Moreton Island, southeast Queensland. This site has been the subject of several previous studies (Morwood 1975; Richardson 1979; Godwin 1983; Robins 1983, 1984a, 1984b), all of which have concentrated on describing the site and/or documenting the geological and technological characteristics of the place. In our re-evaluation we combine archaeological evidence and traditional owner knowledge in an effort to understand a complex cultural landscape. We demonstrate that extraction and reduction activities are not the only behaviours at such sites and we concur with Torrence (1986) that quarries are indeed central places in society and culture.

Quarry studies in archaeology

For archaeologists, a quarry is the starting point for exchange activities. A quarry is the place from where one of the most visible and enduring elements of exchange originates - stone raw materials. Yet this is a narrow view. Not only is exchange more than just the material manifestation of traded goods, not all quarries carry physical evidence of ever having been exploited.

Hiscock and Mitchell (1993) criticised researchers who insist that a stone outcrop can be called a quarry only if it demonstrates evidence of extraction, such as pits, broken bedrock, anvils, and products from specific knapping events (e.g. Wright 1971; Dickson 1981; Florek 1989; Reid 1998:4, 10). The form that extraction takes is largely determined by the nature of the raw material outcrop (Hiscock and Mitchell 1993:13):

> Sources of rock suitable for artefact manufacture … [may] consist of surface deposits of loose pieces of rock, and these can be procured simply by selecting an appropriate piece and collecting it. Other sources consist of outcropping bedrock, and fragments must be broken off before stoneworking or transportation can commence. Still other sources consist of rock buried below the ground surface, and it is necessary to dig to reach the rock. Archaeological manifestations of procurement varies [sic] with the form of the source.

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Consequently, a stone extraction site or 'quarry' may be either an 'excavated hardstone quarry', where raw material for stone tool manufacture has been removed from the natural outcrop by excavation (pits or smashed bedrock), leaving archaeologically detectable evidence (Hiscock and Mitchell's Type 1.1.1 – 1993:59-60), or a 'surficial hardstone quarry' (Hiscock and Mitchell's Type 1.1.2 – 1993:61-62). The raw material from this latter type-site was extracted 'simply by collecting fragments of rock scattered on the ground surface' (Hiscock and Mitchell 1993:61).

McLaren (2002) tested the notion that a quarry may have no archaeologically visible evidence of extraction in his investigation of the Wongawallen jasper outcrop on the Gold Coast hinterland of southeast Queensland. By comparing petrological analyses of raw material from the Wongawallen outcrop with petrological studies of jasper artefacts from nearby sites, McLaren (2002:73-74) showed that the Wongawallen source had indeed been exploited by the Aboriginal stone tool manufacturers of the region:

> The large amount of naturally shattered bedrock at the outcrop would appear to negate the necessity for specialised quarrying techniques. … evidence of raw material extraction and/or artefact reduction should *not* be viewed as a requirement for a stone source's acceptance as a quarry. … not all quarrying behaviour will leave cultural traces at a stone source.

This debate about what constitutes a quarry is significant. A stone source is not necessarily a cultural place at all; it may be merely a geological feature with the *potential* to provide raw materials for artefact manufacture. As Hiscock and Mitchell (1993) and McLaren (2002) document, a quarry is a place of great human interest with a specific role in people's socio-cultural landscapes, even when evidence for extraction does not survive in the archaeological record.

So what, then, are these important behaviours that occur at quarry sites but which leave no archaeological evidence? As well as collection of naturally broken nodules and cobbles, activities at extraction sites relate to the place of quarries in the wider socio-cultural lifeways of the sites' owners, and these activities must be investigated along with technological behaviour.

The socio-cultural place of quarries

Although Torrence (1986) was not the first to recognise the importance of quarries in the cultural context of a society (e.g. Gould 1977, 1980; Binford and O'Connell 1984; McBryde 1978, 1984a, 1984b; Cottrell 1985; Gould and Saggers 1985), her detailed discussion of the place of quarries in production and exchange systems remains one of the most important reviews of the socio-cultural context of quarry sites. Torrence demonstrates, for example, that a group's selection of raw material cannot be determined purely on technological grounds (including flakability). Other factors, mainly to do with socio-economic requirements, act as major determinants of people's choices (Cottrell 1985; Torrence 1986:81-85).

At Tomato Springs in southern California, Cottrell (1985) found significantly more *imported* jasper than at any other site in the region. This is surprising, as there are abundant local jasper outcrops close to Tomato Springs, and these local sources have better-quality stone than that available from the exotic quarries. Cottrell explains this anomaly by considering the political place of Tomato Springs in Californian desert societies. She argues that its inhabitants used the raw material as a tool in the maintenance of a vast alliance network across southern California that served as the basis for risk-reduction strategies in desert communities.

Gould and Saggers (1985) describe a similarly 'illogical' use of inferior exotic stone in the Puntutjarpa region of Central Australia, but their explanation for this differs from that provided by Cottrell. Although once again the importance of stone in maintaining social and political alliances in a harsh environment is proposed (Gould and Saggers 1985:122), Gould and Saggers argue that a variety of factors are involved in selecting raw material for lithic production. They demonstrate that technological suitability is a significant variable, along with proximity of the quarry to other types of sites, particularly base camps and spiritual places. As Gould and Saggers (1985:120) have observed, 'Aborigines made special efforts to visit lithic sources, usually as part of a visit to an adjacent site but sometimes, too, in order to obtain raw material that was known to have superior technical properties.'

Gould (1977, 1980:124, 141), McKenzie (1983), Binford and O'Connell (1984), McBryde (1984a, 1984b), Jones and White (1988), Paton (1994) and Mulvaney (2001) acknowledge the importance of sacred and spiritual places and significant cultural landscapes as part of the business of visiting and using quarry sites. One of the best examples of the spiritual significance of a quarry is the Ngilipitji site in northeastern Arnhem Land described by Jones and White (1988). At this site, not only is the stone of very high quality from a technological perspective, but the stone and the outcrop as a whole also contain great power and prestige, making the resource and its landscape setting a dangerous and restricted location. Only senior traditional owners who know the Law that governs extraction and production can access such a spiritually significant and dangerous place. Many other quarries in Australia have similar ownership and access restrictions.

Gould (1977:64) documents that the naming of a quarry signifies strong mythological associations between the place and the name-owning group and access to the raw material source was restricted in accordance with laws established by such associations. Paton (1994) also stresses the role of naming in the establishment of rights to stone. At four quartzite quarries near the settlement of Elliott in the Northern Territory, south of Arnhem Land, each manufactured leilira blade was named and this name determined both ownership and function of the blade, despite the technological similarity of all artefacts from these quarries. Each blade was linked to its source, the owners of that source, and the social responsibilities of the quarry owners, through its name.

McBryde (1978, 1984a, 1984b) documented the strict ownership and access provisions that applied to axe quarries in Victoria. Here, only quarry owners could extract raw material from the outcrop at Mt William. Access to this greenstone quarry was not just to specialists in axe production, as Howitt and Smyth (cited in McBryde 1984b) believed. The 'qualifications of the specialist craftsman lie in ties acquired by birth-place, inheritance and marriage, rather than technical skills' (McBryde 1984b:272). Trade partners and other recipients of quarried stone from the axe

quarries were supplied with partially reduced cores or axe blanks at large gatherings called for ceremonial, social and trade purposes, where exchange was part of the symbolic and political processes of alliance formation and maintenance. McBryde (1984a:148; cf. 1984b:278) noted that '… strangers were not permitted to work the outcrop, but must negotiate a price for their needs with those who had the right to do so.' Such exchange and negotiation generally took place *close* to the quarry, but not at the actual site of stone procurement.

In order to ensure that cores or artefact blanks were of an acceptable quality, exchange activity often involved *testing* the stone. Numerous authors have documented the importance of testing the quality of stone prior to its removal and transportation to a reduction/tool manufacturing site away from the quarry itself (Binford and O'Connell 1984; Ericson 1984; Torrence 1986:215-216; Jones and White 1988; Bamforth 1990).

Testing is most important in situations where access to the stone itself is restricted. Torrence (1986:215) argues that if the raw material is easy to obtain, the site accessible to all, and the transport distance small, then testing for quality is unnecessary. But when access to a quarry is restricted or where long-distance travel is required, testing and production of pre-forms is a vital component of extraction behaviour (Torrence 1986:216).

Jones and White (1988) concur with this assessment. At the Ngilipitji site, the exclusive access to the raw material by senior traditional owners meant that stone was constantly tested to ensure only the correct type of stone, that containing 'fat' in accordance with Law (McKenzie 1983), was removed from the quarry for further reduction.

Consequently, stone quarry sites are more than just places from which stone is extracted for reduction. They are places with which people must negotiate and there is consequently a range of complex behaviours associated with these sites. In summary:

- Quarries may not necessarily show evidence of stone removal to be stone extraction sites;
- The selection of a particular quarry for the procurement of raw material may be based as much on socio-cultural, political or economic factors as on suitability of stone for reduction;
- Quarries may occupy important places in the social, cultural, political and spiritual realms of a community;
- Quarries often occur close to places of high spiritual significance to their owners;
- Ownership rights at quarries may be determined by traditional Law; such rights, in turn, influence access to raw material and behaviour associated with extraction;
- Where access to raw material is restricted by ownership Laws, raw material may be tested for quality before it is traded.

At the Cape Moreton stone outcrop on Moreton Island, all of the socio-cultural factors listed above are displayed. None is obvious from a purely archaeological examination of the site. Indigenous knowledge is essential for a full understanding of the site, its cultural landscape setting and its meaning.

Moreton Island

Moreton Island in Moreton Bay, southeast Queensland (Fig. 1), has been occupied for at least 2300 years (Hall and Robins 1984; Hall and Bowen 1989; Hall 2000). According

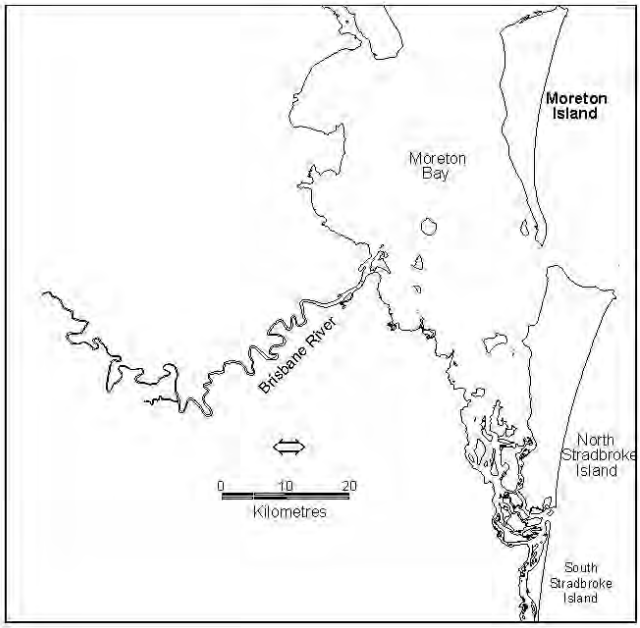

Figure 1 Map of Moreton Bay, Queensland, showing the location of Moreton Island

to the traditional owners of the Island, the Ngugi people, this area has been occupied since the beginning of time. A much earlier site on nearby North Stradbroke Island, Wallen Wallen Creek dated to more than 20,000 BP (Neal and Stock 1986), confirms the long occupation of the region generally.

There are many archaeological sites recorded on Moreton Island, but most are recent in age, dating mainly to the last 1000 years. Hall (2000) argues that occupation of the Island was late and occurred only after the Aboriginal people of Moreton Bay developed dolphin commensalism as part of an intensified fishery in the Bay. But according to the knowledge of Aboriginal communities throughout Moreton Bay, fishing has been the main activity and subsistence behaviour of people since the sea came to its current position. Dolphins have always been a part of this fishery and occupation of Moreton Island is ancient. Although dated archaeological sites on Moreton Island may not support such an interpretation of occupation history, there are numerous places of significance to the Ngugi people that do indicate a very long association with Moreton Island and deep knowledge of its resources. One of these places is Gunumbah - Cape Moreton - with its quarries, stone manufacturing places, and associated story places.

Gunumbah - Cape Moreton

Gunumbah, or Cape Moreton, at the northeastern end of Moreton Island, is an area of archaeological and Aboriginal cultural significance (Fig. 2). One of the main features of significance is the presence of a range of lithic raw materials on the headland and on the beaches below the headland. Stone sources suitable for stone tool manufacture are uncommon on the Moreton Bay islands, and the Cape Moreton outcrops and some poorer quality resources at Point Lookout on North Stradbroke Island are the principal sources for the whole of Moreton Bay (Richardson 1979).

The Cape Moreton area is well known archaeologically (Morwood 1975; Richardson 1979; Hall 1982, 1999, 2000; Godwin 1983; Robins 1983, 1984a, 1984b; Hall and Robins 1984; Hall and Bowen 1989). Richardson (1979) demonstrated that thirteen different raw materials make up

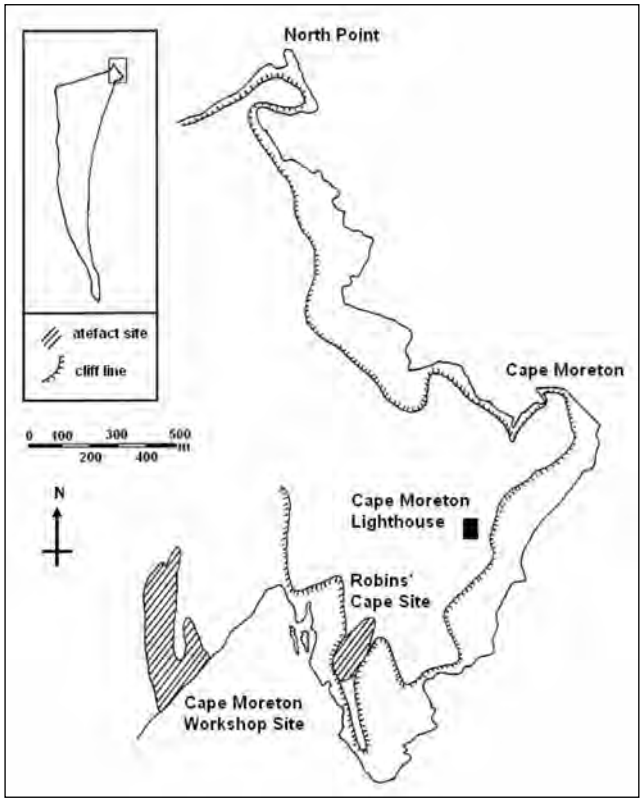

Figure 2 Northeastern portion of Moreton Island showing the location of places mentioned in text

the Cape Moreton stone outcrops. Each of these materials was used by the Aboriginal people of the area for artefact manufacture. The quarry sites themselves are relatively well protected from modern-day disturbance because of the difficulty of access to the area; many of the outcrop sites are very steep.

Associated with the quarry sites on Cape Moreton is a large stone working area southwest of the Cape at the base of the headland (Fig. 2). We term this site the *Cape Moreton workshop site*. It is the largest workshop complex associated with the quarries, and artefactual evidence on the site is extremely dense. In fact, it is the densest accumulation of stone material at any site on Moreton Island. The density of stone declines with distance from Cape Moreton, as does the variety of raw material (Godwin 1983; Hall and Robins 1984; Hall 2000). Conversely, the density of shell on sites increases with distance from Cape Moreton, suggesting that close to the source of lithic material, site use was principally associated with tool manufacture, while further away from the quarries the focus of site use was subsistence activities.

In September 1997, members of the Quandamooka Cultural Resources team, along with archaeologists from the University of Queensland, were involved in conducting a survey of the *Cape Moreton workshop site* as part of the preparation of a management plan to stop vehicles traversing the site (Ross et al. 1997). The site was mapped and its place within the Cape Moreton landscape was determined using archaeological reconnaissance and interviews with Aboriginal owners of the area.

During the 1997 archaeological survey of the Cape Moreton area, Indigenous knowledge was initially collected by the archaeologists on the survey team: Ross, Jon Prangnell and Paddy Waterson (Ross et al. 1997), who worked with members of the (then) Quandamooka Cultural Resources team. This team included members of the Ngugi community. Ross undertook additional interviews with more senior Ngugi traditional owners both before and after the fieldwork component of this project. The relevance of the Aboriginal understanding of this place was recognised even before the archaeological survey, during planning for the project. The confusing interpretations of the quarries by archaeologists who had undertaken the earlier surveys of the headland (Morwood 1975; Richardson 1979; Godwin 1983) alerted the archaeologists that understanding this place using archaeological research alone might be problematic. Through working with Aboriginal community representatives in the field and sharing daily findings during evening discussions of results, it was clear that any complete understanding of the function of the quarries and their place in the Moreton Bay cultural landscape was impossible without the involvement of traditional owners. Prangnell and Ross realised this whilst typing up the day's results towards the end of the fieldwork. Ross said to Prangnell, 'You know, I think we might be the first archaeologists to really understand this place.' Prangnell replied, 'That's because we've talked to the blackfellas.'

For the writing of the current paper, Ross undertook further interviews with senior traditional owners to clarify certain specific knowledge statements about Gunumbah and the Law associated with this place. The inclusion of senior traditional owners as authors of this paper has ensured that the knowledge recorded has been cleared for publication by those with the authority to make decisions about the public availability of such information.

This study provides the foundation for the more in-depth discussion and analysis offered here.

Gunumbah quarry

Archaeological evidence

The parent bedrock varies from sandstone in the southeast of the Cape Moreton headland (on the steepest cliffs) through quartzite, rhyolite, rhyolitic tuff, and then sandstone again at North Point at the western end of the headland (Richardson 1979; Fig. 2). Within this bedrock there are thousands of nodules which occur as inclusions, comprising a range of geologies, including chert, quartz, quartzite, silcrete, and other siliceous morphologies. As weathering occurs, the nodules are released, leaving the surface of the ground strewn with flakable lithics of a variety of types. The nodules are most abundant at the top of the headland, but there are smaller accumulations all along the beaches below the headland. Because the surface is so densely covered in loose raw material, flakable stone does not need to be quarried from its parent matrix. It can simply be picked up (Hiscock and Mitchell's Type 1.1.2 – 1993:61-62). Nevertheless, collection must be in accordance with Ngugi tradition and Law.

Aboriginal knowledge

As occurs in many parts of Australia, particular families within the Ngugi community own the Gunumbah quarry or, more accurately, quarries. There are strict rules about who may access the stones on the headland and only certain individuals have the right to collect them.

The Gunumbah quarries are part of a complex cultural landscape, as in other parts of Australia. At Ngilipitji, the landscape includes story places, resource locales, and

dangerous spiritual places (Jones and White 1988). To the south of Ngilipitji, the sandstone quarries at Kurutiti were used for the production of seed grinders. They are close to thousands of petroglyphs, and together the quarries and the art form part of a mythological site and dreaming track (Mulvaney 2001). At Gunumbah the stone resources share the landscape with story places (including a shark dreaming), a sea mullet migration route (Ross and Quandamooka Land Council 1996), fishing sites, shell middens, and a very significant and dangerous spiritual place. This spiritual site lies to the west of the Gunumbah headland and is marked by a series of large boulders. The boulders are very significant to the Ngugi people, as is the entire Cape Moreton area. The proximity of the spiritual site, in particular, to the quarries means that it is not only inappropriate for visitors and traders to take stone directly from the outcrop, it could also be extremely dangerous for them to do so. Consequently, Ngugi Law dictates that only owners may collect stone from the quarries.

Despite these access restrictions, Gunumbah is well known to Aboriginal communities throughout Moreton Bay and beyond as an area from which stone suitable for artefact manufacture is available, and as a place where meetings, trade activities, and ceremonial practices have occurred for generations. What, then, was the mechanism whereby such a restricted resource became so widely available throughout Moreton Bay and southeastern Queensland generally? The key to understanding this question lies with the *Cape Moreton workshop site*.

The Cape Moreton workshop site

Archaeological evidence

This extensive site covers more than 60,000 m^2. It is situated at the base of the Cape Moreton headland upon which the densest accumulation of stone cobbles occurs. All 13 types of stone available on Cape Moreton are found on the site, much of which is still in cobble form, both flaked and unflaked. The site comprises a general scatter of artefacts and flaked stone, including several discrete intact and *in situ* flaking floors at times associated with food remains and fireplaces (Ross et al. 1997). There are few formal artefact types, although stone hatchets are known to occur (J. Hall pers. comm.). Shell (primarily eugaries [pippi - *Plebidonax deltoides*] and cart-rut [*Dicathais orbita*]) and bone (mostly dugong) also occur on the site, although in low numbers; the site is dominated by stone manufacturing activities.

The site is clearly related to the quarries on Cape Moreton, and appears to be the principal manufacturing site associated with them. There is a smaller workshop site, the *Cape site* (Robins 1983:98-99, 115), at the south end of the headland on the cliff top above the *Cape Moreton workshop site* (Fig. 2). Here, flaked artefacts made on a variety of raw materials are associated with shells (once again mostly pippi and cart-rut) and some dugong bone. One dense flaking floor of chert was located during our 1997 survey. Its proximity to the quarries and its small size relative to the *Cape Moreton workshop site* lead us to suggest that it might have been a workshop associated with the quarry owners rather than a general trading location, as we propose for the *Cape Moreton workshop site* (see below).

Detailed technological analyses of artefact reduction sequences at the *Cape Moreton workshop site* have not been undertaken, and are clearly required to document the level of reduction that occurs on the site. Nevertheless, technological studies are not the only way in which site meaning can be determined, as discussed above. In this study we demonstrate the importance of archaeologists working together with Aboriginal owners to develop an holistic understanding of the meaning of a complex cultural landscape.

The preliminary analyses of the *Cape Moreton workshop site* undertaken by Godwin (1983) and by Ross et al. (1997) indicate that the site is the locale of hundreds of discrete workshops, each being a reduction site for individual cobbles or a small range of nodules. At most of these accumulations, one cobble or a small group of raw materials of different types, have been reduced to a minimal level only. At times only one or two flakes have been struck from a cobble, with the minimally reduced core and the flakes removed from it lying together on the ground. More commonly a number of cores and flakes occur together on the ground. At only a few clusters are there isolated flakes without cores, or isolated cores without flakes.

This pattern of artefact reduction and discard is consistent with evidence of *testing* of raw materials recorded at quarry sites elsewhere in the world (McKenzie 1983; Cottrell 1985; Jones and White 1988; Bamforth 1990). Testing is an integral part of trading activity (Torrence 1986:215-16). We argue, therefore, that the *Cape Moreton workshop site* is a place where traders from communities throughout Moreton Bay and southeastern Queensland generally were provided with cobbles of raw material for testing as part of the negotiation of exchange deals.

The archaeological evidence at the *Cape Moreton workshop site* suggests that this site is the principal one associated with the Cape Moreton quarries, and the central stone trading place on Moreton Island. It is arguably the most important stone trading site in Moreton Bay, and in this sense central to political processes of alliance formation throughout the Moreton Bay region (cf. McBryde 1984a).

In his detailed survey of Moreton Island, Godwin (1983) argued that this workshop site complex 'is of considerable scientific interest, containing information on the stone-working technology of the Island's prehistoric inhabitants' (1983:118). The 1997 survey and our current investigation of Indigenous knowledge of the place concur with this assessment.

Aboriginal knowledge

The archaeological interpretation of the *Cape Moreton workshop site* is supported by the knowledge of the area held by Ngugi traditional owners. As indicated above, the Gunumbah quarries are owned by particular families within the Ngugi community. There are strict rules about who can access the stone on the headland and only certain individuals have the right to collect the cobbles. According to Ngugi cultural knowledge, traders would come to Cape Moreton seeking to obtain stone raw materials and to participate in various alliance forming ceremonial activities associated with exchange. Traders would be shown cobbles of raw material brought by those able to collect them from the headland. Traders would test these samples and then enter into exchange negotiations with the individual families that owned the stone selected. This activity was supported by ceremonial practices and by the sharing of certain foods, especially dugong, which is a food widely used in Moreton Bay for ceremonies.

Ngugi traditional owners term this site a 'marketplace'. In the context of the Cape Moreton quarries and their

associated cultural landscape, it is clear that this designation for the *Cape Moreton workshop site* does not only relate to the economic importance of the place, just as the archaeological description of the place as a 'workshop site' does not signify only the technological value of the place. This site is a focal point for stone testing and artefact manufacture (technological activity), trade and exchange (economic activity), eating of ceremonial foods (social and cultural activity), and negotiation (social and cultural activity). Regardless of the name given to the place, the *Cape Moreton workshop site* is situated within, and inseparable from, the complex technological, economic, social, cultural, political and religious landscape of the Cape. A comparable view of the importance of the Cape Moreton quarries emerges from the ethnographic evidence for the Island (Richardson 1979; Ulm 1995; Hall 1999, 2000).

The Gunumbah site is similar in many ways to other major stone raw material sources elsewhere in Australia, such as the Ngilipitji quartzite quarry (Jones and White 1988) and the axe quarries of central Victoria (McBryde 1978, 1984a, 1984b). At these sites, the public trading site is away from the main stone sources, in accordance with Aboriginal Laws regarding quarry ownership. Traders are brought samples of raw material for consideration and price negotiation, and the samples are tested for quality before exchange is finalised. Negotiations are conducted within a social context of ceremonial activity and food sharing. We interpret the Cape Moreton quarries and workshop sites in the light of the behaviours documented for these other places.

In summary, the Cape Moreton headland is an area restricted to Ngugi family owners. Only those permitted by Law to enter this area for ceremony and stone collection are able to remove stone. The cobbles are first tested by the traditional owners at Robins Site 1 (the *Cape Site*), and then brought to traders assembled away from the dangerous nature of the headland. In this marketplace the traders test the raw material for themselves and make their choices, negotiating a price and participating in trade-related ceremonies involving food, including the ceremonially important dugong.

Conclusion

Cape Moreton is clearly an area of great cultural and archaeological significance. It is the largest raw material source for stone artefacts in Moreton Bay and well known as a location for trade in lithic material throughout the Bay. Aboriginal knowledge relating to the ownership of the quarry sites indicates that trading of stone occurred off the outcrops, but close to the main headland. The archaeological evidence from the *Cape Moreton workshop site* supports the Aboriginal knowledge for the place.

Many archaeologists have worked on Moreton Island and have incorporated a review of the Cape Moreton headland in their surveys and assessments of the archaeology of the Island, yet none set their archaeological results into the broader cultural landscape context (Morwood 1975; Richardson 1979; Godwin 1983; Robins 1983, 1984a, 1984b). To do so involves both the archaeological analysis of associated workshop sites and, more importantly, the knowledge of traditional custodians. It is only by understanding the socio-cultural context of the quarry that its significance can truly be recognised.

Our research demonstrates that quarry studies need to be based on archaeological analyses, but if Aboriginal knowledge is omitted from the process, the full meaning of the quarry cannot be determined. Archaeological and anthropological research goes hand in hand in the interpretation of past lifeways and present-day knowledge in Moreton Bay.

Acknowledgments

This paper developed from a project to document vehicular impacts on a significant cultural heritage place, the Cape Moreton Workshop site. Those involved in the original study were Brian Coghill, Shane Coghill, Aaron McIvor, Mandy Blivet, Troy Coolwell, Renee Brown, Grant Martin, Warren Nixon, Leigh Myers, Annie Ross, Paddy Waterson, Jon Prangnell, and Viv Sinnamon. Elders who provided oral history and other relevant information at this time were Cliff Campbell, Bob Anderson, Joanie Moreton, Keith Borey, Eileen O'Loughlin, Charlie Close, Carol Martin and Audrey Borey. Their input into the original report has strongly influenced the direction of the current paper, and we thank them all for their involvement and provision of information and ideas. Annie Ross prepared the current paper in close consultation with Bob Anderson and Cliff Campbell.

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