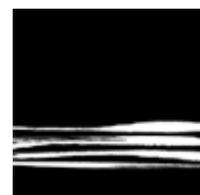


**Journal of the Australian Association
of Consulting Archaeologists**

Volume 1, 2013



AACAI



JAACA 2013 Volume 1

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Front cover: Dentate retouch on artefact from the Boundary Site

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ISSN 2202-7890



**'All our sites are of high significance.' Reflections from recent work in the
Hunter Valley—Archaeological and Indigenous perspectives
MARY JEAN SUTTON, JILLIAN HUNTLEY & BARRY ANDERSON**

Mary-Jean Sutton (Department of Anthropology, School of Social Sciences, University of Queensland, mjandcraig@gmail.com)

Jillian Huntley (Archaeology and Palaeoanthropology, University of New England, Armidale, jford5@myune.edu.au)

Barry Anderson, (Lower Wonnarua Tribal Consultancy Pty Ltd, barry156@bigpond.com)

As part of the environmental impact assessment (EIA) process, the Hunter Valley has been subject to decades of archaeological investigations involving many Aboriginal stakeholder groups. This paper critically discusses the EIA process, specifically the Aboriginal cultural heritage assessment (ACHA) process and the Aboriginal consultation requirements (ACHRs) for New South Wales (NSW) drawing on our collective experience of cultural heritage management (CHM) in the Hunter Valley. We examine the definition of 'values' and the identification of heritage within the history of relevant legislation in NSW to critique the ACHA process in the Hunter Valley. We introduce the relevance of the concept 'solastalgia', relating concerns for heritage to effects of 'environmental distress' from the cumulative impacts of mining and its relevance to the ACHA process. CHM legislation and practice is currently under review by the NSW State government, we hope to stimulate constructive dialogue on these issues based on our collective experience.

Introduction

The Hunter Valley is a 37,200 km² region incorporating the most northern extent of the Sydney Basin in New South Wales (Herbert 1983) (Figure 1). It extends from Newcastle in the southeast with the valley floor bounded by the steep sandstone escarpments of the Blue Mountains, the Broken Back Range and Goulburn River National Park lie to the north-west (Brereton et al 2007:1-3). The Hunter Valley includes eleven Local Government areas and encompasses the boundaries of the Awabakal, Bahtahbah, Karuah, Koompahtoo, Mindaribba, Worimi and Wanaruah local Aboriginal Land Councils. Since the 1960s, the Upper Hunter Valley (including the towns of Muswellbrook, Singleton, Cessnock and Denman), but particularly the Central Lowlands area (including the township of Singleton), has been the focus of extensive archaeological investigations undertaken as part of the Environmental Impact

Assessment (EIA) process including numerous and extensive 'salvage' excavations primarily relating to coal mining (Figure 2). The Upper Hunter Valley lies within the boundary of the Wanaruah Local Aboriginal Land Council (LALC), an area comprising approximately 14,500 km², and the Central Lowlands comprise 30% of the Wanaruah LALC boundary's total area (ERM 2004:1). There are approximately 24 open cut and 10 underground coal mines currently in operation in the Hunter Valley region (not including proposed coal mines waiting for Project Approval or undertaking exploratory works) (NSW Minerals Council factsheet 2010:1). The Hunter Valley is responsible for 64% of NSW's coal production, is the biggest coal producer in NSW, and the Port of Newcastle which services the Hunter Valley's coal mines is reportedly the largest coal port in the world (NSW Minerals Council factsheet 2010:1). At the time of writing, the Hunter Valley region has

approximately 75 Aboriginal stakeholder groups currently actively involved in cultural heritage management (CHM) (including archaeological investigations) as part of the EIA process for existing projects.

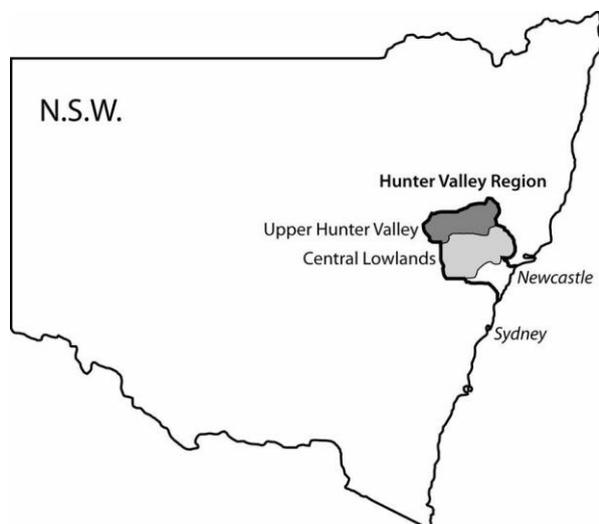


Figure 1. Map showing the location of the Hunter Valley, NSW

The issues raised in this paper are timely and significant as NSW Aboriginal cultural heritage legislation and practice is currently under review by the State Government. Issues in the assessment of ‘significance’ in CHM in the Hunter Valley region must be considered from the perspective of Indigenous community representatives and archaeologists. These issues include the tensions created by the historical development of CHM legislation in NSW and the associated issues of recognition and identification of heritage. We argue that many of these issues arise from the confusion in definitions of ‘values’ and ‘significance’ used in the significance assessment process in both legislation/policy and practice. Recent changes in the Aboriginal consultation process (DECCW 2010a), including the ‘Aboriginal cultural heritage consultation requirements’ (DECCW 2010b) and their impact on CHM in the Hunter Valley demonstrate the complexity of issues in contemporary CHM. We find literature from environment psychology and international interdisciplinary studies on heritage useful for the critique of CHM in NSW (noting this critique has implications nationally).

Albrecht’s (2005) concept of ‘solastalgia’ informs our critique of the nexus between cultural heritage values and the potential long term effects and distress experienced by people in regard to social impacts of mining and other forms of environmental change or transformation.

Values and significance

Ambiguity in the definition of ‘values’ and ‘significance’ in the Burra Charter have led to misappropriation of these terms by some heritage practitioners/archaeologists in the significance assessment process in NSW. The assessment of cultural and archaeological significance in Aboriginal cultural heritage assessments (ACHAs) for many large mining projects approved in the Hunter Valley in recent years have successively followed the Archaeological Survey and Assessment guidelines (NSW NPWS 1997) and the Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (OEH 2011) (for examples, refer to AECOM 2010; ERM 2003; Umwelt 2006). Both guidelines used approaches where significance and values are embodied within a place and assumed by some archaeologists/heritage consultants to be objectively quantifiable. Cultural significance is defined as intrinsic to place in the Burra Charter and places are defined as having inherent, embedded values (Australia ICOMOS 1999:2). Successive NSW government guidelines outline significance assessments for Aboriginal heritage as a two-part process in which the archaeologist determines the ‘scientific significance’ and the Aboriginal community determines or communicates the ‘cultural or social’ significance of objects or places. Although OEH (2011) has recently tried to integrate these assessments and elevate Aboriginal cultural heritage values through appending the Archaeological Report (scientific assessment) as a separate document to the ACHA, in practice the Archaeological Report still forms the bulk and weight of the ACHA and in parts is repetitive in structure to the ACHA. The guidelines by OEH remain focused on the assumption that sites have

intrinsic social, historical, scientific and aesthetic values (OEH 2011:7) which can be quantitatively and scientifically measured and ranked by an archaeologist/heritage consultant. Some practitioners have reduced this to a numbered 'score card' approach (for examples see Umwelt 2008, 2010a, 2010c). These kinds of ratings, especially when used in isolation, constitute a positivist approach grounded in 'New Archaeology', or archaeology as a science, which assumes the significance of an object/site/place/landscape can be measured as an objective 'truth'. In practice, scientific significance assessments predominantly focus on the remnant physical evidence of Aboriginal occupation in the Hunter Valley (often stone artefacts). The focus on material remains does not often take into account intangible heritage, particularly the relationships and activities between contemporary Indigenous people and the environment, despite the requirement in the guidelines to consider intangible social values (OEH 2011:8). This approach elevates the archaeologist/heritage consultant undertaking the Archaeological Report within an ACHA to a position of power, as a 'scientific expert' capable of applying their expertise to obtain a quantitative measure of scientific values. This contrasts with the articulation and communication of cultural and spiritual values by Indigenous people with respect to their heritage as part of the ACHA process.

Significance is not intrinsic or 'embodied' in a place and it cannot be considered as an objectively measurable attribute over space and time (Brown 2008:21; Byrne 2008:614). Instead, values should be considered as made by people, ascribed by people to place (and/or object) and are therefore inherently social in nature (see Berntrupperbaumer et al. 2006:723-741; Boyd et al. 1996; Brown 2008:21; Byrne 2008:614; Pocock 2003:273; Reser and Berntrupperbaumer 2005:125-146; Rowland 1995:161; Smith 1996:67). Significance of a place cannot be determined without defining who values that place by the active engagement of and genuine

consultation with the individuals or collective whose values are being assessed in the determination of significance. Values cannot be objectively identified within places, landscapes or objects; they originate and dwell within the hearts and minds of people. Thus, assessing these values can only be achieved through the engagement of appropriate people in the significance assessment process. Therefore, Aboriginal cultural heritage significance refers to the values held by Aboriginal people about their heritage. These are subjective and shifting in nature and part of the broader cultural system where groups and individuals value and may share attachment to place which may be influenced over time by a myriad of factors.



Figure 2. Overview of the Hunter Valley, central lowlands landscape from the well-known Baiame Cave Site facing east-northeast towards open cut coal mines at Mount Thorley (Photograph–Jillian Huntley)

Environmental psychologists Reser and Berntrupperbaumer (2005:142) provide a useful definition of values as 'individual and shared community or societal beliefs about the significance, importance of cultural heritage and how it should be viewed and treated by humans'. Cultural heritage values 'psychological and social constructs ... found 'within' human individuals, institutions and societies' (Reser and Berntrupperbaumer 2005:142). Cultural heritage values are expressed and represented 'across all human activities, relationships and cultural products and ... incorporate shared beliefs ... about what should be done to protect and

preserve these places and systems' (Reser and Berntrupperbaumer 2005:142). Following these definitions, values are held by people, can change over time and be influenced by any number of social, cultural, political, religious or environmental factors.

Defining values as 'psychological and social constructs' provides a new and useful way of thinking about the nature of significance. ACHAs that assess archaeological and cultural significance need to incorporate methodologies that deal with values as 'psychological and social constructs' and incorporate the interrelationship of people and their values with places/sites/objects and landscapes (tangible, physical heritage) and intangible heritage. An example of a methodology which does attempt to grapple with these issues can be seen in the work of Byrne and Nugent (2004) in the lower north coast of NSW. Methodologies with a qualitative focus and perhaps anthropological in nature therefore appear helpful. Methodologies used in ACHAs need to acknowledge the qualitative aspects of 'values'. It is not possible to absolutely quantify values through hierarchical ranking (such as numbered score systems or ratings), as values are not intrinsic to places, objects and sites but belong to people. The history of the establishment of heritage legislation and policy in New South Wales has perhaps led to, and enshrined, some of these issues raised within the significance assessment process.

History of Aboriginal heritage legislation in New South Wales

The history of the establishment of New South Wales (State) Aboriginal cultural heritage legislation is linked to unequal power relationships between archaeologist/heritage consultant and the Indigenous community in the CHM process. From 1930 to 1945, Frederick David McCarthy (Anthropologist, Australian Museum) and Joseph Lexden Shellshear (Professor of Anatomy, University of Sydney) raised with the NSW government their concerns over the ongoing destruction of Aboriginal sites

and objects (Smith 2000:110). These concerns were not officially heeded until the 1960s, when archaeologists and other members of the public lobbying for legislation to protect Aboriginal and settler heritage sites from development, coincided with wider public remonstrations concerning broader environmental issues (Smith 1996:69-71, 2000:110). Smith argues that the formation of the National Parks and Wildlife (Amendment) Act 1969 (NSW) took into consideration McCarthy's earlier proposals, but these concerns were grounded in archaeologists as having a 'pastoral role for themselves over Aboriginal material culture', because of a moral and scientific right of access and due to a sense of 'duty' to speak for 'a vanishing people' (2000:110). Later amendments to the Act in 1974 (ss. 86-87), appear to have been developed without consultation with Indigenous people (Smith 2000:110). The Act allowed the collection of artefacts from sites, the regulation of collection and research by archaeologists and elevated archaeologists and scientific values above the values of Aboriginal people in heritage (Brown 2008:20-21; Smith 1996:69, 2000:110-115). This history has influenced and shaped existing heritage legislation in NSW.

The elevation of the archaeologist/heritage consultant in a 'pastoral role' of 'political neutrality' as an independent, scientific 'expert' and a focus on physical evidence of past Aboriginal occupation can be argued to be a major flaw in the development of Aboriginal cultural heritage practice in NSW. It could be argued to be a form of institutional racism and a major cause of unbalanced power relationships between archaeologists, government and Aboriginal stakeholders within the EIA process in NSW. However, this situation is not restricted to NSW and several authors have commented on this issue and discussed unequal power relationships between Indigenous stakeholders, archaeologists and government in institutional practice in CHM including the EIA process in Australia (Langford 1983; Murphy 1996:145; Smith 2000:110-115; Tasmanian Aboriginal Land

Council 1996:293-299). Institutional racism refers to the 'existence of institutional systemic policies and practices which place non-white racial and ethnic groups at a disadvantage in relation to an institution's white members' (Jones 1997:225). Institutional racism cannot often be pinpointed to an individual or to a single purpose of an institution but it can include institutional policies and practices which disadvantage people based on race (Jones 1997).

Since the 1990s, the unequal power balance in institutional practice has begun to be addressed through greater involvement of Aboriginal people in management positions within OEH, especially within the cultural heritage unit, in the site register and in the regulation and administration of the Act (Brown 2008:24-25). Recent shifts in the policies of OEH to focus on the requirements of consultation with Indigenous stakeholders and Aboriginal social values in the EIA process through the development of a more integrated ACHA (OEH 2011), and the establishment of the Australian Indigenous Archaeologist's Association in December 2010 are also significant milestones. However, recent regulatory policies such as the Aboriginal cultural heritage consultation requirements (DECCW 2004, 2010b), do not recognise that financial remuneration is required for Aboriginal stakeholder groups during consultation, particularly in relation to their required input on cultural values and this may further perpetuate the existing power imbalance. The onus in the current NSW Aboriginal consultation requirements is for proponents (through their engaged heritage consultant/archaeologist) to facilitate an assessment of Aboriginal cultural values for a proposed development. Such assessment requires the views and information of Aboriginal people registered for consultation while implying that any contractual arrangement with Aboriginal people is separate from consultation (e.g. Section 3.4 'Consultation should not be confused with employment', DECCW 2010b:9). Requiring Aboriginal stakeholders to define and assess cultural values

while stating that consultation does not constitute 'commercial engagement' (and therefore does not require financial remuneration) does not adequately recognise the role of Aboriginal stakeholders as 'owners' of their cultural heritage values and may critically undervalue their role and expertise in the EIA process for assessment of cultural values.

Recognition and Identification of Heritage

Recognition and identification of heritage by heritage consultants/archaeologists, policy makers and other agencies involved in cultural heritage management is influenced by a range of social, political and cultural factors. Internationally there has been some acknowledgement that heritage practitioners must address what has become a crisis in the 'politics ... of recognition' regarding the heritage values of people and identification of heritage (Weiss 2008:426). Weiss (after Mathers et al. 2005) argues that 'for every heritage site chosen and highlighted, countless other narratives or cultural landscapes are overlooked, de-emphasised, or even destroyed' because of the economics surrounding consultancy and the impossibility of a heritage practitioner accomplishing 'political neutrality' in their assessment of the past (Weiss 2008:426). The role of archaeologists as stewards and scientifically neutral 'experts', which is enshrined in heritage legislation, heritage policies and cultural heritage practice, has caused a power imbalance in the EIA process (Smith 1996, 2000; Weiss 2008). Furthermore, as Brown (2008:21) argues, significance criteria developed by Commonwealth and State heritage agencies in Australia and practicing consultants 'are a political construction and are not neutral'.

In practice, this 'politics of recognition' has perhaps inadvertently led to the destruction of other heritage sites and cultural landscapes of value to the wider public. In the case of recognising Aboriginal heritage, sites, places and landscapes may be overlooked, de-emphasised, or even destroyed because they are assessed as not possessing scientific values, or not identified

because they are recent in date, lack physical evidence (defined under the Act as ‘Aboriginal objects’), or lack evidence of stereotypically ‘traditional’ Aboriginal occupation. One example in NSW is the failure to identify post-contact heritage places until the last seven years. Post-contact heritage places include contemporary story places, mission sites, bush food or resource sites, picnic places, and pastoral sites which have originated over the last two hundred years (Byrne and Nugent 2004). Until recently many post-contact heritage places slipped through the gaps of site registers maintained by heritage agencies throughout Australia due to divisions in State legislation between what is perceived as ‘historical/settler’ and ‘Aboriginal’ heritage. As a consequence, post-contact heritage places, particularly former missions and government settlements, are underrepresented on State heritage databases (see Brown 2008:23; Harrison and Williamson 2004; Ireland 2010; McIntyre-Tamwoy 2004; Murray 2004a, 2004b).

There is a notable lack of post-contact heritage sites recorded in the Aboriginal heritage assessments prepared for EIAs for the Hunter Valley. Although these sites can often be difficult for archaeologists to identify in the field due to a lack of physical remains, numerous potential post-contact heritage sites were identified within the history chapter of the Upper Hunter Heritage Baseline Study commissioned by the Upper Hunter Aboriginal Heritage Trust (ERM 2004). Although this study was completed more than seven years ago, none of the additional potential post-contact heritage sites identified for further investigation have been investigated and registered on the OEH Aboriginal heritage register (AHIMS). This is often distressing to the community whose heritage is unrecognised, in addition to the increased potential for a site/place to be damaged or destroyed.

Environmental Distress

This research points to a lack of genuine consultation and community engagement in the cultural heritage significance assessment within

the EIA process, in particular in the determination of a Project Approval (particularly in the case of the former Part 3a of the Environmental Planning and Assessment Act 1979 which extended the Minister of Planning in NSW’s powers to determine Project Approvals). The distress which arises as a result of feelings of disempowerment has been referred to in environmental psychology as ‘environmental distress’ (Connor et al. 2008:88). Such distress may be caused by a perceived threat, significant transformation or the loss of a place or places due to a development without appropriate mitigation, especially where people feel they have not been adequately consulted or involved in the EIA process.

In an analysis of environmental distress experienced by the Upper Hunter Valley communities (including Indigenous groups) in ‘conflict’ over water with coal mines, Connor et al. (2008:88) conclude the mining industry promotes ‘hard scientific knowledge’ in their environmental assessments and consultancy reports with government support of such knowledge ‘enshrined in their regulatory regimes’, leaving any opposition ‘confined to the terms of a contest defined by conservative science orthodoxy’ rather than valuing qualitative analysis and/or the consideration of emotion and distress expressed.

Government agencies and the system of EIA process have promoted ‘hard scientific’ knowledge by chosen ‘experts’ (Connor et al. 2008:88). Broader community concerns are less represented than measurable impacts in social impact assessment within the EIA process. Furthermore, in social impact assessment, the economic benefits of mining to the State and region through jobs and investments are often highlighted, rather than a rigorous assessment of potential social impacts, (including the impact of distress and community wellbeing) from long term mining and its cumulative impacts in a region. As Trigger (1997:162-163) has argued, mining in Australia is dominated by ‘corporate narratives, focused upon growth and process that

marginalise alternative ‘stories’ about the meaning of landscape’. These narratives can be argued to have elevated the ‘moral imperative’ that mining must proceed, due to ‘its economic importance’, over local community well-being (Trigger 1997:162-163). The cumulative environmental impacts of mining and their relationship to the potential long term social and psychological impacts on community members and their wellbeing should be explicitly recognised within the EIA process, particularly within ACHAs.

Cumulative impacts and ‘solastalgia’

One of the key issues faced in the assessment of people’s cultural heritage values within the Hunter Valley is the lack of consideration of cumulative impacts of mining, and the relationship of these prolonged, cumulative impacts to social and psychological health and community well-being. Godwin (2011:88-91) cautions against the application of the assessment of cumulative impacts to CHM in Australia claiming the impossibility of reliably quantifying such impacts. However, we argue that it is crucial to attempt an assessment of such impacts, particularly in regions such as the Hunter Valley which have been subject to an increasing rate of transformation from coal mining and are a focus of continuing extractive industry. We agree with Veth (2011:95-96) that ‘archaeology represents an irreplaceable record of human behavior not obtainable from any other source’. The stakes are high in large ACHA projects in terms of the large amounts of financial resources placed in the EIA process and also in terms of the potential long term impacts of these projects on regional landscapes and communities. We agree with Sneddon (2011:94-95) that cultural heritage management ‘is a much broader church’ where ‘there is value in other disciplines attempts to assess these cumulative impacts’. We look to environmental psychology and the concept of ‘solastalgia’ (Albrecht 2005) to assist in promoting dialogue within CHM on this issue.

Transformation causing distress includes destruction of the landscape by open cut mining and associated impacts on residents include dust, noise and compulsory acquisition of property, leading to loss of neighbours, livelihoods and a ‘beloved’ landscape (Connor et al. 2008: 77). ‘Solastalgia’ (Albrecht 2005:44) describes the feeling of powerlessness and distress experienced by Hunter Valley residents in areas of high impact from coal mining who were watching environmental destruction and transformation of the landscapes surrounding their homes. The results of this work is published in several papers (Albrecht 2006; Albrecht et al. 2004:23-29; Connor et al. 2004:47-58; Connor et al. 2008:76-90). Solastalgia is described as

the pain experienced when there is a recognition that the place where one resides and that one loves is under immediate assault (physical desolation). It is manifest in an attack to one’s sense of place and a feeling of distress (psychological desolation) about its transformation. It is an intense desire for the place where one is a resident to be maintained in a state that continues to give comfort or solace ... It is the ‘lived experience’ of the loss of the present as manifest in a feeling of dislocation; of being undermined by forces that destroy the potential for solace to be derived from the present. (Albrecht 2005:45)

Albrecht (2005:46) links solastalgia to ‘more serious health and medical problems such as drug abuse, physical illness and mental illness (depression, suicide)’ and suggests it may be a diagnosable ‘psychosomatic illness’. A Wanaruah Local Aboriginal Land Council representative interviewed by Connor et al. (2008:84-86) expressed Indigenous attachment to the environment as an intimate spiritual connection; the impacts of coal mining therefore not only destroy that environment but irrevocably damage people’s connections to country. Albrecht (2005:54) argues solastalgia is experienced at a potentially deeper level by Indigenous people due to their strong spiritual and emotional connections to ‘country’, with distress manifest from the ongoing destruction and transformation

of the landscape since European invasion. He has suggested solastalgia is a potential contributor to high Indigenous suicide rates and premature death rates because of the transformation of traditional lands and a resulting sense of powerlessness and challenges to individual and group identity (2005:47-49).

Links between Indigenous well-being, cultural heritage and environment are not new ideas and there is a body of literature which supports this connection (for example Human Rights and Equal Opportunity Commission 1997; Grieves, 2006; Memmott 2007). Reser et al. (2011:28) link environmental change (including natural disasters and climate change) and environmental degradation within Indigenous communities throughout the world as 'exacting very real though largely undocumented human costs'. This concept can be applied in the Hunter Valley context and more broadly within Australia and overseas in places where there is rapid development, major physical environmental change (including natural disasters) and environmental degradation. Such changes may result in psychological distress including identity crises potentially manifested in physical health conditions within affected communities (for example Kwiatkowski et al 2009:57-67; Reser et al 2011:18).

Currently, the links between connection to country, preservation of cultural heritage and emotional and physical well-being are not appropriately assessed as part of the EIA process. Social impact assessments completed as part of EIA focus more often than not on the economic benefits of coal mining, such as potential job growth, infrastructure and offsetting impacts through community based project funding (for examples, refer to AECOM 2010; ERM 2003; Umwelt 2010a; 2010c). In our opinion, many large projects within the Hunter Valley have failed to assess the links between destruction of cultural heritage and its detrimental effects on community well-being (both Indigenous and non-Indigenous) (refer to AECOM 2010; ERM 2003;

Umwelt 2006, 2007, 2008, 2010b, 2010c). From our collective experience we can acknowledge that the rapid transformation of country within the Hunter Valley has caused feelings of powerlessness and loss of connection to country, often expressed by Aboriginal stakeholder groups within the consultation process (refer to Aboriginal stakeholder group correspondence within Umwelt 2006, 2010c). The emotional distress we witnessed can be described as a feeling of disempowerment in the broader EIA process, particularly in the determination of Project Approvals and a perception of a lack of adequate social impact assessment. At times, evidence of this stress may manifest in project meetings in threats and incidents of violence and abuse directed at practitioners and other Aboriginal stakeholder groups. The authors have experienced this first hand and have anecdotal evidence that this is not uncommon. We speculate that this behaviour may be symptomatic of stress and an attempt to reclaim power on the part of disenfranchised and frustrated stakeholder groups. Whatever the cause, the situation needs to be addressed as it is unacceptable that archaeologists and community members are being required to work in contexts where physical and verbal abuse have been normalised and are regarded as acceptable behaviour. From personal experience, employers and agencies are enablers in this process because they have failed to set appropriate standards and take action on reported incidents. Community members' distress has been expressed through comments within the ACHA process. Some Indigenous stakeholders expressed a growing sense of powerlessness about their environment being transformed by their view that their input into the significance assessment process was irrelevant in final decision making in the EIA process. Some comments made by Aboriginal stakeholder groups, demonstrate the view that 'no one listens to what we have to say—the mine will always go ahead no matter what'. When asked to comment regarding the cultural significance of a site or landscape stakeholders stated (often in writing)

‘all our sites are of high significance’ (for example see Aboriginal stakeholder group comments in Umwelt 2006, 2007). During consultation, some Aboriginal stakeholder groups left blank tick box style questionnaires designed to assist groups in making comments on cultural significance. They send back blank signed questionnaires (Umwelt 2006, 2007) or repeatedly state in verbal discussions that they had ‘thrown the draft cultural heritage assessment report in the rubbish bin unread’ (anon, pers. comm. 2007, 2008, 2012). Such examples can be interpreted as attempts to redress unbalanced power relationships, and often represent resistance to the process, and a way to slow a development project and frustrate the proponent. Refusal by some Indigenous stakeholders to take an active part in the assessment process is explained as being due to the perception that the EIA process was unjust, or compromised from the outset. Our experience is that these manifestations of environmental distress dramatically increased commensurate with the increase in the number of Indigenous stakeholder groups formally registered for consultation in the EIA process in the Hunter Valley, particularly over the past seven years.

Most ACHAs undertaken as part of the EIA process do not address the cumulative impact of major developments such as coal mining’s impact on the cultural heritage of the Hunter Valley. Current heritage legislation, site registration and heritage assessment process is still coming to grips with how to define, describe and assess cumulative impact and its relationship to rarity, representativeness and significance. OEHL has begun to address this in NSW by mapping registered Aboriginal sites, previous land use history and development (including mining) over time as a means to explore cumulative heritage impacts (Ridges 2011). However, in terms of CHM, there still is much to be done in the ACHA process on understanding cumulative impacts on cultural heritage and its relationship to cultural heritage values. There needs to be greater understanding and analysis of the types of sites

registered and those underrepresented on site databases, greater public dissemination of information and regulation on the conservation of site types that are within conservation areas and heritage management zones to improve the ACHA process. For example, cumulative impacts of developments may lead to increased rarity of site types. Sites which may have been originally assessed by an archaeologist as common, (and therefore of lower scientific value) may become rare through increased attrition of the archaeological resource due to development. The authors have direct experience of at least two major projects that were affected by dramatic changes from cumulative impacts in their region over five years, between completion of the original archaeological assessment upon which Project Approval was granted and construction of the mine. These changes were due to increased mining approvals nearby in formerly agricultural areas, which were not approved or known to be under consideration during the preparation of the original development approval including the archaeological assessment. The heritage system as it currently exists does not have adequate mechanisms to address changes to significance over time. Cumulative impacts may also require consideration not just in relation to the physical destruction of sites/landscapes but also the accumulated distress of stakeholders involved in the EIA and ACHA process.

Compound Distress: the Importance of Political Neutrality

The decision of some heritage consultancies in NSW to involve themselves in the commercial engagement of Indigenous stakeholder groups on behalf of a proponent (for example, in the determination of commercial rates and definition of tasks [‘job packages’] often including the direct payment of these groups for and on behalf of the proponent) has contributed to, and in some cases, escalated the distress experienced by Aboriginal people in the CHM process. The involvement of any heritage consultant in the commercial engagement of Aboriginal

stakeholder groups (in fieldwork and consultation programs for EIAs) may reinforce imbalanced power relationships in the cultural heritage management process. In our experience the (long term) involvement of heritage consultants in commercial engagement of registered Aboriginal stakeholders seriously undermines the aspiration of ‘political neutrality’ and has led to increasing frustration of Indigenous stakeholder groups’ with the role of the heritage consultant/archaeologist in the assessment process. This has in turn led to an increased, cumulative sense of powerlessness by Aboriginal stakeholders in the Hunter Valley (Indigenous stakeholder representatives pers. comm. DECCW Aboriginal Consultation Requirements Forums at Singleton 2009 and Kurri Kurri 2010).

Offsets and Conservation Areas—perspectives

One approach adapted in ACHAs to attempt to mitigate cumulative impacts, including compound emotional distress and the destruction of sites and landscapes, has been through the development of ‘offset strategies’, often including land based conservation areas. The language of ‘offsets’ to mitigate the negative impacts of coal mining on the cultural heritage values of Aboriginal people in the Hunter Valley is increasingly used in the EIA process, more recently in the context of ‘intergenerational equity’. In ACHAs, ‘offsets’ have included the promises by mining companies to set aside parcels of land termed Cultural Heritage Offset Areas, Conservation Areas, or Heritage Management Zones specifically for their Aboriginal cultural and/or scientific values (often encompassing landscapes with biodiversity and/or other ecological values in addition to ‘cultural’ or ‘scientific’ values). The purpose of this is to set aside land which will be conserved by the land owner. Where formalised under a Conservation Agreement under Div. 12 s. 69 of the National Parks and Wildlife Act 1974 the agreement is binding on all parties. These areas are provided to offset or compensate the

destruction of objects and landscapes which have scientific or cultural values as assessed through the EIA process, by allowing access to Indigenous groups and their future descendants to access cultural heritage sites and landscapes and, thereby, providing a means for renewing attachment to country. However, in some cases, monetary offsets (for example, see Umwelt 2008a:10.3 to 10.4, 2010b:8.30, 2010c:2.46) have been developed in ACHAs to mitigate the impacts of a proposed mining project to Indigenous stakeholder groups. In many cases, land based offsets and Conservation Agreements established as part of the Planning Approval Conditions of a proposed coal mining project have been either completely or partially rescinded at a later date and proposed for use in further coal mining including related infrastructure (for example, see AECOM 2010; Umwelt 2007, 2010a).

The practice of rescinding or partially rescinding land based offset packages (upon which Project Approvals have been issued) by coal mining companies has been a disturbing trend in the Hunter Valley over the last ten years. In our experience, this practice is often justified by the archaeologist/heritage consultant in the ACHA commissioned through the subsequent offer of a ‘replacement’ offset area to Indigenous stakeholder groups or, in some cases, through promises of monetary or other non land based remuneration (refer to AECOM 2010; Coal and Allied 2010; Maguire 2012:1; Umwelt 2007, 2010a:E23). This issue raises ethical dilemmas for the archaeologist/heritage consultants, proponents and Indigenous stakeholder groups within the assessment process. It can damage relationships because project commitments and promises to Aboriginal stakeholder groups are not followed through. Such practices jeopardise the integrity of the EIA process. Greater scrutiny and regulation of projects that involve changes to existing offset arrangements is required on the part of the OEH and Department of Planning. Archaeological organisations (such as the Australian Archaeological Association and

Australian Association of Consulting Archaeologists Inc) may also be able to assist with scrutiny of their membership, where breaches of relevant codes of ethics and professional practice have occurred. These actions have also heightened growing cynicism, conflict and distress within the Aboriginal stakeholder groups of the Hunter Valley as they feel disempowered in the impact assessment process.

Where land based conservation offsets are in place, there is no requirement for a formal access agreement for Indigenous stakeholder groups to these Conservation Agreements, and it is unclear what access is actually occurring or indeed possible for Indigenous stakeholder groups. These areas are often adjacent to the active open cut coal mine areas leading to access restrictions and/or onerous occupational health and safety restrictions (for example Beltana Highwall Mining AHMP 2004:30-31; Umwelt/Xstrata Mangoola 2008). The Mangoola Conservation Offset Areas, particularly Anvil Hill, will be surrounded by open cut mining with potential indirect blasting impacts, thus making them inaccessible for certain parts of the year (Umwelt 2006). During initial archaeological survey of Conservation Agreements and consultation for the ACHA, it is difficult for Indigenous stakeholders and the archaeologist to visualise the future impacts of dust, noise and blasting on these places and sites. Although monitoring programs for Conservation Areas which involve consultation with Aboriginal stakeholder groups are often in place, these programs are neither a legal nor policy requirement for monitoring unless stipulated in the conditions of consent of a Development Approval or Project Approval. There is a lack of knowledge and literature evaluating the real benefits of these Conservation Areas to Indigenous stakeholder groups.

Consultation and practice

The OEH's recent ACHRs (DECCW 2010b) and former draft 'Interim Consultation Requirements for Applicants' (DEC 2004) have led to major

problems in cultural heritage management and the EIA process within the Hunter Valley. The most notable issue is the dramatic increase in the number of registered Aboriginal stakeholder groups for consultation. In 1999, there were two Aboriginal stakeholder groups actively involved in the EIA process in the Hunter Valley. In 2004, there were twelve Aboriginal stakeholder groups registering interest for consultation in relation to EIAs in the Hunter Valley. By 2010, this number had increased to about sixty registered Aboriginal stakeholder groups. This increase has, in many cases, not led to an increased unity on decision making or effective consultation in our experience but to increased factions within the Hunter Valley. For example, one family is represented by at least twelve individual registered stakeholder groups and has membership in at least two peak bodies. This increase in the sheer number of groups per family has an effect on decision making in heritage assessments in the Hunter Valley due to the potential dominance of one family. There is a risk that the voices of other families, represented in fewer registered stakeholder groups and peak bodies, may be muted or effectively silenced. Proponents (and their engaged heritage consultants/archaeologists) cannot make judgments regarding the cultural values of Aboriginal stakeholders registered for consultation regarding projects and are required to afford equal opportunity for the presentation of all registered Aboriginal stakeholders' cultural values during the EIA process regardless of traditional right to speak for country. This increases tensions between Aboriginal stakeholder groups and the archaeologist/heritage consultant, because of a power imbalance in their roles in the ACHA process.

In extreme cases, some Aboriginal stakeholder groups have registered for consultation throughout many areas within NSW in the hope of obtaining paid employment during fieldwork on projects (Indigenous stakeholder group representative, pers. comm. 2007). Effectively such groups 'come in' from areas where they

have not previous registered interest or identified as Traditional Owners, or local descendants, or members of historical communities. For example, several groups from the Wanaruah LALC region have started to register interest for consultation in the Awabakal LALC region publicly arguing that they have ‘a right to succession’; a right to work in the region and speak for country because the ‘Awabakal died out’ (Indigenous stakeholder group representative pers. comm. 2010, 2011; proponent Newcastle area pers. comm. 2011). In this particular case the Awabakal LALC and other Traditional Owner and historical community groups within the Awabakal region are having to negotiate with people they perceive as ‘outsiders’. The OEH ACHRs (DECCW 2010b) stipulate that proponents specifically advertise their projects in broader newspapers with national and State coverage bringing new stakeholder groups into the consultation process unless an approved native title determination exists. These requirements can lead to the focus of a heritage assessment in an EIA for a large mine project being skewed towards the consultation process and fees for involvement of over 60 stakeholder groups in fieldwork. These issues provide an environment which is vulnerable to corruption by unscrupulous proponents and some Indigenous stakeholder groups.

Conclusion

This paper has identified several problems with current ACHA process in NSW, particularly within the Hunter Valley, chiefly the lack of recognition of connections between community well-being and cultural heritage, and the imbalance of power relationships in the ACHA process embedded in legislation and regulatory guidelines such as the ACHRs. We argue that these problems can be linked back to the legacy of the development of cultural heritage legislation in NSW, the definition of heritage constructs (such as values and significance) and their misappropriation in practice, and the politics of recognition and identification of Aboriginal

cultural heritage. The concept of ‘solastalgia’ and recognition of environmental distress and its relevance to assessing cultural heritage values have been discussed to highlight problems within the ACHA process, within the context of cumulative impacts from coal mining in the Hunter Valley. Although, this paper has focused on our collective experience within the Hunter Valley, the issues raised in this paper are potentially equally applicable to any region where visual and perceived environmental changes and landscape scale transformation is occurring in Australia (for example, Pilbara region, Western Australia, Bowen Basin, central Queensland) and overseas (for example, Canada, Chile and Papua New Guinea), particularly where mining and extractive industries intersect with and affect Indigenous communities. We hope this paper provides some critical ‘food for thought’, particularly in the relation to further consideration of cumulative impacts and environmental distress. We hope to promote constructive dialogue on these issues in the future, in a part of the world we call home where much of the attention and financial resources allocated to cultural heritage has focused on the archaeological record through CHM funded by coal mining projects.

Acknowledgements

We would like to acknowledge the support of our respective partners, Craig Evenden, Lucas Huntley and Melissa Anderson. We would like to acknowledge the assistance of Dr Sally Babidge who reviewed two drafts of this paper and provided input and A/Prof. Joe Reser who directed us towards relevant sources. We would also like to acknowledge the Aboriginal stakeholder groups throughout the Hunter Valley who we have worked with over this time. Lucas Huntley prepared Figure 1.

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Completing McCarthy's Project: Stone Artefact Typology and Archaeological Significance in Australia

GRANT WG COCHRANE & PHILLIP J HABGOOD

Grant W G Cochrane (Cutting Edge Archaeology; Department of Archaeology, University of Sydney, grant@cearchaeology.com.au)

Phillip J Habgood (Archaeo Cultural Heritage Services; School of Social Science, University of Queensland)

Assessments of archaeological significance require knowledge of the rarity of particular kinds of objects and places. Therefore, a lack of agreed systems for the recognition, description and classification of archaeological objects and places in Australia undermines the ability of all archaeologists to make valid significance assessments. We discuss one aspect of this problem, stone artefact classification, through the example of the identification of dentate tools in central Queensland. Both the absence of a universal taxonomic system and a generally low standard of communication between archaeologists prevent us from gaining a confident understanding of the prevalence of such artefacts. Despite valid critiques about specific aspects of typological practice, we argue that a more collegial approach to defining stone artefact types and documenting their distribution across space and time is in the interests of all parties that engage with the practice of Aboriginal archaeology. We propose that the best way of achieving this is through the development of an interactive, on-line application.

Introduction

With a range of different jurisdictions, and hence diverse legislative and bureaucratic expectations, Australia provides an unpromising environment for unified approaches toward cultural heritage management. Much of this diversity can be attributed to historical, political and economic factors that are beyond the direct control of the archaeological community. Yet if we consider the prominent role that archaeologists currently play in the cultural heritage management industry, it is clear that they are attempting to adapt to these challenges. This has led to considerable heterogeneity in archaeological practice. At the same time, most archaeologists recognise that the importance of archaeology to cultural heritage management stems from its stature as a scientific discipline, and that the maintenance of this stature rests in their own hands. Integral to this is a

strong level of agreement and adherence to universal principles that transcend geographical boundaries.

These universal principles can be established and conveyed in a number of forms. For example, officially sanctioned guidelines such as those set out in the AACAI Code of Ethics or the Burra Charter are directly applicable to archaeological practice in the cultural heritage management industry. More complex is the need for consensus at the theoretical or conceptual level. Intense theoretical debate, even at core epistemological levels, has been an acknowledged characteristic of archaeology for decades, and so a lack of consensus does not of itself threaten the scientific status of the discipline. But at the interface between the discipline and an industry such as cultural heritage management, there is a clear requirement for consistency in the

recommendations made by archaeologists. Here, lack of consensus undermines the credibility of the discipline and its significance in a constantly changing commercial environment.

Central to the role of archaeology in cultural heritage management is the concept of archaeological significance, and the ability of archaeologists to apply this concept to objects or places that are threatened with disturbance. While the definition of archaeological significance has been the subject of some debate (e.g. Brown 2008; Smith 1996; Sullivan 1995; Sullivan & Bowdler 1984), of greater concern is the lack of agreed systems and standards for the recognition, description and classification of the threatened objects and places. In this paper, we discuss one aspect of this problem; the classification of stone artefacts. We provide a simple example of how difficult it has become to determine whether particular kinds of stone artefacts are rare in a given regional context. We attribute much of this difficulty to discipline-wide theoretical trends that have discouraged the definition of artefact types and the mapping of their regional distributions. We argue that there is a better alternative, but that it will require high levels of participation and commitment from a broad range of practitioners.

Dentate, Denticulated and Serrated Artefacts in Queensland

In an important paper outlining distinctions between northern Australian bifacial points, Akerman and Bindon (1995: 89) provided definitions for different types of specialised margin treatment involving pressure flaking:

- Dentate, a margin with more-or-less regularly spaced projections or teeth separated by notches that are wider than the teeth.
- Denticulate, a margin with regularly spaced projections which are separated by notches that are of similar width or narrower than the teeth themselves.
- Serrated, a margin with extremely small or fine projections usually triangular in outline

and separated from each other by equally fine notches.

Holdaway and Stern (2004: 238) have suggested that the same definitions could be applied more widely to help define other artefact types. For example, some archaeologists have used the term 'saw' to classify non-pointed artefacts with serrated margins (McCarthy 1976: 36). However, other artefacts with dentate or denticulate margins often escape formal classification and become incorporated within the general class of 'scraper' (Holdaway and Stern 2004: 238). Hence while the term 'denticulate' has been applied in some Australian stone tool classifications, there has been no consistency in its usage or its definition. It is therefore not surprising that questions about the prevalence of artefacts with dentate, denticulated or serrated margins in particular regions are difficult to resolve. The state of Queensland provides a good example of this.

In 1969 *Mankind* published a short note from Waldron (1969: 155) describing five chert flakes located on a property 35 miles north of Roma in south central Queensland. The flakes had neatly dentated working edges and, according to Waldron, constituted a type of artefact not previously mentioned in published descriptions of Queensland stone implements. From Waldron's drawings and brief descriptions, the artefacts varied in size and shape. The dentate retouch occurred on one or both lateral margins and, in one case, inverse retouch was applied. None of the flakes appear to have been points, although one was the proximal remnant of a broken tool. Waldron suggested that the dentation had been produced by pressure flaking and that because the tools had been found in association with uniface pebble choppers, horse-hoof cores and nosed scrapers, they might have a pre-Bondaian antiquity.

From our years of field experience in Queensland, we would agree that artefacts with margins corresponding strictly to the definitions provided by Akerman and Bindon are rarely encountered. We would add the caveat that

artefacts that might be described as denticulates under a broader definition, such as core tools or robust flakes with sequences of large notches along a margin, are relatively common. Bearing this in mind, we were surprised to find a broken artefact with a dentate margin (Figure 1) during a recent archaeological survey of the southern Arcadia Valley (ARCHAEO 2010), which is located about 160 kilometres north of Roma and about 480 kilometres northwest of Brisbane (Figure 2). Because of the breakage at both ends of the artefact, the dentate margin only consists of three teeth. The retouch is unifacial and relatively invasive. Pressure flaking is the most likely method of retouch, though this is not conclusive. The artefact was manufactured from silcrete and bears considerable surface weathering. Like Waldron's Roma artefacts, it was found on a landscape that also contained horse-hoof cores, though not in close association with them.



Figure 3. Broken dentate artefact from the southern Arcadia Valley.

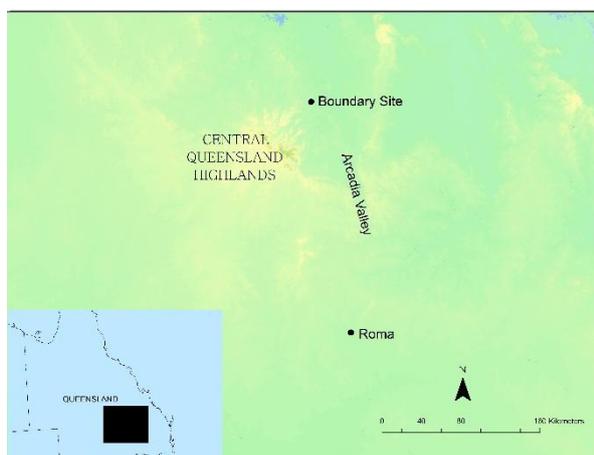


Figure 4. Sites mentioned in the text.

Still more recently, during analysis of stone artefacts from an undated surface lithic scatter near Rolleston known as the Boundary Site (Figure 2), four further examples of retouched flakes with dentate margins were observed (Cochrane 2013). On one, the dentate margin was formed by carefully controlled invasive retouch, though again it cannot be conclusively determined that this was due to pressure flaking (Figure 3). In the case of the other three artefacts, formal classification as dentate tools might be considered more problematic, either because the retouch is not very invasive (Figure 4), or because it is uneven and applied to a relatively steep margin (Figure 5).



Figure 5. Dentate artefact from the Boundary Site.



Figure 6. Non-invasive dentate retouch on flake from the Boundary Site.

Typology in Contemporary Aboriginal Archaeology

Communications like Waldron's commonly appeared in Australian anthropological journals prior to the expansion of professional archaeology in the 1970s and 1980s. They were

considered noteworthy for two main reasons, both ironically related to the desire to establish a discipline that conformed to high professional and scientific standards. The first recognised that the structural paradigm that gave birth to scientific archaeology was taxonomic classification, which provided a means for recognising variation in material culture across space and time. The second was a pervasive but increasingly challenged view that spatial and temporal distributions of artefact classes could be interpreted as a relatively straightforward reflection of cultural differentiation, diffusion and migration (Holdaway and Stern 2004: 218).



Figure 7. Steep-sided dentate retouch on flake from the Boundary Site.

There have been many developments that have affected the practice of Aboriginal archaeology in Australia since the 1960s, including the nature of intra-disciplinary communication. Today, journals rarely publish papers that simply bring to notice observations about the presence of artefact types outside their known range. This change in emphasis reflects a philosophical shift, coincident with the professionalisation of the discipline, involving a broadening of archaeological goals beyond the mere description and mapping of artefacts, to using them to develop and test theories about the economic, ecological, technological and social aspects of past Aboriginal lifeways.

One need only observe the occurrence of similar trends in other countries to understand that this expansion of goals in no way invalidates the longstanding practices of taxonomic classification

and distributional mapping (e.g. Bamforth 1991; Deacon 1984; Neeley & Barton 1994). In fact, even in Australia where archaeology became far more theoretically oriented, the archaeological evidence underlying most models of past behaviour consists of the spatial and / or temporal variation of artefact types or other distinctive forms of material culture. Hence it would be wrong to assert that new information about the distribution of artefact types is irrelevant to contemporary research questions. Dentate, denticulated and serrated artefacts provide a good example of this. Strictly defined, their spatial and temporal distribution can directly influence our understanding of regional trends in stone technology, and more detailed studies of their uses may also be germane to hypotheses of past Aboriginal ecological and economic relationships.

So what are the specific causes of the drift away from a discipline-wide commitment to mapping artefact type distributions? We would argue that the actual principle of artefact classification has not fallen from favour. However, there have been a number of valid critiques about specific aspects of typological practice (e.g. Clarkson 2002, 2005; Glover 1969; Gould 1969: 232-233; Hayden 1977; Hiscock & Attenbrow 2002, 2003, 2005a, 2005b, 2011; Mulvaney & Joyce 1965: 174-193; White 1969; White & O'Connell 1982: 83-85; White & Thomas 1972; Wieneke & White 1973), and these have resulted in division and uncertainty over the most suitable response. These critiques have drawn upon different kinds of empirical evidence, including ethnographic accounts of Aboriginal toolmaking, and statistical analyses of artefact assemblages, to demonstrate that variation of the attributes used to define and distinguish between types is often continuous in nature. Thus when a taxonomic system that assumes discontinuity is strictly enforced upon an archaeological assemblage, the resulting groups of artefacts may simply reflect arbitrary divisions of continuous variation, rather than any meaningful distinctions of technological or cultural significance.

A mature response to these critiques would be to tighten the empirical demands of typological practice and ensure that the criteria that distinguish types reflect significant discontinuities in variation. This would imply an acknowledgement that typological systems cannot be comprehensive in nature, but instead function as a tool to help identify and document instances of artefact standardisation. The interpretation of these standardised artefacts should be a matter for subsequent theoretical discourse. However, practical adjustments of this nature require institutional leadership, and here Australian archaeology has been found wanting. When experienced stone artefact researchers gathered at the Australian Museum for the 1996 AIATSIS lithics workshop, with a view to developing a stone artefact manual to supersede the influential but outdated work of McCarthy (1976), they failed to reach consensus on the role of typology in Australian lithic research. The resulting publication, *A Record in Stone* (Holdaway & Stern 2004), provides a comprehensive guide to technological analysis but its treatment of typology reflects the ambivalence of workshop participants. Akerman (2005) spoke for many when he ruefully declared that 'I will still be hanging on to my copy of McCarthy'.

If some seasoned lithic researchers are frustrated with this turn of events, the real victims are the numerous young archaeologists armed with only a basic knowledge of stone artefact identification, yet charged with the responsibility of assessing the archaeological significance of stone artefact sites. The commercial constraints of cultural heritage management surveys will always impose limitations on the time available for observing key features of these sites. So while it is true that all artefacts may have some potential research value, there is a practical demand for simple measures to help distinguish the expected from the unexpected, including taxonomic systems that define artefact types of regional or temporal significance.

A More Valid and Productive Approach to Typology

To return briefly to our case study from south central Queensland, it is perhaps fortunate for us in our role as cultural heritage management advisers that the archaeological significance of the southern Arcadia Valley and the Boundary Site could be rated as very high due to a number of factors not discussed in this paper (Cochrane 2011, 2013, in press; Cochrane & Doelman in press). The presence of sparse numbers of dentate artefacts in less auspicious stone artefact scatters might generate a few headaches. Would such sites be considered rare, and hence warrant a high archaeological significance value? On current evidence we would tend to say yes. But is the current evidence strong enough to underpin this decision? Would all archaeologists reach the same conclusion?

As we have noted, artefact types defined according to the nature of specialised margin treatment are not universally recognised, but this is not the only barrier to a confident assessment of the archaeological significance of the dentate artefacts. Another formidable barrier is the nature of communication within the archaeological community, especially in Queensland. With unprecedented levels of land-disturbing development in rural areas, field surveys are constantly being undertaken and large amounts of Aboriginal archaeological material are regularly discovered. Yet in Queensland's loosely regulated heritage management environment, the extent to which information about these discoveries is shared among archaeologists is a complex matter. For a variety of reasons, Aboriginal parties, developers and even archaeologists may have objections. Many of these reasons are valid, but one gets the impression that there are often occasions where archaeologists have not strongly articulated the argument for public disclosure. This attitude runs counter to Section 5 of the AACAI Code of Ethics, and undermines the general standard of service that the discipline can provide. The strength and validity of a scientific

and commercially sustainable archaeology rest first and foremost on the ability of practitioners to document observations, apply established methods of classification and ensure that this information is available to other practitioners. Without this basic framework, it is very difficult to state whether a particular aspect of cultural heritage is rare in its regional context. Cultural heritage managers can assess the significance of sites in the absence of such a framework, but such assessments cannot be regarded as 'scientific'.

If this desire to build a reliable, accessible and geographically extensive empirical base sounds like something that threatens to distance archaeologists from their Aboriginal clients, we would argue the opposite. Archaeologists who work regularly with Aboriginal people understand that they expect us to have expertise, and to be able to answer the questions that are most important to them. Most frequently, these are straightforward questions such as 'Is this tool rare?' or 'How old is it?' Such information helps them set priorities for the ongoing management and protection of their cultural heritage. If all archaeologists can answer these questions with confidence and authority, then Aboriginal people are more likely to want to be engaged with our discipline, and more likely to be empowered as a consequence of that engagement.

If the discipline can begin to appreciate the strong need for a more collegial approach to the assessment and management of stone artefact sites, then we may find that the failure to update McCarthy's typology with a more recent publication is something of a blessing in disguise. Considering the pace at which archaeological fieldwork is now proceeding in Australia, and the sheer volume of observations that are made each day, traditional forms of communication such as text books and journals are probably no longer adequate for the scale of this task. Archaeologists are increasingly drawing upon electronic information systems for recording, processing and sharing data (e.g. Sobotková et al. 2012; Williams & Smith 2013: 102), and this would

undoubtedly be the most efficient way to establish a comprehensive guide to Australian stone artefact types and their distribution.

What we envisage is an interactive, on-line application that both defines and cumulatively maps the geographical and temporal distribution of Australian stone artefact types. The evolution of this application would proceed in the following manner.

1. Recording of existing knowledge: Notwithstanding the revelations that some previously published stone artefact types have no empirical standing, there remain many types that are clearly standardised with respect to key attributes and have known geographical or temporal parameters. A panel of authoritative specialists, including archaeologists with extensive museum experience, could be given the task of identifying these artefact types, and providing rigorous definitions, photographs and illustrations. This information would be loaded as the baseline for the interactive application. An important feature would be a map featuring the known geographical range of each artefact type.
2. Submission of new information: There is considerable variation in the experience levels of archaeologists engaged in cultural heritage management and other field research. Despite this, the application should encourage input of new information from all archaeologists. This would ensure that it is widely embraced and that the vast resources available to us are fully harnessed. New information could include details of recognised artefact types found outside their known boundaries, or the observation of previously unrecognised artefact types. The submitted information would include images and descriptions of the artefacts, their location, their temporal context (if known), and statistical

information establishing the discrete nature of their key attributes.

3. Review of new information: Quality control in archaeological publications is generally achieved through a peer review process. An interactive application allows a magnified form of peer review, whereby instead of two or three selected practitioners, the review is conducted by the entire community of platform users. Under this process, submissions would be subject to on-line user comment and debate, and this would allow the submission provider to modify, clarify or withdraw information.
4. Approval and addition of new information: After a period of review, a moderating panel would then determine if the information from each submission should be formally added to the application's display of confirmed data. Submission, review and approval of new information would all occur continuously as an ongoing process, and so the application would be constantly updated.

An electronic information system of this nature would be constructed by archaeologists to serve the needs of archaeologists. It would provide crucial background information for practitioners undertaking surveys, and this information would have the authority of the entire participating disciplinary community. Unlike a published text, it would be completely up to date at the time of its use. Ultimately, this would enable assessments of archaeological significance to be made with much greater confidence. It would also provide a much more robust data set for archaeologists engaged in research into the causes of artefact variation.

Conclusion

We imagine that there must have been a night when a member of the sparse contingent of museum workers and amateurs that pioneered Australian archaeology went to bed wearily pondering the scale of the task that lay ahead -

recording the distributions of the many and varied artefact types across such a vast continent. Thus preoccupied, they fell asleep and had a strange and wonderful dream. They were cast into a very different Australia, with a veritable army of archaeologists all trained with university degrees. Millions upon millions of dollars were available to be spent on archaeological surveys. Aboriginal communities, empowered and fiercely proud of their cultural heritage, routinely provided personnel to conduct the surveys including people with deep levels of cultural knowledge. And most exciting of all, new forms of technology were available that enabled archaeologists to share information and clarify typological distinctions in next to no time. It was a very reassuring dream. In such an Australia, how could archaeology possibly go wrong?

Acknowledgments

We gratefully acknowledge the opportunity given to us by the Karingbal People to conduct research in their Country. In particular we thank Charles Stapleton for his ongoing support of archaeological research in the area and John Hoare, Raymond Saltner, Fred Stapleton and Katrina Cutting for their help while we were working in the valley. Thanks to all of the other Karingbal field representatives who have participated in the project. We also thank Ann Wallin, Tim Gall, James Robinson, Xavier Carah and Joe Borg from Archaeo Cultural Heritage Services for the important roles that they have played during this research.

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