
When the Foreign Becomes Familiar: The Glass Bead Assemblage from Madjedbebe, Northern Australia

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By investigating the materiality of colonial encounters, specifically the consumption of introduced commodities by Indigenous peoples, archaeologists can explore questions concerning value, agency, consumer choice and localization. This has the significant capacity to broaden understandings of intercultural encounters and challenge colonial narratives. Glass beads represent one of the earliest foreign material culture introductions to the Indigenous peoples of Australia. The rock-shelter site of Madjedbebe, best known for yielding the oldest evidence to date for human occupation in Australia, also contains one of the largest assemblages from an Indigenous site context in Australia—51 glass beads and associated fragments. We present here an analysis of these objects—through attribute and microwear analysis—in concert with the archival record, to reveal the ways in which Bininj (Aboriginal people) incorporated glass beads into their own lifeways.

Introduction

From the fifteenth century onwards, the encroachment of Western powers into ‘unmapped’ territories resulted in the widespread distribution of European-manufactured commodities to Indigenous peoples world-wide. These exchanges created tensions between local and larger global systems and the elision of capitalist frameworks with non-Western systems of consumption. Archaeologists have employed various theoretical approaches to address how introduced materials were exchanged and translated into local Indigenous contexts (e.g. Birmingham & Wilson 2010; Harrison 2000; Lightfoot 1995). Early frameworks were typically unidirectional, exploring concepts like acculturation or assimilation, with recent discussions emphasizing far more complex and diverse processes, through the lenses of new materialism, personhood, hybridity, dominance, resistance and survivance (Äikäs & Salmi 2023, 3; Cipolla 2017; Miller 1995).

Consumption can be defined as ‘reflect[ing] the way consumers negotiate, accept and resist goods’ dominant meanings within rich social, global, historical and cultural contexts’ (Mullins 2011, 133). By exploring the Indigenous consumption of introduced commodities, archaeologists are well positioned to explore questions of the colonial encounter, especially those which concern Indigenous agency, consumer choice, regimes of value and how foreign materials become localized (Cipolla 2017, 12; Mullins 2011; Panich 2014; Silliman 2015; Silliman & Witt 2010; Thomas 1991). The investigation of these questions is inherently political, as findings can challenge oversimplified Eurocentric narratives that silence the ‘subaltern’ (Äikäs & Salmi 2023, 8; Bhahba 1994; Birmingham & Wilson 2010; Cipolla 2017, 6; Flexner 2014; Harrison 2003; Lydon & Rizvi 2010, 21; Ojala 2019; Perston *et al.* 2021; Torrence & Clarke 2000; Wesley & Litster 2015a). This is true for the colonial archives concerning the distribution of glass beads into Indigenous Australia, which are often reductive

and emphasize a fetishism or enchantment with introduced 'exotic' objects on the part of the colonized (Forrest 1995; Plomley 1983). These Eurocentric 'first-encounter' narratives are problematic, in that they conceptualize glass beads as merely a token through which Europeans could 'extend the hand of friendship' in order to smooth their way to exploiting the various untapped riches of 'new' lands, thereby overlooking questions of agency, localization and choice, focusing wholly on simplistic notions of value (see Litster *et al.* 2018; Wesley & Litster 2015a,b). Or, as articulated in the North American context, 'coloured by intertwined narratives of cultural extinction and technological change' (Panich 2014, 744–5).

Furthermore, the nature and frequency of the Indigenous consumption of European commodities is highly variable, in part because consumption involves agency: not all consumers have equivalent choice or power in these exchanges and a substantial power differential exists between producers, their go-betweens and Indigenous consumers. Thomas (1991) and Cipolla (2017) have reinforced the importance of considering local processes, asserting that there is no historical patterning to consumption, with the latter arguing that 'in some cases new items led to drastically novel cultural forms, while in other cases Indigenous ontologies rewrought foreign objects in dramatic ways' (Cipolla 2017, 9). For example, scholars have argued that the introduction of European-made goods, such as beads, is thought to have 'enhanced' the complex potlatch ceremonies of the Pacific Northwest (Crull 1997, 109). Similarly, Panich's study of artefacts from the Mission Santa Clara de Asís in central California revealed that Native Americans acquired glass beads from the mission, while then incorporating them into local 'understandings of status and mourning' (Panich 2014, 730). Wesley and Litster (2015a) argued that glass beads took on new meaning within Indigenous customary contexts in the Wellington Range (Arnhem Land), Australia. Nonetheless, in other instances, introduced commodities and materials have been jettisoned from Indigenous contexts, highlighting a resistance to the centripetal tendencies of colonialism. For example, the centuries-old traditional *Divehi* (Maldivian) practice of tuna fishing with pole-and-line, which hooks a single fish at a time, is still practised to support sustainable fishing practices, despite the availability of other technologies returning a larger catch for less labour (Litster 2016).

In Australian archaeology, the materiality of colonial encounters has largely focused on syncretic modifications and forms, such as the production of glass artefacts through traditional stone tool working

techniques (e.g. Allen 1969; 2008; Harrison 2000; 2003; Munt & Owen 2022; Perston *et al.* 2021; Ulm *et al.* 2009; Wolski & Loy 1999; see also Harrison 2002 for metal and Munt & Owen 2022 for ceramics). Perhaps the most emblematic of the colonial encounter are the striking glass Kimberley points of the northwestern Australian coastline. Harrison (2003) considered these as 'skeuomorphs'—objects manufactured in a material intended to appear as one regularly made of another material (Knappett 2002). Unsurprisingly, skeuomorphism has been invoked in discussions of 'identity creation and maintenance, in particular in situations in which different social groups are opposed in economic, social and often colonial situations' (Frieman 2010, 3). Another major line of investigation in Australia focuses on the rock-art record—on the depictions of introduced material culture from Makassans (trepanners from Island Southeast Asia) and later Europeans (see Figure 1c) (e.g. Clarke & Frederick 2006; May *et al.* 2021a,b; Miller *et al.* 2022; Taçon & May 2013; Taçon *et al.* 2012; Wesley 2013). These investigations have generated 'significant findings into topics such as change and continuity, performance and memory, antiquity of cross-cultural interaction, involvement in specific events, motifs as symbols of power and resistance, and reflections of Indigenous involvement in specific events' (Brady *et al.* 2022, 527).

Set against the relative paucity of documentary records concerning the significance of glass beads in Indigenous Australia, we contribute to these studies of introduced material culture by reporting on one of the largest assemblages of glass beads recovered from an Indigenous site context in Australia: 51 beads and fragments from the rock-shelter site of Madjedbebe in the Alligator Rivers region (adjacent to western Arnhem Land), best known for yielding the oldest evidence to date for human occupation in Australia (Clarkson *et al.* 2017). We present results from a standard attribute analysis, alongside a review of the archival and material culture record, to explore questions of consumption, specifically consumer choice, regimes of value and agency during early colonial encounters in the region. Significantly, our study is the first to deploy microwear analysis to contribute to discussions of the Indigenous use of glass beads from a colonial context (see Munt & Owen 2022, Ulm *et al.* 2009 and Wolski & Loy 1999 for examples of usewear on Australian Aboriginal glass artefacts).

The Madjedbebe site context

Today Madjedbebe is located in the clan estate of the Mirarr people, in close proximity to the East



Figure 1. (a) The Djawumbu massif with Madjedbebe at the base (source: Mario Faggion); (b) facing southeast towards Madjedbebe (source: Shannon Nango); and (c) an example of contact motifs at Madjedbebe (source: Shannon Nango).

Alligator River along the eastern edge of the Magela Creek floodplain of the Northern Territory (Fig. 2). The site is within the Jabiluka Mineral Lease, which is excluded from the surrounding UNESCO World Heritage-listed Kakadu National Park.

Madjedbebe comprises a narrow overhang, extending for approximately 50 m along the base of the sandstone Djawumbu massif, adjacent to Djabaluka billabong (Fig. 1). Ethnographic records highlight that during the wet season (*kunumeleng*

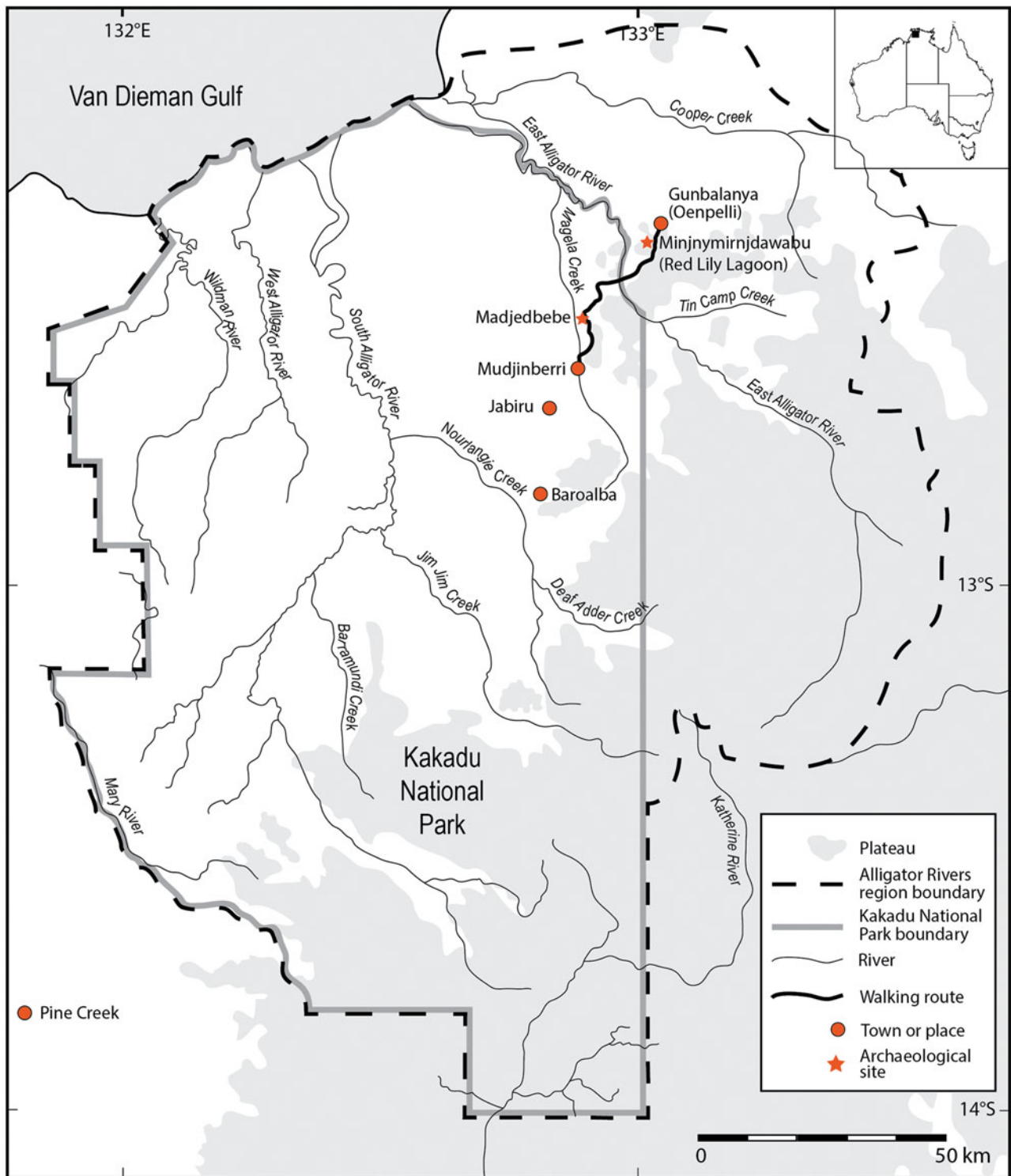


Figure 2. Map of key locations mentioned in the text.

and *kudjewk*, November through to mid March]), *Bininj* (Aboriginal people) access to the contiguous floodplains and lowlands was limited, which

redirected focus to the sandstone escarpment and plateau (Chaloupka 1981; Layton 1981; Schrire 1982; Spencer 1914). These accounts of Madjedbebe

being a wet-season site are supported by the results from analyses of macrobotanical remains recovered from excavations at the site (Florin *et al.* 2022).

During the dry season the Djawumbu massif outlined a walking route stretching between Gunbalanya (formerly Oenpelli) in the north to various places south, including Baroalba (a timber camp) and Mudjinberri (a former meatworks but now a *Bininj* outstation) (May Nango and Djaykuk Djandjomerr, pers. comm. 2021; see Figure 2). It has been suggested that Mirarr *kunred* [Country] was traversed by other clan groups for the purpose of seasonal food procurement and acquiring material for fabric, tools and weapons (e.g. Berndt & Berndt 1970; Chaloupka 1981). The late Mirarr Elder Toby Gangali explained to Layton (1981, 13) that the massif was also used to escape mosquitoes and for ceremonial purposes, but not long term, as ‘all the time we kept moving around’ (see also Kamminga & Allen 1973, 55). Another now deceased *Bininj* man, Jimmy Galareya Namarnyilk of the Yirridjdja clan, further remarked that the massif had ceased to be used for ceremonial purposes and was now considered ‘dead’ (pers. comm. 2010, as cited in Wright *et al.* 2014, 93). Mirarr people today dispute this latter statement: while their access has been restricted for several decades by the mining lease granted over their *kunred*, they still hold knowledge of the *djanj* [sacred] sites in the vicinity and are actively planning for the time when their Country is fully returned to them following the departure of mining parties.

Madjedbebe has been the focus of several major archaeological studies over the past 40 years, each expanding Western knowledge about the site and its long-term use (Clarkson *et al.* 2017; Kamminga & Allen 1973, 45–52; Roberts *et al.* 1990). Investigations have yielded dates indicating commencement of human occupation at around 65,000 years BP—older than other known sites in Australia—resulting in widespread debate surrounding their veracity (e.g. Allen & O’Connell 2003; Bird *et al.* 2002; Bowdler 1991; 2017; Hiscock 1990; Veth 2017; Wood 2017). The recent excavations in 2012 and 2015 involved 20 1×1 m contiguous squares extending from the rock-shelter wall to beyond the dripline, incorporating the area of the two earlier excavations (see Figure 3). These most recent studies revealed a stone assemblage including late Pleistocene-aged grindstones, ground edge axes and ground ochres (Clarkson *et al.* 2017). Subsequent detailed studies have included the analyses of the mid-Holocene shell midden layer (Woo 2020), magnetic susceptibility of the sediments (Lowe 2014), burial patterns (Lowe *et al.* 2014), the archaeobotanics (Carah 2017;

Florin *et al.* 2022), Holocene-aged ochres (Cox 2013; Crough-Heaton 2021), flaked stone artefacts (McNeil 2016), ground stone assemblage (Hayes 2015) and bone points (Basiaco 2018; Langley *et al.* 2023).

Despite ‘contact’ artefacts being found at Madjedbebe, they have not previously been the focus of any detailed analysis. This contrasts with a well-reported rock-art assemblage, featuring an impressive array of contact motifs, including a number of firearms attributed to the buffalo-shooting industry (see Figure 1c; May *et al.* 2017a,b; Morley 1979; Morley & Lovett 1980). The early excavations in the 1970s returned a small contact artefact assemblage, including one blue glass bead in the upper 10 cm of deposit (Kamminga & Allen 1973, 45–52; see Figure 3 for location of excavation square). Of relevance here but not reported on previously are the numerous glass beads recovered during the 2012 excavations, which are the subject of this paper.

Glass beads in Arnhem Land: archival items, material culture and archaeology

European explorer Ludwig Leichhardt (1847) undertook an overland expedition from Moreton Bay, Queensland, to Port Essington, Northern Territory, in 1844–45, travelling through Mirarr and adjacent clan estates. This first fleeting appearance of *Balanda* (non-*Bininj*) heralded the subsequent sustained presence in the Alligator Rivers region of predominantly buffalo shooters (Feakins 2019; Levitus 1995), timber getters, gold, tin and copper miners (from the late 1870s onwards in the Pine Creek area: Bell 1983; Forrest 1985) and missionaries, the latter after 1925 with the establishment of the Oenpelli Mission by the Church Missionary Society (Cole 1975). Exploration for uranium mining came later, in the 1950s, followed by the federally mandated establishment of the Ranger uranium mine, against the wishes of the Mirarr (Graetz 2015). This recent history provides the framework for understanding the integration of new materials—such as glass beads—into *Bininj* culture through the nineteenth and twentieth centuries. In the sections to follow, we delve more deeply into the varied evidence for the introduction and use of glass beads in Arnhem Land.

Archival items: documents and photographs

The majority of archival items which refer to glass beads are those associated with Oenpelli (now Gunbalanya), from both the pre- and post-Mission era (see Figure 2 for location). In 1912, prior to missionization, anthropologist Baldwin Spencer was

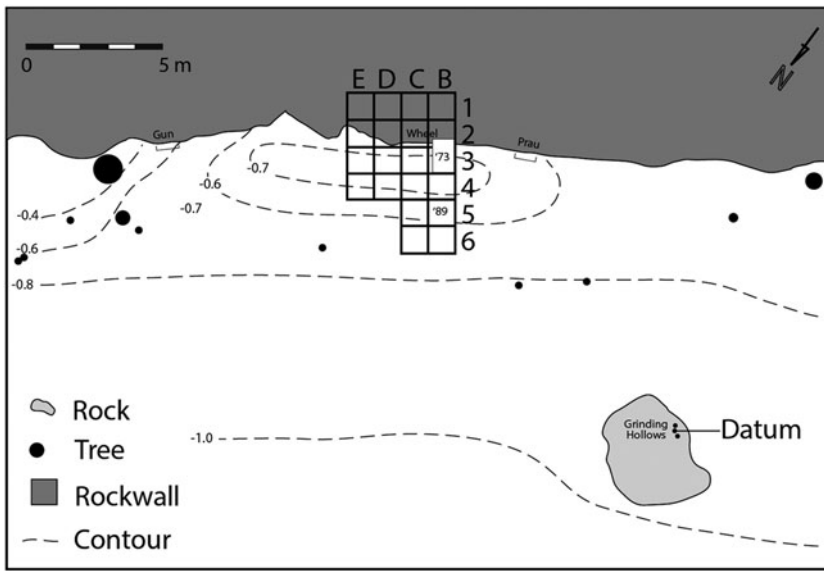


Figure 3. Madjedbebe site plan showing 1973, 1989, 2012 and 2015 excavation squares. Squares E1–B1 and B2 were located beneath the sloping back wall. (Source: Clarkson *et al.* 2017, 307.)

hosted by buffalo hunter Paddy Cahill, where he purchased trade items before leaving for fieldwork on Melville Island (the Tiwi Islands). Those items included red cloth, handkerchiefs, flour, tobacco, treacle, pipes, knives, 28 pounds of sweets and 20 pounds of beads (Mulvaney & Calaby 1985, 292). A later 1926 account by Reverend Alfred Dyer reported the relative value of glass beads to those in the Mission:

That old pair of scissors or razor, knives, bags, beads, ribbons, wool etc are all of value to them & help me to cut down expenses. Trousers & shirts that are shabby but will wear & pieces of cloth I want. (NTRS 1099/P1 vol. 1, as cited in May *et al.* 2020, 74)

In a 1929 letter, Dyer also recorded the need to re-stock small beads so that they might be purchased by the Mission's permanent workers, via which means the Mission recouped *Bininj* wages that were paid out (ML MSS 6040/12, cited in May *et al.* 2020, 154). A reference from 1932 also highlighted the distribution of glass beads along the Arnhem Land coastline by Japanese pearl-ers:

Aboriginal women were purchased from the old men of the tribes for such trifling considerations as beads, fishing hooks and knives. (NAA A431 1950/2752, as cited in Wesley & Litster 2015b, 214)

Such sources make clear the discrepancies in value perceptions between communities. *Balanda* emphasized the low financial cost ('trifling') of beads, which were purchased by the pound weight. In contrast, *Bininj* ascribed relatively high value to such

objects. This divergence in value resulted in glass beads becoming a useful means of trade and exchange: easily provided by one party and highly desired by another. These sources also hint that beads were desired objects by men, in contrast to assumed Western sensibilities, where beaded objects of personal adornment are often associated with women. This is further substantiated by the early photographs by Sub-Inspector of Police Paul Foelsche and Baldwin Spencer, depicting men in Arnhem Land wearing glass beaded necklaces and chokers during the late nineteenth and early twentieth century (see images in Welch 2008 and Wells 2003).

In addition to the distribution of glass beads close to Madjedbebe, these objects would have also been acquired further afield. Early twentieth-century reports in the *Northern Territory Times and Gazette* indicate that *Bininj* from western Arnhem Land were at this time travelling to Palmerston (now Darwin) annually during the wet season, affording them relatively ready access to beads and other European commodities (Wesley & Litster 2015b). In 1878, merchants Mander and Barlow were able to import and sell beads in Palmerston (Anon. 1878). In a diary entry dated 21 September 1897, German ethnographer Erhard Eylmann recorded glass beads on the 'decorative' objects of six or seven tribes visiting a camp outside of Palmerston (Courto 2003, 155, as cited in Allen *et al.* 2018, 56).

Material culture

Glass beaded material culture objects from Arnhem Land are held in Australian and international

museums but are relatively rare, a situation Allen *et al.* (2018) attributed to an early collector bias for ‘authentic’ Indigenous objects free from materials such as glass, metal and ceramic. Two major studies have documented glass beads in Australian collections from Arnhem Land: those by Allen *et al.* (2018) and Hamby (2011). Both projects applied standard methods of recording, with that by Allen *et al.* (2018) also incorporating chemical characterization. The results of this analysis revealed that most were made of a sodium glass matrix, with arsenic and lead additions characteristic of beads made in both European and southeast Asian production locales during the late nineteenth and early twentieth centuries (Allen *et al.* 2018, 75).

Allen *et al.* (2018) conducted a detailed investigation of glass beaded objects from the Indigenous Collections held by Museums Victoria, and they identified three main groups of objects (in order of abundance): (1) beaded chokers and headbands; (2) small bags (including ‘biting bags’); and (3) strings of beads. They posited that the distribution of beaded chokers and headbands—seemingly worn exclusively by Aboriginal men based on available historical photographs—overlaps on the eastern (western Arnhem Land) and western (Adelaide River) boundaries with the distribution of traditional head filets (*galamba*), which are used in higher-order men’s ceremonies, pointing to their potential use (Allen *et al.* 2018, 57). The next most common beaded material culture items are the small string bags or ‘biting bags’, investigated previously by Hamby (2011). Biting bags were thought to hold power for activities such as ritual fighting and were held in the teeth, thus allowing the wearer ability to access the power contained therein (Hamby 2011, 513). In her study, Hamby (2011) recorded a visually striking biting bag collected by Paddy Cahill in 1918 from western Arnhem Land, which was decorated with a white button and yellow and blue opaque glass beads (Museums Victoria Object # X25921). The final category is the strings of glass beads—possible necklaces or bracelets—of which there are only two examples, both collected by Paddy Cahill between 1918 and 1922, including one with 492 beads (Allen *et al.* 2018, 59).

Archaeology

Although only small numbers of glass beads have been found in archaeological sites, at present more have derived from Arnhem Land than all other regions of Australia combined (Litster *et al.* 2018; Litster 2019; see Table 1). Accordingly, they have been more studied here than elsewhere. The most detailed analysis to date has been the assemblage

of glass beads from several Wellington Range archaeological sites, a region which also contains at least one rock-art depiction of glass beads (Wesley & Litster 2015a). Wesley and Litster (2015a) suggested such beads derived from a pre-Mission introduction from Macassar, a concept they explored through a hybrid economy framework operating between Indigenous people, Europeans and Makassans (after Altman 2005).

Methods

In this study, 13 attributes were recorded for each bead/fragment, following standard methods of glass bead recording (Beck 1928; DeCorse *et al.* 2003; Karklins 2012; Kidd & Kidd 2012; Wood 2011). Although the sample size is too small to discern statistically significant observations based on these attributes, these recordings enable the results to be compared easily with other glass bead analyses which followed similar methods of recording. Glass beads were classified into known types where possible, based on descriptions in published literature (Blair *et al.* 2009; Cromwell *et al.* n.d.). Where glass was chartreuse in colour, a UV light was used to detect if the bead was a uranium or vaseline glass. All objects were individually examined and photographed using a Dino-Lite (AM7915 series). Where microwear was noted, further microphotographs were taken using a Zeiss 2000-C stereomicroscope fitted with an AxioCam MRC5. Trace features followed McGloin’s (2021) descriptions, these being: glass bead-on-bead wear (small striations creating a matte-looking surface and flattening of the bead surface); edge rounding of the perforation; hertzian fractures; and neck damage of the perforation likely related to a string or a knot.

Results

The glass beads/fragments were found in the uppermost seven spits from 10 of the 20 excavation squares at Madjedbebe (Figure 4; Table 2). Most were seed beads or associated fragments ($n = 43$), followed by bugle beads ($n = 3$), barrel beads ($n = 2$), spheroidal ($n = 1$), other ($n = 1$) and also a drip/splatter ($n = 1$). The method of manufacture was varied, with the majority being drawn ($n = 45$), followed by wound ($n = 2$), moulded ($n = 1$), blown ($n = 1$) and unknown ($n = 2$).

Attributes (colour, size, diaphaneity)

The beads from Madjedbebe were of a variety of colours (Fig. 5), with most falling into the grey ($n = 16$),

Table 1. Glass beads from Arnhem Land archaeological sites.

Site	No. of beads	Comments	Reference
Malarrak 1, Wellington Range	3	One Cornaline d'Aleppo ('carnelian of Aleppo' or 'white heart'); one opaque red-purple seed bead and one translucent green seed bead	Wesley & Litster 2015a; Litster <i>et al.</i> 2018
Malarrak 4, Wellington Range	9	Eight seed beads, one lamp wound blue bead (conjoins with the other half found at Djulirri)	Wesley & Litster 2015a
Maliwawa (Bald Rock 1), Wellington Range	3	Two seed beads, one glass 'drip/splatter'	Wesley & Litster 2015a
Maliwawa (Bald Rock 2), Wellington Range	2	Two clear glass beads. One spheroidal faceted Bohemian mould pressed glass bead, one glass seed bead	Wesley & Litster 2015a; Wesley pers. comm., 2022
Maliwawa (Bald Rock 3), Wellington Range	4	Two sections of bugle beads; two blown beads with end collars (one fragmentary)	Wesley & Litster 2015a
Djulirri, Wellington Range	12	Surface finds. Nine seed beads, two bugle beads and one lamp wound blue bead (conjoins with the other half found at Malarrak 4)	Wesley & Litster 2015a
Mayarnjarn	1	One 'orchid mist' seed bead	Wright <i>et al.</i> 2023
Dalakngalarr 1	1	One blue-green seed bead	James <i>et al.</i> 2017
Jimeri I	3	Glass	Schrire 1982
Jimeri II	34	Glass	Schrire 1982, 196
Paribari	1	One blue glass bead	Schrire 1982, 60
Makbumanja, Groote Eylandt	1	Red glass	Clarke 1994, 174
Aburrkbumanja, Bickerton Island	1	Glass	Clarke 1994, 404
Marnkala Cave, Groote Eylandt	1	Red glass	Clarke 1994, 293
Minjnymirndawabu (Red Lily Lagoon)	79	Multiple colours (seed, spherical, bugle and 'drip/splatter')	Wesley & Litster 2015b
Madjedbebe (1973 excavations), Djawumbu Massif	1	Blue glass	Kamminga & Allen 1973, 45
Anuru Bay	5	One blue glass bead, three green glass beads and one yellow glass bead	Macknight 1969, 315
Hardy Island, Trempang Processing Site	1	White glass	Macknight 1969, 315

blue ($n = 13$) and green/yellow ($n = 10$) categories. Other colours included brown ($n = 3$), red ($n = 3$), orchid mist ($n = 1$), multiple colours (blue and white) ($n = 1$), and not assessable ($n = 4$). Four beads were unable to have their colour assessed owing to heavy patination or were completely colourless and transparent. The proportion of those with a 'grey' colour was likely also due to post-depositional taphonomic factors, such as heat exposure, rather than this being their original colour.

Beads were mostly in the small ($n = 27$) and medium ($n = 15$) size categories, with only five

classified as minute and four as large (Fig. 6). This is unsurprising as most were seed beads, which are typically small. Twenty-two beads were classified as opaque and 26 as translucent, with three being completely transparent (Fig. 7).

Microwear

Microwear on the beads reveals evidence for extended bead-on-bead stringing. Glass bead-on-bead wear (indicated by flattening of the bead) was the most prominent wear trace identified, being present on Beads #20, #24, #26, #30 and #48 (see



Figure 4. Glass beads and fragments from Madjedbebe. Numbers given underneath each bead represent a unique identifier.

Table 2. Distribution of glass beads and fragments found during the 2012 Madjedbebe excavations. Row B is perpendicular to the rear shelter wall and Row 1 is adjacent to the wall.

Square B1	Square B2	Square B3	Square B4	TOTAL
		3		3
Square C1	Square C2	Square C3	Square C4	
		6	3	9
Square D1	Square D2	Square D3	Square D4	
	1	9	4	14
Square E1	Square E2	Square E3	Square E4	
2	5	9	9	25

Figure 8a–b for an example). Edge rounding and/or other damage can be seen in several of the beads from Madjedbebe, most prominently in Bead #23, a barrel bead, where clear damage to the perforation can be seen, most likely associated with a knot or a string (see Figure 8c–f). Other clear examples of edge rounding and/or damage can be seen in Beads #6, #12, #14, #15, #16, #20, #25, #30, #40, #41, #43 and #48. Hertzian fractures could be seen throughout the assemblage, but most prominently on the face of Bead #42, indicating substantial damage to the object (Figure 8g–h).

Manufacturing flaws and other irregularities

Six flawed (misshapen) beads were found in the assemblage (Beads #8, #19, #37, #38, #41 and #42). Air bubbles were recorded in Beads #33 and #51, indicating a manufacturing imperfection, presenting a ‘pitted’ appearance (see Figure 9). Importantly, several knots or beads without clear perforations (n = 4;

Beads #27, #33, #39 and #51) and one drip/splatter (n = 1, Bead #46) were found at the site (see Figure 9).

Taphonomy

There is also evidence for fire/heat at the site, with heat damage evident in Beads #13, #37 and #38. This is likely a post-depositional effect, with there being abundant charcoal present in the upper layers of the site (Carah 2017).

Discussion

The analysis of the glass bead assemblage at Madjedbebe illuminates aspects of Indigenous responses to colonial regimes operating in western Arnhem Land during the late nineteenth and early twentieth centuries. Although no evidence exists as yet to support the presence of glass beads at locations further south than Madjedbebe (a situation that is probably the result of a lack of investigation rather than being reflective of their actual distribution), material culture collections and archival records highlight the presence and value of glass beads at Gunbalanya (to the north) during both the pre-mission and mission periods (see Figure 2). Importantly, in 1926, Reverend Alfred Dyer reported on the value of glass beads to local Indigenous groups at Oenpelli—which contrasted markedly to European attitudes to the glass beads—remarking that if he were to acquire glass beads to provide to the mission occupants, he would be able to ‘cut down expenses’ (NTRS 1099/P1 vol. 1, as cited in May *et al.* 2020). This potentially ties into a trope described by Thomas (1991, 85) whereby ‘the [Indigenous] people are [perceived as] innocent but hopelessly greedy’.

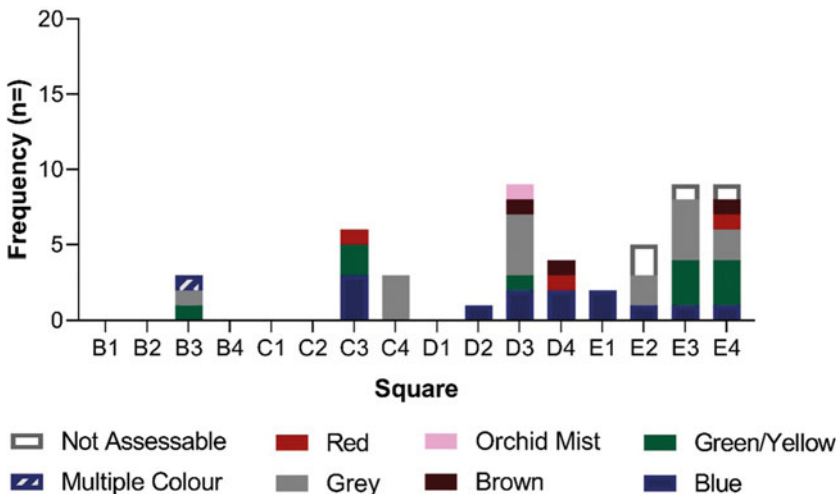


Figure 5. Glass bead colour by square.

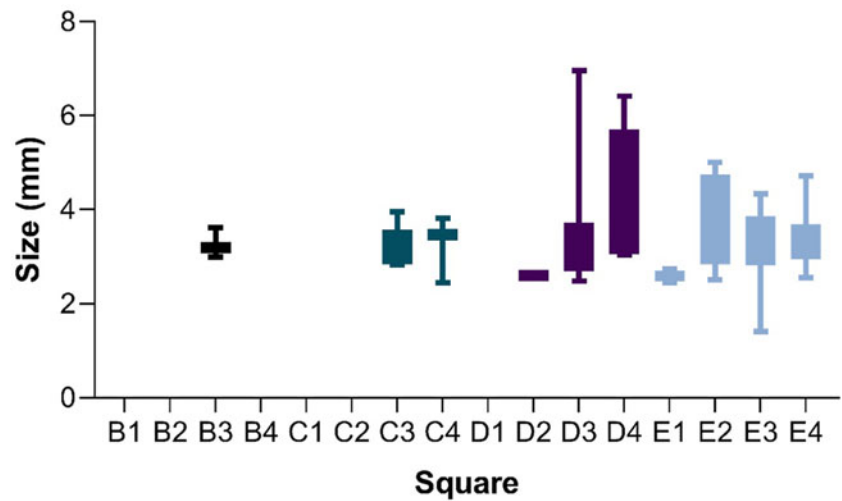


Figure 6. Glass bead diameter (mm) by square.

Significantly, *Bininj* were able to visit the mission at Gunbalanya where they would occupy fringe camps but could routinely leave to practise ceremony, fishing, hunting and gathering (Wesley & Litster 2015b). Such activities very likely account for the distribution of glass beads beyond Gunbalanya into other nearby regions, such as Madjedbebe. When they did so, glass beads were not entering a naïve Arnhem Land material culture landscape. The cross-cultural integration of material culture was already well embedded in the region and is attested to by the extensive contact rock art at Madjedbebe, one of multiple sites in Mirarr *kunred* with contact-period rock art (May *et al.* 2017a,b; GAC unpub. data).

How *Bininj* incorporated and interacted with introduced material culture can be seen to some degree in the firearm paintings associated with

buffalo shooting depicted at Madjedbebe. Such motifs show increasing familiarity with the weapons and their integration into traditional artistic systems, alongside attitudes of ownership and identity associated with these new materials (May *et al.* 2017a). Similarly, the glass beads at Madjedbebe represent the incorporation of such items into existing Indigenous systems, sitting alongside (and perhaps sometimes depositing) a wide swathe of Indigenous materials used similarly for ornamentation (e.g. Akerman 2018; Balme & O'Connor 2019; Wright *et al.* 2018). Beads were locally made from a relatively diverse material base including shell, bone (including shark and fish vertebrae), integument, seeds, grass and reeds, with the latter two materials—based on representations in museum collections—being most commonly used (McAdams 2008). Although limited evidence for organic beads has been found in the

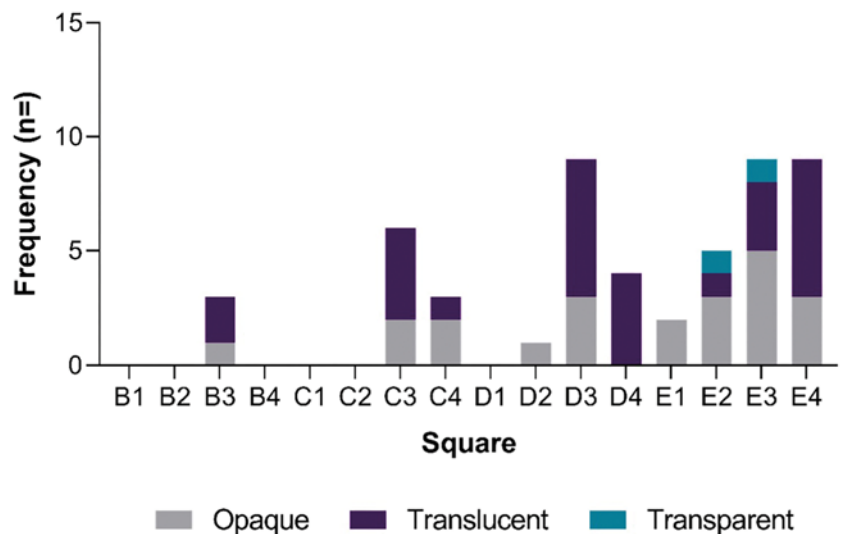


Figure 7. Glass bead diaphaneity by square.

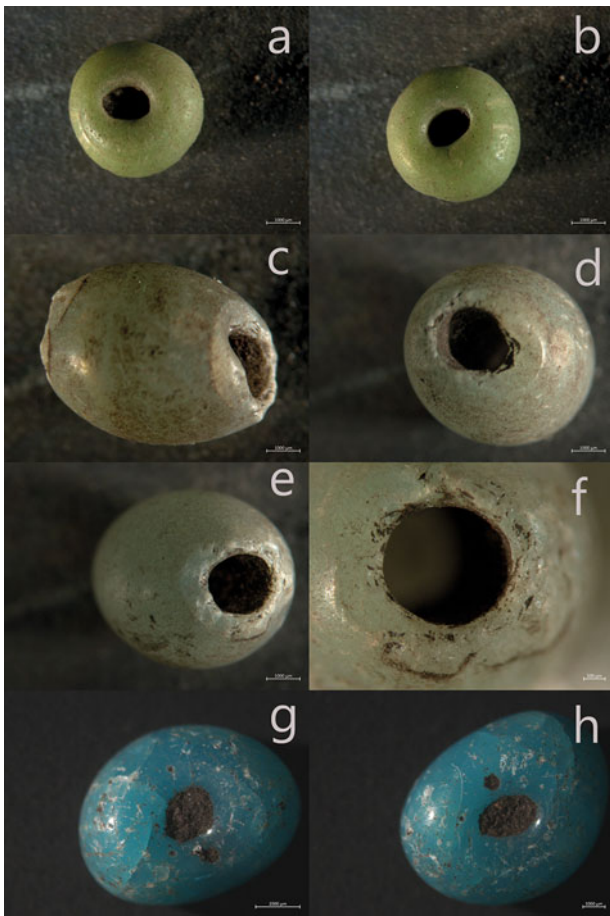


Figure 8. (a, b) Bead #30: flattening of the bead surface from extended glass bead-on-bead wear; (c–f) Bead #23: edge rounding of perforation and damage to perforation; (g, h) Bead #24: extensive hertzian fractures indicating damage to bead.

archaeological record of Arnhem Land, Wright *et al.* (2014) reported on a surface find from a site within 1 km of Madjedbebe of six shark vertebrae beads thickly painted with a deep red ochre.

Glass beads may have been used to supplant, supplement or skeuomorphize such Indigenous organic ornaments. Taussig (1993) addressed the ‘colonial encounter’ in his seminal exploration of ‘mimesis’ (imitation) and ‘alterity’ (difference). The role of glass flaked artefacts in colonial Australia has been discussed as a means to ‘bend reality and subvert the system in which it is also apparently complicit’ (Harrison 2003, 316; see also Perston *et al.* 2021). Glass beads might have been similarly incorporated into traditional objects in Indigenous places away from ‘interspaces’ such as missions, highlighting the significance of Indigenous agency in the use of these introduced materials.

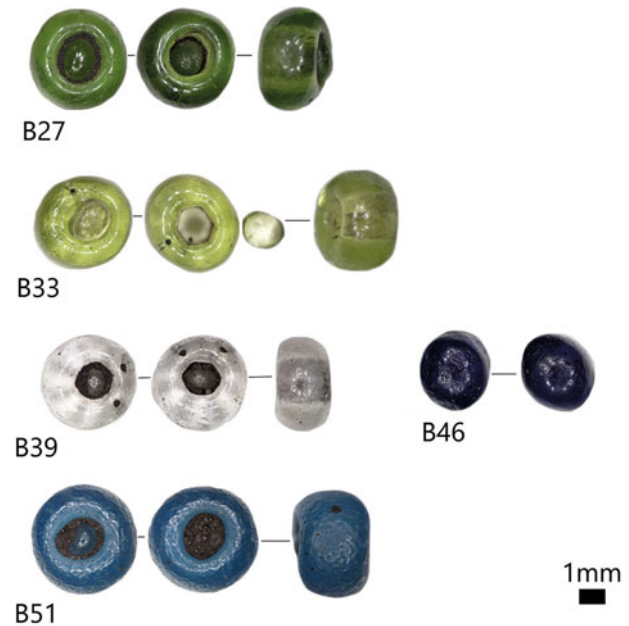


Figure 9. Beads #27, #33, #39 and #51 showing unclear perforations, i.e. ‘knots’; #46 ‘drip/splatter’.

The presence of knots and splatter¹ at Madjedbebe implies that at least some beads very likely arrived at the site in packages of beads, as such objects do not have a clear perforation and could thus not be strung (see Figure 9). Other splatters have been found at Maliwawa in the Wellington Range and at the nearby Minjnymirndawabu (Red Lily Lagoon), but have not been reported outside of Arnhem Land archaeological sites. Unstrung beads were most probably used for stringing or incorporation into objects such as the biting bags, necklaces or chokers present in museum collections from the region (Allen *et al.* 2018; Hamby 2011).

The attribute analysis of the glass beads allows us to explore aspects of consumer choice, which importantly, is constrained by various factors, including

the cultural identities of individual agents, the groups, and communities with which they identify, the classes in which they find themselves and the social, political and economic contexts in which they can live all impact consumer choices. (Silliman & Witt 2010, 49)

The diversity and nature of beads at Madjedbebe would have been limited by what was brought into the region by *Balanda*. The majority are seed beads, which are difficult to date or attribute to a specific manufacture centre; however, based on the comparative literature from similar finds in North American

sites (e.g. Karklins & Adams 2013; Kidd & Kidd 2012), it is probable that they were manufactured in European glass-bead production centres, during the late nineteenth and early twentieth centuries. Seed beads were mass-produced and therefore less expensive than wound and blown beads, of which there are only three in the assemblage (Wood 2009, 220).

Owing to the small sample size any statements made about consumer preference are indicative and not conclusive: however, some insights into availability are apparent. Firstly, several flawed beads were recovered, indicating that the beads supplied were not of the highest quality. This is unsurprising given that local missionaries at least saw beads as a cheap alternative to other goods that could be used in interactions with *Bininj*, in keeping with routine missionary frugality. The colour categories of blue and green were the most prominent, excepting the mostly taphonomically affected grey category. Globally, green and blue colours were highly desirable in colonial contexts and consequently beads of these tones were produced in greater quantities by European manufacturers (e.g. Crull 1997, 168; Karklins 1985). As such, their abundance at Madjedbebe could reflect either merely availability or specific *Bininj* demand. These two colours are not present in naturally occurring pigments of the region, and the value placed on blue tones is replicated in the use of laundry-blue pigment in the 'visual culture' of the region (Miller *et al.* 2022). The distinctive pink 'orchid mist' colour (known as 'Cheyenne Pink' in North American contexts) has appeared in all Arnhem Land sites where multiple seed beads are present and it features prominently in material culture collections at Museums Victoria (Allen *et al.* 2018, 75). The latter also feature a large number of cerulean blue beads, mirroring the large proportion of blue beads found in the assemblage from Madjedbebe.

Further effects of consumer choice can be seen in the size and diaphaneity recordings of the assemblage. As noted above, the majority of the beads from Madjedbebe were in the small and medium size categories (see Figure 6). This reflects the dominance of seed beads in the assemblage, a preference for which was revealed in archival sources in which Alfred Dyer requested 'small' beads that could then be purchased by the mission's permanent workers (ML MSS 6040/12, cited in May *et al.* 2020). This also agrees with the ubiquity of seed beads seen in material culture collections containing glass beads (Allen *et al.* 2018; Hamby 2011). Similar preferences for smaller beads have been recorded in North American contexts (Stine *et al.* 1996). A preference

for these small beads might also relate to the *Bininj* preference for small grass and reed beads, along with vertebrae—all of which required considerable skill to craft into beaded objects. A greater number of opaque and translucent beads are evident in the Madjedbebe assemblage, with far fewer transparent (i.e. colourless) beads recorded than elsewhere. This might indicate a desire for coloured beads, more than a diaphaneity preference. This corresponds with Allen *et al.*'s (2018, 68) observations concerning material culture collections: although opaque beads featured in higher frequencies across museum material culture collections, there was only one object entirely made from opaque beads, with the authors remarking that 'colour was of greater importance to the design than opacity' (Allen *et al.* 2018, 68).

Conclusion

Our analysis of the Madjedbebe glass bead assemblage provides significant insight into the local consumption of introduced materials in the Alligator Rivers and Arnhem Land region. By considering the archaeology in concert with the archival and material culture records, regimes of value become clear. Archival sources reveal that beads were considered 'mere trinkets' by Europeans; nevertheless, their presence at an important contact node in the region—Madjedbebe—substantiates their having had a much greater cultural significance to *Bininj*. Our study explored aspects of consumer choice—evidenced mostly through the attribute analysis—which indicatively supports the idea that colour was more important than diaphaneity in European seed beads of nineteenth- and twentieth-century types valued by *Bininj*, reflecting preferences seen in Arnhem Land material culture museum collections and as described in the published literature. We have argued that beads were likely obtained to the north from Gunbalanya, or further afield towards Palmerston (Darwin) to the west, with their distribution southwards being facilitated by the frequent travel undertaken by *Bininj* in the region. Importantly, our study serves to highlight one of the many ways in which introduced materials were incorporated into *Bininj* lifeways—how foreign materials become localized—by revealing that beads arrived at Madjedbebe most likely as both strung and unstrung ornaments, the latter most probably for their intended stringing at the site. Similar evidence has been found at only two other sites in Australia—elsewhere in the immediately adjacent region of Arnhem Land—pointing to a potential regional practice associated with personal ornamentation.

Note

1. It is worth noting that Venetian beadmakers did use a machine to sort unstrung from strung beads (Karlis Karklins, pers. comm. February 2022), which implies those found at Madjedbebe may have derived from another production centre. This also agrees with Allen *et al.*'s (2018) study, which, based on chemical characterization, excludes Venetian production centres as the source for beads found in Museums Victoria collections from Arnhem Land.

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Mirani Litster is a Lecturer in Archaeology in the College of Arts, Society and Education at James Cook University, based at the Nguma-bada campus in Cairns. Her research focuses on coastal and island archaeology, the archaeology of cross-cultural encounters, early globalization, conflict and warfare, and archaeomalacology. Her regional focus includes Australia and the Indian Ocean and she has been involved in research projects from Australia, Southeast Asia, South Asia and the Pacific.

Lynley A. Wallis is a Professor based in the Griffith Centre for Social and Cultural Research at Griffith University in Brisbane. She has made significant contributions to Australian archaeology, including the development of new models for the colonization of both offshore islands and desert regions. Lynley also played a key role in the re-excavation and analysis of Australia's oldest evidence for human occupation—the site of Madjedbebe. Lynley has been at the forefront of exploring aspects of frontier conflict in Queensland and is currently leading a major project with numerous Aboriginal communities in south-east Cape York Peninsula.

The **Gundjeihmi Aboriginal Corporation** (GAC) was established in 1995 to represent the rights and interests of the Mirarr and support the management of their traditional practice, sustainable development and culture. All members of GAC are Mirarr Traditional Owners.