

## **The Earliest Bronze Age Culture of the Southeastern Gobi Desert, Mongolia**

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The Eurasian Bronze Age is one of the great archaeological horizons of the world. Across the vast grassland and mountain regions of the steppe dramatically mobile populations left exquisite metallurgy and extensive mortuary monuments (Hanks 2010; Chernyk 1992; Shelach 2009, Anthony 1998; Koryakova and Epimakov 2007; see also Simpson and Pankova 2017). This paper will use integrated regional archaeological data to argue that local patterns of similarity and difference in the archaeological record of Mongolia can recast the grand narrative as one of local agency and the Eurasian Bronze Age as a mosaiced and diverse process responding to both regional conditions and continental trends. We will focus on archaeological material related to the Ulaanzuukh mortuary tradition (Tumen et al. 2013), the earliest dated monumental record in southeastern Mongolia. This data allows us to investigate the archaeological record of the context and interrelationships of the earliest appearance of characteristically Bronze Age material culture in the southeastern Gobi desert region.

The southeastern Gobi region located in Sukhbaatar and Dornogovi aimags of Mongolia (figure 1), is a semi-arid steppe region famous today for its horses and metal resources. In prehistory it was situated between the established farming communities and early states of the Northern portion of the Yellow River watershed to the south and to the north the richly watered and forested Khangai highlands and Kherlen valley, a region that gave rise to both historical steppe empires and a rich Iron Age archaeology.

The Eurasian Bronze Age is known from extensive work in regions such as the Minusinsk basin of Siberia through which the macro-regional sequence was defined (Kiselev 1937; Legrand 2006). The wide distribution of similar material culture, languages and Central Asian domesticates across Eurasia has always made the spread of the Bronze Age a compelling topic and led to the pursuit of clear and concise packages of identity, material culture and genetics (Anthony 2007; Frachetti, 2011; Boyle *et al.* 2002). Mongolia is not alone in being a place to critically examine these models of homogeneous processes of change (see Popova 2009, Koryakova and Epimakov 2007), and its geographic separation from the majority of the Eurasian steppe and rapidly developing archaeological research trajectory allow for robust

local studies. Recent work by the Dornod Mongol Survey (DMS) and others (Janz *et al.* 2017; Amartuvshin *et al.* 2015, Tumen *et al.* 2013) makes it possible to describe the probable earliest Bronze Age cultures of the Gobi region as both practitioners of familiar middle Holocene adaptive strategies used by communities to answer local needs but also as communities whose choices resonated with macro-regional trends. In this paper we will contribute to the discussion of to what extent is the Eurasian Bronze Age defined by social and political conditions, technological manifestations, or typological patterns (Kristiansen & Larsson 2005; Kohl 2007; Shelach 2009; Chernykh 1992).

The material evidence of the Ulaanzuukh culture is for all practical purposes Eneolithic (Tumen *et al.* 2013). It displays attributes of both the preceding Epipaleolithic hunter-gatherers and the succeeding Bronze Age cultures but with no evidence for the production or use of bronze objects (Tumen *et al.* 2013; Amartuvshin *et al.* 2015). However, as with other similar archaeological cultures in Eurasia (Shishlina 1999; Anthony 1998) scholars favour similarities to later developments over ties to what came before and present these transitional cultures as the first of the Bronze Age not the last of the Epipaleolithic. With that in mind, we see this period as one of consolidation that laid the ground work for the growth of regional polities and the traditions that developed fully by the late Iron Age.

The period that succeeds the earliest Bronze Age, known as the late Bronze Age and Early Iron Age of Mongolia (c.3200-2300 BP) of the Late or Terminal Bronze Age in the Eurasian Steppe (Honeychurch 2015, Hanks 2010), was a time characterised by several practices considered emblematic of the eastern Eurasian Bronze Age. These include long range connections and regional hierarchies that are visible through syncretic iconography (Jacobson 1993; Volkov 1981; Fitzhugh 2009), the strengthening of elite management of long range exchange systems (Honeychurch 2015), macro-regional mortuary traditions with regular burial forms and settings (Erdenebaatar 1992; Hao 1988; Törbat *et al.* 2009), wide-spread information laden monumental types suggesting regular mobility and shared architectonics (Wright 2007; Houle 2009; Liu 2014; Tsybiktarov 1995); and the establishment of historically familiar mobile pastoralist economies (Makarewicz 2015; 2011; Taylor 2017).

We will argue that the earliest Bronze Age in the Gobi was a period defined by its creation of monumental social spaces, not its metallurgy or domestic animals and that these places were arenas in which changing political relationships were played out. We define politics in the broadest possible way as social relations of a group organised and materialised towards particular social goals (Johansen 2011; DeMarrias *et al.* 1996). Societies in the southeast Gobi 4000-3000 years ago were negotiating transformations in their environment, regional networks and social hierarchy. The most visible archaeological manifestations of the new societies that emerged are new monumental spaces. Ultimately, these are the earliest Bronze Age societies in the region not because of their metal working, but because of their place-making and emerging hierarchies.

### **The Dornod Mongol Survey**

The DMS is an ongoing regional survey, excavation, ethnoarchaeological and paleoenvironmental research project in southeastern Mongolia (figure 1). Our study region encompasses a total of 7000 km<sup>2</sup> and includes range of steppe environments from playa basins to arid sandy uplands, grasslands and rocky ranges of hills that form islands of richer conditions in the less hospitable surrounding environment. Within this area we have focused on a subset of distinctive areas totalling 520 km<sup>2</sup> and have intensively surveyed 97 km<sup>2</sup> in a range of environments and recorded all monumental and architectural sites and detected artefact scatters as small as 2 m<sup>2</sup>. This provides a sample of all but the rarest types of sites and also, we are able to combine monuments with habitation patterns.

### **Ulaanzuukh type Monuments**

The study of monuments is the study of place-making and the creation of social spaces (Bradley 1993; Kuper 1972; Núñez *et al.* 2017; Osbourne 2014). This includes mortuary monuments and graves, but also a range of other constructions related to them. In the Gobi region, all of these have common elements and building techniques that could have made up a broadly understood architectural style. The builders of these made up a community of practice (Wendrich 2012; Sassaman &

Rudolphi 2001) learning and reproducing monumental forms and meanings that went with them. In this paper, a range of mortuary and non-mortuary monuments are presented together as a record of both local societal action and regional common ideologies.

The Ulaanzuukh mortuary tradition has been defined by burial excavations carried out by Tumen and Navaan (Tumen 2013, Navaan 1975, Honeychurch 2015:122-126). The DMS has documented more than 500 burials of this type as well as hundreds more associated features. There are several related monumental forms we highlight in our reconstruction of the earliest Bronze Age landscapes of the Southeast Gobi (figure 2,4,5). First, the burials themselves are rectangular stone structures with a shallow burial pit inside a low enclosure filled with stones. The enclosures are defined by short well-constructed walls of flat stones several courses and c. 40 cm high. Against these walls are leaned many upright flat stones that cover the wall (figure 3). These burials are found in a range of sizes from 1.4 m to 13.5 m along their long axes and average  $4.8\pm 2$  with a consistent orientation of ENE ( $77^\circ\pm 26^\circ$ ). Human interments are extended and prone, a burial tradition that is found across the Gobi region in several different, but structurally related, monument forms (Tumen *et al.* 2013; Kovalev & Erdenebaatar 2009; Ma 2017). In some cases, these burials have unadorned standing stones of c. 1 m in height several meters away from the southern or eastern ends. In rare cases these stones may show signs of having been roughly shaped at the top. Multiple burials can be found arranged in chains, groups of rectangular burials built with long sides almost abutting. Typically, one end of the chain is the largest burial in the array and there are less than 10 burials in any chain (see Tumen *et al.* 2013, fig 2). Excavated examples have shown that individuals buried in these associated graves can be both groups of similar people (mostly males of a similar age range) or diverse populations (adults and children). In both cases the chains are built within the space of one to two centuries or less (Table 1) suggesting a living relationship between the deceased and an ongoing memorial tradition in the community.

In addition to these recognised mortuary monuments there are other associated structures that are found (figure 4). It is their association with burials that provide their chronology. These are rectangular enclosures that are outlines defined

by 1 course alignments. These are larger than burials with a long axis of  $6.2 \pm 1.6$  m and an average enclosed area of  $34.3 \text{ m}^2$ . These typically have an opening in the alignment on a short side, oriented south. They may have additional small pavements along the long west side and a cubical stone set into the ground near the centre. The same type of stones is found forming a pair of rows of 2-3 stones extending south from the opening in the main enclosure. These structures can occur singly, but more frequently are found in groups placed closely side-by-side in lines. These lines can be long and the upstanding stones can appear to be alignments many 10s of meters long perpendicular to the openings in the enclosures.

The second enigmatic type of structures are long rays. These are ground level alignments of stones that are found both as pairs of lines that converge on another monument or single long lines that may bend slightly at their ends. The DMS has recorded 9 examples of these features, all with orientations of ENE-WSW irrespective of terrain and an average visible length of  $121 \pm 33$  m. Most have a burial at their eastern ends, but there are 3 without an apparent feature at either end. Ray alignments orientations are parallel to grave axes, tying these two structures together even when they are not built together.

The final monument feature type are circles (figure 5) constructed of standing flat stone or slabs similar to those set around burial mounds. Two examples have been completely excavated. DMS has recorded 45 examples located in a wide variety of settings. Circles have a size range of  $10.3 \pm 3$  m diameter and contain no additional features or artefacts. In some cases, there are hints in the surviving structures or open spaces in the ring that could have directed access into or out of it. Circles come in three formats, first those near or connected to a larger burial ( $n=35$ ). Burials directly associated with circles are significantly larger than the general population ( $7.3 \pm 1.9$  m long,  $t=-5.74$   $p < 0.0001$ ). Large burials and circles can occur singly and are not found only in sites with many burials, but the median size is 3-4 burials in a chain with an associated circle.

Second are circles without an associated burial ( $n=7$ ) but often with a natural rock outcropping in the northern quadrant of the circle. The open southern and blocked northern orientation of the rectangular enclosures and circles suggest another common axis and one in which the accessible spaces could be inhabited by

active living people.

Finally, there is a larger and more elaborate variety of circle with parallel arcs and defined entranceways (n=3). These are monuments with defined approaches that lead to sharp turns at the entrance of the circle and burials or outcroppings built into the ring of the circle suggest an orientation towards those within the space. In two of the three recorded examples the approach arcs are facing towards or directly connected to former wetland areas.

The demarcations of space created on the ground by stone alignments and structures around and within monumental complexes could have served to structure community politics by positioning people within places. As oriented spaces with structured passages into and out of them and a clear demarcation of participants and observers, circles could have been important for structuring activity around graves. These circles show us an increased investment in the original building event of the burial monuments. However, the payoff of that investment is uncertain. Higher initial investment did not necessarily produce, or may not have needed to produce, a long sequence of burials following initial construction; as one might assume if the interred individual was a key member of an established lineage. Circles also have a connection to the characteristics of the landscape, a pattern repeated in the burial monuments themselves. Rough stone slabs, seen also in circle construction, are leaned around well-built grave walls. This could serve to 're-wild' those graves and connect them to the natural rock filled landscape in which they were built (Bender *et al.* 2007; Bradley 2000).

The low walls of flat stones are a key element of burials in this region and also of burials across a wide swath of the Gobi (Tumen *et al.* 2013; Kovalev & Erdenebaatar 2009; Ma 2017). These are found only in burial construction. The same repetition is true of the offset standing stones seen at some burials. These component elements tie the monuments recorded by the DMS to a supra-regional set of meanings and traditions. The precision of these similarities suggests common regional identities and ways of memorialising and politicising (Bauer 2011) local landscapes. Each monumental element's meanings may have been rendered clearer by the fact that each can be found alone, without their typically associated elements. One row of cubical stones, a circle or a standing stone alone could have been

evocative of the whole associated complex of elements and social relationships.

## **The Habitation Sites**

In contrast to the extensive and detailed monumental record, the evidence of Ulaanzuukh related settlement consists of scatters of chipped stone and ceramics. These scatters have yielded a consistent pattern of thin walled red ceramics with a granular fabric (figure 6) and chipped stone debitage and tools from a microblade and small flake based industry. Ceramics and formal tools are the same types that are found in Ulaanzuukh burials (Tumen *et al.* 2013). The assemblage includes wide mouthed tripod vessels with small conical hollow feet that have been found in burial contexts (Tumen *et al.* 2013 fig 4, Amartuvshin *et al.* 2015) and surface scatters. Despite the complex stone built monuments associated with the material culture of these scatters, no architecture has been found at any of these sites (for a contrast see Jia *et al.*'s (2017) presentation of large architectural structures in the Bortala Valley of the Xinjiang). This stone tool industry is part of the broader East Asian microlithic tradition and definitive local and chronological divisions are not yet defined, for this reason ceramics are the major identifier of Ulaanzuukh period surface scatters. Scatters that include ceramics range from 2 m<sup>2</sup> to 7558 m<sup>2</sup> and an average size of these scatters is c.1000 m<sup>2</sup> (n=71). The relative size and state of preservation of artifacts between scatters is similar. The scatters have a median density of 1 object per 11.8 m<sup>2</sup>, with c. 25% of those objects being small pottery sherds. We interpret this range of sites as the remains of activity areas or temporary habitation sites that are part of a shifting settlement system perhaps one of groups of ceramic using hunter-gatherers typical across much of Eurasia and East Asia (Jordan & Zvelebil 2006; Lee 2011).

Distinct landscape contexts are key to the settlement patterns of this period. Artefacts are found at former wetland edges, the tops of shallow draws, bluff edges, ridge tops with shelter covering the north and east and on hilltops or terraces overlooking wetlands. This pattern is distinguishable from the locations of later habitations in which interfluvial areas are inhabited and high visibility hilltops and wetland edges are not heavily used. The largest artefact scatters are found in the water rich hills of Delgerkhan Uul. In this area stream channels and wetlands

provide the central axes along which burial monuments are built (figure 7). There is a distinct group of large scatters, over c.2500 m<sup>2</sup> (n=5) that are found in either very sheltered areas or on higher ground near wetland areas. This distribution and choice of locations suggest a land-use pattern of hunter-gatherers (Binford 1978; Gamble & Boismier 1991; Mithen 2000) not a community dependent on animals for mobility as we see historically in this region and others (Simukov 2007; Mearns 1993).

## **Chronology**

The DMS chronology is established using architectural and artefactual typology supported by radiocarbon dating and stratigraphic relationships between artefacts and monuments. From the radiocarbon dates associated with the Ulaanzuukh and related prone burials or similar grave forms (table 1) we see that the monumental tradition is focused into a period of three centuries between c.3400 and 3100 cal. BP. In several cases directly dated carbon within ceramics places their dates earlier than the monumental record. Combined with enduring chipped stone industry of the region this suggests a material culture tradition to which monuments were added starting c.3500 BP. A similar overlap is also seen at the end of the period, where the latest dated Ulaanzuukh burials overlap with later monumental forms. Based on the contexts dated so far, burial chains form the central cluster of the chronology while burials with connected circles date across the entire span of the monumental phenomenon.

## **Environmental Context, Resilience and Response**

Preliminary geoarchaeological field observations suggest that the period from 6000-4000 BP in the Southeast Gobi was one with far more widespread wetlands and associated vegetation than today. After c. 4000 BP a change in the rainfall regime, increased erosion and a transformation of the vegetation took place. This is visible in a mobilisation of sediment that exposed rocky uplands and filled drainage valleys. These processes created a landscape akin to the one we see today in the region. There is evidence for habitation throughout this time span (Janz et al. 2017) and

during the centuries of rapid landscape change after c.4000 BP. Though there is continuity in ceramics and stone tool industry across this environmental transition, in the valleys of Delgerkhan uul there is no evidence for monument building earlier than the Ulaanzuukh tradition. The first appearance of which is soon after c.3500 BP and stands directly atop the exposed rocky uplands and infilled drainages.

## **Discussion**

Our initial contrast between the earliest Bronze Age material and the succeeding late Bronze Age and early Iron Age focused on the development of long range connections and regional hierarchies. Data collected by the DMS show similarities with later material that suggest the roots of these later conditions. The DMS study area in the 2nd Millennium BC is part of a burial tradition seen throughout the Gobi region. These commonalities suggest long standing connections between people maintained by regular exchanges (e.g. Makarewicz et al. 2018) that allowed for uniform developments and some maintenance of the burial styles (Honeychurch and Amartusvhin 2011, Wright 2017). However, local variations argue against wholesale population mobility, but demonstrate a dynamic awareness of the larger culture and the mobility of some members of the society (see also Frachetti 2008, Taylor et al 2017, Honeychurch 2015). The appearance of tripod vessels and ground stone axes evokes the Neolithic world of the Yellow River drainage to the south as well as the unique Neolithic wetland periphery site of Tamsagbulag (Dorj 1969; Séfériadès 2004) in the grasslands 450 km to the east.

This is an area of intense local engagement with landscape and continuity of habitation patterns from the Epipaleolithic. The evocation of the local landscapes and its resources in monumental form and a density of monument construction that suggests a high population density in the area highlight place based local resilience. In a model of emerging hierarchy, we can see the memorialisation of individuals and lineages through monuments, but also a range of what might be called 'misfired' lineage monuments seen in the building of single large burials and associated circles that never gain any additional structures around them. These may have been attempts to celebrate and consolidate lineages that failed.

The work of the DMS provides a clear refraction of any Bronze Age 'package' of monuments, food production, metallurgy and riding into separate elements and an ordering of those elements into different times and contexts. Major changes in subsistence practices such as the adoption of pastoralism, which might be seen in material culture and settlement location are predated by an explosion of monumental construction, which itself predates the deposition of bronze objects and horse riding (Table 1 see also Taylor 2017). Continuity in habitation from the mid-holocene and common material culture included in burials suggests that monumental memorial practices were adopted by an established community and local traditions emerged in place. Existing regional networks, evidenced by common Epipaleolithic material culture and ceramic styles (Amartuvshin *et al.* 2015; Janz 2016) provided a conduit for new exchanges of styles and social patterns generally evidenced by architecture and only later through metals and domesticates. In later southeast Gobi contexts and surrounding regions at this time portable artefacts were demonstrations of elite status, mobility and connections to other communities (Hsu *et al.* 2016; Linduff 1998). In this Gobi region, where large metal artefacts were lacking, the importance of monumental precision, the precise reproduction of key architectural elements, is increased. Though this precision remains a key element of monument building in the region later, it is one of the earliest aspects of Bronze Age monumentality to be manifested.

Kristiansen and Larsson (2005:8-14) highlight institutionalisation as the foundation of complex Bronze Age societies in Europe. Those institutions were reified through recurring contextual relationships and produced and reproduced by elite power and resistance to it. This detailed study of the early monumental record of the southeast Gobi region evokes structured and repeated institutions with its similar forms and in the scale of spaces created. The building of the first enduring lineage memorialisations combined with permeable monumental spaces that advertised new powers are a record of politics and the shift from a transegalitarian society to a hierarchical one. These local processes mirror the larger processes of the greater northeast Asian region where a distinctive elite Bronze Age culture colonised almost every existing society during the 2nd millennium BC (Liu & Chen 2012; Shelach 2009; Honeychurch 2015; Kim 2004). In each region, this social order manifested a local flavour despite the fact that communities across the steppe took

part in the larger social and political transformations that characterized the Eurasian Bronze Age world.

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## FIGURES CAPTIONS

Figure 1. Map of Mongolia showing DMS study area and the focal study areas within it.

Figure 2. Ulaanzuukh type burials and burial chains.

Figure 3. Slab built wall of a large Ulaanzuukh burial with a leaning slab in-situ covering the wall.

Figure 4. Ground level features associated with Ulaanzuukh type burials. Images A and B show rectangular enclosures and C a parallel set of long alignments. A cubical centre stone is visible in B.

Figure 5. Circular features associated with Ulaanzuukh monuments. Image A shows an example with secondary arcs, a northern bedrock outcrop and standing stones marking the sharply turned path into the interior.

Figure 6. Mid to Late Holocene ceramic rims. Item F is an example of a 'net impressed' ceramic type (see table 1). B and D show deep quatrefoil indents. Item C is a red slipped fine ware, while all others are coarse and without surviving surface treatment.

Figure 7. Dense areas of monument building in the DKU area are gathered along the main drainage and the ridge of the Delgerkhan Uul to the NE of it.



## TABLES

Table 1. Radiocarbon Dates

Date Context		<sup>14</sup> C years BP	Calibrated 95.4% BP Date <sup>1</sup>	Distance from DKU (km)	Material Dated	Laboratory Code	Source
<b>Early and Mid-Holocene Ceramic Dates</b>							
South Gobi	Various early ceramic contexts (including 'net impressed' ceramics)	various	8010-5090	400-550	Ceramic	Various	Janz et al 2015
Zaraa Uul site early context	Excavated site layer	6990±30 to 5910±30	7850 - 6650	60	Bone Ceramic	UGAMS 22331-22334	Odsuren et al 2015, Janz et al. 2017
<b>Ulaanzuukh Type artefact scatters</b>							
DMS 650	Directly dated ceramic from single period scatter	3550±25	3962-3775	0	Ceramic	UGAMS 28409	
South Gobi	'String paddled' surface similar to Ulaanzuukh	various	4973-1450	400-550	Ceramic	various	Janz et al 2015
Zaraa Uul later context	Faunal material in strata with other cultural material	3230±25 2580±25	3495-3382 3759-2706	60	Ceramic, Bone	UGAMS-22328, 22329	Odsuren et al. 2015, Janz et al. 2017
<b>Ulaanzuukh and related monument groups</b>							
Chandman Khar Uul (CKU) burials	Burial group in a similar style to Ulaanzuukh	various	Span from 3489-3271 to 3353-3249	120	Bone	OS68952-68955, OS68271, AA100847, AA100860, AA100861, AA100863, AA100870, AA100876	Amartuvshin et al. 2015
CKU burial 33	One burial in a chain of 5 (included in above)	3092±52	3450-3190	120	Bone	AA100870	Amartuvshin et al. 2015
Ulaanzuukh site burial chain 1	Ulaanzuukh burial chain	3101±30 to 3015±28	3497-3228 to 3336-3042	5	Bone	IAAA103368-103371	Tumen 2013
Ulaanzuukh site burial chain 2	Ulaanzuukh burial chain	3127±29 to 3006±30	3825-3251 to 3395-2711	5	Bone	IAAA33072-103374	Tumen 2013
DMS 657a	Ulaanzuukh burial with associated circle	2930±30	3170-2970	0	Bone	UGAMS 28309	
DMS 657c	Horse remains in same Ulaanzuukh group	2880±25	3070-2925	0	Tooth	UGAMS 28310	
DMS 019d	Equid tooth in <i>khirigsuur</i> satellite mound	2760±25	2925-2781	0	Tooth	UGAMS 28307	
1. All calibration and date spans carried out using OxCal online version 4.3 <a href="https://c14.arch.ox.ac.uk/oxcal/OxCal.html">https://c14.arch.ox.ac.uk/oxcal/OxCal.html</a> Using the IntCal13 calibration curve							