Here There Be Herders: Comparative Archaeological Survey of Bronze Age Monumental Landscapes

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Here There Be Herders: Comparative Archaeological Survey of Bronze Age Monumental Landscapes

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Abstract:

Within our global understanding of the human story, nomadic pastoralists are often featured as marginal, or at best ancillary, to a narrative on sedentary civilizations of increasing complexity. Research on these groups has been limited by this conception, and by a minimal signature in the archeological record. However, revolutionary technological and methodological advances in the field have allowed for increased complexity in current research on the emergence of pastoralists in antiquity. As a region with an extensive nomadic pastoral history, and as a nation reviving its interest in the past, Mongolia is ideal for such studies. However, for large swaths of the country, we can only fathom at the intricacies of the archeological record, a record that is endangered by the proliferation of legal and illicit mining operations, infrastructural development, and looting.

This project addresses gaps in our understanding of the Mongolian past through archeological surface survey at Shatar Chuluu, Biirriin Khundii, and Khar Sairin Am: three Bronze Age sites lying at the southern limits of the Khangai Mountains. Using aerial photography to expedite site mapping, the project adds to a regional and local comprehension of monumentality as it emerges in the Mongolian Bronze Age. This information reveals a monumental landscape that conceptually emphasizes deer stones as territorial, burial monuments as local and locative, and khirigsuur stone mound complexes as communal displays of social stability. The form and function of these lasting remains form distinctive patterns of monumentality within the region.

Archaeology, Anthropology, Bronze Age
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Terms and Phrases:

**Aimag:** A Mongolian governmental jurisdiction akin to a providence.

**Deer Stones:** Deer stones discussed in the context of this paper will usually refer to carved stone monuments. They are also, confusingly, the name given to satellite mounds at the eastern periphery of khirigsuurs.

**Archeological Survey:** An approximation of the archeological record in a pre-defined area (Schiffer, 1978). A variety of set techniques, with varying time, labor, and probability of discovery, are utilized to record and understand the spatial arrangement of archeological features visible at the surface (Schiffer, 1978).

**Arms:** In the context of khirigsuurs, “arms” are low curved walls of stone that extend, often to the east or southeast, from the central mound, creating a semi-separate space.

**In Situ:** A Latin word that indicates something is in its location of origin

**Kurgan Mounds:** Stone mounds found on the Central Asian Steppe that were constructed synchronically to khirigsuurs (Wright, 2012). These burial mounds show a direct relationship between the size of the mound and decoration within the burial cist of the interred. This is thought to be a visible indication of hierarchy in society that is directly associated with the buried individual.

**Mobile, equestrian pastoralism:** This form of pastoralism is distinctive in its exploitation of horses. Archeologists do not fully understand the sequence of domesticated horse adoption in Mongolia. The earliest evidence of domesticated horses is found far west of Mongolia, and archeologists suggest the practice diffused into the area via the Altai Mountains in the west, or from Siberia in the north (Hanks 2010) (Houle 2016).

Radiocarbon dates on domesticated horses support the later of these narratives, suggesting people started to incorporate domesticated horses during the Middle Bronze Age (~1500 BCE), corresponding with a shift from hunter-gathering populations in the area to clear indications of domesticated sheep, goat, cattle, and horses by 1300 BCE (Houle 2016).
**Naiman Chuluut-style burial:** Chuluun gives this name to circles of eight stones that appear at the outermost edges of some khirigsuurs (Chuluun, et. al., 2016). These circles are described as extending around the entirety of the given structure. However, neither khirigsuur featuring these circles from this project had full rings visible at the surface. KSA002 K001 featured two incomplete concentric rings appearing on the northern, western, and eastern sides, while KSA003 K002 features two rings on the Northern and eastern side. Both khirigsuur could have been altered by the presence of a road adjacent to their eastern perimeters. SHC002 K002 and K003 also have incomplete rings at their northern perimeters.

**Nomadic Pastoralism:** A term that describes a spectrum of lifestyles distinctive in their subsistence through the care of herd animals (Honeychurch, et. al., 2016). Groups practicing pastoralism are characterized by low population densities, often pushed to the peripheries of agricultural population centers (Clark, 2014). Environmental fluctuations prove especially important to these groups, as nomadic pastoralists rely on animal behavioral patterns, move locations seasonally, and are often already in areas of limited or intensely seasonal environmental productivity (Clark, 2014). The term also applies to the complex social and symbolic manifestations that emerge through these communities (Honeychurch, et. al., 2016). While the exact dawn of pastoralism in Mongolia is hotly debated, most scholars agree that it is adopted by the end of the 2nd millennium BCE.

**Plaza:** The space encircled by the rock wall of a khirigsuur monument. Excavations of khirigsuurs often reveal the plaza is covered by a stone floor, and often has a path leading to the center mound from the eastern wall (Fitzhugh, et. al., 2010).

**Probabilistic Sampling:** The strategic variation of set sampling schemes (along a variety of metrics superfluous to this project) within defined sites to produce a map of the archeological record therein. This mapping technique strives to be unbiased towards highly visible or circumstantially encountered site features (Schiffer, 1978).
Provenance: In the context of archeology, provenance is the exact spatial and cultural context in which an object is found in situ.

Soum: the smaller administrative units that constitute an aimag in Mongolia, comparable to a county within a state.

Xiongnu: The Xiongnu constitute one of the first Mongolian empires, which emerged around 200 BCE (Hambly, Sinor, n.d.). Xiongnu elite tombs are the largest features found in the ancient Mongolian landscape, most of which appear in the Khangai and Khentii forest steppe (Chuluut, 2016). These tombs show a relationship between size/depth and the quality of buried ritual objects, relating directly to social rank or wealth (Chuluut, 2016). Smaller Xiongnu tombs exhibit a similar correlation in size and the relative value of grave goods (Chuluut, 2016).
Introduction:

With the democratic transition of 1990, Mongolian intellectuals began to explore and discuss the Mongolian past through historical and archeological study, outside the framework of communism, for the first time in over 50 years. Thirty years later, the capital has prolific symbolism and cultural links to Mongolian heritage, and a short drive east of the city will put one in the shadow of the largest equestrian statue in the world: Chingis Khaan, as he faces his Chinese conquering grounds.

Every year, over 30,000 Mongolians are moving out of their nomadic ancestral lands and into the capital city of Ulaanbaatar (Badruun 2017). In the disorienting melting pot of global capitalism, urban Mongolians increasingly look to historical and archeological narratives as a source of cultural pride and stability. This comes at a time when advances in archaeology are allowing for a richer understanding of the past than ever before. However, even as scholarly efforts in Mongolian archaeology intensify, the country’s cultural capital is increasingly being disturbed by mining, looting, and developmental endeavors.¹ The archeological record is under threat, and for large swaths of the country, that record remains clandestine. Only a small fraction of the country has been documented through professional survey (Clark, 26 April 2017). This gap in knowledge of the Mongolian context corresponds with our general knowledge of the past, which casts a substantial bias towards literate, sedentary, and high-density agricultural societies. Academics have placed the ideals of such societies at the top of a trajectory of human societal development, and in doing so have often conceptualized nomadic and pastoralist societies as simple fringe groups auxiliary to agricultural civilizations (Honeychurch, Makarewicz, 2016) (Stahl, 2007). In doing so, the archeology of pastoralists often only considers pastoralists in the context of their interactions with these sedentary civilizations (for

¹ Mining revenue represents the largest share of Mongolia’s GDP, and the industry is, and will be, the cash cow of Mongolia for the foreseeable future. However, mining, especially that done by small scale artisanal miners, is causing significant alterations to the landscape.
Mongolia, these are the conquering campaigns of Chingis Khaan and the Hunnu) (Honeychurch, Makarewicz, 2016). Also, internal research on ancient pastoralists as such is concentrated on initial animal domestication sequences.²

An incomplete understanding of the Mongolian past, in a framework of irreversible landscape alterations through mining, development, and looting, makes archeological survey a pertinent and timely undertaking in the Mongolian context. This project will be important to expanding the understanding of the Mongolian past along two axes: the geographic distribution of cultural remains, and though inter- and ultra-regional comparison. The project will specifically look at three Bronze Age monumental sites in the Bayankhongor aimag: Shatar Chuluu, Biiriin Khundii, and Khar Sairiin Am.

Shatar Chuluu lies about 20km north of the Bayankhongor aimag center along the Tuin River in Erdenesogt soum, and contains multiple deer stones associated with later Turkic graves, along with multiple khirigsuur (Batsuren, 2 May 2017). Biiriin Khundii, in Ulziit soum, 45km directly east of the aimag center, is a little-known site that has not had any mapping done to date. Russian archeologists first mentioned the location in the 1980’s, but the area has since received little attention (Bayarsaikhan, 16 April 2017). There are at least three deer stones at this location, and the existence of more stones is possible³ (Bayarsaikhan, 16 April 2017). Khar Sairiin Am is located 35km south of the Bayankhongor Aimag center along the west side of the Tuin River. The site is

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² Focus on the origins of domestication highlights a scholarly tendency to pursue “firsts” in the archaeological record, oftentimes leaving a relative gap in knowledge regarding social, political, and cultural dynamics of the times in favor of these debated claims of the “earliest evidence.”
³ More deer stones were visible in the distance, nearer to Biiriin Nuur (lake), but time constraints didn’t allow for visitation or documentation.
known to have khirigsuurs and multiple burials (Bayarsaikhan, 16 April 2017). These three sites lie on a general North, East, South axis.

![Map of Mongolia](image.png)

*Figure 17: Map of Mongolia featuring magnified region with site locations (10km scale).*

The field research had three major foci: (1) production of aerial photographs of intricate monument complexes for analytical and mapping purposes, (2) implementation of field findings (supplemented by past projects in the area) to comparatively analyze the sites, and (3) discussion of the implications of finds at each site against relevant literature in the field. The constraints of this project necessarily put less focus on local precision, intensive survey, or excavation, instead focusing on regional and cross-site trends. The project also put emphasis on standardized data collection, aligned to past professional archeology projects, with the prospect that maps and analysis from this project can be used to inform future archeological investigations in the area.

*The Bronze Age in Mongolia:*

While the projection of set “Ages” (based on European technological sequences) onto the archeological record has proven problematic, pre-Xiongnu
people living during the conceptual Mongolian Bronze Age (~2500-400 BCE) effected transformative intensifications of social, political, and pastoral complexity (Connah, 1998) (Houle, 2016). People in the Bronze Age sweepingly adopted “mobile, equestrian pastoralism” and instigated the climax of stone monumental construction in Mongolia (Houle, 2016). This subsistence strategy soon became the economic backbone of the Central Asian steppe, and provided the framework for nomadic military superiority through mounted warriors (Hambly, Sinor, n.d.). This development impacted the social, political, and economic history of Eurasia for over 2,000 years, the repercussions of which are still discernable today.

**Dominant Bronze Age Monuments:**

Burial Monuments:

Sagsai-type burials:

Sagsai-type burials are characterized by a round or square surface-covering of agglomerated stones, easily distinguished from other monuments by four large stones arranged vertically at four opposing sides along the structure’s perimeter (Chuluun, et. al., 2016). Archaeologists have found the distribution of Sagsai burials to be concentrated in southwestern Mongolia, and to date from the Middle to Late Bronze Age (1500-980 BCE) (Chuluun, et. al.,

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4 The earliest known monumental structures in Mongolia were burial sites from the Neolithic Age, dated to ca. 4000 B.C. (Chuluun, Tseveendorj, 2016). These graves consisted of single mounds made of piled stones averaging 3-7 meters in diameter, with a simplistic internal structure and exhibiting low variability across burials (Chuluun, et. al., 2016). The complexity of Neolithic burials thus far uncovered in Mongolia exhibit burgeoning efforts towards ritual burial, but likely only require the work of a small group of laborers (Clark, 6 May 2017). This contrasts sharply with monumental structures found from the Mongolian Bronze Age, most significantly khirigsuurs.
These graves may stand alone, or appear in groups exceeding 20, often arranged into parallel lines (Chuluun, et. al., 2016). The stone coverings of Sagsai-type burials have considerable size variations (anywhere from 2.5m to well over 8m in diameter), and research indicates a probable relationship between the size of the burial and the relative social status of the individual interred (Chuluun, et. al., 2016).

Hourglass-type burials:

Hourglass-type burials are loosely rectangular stone structures recognizable by the distinctive concavity of their eastern and western walls. The resulting shape resembles the outline of an hourglass, under which the interred lay (Chuluun, et. al., 2016). The definition of what constitutes an hourglass grave is still in question, as work regarding the variability in possible structures has revealed inconsistencies in formal qualities, even that of the hourglass shape (Chuluun, et. al., 2016). While most known graves appear in southern and southeastern Mongolia, research on the spatial distribution of these burials is also incomplete (Chuluun, et. al., 2016). Hourglass type graves date to the Middle Bronze Age (2500-2000 BCE) (Chuluun, et. al., 2016).

Khirigsuurs:

Khirigsuurs consist of a large central mound of piled stones covering a burial pit (Houle, 2016). The pile is encompassed by a low circular or square wall of stones, called a fence (Chuluun, et. al., 2016) (Houle, 2016). Khirigsuurs vary in size and complexity, and while most have a diameter of 10-50 meters, some span over 400 meters and contain multiple auxiliary features, including secondary fences, rectangular stone “walkways,” human burials, and smaller mounds containing sheep, goat, cattle, and domestic horse remains (Houle, 2016) (Chuluun, et. al., 2016). Archeologists have yet to reach a consensus on
khirigsuu typology because of this breath of differences in amplitude and morphology (Chuluun, et. al., 2016). Concentrated in western and central Mongolia, khirigsuurs often are found in clusters along river valleys and date to the Middle to Late Bronze Age (2000-1500 BCE) (Chuluun, et. a., 2016). Horse bones associated with khirigsuurs in northern Mongolia have been dated to the 15\textsuperscript{th}-8\textsuperscript{th} centuries BCE. Consistency in the orientation of khirigsuurs across Mongolia suggests they are built in orientation with a celestial, rather than local, marker (Allard, Erdenebaatar, 2005).

There is debate within the archaeological community regarding a separate classification of khirigsuur-esque burial sites known as slope or class 3 burials. Archeologists in favor of separate classification argue that although slope burials are often colloquially labeled as khirigsuurs, these stone mounds are smaller graves that lack animal ritual deposits or large tumuli. Houle notes an important distinction in location: slope burials are often found in groupings along a hillside, and are associated with sites showing signs of human habitation. Houle therefore purports that social divisions of the time, visible in the scale of monuments, were spatially separated upon burial (Houle, 2016).

Many anthropological archaeology questions regarding khirigsuurs involve speculation on the broader social distinctions they imply (Houle, 2016). Debate over function and significance of these monuments is influenced by the evidence for relatively complex social organization that the ritual activities, and labor necessary for their construction, indicate (Houle, 2016). This contested topic will be expanded upon in the Discussion.
Slab Graves:

These graves are pervasive in Mongolia, and are often found near khirigsuurs (Chuluun, et. a., 2016). Slab graves exhibit significant variation based on region, social status, and time-period, but often feature four pillars of stone at each corner of a rectangular fence made of upright slabs of stone (Chuluun, et. a., 2016). Unlike khirigsuur, hourglass, and Sagsai graves, mortuary goods are common, though many graves have been looted by recent or ancient pillagers (Chuluun, et. a., 2016). Archaeometry and physical science have been used to determine that slab graves date from the end of the 2nd millennium to the first half of the 1st millennium BC, indicating their coexistence with khirigsuurs and deer stones for roughly 200-300 years (Chuluun, et. a., 2016).

Deer Stones:

Deer stones have become popular aesthetic representatives of the achievements of prehistoric nomadic culture in Central Asia (Chuluun, et. a., 2016). Of the 700 stones found at the turn of the century, 500 were within the parameters of modern Mongolia, a number that is now over 1,200 (Chuluun, et. a., 2016). Deer stones are four-sided pillars of stone thought to symbolize a deceased person, and often are found in proximity to tombs and khirigsuurs (Chuluun, et. a., 2016). Other than three slanting lines thought to denote a human face, no other human features are present on the stones, though many stones feature earrings, necklaces, and belts from which tools often “hang” (Chuluun, et. a., 2016). Some stones are adorned with stylistic animal depictions, including the flying reindeer that give the stones their name.
Russian scholars such as V. V. Volkov, E. A. Novogorodova, and D. G. Savinov, some of the first scientists to research deer stones, have classified them into three basic categories based on morphology, location, and creation methodology: Stylized deer stones of Mongol-Transbaikal type, realistic deer stones of Sayan-Altai type, and non-imaged deer stones of Eurasian type. (Chuluun, et. a., 2016). This project only identified stones of the Mongol-Transbaikal type, which constitute 80% of the stones identified in Mongolia and are most common in the northern and central regions of the county (Chuluun, et. a., 2016). These stones feature the definitive stylized deer representations, and often have carved necklaces, earrings (sometimes discussed as sun/moon symbols), belts, weapons, mirrors, bows, quivers, swords, domestic tools, or axes (Chuluun, et. a., 2016).
Methods:

The field work for this project was conducted within a limited time frame, and therefore employed a methodology emphasizing the rapid collection of spatial information. Rather than *probabilistic sampling*, it used purposive techniques to locate large, high-visibility sites. Possible survey locations in Bayankhongor aimag were first discussed with experts in the field who knew about the distribution of Bronze Age monumental sites in the area (Bayarsaikhan, 18 April 2017) (Batsuren, 19 April 2017) (Clark, 26 April 2017). They were also consulted regarding the type of monumentality at these sites. Before field work, Google Maps provided important regional information, on which some of the larger khirigsuurs were visible at all sites.5

Field work was conducted May 7th-9th. A Hyundai Istana and a hired driver provided transportation between and within sites. At each location, features were photographed alongside a photo board with identifying information, scale, and north arrow (Appendix 2-4). Relevant measurements were taken at each feature, and GPS was used to record feature location and elevation. Sketches were made of features at each site to supplement and back up photographs, noting their relative size and spatial arrangement.

A DJI Phantom 3 Standard drone was used to take aerial photographs. These photographs contained the same identifying information, scale, and north arrow as those taken on the ground. They also utilized 3 white boards 50cm x 37cm that were set at the northern perimeter of features and spaced 10m apart using a tape measure. One board was set on a north-south plane and the other set on a west-east plane using the northern board as a guide. The centers of the foam boards were marked with three variations of an “X,” the most visible of which was set in the northwest corner of the resulting right angle. These “X”s were used to orient the drone from the air, and to estimate distances from drone photographs.

5 Khar Sairiin Am is visible on Google Maps in exceptional clarity
This method of distance estimation was tested using measurements already taken via tape measure on the length of the central mound and outer ring of BKH001 K003. Both methods resulted in measurements of 15m and 24m, respectively. The drone took pictures at 50, 100, or 150m in elevation, depending on the extent of the feature. When a drone photograph was taken, this image was overlaid using the markup feature in Apple Photos, with added lines emphasizing features visible in the photograph, which were supplemented by field notes and drawings.

Not all features present at each site were documented because of time restraints, and because some features had already been recorded in previous projects. At each site, a line of khirigsuurs was identified along a roughly northerly transect extending from the largest central khirigsuur at the site. Khirigsuurs were recorded using premade recording forms that note identifying and locational information, link the feature to relevant photographs and drawings, and note rock wall shape, stone type, and construction (ex. square, single-boulder wall visible in southwest corner, mixed granite and deformed mafic rock). The central mound width was measured, and any depressions indicating looting were noted. Any other surface features were noted, separated into those found within the plaza, and those existing as satellites to the main encirclement. All forms are found in Appendix 1. Drone photography expedited an understanding of surface-level spatial information about complex khirigsuurs structures.

Sagsai-type burials that were associated with the identified khirigsuur lines were recorded using similar forms (Appendix 1). Slab graves were recorded with GPS information, orientation, and the length/width of their walls (Appendix 1, Figures 19-22).

Deer stones within the parameters of the survey underwent a 3-step recording process. Identified stones were first cleaned using water, a rag, and a plastic sponge, removing bird droppings and settled dust. After drying, blue chalk was used to outline visible etchings in the stone, allowing for clarity in records.

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6 It also often depended on range limitations induced by powerful winds.
7 Deer stones found at Shatar Chuluu were not recorded in this manner, as they were already documented by a project in 2015.
and photographs. Photographs were taken from each directional surface (south, west, etc.), top, and bottom (if applicable). Condition, orientation, and cleaning notes were taken (if applicable). Following recoding, all chalk was washed from the stone, returning the stone to its original condition in all but cleanliness.

Deer stones were recorded in a manner consistent with the system previously used by the Mongolia Deer Stone Project. Notebook documentation was supplemented by separate worksheets for each deer stone. Stones that remained upright were labeled based on directional surfaces, with side 1 always being designated as the southern face, and other sides being labeled in a clockwise direction. Stones that were found in a fragmented state were each given a letter, ordered from the top of the original stone to its base. Multiple stones at a given site were given numerical labels, with number #1 given to the most prominent stone. (Fitzhugh, 2010).

Using such standardized data collection methods is important, especially in the context of understanding the Bronze Age in Mongolia. Research for dissertations covers many of the survey projects previously done in Mongolia (Houle, 2016). The variability of methodology and data collection employed by these small-scale projects causes difficulties for archaeologists that attempt to analyze data from multiple projects to compare regional and supra-regional developments (Houle, 2016).

**Limitations:**

Limitations to this project included necessary time and budget restraints that were more stringent than many like-minded postgraduate field projects. The project was also heavily influenced by weather, scheduling, and its reliance on others for transportation, significantly limiting the extent to which sites could be mapped. Another pertinent limitation was a reliance on the English language to plan field strategies and to discuss complex archeological theory. This limited the amount of literature accessible to research findings, and affected the working relationship with partners in the field.

Field work was marred by significant setbacks and variability. The project was originally set to have 9 days of intensive fieldwork (with 7 days spent
focusing on a single site) occurring from May 14th through May 23rd. However, it was conveyed on May 1st that, due to scheduling and budget changes, it was necessary to leave on the 5th and only spend 5 days in the field. Preparations set to occur over the course of 11 days were therefore crammed into 3 days. Field work itself was impaired by car issues (a replaced tire, a blown-out tire, a popped tire, and a midnight stint stuck in the mud), weather issues (specifically impeding drone usage), battery limitations, detrimental (though benign in intention) miscommunication, and minor injury. These constraints culminated in only 3½ days of work at 4 different locations in Bayankhongor aimag, and resulted in significant restructuring of the enterprise, the results of which are presented in this paper.
Ethics:

The nature of research conducted herein avoids many of the ethical limitations of human subjects research that social scientists must often consider. The only interactions with individuals in relation to the research were in a professional setting, and discussing the intricacies of the archaeological record, rather than personal or private information.

However, it is appropriate to discuss this research in terms of environmental ethics. Archeological excavations, necessarily destructive in practice, are limited by their environmental impact. Through the very act of recording preserved artifacts via excavation, archaeologists are disturbing contextual layers and destroying provenances. Therefore, archeological digs must be very careful about the information they record, as no one can “redo” an archeology excavation in the exact same spot. Professional archeologists must work along multiple lines of governmental and institutional approval before commencing on a project that disrupts an archeological site in any way. Individuals that do not comply with regulations in place, especially when they intend to sell recovered goods, are considered looters. Looting is illegal (often just in theory) in most countries.

This project avoids all the above issues by conducting no actual excavation, sampling, or surface collection. The purpose of this project was to understand the monumental landscape through features visible exclusively from the surface. The information gathered did not alter or endanger the local environment, nor the archeological record. The only active adjustment made during field work was to wash dust and bird feces from the surface of deer stones at Biirin Khundii, an act that is standard practice in Mongolian archaeology, specifically condoned by the National Museum, and did not cause any more damage than a good rain storm.
Results:⁸

Biiriin Khundii (BKH):

Archeological survey was conducted at Biiriin Khundii on May 7th.

Deer Stones:

Three stones were recorded at N46°08’32.8, E101°15’42.2. The stones were repositioned from their original locations and placed at three corners of a slab burial. Stones 1 and 2 stood upright, while Stone 3 had fallen towards the south.

Stone 1:

![Deer Stone 1](image)

\[Figure 7: \text{Deer Stone 1--photograph of southern face and drawings of all sides}\]

Belt:

The belt is represented by a single band, and features an axe and an unknown object hanging from it on the southern side, and a knife on the northern side.

Features:

⁸ The results of the Bayankhongor survey are discussed here in a general sense, or in terms of information pertinent to topics arising in the discussion section. The raw data recorded from field work can be viewed in Appendix 1, while relevant photos are available in Appendix 2.
S: 4 deer facing east, ring near top
W: 4 deer facing north, shield near top
N: 5 deer facing east, 2 horses facing up, disk is featured below highest deer
E: 5 deer facing north

Stone 2:

Belt:
The belt is represented by two bands, with an alternating triangle pattern in between them. There are no tools associated with the belt, though the north side has an extra triangle pattern appearing below the belt.

Features:
S: 3 deer facing east, ring near top
W: ring near top
N: 3 deer facing west, disk near bottom, between animals and belt
E: 1 deer facing down

*Figure 8: Deer Stone 2--photograph of southern face and drawings of all sides*
Stone 3:

![Figure 9: Deer Stone 3--photograph of exposed face and corresponding drawing](image)

Stone 3 had fallen over, and only had one surface fully visible, showing significant wear and degradation. No belt or other symbols were discernable, except for 3 deer on the visible surface.

Graves:

SB002:

This Sagsai-type burial showed evidence of looting, with two holes dug at the center of the mound and at $110^\circ$. Upright stone monuments were found at 4 corners. See Appendix 2.

Slab Burials:

*Table 1: Length and width measurements of slab burials at Biirin Khundii*

<table>
<thead>
<tr>
<th>BKH Slab Burials</th>
<th>length (cm) (East-West)</th>
<th>width (cm) (North-South)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>399</td>
<td>396</td>
</tr>
<tr>
<td>2</td>
<td>443</td>
<td>341</td>
</tr>
<tr>
<td>3</td>
<td>380</td>
<td>200</td>
</tr>
<tr>
<td>4</td>
<td>324</td>
<td>200***</td>
</tr>
</tbody>
</table>

***estimate: incomplete wall limited accuracy

See Figures 19-22, Appendix 2 and Figure 39, Appendix 5

Khirigsuurs:

*Table 2: Measurements taken from khirigsuurs at Biirin Khundii*

<table>
<thead>
<tr>
<th>Biirin Khundii</th>
<th>Fence diameter (m)</th>
<th>Mound diameter (m)</th>
<th># of satellite features</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 K001</td>
<td>unmeasurable</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>1 SB002</td>
<td>7</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>1 K003</td>
<td>24</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>1 K004</td>
<td>20</td>
<td>12</td>
<td>5</td>
</tr>
</tbody>
</table>
K001:
Coverage by an alluvial fan deposition from the north made the fence only discernable on the eastern edge. No other features were visible to merit a drone photograph.

<table>
<thead>
<tr>
<th>BKH001 K003:</th>
<th>![Image]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circular fence and centered mound. Three indentations in the central mound show evidence of looting far in the past. There are 4 eastern horse head burials and one human grave (4m diameter) to the west.</td>
<td>![Image]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BKH001 K004:</th>
<th>![Image]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Square fence with corner rings. 4 aligned <em>deer stones</em> at the eastern end. Central mound is offset towards the southeast corner of the rectangular encirclement.</td>
<td>![Image]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BKH001 K005:</th>
<th>![Image]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rectangular fence with corner mounds. Two distinct satellite types. 10 horse head burials to the east, and some extending south. 4 deer stones are beyond the eastern fence. Three <em>Naiman-Chuluut</em> circles appear at both the</td>
<td>![Image]</td>
</tr>
</tbody>
</table>

**measurements taken with a set of GPS points**
northwest and southwest peripheries. Central mound is offset to the southeast.

BKH001 K006:
Circular fence with centered central mound. 10 mounds appear at the east side of the enclosure, and there is a multifaceted wall at the southern end. The west side features two “walkways.” Possible ring around central mound.

*Khar Sairiin Am (KSA):*
Archeological Survey was conducted at Khar Sairiin Am on May 8th.

Graves:
Four sagsai-type burials were found at the western end of KSA (Figure 2). Three hourglass graves were found at the northwestern edge of the survey area (Appendix 3).

Khirigsuurs:

*Table 4: Measurements taken from khirigsuurs at Khar Sairiin Am*

<table>
<thead>
<tr>
<th>Khar Sairiin Am</th>
<th>Fence diameter (m)</th>
<th>Mound diameter (m)</th>
<th># of satellite features</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 K001</td>
<td>10*</td>
<td>24*</td>
<td>65</td>
</tr>
<tr>
<td>2 K002</td>
<td>14*</td>
<td>25*</td>
<td>32</td>
</tr>
<tr>
<td>2 K003</td>
<td>13*</td>
<td>35*</td>
<td>1</td>
</tr>
<tr>
<td>3 K001</td>
<td>8*</td>
<td>16*</td>
<td>0</td>
</tr>
<tr>
<td>3 K002</td>
<td>10</td>
<td></td>
<td>41 21</td>
</tr>
<tr>
<td>3 K003</td>
<td>11</td>
<td></td>
<td>32 4</td>
</tr>
</tbody>
</table>

*measurements acquired from drone photographs*
Table 5: Description and edited aerial photographs of khirigsuurs at Khar Sairin Am

<table>
<thead>
<tr>
<th>KSA002 K001:</th>
<th>![Image]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circular fence (incomplete at the eastern end) and a centered central mound. Thirty mounds are arranged at ~5m* out from the wall along the northern, eastern, and southern sides. 4 of these constitute an inner line of deer stones at the eastern end. An outer ring of 35 stone circles make it a Naiman Chuluut-style burial (Chuluu, et. al., 2016). Some of these circles are constructed entirely from white stone.</td>
<td></td>
</tr>
<tr>
<td>KSA002 K002:</td>
<td>![Image]</td>
</tr>
<tr>
<td>Square fence (incomplete at eastern end), with centered central mound and small mounds at each of the 4 corners. Closest satellite to eastern wall could be a walkway, or four degraded deer stones. ~30 mounds (some are disputable or incorporated into a bar found across the southeast). Two rings are at the peripheral of the western and southern ends.</td>
<td></td>
</tr>
<tr>
<td>KSA002 K003:</td>
<td>![Image]</td>
</tr>
<tr>
<td>Square fence with no visible corner embellishment. Central mound is offset to southeast. Possible small ring around mound, and evidence of possible walkway outside the western wall.</td>
<td></td>
</tr>
<tr>
<td>KSA003 K001:</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Square fence with proportionally large central mound, and mounds at north, west, and south corner. Central mound is topped by white stones. Absence at western corner could be the result of erosion along the exposed river bank. Southern corner appears to be square from aerial photographs, but could just be a result of degradation. No visible satellite features.</td>
<td><img src="image1.png" alt="Image" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>KSA003 K002:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Square fence with evidence of stone rings at the east, west, and southern corners. White stone walkway extends from the center mound to the east. Walkway is present beyond eastern wall, and at least 20 naiman chuluut circles appear in two rows (inner: 15 circles, outer: 5 circles), along north, west, and south periphery.</td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>KSA003 K003:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Square fence with evidence of stone rings at the east, west, and southern corners. White stone walkway extends from the center mound to the east. 4 deer stones present beyond the eastern wall.</td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
</tbody>
</table>
**Shatar Chuluu (SHC):**

**Deer Stones:**
Because of time restraints, and because a report had purportedly already been done on the stones at Shatar Chuluu, these stones did not undergo the same procedure as those at Biirii Khundii.  

**Graves:**

**Slab Graves:**
Again, limited information could be recorded on slab graves at Shatar Chuluu. There were 9 slab graves visible from drone photography, just north-northeast of SHC001 K001 (Figure 42, Appendix 5).

**Sagsai-type Burials:**
Time, weather, and battery life made it impossible to get beyond the main line of khirigsuur to any Sagsai-type graves. However, these graves were visible on the northern and southern hillsides.

**Khirigsuurs:**

*Table 6: Measurements taken from khirigsuurs at Shatar Chuluu*

<table>
<thead>
<tr>
<th>Shatar Chuluu</th>
<th>Fence diameter (m)</th>
<th>Mound diameter (m)</th>
<th># of satellite features</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 K001</td>
<td>66*</td>
<td>14*</td>
<td>18❖</td>
</tr>
<tr>
<td>2 K002</td>
<td>67*</td>
<td>19*</td>
<td>over 321º</td>
</tr>
<tr>
<td>2 K003</td>
<td>42*</td>
<td>13*</td>
<td>31</td>
</tr>
<tr>
<td>2 K004</td>
<td>35*</td>
<td>13*</td>
<td>47</td>
</tr>
</tbody>
</table>

*measurments acquired from drone photographs
❖ one feature appears beyond the edge of the photograph

9 many features do not appear from the southern side of the monument

---

9 Unfortunately, these reports, viewed after the fact, did not hold much information at all on the stones.
10 Wind and storm conditions, time limitations, and battery life caused issues and limitations to drone photography.
**Table 7: Description and edited aerial photographs taken at Shatar Chuluu**

<table>
<thead>
<tr>
<th>SHC001 K001:</th>
<th><img src="image1.png" alt="Image" /></th>
</tr>
</thead>
<tbody>
<tr>
<td>Square fence, incomplete on the southern edge, with a circular mound at each corner.</td>
<td></td>
</tr>
<tr>
<td><em>Arms</em> are present inside the southern corner of the fence, separated from the central mound.</td>
<td></td>
</tr>
<tr>
<td>Satellite mounds are particularly variable, including segments of visible wall extending to the north and west.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SHC002 K002:</th>
<th><img src="image2.png" alt="Image" /></th>
</tr>
</thead>
<tbody>
<tr>
<td>Square fence, ovular central mound. Possible previous arms were repurposed to create a modern wall inside the southern fence.</td>
<td></td>
</tr>
<tr>
<td>With over 300 satellite mounds, it is the most complex mound recorded by this project.</td>
<td></td>
</tr>
<tr>
<td>Interesting satellites include a walkway outside the northern fence and an amoebic enclosure beyond the eastern fence.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SHC002 K003:</th>
<th><img src="image3.png" alt="Image" /></th>
</tr>
</thead>
<tbody>
<tr>
<td>Circular fence. Central mound is interrupted by arms extending southeast. Only khirigsuur with a circular fence that seems to have corner mounds.</td>
<td></td>
</tr>
<tr>
<td>4 deer stones, 16 associated mounds, and 7 naiman chuluut circles at northwest periphery.</td>
<td></td>
</tr>
</tbody>
</table>
SHC002 K004:
Square fence, central mound abuts a southern and eastern pair of arms. 4 deer stones are present, with 34 associated mounds and 7 naiman chuluut circles. A possible walkway appears at the eastern periphery.

Maps:

Figure 10: Field Work Regional Map (10km scale)
Biirin Khundii:

Figure 11: Biirin Khundii Regional Map (1km scale)

Figure 12: Biirin Khundii Local Map (10dm scale)
Figure 13: Biirin Khundii Site Map (10dm scale)

Khar Sairiin Am:

Figure 14: Khar Sairiin Am Regional Map (1km scale)
Figure 15: Khar Sairin Am Local Map (10dm scale)

Figure 16: Khar Sairin Am Site Map (10dm scale)
Shatar Chuluu:

Figure 17: Shatar Chuluu Regional Map (1km scale)

A lack of adequate GPS information on features at SHC made its accurate mapping impossible. However, the relative locations of the features were apparent, and are used in the Discussion.
Discussion:

Analysis:

Deer Stones:

Deer stones were present at BKH and SHC. Only those at BKH underwent intensive documentation. Stone #1 was the best preserved, and had the most visible animals and carvings. Stone #1 contains a shield on the western face, placed near the top of the stone, above all animal etchings. This is of interest, because if a stone features a shield, it usually lies directly above the belt, rather than at the upper limit (Chuluu, et al., 2016). Also of interest is that the disk and ring features of stone #1 appear at notably different heights on the southern and northern sides, respectively. This trend is also present on stone #2, but even more pronounced, as the disk is etched directly above the belt, while the ring is abutting the upper limit of its southern face. There is also a second ring near the top of the western face. In the past, researchers considered these features on deer stones to be depictions of the sun and moon (Chuluu, et. al., 2016). Many archeologists now consider them to be earrings or mirror discs, and are supported by a recent find of 13 deer stones with clear human faces etched into the eastern aspect, along with the belt, necklace, and tools more commonly featured on deer stones (Chuluut, et. al., 2016). While these clear human features seem to negate the idea of stones as cosmic depictions, the discrepancies in height between the features on the north and south sides of the stones at BKH support the earlier theory, or at least call into question their symbolism as earrings. This should not negate the conception of deer stones as representing individuals, as all BKH stones feature distinctively anthropomorphic belts and tools. However, it does provide evidence for common symbols to be incorporated by different groups in different ways, acquiring new or ambiguous meanings as they are adopted locally.

While the deer etched into all the stones are stylistically similar, both on each stone and across the three, there are notable directional and formal differences. Though their distinctive stylization remains constant, the proportion and number of these stylistic elements vary across deer. Deer differ minimally across a single panel, but exhibit more differences between panels, and are the
most variable between different stones. Also, the layout of etchings on the stones show that deer have the tendency to “run into” each other, forcing features to be left out, warped, or stunted in relation to another deer. Features are usually morphed in relation to etchings formed above them, suggesting that the chronology of etchings worked from the top down.\textsuperscript{11} These two elements—variation in form and compensation for other etchings—suggest that stones were etched across different periods of time or by different individuals.

Burials:

Of the three types of burial outlined in the introduction, only Sagsai-type burials were present at all sites, while hourglass burials were only present at KSA, and slab graves were built at BKH and SKC. However, this is only the case within the limited parameters of observation and survey conducted through this project. Sagsai-type burials in Central Mongolia are often associated with mountain slopes and foothills, while those of Western Mongolia and the Gobi Altai tend to appear at lakeshores, in river valleys, and on mountain passes (Chuluun, et. al., 2016). Sagsai-type burials in Western Mongolia are distinguished by a covering of predominantly white stone. The Sagsai burial documented at Biiriin Khundi exhibited features inconsistent with a single regional distinction. While there is a higher frequency of white (silica) stones within the plaza than in surrounding areas, the rock therein is still predominantly the local mafic stone (Kingston, 16 May 2017). Though the results of recent looting at this grave is unknown, many Sagsai-type burials do not contain any associated artifacts (Chuluun, et. al., 2016). The Sagsai-type burials at KSA qualitatively had a higher relative amount of white stone, while those at Shatar Chuluu could not be documented.

Slab burials at SHC and BKH appeared in generally northern-facing rows. BKH had a single row of 5 burials, which featured an unidentified ring connecting

\textsuperscript{11} Two notable deviations to this pattern are present on stone #1, where half of a deer was added to the top of the south side, and two horses were added to the upper north side. Both these added features seem to be limited by the disk and full deer on the south end and the deer and ring on the north end, respectively.
burials #1 and #2. SHC had a row of 3, a row of 4, and two unassociated graves. A small ring appeared between the two rows (Appendix 5).

Sagsai-type burials, hourglass graves, and slab burials will be examined in relation to regional arguments, but not enough information was gathered on them individually to justify burial type-specific discussion.

Khirigsuurs:

Khirigsuurs showed lots of formal variability, visible in drone photography. Square fences on khirigsuurs were usually slightly longer on their eastern aspects than along their western walls. This is consistent with past studies on khirigsuurs, that show the east fence to be 10-15% longer on average (Allard, 2005). Allard purports that this could be a “keystone effect,” in which builders are facing east while measuring the walls during construction. However, his second option is more viable: that khirigsuurs are purposefully longer at this end (Allard, 2005). Intentional construction differences to orient a feature towards the east is also visible in deer stones, which face east. Correspondingly, if a fence from the surveyed khirigsuur was incomplete, this gap was most likely to be on the eastern side.

Interpretations on Maps

The maps created from these sites (Figures 10-17) expedite the crux of landscape and site based arguments within the parameters of this paper. In a time of increasing mobility, environmental and topographic factors become increasingly important to understanding the movement and social interactions of people. The geographic similarities of Shatar Chuluu and Biiriin Khundii are most immediately recognizable. Both are in mountainous regions that exist at the widening of a river valley, following a bottleneck directly downstream. The topography surrounding Khar Sairiin Am is less immediately lucid, yet its location corresponds to the same basic regional features. While it is almost 800m lower in elevation, and within the steppe/desert steppe rather than the mountains, KSA appears upstream from a bottleneck caused by a mountain chain running perpendicular to the river in an otherwise relatively open landscape. While the features of Khar Sairiin Am are tucked within the bounds of the mountains
forming its regional bottleneck—compared to the other sites that lie in valleys beyond the constriction point—this may be due to the exposure of the land that opens immediately to the north.

Theoretical Discussion:

Overview:

The general trends from archeological remains across the three sites conceptualize valleys as central spaces, while increasing proximity to mountain slopes is indicative of locality and is conceptually more familial space. The seeming directionality of the sites orients them towards constricted sections of the river, likely routes for traveling through the region.

Deer Stones:

While deer stones only exist at Shatar Chuluu and Biiriiin Khundii, both are set facing the “entry-point” of the site created by a regional bottleneck. Most current scholars argue that deer stones are representative of individuals, with symbolic representations of faces, belts, necklaces, etc. (Chuluu, et. al., 2016) (Houle, 2016) (Bayarsaikhan, 2017) (Fitzhugh, 2010). Some argue that the animal images are tattoos (compared to the tattoos found on the preserved bodies of Pazyryk mummies), or designs on a shaman’s ritual clothing (Chuluun, 2016) (Houle, 2016). Monuments that appear in areas not suitable for homesteads have previously been mentioned as appearing in higher-visibility locations to mark territorial claims to travelers (Clark, 2014). The deer stones from SHC and BKH are near probable homestead sites. However, their position at the forefront of those sites, and their likely representations of shamans or warriors, make it plausible that they are an iteration of monumental gatekeepers, alerting travelers to the people of that region. The stones feature accessories that link them to an individual, yet other than some monuments that feature faces or representative slanting lines, no actual human features are present. Instead they seem to prioritize human adornments, perhaps emphasizing wealth, technology, or different local groups. This is in direct contrast to excavations from burials, which often yield few grave goods.

Burials:
Burials (Hourglass and Sagsai-type), conversely, are built at the base of foothills, or up into the folds of mountains (Figures 13, 16) (Chuluun, et. al., 2016). These parts of the landscape were often the locations of modern and ethno-historical homesteads for people practicing *nomadic pastoralism*, a practice in its infancy by the end of the Bronze Age (Houle, 2016) (Wright, 2012). The mountains are especially utilized during the colder months, as families move into protected mountain areas. This seasonality creates a cycle in which herders split off into smaller family groups to survive the harsh winter, before congregating in large valleys during the summer months (Wright, 2012). The frequent use of valleys by herdsmen and as summer gathering points make the foothills peripheral locations, associated with individual family encampments. The valley becomes a communal and public space for pastoralists, while the foothills connote localized interactions with smaller parties. Within this framework, foothills at the perimeter of monumental valleys could plausibly distinguish a person’s place of origin found near, or in the mountains behind, these slopes. Many burials remain visible from the central valleys, but are physically set apart in clusters at specific points. Figure 15, the local map of KSA, provides a visualization of this phenomenon: graves are clustered at cross-valley mouths that extend back into the hills. The Sagsai-type burial at BKH is also tucked up into the foothills, directly next to a modern ger site (Figure 12).\(^{12}\)

A tradition of burying the dead in the seclusion\(^{13}\) of mountains is manifested in the burial practices of many later peoples as well. The Xiongnu, the first major “ancient state” in Mongolia, buried their elite rulers in exclusive and secluded mountainous areas (Clark, 2017) (Chuluu, et. al., 2016). There was even an emphasis that Chingis Khaan be buried in the mountains where he was born (a location still not discovered) (Weatherford, 2004). However, these mortuary trends become problematic when examining khirigsuurs, which exist in areas of high traffic, visibility, and functionality.

\(^{12}\) This camp was vacant during field work

\(^{13}\) In the case of Bronze Age burials, physical seclusion from central areas while remaining visible, allowing association with the valley below.
Khirigsuurs:

The Bronze Age was characterized by increasing mobility and social interaction (Houle, 2016). These factors, which would hypothetically cause instability and fracturing in communities, antithetically correspond with the most intensive period of monumental construction in Mongolia’s distant past. These monuments can be massive in scale, from KSA002 K002, with over 300 satellite mounds, to BKH001 K006, with a central mound diameter of 64m, to khirigsuurs from other sites that sport fence diameters of over 400m—feats that necessarily require cohesive labor on a grand scale (Houle, 2016). Khirigsuurs therefore feature strongly in scholarly debates on Bronze Age society, and, due to the pertinent and expedited information that drone photography provides on their complex structures, will constitute a significant portion of this paper. Various arguments have been made towards the functionality of khirigsuurs, however, they are generally categorized as “ancient funerary monuments” by the Institute of History and Archaeology (within the Mongolian Academy of Sciences) (Chuluu, et. al., 2016). An idea in place, based on work done on better-understood Northern European and Central Asian Steppe chronologies (a common, if problematic approach) is that the monumental landscapes of the Mongolian Bronze and Early Iron Ages are indicative of sweeping societal inequality, with built hierarchies that allow elites to command labor capable of building the monumental manifestations that are still visible today (Wright, 2012). Correlations between the power of the individual and the relative size of the monument constructed show the amount of labor the ruler could command, and therefore their power (Wright, 2012). Under this theory, smaller monuments at the periphery were built to affiliate themselves with the elite, gaining status through physical, visible association (Wright, 2012).

However, as Wright notes, this theory of khirigsuur functionality hinges on three important elements: that it is possible for Bronze Age elites to coerce the labor of large groups, that the monuments are reflective of (powerful) individuals,

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14 This paper has already deviated from this position by presenting them as distinctly separate from burial features in the survey.
and that a visible hierarchy of the monuments exists to reflect the hierarchies of power they represent (Wright 2012). The latter two are relevant to the parameters of this project.

Khirigsuurs are purported to be sites of elite representation and burial. However, by Occam’s Razor, monuments that coexist with khirigsuurs in the Bronze Age more convincingly fulfil these functions. The link from khirigsuurs to individuals is speculative, and while human remains are sometimes found in excavated khirigsuurs, they, and any associated grave goods, are uncommon (Wright, 2012). Humans are also sometimes found buried in satellite mounds outside the western wall, rather than within the central mound, making it more likely that they were buried in relation to the khirigsuur than that the khirigsuur was built for them (Table 3: BKH001 K003) (Batsuren, 7 May 2017) (Wright, 2012). Alternatively, deer stones are well understood to represent people (and are positioned in more “territorial” ways than khirigsuurs), while slab graves, hourglass graves, and Sagsai-type burials are directly related to inhumation. Sagsai burials in particular exhibit a correlation between the size of the grave and the social status of the interred (Chuluun, et. al., 2016) These burial types also show a locational pattern more congruent with the burial practices of both earlier and later cultures in Mongolia.

The second issue addressed in this research is a visible hierarchy of monuments. Unlike the kurgan mounds of the Central Asian Steppe to which they are often compared, khirigsuurs do not show a direct correlation between size and complexity (Wright, 2012) Wright argues that elaboration occurs across all size ranges, and while measurements taken at BKH, KSA, and SHC all show that monuments generally decrease in size as they get farther away from the largest central khirigsuurs (a possible indication of rank or hierarchy), the qualitative complexity of those monuments does not significantly increase (as would be the

15 This could in part be attributed to extensive looting and natural degradation
16 Though it is less clear if they represent specific individuals or general human motifs
case if size differences were the result of hierarchical differences in coercible labor).

Further, if khirigsuurs were representations of hierarchical power within a regional setting, they would hypothetically exhibit more similarity within regions, as people tried to align themselves with the established hierarchy. This would correspond to interregional variation, as power centers vied to outdo and distinguish themselves from each other. However, comparison of BKH, KSA, and SHC show the opposite to be true: there is significant structural variation in khirigsuurs at each site, but those same arrays of form appear in different combinations. Additionally, smaller khirigsuur qualitatively reveal greater variability in form relative to more massive ones, contradictory to the given theory of power association through hierarchical structures. The repetition of various mound elements in different combinations suggests a “vocabulary” of monumental components that is viable not just within Bayankhongor, but throughout the entirety of khirigsuur distribution (Wright, 2012). Looking at the well-studied site of Egiin Gol, Wright distinguishes three “typical” khirigsuur formulations (Figure 18). These styles are directly applicable to the variations exhibited in Bayankhongor, over 400km southwest. The variation in monument features, regardless of monument size, in congruence with the existence of these similar features across multiple sites, suggests an interpretation of khirigsuur that does not rely on size and complexity in direct relation to representations of individual power. Alternatively, it is more productive to consider form as the

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17 Some features do appear in higher frequency based on site, such as the prevalence of arms at SHC khirigsuurs
18 This observation was also made in a previous study of khirigsuurs, though no conclusions in relation to function were (Allard, 2005)
distinguishing factor of khirigsuur function, with size a simple indication of scale and regional cooperation.

Rather than being constructed in a single building phase, or based on a grand plan, as might be the work of a single leader, variations and asymmetries in the placement of satellite mounds (associated with horse remains from purported sacrifices) shows that actions at the site were an agglomeration of distinct incidents occurring through time. For example, KSA002 K002 shows a pattern of satellite mounds that look as if they were formed into rows. However, the outside rows on the south and eastern sides appear to be incomplete, suggesting that mounds were added as rituals or other events merited, not within a single construction period.\(^\text{19}\)

The argument could be made that while satellite mounds may be added as time goes on, these additions could be sacrifices done for previous powerful leaders to affirm their positions and the social system they represent. If this were true, then the en-fenced sections of khirigsuur should not show signs of increasing in size over time. Chronologically, small khirigsuurs would appear first, with the infancy of social organization, and then larger and larger khirigsuurs would be built later as the potential labor force under

\(^{19}\) Other khirigsuur that show seemingly incomplete or additive mounds are SHC002 K003 and KSA002 K001. However, this agglomerative process is not always the case, and some sacrifices could have been done in a group, planned manner. Dating on faunal (mostly horse) remains from multiple khirigsuur have supported both variations: Geometrically and systematically placed burial tend to yield similar dates of horse interment, while asymmetric and variable satellite features relinquish dates sometimes centuries apart (Wright, 2012).
leaders expands. However, it would make sense that smaller monuments, given
the option of construction in a central location, would by the observed nature of
khirigisuur distributions be constructed there. Consequently, by the time huge
khirigisuurs were possible, the “best”
most central locations would be taken
by smaller khirigisuurs that had been
previously built. The record would
therefore show increasing size with
distance from central locations, rather
than the opposite trend visible here.

However, BKH001 K006 and
KSA002 K002 show possible stone
rings (with strategically set stone circles, rather than lose piles) at the edges of
their central mounds. This suggests a possible different narrative, in which small
centrally located mounds are rescaled, concurring with social intensification, by
extension of the central mound to the previous outer ring. 20 It is unlikely that
leaders would expand the burial monuments of the deceased, nor is it likely they
would build their own monuments directly on top of preexisting ones. Rather,
extrusions could be indicative of communal efforts to revamp khirigisuurs as
communities expanded. It is possible that, for such small khirigisuurs occurring
early in the chronology, no satellite mounds had yet been formed, which could
explain why no mounds are now visible within the khiriguru’s expanded plaza.

Stable community organization on the scale visible in the Bronze Age was
new to the Mongolian landscape, and these new conditions manifested in
khirigisuurs as visible convictions of cohesion and organization (Wright, 2012).
However, it is unlikely that the monumental results are exhibitions of pervasive
hierarchies. Khirigisuurs, especially massive ones, are found at areas of notable
visibility: geographic visibility, but also social visibility through their distinction

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20 For example, at KSA002 K002, this ring has a diameter of 13m, a length
similar to fence diameters from smallest khiriguru at KSA and BKH.
as prized summer congregation sites for modern and ethno-historical nomadic pastoralists (Wright, 2012). Khirigsuurs may still be built at the will of strong leaders, but they are not made as arguments of an individual’s power, but are more likely constructed over time, with differing forms and functions, as ritualized arguments of a community’s stability and cohesiveness.

This hypothesis of khirigsuur function fits into a local conceptual landscape of people in the process of addressing variable environmental and social circumstances. More than in past ages, people in the Bronze Age were altering the natural world to create visual security in permanent structures. Deer stones were erected at regional entrance points, while colossal group projects in central locations and gathering points induced khirigsuur complexes on a grand scale. Visible at the peripheries were burial sites, associated with individual family encampments and monumentalized on the narrative of an unchanging nativity within an increasingly mobile population.
Conclusion:

This paper focuses on the information drawn from archeological survey in Bayankhongor to discuss social landscapes within the region. While the trends visible in this survey are not limited to these sites, it is important to recognize regional differences in the Mongolian Bronze Age population and culture (Wright, 2012) (Houle, 2016). While the monumental landscape shows loose homogeneity across Bronze Age Mongolia, relative mobility, lifeways, and herd structure are thought to vary considerably (Houle, 2016). Discrepancies found in this project against published and established trends in Bronze Age forms and features should not be indicative of new or peripheral groups, but should add depth and local variety to the working conception of the Mongolian Bronze Age. The project adds new information to the mosaic of increasing interactions among diverse Bronze Age populations.

Expanded mobility in the Bronze Age invokes the increased importance of local and regional impacts on movement and social interactions. More encompassing comparative research along these axes should be the basis of future investigations. Notably, not all data collected from the survey was exhaustively discussed in relation to the paper’s argument, and information gleaned from these records can be utilized in the future and applied to other debates and topics within the field that have not been considered in the paper. There were also many features at the sites that were from later periods, and therefore not analyzed, including Turkic statues at Khar Sairiin Am and Turkic graves and lion statues at Shatar Chuluu. Furthermore, the survey conducted here is nowhere near complete, as only northern transects of the largest khirigsuur monuments and the features associated with deer stones were recorded. More extensive survey of all the investigated areas is necessary.

Arguments for burials being peripheral fail when discussing slab graves, which appear alongside deer stones near site “entrance” locations. However, because slab burials were built incorporating pre-existing deer stones into their structures, the people who made them anteceded those who produced the stones.
and likely those who had begun work on khirigsuurs as well. This touches upon a general limitation of this project: no dating, relative or otherwise, could be done at the sites, meaning that concurrence of the various khirigsuurs could not be tested as indicative of different functions, or simply as build at different times. However, the above proposed loose chronology of slab graves corresponds with other research that shows “slab grave cultures” overtaking and outlasting the builders of Sagsai graves for at least 300 years (Chuluut, 2016). Information gathered from BKH, SHC and KSA could be useful to future archeologists examining why, and under what parameters, different groups were constructing different types of graves in the same area, and to what level these groups interacted.

Other Bronze Age debates similarly stand to benefit from the information gleaned in this survey. Examples include:
- Comparisons of the distances between sites over time as indicative of the widespread adoption of horse domestication (Houle, 2016).
- Inquiry into the dichotomy of accessory and adornment laden deer stones (with few to no actual human features) and Bronze Age burials, which have few to no associated grave goods
- The Xiongnu culture that postdates cultures of the Mongolian Bronze Age exhibits clear indications of societal elites and a set hierarchy. How and when does this system materialize, if khirigsuurs are egalitarian communal efforts, and not direct ties to an emerging hierarchy?
- Archeologists tend to focus on the centralized, extensive monumental landscape when approaching Bronze Age sites, and this project follows suit, if on a smaller scale. Future projects may benefit from expanding beyond easily identifiable and visually captivating sites into smaller sites and habitations at their peripheries.

21 The repositioning of deer stones into these graves also limits the ends to which the positionality of deer stones at these sites can be argued as the actions of the original carvers.
22 This project attempted to extend its survey beyond the parameters of central monuments, specifically to examine art etched onto rock faces in the surrounding mountains, but was twice defeated. We could not get to one rock art site because
- Historians in Mongolia often address interactions with the Chinese through time, but during the Bronze Age, even this far south, we see cultural aspects more closely aligned with northern groups. Horse domestication likely came through Siberia, while deer stones seem to start in the Darkhad Depression, with the two oldest C-14 dated stones in Mongolia (with calibrated date ranges of 2211-1938 calBCE and 1350-1090 calBCE respectively). However, the sites from this paper are at the southern edge of the Khangai Mountains, and the directionality of the sites is downstream towards the south. Comparative studies of northern and southern contemporaneous sites could help understand the southern edges of the deer stone and khirigsuur complexes and their interactions with people living at the fringes.

- Looting and post-construction interactions at SHC, KSA, and BKH are prolific, though left undiscussed here. These actions, and their conception in modern Mongolian culture, would provide germane content for future research, and ample discussion within an ISP format.

This paper used drone photography to accelerate the understanding of complex structures and their distributions across three distinct sites in Bayankhongor. Information from these images, and from traditional archaeological survey and mapping, was used to compare the sites against each other and against existing Bronze Age publications. In doing so, this paper was able propose interpretations of societal structure through monumental construction practices, and to provide information for possible future investigations in Mongolia.

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of time constraints, misunderstanding, and transportation limitations, while at another site significant time was spent recording information, only to later find it was the subject of unpublished research, keeping it under wraps for the time being.
References:


Appendix 1: Survey Feature Recording Sheets

Bayankhongor Mapping Project

Khirissur Recording Form

Site: KSA003

Khirissur Number: 7

Wall Shape: C (S) R Other: 

Photographs: 2 3 4 5 6

Rs: 

Drone Video: Y N

Drawings: Y N

Encirclement Diameter (N-S): m

Encirclement Diameter (W-E): m

Relation to other site features:
135° from KSA003 (core), drawn from 2015 report

Additional Comments:
- Rock stone, black stone, and white stone. East door has well and white stone path.
- R&W: Single stone, spaced rocks
- W: White stone path on SE face, scattering of stones concentrated on southern side
- C: 10m diameter

Si: on N, S, E side, 8 small mounds in 1' ring, check agent stone
- (6 other mounds on north side seen in drone shot)
- Also wall on SE side (same as white stone path)
Khiriguur Recording Form

Site: K.5A.003

Khiriguur Number: 2

Wall Shape: C (3) R  Other:

Photographs: 1 2 3 4 5 6

Drone Video: E N

Drawing: 9/N

Encirclement Diameter (N-S): __________ m

Encirclement Diameter (W-E): __________ m

Relation to other site features:

Location: 30°50.00'N, 100°40.01'E

Additional Comments:

- white, earthen wall, organized stone (silm) on top
- 5 small stone construction, 8 circles of stone at each of the 4 corners, do not visible.
- C. Hotupeh Door (likely souvern soltira in past than 2000 BC) 11 m diameter
- S. Eastern wall, Northern side decorated by red/sand.
  (drone reveals wall is possibly 4 separate mounds.)
Bayankhongor Mapping Project

Khildsuur Recording form

Site: SKK 5X4H001

Khildsuur Number: 1

Wall Shape: C (S) R Other: ________

Photographs: 3 4 5 6

Drone Video: Y/N

Location: #10 E: 2418 m

Encirclement Diameter (N-S): ________ m

Encirclement Diameter (W-E): ________ m

Relation to other site features:

- Stone grave B, 769' (W) and an adobe hill of 135° (SE)
- Modern encampment 60°

Additional Comments:

R.U.: Single battered wall, only intact in NE corner. Likely the rest is covered by

- Gravel and vegetation (as usual, nothing in my opinion)

C: slight central deposit, W/E damper

S: N/A

Note: Bone, stone, etc.

Archaeological research

Archeological Research
Slope Burial Recording Form

SAGSAI BURIAL

Date: 5/3/12

Site: 344H001

Burial Numbers: 32

Wall Shape: ○ S R Other:

Photographs: 1 2 3 4 5 6

Drone Video: Y/N

Drawings: Y/N

Encirclement Diameter (N-S): ___ m

Encirclement Diameter (W-E): ___ m

Relation to other site features:

61 m from ket1, 25° from ket1

Additional Comments:

Loosened ENE: 3. hole, dug & center of circle and 110° (W-SW)

Covered: 6.0 cm deep, 1.00 cm wide (W-SW), partially filled in

110° hole: 1.00 cm deep, 1.00 cm wide (W-SW)

P1: single fired bottle, with remnants of 4 corners, grains, but more eroded than 1cm/

P2: hole reveals a 3. stone, deep floor, with large greenstone # base, small (2cm) stone # base

P3: hole reveals a 4. stone, deep floor, with remnants of 4 corners, grains, but northern corner is more eroded

C: 3.5 m, wide, destroyed by digging

S: No
Khirsuur Recording Form

Site: 2125001

Khirsuur Number: KMH

Wall Shape: S  R  Other:  

Photographs: 2 3 4 5 6  

Drone Video: N

Drawings: Y  N

Encirclement Diameter (N-S): m

Encirclement Diameter (W-E): 218.5 ± 1 m estimated using drone photo was also 241

Relation to other site features:

150m north, 300m east

Additional Comments:

Pilot single-rocker panel blue, frame/embrasure

Plaza: SW square

15 (NE-W) diameter, 3 days from living (was this in the past)

Final east DP

East satellite for horse rider gate, West satellite for human gate. NE diameter
Bayankhongor Mapping Project

Khirigsuur Recording Form

Site: 184001

Khirigsuur Number: 41

Wall Shape: C 8 R Other: ________

Photographs: 1 2 3 4 5 6

Drone Video: Y N

Location: 48°06'41.6", 116°08'25.7" E 232.0 m

Encirclement Diameter (N-S): ____ m

Encirclement Diameter (W-E): 20 _______ m

Relation to other site features:

370° to K338 248.0 m

Additional Comments:

B: wall has spaced stones, much closer to center

P: very large stone near

C: much more stones than previous K. (12m) W-E

S: horse temple ritual at 3 East, no time burial.
Bayankhongor Mapping Project  
Khiriguur Recording Form  

Site:  

Khiriguur Number: 5  

Wall Shape: C 5 R Other:  

Photographs: 1 2 3 4 5 6  

RS: 926  

Drone Video Y/N  

N  

Location: 46°01'31"  101°16'05"  

E: 2816m  

Drawings: Y/Ø  

Encirclement Diameter [N-S]: 9.9 m  

Encirclement Diameter [W-E]: 21.5 m  

Relation to other site features:  

Relation:  

Additional Comments:  

RW: well spaced stones, 9 circular  

D: not visible  

C: 12m (W-E) off-angle towards SE.  

S: 14 horse tempa ritual pillar on east side, with  

one extending to south side.
Bayankhongor Mapping Project

Khirigsuur Recording Form

Site: [site][1]

Khirigsuur Number: 6

Wall Shape: [S][5][R]

Other: [square, [other][2], possible square well?]

Photographs: [1][2][3][4][5][6]

#5:

Drone Video [Y][N]

#1: 113, 100, 150 m

Drawing: [Y][N]

Enceinte Diameter (N-S): [m][3]

Enceinte Diameter (W-E): [m][4]

Location: [location][5]

Measure of GPS circle 17-18 (DP est. 67 m)

Relation to other site features:

Additional Comments:

BRW: Partially present circular wall, possible square over wall visible at SE corner. Also, possible inner ring (though this could just be the start of the central mound)

P: not visible, evidence of rocks being taken from center to build modern rock wall enclosure

C: 41 m (DP est.) large depression going East

S: 10 m mounds on east side of enclosure, multifaceted southern wall; [western] [wall]; possible smaller satellite features, hopefully visible in drone photo.
Bayankhungor Mapping Project

Deer Stone Recording Form

Site: EKHOO -

Location: 46° 08' 38.2" N 108° 15' 42.2" E 

Stone Number: 1 Fragment: 1 of 1

Orientation: [ ] F

Comments:

Photographs: 1 2 3 4 5 6

S #:

W #:

Drone video: Y [ ] N [ ]

Drone Photograph [ ] Y [ ] N [ ]

Drawing Pages: 5 - 9

Cleaning Notes:

Water sprayer/poured over, scrubbed with plastic sponge and water

Tools: Photographs/drawings done the cleaning day

Relation to other Stones:

85 cm, 160° (3) at 51, 343 cm (40°) E of 53

Additional Comments:

- Both is a single bar, including an arc over an object (and unknown object) on southern side, a knife on northern side. Of single side carinated non-linear.
- Marks: Ring on south side, circle on north side (near AP), chisel on west side top
- Animals:
  - S: 4 deer
  - W: 4 deer
  - N: 5 deer, 2 horses
  - E: 5 deer

- Blue plaque glued at bottom, not present at other stones.
Deer Stone Recording Form

Site: 53

Location: 46° 08' 53" N, 101° 15' 42" E 23

Stone Number: 2

Orientaion: F

Fragment: 1 of 2

Comments:

Photographs: 1 2 3 4 5 6

S #: N #:

W #: E #: Other #:

Drone video: Y N

Drone Photograph: Y N

Drawing Pages: 11 -- 12

Cleaning Notes:

Relation to other Stones:

Additional Comments:

Salt: Double band, with triangle on pattern between. North side has an extra triangle hanging below the belt.

North side has a disk on the lower right.

Animals: S: 3 deer
          N: 3 deer
          W: NA
          E: NA
Appendix 2: Biiriin Khundii Pictures

Figure 20: BKH001 K001

Figure 21: BKH001 SB002
Appendix 3: Khar Sairiin Am Pictures

Figure 36: KSA003 Hourglass 1

Figure 37: KSA003 Hourglass 2
Figure 38: KSA003 Hourglass 3

Figure 39: KSA001 Turkic statues facing east
Appendix 4: Shatar Chuluu Pictures

Figure 40: SHC002 Turkic burial facing east

Figure 41: Lion statues facing east
Appendix 5: Drone Photographs of Deer Stone and slab burials

Figure 42: 5 slab burials, 2 smaller slab burials, and 2 unidentified stone rings at Bitriin Khundii. Photo is oriented north.

Figure 43: 9 slab burials and 1 unidentified ring at Shatar Chuluu. Photo is oriented north.