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Prehistoric Mongolian Archaeology in the Early 21st Century: Developments in the Steppe and Beyond

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Abstract

There has been a great increase in archaeological research in Mongolia since 2000. Increasingly precise chronologies, regional studies, and the growth of development-driven archaeology are transforming our knowledge of this key region of north-eastern Asia. This review summarizes recent work and provides a narrative of the prehistoric and medieval cultural sequences as presently understood. I focus on long-standing key topics: early human habitation, the adoption of food-producing economies, Bronze Age social transformations, and the emergence of central places and large polities. I argue that, on the one hand, Mongolia has unique data and new examples to offer the archaeological community and, on the other, that the prehistory of Mongolia and the steppe are not so different from the rest of the world in its history of research and key questions. This review provides general overviews covering the Upper Paleolithic, Epipaleolithic or Neolithic, and Bronze Age to the Xiongnu period; specific data related to each period provide jumping-off points for comparative analysis and further examination.

Keywords Mongolia · Hunter-gatherers · Nomadic pastoralism · Monumentality · State origins

Introduction

Mongolia has seen an explosion of high-quality archaeological research and publication during the first decades of this century. So much so that it is possible for me to write a new, and somewhat unorthodox, narrative of the prehistoric archaeology of Mongolia. In Mongolia we see atypical trajectories for a range of oft-studied topics in archaeology, from the emergence of complex polities, to the transition of hunter-gatherer subsistence systems, to food production economies, and the construction

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and maintenance of monumental architecture. These new narratives are made possible by both a wealth of new data and the rich and critical new models of social processes made possible by them.

The great growth in archaeological research during this century, especially intensive regional research projects and bioarcheology, has established Mongolia as a locus for global archaeology. The study of nomadic pastoralism and its economic and political structures has perhaps the greatest potential, including the growth of the Xiongnu polity, the monumental burial forms of the Khangai Highlands, novel models of a state built within a political and economic system rooted in mobility rather than central places, and the relationships of labor scale to burial contents. The alternative trajectories that I describe provide contrasts and complements to a range of established models of social change in prehistory.

In this review I have focused almost entirely on work published since 2000 with only a few exceptions where reference to earlier research is needed to set the stage for recent work. This review follows a basic chronological sequence, from recent discoveries related to the earliest known inhabitants of Mongolia through the heavily examined Bronze Age and up to the Iron Age and Xiongnu period. Though different data are emphasized in different sections, I discuss modes of habitation and land use among typical inhabitants in each period alongside the coverage of major recent research themes and projects for that period.

This review stands on the shoulders of a group of excellent regional and Mongolia-specific reviews and studies carried out over the past decade (Hanks 2010; Honeychurch and Amartuvshin 2007; Honeychurch and Makarewicz 2016; Honeychurch and Wright 2008) and has benefited immeasurably from recent conference and exhibition-based syntheses that have stimulated publication of research (Bemmann et al. 2009; Brosseder and Miller 2011; Fitzhugh et al. 2009; Hanks and Linduff 2009; Sabloff 2011). Also of great note is the increase in the number of radiocarbon dates by projects in Mongolia as the regional research framework moves away from the typological based chronologies of the 20th century. This allows us to narrow the chronological ranges of many previously less-well-defined phenomena and extend others in unexpected directions.

The modern nation of Mongolia sits in the center of eastern Eurasia between Russia to the north and China to the south. It is often thought of as a vast homogenous grassland and its archaeology that of the dwellers in this grassland. It is, in fact, a large and diverse territory that is best equated to other large mid-continental regions around the globe. The west is mountainous with arid basins containing lakes and wetlands, and the south is arid, dominated by the Gobi Desert (Fig. 1). The desert is diverse, encompassing poorly watered highlands, extensive gravel flats, marshy seasonal wetlands, volcanic geology, and arid rocky plateaus. A spur of the Altai range extends from the west into the Gobi region and divides western Mongolia between the comparatively better-watered north and arid south. The area east of Mongolia is steppe and mostly a vast grassland broken up by ranges of treeless hills and the long Kherleen River that eventually spreads out into large wetlands and lake basins along and beyond Mongolia's eastern borders. Central and northern Mongolia are dominated by ranges of low mountains and wide, high-elevation valleys. I refer to this area as the Khangai Highlands. All of Mongolia's large rivers rise there. The

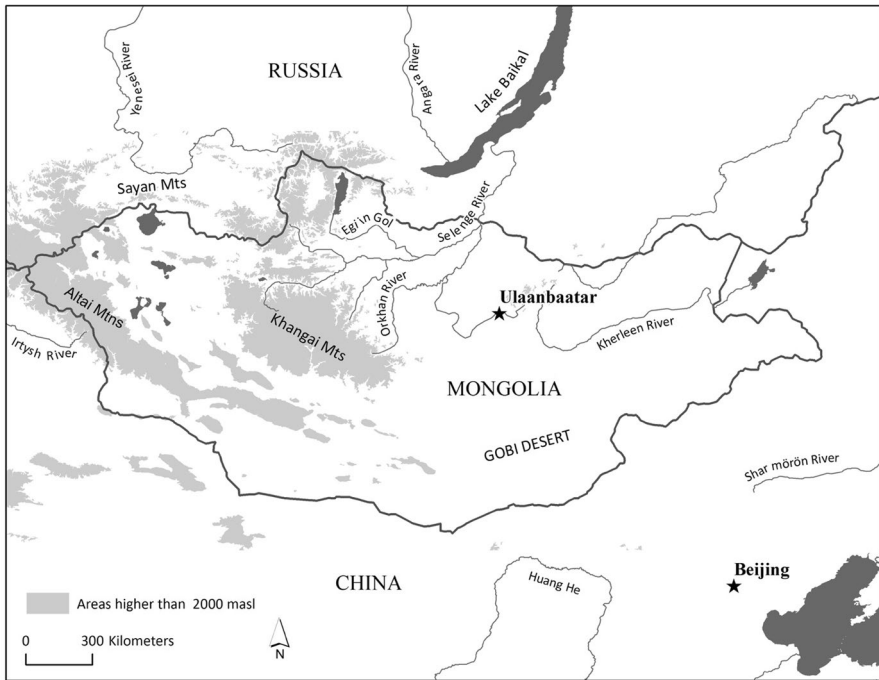


Fig. 1 Map of geographical regions and features mentioned in the text.

Selenge and the Orkhon drain northward toward Lake Baikal and the Kherleen flows east. This is a well-watered region with upland forests, wide river valleys, steep-walled smaller stream valleys, and intermontane lakes.

A Brief History of Archaeology in Mongolia, with an Eye to the 21st Century

Mongolia has been a part of world archaeology since the formation of the modern discipline. The roots of archaeology in Mongolia are found in the reports of the Siberian intellectual Yadrintsev (1889) who described the medieval monuments and ruins of the Orkhon Valley and drew the attention of other Russian scholars to them. Shortly thereafter, Radlov's philological expedition (1892) brought the cities and monuments of the Orkhon Valley, including the bilingual Türk inscriptions there, to a world audience. These inscriptions brought to light the first known indigenous writing system in the Eurasian steppe and linked it to the Turkic empires previously known only from external accounts. In the early 20th century, K. Maskov excavated at the Orkhon city of Kharbalgas (Dähne and Ulambayar 2012). N. C. Nelson and Alonso Pond accompanied the Andrews expedition into the Gobi Desert in search of dinosaur bones in the 1920s (Andrews et al. 1932). They brought with them the then-current theories of human origins that suggested Inner Asia could have been

the cradle of humanity and cutting-edge methodological skills in regional archaeology that were being developed in the American Southwest (Berkey and Nelson 1926; Fairservis 1993; Nelson 1926a, b). At the same time, Russian scholars began excavations at the major Iron Age necropolis of Noyon Uul and, in 1924–1925, launched the archaeology of the Xiongnu and raised the question of the nature of polities in the Eurasian steppe (Khodukin 1926; Voskresenskii and Tikhonov 1932). These discoveries were rapidly made available to international scholars (Kozlov 1927; Kozlov et al. 1925; Trever 1932; Yetts 1926), and immediately following the second world war, scholars returned to excavate in the Orkhon Valley (Kiselev 1957; Merpert 1995; Perlee 1961). It is not within the scope of this review to cover the extensive fieldwork campaigns of the Soviet period by Mongolian and Eastern Bloc archaeologists that took place during the second half of the 20th century. Those excavations established the framework for 21st century research, trained many scholars still active in Mongolia today, and located and carried out initial work at many sites still being studied. A number of scholars have written reviews and syntheses of this period (Bayanbat 2009; Gunchinsuren 2017a, b; Jisl 1965, Okladnikov 1965; Tseveendorj et al. 2002).

Key Debates

The first issue of *Studia Archaeologica*, the national archaeological journal of Mongolia, was published in 1960 and remains the premier journal of Mongolian archaeology. Topics addressed in early issues were fortified town sites (Perlee 1963), rock art (Dorjsuren 1963), and the Bronze Age mortuary record (Ser-Odjav 1964). These, along with the initial foci on Xiongnu and early humans, have been the major topics of enquiry in the archaeology of Mongolia since its inception and remain so today (Enkhtuvshin and Ta 2008; Ser-Odjav 1987; Tseveendorj 2009). I focus on four of these topics: early human inhabitation, Bronze Age society, rock art, and the Xiongnu polity.

The key areas of research and debate for scholars of Mongolian archaeology arise from these long-standing central topics, most of which are familiar to archaeologists from any region of the world. The structure of typo-chronology and terminology (e.g., Turbat 2014; Wright 2007, 2011) or debate on the use of “Neolithic” in north-eastern Asia (e.g., Kuzmin 2014; Lu 1999; Okladnikov 1990) have always been specific parts of archaeological debate, but one on which even modern biomolecular studies depend. As already mentioned, Mongolia provides a novel venue for such questions as the emergence of complex societies (Honeychuch 2015), the structure of exchange systems, and the adoption and spread of subsistence systems. For most of these topics, the balance of autochthonous and exogenous sources of change is a steady source of debate from the earliest publications to the most recent. An element of these discussions has always been the influence of riverine East Asia on eastern Eurasia and the influence of Eurasia on China (Lattimore 1940; Rawson 2017). This has often been the central question of Mongolian archaeology, but more recently the question of regional relationships has broadened.

Strongly asserted arguments about the central role of climate in defining culture (Chen 2015; Pederson et al. 2014) are part of a long-standing debate in Eurasia (D'Arrigo et al. 2001; Lattimore 1938) and can be found in many archaeological contexts worldwide. The debate about the spread of power through the grassy medium of the Eurasian steppe is also a discussion about the central role of mobility. The enactment and effects of mobility can be found at the core of most of these debates. In our interpretations we see the tension between privileging the impact of migration, long-range mobility, and exchange or the necessity of short-range pastoralism, interaction, and local change.

Cultural Resource Management

International collaboration and research driven by a national agenda have always been a part of Mongolian archaeology. The sea change of the last decade has been the growth of cultural resource management (CRM). As the recent international resources boom transformed Mongolia, research scholars from the Academy of Sciences brought in experienced advisers and built a CRM infrastructure and rushed to keep pace with economic growth. They developed new forms of collaboration and funding (Reading et al. 2016), new types of research plans (Gunchinsuren et al. 2011, 2013), and recovered challenging new data sets including extensive regional surveys and large multiperiod cemeteries (Amartuvshin et al. 2015).

Mongolia has joined the international archaeological heritage community with the addition of three archaeological regions to the UNESCO world heritage list since 2004 (UNESCO 2017): The Orkhon Valley Cultural Landscape, Petroglyphic Complexes of the Mongolian Altai, and the Great Burkhan Khaldun Mountain and its surrounding sacred landscape, a region central to the life of Genghis Khan. All embrace the holistic cultural landscape approach to the preservation and celebration of national heritage. The establishment of Mongolia on the international cultural heritage stage is focused primarily on the protection and enshrining of national narratives, particularly those related to Genghis Khan and the Mongol empire (Honeychurch 2010; Nomin 2009; see also DePriest et al. 2014; Sneath 2014)

Early Human Habitation

Following the identification of the Denisovan genetic lineage in the Russian Altai, west of Mongolia (Krause et al. 2010), and the discovery an archaic *Homo* cranial fragment dating c. 20,000 years ago from Salkhit in northern Mongolia (Fig. 2), the study of the hominin populations of Middle and Upper Paleolithic Mongolia gained a new dimension (Coppens et al. 2008; Derevianko et al. 2000; Kaifu and Fujita 2012; Tseveendorj et al. 2005, 2016). The Middle Paleolithic has not been extensively studied recently; although many surface finds show that Middle Paleolithic tool users were adapted to a range of environments, there are few excavated contexts (Bazargur 2015; Derevianko 1998; Derevianko et al. 1990; Zwyns et al. 2014b). The excavation at Jinsitai Cave (Li et al. 2018), close to the Sino-Mongolian border

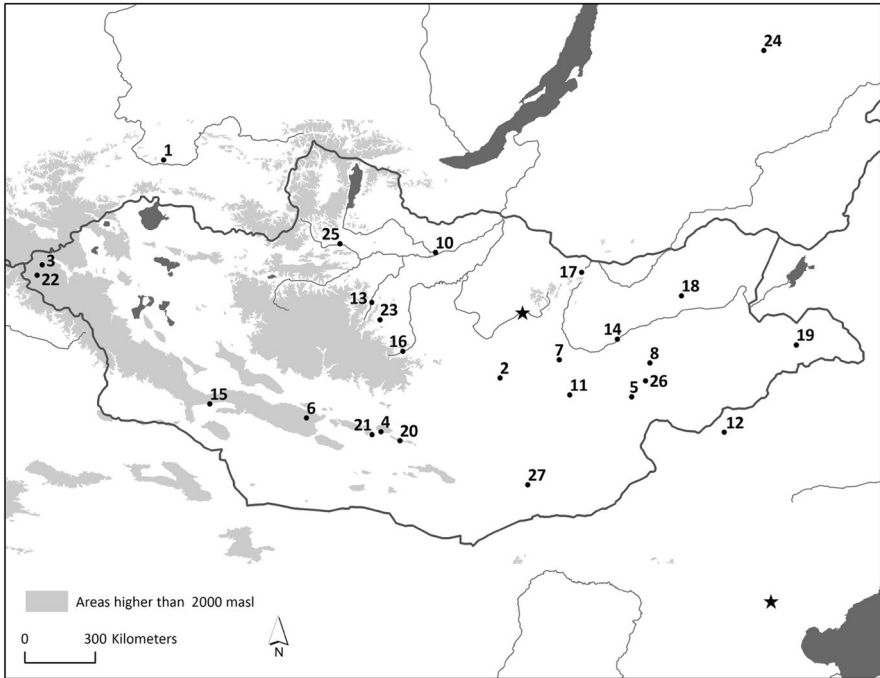


Fig. 2 Sites from the Paleolithic to the Iron Age: 1. Arzhan; 2. Baga Gazaryn Chuluu; 3. Baga Oigur/Tsagaan Salaa; 4. Bar Ovoo; 5. Chandman' Khar Uul; 6. Chikhan Agui; 7. Daram; 8. Delgerkhaan Uul; 9. Denisova Cave (northwest of map); 10. Dorolj; 11. Ikh Nartiin Chuluu; 12. Jinsitai Cave; 13. Khanui Valley; 14. Khanzat; 15. Khyar-Kharaach; 16. Maikhan Tolgoi; 17. Rahsaan Khad; 18. Salkhit; 19. Tam-sagbulag; 20. Tevsh Uul; 21. Tsagaan Agui; 22. Tsagaan Gol; 23. Tsatsiin Ereg; 24. Ust-Karenga; 25. Uushigiin Over; 26. Zara Uul; 27. Zhavklant Khairkhan.

opposite Sukhbaatar Aimag in eastern Mongolia, offers the potential to broaden the context of the Middle Paleolithic in the region.

The Upper Paleolithic has been the main focus of Paleolithic research in Mongolia (Derevianko et al. 2004; Gladyshev et al. 2010; Gunchinsuren 2017b; Lkhundev et al. 2015; Zwyns et al. 2014b). Two Upper Paleolithic sites have been investigated in the valley of the Kherleen River in eastern central Mongolia. The long-studied site of Rahsaan Khad produced Upper Paleolithic large blade-based tools and radiocarbon dates from fauna of 41,000–39,000 years ago (Gunchinsuren 2017b; Tsogbaatar et al. 2010). The open-air site of Khanzat-1, on a geomorphologically stable terrace overlooking the river valley, yielded spatially coherent arrays of tools and debitage (Izuho et al. 2009; see also Jaubert et al. 2004).

The most recent investigations of the Upper Paleolithic in Mongolia are the stratigraphic excavations at the Tolbor complex of localities in the valley of the Ikh Tulberiin Gol, particularly Tolbor 15. The research has concentrated on the Pleistocene terraces of a pair of north-flowing tributary valleys of the Selenge River (Gladyshev et al. 2012; Khatsenovich et al. 2017; Zwyns et al. 2014a). This work has revealed

a deep stratigraphy and initial Upper Paleolithic stone tool industries dating from before 40,000 years ago to the Epipaleolithic, spanning the change from large blade-based industries to flake-based ones at c. 25,000 and ultimately to pressure-flaked microliths (see below). At the nearby site of Dorolj 1, drilled ostrich eggshell beads were found in the same layers as large blade tools (Jaubert et al. 2004; see also Janz et al. 2009). The excavated strata were deposited as part of a series of open-air, stream-side sites made by people moving around the valleys and exploiting—and in one case caching (Tabarev et al. 2013)—local stone resources. The relatively early Upper Paleolithic dates in this area are seen as the residues of a “Selenga corridor” that allowed easy east-west travel through that river system by Upper Paleolithic populations (Zwyns et al. 2014b).

Based on environmental reconstructions from Dorolj 1 in the nearby Egiin Gol Valley, older than 30,000 years, people in the northern section of Mongolia inhabited a cold steppe or periglacial environment and hunted a diverse range of late Pleistocene ungulates (Jaubert et al. 2004). Dorolj 1 and the middle strata of the Tolbor sites are contemporary with earlier excavations in the Orkhon Valley and Tsagaan Agui, a cave site in the Gobi region (Derevianko et al. 2000; Olsen et al. 1998). Taken as a whole, the Upper Paleolithic of Mongolia is a manifestation of industries and modes of subsistence that were spread across northeastern Asia and Eurasia before the onset of the last glaciation of the region.

Holocene Hunter-Gatherers

The defining objects of the Holocene habitation of Mongolia are the pressure flaked and microlithic debitage and finished tools that are made on different materials and found in a range of contexts across the country. In addition to this chipped stone industry, these sites also contain ground stone, fine polished stone objects as well as grinding stones, body adornments such as small pierced discoidal ostrich eggshell beads, and a range of ceramic containers. Research has focused on subsistence strategies in the dynamic postglacial environment of eastern Eurasia. In this era lakes filled what are today the arid basins in the Gobi Desert and western Mongolia. Environmentally, this period saw what has been termed “the greening of the Gobi” (Janz et al. 2017). Today’s arid steppes were warmer and wetter savannah and grassland environments with riparian and upland woodlands. In the grasslands and in the cooler forested north of Mongolia, wetlands and streams filled wide valleys carved out during the Pleistocene (Holguín and Sternberg 2018; Janz et al. 2017; Wright and Janz 2012). The ubiquity of small blade and flake-chipped stone debitage across Mongolia demonstrates that humans flourished and moved throughout these territories and that the archaeological record here is connected to pan-Asian narratives of postglacial human adaptation (Bar-Yosef 2011).

The small blade and pressure flake tool kits of this period originated c. 15,000 years ago (Gladyshev et al. 2010; Janz et al. 2017) from regional roots in Siberia and northeastern Asia and are found throughout the region by 11,000 years ago. Ceramics, a widespread postglacial technology in eastern Asia (Jordan and Zvelebil 2006; Kuzmin 2013), appeared in Mongolia and its immediate vicinity in similarly

early times. At Ust-Karenga 12 in Transbaikal, ceramics dating as early as 14,000 years ago were found (Razgildeeva et al. 2013). No ceramics within Mongolia are yet dated to this period (Kuzmin 2014, 2017). The earliest firmly dated ceramics are from the Gobi region (Odsuren et al. 2015), at c. 7900 years ago where “net-impressed” decorations have been found (Janz et al. 2015).

Many of the recorded Holocene sites are surface scatters that were collected to develop an understanding of the bladelet-based technologies that were used in the terminal Pleistocene and early- to mid-Holocene (Goebel 2002; Janz et al. 2009). Where surveys of larger areas have been carried out, the spatial patterns of habitation are centered around drainage systems. In the valleys of northern Mongolia, the largest chipped stone scatters are strung out along rivers and occupy higher bluffs and well-drained large sandbanks deposited by large postglacial rivers (Abramova 1956; Wright and Janz 2012). Excavated assemblages in northern and central Mongolia are rare, but extensive work in the region west of Lake Baikal suggests a river and lacustrine-focused subsistence system with a high degree of seasonal mobility (Weber et al. 1998; Weber and Bettinger 2010). Northern Mongolia contains little evidence for the elaborate adornments and extensive cemeteries that are found in the river valleys of the Baikal region of Siberia (Bazaliiskii 2003). One can only assume that the combination of infrequent contact between major watersheds and lower population densities along Mongolia’s relatively smaller rivers meant that those populations were not drawn into the body and burial social displays of the Baikal region (Shepard 2012) until the Bronze Age.

In less well-watered southern Mongolia, most detectable habitations were in wetlands (Janz et al. 2017; Sfériadès 2004). Smaller chipped stone scatters and single finds of finished tools in regions beyond the immediate wetlands and riverbanks demonstrate shorter term use of other areas as smaller logistical locales. These landscapes suggest that mobile hunter-gatherer bands were moving on foot and returning repeatedly to the best locales on the landscape. Common technological traditions and widespread styles of body adornments suggest the people of Early and Middle Holocene Mongolia had long-standing of diffuse cultural connections across the region.

Although there are ongoing excavations in western and northern Mongolia, many of the recent excavations on this period have taken place in the Gobi Desert. The cave site of Chikhen Agui (Derevianko et al. 2001, 2003) provides a record of repeated habitations between 13,400 and 8700 years ago. Dates from the several large hearths and the discovery of grass bedding in the excavation suggest that the cave provided winter shelter for small groups of people who made and used microlithic compound tools. Open-air and excavated scatters of microlithic debitage and tools at Ikh Nartiin Chuluu also contained ground stones that have yielded unidentified starches and other plant remains (Schneider et al. 2016). Excavations at the open-air site of Zara Uul, located in a sheltered area of hills between two lake basins, have yielded chipped stone debitage and tools, ‘net-impressed’ ceramics, fauna, and chipped stone adzes with signs of polishing on their edges dating to 7800–5900 years ago (Janz et al. 2017; Odsuren et al. 2015).

The unique sites of the Tamsagbulag area (Okladnikov and Derevyanko 1970; Sfériadès 2004) are wetland-edge settlements of semisubterranean houses with

grinding stones, pits of bovid bones, and burials in pits beneath house floors in addition to ceramics, ground stones, and small tools that are typical of this period. Millet was identified by the original excavators (Séfériadès 2004, p. 146). Tamsagbulag dates to 6700–6100 years ago. The houses are c. 40 m² in extent and rectangular with no obvious entryways, which led the excavators to conclude that they were accessed through the roof. The duration, seasonality of the site, and the extent to which these people were farmers remain to be investigated, but this form of dwelling has not been found elsewhere in Mongolia. These dwellings and the tools found at the sites are evocative of Neolithic farming communities to the east of Mongolia.

Taken together, these various Holocene sites across Mongolia show evidence for increasing territorial specialization. Archaeological data include a range of trends that indicate increasingly tethered mobilities focused around predictable resources, including larger grinding stones, less-careful use of lithic raw materials, and an increase in ceramic use (Janz et al. 2017).

The Adoption of Food-Producing Economies

The adoption of food-producing economies transformed human cultures throughout the world. In Mongolia the main impact of the addition of food production to the hunting and gathering economy was the adoption of western Eurasian domestic animals. The most likely vector for the introduction of domestic animals in Mongolia is from the west during the early second or late third millennium BC, more than 1000 years earlier than the first appearance of domestic grains in Mongolia (Spengler et al. 2016). It is not yet clear if there is any detectable chronological difference between these earliest pastoralist cultures of the northern Sayano-Altai-facing borders of Mongolia and the southern Altai and Xinjiang-facing areas. What is becoming obvious (Janz et al. 2017; Wright 2017) is that the transition between Epipaleolithic or Eneolithic hunting and gathering and the fauna, monuments, and metallurgy of the succeeding Bronze Age in the Mongolian steppe (see below) is not a clear break with the past (cf. Mooder et al. 2006).

Models that build on Holocene hunter-gatherer adaptations (Janz 2016; Janz et al. 2017) focus on both environmental changes that took place during the second millennium BC and the resulting pressures on wetland adaptations that pushed people toward modifying their subsistence systems and adopting pastoralism. The impact of pastoralism itself cannot be discounted, as new livestock populations modified grassland and forest ecosystems made fragile by shifting rainfall regimes (Rosen et al. 2019). In addition, as pastoralist-based ideas of property (Ingold 1986), wealth, and resource management spread throughout the existing mobile hunter-gatherer social networks, people could have been pulled into a pastoralist economy by new social expectations (Wright 2017; Wright et al. 2018; see also Mutundu 1999). Finally, as patterns of mobility were adapted to the needs of growing numbers of domestic animals, new networks of movement and connection developed. These factors combined to spread food-producing economies throughout Mongolia in only a few centuries.

Monumental and Mortuary Archaeology of the Bronze and Early Iron Ages

Beginning around 4000 years ago, the grasslands and forested valleys of Mongolia witnessed an epochal subsistence change—the establishment and spread of pastoralism. This was more than the advent food production but also the first appearance in the archaeological record of monumental architecture, metal production, and social hierarchy.

The archaeology of Bronze Age Mongolia is an archaeology of monuments. We can see “Bronze Age” as an identity that is recognizable archaeologically through objects and practices woven together by the use, display, and production of metal (Chernykh 1992; Kohl 2007; Kristiansen and Larsson 2005; Rawson 2017; Shelach 2009). Habitation and production sites are rare and low impact, and the landscape is dominated by impressive architecture made up of stone mounds, formal constructions, standing stones, rock art, complex patterns of alignments, and repeated smaller features. The excavation of monuments provides bioarchaeological and material cultural information that forms the central narrative of the period.

Recent research on aspects of the Bronze and Early Iron Age in Mongolia shows a general diversity of material, a spread of Bronze Age material culture across the Mongolian steppe, and a refraction of the different aspects of Bronze Age culture in that they do not march in lock-step as practices such as pastoralism or monument building are spread and adopted. For the purposes of this review the Bronze Age of Mongolia can be divided into two working chronological units: the earlier (c. 1800–1200 BC) and the later (c. 1200–800 BC). The boundaries of these periods are indistinct in terms of both technologies and typologies. A key watershed, however, could be the widespread adoption of horse riding. Taylor et al. (2017) have reached the conclusion that widespread riding in Mongolia was established in the 13th century BC. This is not a date for the introduction of horse riding in any form, but a change in the society of horses and riders (e.g., Honeychurch 2015). The interpretative narrative of the Bronze Age can be divided approximately into an earlier phase, where advent and invention are central and the mobility of individuals is diverse, and a later phase in which display, social difference, and hierarchy are the major topics, and common community mobility is the rule. The later phase is frequently referred to as the Bronze and Early Iron Age because new metal technologies appeared against a backdrop of continuity in monumental types and ceramics. Typologically, there are early and late examples of most monumental forms, but different types have their florescence in different phases, which provides the general chronological framework for monumental types.

In much of Mongolian archaeology, there is a balance between typology and context. Though the context of archaeological material is becoming a common aspect of archaeology in Mongolia, typology remains a central part of research. Unlike much of the archaeological world, many basic typologies of material culture are not set in stone, and debate and reformulation of those typologies is an

active part of current research (Amartuvshin and Batzorig 2014; Turbat 2014). This is especially important in the study of the Bronze Age where questions of identity, cultural diffusion, and scholarly standpoints are active issues for discussion.

Few monumental types are clearly defined chronologically or spatially, and most sites are agglutinations of periods and types. Many monumental sites were used for long periods, and it is not uncommon to find burials and elaborate monuments built in the same place that are separated by many centuries or even millennia. The site of Baga Mongol at Baga Gazaryn Chuluu (Nelson et al. 2009), for example, is a relatively unassuming cluster of burials spread over less than 1 ha amid an islet of outcropping rock in the surrounding grassland. Nearly complete excavation of those burials has shown that this locale was used for interment for more than 2500 years beginning in the Bronze Age.

In addition to the range of typically sized monuments and burials, several macro-monuments have been identified in the Khangai and Gobi regions. These are very large structures often made up of smaller and simpler elements that are combined to form larger wholes. These are differentiated from very large monuments in that they often lack central foci and are not simply bigger versions of other monuments (see below; Wright 2014b). Examples include a pit and mound circle 185 m in diameter (Ahrens 2016) and the several hundred-meter-long avenues and linear alignments of the Ulaanzuukh (Wright et al. 2019). These large structures show a different scale of community investment in monument planning and building than the conventional mortuary structures that have long drawn archaeological attention.

Bronze objects found in graves have long been the marker of this period (Amartuvshin 2003; Erdenebaatar 2002; Erdenebaatar and Khudyakov 2000; Hudiakov and Erdene-Ochir 2010). Park et al. (2011) examined a range of bronze objects and production debris from Baga Gazaryn Chuluu and proposed a system of circulation of objects, knowledge, and producers between local and regional communities, as well the recycling of bronze objects, to explain the similarities and constraints of the metal production system. These bronzes are arsenic rich, but this may be due mainly to restricted access to tin resources than to particular formulae for metal production. The ores were mined and smelted in the Gobi region, and this highlights the range of connections between communities of practice and, perhaps, illustrates a distinctively mobile production style in which ore, ingots, tools, and final products were prepared in widely separate areas. Hsu et al. (2016) have carried out preliminary studies of large-scale metal recycling across eastern Eurasia and highlight the Sayano-Altai region and the Onon River watershed as major production regions for bronze objects in the 1st millennium BC. Combined, these two analyses may show a multicentered system of production and recycling of metalwork during the Bronze Age.

Settlement and Subsistence

Pastoralism, in the broadest sense, is the herding and husbanding of animals and is an element of food production economies worldwide. Nomadism adds an element of population mobility to the economy. Nomadic pastoralists move the majority of

their human and animal population to advantageous locations. These locations are typically most advantageous to the animal populations. This relationship between humans, domestic animals, and landscapes protects and nourishes animal populations, provides humans with food and a range of raw materials, and helps shape the landscape into a grassland biome. Nomadic pastoralism is a particularly effective adaptation to the steppe, a territory that would otherwise be challenging for humans to survive in over the long term (Dyson-Hudson and Dyson-Hudson 1980; Fijn 2011; Honeychurch and Makarewicz 2016).

Though charismatic monuments dominate the archaeology of Bronze Age Mongolia, recent research has begun to take on the challenge of settlements and settlement patterns, in terms of both the nature of these communities and the role of nomadic pastoralism in their structure. Evidence from burial and settlement excavation shows that by the end of the Bronze Age the main domestic animals we see today in Mongolia were widespread among human populations (Broderick and Houle 2013; Makarewicz et al. 2018; Taylor 2017; see also Nomokonova et al. 2010), and dairy consumption was established (Jeong et al. 2018). What can be questioned is to what extent the herding and mobility practices that we know from ethnography and can trace into the Iron Age (see below) existed in the Bronze Age. Whatever the pastoral tactics of Bronze Age Mongolians, evidence from burials, perimortuary monuments, purpose-built monuments for animals' remains, and rock art imagery (Jacobson-Tepfer 2012; Jacobson-Tepfer et al. 2006) show new human–animal relationships.

The ceramics of this period include distinctive open-mouthed vessels with thick walls, many inclusions, and idiosyncratic decorations and appliqué elements on their bodies and rims. This ease of identification makes it possible to locate habitation debris and build settlement patterns (Galdan 2015; Houle 2009a; Jargalan et al. 2015; Torbat et al. 2003; Williams 2008). These studies show that large scatters that might suggest large, repeated, or long-term habitations are rare and that most habitation sites so far discovered are small. In the lower Egiin Gol Valley, 13 scatters with Bronze Age ceramics with a total area of 1.24 ha were recorded in 243 km² (though see Honeychurch et al. 2007 for a study of Egiin Gol using an expanded 310 km² survey area). Spatial analyses of a similar array of small sites in the Khangai region suggest that they are those of a locally mobile population (Houle 2009a; Seitsonen et al. 2014). In the upper Selenge watershed, a long campaign of burial excavation (Frohlich et al. 2009; Littleton et al. 2012) suggests a stable long-term population of less than 100 people could have produced the monuments found there over 400 years in an area of c. 850 km². This is a population density of <1 person per 10 km², perhaps not a much greater population than could have been supported in this area by Holocene hunting and gathering (Weber and Bettinger 2010; Weber et al. 2011).

The Early Phase of the Bronze Age

The earlier Bronze Age is the temporal frontier of monumentality in Mongolia. The archaeology of this period is dominated by the advent and development of the first widespread monumental forms and a presumed transformation in human–animal

relations with the adoption of pastoralism evidenced through faunal remains, geoarchaeology, and land-use patterns. Habitation scatters in the earliest Bronze Age are difficult to distinguish from those of the earlier Epipaleolithic (Wright 2016a). Pressure-flaked stone tools remained common and ceramics had been used in earlier hunter-gatherer contexts. The ceramics of this period in the steppe and desert regions of Mongolia are a distinctive thin, friable red ware with sandy inclusions, as well as some coarse paddle-decorated types (Janz et al. 2015, 2017). Small bronze and copper objects entered the repertoire of these communities as tools, but more frequently as objects of body adornment such as earrings, buttons, or clothing decorations. This is perhaps a new style linked to political display in the early Bronze Age (Shepard 2012), which is seen in many regions of Eurasia.

Limited traces of this period have been recognized throughout Mongolia. Lake Hovsgol and the Selenge watershed contain some cultural material from this time, with some connections to South Siberian styles of burial and animal use, but this region has not yet presented a clear early narrative (Fitzhugh 2009a, 2017; Fitzhugh and Bayarsaikhan 2011; Séfériades 2004). Central to the narrative of early monument building in Mongolia is the recognition of the macroregional Afanasievo culture of the late fourth and early third millennium BC defined in the Sayano-Altai region but not clearly defined in Mongolia (Jia and Betts 2010; Svyatko et al. 2009). In the Altai west of Mongolia are found two of the earliest monumental Bronze Age cultures yet identified in Mongolia: the Monkkhairkhan (Kovalev 2017; Kovalev and Erdenebaatar 2009) and the Chimurchak or Khemcek, which includes major monumental sites in the upper reaches of the Irtysh River in Xinjiang (Jia and Betts 2010; Kovalev 2012; 2016; Kovalev and Erdenebaatar 2009; Turbat 2014), both are defined by distinctive monumental forms. The Chemurchek are identified by buried slab cists and iconic round-faced figural stele. Major monumental sites (Jia and Betts 2010; Kovalev 2015; Xinjiang Institute of Archaeology 1981) contain large (c. 960 m²) quadrilateral platforms and long ground-level alignments (Kovalev 2015, fig. 3). Chemurchek sites in Mongolia date to the 25th–19th centuries BC (Jia and Betts 2010; Kovalev and Erdenebaatar 2009). These are the earliest dates for monumental sites in Mongolia. The other Altai-focused monumental type is the more-widespread Monkkhairkhan form. The characteristics of this type of burial are a flat, circular stone pavement that is often relatively large (c. 10 m + diameter) and a flexed burial. In the mountains and inland delta of the Tsenker River drainage, these monuments date to the 18th–17th centuries BC (Kovalev and Erdenebaatar 2009). At Bar Ovoo, 1200 km to the east, they date to the 15th–13th centuries BC (Miyamoto 2017).

Recent work along the southern Altai Mountains and into the Gobi region to the east (Kovalev and Erdenebaatar 2009; Miyamoto 2017; Miyamoto and Obata 2016) highlights regional communities that share some mortuary architecture and burial traditions as well as ceramic decorations. The key archaeological cultures of this region are the Tevsh and the Ulaanzuukh, each represented by their distinctive monuments (Erdenebaatar and Kovalev 2008; Ma 2017; Navaan et al. 2009; Tumen et al. 2013). Though the specifics of these monumental types vary, their common attributes include prone extended burials, monuments that include short walls constructed of layered flat slabs, and emphasis drawn to the east or northeast side of monuments by large standing slabs. The marker monuments of each culture are the

shaped burials of the Tevsh, so named for their waisted hourglass-like plan views. Burials of this form are found in northeastern Mongolia, but none are yet dated. From the Tevsh site itself (Miyamoto and Obata 2016) and nearby (Erdenebaatar and Kovalev 2008; Kovalev and Erdenebaatar 2009), they date to 15th–12th centuries BC. The rectangular burials of the Ulaanzuukh tradition dating to the 15th–12th centuries BC were first identified at Delgerkhaan Uul (Navaan et al. 2009; Tumen 2011), at the eastern extreme of this common cultural territory. Burials in this tradition at Chandman' Khar Uul, 120 km south of Delgerkhaan Uul, date between the 15th and the 13th century BC (Amartuvshin et al. 2015). A similar burial from the Baga Mongol locale at Baga Gazaryn Chuluu dates to 14th–11th centuries BC (Nelson et al. 2009). This particular example contains fauna, a bronze knife, and stone bowl or crucible, things not typically found in the earlier eastern Ulaanzuukh burials. The typical grave goods of the earlier burials are stone beads and pendants, pottery, and chipped stone tools.

Baga Mongol is an example of a recurring situation in which a burial monument and its contents are not coupled attributes, and enduring architectonic traditions of burial weather changes in technology and human–animal relations. This is an important situation to note when we consider general social change and agency in the Mongolian Bronze Age.

Isotopes of strontium in the bones of two buried individuals from the Tevsh and Khyar-Kharaach sites (Yonemoto et al. 2016, 2017) show individuals of different areas of origin. Though the regional isoscape is unknown, the excavator was able to argue this is evidence for different mobility histories. Though these two individuals were identified as mature or elderly males (Miyamoto 2017), the demographics of cemeteries from the Bronze Age in general show a wide range of ages and different sexes interred in the monuments (Amartuvshin et al. 2015, table 6; Frohlich et al. 2009; Littleton et al. 2012; Tumen et al. 2013).

Many recent excavations of monuments of the Bronze and Iron Ages have taken place in the context of the extensive examination of large multi-monument sites (Ahrens 2016; Amartuvshin and Honeychurch 2010; Bemann et al. 2015; Gantulga et al. 2009; Kovalev 2016; Kovalev et al. 2016; Magail et al. 2009; Miyamoto 2017; Miyamoto and Obata 2016). This research has turned the focus of Bronze Age monumental archaeology from the frequently sparse contents of graves to the interrelationships of monuments and the process of place making. It is clear from these sites and the many unexcavated examples recorded by surveys that Bronze Age monumental groups are more frequently places of diverse structures than of a single type of structure. Though types of monuments overlap between locales, the real universal commonality is that these are places full of diverse monuments that for many centuries attracted people to add additional monuments.

One of the most intriguing elements of widely investigated large multi-type monumental sites such as Maikhan Tolgoi or Tsatsiin Ereg is highlighted by the examination of two burials from the Khyar-Kharaach site, whose strontium profiles were mentioned above (Miyamoto 2017, figs. 66, 67). Two individuals of comparable mature age were buried c. 50 years apart. They have graves that are similar in construction. Burials were placed in shallow pits, extended, with their heads to the northwest and a cardinally oriented square defined by standing stone posts

constructed around them and filled in with a c. 55 m² pavement of stones. The only difference is the final shape of the graves, defined by the extent of the pavement; one is square, and one is round (see Frohlich et al. 2009; Wright 2014b). What then was the difference between these two individuals? Are their graves aspects of their different upbringings? A shift in mortuary practice from one generation to the next? A symbol representative of a larger idea of ethnicity (Fitzhugh 2009b)? A status earned during their lives? Style choices expressed by individuals or groups (Hodder 1982; Wiessener 1983; Wobst 1977)? Ultimately, many of these factors were probably in play. This highlights one of the fundamental questions of Mongolian Bronze Age archaeology, how are the people buried in different types of monuments different from one another, if at all?

The cardinal-oriented space defined by four corner posts in the burials at Khyar-Kharaach is another element of monument construction that is seen in a range of different monumental forms along the face of the Altai and other regions. They have been noted at Tsatsiin Ereg (Magail et al. 2006), in the Khanui Valley (Houle 2009a) but not widely at Baga Gazaryn Chuluu (Wright et al. 2007) or Chandman' Khar Uul (Amartuvshin et al. 2015). Examples at Khyar-Kharaach date between the 14th and 11th centuries BC (Miyamoto 2017) and the 14th and ninth centuries in the upper Selenga watershed (Frohlich et al. 2009).

Emerging from this maze of sites and monument types is a narrative of the spread of a common material culture along the Altai range beginning in the 16th–15th centuries BC and reaching its eastern extent in as little as 100 years. In the past, narratives of insular populations and migration were the dominant explanation for these distributions (Kuzmina 1998; Kovalev 2017; Tsybiktarov 2002; see also Frachetti 2011; Renfrew 2002). Now an explanation that combines interaction, adoption, adaptation of built spaces and subsistence system, and mobility at different scales is more appropriate. If monuments can be seen as embodiments of cosmological ideas and common quotidian objects indicative of widespread and established subsistence practices, then the earlier Bronze Age was also a time of diverse and rapidly shifting ideas about the place of humans in the world.

Rock Art

The most dramatic rock art in Mongolia is associated with the Bronze Age, spanning its advent and defining the iconography of its end. Some of the most impressive archaeological work done in Mongolia in this century has been the study of Altai rock art. Jacobson-Tepfer et al. (2006, 2010; Jacobson-Tepfer and Meacham 2009; see also Kortum 2014; Kubarev 2009) carried out 18 seasons of extensive survey and recorded tens of thousands of panels and associated monuments in the Mongolian Altai. Their work was some of the first extensive use of GPS and GIS in Mongolian archaeology (Jacobson and Meacham 1998; Jacobson-Tepfer et al. 2010). In basing analysis on an art historical image-centered and cognitive approach, this research provides a rich counterpoint to narratives based on conventional archaeological excavation and material analysis.

The scale of this corpus makes it impossible to say that the Altai rock art inventory is dominated by a particular type of images. The diversity of creatures and activities depicted cannot be completely reviewed here. Wild animals such as elk, argali sheep and wild goats, tigers, and domesticated species such as dogs, yaks, cattle, and horses are seen, along with wagons, dwellings, bows, and arrows. However, monuments, many of which are proximate to rock art sites, are rarely depicted. What can be said is that despite this, many patterns in rock art can be connected to the rest of the archaeological corpus of Mongolia. Panels include images of animals and equipment paralleled in the mortuary record and images of herding, hunting, and traveling.

The context of many of these sites cannot be overlooked, and Jacobson-Tepfer's work has provided a regional record of the temporality of landscape (Ingold 1993) in the Altai. The large sites of the Tsagaan Salaa and Baga Oigur (Jacobson-Tepfer et al. 2006, 2010) are in valleys that lead down from the Altai massif of Tsavan Bogd. Some of the earliest imagery may have been made when these valleys were only recently deglaciated. Though these valleys offer some summer pastures to later visitors, their dominant feature is the structured symbolic landscape of rock art and monuments. Because rock art of the Altai style is found over much of western and central Mongolia, these locales might be considered to have been key central places and perhaps destinations for long-range journeys during the Bronze and Iron Ages.

The Altai rock art tradition is not the only one in Mongolia. Whereas the Altai tradition is built around animal–human relationships, the rock art of the east and southeast of Mongolia and eastern Inner Mongolia features iconic “maskoids” of deeply incised and stylized faces (Tserendagva and Gunchinsuren 2009; Tseveen-dorj et al. 2007) that might be seen as more human-centered imagery.

Rock art images also are portable objects in themselves. Though most are set on earthfast boulders or outcrops, some are made on portable stones or have been quarried off their original rock faces. These mobile rock art panels are found incorporated into nearby monuments in several regions (Gantulga et al. 2015; Kovalev 2015; Ma 2017; Magail et al. 2010). In the later Bronze and early Iron Age some imagery related to that presented in many rock art panels became ubiquitous. The ties created by incorporation or proximity emphasize a common symbolic grammar and engagement with the monumental work of others in the creation of meaningful places in the landscape.

The Later Phase of the Bronze Age

The later phase of the Bronze Age is dominated by one monumental form and its contexts. These monuments, known as *khirigsuurs*, are defined by their central mound of stones and surrounding ground-level stone features. There are many patterns, types, and regional styles, including a quadrilateral or circular surrounding alignment (a “fence”), additional alignments and features that further modify the spaces around the central mound, and a range of satellite mound features of different morphologies. *Khirigsuurs* are found singly but most often in groups and in a wide range of sizes, from mounds of a few meters with a simple fence to complexes

structures covering tens of hectares (Amgalantugs 2015; Fitzhugh and Bayarsaikhan 2011; Houle 2009a; Tsybiktarov 1995; Wright 2007).

Khirigsuurs are dramatic monuments. Their ground-level designs can make moving through and around them a complex exploration of constructed space. The most spectacular examples stand in the flat open ground of valley floors and are visible from a great distance. The majority of khirigsuurs fall in a relatively narrow size range of mound and fence, though there are some examples that are vastly larger in terms of mound size or areal extent and number of satellite features (Allard and Erdenebaatar 2005; Hatakeyama 2002; Wright 2014b). These huge monuments have been associated with ideas of social hierarchy, basically that bigger monuments represent more important individuals. This is difficult to argue given limited existing khirigsuur burial data. What can be said is that huge monuments emphasize the labor mobilization aspects of khirigsuur mounds over the complexity of the surrounding spaces. Khirigsuurs do not require elaborate engineering knowledge to build, but they could require a lot of labor to transport stone. While an average-sized monument could be built in a few days or less by a small group of people, a larger structure needing several orders of magnitude more stones might be the work of a proportionally larger group (Wright 2007, 2014; see also Bradley 1993).

The weight and visibility of khirigsuurs has attracted attention since the earliest days of Mongolian archaeological exploration. The central mounds have not been found to contain anything more than unadorned skeletons (Frohlich et al. 2009; Littleton et al. 2012; Tsybiktarov 1995), and the presence of human remains is not the case everywhere (Takahama et al. 2004; Torbat et al. 2003; Tsybiktarov 1995). However, the satellite features and mound surfaces have proved to be rich in the remains of fauna and ceramics. These all are interpreted as parts of rituals that focused on khirigsuurs. Fauna in satellite features and human remains in central mounds provide dates for khirigsuurs in several regions: 11th–9th centuries BC in the Khangai Highlands and the Khanui Valley (Allard and Erdenebaatar 2005; Fitzhugh 2009b; Fitzhugh and Bayarsaikhan 2011; Houle 2009a), 15th–9th centuries in the upper Selenga watershed (Frohlich et al. 2009), 11th–9th centuries in the Khoid Tamir Valley (Gantulga et al. 2015), 13th–10th centuries at Maikhan Tolgoi (Bemmann et al. 2015), and 11th–9th centuries in Delgerkhaan uul in the south-eastern Gobi. Full-coverage surveys throughout Mongolia have counted hundreds or thousands of khirigsuurs (Frohlich et al. 2009; Jacobson-Tepfer et al. 2010; Torbat et al. 2003; Wright et al. 2007). That being said, they are not ubiquitous, and dense areas are concentrated in the central, west, and north, and not in the grassland and Gobi of the southeast and east.

A proportion of khirigsuur satellite features contain faunal remains, including the heads and necks of horses (Allard et al. 2007; Taylor et al. 2017) and domestic animal bones usually burned somewhere else and deposited in the ring-shaped satellites as burnt bone (Broderick et al. 2016). Similar depositions of burnt bones are found in small pits beneath rectangular pavements arrayed around khirigsuurs (Bemmann et al. 2015; Kovalev et al. 2016; Miyamoto 2017). Many satellite features appear to be empty; whatever activity they commemorated left no archaeological traces. Where human remains are found in khirigsuurs, they are unfurnished graves with extended bodies (Littleton et al. 2012). The dates, spatial patterns, and overlaps of

satellite features highlight the life histories of large and complex khirigsuur monuments (Bemmann et al. 2015; Wright 2007). Initial constructions and rituals were augmented with continued additional satellites being added over generations or centuries (Gantulga et al. 2015; Zazzo et al. 2019). Though a range of types and scales of major monuments were constructed in the Late Bronze and Early Iron Age, it is this common vocabulary and built settings of animal sacrifice that ties them all together and provides evidence for common ideas about the interaction of humans, animals, and the supernatural.

Because khirigsuurs are a common and visible monumental form and are recorded in large numbers by archaeological surveys, it is possible to look at distributions of monuments across the landscape. This can provide some guide to how the people of this period organized their ritual and political spaces. Concentrations of monuments in the mountain valleys of the Altai are separated by 25–35 km (Jacobson-Tepfer et al. 2010, fig. 5), in the forested steppe of the upper Selenga watershed, by 7–10 km (Frohlich et al. 2009, fig. 3), similar to the 8–10 km in the Egiin Gol (Torbat et al. 2003), by 10–15 km in the valleys of the northern Khangai (Houle 2009b), and by 20 km in the northern Gobi and Baga Gazaryn Chuluu (Honeychurch 2015). In all these regions this steady distribution of monumental site clusters is punctuated by larger concentrations gathered around locales that are distinctive from the general topography. Notable site areas like Uushigiin Ovoo, Baga Gazaryn Chuluu, Tsagaan Sala, and Baga Oigur Gol in the Altai and Jargalant in the Khanui Valley are in this category of regional central places. This patterning is particularly notable when we consider the social units that built these monumental clusters. If each ordinary cluster can be considered the focus of a community or lineage (Frohlich et al. 2009), what is seen are records of inhabited territories. Large concentrations may have drawn in many such smaller groups, perhaps maintaining separate but proximate monumental sites or drawing together and recognizing one area or community as more central to their regional identity. This is a key element of emerging spatial politics (Honeychurch 2015).

Deer Stones

If Mongolian archaeology, and the late Bronze Age of Mongolia, has an iconic image, it is the deer stone (Powell 2006). These are irregular pillars of hard stone c. 1–3 m high with smoothed surfaces and boldly incised decorations. They are named for a distinctive stag-like animal with waves of antlers rolling over its back and leaping or flying across the surface of the stones. This image also occurs in stationary rock art (Jacobson 1993; Jacobson-Tepfer 2001), portable artifacts, and, in later periods, tattooed on people's skins (Rudenko 1970; Simpson and Pankova 2017). Deer stones have been the focus of several recent research campaigns to catalog, document (Bayarsaikhan 2017; Turbat 2016), and investigate their chronology, iconography, and connections to the circumpolar world (Fitzhugh 2009b, 2017). To date, there are c. 1300 examples known in Mongolia (Turbat 2016), with more in the Altai in Russia and Xinjiang (Jacobson-Tepfer et al. 2010).

The affinity of deer stones to khirigsuurs is shown by the common forms of satellite mounds around them. At a few excavated sites, these mounds have provided

faunal samples dating between the 12th–8th (Fitzhugh 2009b; Fitzhugh and Bayarsaikhan 2011) and the ninth–sixth centuries BC (Gantulga et al. 2015). Fitzhugh (2009b, Fitzhugh and Bayarsaikhan 2011) uses the common satellite features to posit a unified deer stone–khirigsuur (DSK) culture active in the Late Bronze and Early Iron Age.

Deer stones were unlike any monuments that came before them. Unprecedented elaborate stone working and transport was required to create them. Equally new was their striking imagery and continued veneration. Communities producing deer stones must have needed to support specialized labor to invest the time in polishing, carving, and transporting the stones.

The most extensively investigated deer stone site is Uushigiin Ovur in the northern watershed of the Selenga River (Kovalev et al. 2016; Takahama et al. 2004; Takahama and Hayashi 2003; Volkov 1981; Volkov and Novgorodova 1975; see also Bayarsaikhan 2017). Kovalev et al. (2016) excavated a large area of ground-level features, satellite features, and stone settings at the site, documenting up to 20 deer stones either standing or broken and incorporated into other features, as well as empty sockets that show moving and re-erection of the stones. All these are surrounded by a dense array of surface mounds, pits, pavements, and low platforms that combine to suggest a long-term and systemic use of the site as a ritual nexus in a region of long-standing intensive monument construction.

The anthropomorphic aspects of the stones, including faces, belts, and ears amid the deer imagery, are used to argue that they represent individuals. The syncretic motifs that dominate the stones suggest supernatural connections (Jacobson 1993) and macroregional systems of belief (Fitzhugh 2009a, 2017). Where people are represented as the main focus of the monuments, deer stones are presented as cenotaphs for chiefly individuals (Kovalev et al. 2016; Liu 2014). With their dominant wild animal iconography and their associated features containing the remains of domestic animals, the monumentally literate could have read the deer stones as empowered by tensions of domestic and undomesticated forces in society, as well as monuments to the humans they may have represented.

The Final Bronze Age and Early Iron Age

At the Tsatsiin Ereg site in the Khangai Highlands, a rectangular burial constructed of reused deer stones has been excavated (Gantulga et al. 2009, 2013; Magail et al. 2010). The occasional practice of repurposing older monuments is evocative of the reuse of deer stones in the seventh century BC Scythian kurgan of Arzhan II in southern Siberia (Cugunov et al. 2003). Structures like these tie deer stones not only to the monumental tradition of khirigsuurs but to the monumental burial form of the Late Bronze and Early Iron Age, the slab burial. These are rectangular burials composed of a box built of large slabs placed on edge around the burial pit. The slabs are loosely set into the ground and supported by smaller stones along their bases. Burial pits are shallow and with one, or rarely more, supine extended bodies whose head is typically placed at the easternmost end of the pit. The burials are covered with a pavement of smaller slabs. The construction of these burials makes them particularly easy to reopen, and

almost every one of the hundreds so far excavated was reopened and the contents disrupted in the past (Amartuvshin and Honeychurch 2010; Erdenebaatar 1992; 2002; Erdenebaatar and Khudyakov 2000; Johanneson 2016; Littleton and Frohlich 2012; Marcolongo 2005; Miyamoto and Obata 2016; Torbat et al. 2003). This style of burial was built throughout Mongolia from the 10th to the fourth century BC, with the highest densities found in the eastern regions of the country (Honeychurch and Amartuvshin 2011). Examples are also found in southern Siberia and northeastern China.

Due to being disrupted, these burials typically contain only leg bones and sometimes the skulls. In addition to human remains, animal remains also are found, particularly the heads of horses (Erdenebaatar 1992; Torbat et al. 2003) but also the scapulae of large mammals (Gantulga et al. 2009; Miyamoto 2017). These burials contain a range of other objects including bronze items, worked bone objects, chipped stone points, bronze buttons and bangles, knives, turquoise and other hard and soft stone beads, gold adornments, and decorated ceramics. The wealth of metal goods in slab burials and the ease of reentry raises many questions about the intent of that reentry. Recycling of metal is suggested by battered bronze fragments and slag found near slab burials at Baga Gazaryn Chuluu (Park et al. 2011). The purposeful destruction of burials and the individuals interred in them may have been a manifestation of social instability in the Late Bronze and Early Iron Age (Johanneson 2016; Nelson et al. 2009). Conflicts may have been of increasingly high stakes (Hudiakov and Erdene-Ochir 2010).

Although there is chronological continuity from earlier burial forms to slab burials, the amount and nature of the burial goods and the inclusion of fauna sets the slab burials apart from earlier burial traditions. Slab burials are found in linear arrays in some cemeteries (Amartuvshin and Honeychurch 2010; Johanneson 2016), something seen only previously in the Ulaanzuukh tradition of the southern and southeastern Gobi. These arrays may have been memorials to lineages. Another informative setting for slab burials is incorporated into khirigsuur monumental complexes. Burials were built around, inside, and into the fences of khirigsuurs. The multicomponent nature of the monuments immediately makes slab burials contributing elements of the other structures and effectively attaches them into the memorial traditions of the later Bronze Age and Early Iron Age (Bemmann et al. 2015; Wright 2014a). This self-referential monumental landscape tying ancient memorials and monuments to newer ones remains a pervasive element of the archaeological landscape from the later Bronze Age on.

The Bronze Age archaeological record of Mongolia is dominated by an intensely complex monumental landscape with a much less complex record of habitation sites. Almost all habitation information comes from surface survey of campsites and metal-working areas. These ephemeral remains are believably a result of new conditions for the preservation of domestic debris. With the passing of chipped stone from regular use and a limited range of ceramics in everyday use, a large range of material culture may be missing from this archaeological record. The preservation of Iron Age tombs in permafrost or arid regions (Törbat et al. 2009) shows the people of the first millennium BC to have a range of skillfully made leather and wood artifacts in addition to only a few metal, ceramic, and bone ones.

It has long been recognized that there is great diversity in the monumental archaeology across Mongolia. This diversity has been a mainstay of models of cultural identity and change in prehistory built around particular types of monuments. The increasingly full documentation of sites and regions has demonstrated that spatial continuity and typological overlap of monuments is the typical situation. Interpretations of these sites and landscapes as large chronological, territorial, or cultural units no longer offer the clear explanatory power it once did. Explanations focus instead on localized cultural landscapes, smaller groups, and their interactions, and the interplay of different styles within prehistoric societies are becoming more effective ways to approach monumental constellations and the societies that built them.

The Early Iron Age

Though the Iron Age during the middle and late first millennium BC is well known in the Altai and southern Siberia with the florescence of the Pazyryk culture and Scythian horizon (Alekseev et al. 2001; Rudenko 1970; Törbat et al. 2009), the Mongolian Iron Age (c. 800–300 BC) is a notably understudied period. Just as social orders and material culture have been changing throughout the Bronze Age, change continued in this period with the dominant narrative assumed to be the emergence of regional polities setting the stage for the emergence of Eurasian states. Iron itself was not widespread, though a few arrow heads, knives, and pieces of horse furniture are found. Ceramic forms during the Iron Age changed to include a wider array of better-made closed-mouth vessel forms, some with plain burnished surfaces and a much more limited range of appliqué decorations than before (Wright 2011).

While slab burials continued to be built, no other particular monumental forms are associated with the Iron Age. Slab burials span several technological transitions and outlast a range of older monumental traditions. An interpretation of this might be that the social orders that favored the burials of individuals and their personal trappings were well established at this time. Large samples of human remains from burials of this period that are held at Jilin University in the People's Republic of China, Mongol National University, and others open up the possibility of large-scale comparative physical anthropology of populations between major periods and regions (Eng 2016; Dashtseveg 2013; Lee 2013; Lee and Zhang 2011; Tumen 2011).

The Archaeology of the Eurasian State

By the end of the Early Iron Age (c. 200 BC), the diffuse archaeological record of the mid-first millennium BC was transformed by the development of new material culture and mortuary traditions as an emerging powerful polity became a potent actor on the East Asian political stage and participant in the trans-Eurasian economic world. The Xiongnu, as they are known in Chinese historical records (Atwood 2015; Giele 2011; Watson 1961), rose to prominence in the Khangai Highlands and southern Transbaikal in the last centuries of the first millennium BC and continued as a regional force until the early third century AD. Historical and archaeological

sources show them to have been a major political and military force with a multi-layered social hierarchy, an economy that included industrial production and long-range exchange, and a diplomatic power (Honeychurch 2015; Lewis 1990).

The scale and extent of the archaeology of the Xiongnu as well as their importance on the historical stage have made them a primary focus of recent archaeological research, and important syntheses of archaeology and historical documents have been published (Brosseder and Miller 2011; Eregzen 2011; Turbat 2013). Through this research the Xiongnu have become the prime example for the emergence of the state in the Eurasian steppe. It is beyond the scope of this paper to review the data (e.g., Batsaikhan 2011; Giele 2011) and the debates around the political structure of the Xiongnu state (Brosseder 2016; Honeychurch 2014; 2015; Kradin 2005, 2011; Miller 2014). Honeychurch (2015) glosses that state as a major alternative model to contrast with place-based territorial hierarchies and argues that it can be described instead as a multidimensional network that practiced a particular “spatial politics” in which population mobility, the extensive scale of territory, and a particular participatory politics made possible by a pastoralist-based economy were at the core of the state’s structure (see Rogers 2007, 2012).

The Xiongnu polity was huge, far-ranging, and engaged in warfare and diplomacy with various small and large states around it, most notably the Han empire (206 BC–AD 220) in the riverine lands south of the Gobi Desert. Recent excavations along the Xiongnu–Han border have brought the frontier practices of these two empires into focus on the local scale. Two small forts (Fig. 3) that were part of a deep frontier strategy of the Western Han Dynasty (206 BC–AD 9) and now stand in the arid southern Gobi of Mongolia have been investigated, and each shows different aspects of the frontier. Mangasyn Khuree (Amartuvshin et al. 2011) was a c. 130 m square fort in which were found the distinctive Han ceramics, crossbow elements, and armor one might expect to find in a military outpost. In addition, surrounding the fort was a c. 500-m diameter low circular wall. This structure may have defined an area of settlement around the fort, provided extra protection to the small fort, or been a later addition. Batsaikhan (2011) has suggested that this fort came to serve as a central place for ethnic Xiongnu who joined the Han empire. The second fort, at Bayan Bulag (Kovalev et al. 2011), stood near a spring in the piedmont of far eastern Altai Mountains. It is similar to Mangasyn Khuree in size and construction as well as military material culture. Excavations outside the fort discovered both wattle-walled structures of Han type and a mass grave of Han soldiers some distance from the fort. This burial contained a group of bodies, some hacked or dismembered, and evokes the brutal military life for those on the imperial borders.

Bioarchaeology of the Xiongnu

Evidence of conflict is rare in the Xiongnu archaeological record. A large number of graves and cemeteries of the Xiongnu have been excavated, and their skeletons are the most extensively studied of any archaeological population from Mongolia. From this corpus of skeletons, we see that Xiongnu people fell off their horses and suffered from arthritis and many similar complaints of active

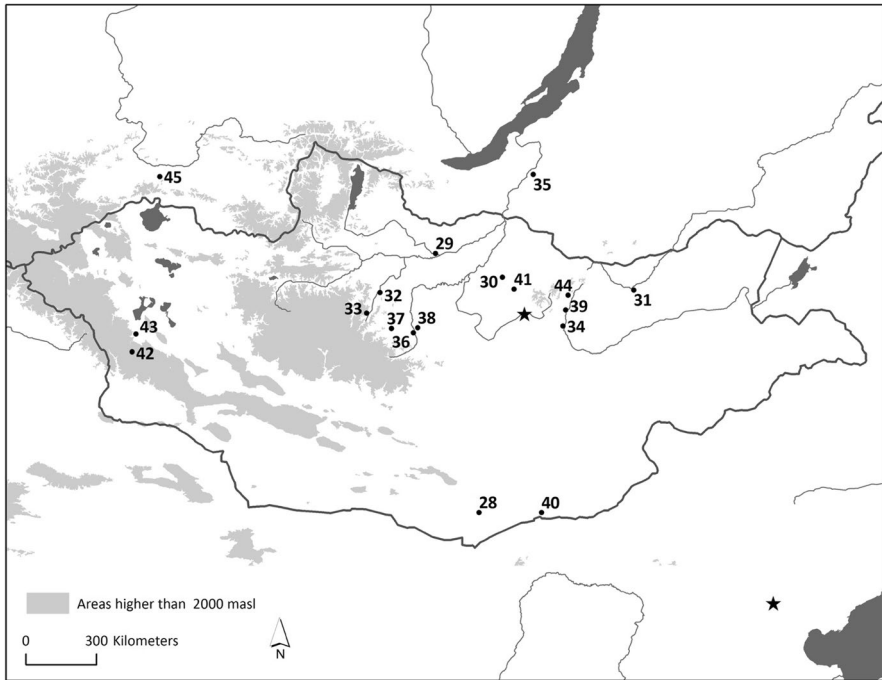


Fig. 3 Sites from the Xiongnu and Early Turkic periods: 28. Bayan Bulag; 29. Borkhan Tolgoi; 30. Boroo Gol; 31. Duurlig Nars; 32. Gol Mod I; 33. Gol Mod II; 34. Gua Dov; 35. Ivolga; 36. Khar Balgas; 37. Khudgiin Tolgoi; 38. Khushuu Tsaidam; 39. Khustyn Bulag; 40. Mangasiin Khuree; 41. Noyon Uul; 42. Shombuuziin Belchir; 43. Takhiltyn Khotgor; 44. Tereljiin Dorvoljin; 45. Terezin.

premodern people but were not exceptionally prone to violent death (Eng 2016; Mon-Sol 2003; Naran 2003). All analyses of the bioarchaeology of Xiongnu populations have revealed diversity in measures meant to establish East Asian or European physiologies (Kradin 2005; Lee 2009; Lee and Zhang 2011; Schmidt and Seguchi 2016; Yun 2009). The skeletal morphology and genetics of these populations have shown multigenerational spatial stability in local cemeteries (Keyser-Tracqui et al. 2003; Ricaut et al. 2010) and within regions (Lee 2009; Lee and Zhang 2011). In contrast, there is genetic diversity among elite populations (Kim et al. 2010) and long-standing population continuity within the Xiongnu cultural sphere as a whole (Pilipenko et al. 2018). In these analyses of population dynamics, we see evidence for a rapidly expanding and successful state attracting many existing populations into its cultural and political space (Batsaikhan 2006). Burials similar to those with Xiongnu material have been found outside Mongolia in the Altai (Tishkin 2011), Inner Mongolia (Pan 2011), and Tuva (Leus 2011; Sadykov 2016). These demonstrate both the cultural impact of Xiongnu practices and material culture and its adaptability to local contemporary conditions.

Subsistence and Material Culture

Han Dynasty political ethnographers described the inhabitants of what is today Mongolia as wanderers dependent solely on domestic animals without settlements or agriculture (Watson 1961, pp. 155–156). A modern combination of ethnoarchaeological investigations of herding practices and settlement archaeology has shown those descriptions to be largely incorrect. Xiongnu populations were certainly mobile pastoralists. Fauna from graves and settlements (Houle and Broderick 2011; Makarewicz 2011; Mandakh 2015; Martin 2011) includes the main established domestic species of dogs, cattle, sheep, goats, and horses. Cattle show signs of having been used for traction (Martin 2011; see also Taylor et al. 2015; Miller 2012). Site locations (Wright 2016b; Wright et al. 2009) and isotopic profiles (Makarewicz 2015) demonstrate that many of the seasonal mobility patterns and animal grazing conditions seen ethnographically in Mongolia (Mearns 1993; Simukov 2007; Vainshtein 1980) were employed in the Xiongnu period, including foddering and winter penning of animals. Excavations in the lower Egiin Gol have found wheat and barley grains on Xiongnu habitation sites (Wright et al. 2009; see also Spengler et al. 2016), adding to evidence for agriculture from earlier excavations (Davydova 1968; Kradin 2005).

Distinctive paddle-built coarse and fine gray ceramic wares dominate the Xiongnu assemblage from both graves and settlements. A range of jars with constricted necks or open mouths are most common. Fancier examples have shoulders decorated with the emblematic Xiongnu wave band (Torbati 2003; Wright 2011). X-ray fluorescence analysis of ceramics from Egiin Gol shows that a substantial amount of this pottery was produced locally (Hall et al. 1999). Though Xiongnu pottery is a distinctive horizon in the archaeological record of central and eastern Mongolia, it shows regional variation in both fabric and form and has similarities to the Iron Age types that preceded it.

Xiongnu graves are rich sources of portable material culture. Sites such as Borkhan Tolgoi (Torbati et al. 2003), Terezin (Leus 2011), Khudgin Tolgoi (Mon-Sol 2003; Yun 2009), and small cemeteries around Baga Gazaryn Chuluu (Amartuvshin and Honeychurch 2010; Eregzen 2011; Nelson et al. 2009; 2011) and other locales contained lacquer bowls, birch bark containers, stone portable hearths, metal cauldrons with single bases or tripod feet, colorful beads and metal dangles and small bells, gold hoop earrings, multipart leather belts and straps with elaborate bronze and wooden clasps, and leather caps and cowls. Karpova et al. (2016, p. 22) examined the textiles of the elite graves of Noyon Uul, describing the color preferences of the Xiongnu as “bright and saturated,” tastes evocative of the slightly earlier Scythian and Pazyryk populations of the Sayano-Altai region (Rudenko 1970; Simpson and Pankova 2017).

Settlement and Industry

The excavation of the town of Ivolga in Transbaikal in the mid-20th century (Davydova 1968, 1995, 1996) was a watershed in the study of Xiongnu settlements. In this century a much wider range of inhabitation sites have been documented. Regional survey projects covering c. 900 km² and several excavations of nonmortuary sites have revealed a diversity of settlement types and configurations. Though Xiongnu archaeological material has been found across much of the territory of Mongolia, most discoveries of settlements have been in the well-watered forested steppe, the Khangai Highlands, and southern Siberia. This is not for want of looking, so it is likely that this region was the cultural core of the Xiongnu society.

Regional survey in the Egiin Gol Valley has shown that Xiongnu settlements were divided into two basic types, large riverside sites and sites along smaller tributary streams (Torbat et al. 2003; Wright et al. 2009). This settlement pattern matches the modern summer to winter settlement location pattern in the region. A similar pattern was observed in the Khanui Valley of the northern Khangai (Houle and Broderick 2011). No other regional surveys have been able to recover what appears to be a complete seasonal nomadic round, although reconnaissance in the Altai Mountains between Takhiltyn Khatgor and Shumbuuziin Belchir (Williams 2008) hints at an elaborate system of transhumance in which different households might have moved between different upper and lower elevations over their yearly rounds. In the Gobi region, mobility appears to have been farther ranging than in northern areas, and surveys recovered only portions of the seasonal round (Wright 2016b; Wright et al. 2007). The repeated strong parallels between the habitation locations of modern, historic, and Xiongnu populations argue for a pastoral nomadic settlement system being used by much of the Xiongnu population. However, excavations at those sites have revealed farmed wheat and barley and pit-house architecture that suggests a more complex settlement and subsistence landscape.

The hints of architecture found in Egiin Gol are much better illustrated by the extensively excavated settlement of Boroo Gol in the eastern Khangai Highlands (Pousaz et al. 2007; Ramseyer 2016; Ramseyer and Turbat 2009). At Boroo Gol a group of cardinaly oriented pit houses of c. 25 m² were excavated. Dated contexts show that settlement was used throughout the Xiongnu period, from the second century BC to the second century AD (Solongo and Törbat 2011). These dwellings are evocative of the much larger (5+ ha) settlement of Ivolga in southern Siberia, which contained more than 100 pit houses of varying sizes along with traces of a range of craft production activities all surrounded by a ditch and palisade. Kradin (2005) estimates this settlement to have had a population in the thousands. Based on the historically known resources in these areas, it is possible that smaller settlements grew up in particularly productive areas across Xiongnu territory, Boroo Gol for gold production (see Radtke et al. 2013) and Egiin Gol for farming.

In addition to everyday habitation sites, the inhabited landscape of the Xiongnu included walled enclosures. These were roughly square structures several hundred meters on a side. The enclosing walls in most cases were not substantial structures, probably several meters high and not particularly thick. The

interiors of the enclosures appear to be mostly empty with a few large platforms of c. 1–2 m high within the enclosure (Purcell and Spurr 2006). Excavations at Tereljiin Dorvolzhin (Danilov 2011) focused on the platforms, the larger of the two is 1800 m² and the smaller 500 m². They are connected by a low mound, perhaps an elevated walkway, a pattern that is repeated at several other enclosure sites. The mounds supported some sort of tile-roofed structures without substantial walls. Excavations at Gua Dov (Eregzen 2017; Eregzen et al. 2016) found tile caps on the walls and a lightly built but tile-roofed gate. Other finds from these sites are rare though some pottery, tiles, and optically stimulated luminescence (OSL) dates (Solongo and Tengis 2015) associate these firmly with the Xiongnu period. These enclosures are interpreted as infrequently used central places within the Xiongnu polity that were built to emphasize separation of enclosed and exterior spaces more than to serve as fortifications. These are rare enough (Holotova-Szinek 2011) that it would be possible to see them as each central to a unit within the Xiongnu state or as spots used by a mobile ruling court as they moved around their domain. To date no intensive surveys have taken place around any of the 20 or so enclosures of this type that are known, so we do not know how less-elite habitation was arrayed around them.

The industrial zone of Khustyn Bulag (Ishtseren and Sasada 2014; Sasada and Amartuvshin 2014) is close to Tereljiin Dorvolzhin and may have provided the tiles and other items for that site. Danilov (2011) reported possible artisan's marks on the roof tiles from Tereljiin, though no direct connection has yet been made between the two sites. In addition to tiles and ceramics, iron was smelted and steel was made at the Khustyn Bulag complex. The iron technology deployed there and at other Xiongnu sites in the Khangai and the Gobi is a bloomery-based Siberian technological tradition (Park et al. 2010; see also Kozhevnikov et al. 2001; Miniaev 2016). The sophistication of the Xiongnu iron industry is also seen in the production of the metal elements for Han Chinese-style carts found in elite Xiongnu tombs at Gol Mod I and II (Park et al. 2017; see also Polosmak et al. 2008b). The vehicle elements are indistinguishable from Han pieces until metallurgical analysis is performed. Small-scale iron working was widely practiced at Xiongnu settlement sites (Houle and Broderick 2011; Park et al. 2010), and iron objects are commonly found in graves and middens.

Though there are traditions drawn from Han texts that the Xiongnu state had a capital site, no extraordinary elite site has been found in any of the possible locations for such a center (Bemmann 2011; Miller 2014). A strong argument has been made why no central capital was necessary for Xiongnu political systems to function (Honeychurch 2015). If the Xiongnu settlement pattern seems minimal compared to that of other complex societies, population density may be a key factor. Based on the recorded sizes of Xiongnu armies and leaders' followings (Miller 2014)—numbering only in the thousands or tens of thousands of mostly mobile people—towns, industrial sites, or even villages to support this population must have been relatively rare across Xiongnu territory.

Trade and Exotic Goods

Our understanding of the metallurgical traditions of the Xiongnu period has been reshaped, and the importance of a frontier iron trade between the Xiongnu and the Han empire (Barfield 2001; Yang and Shao 2015) does not appear to have been particularly influential in the Xiongnu heartland. Exotic goods provide all the evidence available for long-range trade from the Xiongnu period. The exotic nature of these goods has long been recognized, but recent discoveries and analytical studies have greatly increased the understanding of the place of these objects in Xiongnu society (Brosseder 2011, 2015). The elite tombs at Noyon Uul have been a major recent focus of study. Lacquer objects have been found to be manufactured in Han workshops (Chistyakova 2009; Karpova et al. 2017) and distributed throughout Xiongnu society. The sumptuous textiles unearthed from Noyon Uul (Voskresenskii and Tikhonov 1932) include both Eurasian styles of fabrics and felts as well as silk from the Han empire and wool textiles dyed in many locales across southern Eurasia (Karpova et al. 2016) that must also have arrived in Mongolia through a wide-ranging exchange system.

Ordinary Xiongnu tombs contain a range of beads manufactured as far away as Egypt (Davydova 1996; Lankton et al. 2012). However, it is the textiles from the original Noyon Uul excavations that were the icons of the hybrid Eurasian style and trade system of the Xiongnu. Recently, this position as icons of Xiongnu engagement with Eurasia as a whole has been displayed in decorated silver horse harness ornaments excavated from both Gol Mod and Noyon Uul (Erööl-Erdene 2011; Polosmak et al. 2011; Treister 2016). These include depictions of animals including a single-horned gazelle and a medallion depicting a Hellenistic-style scene of a satyr and a nymph. Both of these were manufactured in Pontic Greek western Eurasia and converted to their final use or made specifically for Eurasian consumption. Object-focused studies highlight the extent and complexity of the economic reach of Xiongnu communities. Brosseder's extensive studies (2011, 2015) of different classes of high-status objects show that the Xiongnu were great consumers of exotic goods, in the service of individual identity and as part of a prestige goods-focused political system (Brosseder 2015, p. 20; Honeychurch 2015).

Cemeteries and Mortuary Landscapes

A major focus of excavation during the first decade of this century were the large terrace tombs of the Xiongnu elite. This type of tomb had been known since the first excavations at Noyon Uul early in the 20th century (Khodukin 1926; Trever 1932), but no major excavations had followed those (see Konovalov 2008 for excavations in Siberia). Beginning in the first years of this century, expeditions returned to Noyon Uul (Polosmak et al. 2008a, 2009), Gol Mod (André and Desroches 2002; Yeruul-Erdene 2014), Gol Mod II (Allard et al. 2002; Erdenebaatar et al. 2011; Miller et al. 2006), Duurlig Nars (Eregzen and Aldarmunkh 2015; Yun and Chang 2011), and Takhiltyn Khotgor (Miller et al. 2008). The locations of these complexes are mostly

in the central Mongolian highlands, the Selenge drainage, and at the eastern face of the Altai in western Mongolia and define the core regions of the Xiongnu polity.

The corpus of elite tombs now includes more than 20 excavated major tombs from six of 10 known cemeteries (Brosseder 2009; Eregzen 2011). These tombs all have similar attributes, with size as the major variable. All are roughly square platform structures with stone-faced sides and south-facing ramps that reach up to the top of the platform. The platforms range from 67 m² to 2100 m². The surfaces of these structures are regularly divided by partitions that segment the platforms and the ramps into smaller roughly rectangular areas and structurally help deter robberies from the tombs (Kononov 2008). Beyond the platforms themselves are arrays of parallel small mounds containing animal bones (Miller et al. 2008). In some cases, ring burials are arrayed systematically around the tomb platforms (Jones and Joseph 2008; Miller et al. 2006). These elite cemeteries are surrounded by large cemeteries of ordinary graves. The kinship connections seen in ordinary cemeteries (Keyser-Tracqui et al. 2003) suggest that these large cemeteries may be drawn together by real or fictive kinship within elite and ordinary lineages.

The burial pits of these elite tombs are as massive below ground as the platforms are above. They are accessed with a sloped *dromos* that mirrors the ramp above it. These stepped pits average 9 m deep, but some are as deep as 18 m. At the base of the pit is a tomb chamber built of wooden beams. When constructed, these tombs contained large amounts of burial goods, treasures, furs, textiles, exotic items from across Eurasia and East Asia, animals, and vehicles. All excavated tombs have been previously reentered and most of their contents removed long ago. These tombs were large investments of resources and show the wealth in goods and labor available in Xiongnu society. The massive tombs were constructed only between the first century BC to the first century AD, probably with several such tombs built and furnished each year. Construction must have required elite lineages to consume a constant stream of gold and exotic goods.

The most common marker of the Xiongnu is the ring grave. These graves were cut deeply into the ground, and some have burial pits 3 m or more deep. They are defined on the surface with a 6–10-m ring of heaped stones with an open center. Burials themselves are found in stone or wooden coffins with a range of animal parts, ceramics, and other grave goods arrayed around the body. The fauna in Xiongnu graves includes domesticates and provides the best sample of fauna from any period studied in Mongolian archaeology. The use of fauna as part of the mortuary ritual puts the human–animal relationships on public display (Makarewicz 2010). Notably, there are many similarities between faunal deposits in large and small tombs (Martin 2011).

Ring graves have been continuously studied since the earliest days of archaeology in Mongolia. Recent excavations have focused on large and small cemeteries, and Xiongnu mortuary archaeology has been greatly advanced by expeditions that have focused on the nearly complete excavation of single cemeteries, opening up these populations for detailed study (Brosseder and Miller 2011; Shan 2009). These sites include Borkhan Tolgoi in Egiin Gol (Keyser-Tracqui et al. 2003; Ricaut et al. 2010; Turbat 2004), Khudgiin Tolgoi (Mon-Sol 2003; Yun 2009), Baga Mongol (Nelson et al. 2009), and Shumbuuziin Belchir (Miller et al. 2011). Ring graves are not the

only form of grave used in the Xiongnu period. Graves without the same depth or stone surface expression have been found both intermixed with other grave forms and as complete cemeteries in their own right (Davydova 1996; Leus 2011).

Successors to the Xiongnu

The evidence for large-scale unified political organization in the Mongolian steppe faded by the second century AD with the end of the construction of large terrace tombs and central places. However, the changes in everyday practice that came about in the Xiongnu period endured. Common Turkic period ceramics resembled Xiongnu forms but included a range of new textured decorations. Turkic period grave architecture traditions continued to follow Xiongnu-style ring graves, but in smaller scale and more dispersed pattern of cemeteries. In time, a new quadrilateral monumental form appeared that echoed quadrilateral elite graves with carved stranding slab boxes and attendant standing stones or carved images of people (Bayar 2004).

From the continuity of everyday material culture and subsistence practices after the dissolution of the Xiongnu polity, it is clear that a new distinct identity had taken hold in the eastern Steppe. Though its roots are in the sweeping cultural changes of the Xiongnu period and Late Iron Age, it is probably better to think of this archaeologically as an Early Turkic culture that not only looked back centuries to well-established ways of doing things but also asserted diverse new political identities (Hayashi 1996; Kubarev and Tseveendorj 2002; Vasilyev 1991, 1992). Major changes in the political landscape in Mongolia occurred with the reemergence of large regional polities during the Turk Khagantes (sixth–eighth century AD). Initially, rulers seem to have followed the mobile political system pioneered by the Xiongnu, but, as time passed, they become more urban based and presented their power in a style similar to the other medieval states of eastern Eurasia (Mackerras 1973; Rogers et al. 2005; Sinor 2000).

Conclusions

In concluding, I note the key developments of the last decade and half of research and what the future directions for Mongolian archaeology might be. The key research to take away from the preceding pages are the increasingly sophisticated models of the “Green Gobi” of the middle Holocene and the relationship between environmental change, adoption of pastoralism, and monumentality; the short chronology of the of classic Eurasian Bronze Age in Mongolia; the detailed archaeology of Xiongnu society that supersedes previous text-based studies of it; and finally, our increasingly nuanced understanding of the archaeology of pastoralism drawn mostly from studies of the Xiongnu period.

Though I have focused on Mongolia, in particular, the work summarized here serves as a template for others working in sparsely occupied landscapes. We have learned that the inhabited landscape of the steppe has always been busy with human

action and that habitation sites of all period and economies are visible and accessible through archaeology. Regional studies provide a basis for saying that it is likely that the population density has always been low over much of Mongolia and that central places of different sorts have formed cultural nuclei.

Trajectories of social and economic development visible in the archaeology of Mongolia are just as likely to be autochthonous developments or related to trans-Eurasian east–west interaction as they are to be based on dependencies or interactions with the sedentary agricultural populations to the south of Mongolia. Although the drama of mobility provides the theme around which most interpretations of Mongolian archaeology are built, it is becoming clear that dramatically told migration narratives of long-range mobility may not be the element of the story that really matters. It is shorter range, temporally precise, local, and repeated mobilities and associated interactions that are more important for the past societies of Mongolia. These underpin a story of the adoption of technologies, symbolic grammars, people, and animals into existing societies.

This last sentiment, that increasingly detailed understandings of archaeological chronology and typology and their spatial distribution is loosening the bonds of the unitary archaeological culture concept that has held sway across much of Eurasia since the 19th century is perhaps an overly rosy picture. Though this review has concentrated on agentive and anthropologically focused archaeology and models, the easy overarching shorthand of grave-form-based packages of behavior, social structure, and beliefs remains a strong force in Mongolian and Eurasian archaeology (e.g., Jeong et al. 2018; Kovalev and Erdenebaatar 2009; Kuzmina 1998; Tumen 2011).

In 2019 the future of Mongolian archaeology is one of growth in the amount of documented archaeology, the chronological precision or our understanding of it, and new foci in key understudied periods and areas. Collaborative research and cultural resource management will frame future research and structure how Mongolian archaeology positions itself as part of the discourse of global archaeology.

In Mongolia there are archaeological sites that are world-class records of past human endeavor. The deer stone monuments at Uushigiin Ovoo, the thousands of interrelated rock art panels at Sagan Sala and Baga Oigur, and urban landscapes of the middle Orkhon including Kharbalgas and Karakorum have no parallels elsewhere. As research, and recognition, focuses on notable places such as these, it also continues throughout the country beyond those famous sites. International collaborative research and the reemergence of Mongolian-led archaeological research in the 21st century means that the data available for detailed studies, the testing of interpretations, and the creation of syntheses are constantly growing. Volkov's (1981) survey of deer stones, for example, counted c. 300 known examples with increasingly effective survey and recording; Turbat's (2016) more recent survey increased that count to more than 1300.

Specific future developments can be expected in chronology. The chronological periods by which much of the development in Mongolian prehistory are measured, and have been used here, are large and unwieldy for addressing the details of social practice and change and the detailed particulars of historical change that more frequently are the concern of researchers now. The ability to record large arrays of

dates and data on specific materials offered by ZooMS (van Doorn 2014) and the direct dating of ceramics (Janz et al. 2015) and metal objects (Park et al. 2011) will provide a transformation and challenging complications of the long chronological periods. Of those periods, the one that needs the most attention is the Iron Age, broadly the middle centuries of the first millennium BC. Although there are major known sites that are threatened by development and unregulated digging, this is a largely unexplored and currently difficult-to-recognize period in much of Mongolia. This period also was the wellspring of the major polities of eras that have historically received much archaeological attention, and so it is a key element of the study of the origins of the state on the steppe.

The mid-Holocene transformation of landscape and subsistence that lead to the widespread adoption of nomadic pastoralism is another period of growing research focus. Again, the foundations of later complex patterns were laid down then, but also these processes are globally informative for the study of subsistence change in other regions. This research will hopefully be a fruitful collaboration among the study of hunter-gatherer economies, monumental landscapes, bioarchaeology, and environmental change.

The coming storm of biomolecular archaeology of both human and animal populations will both clarify and raise many questions about the spatially and typologically based archaeological interpretations (Hermes et al. 2018; Jeong et al. 2018; Makarewicz 2016; Pilipenko et al. 2018; Yonemoto et al. 2016). Though these studies can situate Mongolia as a key territory in trans-Eurasian stories, their greater contribution could be as building blocks of local integrated narratives. The ability to approach landscape use and the biographies of individual animals and humans they potentially provide will be powerful tools for the study of the adoption and spread of pastoral communities, and mobility and political economy in the steppe, as well as providing depth and extensibility to ethnoarchaeological studies of animal management and multispecies relations in the past.

I close this review by returning to a point in the introduction, that the most important future development for Mongolia is the ongoing building of a strong archaeological cultural resource management system. This, combined with capacity building for archaeological analyses centered at Mongolian institutions, will provide an overall stronger Mongolian archaeology and very different landscape for the next decade of research. The examples of Japan and the Republic of Korea with their long histories of cultural resource management alongside development (Barnes and Okita 1999; Byington 2008; Pai 2000) provide a model for a possible future of Mongolian archaeology as a rich national archaeology and also a central reference point for modern archaeology in Asia and the world.

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