## Archaeological Investigations of Xiongnu Sites in the Tamir River Valley

# Results of the 2005 Joint American-Mongolian Expedition to *Tamiryn Ulaan Khoshuu*, Ogii nuur, Arkhangai aimag, Mongolia

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During the summer of 2005 an archaeological expedition jointly mounted by the Silkroad Foundation of Saratoga, California, U.S.A. and the Mongolian National University, Ulaanbataar, investigated two sites near the confluence of the Tamir River with the Orkhon River in the Arkhangai aimag of central Mongolia (Fig. 1). The expedition was permitted (Registration Number 8, issued June 23, 2005) by the Ministry of Education, Culture and Science of Mongolia. The project had multiple goals: archaeological investigations of the Iron Age Xiongnu culture in central Mongolia, instruction of Mongolian university students and Silkroad Foundation volunteers in archaeological field methods, and cultural exchange Mongolians between and Americans. These activities, far from being discrete, were inseparably part of the everyday activities of the expedition. The archaeological investigations, and their results, are the focus of this article, which is a preliminary and incomplete record of the project findings. Not all of the project data including osteological analysis of the burials, descriptions or maps of the graves, or analyses of the artifacts — is available as of this writing. Consequently, the greater emphasis falls on one of the two sites. It is hoped that through the Silkroad Foundation, the many different collections from this project can be reunited in a scholarly publication.

## **Research Design and Project Methodology**

Central Mongolia contains a rich, deep, and varied archaeological record that is, unfortunately, poorly known outside of Mongolia and the Russian-speaking archaeological community (cf. Bessac 1965; Davydova 1968).



Fig. 1. Map showing location of the Tamir River excavations.

What is known points to this area as one of the most important cultural regions in the world, a fact recently recognized by the UNESCO through designation of the Orkhon Valley as a World Heritage Site in 2004 (UNESCO 2006). Archaeological remains indicate the region has been occupied since the Paleolithic (circa 750,000 years before present), with Neolithic sites found in great numbers. As early as the Neolithic period a pattern developed in which groups moved southward onto the steppes from the Taiga, adopted pastoralism in some form, and eventually moved south and west. Whether the movement was in response to pressure from other groups to the north or east (pushing) or new opportunities to the south and west (pulling) remains an important arena of research, but the pattern was persistent for millennia. The adoption of metal implements in the Bronze and Iron Ages appears to have done little to change this pattern. The first historically documented group of the Iron Age, called the Xiongnu (Hsiung-nu) by Han scholars, appears on the scene around 300 BCE, presaging a succession of similar steppe nomads that included the Uighur, Turks, and Mongols. The Xiongnu had a complicated and contentious relationship with the Han, raiding as well as trading with Han settlements along the northwestern frontier of China. The relative degree to which the Xiongnu political system and its leaders were dependent on the Han is the current subject of

heated debate (Barfield 1994; cf. Di Cosmo in this issue). In an attempt to address some of the questions about this relationship, as well to gather additional information about the nature of the Xiongnu culture, the Silkroad Foundation launched an archaeological expedition to gather new data.

## Ethnic Identity, Material Culture, and Gorodishche

Specifically, the 2005 expedition sought information in three areas: the ethnic affiliation of the Xiongnu, the affiliation of Xiongnu material culture with Siberian and traditions, and Han the and architecture use of *gorodishche* (earthen-walled structures) by the Xiongnu. Recent archaeological investigations of burial populations in Inner Mongolia and southern Siberia have identified significant europoid Caucasian Bronze Age populations, some as old as the Hirgisur complex of the Bronze Age (Di Cosmo 1999). Some readings of Han texts suggest the Xiongnu were, at least in part, ethnically like modern European populations, a view supported by the recovery of Caucasian remains from some Xiongnu graves (Tumen 2005; see also the article by Batsaikhan in this issue). Furthermore, some scholars have suggested that the Xiongnu, after leaving central Mongolia, migrated west across the steppes to the eastern edges of the Roman Empire, where they were known as the Huns. Others, noting that *hunnu* is a Han term for any barbaric foreigner, and that the Xiongnu and Huns are separated by nearly 200 years in the Han and Roman accounts, suggest that the Xiongnu and Huns are two different groups, albeit of similar nomadic lifestyles. Addressing this issue requires better understanding the ethnic composition of the Xionanu and Huns and their material culture traditions (Di Cosmo 1999; Miniaev 1995). Excavation of Xiongnu tombs in Mongolia could potentially provide skeletal remains and burial

goods to address the questions of ethnic identify and material cultural. The 2005 expedition selected a Xiongnu cemetery in the Tamir River valley, a region from which a good comparative collection was excavated in 2003 by a joint Mongolian-Korean expedition. The cemetery site selected by the 2005 Mongolian-American Expedition was named Tamir 1.

Tamir 1 is located on a prominent granitic outcrop known as Tamiryn Ulaan Khoshuu near other cemeteries of the Neolithic, Bronze Age, and Mongol periods. The significance of this place may derive in part from its prominent visibility within the Tamir and Orkhon River valleys, and its proximity to the broad, wellwatered floodplains of these major rivers. Investigations from July 20 to August 19, 2005, included the preparation of detailed maps of the site using handheld GPS units, photodocumentation, and the excavation of five graves at Tamir 1.

The third research question targeted a site 10 kilometers to the west of Tamir 1, which we designated Tamir 2. This site consists of three enormous earthen-walled enclosures that (superficially) resemble structures excavated during the Soviet era in the area of Lake Baikal and in the Selenga River valley of southern Siberia. A noteworthy project at the site of Ivolga by Davydova (1968) suggested that these gorodishche were fortified, permanent Xiongnu villages, containing tightly packed semisubterranean houses, pits, metal foundries, and possible animal enclosures. These sites, however, also contain considerable evidence for agriculture, in the form of grain storage pits, large ceramic vessels, agricultural tools, and grinding tools. The variety of features and specialized tools raised the question: did the Xiongnu practice agriculture in tandem with pastoralism (Di Cosmo 1994), or,

alternatively, did the Xionqnu polity incorporate groups with different lifeways, including agriculture, hunting and collecting, and dedicated pastoralism (Barfield 1981)? The 2005 expedition targeted Tamir 2 (1) to address whether the site is a construction of the Xiongnu, rather than another group or a different time period, (2) if built by the Xiongnu, to determine if this was a year-round settlement (permanent), a seasonal settlement, or was built for short term occupation such as fortified refuges, periodic or seasonal gathering places, or special functions (i.e. ceremonial), and (3) to establish the relationship of this site with the cemetery, Tamir 1.

## **Project History**

The general goals of the project were identified in consultations among Adela Lee, Head of the Silkroad Foundation, Dr. Albert Dien of Stanford University, Dr. Mark Hall of the University of California at Berkeley, and Dr. Zagd Batsaikhan of the Mongolian National University, a noted authority on the Xiongnu and author of the definitive work on the Xiongnu, entitled (in English) Xunnu. Dr. Hall had worked on a prior excavation with Dr. Batsaikhan. The latter had previously excavated at Tamir 1 and felt that it was a significant Xiongnu cemetery, likely to contain additional intact graves. He had also discovered Tamir 2. The proximity of the two sites offered the opportunity to explore all of the research questions discussed above, as well as offer students of the field school opportunities at survey, mapping, and excavation.

Plans for the project were initiated in 2004, with field work to be conducted in the summer of 2005. Dr. Hall made all of the initial preparations, issuing a call for volunteers in the fall of 2004. Of the dozens of applicants, Dr. Hall selected 14. Unfortunately, just two weeks before the project was

the field, tο take other commitments forced Dr. Hall's withdrawal from the project. The Silkroad Foundation subsequently contracted with two of the volunteers professional \_ archaeologists with prior experience running archaeological field schools - to co-direct the project for Silkroad Foundation. Due to scheduling conflicts resulting from the sudden change in project supervision, neither David Purcell nor Kimberly Spurr was able to participate in the project for the entire four week field term. The Silkroad Foundation contracted with Dr. Wang Binhua, a prominent retired archaeologist formerly based in The Xiniiang-Uighur Autonomous Region in China, to complete the project term after Purcell and Spurr departed, and to provide additional perspectives on the Xiongnu tradition from the western area occupied by the culture and the archaeological traditions of the Peoples Republic Of China. Thus, the 2005 expedition came to have four archaeological directors and a field methodology that combines contemporary trends from three of the major schools of archaeological methodology: American, Soviet (Mongolian), and Chinese. The methods used in survey, testing, mapping, and feature excavation are described below.

## Field Methods and Approaches to Data Collection

## Site Survey, Mapping, and Documentation

Although it was hoped from the outset that the field school would include the opportunity for systematic surface surveys of the type that form a major part of the American approach to describing settlement systems, time and materials did not allow for this. Instead, the project focused on detailed documentation of each of the sites, with the goal to produce plan maps of each site showing the locations of each archaeological feature, relevant natural features, and areas subjected to excavations. David Purcell directed this part of the field school. Using a Garmin 12-channel handheld Global Positioning System (GPS) receiver, each of the sites was mapped to scale with 3-5 m accuracy. During this activity, basic metric data was collected for each feature and recorded in tabular form. Due to the size of Tamir 2, and to give all project participants an opportunity to learn site mapping, the recording resulted in a site map of the entire settlement and individual maps of each of the three enclosures (Figs. 21, 22, below). At Tamir 1, the density of graves in the central portion of the site required that we produce a detail map of part of the site, in addition to the overall map. All of the Mongolian students and Silkroad volunteers were able to take part in this activity.

Some surface survey of areas outside of the sites did take place, but at an informal, reconnaissance level. This included a number of individual and group forays around Tamir 1 to investigate the many other grave markers on Tamiryn Ulaan Khoshuu, which Dr. Batsaikhan identified as belonging to Neolithic, Bronze Age, and Mongol graves (Fig. 2). On one occasion, Batsaikhan, Purcell, and Spurr drove north of Tamir 2 to visit a site with extensive earthen walls that had been reported by a local herdsman. A rough GPS map of this site seems to show that it is of very different form than Tamir 2, and possibly represents an animal trap and corral from an unknown period, rather than a habitation area.

## **Test Excavations**

The 2005 expedition further investigated Tamir 2 through a series of systematic and judgmental test excavations. The systematic tests consisted of 1 x 1 m hand units placed on a 50 m grid within Structure A of Tamir 2. Fifteen of these units were excavated to 20 cm below the surface to, or slightly into, a culturally sterile calcic soil. The development of such soils typically requires many millennia, with their formation likely pre-dating the Xiongnu occupation. The test units were located by reference to the GPS coordinates, and thus have a potential locational error of 3-5 m. Relocating these units would be almost impossible for subsequent researchers, so each unit was lined with plastic sheeting and a metal object (coin, or other small trinket) was placed in the bottom center. The units will, therefore, be identifiable with a metal detector and the actual location of the unit could be precisely plotted with reference to a site grid placed with a transit, theodolite, or total station.

Each test unit was laid out with respect to the cardinal directions. Since topographic maps of the project area were not available to the 2005 expedition, Purcell set true north declination on his compass to 9° W, the alignment of the western wall of Structure A. The GPS-derived plot of this wall is 4° E declination, indicating that the builders of Tamir 2 sought to orient their layout to the true cardinal directions, not magnetic. GPS north is slightly askew from True North.

For each volunteer, Purcell then provided instruction on how to set up an excavation unit, make sure that it is square, set a datum for vertical measurement controls, and excavate using hand tools. Each unit was excavated in arbitrary 10 cm levels. Unfortunately, screens were not



*Fig. 2. Surface remains of a Bronze-Age (?) grave on a slope facing* Tamiryn Ulaan Khoshuu.

available to sift the soil for small artifacts that are often overlooked when excavating. Profiles were then drawn of the exposed soil stratigraphy in selected units (those that exhibited useful stratigraphy) and plan maps were drawn of the bottom surface of the unit if it exposed a cultural feature or artifact. Selected units were also documented through digital photographs.

To investigate the architecture of the gorodishche, three judgmentally selected test excavations were made in Structure B. These consisted of a 1 x 1 m unit (TU 17) placed in a long, low swale that extends partly across the interior of the structure, a 1 x 1 m unit (TU 16) placed within the interior southwestern corner of the wall, and a 1 x 1 m unit (TU 19) placed in a gap of the near southern wall the southeastern corner. All were excavated in arbitrary 10 cm levels initially, with TU 19 being excavated in natural levels below 20 cm. TU 17 exposed what appeared to be a natural cobble and gravel deposit and was discontinued at 6 cm (Fig. 3). TU



Photo © Daniel C. Waugh 2005 Fig. 3. Test Unit 17, Tamir 2 site.

16 exposed what appeared, at first, to be molded dirt (adobe) bricks, and was expanded with 1 x 1 m units to the north and east; these proved to be natural drying cracks in melted construction dirt that has collected at the base of the wall (Fig. 4). Expanded to 1 x 3 m, TU 19 exhibited a series of four cultural fills of visually distinctive colors that appear to represent the construction



Photo © Daniel C. Waugh 2005 Fig. 4. Test Unit 16, Tamir 2 site.

sequence within the wall proper (Fig. 5). A possible post hole was observed in profile in the east end of this unit, perhaps part of a palisade wall or gate.



Photo © David E. Purcell 2005 Fig. 5. Test Unit 19, Tamir 2 site.

Test Unit 18 consisted of cleaning and profiling the walls of a rectangular pit found near the center of Feature 1 (Structure B), in the top surface. The pit measured approximately 1.35 x 1.0 m. After cleaning the pit walls, layers of brightly colored soils and an older, in-filled pit or shaft, were visible. Some of the layers are less

than 5 cm in thickness, and alternate regularly, suggesting the periodic renewal of the exterior surface of the mound. The old pit or shaft was slightly north of TU 18, and may have been an ancient looters' tunnel. The conspicuously

vertical walls and rectangular plan of TU 18 suggests that it was excavated by archaeologists, rather than looters. Dr. Batsaikhan was unaware of who would have conducted such an excavation.

## Feature Excavations

The excavation of individual archaeological features was the

final activity undertaken in 2005, and the primary focus of efforts at Tamir 1. The approach followed methods used previously by Dr. Batsaikhan at this and other Xiongnu sites, with slight modifications at two of the features. Using a compass set to magnetic north, the visible feature (a low rock ring) was divided into quarters along the cardinal directions using string lines, which extended at least 1 m beyond the edge of the rock ring. Vegetation and overlying dirt was cleaned (Fig. 6) from the northwestern quarter first, followed by the northeastern, southeastern, and southwestern. A balk, or untouched strip of soil 20-30 cm in width, was left between each of the quarters (Fig. 7, next page). Using metric graph paper, each exposed stone of the grave surface was then drawn to scale with a string mapping grid, drawing a block  $5 \times 5$  m at a time. The northwestern quarter was illustrated first, and upon completion of the map of that section, the rocks were removed and discarded, and a  $2 \times 2 \text{ m}$ excavation unit was established at the center of the section, with the balks forming two of the edges. Each feature quadrant was treated



Fig. 6. Cleaning the rock ring of Feature 201, Tamir 1 site.



Photo © David E. Purcell 2005.

*Fig. 7. Partially exposed rock ring of Feature 160, Tamir 1 site, view along balk to south.* 

in this manner, sequentially. The excavation units were excavated approximately 1 m in depth, with the fill being discarded, to expose the opening of the grave shaft proper. After two adjacent quarters had been opened in this manner, profile maps of the balks were drawn to illustrate the stratigraphy of the upper portion of the grave shaft and the collapsed grave monument. The balks were removed once all of the profiles are drawn, and the grave shaft fill was removed as a single stratum down to the tomb. The grave contents were exposed, hand, excavated by and photographed before being removed to complete excavation of the grave. Photography was undertaken almost entirely by Silkroad participants, although not in a systematic fashion; typically, photographs were taken when an interesting find was uncovered and announced. Once the entire grave had been completely excavated, the skeleton and grave goods were replaced in their positions and a final map of the grave was drawn. Vertical controls were not used at Features 97 or 100, including the use of a vertical datum, level lines for the balk profiles, or recording of vertical elevations. Limited vertical control was undertaken at Feature 109.

Purcell initiated several modification to these procedures

at Features 160 and 201. At Feature 201, each of the quarters undertaken was simultaneously with clearing the vegetation and overburden. During the removal of the rock fall from the grave monument, large quantities of animal bones were observed mixed with the rock, as well as ash and charcoal, concentrated beneath an upright boulder at the southeastern edge of

the ring (a possible headstone). The northeastern and southeastern quarters and part of the southwestern quarter were then excavated carefully by hand to expose a deposit of burned, butchered horse bone, associated with a few artifacts. At Feature 160, excavation proceeded in halves, not quarters, due to its small size. At both features, vertical data were established and elevations were recorded for the present ground surface, top of the grave monument, grave shaft opening, and individual points within the graves. The balk profiles of both features were drawn from level lines, with the entire grave, shaft included, profiled in sections approximately 2 m in thickness. Unfortunately, due to a miscommunication, only the upper meter of the grave shaft was documented in this manner before the rest of the grave shaft fill was shoveled out. The deeper profiles documented the fill sequence of the graves, a procedure that was followed by the 2003 Mongolian-Korean Expedition. In addition, in Features 109, 201, and 160, most artifacts or features found in the graves or grave shafts were mapped and vertical elevations recorded as they were exposed, and each find was exhaustively photodocumented by Dan Waugh, David Purcell, and other project participants. As noted above, this program of photography was

d inconsistently applied.

Excavated artifacts were removed to the expedition camp as soon as they could be safely taken from the ground, and were stored in the expedition laboratory in a ger that was erected in camp. In this location, artifacts were cleaned, photographed, and illustrated. Dan Waugh systematically documented every substantial, and many of the less complete, artifacts through photographs taken in relatively controlled lighting.

## RESULTS

#### Tamir 1 - The Cemetery

Tamir 1 consists of 287 graves visible on the surface as torusshaped low mounds of rocks clustered on a south-facing slope around the head of a series of dry washes that are tributary to the Tamir River. Documentation of Tamir 1 entailed the preparation of two maps, and completion of a table that recorded the size, condition, orientation, and attributes of each grave. One map completed in 2005 is a plan of the entire site, shown in relation to the natural drainage system; the other is a detailed plan view of the densest portion of the cemetery. The cemetery encompasses 560 x 390 m, an area of 21.8 hectares. Each grave was documented as a `feature' and numbered sequentially from 1-290 (three numbers were omitted). The surface expression of the graves ranged from 2 m in diameter to 12 m, with an average of 4.6 m (n=273) and modes of 4.0, 5.0, 3.0, and 6.0 m (in order of frequency). The median feature diameter is 4.5 m, (n=269). Thirty-one of the graves exhibit single boulders set upright in the ring of rocks, often on the southeastern or northeastern edge, perhaps marking the head of the grave (headstones). The graves located closer to the Tamir River floodplain appear to be smaller in diameter, in closer



Fig. 8. Feature 97, Tamir 1 site (clockwise from upper left): bronze cauldron with iron base, pot, lamp, animal bones, gilt ring of lacquer bowl, resting on pot.

proximity to one another, and more densely clustered than are graves located higher on the slope, farther from the river's edge. Dr. Batsaikhan previously excavated in Tamir 1, but the site has also been subjected to unscientific and unauthorized excavations, including several graves observed in 2005 that appeared to have been very recently looted. Five graves were completely excavated by our expedition in 2005: Features 97, 100, 109, 160, and 201. Excavation revealed that the rock rings were once continuous mounds of rocks piled over the grave shaft, but with the settling of the grave and shaft fill through time, now appear to be mounded rings of cobbles.

Feature 97 contained a nearly complete, but disarticulated, human skeleton and a cache of grave goods at the foot of the grave (Fig. 8) that included a bronze and iron cauldron, a lacquerware bowl with a gilt brass rim (see images, next article), an oil lamp, and several ceramic jars. There was also group of decorative metal and bone objects that may have been horse tack decorations, a bone and metal bit, and a wooden toggle. Two or possibly three other lacquer vessels, less well-preserved, were also present but disintegrated before being documented or described.

100 Feature contained an articulated skeleton within the remains of a poorly preserved wooden shaft liner. Associated grave goods included a complete white bronze TLV mirror (Fig. 1, p. 36), two ceramic jars, a fragment of cloth (Fig. 9), a ceramic spindle whorl, a complete oil lamp, metal bronze clothing plaques including possible

buttons, a carnelian (?) bead, a bronze cauldron, and a bronze (?) coil-like object of unknown function (possibly a core for a string of coins).



Photo © Daniel C. Waugh 2005 Fig. 9. Cloth (carpet?) fragment with embroidered design. Feature 100, Tamir 1 site.

Feature 109 was a tomb showing evidence of two looters' shafts, but still held a partially intact wooden lining and the disarticulated and obviously disturbed remains of one individual. The funerary offerings that had been overlooked by the looters included a gold earring (less the inset stones) (Fig. 10), a turquoise jewelry setting, two fragments of a large white bronze TLV mirror (Fig. 3, p. 37), three cast glass beads (Fig. 11), a possible iron knife with lacquered



Fig. 10. Gold earring. Feature 109, Tamir 1 site.



beads. Feature Tamir 1 site.

wooden handle (Fig. 12, next page), and various rusted iron objects. Despite the later digging in the tomb, handholds and footholds were identified by Dr. Wang in the shaft walls as having been cut during the graves initial excavation, providing ingress and egress for the excavators.

Feature 160 exhibited a looter's shaft in the profile of the grave shaft; at the bottom of the looter's shaft was the displaced cranium from the burial (Fig. 13, next page). Quantities of charcoal were scattered throughout the grave



Fig. 12. Iron knife with handle of lacquered wood. Photo in situ, approx. 310 cm. depth (© Daniel C. Waugh); sketch of possible original appearance (© David E. Purcell). Feature 109, Tamir 1 site.



*Fig. 13. Skull in Feature 160, Tamir 1 site.* 

shaft starting around a depth of 50 cm and continuing to the bottom. At 231.5 cm the excavation revealed a rectangular rock "lining" of the grave with a rock pile in the center (Fig. 14).

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Fig. 14. Feature 160, Tamir 1. Rock "lining" of grave.

It is possible that these rocks had been placed on the top wooden boards of the coffin (no longer extant). The lowest layer of the coffin walls was intact, and there seemed to be traces of a pattern of a carpet that might have been laid on the ground below the body. At the SE end of the coffin was a separate compartment (Fig. 15)

containing two ceramic jars and a possible cooking vessel, and just

inside the coffin were remains of a lacquerware vessel (Fig. 16). Beyond the NW end of the coffin some vertebrae, probably of a sheep, were found. Apart from the skull (see above), the middle section of the skeleton was in the presumed original position laid NW to SE. However, the mandible had been displaced and was found in approximately the pelvic area, a result presumably of the



Photo © Daniel C. Waugh 2005 Fig. 15. SE wall of coffin, sherd of jar visible in center. Feature 160, Tamir 1 site.

intact grave with a fully articulated skeleton in situ, except for the cranium, which was found on the NW side toward the feet. Associated grave offerings included a string of Han Dynasty *wushu* coins (Fig. 17), found in the



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*Fig. 16. Pots, charred vessel and remains of lacquer bowl (lower right). SE end of grave, Feature 160, Tamir 1 site.* 

action of the looter. The grave goods included a complete bronze mirror of possible local manufacture (Fig. 5, p. 38), a

metal earring, a ceramic spindle whorl, four stone beads, assorted iron objects including possible belt buckles/plaques, all badly corroded, and traces of at least one additional lacquerware object.

Feature 201 was also an apparently



Fig. 17. A string of wushu coins on a metal 'core.' Feature 201, Tamir 1 site.



Fig. 18. Jar in Feature 201, Tamir 1 site.

remains of what was apparently a lacquered box, 13 clothing toggles or clasps of bronze (?) with some traces of fabric wrapping, at one intact large ceramic jar (Fig. 18) and sherds of a second one, an iron



Photo © Daniel C. Waugh 2005

Fig. 19. Bronze and lacquer handle for an eared cup. Feature 201, Tamir 1 site.

base for a cauldron or standing lamp, a compound bronze and lacquerware object (Fig. 19), apparently the handle of a lacquered eared cup, from which additional fragments remained, and various iron objects including a belt buckle. One iron ring or clip was found within the burned horse offering in the rock tumulus above the grave, as were a few sherds.

## Tamir 2 - The Gorodishche

Three gorodishche or earthenwalled fortifications, labeled Structures A-C from west to east, form Tamir 2 (Figs. 20, 21). The enclosures extend in an east-west line 1,725 m across a broad, gentle

plain at Hermental, westnorthwest of Tamir 1. The plain is a part of the Tamir Valley that is bounded by ranges of hills to the west, north, and east, and extends Archaeology in a long slope that gradually flattens to the south where it merges with the floodplain of the river. From Tamir 2, Tamiryn Ulaan Khoshuu is a dark, prominent landmark on the horizon to the east-southeast. The expedition mapped the structures at Tamir 2 and produced plan view maps of each structure individually, to show detail, and of the three together to show their relationship. During the collection of the UTM

coordinates with the GPS receivers, the site was traversed many times on foot. with detailed notes recorded about the form, condition and orientation of the gorodishche. No dating artifacts before the modern period were observed, other than a single pottery

sherd observed (but not collected)

on the top of an earthen mound (Feature 1) within Structure B. No artifacts or buried features or cultural deposits were exposed in the test units. This seems unusual, in light of Davydova's (1968, p. 217) comment that Xiongnu settlements of Mongolia differed from Ivolga in containing large quantities of (roof) tile, a fact that she attributed to 'some other type of dwelling, different from those of the Ivolga gorodishche.'

The soils consisted of two strata. Stratum I, the uppermost, is a medium brown silty sandy loam, humic, containing abundant rootlets and some fine gravel. It is 8-20 cm thick and uncompacted. Its contact with the underlying Stratum II is typically horizontal (occasionally undulating) with an indistinct 1-2 cm thick contact zone. Stratum II is a compact pale brown sandy loam that exhibits a Stage I-II calcium carbonate development. It extends from 8-20 cm below the present ground surface to an undetermined depth. It contains variable quantities of gravel, up to small cobble-sized.



Fig. 21. Overview plan map of Tamir 2, depicting the spatial relationship of the three gorodishche (structures). Numbered forms within the enclosing earthen walls are large earthen mounds, to which arbitrary feature numbers were assigned. Breaks in the walls are apparent formal gates and other cuts or gaps in the continuity of the walls. (Drawing © David E. Purcell 2005)



Photo © Daniel C. Waugh 2005

Fig. 20. Panorama (composite of three photographs) of Tamir 2 settlement site, taken at 7:15 PM from point at altitude of 1455 m looking SW by W along length of site.

All rocks exhibit a 3-6 mm rind of calcium carbonate, with projections from the downward surfaces. Most of the rocks are schistic metamorphic. Stratum II contains significantly less moisture than does Stratum I.

Three hand excavation units were judgmentally placed in or near architectural features (such as walls and gates) to expose details of their construction, and were in some cases expanded to follow interesting deposits. These are described above. The previous excavation on the central mound in Structure B was also cleaned and profiled (TU 18), providing details of its construction. No artifacts were recovered from any of the judgmental units. Given the vast areas encompassed by each of the *gorodishche* – ranging from 7.2 hectares in Structure C to 16.3 hectares in Structure A - the absence of findings by this very limited testing is not surprising. What is surprising, however, is the complete lack of surface or subsurface artifacts. Further research is necessary to establish the age and cultural associations of these features through archaeological means, despite their apparent similarity to other features east of Ulaanbataar previously studied by Dr. Batsaikhan.

## Structure Descriptions and Interior Features

Structure A, the westernmost of the three enclosures, measures 490 m east-west by 450 m northsouth in maximum dimensions. The enclosing wall is 16-18 m in width and appeared to vary from 0.5 m to 2.0 m in height above the interior ground surface, with a shallow ditch visible at the base of the wall on the exterior, except in three locations that correspond with gaps in the wall. Nine locations along the wall exhibit visible dips or reductions in elevation, four of which extend to the interior ground level, providing grade-level access to the structure's interior. Major gaps appear in the approximate centers of each of the walls, with those on the north and east walls at grade. The gaps on the south and east walls feature visible ramps extending from the gap down to the exterior, over the ditch. The gaps in the east, west, and south walls are flanked by sections of the wall that are broader at the base and higher in elevation than surrounding sections of the wall; these three openings appear to have been formal gates. The east and west walls also feature gaps at grade level that are not regularly spaced along the wall. These may represent more recent cuts to provide access, but additional research is needed to fully describe the construction and modification sequences of these features. The north wall exhibits three shallow gaps, in addition to the gap in the wall center, which is at grade but is blocked on the exterior by the ditch The ditch appears to have been a borrow ditch for soil used to build the enclosing walls, but also appears to have functioned as a dry moat, based on its placement to the exterior of the wall. Each corner of Structure A stands 0.4 to 1.0 m higher than contiguous sections of wall, and is much broader at the base, forming a swell that extends outward 4-5 m beyond the walls. These may have been the bases for tower-like elevated features, or bastions.

Structure A contains five earthen mounds of various shapes, ranging from nearly square to nearly circular. The largest, Feature 1, stands nearly 3.5 m above the ground and is near the center of the structure, in line with the gates on the east-west and north-south axes. The other mounds stand 0.9 to 1.4 m above the surrounding ground. Feature 5 has a small square rock alignment on top, and Feature 1 has a rock ring or ovoo base near its center. A possible earthen ramp slopes down the eastern end of Feature 3. A low swale or ridge links Feature 1 with Feature 4;

whether this is a natural or constructed feature was not determined. An iron pipe was found standing upright in the southeastern 'tower' of Structure A.

Structure B is the central earthen enclosure, nearly square in shape, measuring 455 m east-west by 440 m north-south to the outer edges of the ditch (Fig. 22, next page). Its construction is similar to that of Structure A, with gates visible in the north, east, and south walls, with accompanying towers. The north wall includes two shallow gaps equidistant between the corners and the central gate. The south wall exhibits two shallow gaps but without regular spacing. The west wall exhibits a shallow gap in the wall center, but without flanking mounds, and a grade level opening to the south. Only the north and south gates and the southern gap in the west wall are at grade level. The Structure B walls are also enclosed by a shallow (15-20 cm deep) ditch, which is continuous around the exterior except at the south gate, which spans it. Six interior earthen mounds were documented, as well as a seventh, low mound that may be natural. Like Structure A, the largest mound (Feature 1) is near the center, in line with the gates. This mound stands approximately 2 m above the ground, but exhibits a much more formal shape in plan that did Feature 1 of Structure A. It is rectangular with obvious ramps that extend east and west toward the gates. A cluster of small boulders and a rectangular pit were found on top; a single potsherd was found within this pit, which was cleaned and profiled to document the mound construction sequence. The upper portions of the mound, based on this profile, appear to have been made of alternating layers of brightly colored soils. The arrangement of the interior features — with a small circular mound (Feature 4) south of Feature 1, and two other mounds in the southeastern quadrant (Features 2 and 3) - is



of the enclosure. A possible borrow ditch/moat, 5 cm in depth, is visible only around the northeastern wall corner exterior. Four earthen mounds were observed in the interior, with the largest (Feature 1) BORROW DITCH/ near the center, standing approximately 4 m in height, the tallest of any feature documented at Tamir 2. To the southeast are three other mounds (Features 2-4) that range in elevation from 0.6 to 1.6 m above the ground. No other features were observed. The lower walls, near absence of a ditch, and less pronounced encircling walls may indicate that this structure is older than the other two; the more pronounced wall features of Structure A may indicate that it is the youngest of

*Fig. 22. Tamir 2, Structure B detail plan map. Elevations are GPS-derived (WGS 84 Datum), with a 3-5 m potential error. Relative heights are estimated above the surrounding ground surface level, which slopes north to south. (Drawing © David E. Purcell 2005)* 

nearly identical to that observed at Structure A. Structure B, however, also includes a low mound almost in-line with, and near, the east gate (Feature 5), and another mound just east of the north gate (Feature 6). The low mound that was not assigned a feature number is just east of the south gate, but stands barely 20 cm above the surrounding ground. A low ridge extends northwestwards from Feature 4 to the west wall; this was tested (Test Unit 17) and found to be a natural gravel deposit. However, the siting of Feature 4 at its end appears to have been deliberate. The wall corners exhibit mounds of dirt, possible towers/bastions, but the corners do not form pronounced swells and the mounds are relatively low in elevation compared with contiguous wall segments. The Structure B walls are 16-20 m in width and 1.2-1.75 m in height.

**Structure C** is the easternmost enclosure. It is rectangular in plan, measuring 335 m east-west by 275 m north-south. The walls are 10 m in width and 20-60 cm in height. Gaps are present in the walls, but follow no apparent regular scheme of placement, with a single gate in the east wall center, and pairs of gaps in the other three walls. The gaps are not flanked by earthen mounds, and only the northwestern and northeastern wall corners exhibit mounds of dirt; the southern corners do not, and the entire southern wall is approximately 20 cm lower in elevation that the rest the three, and that the *gorodishche* were constructed over a relatively long time period in order from east to west.

## SUGGESTIONS FOR FURTHER RESEARCH: METHODS AND GOALS

The results of the 2005 Expedition do not 'solve' the problems of the central Mongolian Iron Age. Indeed, few individual archaeological projects have the ability to dramatically change existing models. The acquisition of archaeological data usually produces incremental results, in that the results of any one individual project, combined with years of research in a given area, together reveal strong patterns that suggest the signatures of cultures, periods, and transitions. Once patterns have been delineated, then subsequent individual projects can contribute through the recovery of more specific data that supports, refutes, or refines the model. For example, the finding of a certain type of diagnostic artifact in association with datable materials may supply a date for just that artifact type or for an entire phase, depending on the context.

Several types of artifacts recovered from the graves of Tamir 1 appear to be important finds, particularly the TLV mirrors recovered from Features 100 and 109, the glass beads from Feature 109, and the lacquer bowl from Feature 97. The specific significance of the mirrors is described at length by Prof. Lai elsewhere in this issue. In general, however, the richness and size of the graves, in comparison with other Xiongnu graves excavated by Drs. Batsaikhan and Wang, suggest that this cemetery (Tamir 1) may represent the final resting place of more important or wealthy Xiongnu individuals. The orientation of the heads to the east rather than the typical north orientation, greater number of ceramic vessels, and the relative lack of military hardware are also unusual aspects to Tamir 1. However, the degree to which ancient grave robbing has affected the composition of the grave goods cannot be evaluated at this time. Some graves, such as Feature 109, were clearly looted many centuries ago, leaving only those artifacts overlooked or discarded (such as the broken mirror) by the robbers, and skeletal remains in disarray. What is then difficult to explain are objects such as the golden earring from Feature 109, which appears to have been stripped of its jewels, but was left in the grave, probably by accident. Given the site's location in the Orkhon Valley, it is tempting to speculate that this cemetery was used by the elite of Xiongnu society, perhaps indicating that an important or central

Xiongnu settlement was located nearby. If Tamir 2 was that settlement, our efforts so far cannot even substantiate that Tamir 2 was ever inhabited like Ivolga, much less that it was associated with the cemetery. To date none of the graves at Tamir 1 reveal the complex structures and richness of goods found in excavations at Noin Ula, Gol Mod and Tsaraam (on the last, see the article by Miniaev in this issue).

Clearly, much additional research needs to be conducted at Tamir 2, which perhaps should become the focus of future efforts. The size of the site, its apparent lack of artifacts, and its relative proximity to Tamirvn Ulaan Khusuu suggest that it too, is an important place, but its function remains unknown. A military purpose, is suggested by the existence of the walls and the presence of apparent fortifications along them. Future research needs to be directed at (1) establishing the age of the site, (2) identifying and excavating features within and outside of the walls, (3) comparing the site architecture with other earthenwalled structures of the central Mongolian steppes, (4) recovering materials that link the site with Tamir 1 or with other sites in the region, and (5) conducting regional settlement analysis to better understand the types and placement of other sites in the region.

Much of the research at Tamir 2 will need to be accomplished using remote sensing methods, including aerial and satellite photographs, on the ground systematic survey, and remote prospecting for features in and around the site itself. It is clear that pedestrian surface survey, as practiced in the western United States, is not appropriate for the Mongolian steppes, given the lack of visible artifacts on the surface, the vast areas to be examined, and the nature of the known types of sites. Some pedestrian survey should be conducted in support of

careful review of aerial and satellite photos and systematic survey using horses, camels, or vehicles. Such surveys could easily be carried out by following GPS gridlines, looking for visible features. Areas around recorded sites and in proximity to eroded surfaces should be inventoried more intensively on foot, systematically following GPS gridlines. A check of Google Earth revealed that Tamir 2 is not visible due to low resolution; higher resolution images need to be examined. If publically accessible images of this region are not available, it would be worth having aerial photos flown of this area, after obtaining the needed government permission.

The interior, and the exterior perimeter, of Tamir 2 should be examined using ground penetrating radar, magnetometer, and electrical conductivity instruments. Any subsurface features, including our test units, pits associated with recent herder camps, and ancient features such as houses, storage pits, etc. should be apparent. Remote sensing is now used routinely in some settings, and the cropped grass of the steppes is ideal for the use of all of these methods. Interior features, such as houses and pits, were readily visible on the ground surface at Ivolga as low mounds with upright stone slabs and depressions; the gorodishche at Tamir 2 did not exhibit any of these indications of buried features. Systematic test excavations are not recommended, as hundreds or thousands would have to be excavated to complete even a small, and probably not statistically valid, sample of just one of the structures. One of the structures should be completely mapped by remote means; based on the results, the other structures may be sampled in areas where features are likely. The sheer size of these structures suggests that they were built, at least in part, to shelter herds of animals, so features may not be present in large sections of them. Given the

placement of the interior mound features that are visible, it is expected that some sort of internal partitions or fences may have been used to divide the interior space, although the form of such a fence is unknown. Excavations of possible features should be undertaken to 'ground truth' the findings. However, fine mesh excavation screen must be part of any further program of test excavations, in order to catch small objects. Often artifacts as large as coins can be missed, and coins are very important for dating sites in this area.

Tamir 1 also yielded important information, particularly about the types of artifacts that might be expected at this cemetery in future excavations, particularly the laguer vessels. Preparation for subsequent excavations of graves should include having on hand appropriate conservation materials and methods to salvage *intact* these priceless artifacts for further study and display. Future projects should also be better prepared to transport fragile artifacts and human remains back to Ulaan Bataar, by including sturdy boxes, plastic tubs, and other packing materials as part of their field equipment. In situ mapping of the graves as finds are made, with recording of vertical elevations, is highly recommended as part of standard operating procedure. This will make the collected data compatible with current standards in use around the world. Another arena in which more rigorous field methods should be applied is the collection of soil and plant samples for analysis. Advances in the study of preserved pollen, plant remains, wood species and dating, radiocarbon dating, and faunal remains have greatly enhanced the current knowledge of subsistence, trade, burial and religious practices, and chronology. A central tenet of historical archaeology is to test the archival record against the physical remains of the past and to illuminate the lives of individuals

or groups not described by the official chronicles, especially the poor and those of minority or dispossessed status.

The use of 3-D laser scanning of the graves is also recommended, but not strictly necessary. This type of mapping uses computer-controlled lasers to measure to sub-millimeter accuracy the forms of features and their contents; this could include the surface expression of the collapsed grave monuments, the grave and grave shaft, and the skeleton and associated funerary objects. The advantage of this approach is that it generates an electronic dataset that can be output as a virtual illustration of the feature, or even used to create an exact scale model of the feature. Such an approach is desirable if public interpretation and presentation of data is a component of future projects. For example, a Xiongnu grave model could be generated from such data and installed in the Mongolian National University, or presented to the public on line or modeled in relief and displayed publically. Laser scanning also supports the creation of web-based displays that allow viewers to manipulate their point of view via the Internet.

The overall impression of the sites investigated by the 2005 expedition is that these are important places within one of the cultural cradles of the world's civilizations. Within a 60 km radius are the Uighur capital, the Oidan capital, the Mongol capital, and the burial sites of the Türk leaders Bilge Qaghan and his brother Kültegin. Does the Orkhon Valley also hold the Xiongnu capital, and are Tamir 1 and 2 somehow associated with it? These are just some of the exciting questions that the 2005 expedition has raised, and as with all good science, we are now left with more questions than answers, and more questions than before we undertook the project.

## **About the Authors**

David Purcell and Kimberly Spurr are professional archaeologists who live in Flagstaff, Arizona. They graduated in 1993 with Master's degrees in anthropology from Northern Arizona University and have worked in a variety of settings since. Purcell has worked for contract archaeological research companies and is currently employed as Principal Investigator and Projects Manager by Four Corners Research of Tularosa, New Mexico. He also works as the Coordinator of the Kaibab-Vermilion Cliffs Heritage Alliance, a non-profit organization dedicated to research, preservation, and interpretation of the cultural heritage of the region of Arizona lving north of Grand Canvon, Spurr worked for the Navajo Nation Archaeology Department for 13 years, leaving this summer to form Past Peoples Consulting, LLC, which specializes in the study of human remains and burials, in both archaeological and forensic settings. She directed the preliminary phase of a multi-year investigation of a Paleoindian site in North Dakota this summer, and will also work with the Museum of Northern Arizona to excavate sites along the Colorado River in Grand Canyon this coming fall.

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## The Challenges of Preserving **Evidence of Chinese Lacquer**ware in Xiongnu Graves

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This brief communication may serve as an appendix to the report by David Purcell and Kimberly Spurr on the Tamiryn Ulaan Khoshuu excavation in 2005. My goal is not to provide a scholarly analysis of the abundant evidence uncovered of Chinese we lacquerware — I lack the expertise to do that - but mainly to document it and to highlight the challenges which must be addressed if such evidence from future excavations is to be properly preserved and studied.

One is struck by the frequency with which lacquerware (or at least traces of its existence) is reported in excavations of Xiongnu graves and also the apparent lack of its serious analysis. The term can, of course, encompass a variety of objects of different composition, ranging from those merely decorated with a resin-based paint to objects made of layers of wood, clay and/or cloth impregnated with lacquer and then covered with additional layers of paint. With notable exceptions, the evidence from Xiongnu graves is of surviving paint layers or fragments, not intact objects on which the paint was applied. As

was the case in our Tamir excavations, such survivals may end up being 'preserved' primarily in the photographic record, although this should not always have to be the case.

lacquerware in Xiongnu tombs are the 'eared cups' (Fig. 1), painted table legs, chopsticks and an animal-shaped pouring vessel found in the excavations at Noin Ula in northern Mongolia. Indeed, the inventories of the Noin Ula graves are full of references to lacquered objects (Rudenko 1962, pp. 117 ff.; pls. VI, XLVIII; Trever 1932, pls. 27, 29-31). As is well known, the circumstance of the graves having been flooded there resulted in remarkably good preservation of organic material, including carpets, clothing, a wide variety of wooden objects, and much more. The eared cups at Noin Ula are of particular interest here: at least one of them had both bronze handles and an inscription dated 2 BCE indicating its manufacture in Sichuan, the major location of Han lacquer production (Dschingis Khan, nos. 16, 17, pp. 50-51).

sonably well preserved Chinese

At Tamir 1, evidence of lacquer was found in at least four of the five excavated graves, in all cases the designs being in red (or orangish red) and black. Where possible, it was photographed in situ, but with one exception, none



Photo © Daniel C. Waugh 2004

The best known Fig. 1. Lacquerware eared cups excavated at Noin Ula. examples of rea- Collection of the Hermitage Museum, St. Petersburg.