

Report of the field work conducted by The Wall project in the summer of 2023

From July 28 to August 26, 2023, our team of scholars from the Hebrew University, The National University of Mongolia, Yale University and the University of Pittsburgh conducted a field research on sites associated with the 'Mongolian Arc' (MA) in eastern Sukhbaatar province. Most of the work was conducted around the site we labeled MA3 but we also did some work at site MA20 (Fig. 1).

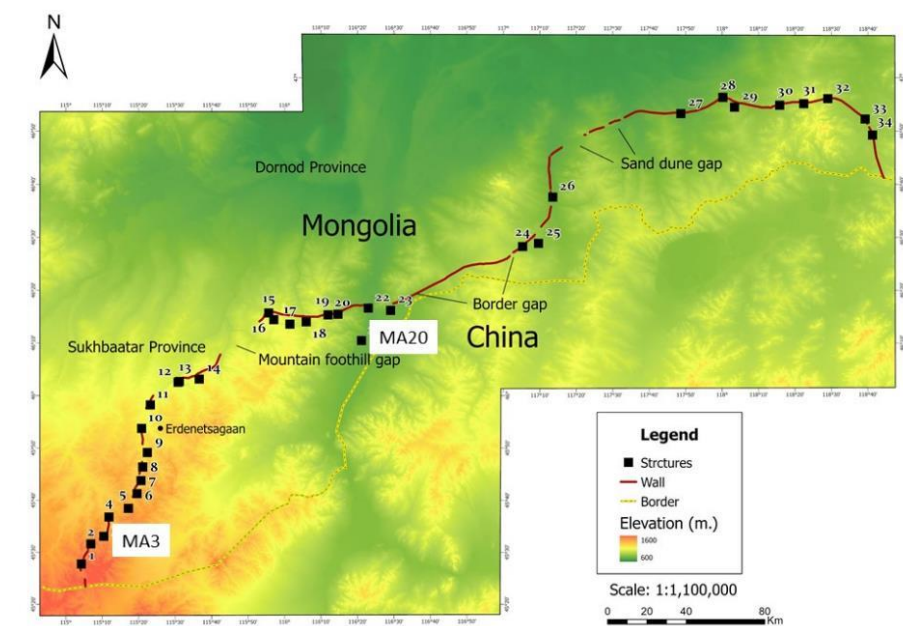


Fig. 1. The wall line of the 'Mongolian Arc' (marked in red) and the location of MA3 and MA20.

Excavations in and around structure MA03

Structure MA3 was identified by a survey we conducted in 2022, located at: 45.55123, 115.17371. It is a rectangular structure surrounded by massive earthen and stone walls, still standing to about 1m high, and surrounded by ditches. The enclosure is measuring 30x31m. It is located some 150m south of the wall/ditch line with its corners facing the cardinal directions (Figs. 2 & 3). Between the structure and the wall line to its north there is a higher ground so that the wall line is not visible from the structure (Fig. 4). During the survey we identified the entrance to the structure from the southeast and remains of stone construction on the four corners of the structure as well as on the external sides of its walls. The structure (enclosure) of MA3 is located on a ground that is sloping towards the deep stream located

south and southeast of it (Fig. 3). As a preparation for our excavations a team from the university of Pittsburgh conducted a geophysical survey of the enclosure and its surroundings (see the geophysical report). Using a metal detector, we found several artifacts, including Northern Song coins, on or near the surface of the site.

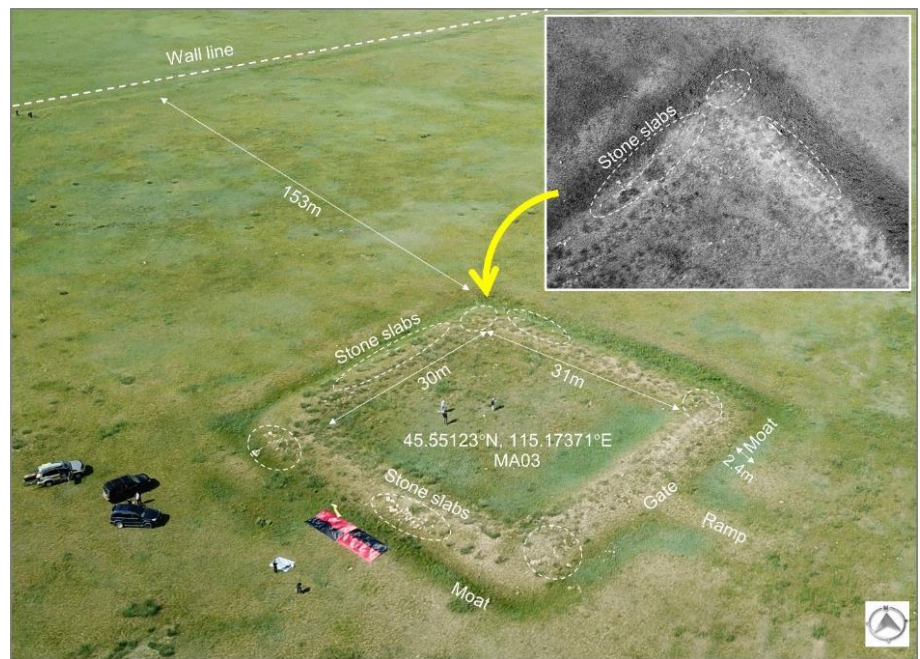


Figure 2: Structure MA3

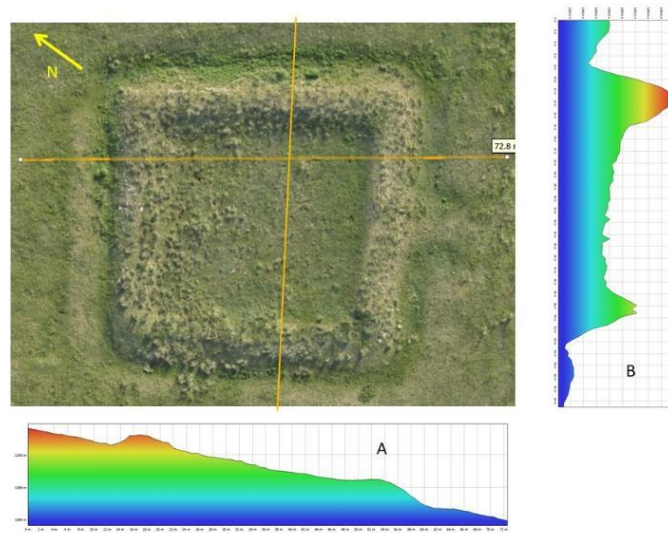


Figure 3: Cross-sections of MA3 from Northwest to Southeast (A) and from Northeast to Southwest (B).

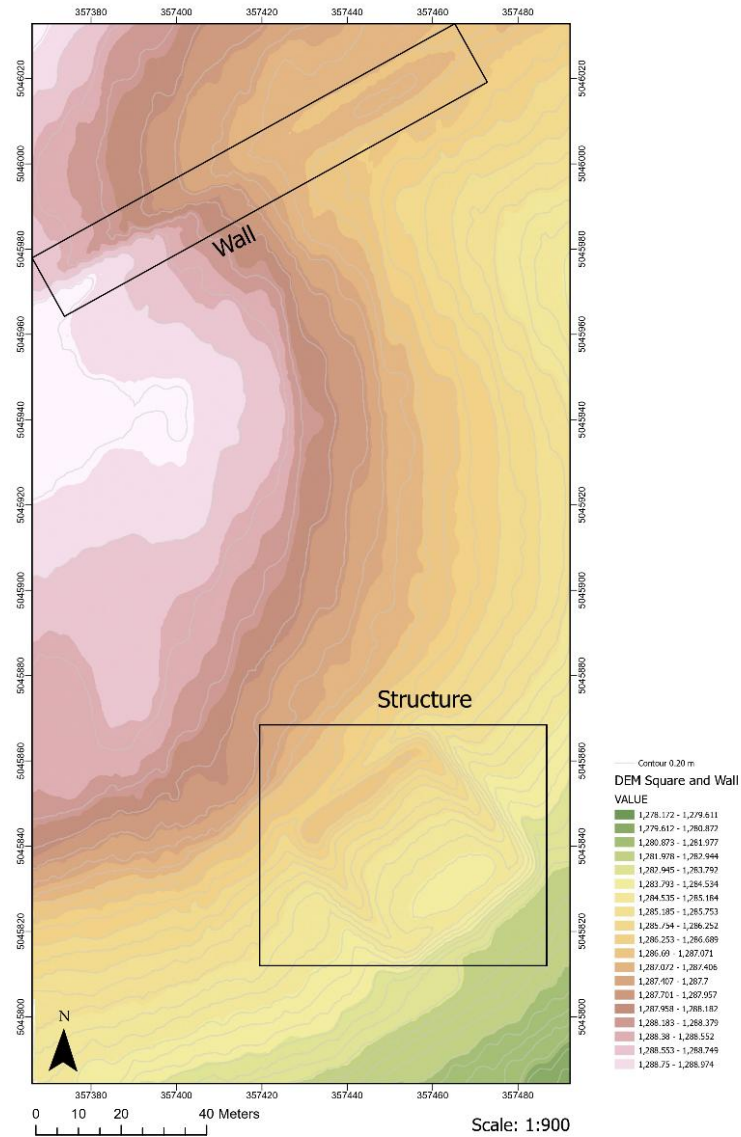


Fig. 4: A topographic map of the area of MA3 and the wall-line north of it

Our excavations in the summer of 2023 were conducted in five locations: one (area A) on the wall line, three (areas B,C, and D) at the northern part of MA3, and one (area E) at the southern part of MA3 (Figs 5). Below we describe the results and main findings at each of the excavation areas.

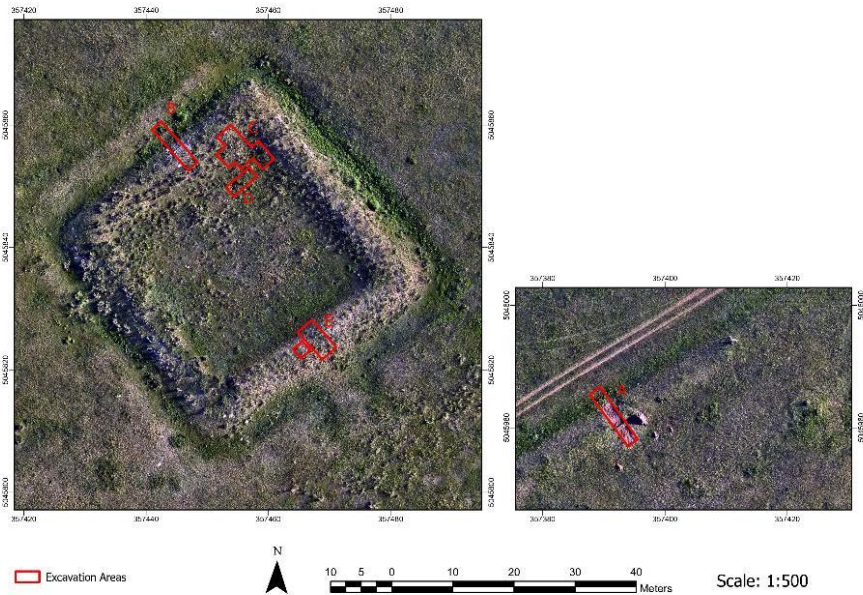


Fig. 5: Location of the five excavation areas.

Area A

The area is a large trench 9m long and 2m wide that cut through what we identified above surface as the lines of the wall and the ditch of the 'Mongolian Arc' (Fig. 6). The goals of this excavation were to uncover the structure of the wall line – including the ditch and the possible wall – and to take samples for the dating of the construction and destruction period of this line. The outline of the ditch was very clear throughout the excavations and in the excavation profile (Fig. 7). The ditch was some 3m wide and only 60-70cm deep. OSL samples were taken from the profile of the excavation to date the process of the ditch's filling. Observing the excavation profile inside (southeast of) the ditch line we uncover the remains of the earth excavated from the ditch and piled there. This earth pile was not pounded. It is unclear if there was any standing wall in this section of the 'Mongolian Arc'. Further to the southeast of the earth pile there is a layer of lighter soil but we did not find here clear evidence for the layering of pounded earth (Fig. 7). This may have been the foundation of a wall but more likely, it represent a natural accumulation. No meaningful artifacts or animal bones were found in the excavations of area A.

The shallow depth of the ditch is surprising, especially because the ditch we excavated in 2019 at the Northern Wall-Line, near cluster no. 24, was much deeper (Shelach-Lavi et al., 2020). To further check this, we auger-tested at four locations along the ditch, three of them were relatively close to structure MA3 and one further to the north near structure MA18

(Table 1). The depth of the three points close to MA3 were similar to that of the excavated trench, only the one further to the north was much deeper. Those results suggest that there was a regional variability in the depth of the ditch as well as perhaps in other features associated with this line.

E	N	Depth
115.17362095	45.55311350	56cm
115.17362651	45.55310972	65cm
115.18021168	45.55620940	65cm
116.19145	46.256141	139cm

Table 1: the location of four auger tests inside the linear ditch (the 'wall-line')

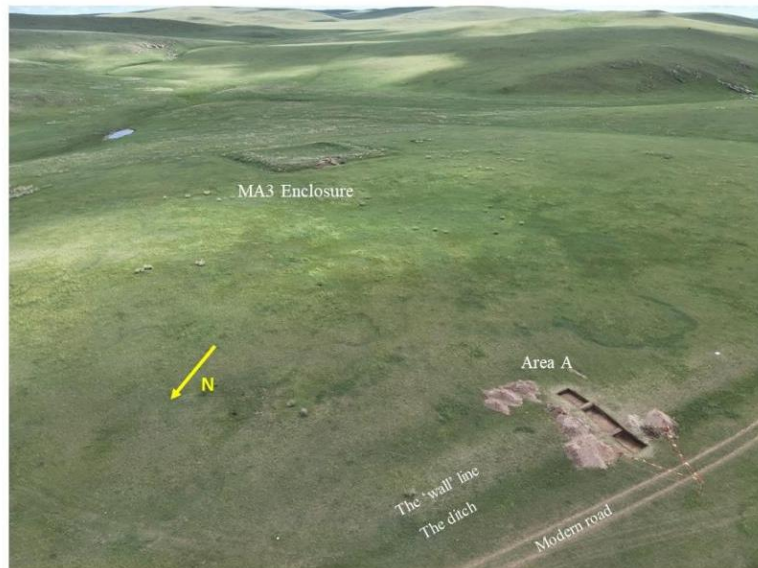


Fig. 6: The location of area A.

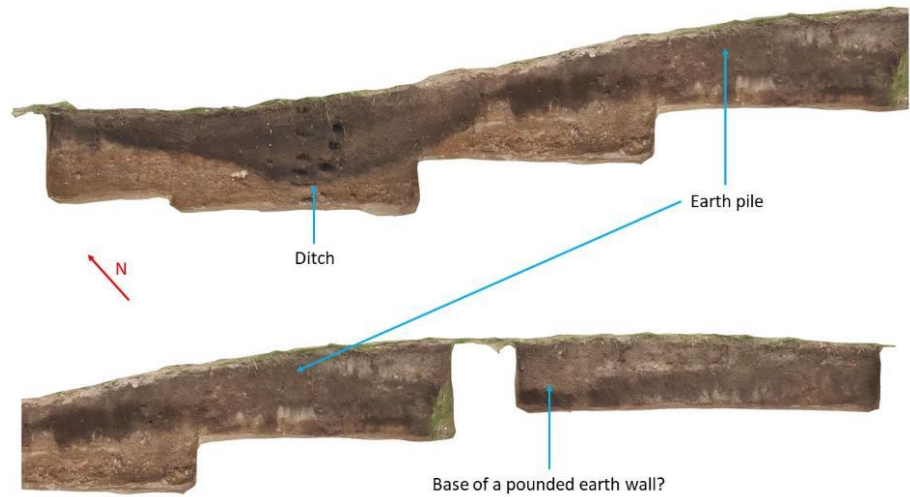


Fig. 7: The NE section of the excavation trench. Upper photo – the NW part of this section; Lower photo – the SE part of this section

Area B

The goals of the excavation in this area were to understand the construction methods of the enclosure's wall as well as to take dating samples from the accumulation inside the ditch. We selected to place it at the center of the northwestern wall of the enclosure because this seemed to have been the area where the wall is best preserved and the external ditch is not disturbed by extensive water erosion. A line of stone was visible on the surface at the top of the preserved wall line and we oriented the excavation trench perpendicular to this line (Fig. 8). The excavated trench was 2m wide and 8m long, extending from the edges of the external ditch, through the earth and stone wall of the enclosure and into what was probably an internal ditch (or drainage).

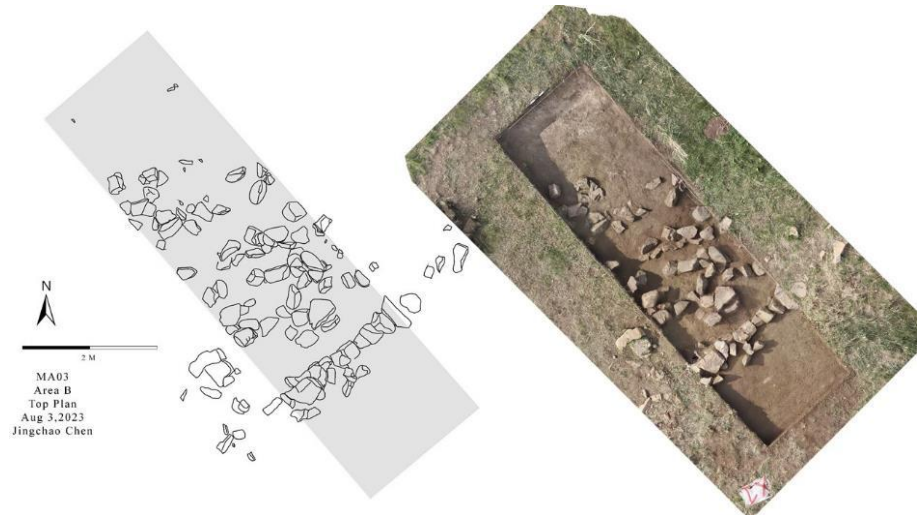


Fig 8: Area B during the excavations of the upper levels. The original line of stones is visible at the lower (southeastern) part of the photo and the upper levels of stones which collapsed from the wall into the ditch were exposed northwest of it.

The external ditch was clearly identified in by the excavated trench. It is filled with layers of mainly dark color soil and stones, accumulated above the natural reddish-brown soil that was exposed at the bottom of the ditch (Figs. 9 and 10). On the inside (southeastern side) the ditch has a relatively straight wall while on the outside it has more moderately sloping walls. The ditch was about 4m wide, and 2m deep from the bottom of the stone line in the southeast (1286.5) to the deepest point at the center of the ditch (1284.5).

All together some 150 stones of different sizes were taken out from the 2m wide trench (Fig. 11). This is a large number of stones for a 2m section of the enclosure wall. The stones were undressed and were found mostly outside the wall, suggesting that all the stones were used to face the outer side of the pounded earth wall. However, because pounded earth layers were found under the preserved line of stones, it is also possible that the lower part of the wall was not dressed with stones (Fig. 12). Two main layers of stone collapse were identified inside the excavated trench (Fig. 13), signifying the process of collapse, which seem to have been part of a natural deterioration rather than violent distraction. Samples for OSL dating were taken beneath some of the collapsed stones as well as from the bottom of the ditch (Fig. 10) in an attempt to chart the process of the ditch's filling and the wall's collapse. Sporadic lithic, pottery and animal bones were found in the fill of the ditch but none of them is of any significant beyond the fact that they may have drifted into the ditch during the accumulation process.



Fig. 9: The northwestern section of the ditch. The two main layers of stone collapse are clearly visible in this section as are the accumulation of earth layers.



Fig. 10: The southwestern section of the ditch. Three OSL samples were taken from the bottom of the section (marked with white labels) as well as 11 soil profiles.



Fig. 11: All the stones taken out of the excavation trench.

Below the preserved line of stones thin layers of earth area clearly visible (Fig. 12) Those are remains of a pounded earth (hangtu 夯土) wall. They are preserved, on the inside part (southeastern part), some 50cm high and almost 4m wide. Under the pounded earth layers there is a darker layer of soil which, throughout the site is typical to the natural soil accumulation and below it is the natural geological accumulation of a light color soil. It seems that the wall was built directly on top of the natural accumulation without a significant foundation trench.

Beyond the wall, inside the enclosure, we identify evidence of an internal ditch or a drainage canal (Fig. 13). This ditch is 1.15m deep on the southwestern side of the excavation trench and 1.3m deep on the southeastern side. It is possible that the continuation of this internal ditch is also seen in the excavations of area C, but there it was destroyed by the grave that was dug into it in later periods. The internal ditch which is parallel to the walls of the enclosure is also visible in the results of the geophysical survey.

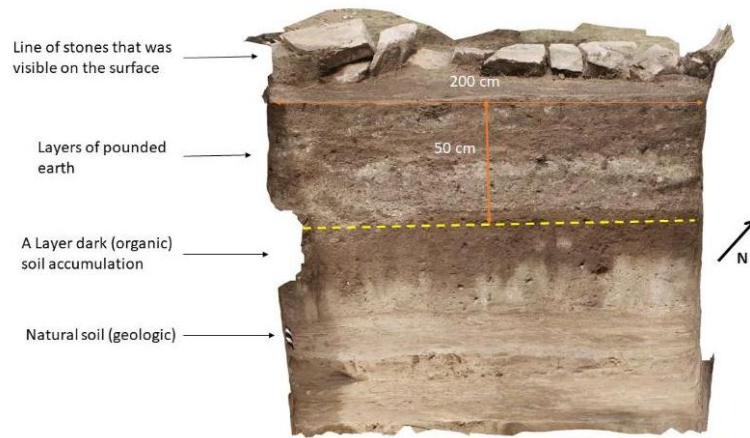


Fig. 12: A look from the inside of the enclosure towards the enclosure's wall



Fig. 13: A complete section of the excavated trench (the southeastern profile). The internal ditch dug into the natural soil is visible on the left site (marked by the yellow line).

Area C

This is the most complex area of our excavations both in terms of its shape and dimensions and the different layers and features discovered in it. It is located inside the northern corner of the enclosure, east of area B and north of area D (Fig. 13). The area was selected for excavations, among other things, because of clear anomalies identified here by the geophysical survey. The excavations started from revealing a stone pile that was partly exposed on the surface of the site (Fig. 14). Following the different discoveries, we expended the excavation area to different direction until it reached its final, irregular, shape (Fig. 15). Below our discuss the results of the excavations is divided into two parts – the excavations of the NW part of the area, which include the excavations of a grave, and the excavations of the SE part which include the exposure of a stone-built bunk (kang - 炕). Sample for 14C and OSL dating were taken from different localities in area C.

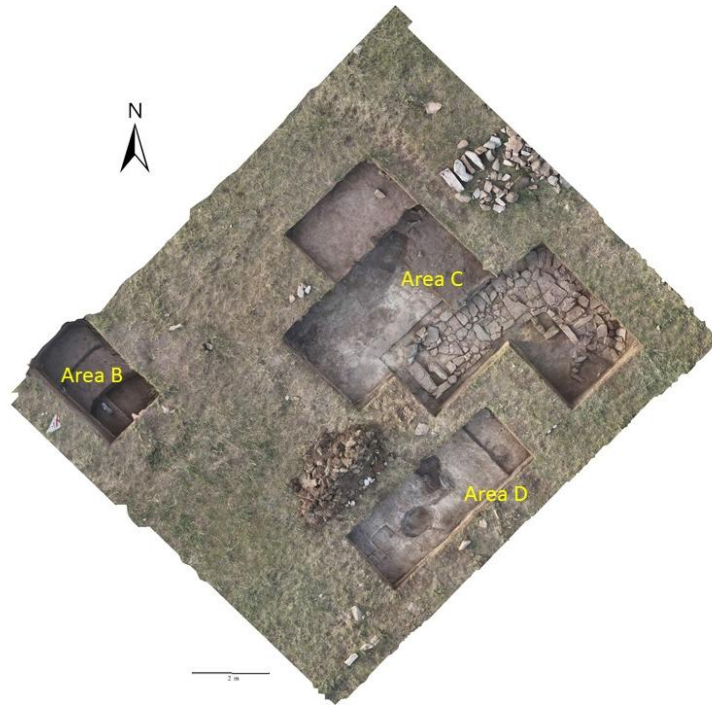


Fig. 13: The relative location of areas B, C and D.



Fig. 14: Exposing the stone piles next to the enclosure's wall (the wall is at the upper part of the photo).

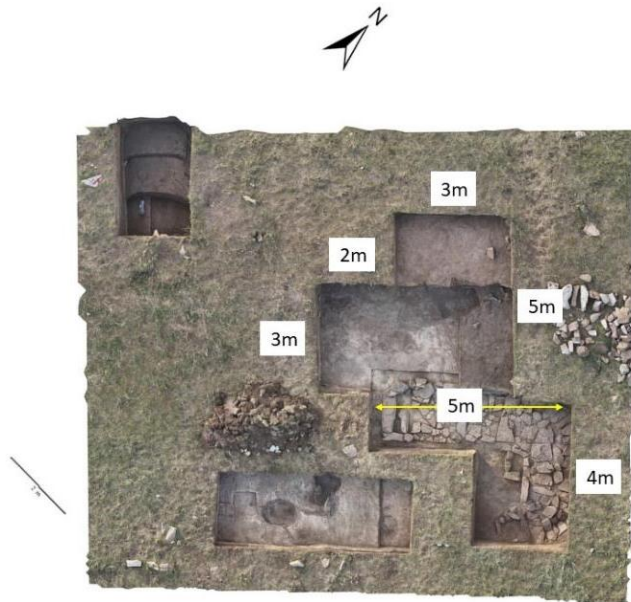


Fig. 15: Dimensions of Area C

The NW part of area C

The excavations, inside the northern corner of the enclosure, started in an area where a geophysical survey showed an L-shaped anomaly (series of pits?) and a concentration of stones were exposed on the surface. In the area close to the enclosure's wall, pounded earth layers were exposed close to the ground surface. Those were identified as part of the enclosure's wall. Southeast from it, we expanded the excavation area to define the extent of the stone pile. The pile was laid on top of a slope, coming down from the NW to the SE, probably on the debris of the pre-existing structure of the enclosure's wall. The pile was circular in shape, some 5m in diameter (Fig. 16). Below the stone pile, there was a depression that turned out to be a burial pit. The burial pit is some 2m long, oriented to the north, and 0.7m wide. A metal arrowhead and a few potshards were recovered from the fill of the pit. At the bottom of the pit, at about 1m below the upper level of the stone pile, lay a human skeleton (Fig. 17). The grave was apparently dug into the internal ditch of the enclosure, which by the time of the grave's construction was already filled with soil. Remains of the filling of the ditch with darker soil are clear around and beyond the grave (Fig. 18).

Based on the position and structure of the grave, it is clear that it post-dates the abandonment of the enclosure. It is dug into the internal ditch of the enclosure when it was already filled with accumulated earth. The stone pile that covered the grave was made up of stones that were taken from the collapsed wall of the enclosure. Samples taken from the grave, including

bones of the human skeleton, were sent for dating, were sent for dating in order to confirm this conclusion and date the grave.



Fig. 16. A drone phot and a drawing of the stone pile (unites 306 and 308). Stones at the center of the circle were removed by the excavation (see fig. 14 for the upper part of this stone circle). The red arrows are pointing to a standing stone slab which is part of the feature found in the SE part of Area C.



Fig. 17: The excavated grave

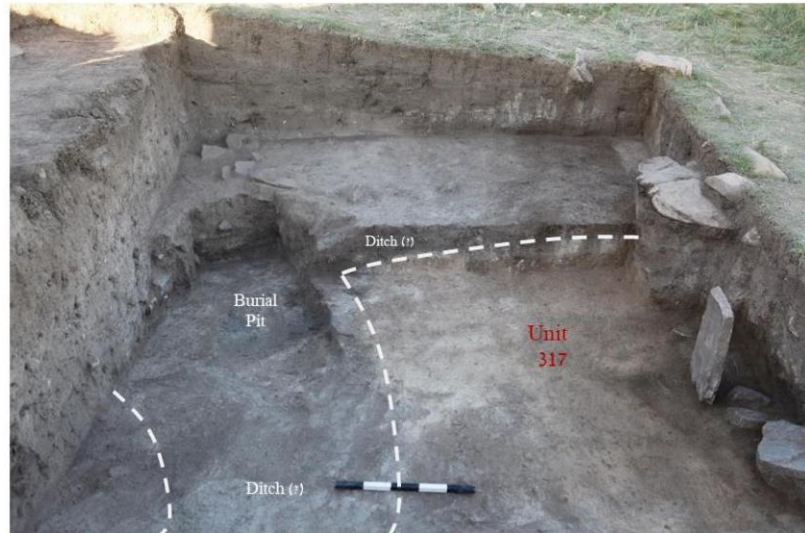


Fig 18: remains of the ditch south and east of the grave (after the grave was fully excavated)

The skeleton was in the extended supine position, its head facing up and is pointing to the north. The skeleton is relatively intact (see bioanthropological report) (Fig. 19). Near the head of the skeleton was placed a birch basket (B. 3063) (Fig. 20) and a green fabric was found on top of the skeleton's chest (Fig. 21). A total of 13 fragments of wood beams were identified above and below the skeleton (Fig. 22). The preservation was not ideal, but the general layout of the beams, as well as the unusual position of the body (raised shoulders, feet laid one on top of the other), may suggest that the body was wrapped with the frame of a Ger as part of the burial. A wooden 'headrest' was found below the skull. An arrow head (B. 3062) was found near the birch basket and a metal point (B. 3061; Fig. 22) was found near the right leg of the skeleton. Burned animal bones and a patch of burned earth were found below the skeleton but it is not clear whether it is part of the burial or pre-existing feature below the burial.



Fig. 19: The skeleton before final cleaning (left) and after cleaning (right).





Fig. 20: The birch basket



Fig. 21: Pieces of fabric on the skeleton's chest.



Fig. 22: Wooden beams at the bottom of the burial pit and remains of a metal point (bottom left) during the excavations

The SE part of area C

This is the area located south and west of the standing stone uncovered when the pile of stones was excavated (Fig. 16). A semi-subterranean structure (or house), some 5x4m in size was exposed in this area continue into area D to the south (Fig. 23). The the NE and NW parts of this structure, which were exposed in area C, comprise an L shape stone and earth platform, with two stone-built structures attached its shorter (southern) leg (Fig 24). The maximum width of the platform is 1.6m; its maximum length (NW-SE) is 4.8m and (NE-SW) 3.6m. Upon removing some of the stones at the two ends of the platform and further excavate inside the southern of the two stone structures, it become clear that this was a built bunk which was heated from below. This is a well-known feature of domestic houses in North China, known as kang (炕). Such structures have been discovered at Jin period sites in north China (Jilin 2018: 64-65). Very similar kang was also found at the Liao city of Chintolgoi Balgas, in central Mongolia (Karadin et al., 2009: 465, fig. 2). The stone structure was a two-rooms furnace. The lower room was the furnace itself, where ashy layers were found, and the second perhaps used as an opening to clean the furnace and the two smoke tunnels that went under the stone and earth platform (Fig. 25-27). The furnace is 40cm deep and 60 cm wide with a stone built opening, visible on the southern section of the excavation, used perhaps to enter woods and fire materials in to it (Fig. 26). The smoke tunnels are dug some 50cm below the lower level of the stones and are between 20-30cm wide (Fig. 27). The smoke tunnels pass under the entire stone and earth platform and end at a chimney. The upper parts of this

chimney were held by the standing stone (Fig. 28). Tunnel 1 is 6.8m long and tunnel 2 is 5.85m long.

Most of the artifacts found in the SE part of area C area were recovered from accumulation directly on and above the kang. It included a relatively large amount of animal bones, pieces of metal and organic materials, but very few potshards. A bronze coin was found under the stone layer of the Kang, near the furnace (Fig. 29). The coin reads 皇宋通寶. It is a Northern Song coin dated to 1039-1053 CE, but since Northern Song coins were used for a long time after the demise of this dynasty the coin (and other Northern Song coins found during our excavations) is not indicative of the time of construction. Samples for 14C dating, flotations and soil analysis were taken from different locations including the furnace, the smoke tunnels, the chimney area and accumulation above the kang.



Fig. 23: The estimated area of the structure in area C and D.



Fig. 24: The upper level of the stone and earth platform

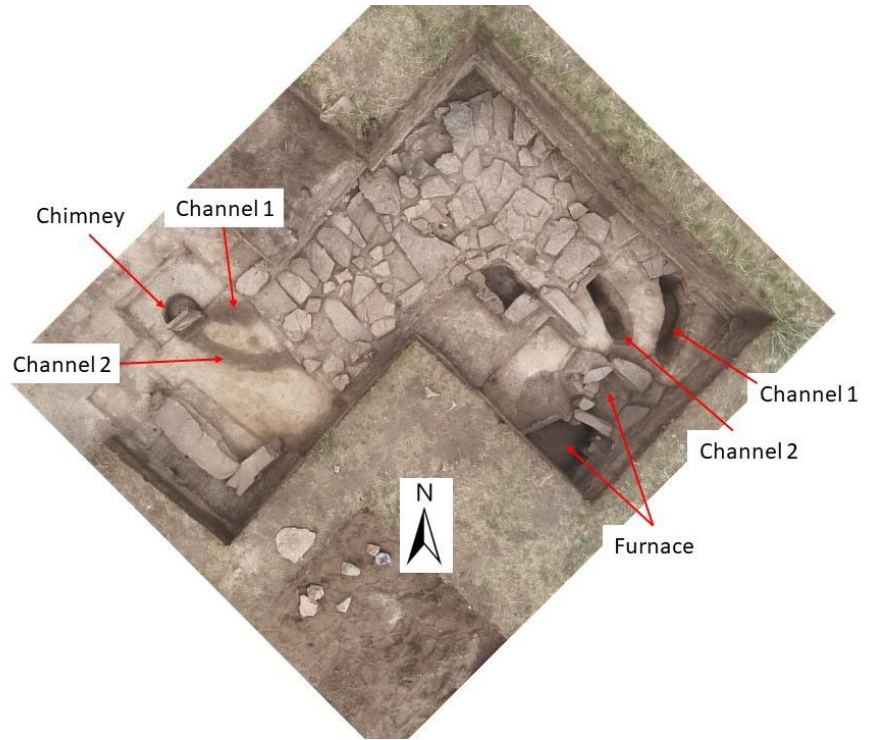


Fig. 25: The lower level of the stone and earth platform



Fig. 26 The furnace



Fig. 27: The furnace and the tunnels connecting it to the stone and earth platform



Fig. 28: The Chimney



Fig. 29: A Northern Song coin (B. 3182), found under the stone layer of the stone and earth platform

Area D

The area was opened as a small 1x1m test pit south of area C. The reason for opening was a strong signal from the metal detector and our desire to learn more about the interior of the enclosure. Some 45cm below ground level (at 1285.22) we discovered a large part of a broken iron plow (basket 4002) (Figs. 30). Similar artifacts are known from Liao and Jin period sites in Northern China (Shang 1997; Zhao 2019). Below it we uncovered what seem to be parts of an ash-pit or hearth. Following this we expended the excavation area to the northeast, parallel to area C. The final area is 2x5m. The area is divided into three parts (Fig 31): The larger southeastern part has two ash pits (or furnaces), the northwestern part is clearly marked by a different soil type and its straight southeastern limits continue the edge line of the stone ramp (kang) in area C. This part, thus belongs to the structure whose larger northern part was exposed in area C. This structure was dug some 50cm below the original topsoil level. Between the two extreme sides of area D there is a narrow strip with mostly virgin soil that separate the two structures (Fig 32A). The dug-in structure is sloping up near the southeast limits of area D (Fig. 32B). This seem to be the limits of the structure that started in area C. It was, therefore some 4m wide (from northwest to southeast) and 5m long (from northeast to southwest) (Fig. 23).



Fig. 30: The broken iron plow.



Fig. 31: A drone picture of area D and parts of area C. The yellow dotted lines separate between the three sections of the area.

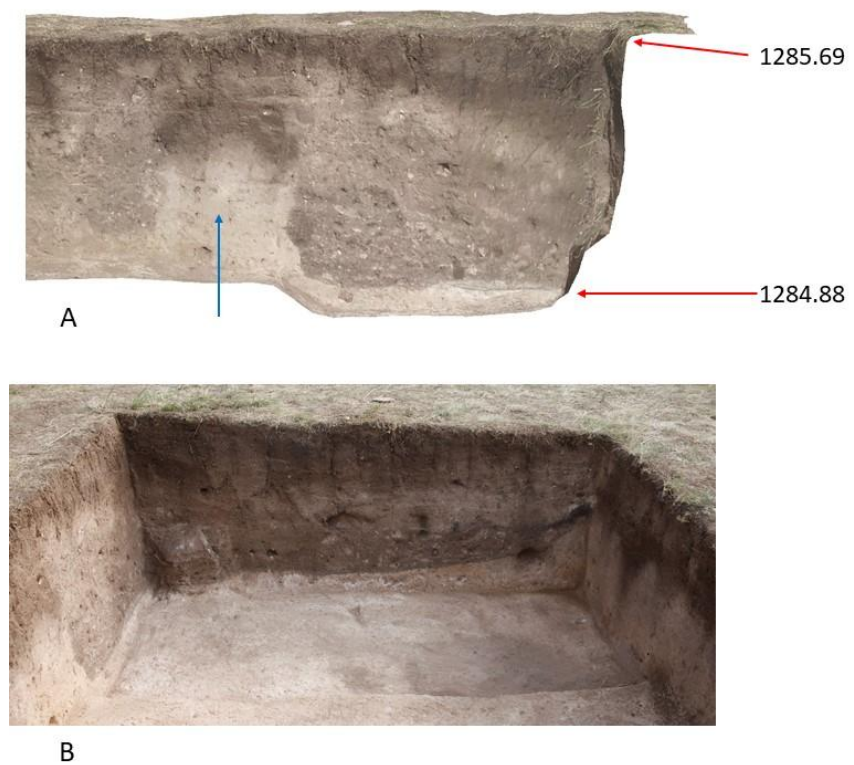


Fig. 32: A the northwestern section of the excavated area (only its northwestern part of this section is shown). The blue arrow points to the natural soil that separated the two structure and right of it is the below-ground level of the structure located in area C; B. The northwestern section of area D. The dug-in level of the structure that continue from area C is clearly seen as the dark part of this section above the lighter color natural soil. The sloping up of this level on the left (southeast) mark the edge of this structure.

The larger part of Area D, the southwestern part, belong to another structure that was probably parallel to the structure discovered in areas C and D. It was also dug some 50cm into the virgin soil. In this area there are two ash-pits or furnaces that are were dug into the floor of the structures. The floors of both pits are some 110-120 cm below the ground level (or some 50-60cm below the level of the structure's floor). Pit A (the more southeastern of the two) is oval in shape and was connected to Pit B who has an elongated shape (Fig 33). Pit B had a stone made structure and was connected, as can be seen in the section of the excavation, through a tunnel to the unexcavated part of this structure (located further to the north and west). Both pits probably served to heat a built bunk (kang - 炕) like the one found in the other structure. Inside the pits we excavated ashy soil with carbonized materials (14C and flotation samples taken), few large pieces of semi-burnet wood as well as animal bones.

Metal artifacts, including a large part of iron pot, a nail and an arrowhead, were found in and around the ash pits. A coin (basket 4049) was found on the floor surface. It is quite eroded but it reads 嘉佑通寶 and dated to 1056-1063AD. A few potshards were also found.



Fig. 33: The two pits in area D

Area E

This area was located on the top of the southeastern wall of the enclosure. The aim of the excavation was to understand the structure of this wall and expose the enclosure's gate. We located it based on what seem to be a ramp leading to the gate from the southeast and a line of stones visible on the surface (Fig. 34). The initial dimensions of the square were 3m East-West by 5m North-South. This was extended in the southern direction(1mX2m) as well as the western section (2mX2m) (Fig. 35).



A ramp leading to the
supposed location of the gate



The line of standing
stones originally visible
on the surface

Fig. 34: The location of area E and the line of standing stones originally visible on the surface.



Fig. 35: The final alignment of the excavations in area E

In all the sections of area E there are three prominent layers (not including top soil) were visible although not uniformly distributed. They are (from top down): **Layer 1**: A narrow layer (ca. 2.3-6cm) of dark brown soil, right below the top soil. Mostly loose, silty, sandy in texture. Containing few if any artifacts. **Layer 2**: The most prominent layer in the square and in all sections occupies the most area. Made up of thin layers of the rammed earth construction. The soil is a mixture of yellowish white hard soil with calcite nodules which overlays a dark brown loose silty, sandy material. The depth of this layer varied – it is about 50cm thick in the northeast, 25cm in the southwest and 75cm in the northwest (the internal part of the wall). Clearly visible in all sections are vertical darker intrusions that cut through the rammed earth layers (Figs. 36 and 37). Because they are straight and their size is uniform we understand them to be part of the construction of the wall and not later intrusions. Probably this is where the wooden frames for the construction of the rammed earth sections were placed. **Layer 3**: This is a dark brown soil mostly loose and silty underlying the rammed earth section.

Inside the area of the rammed earth construction layers we identified two large areas of darker soil. These areas are square in shape so it is unlikely that they represent a natural phenomenon (Fig. 37). More likely, they are part of the construction technique – probably areas that were not rammed but left unbuilt and then filled with loose earth.



Fig. 36: The southeast section of the excavation trench. The lines of the rammed earth layers are and the vertical darker intrusions are clearly visible.



A



B

Fig 37: Dark square patches inside the rammed earth layers. A from unite 511 (extension of the main excavation to the northeast). The yellow arrow point to a darker vertical intrusion : B. in the main trench near the standing stones line.

The structure of the gate, if it existed in this area, was not detected. We hypothesize that the line of standing stones may be part of this structure, but we could not identify any evidence to support this hypothesis in our excavations. A few potshards and animal bones were recovered

from the excavations but we did not recognize any meaningful context for those finds. A burning patch close to the bottom of unite 511 contain a piece of metal and pieces of wood.

Structure MA20

Location: 46.174644, 116.351506

Size: 31.2 x 52 m²

The site was previously reported as Khaltariin Balgas (Bayar 1982). In our JFA report on the survey the site is marked as MA21 (because more sites were added). So, it is better to keep its name as Khaltariin Balgas in order to avoid confusion.

This is a unique and a very well-preserved structure surrounded by a stone wall and earth walls and a ditch. Unlike all other structures we surveyed in 2022 it is rectangular (and not square) in shape (Fig 38). It is also relatively large and it is located far from the wall line. A small square is located inside the large rectangular structure connecting to a ramp at the south side; a gate is identified at the south side. Many stone features are visible. The surface of the site is covered with glazed pottery – mostly roof tiles and other construction materials (Fig. 39). Our work on the site was limited to one afternoon and one morning. During this limited time, we were able to do the following: 1. A general survey of the site itself, collecting unique artifacts and exploring the main features of the site. 2. A drawn photography of the site, including systematic photography to create a photogrammetric image of the site. 3. A systematic pedestrian survey around the site on all four directions. 4. A shallow test-pit excavation on the site.



Fig. 38: Khaltariin Balgas site – a look from to north



Fig. 39: Broken glazed tiles on the surface of the site

The orthophoto we produced allow for a greater accuracy of measuring and reconstructing the site (Figs. 40 and 41). The site is oriented more or less to the cardinal directions (slightly tilted to NNW-SSE). The outer walls of the site are constructed of stones and earth and are enclosed by a ditch. They measure 38x49m and have towers at the four corners and an entrance gate at the center of the southern wall. The walls are about 1m high from the internal level of the structure and about 2.5m above the level of the external ditch. The internal mound, which probably served as the foundation of a structure, is also rectangular in shape, some 20.5x25.5m. It has a higher platform on its northern side (where the main building probably stood) and a lower part towards the south, which may have been an open court. At the southernmost part of the internal mound, just in front of the enclosure's gate, there is a semi-circular ramp, perhaps the location of the stairs that lead to the structure.



Fig. 40: An orthophoto of Khaltariin Balgas site.

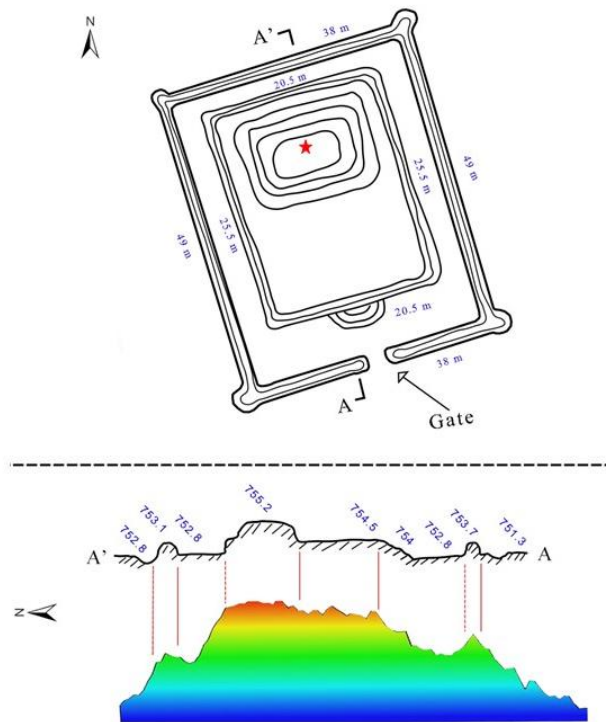


Fig. 41: A schematic map (above) and an elevation transect (below) of Khaltariin Balgas site. The red star mark the location of the shallow excavation pit.

The pedestrian survey around the main structure consisted of systematically walking in line, with people spreading some 20m from each other. We started at each of the enclosure walls and walked away from it for about 1km. This survey produced very few finds and no evidence for any habitation of activity area outside the enclosure. Outside the Southwestern corner of the enclosure we found some bricks and tiles but they were probably eroded from the main building. Inside the enclosure we tried to conduct a systematic augering sampling but because of the many stones, bricks and tiles it was impossible to auger for any meaningful depth.

At the highest point of the enclosure we open a 2x2m test unite. The idea was not to conduct a full-scale excavation but to clear the upper surface layer and collect diagnostic materials and samples for dating. We excavated only to a depth of 10cm, in two separated layers. The unit was packed with artifacts, not only tiles and other glazed artifacts but also organic materials, such as painted wood, and remains of stucco and fresco, some of them decorated with small golden leaves (Figs. 42-45). Those finds suggest a very elaborated structure,

perhaps a shrine, which was expensively decorated. Judging from the style of the artifacts this structure should be dated to the Mongol period. We took 14C samples to verify this date.



Fig. 42: Pieces of stucco and fresco during the excavations



Fig. 43: Selected stucco and fresco pieces



Fig. 44: Selected tiles



Fig. 45: Painted wood pieces

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Look also at comparable materials in this paper:

Kradin, N. N., Ivliev, A. L., Ochir, A., Erdenebold, L., Vasiutin, S., Satantseva, S., & Kovychev, E. V. (2015). Khermen Denzh Town in Mongolia. The Silk Road, 13, 95-103.

[ס1] הערות: Look for other artifacts from this paper which are comparable to what we found in this site as well as in Liao period sites we excavated

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