The excavation of the Mazongshan jade quarry sites in Subei County, Gansu

Gansu Provincial Institute of Cultural Relics and Archaeology

Keywords: Jade—mines and mineral resources; Mazongshan jade quarry sites (Subei County, Gansu); mineral industries—China—to 220 CE.

Abstract

In 2014, Gansu Provincial Institute of Cultural Relics and Archaeology continued the investigation and excavations to the Mazongshan jade quarry sites in Subei County. In Jing-Bôr Pasture Locality, 10 material deposits, 11 ash pits, two ash ditches and 21 house foundations were recovered, the artifacts unearthed from which included potsherds, stone and bone implements, bronzes, iron objects, jade blanks, etc. In Hanyaozi Pasture Locality, six quarrying pits, one inclined shaft, two material deposits and one fortified remain were recovered. These excavations provided important materials for understanding the mining scale of the jade quarries, the structure and pattern of the quarrying settlements and the interrelationships among these quarrying settlements during the Warring-States Period through the Han Dynasty.

Site summary

The jade quarry sites of Mazongshan are located in the western part of the Hexi Corridor in Gansu. The Hexi Corridor is a high plain that stretches from the east at Wushaoling to the edge of Gansu on the west, and has the Qilian Mountains to the south and the Beishan Mountains to the north. The Beishan Mountain range from west to east comprises Mazongshan, Helishan, and Longshoushan, with the Mazongshan jade quarry sites being located in the Mazongshan region, an area that is administered by the of Mazongshan Township, Subei Mongol Autonomous County (Figure 1). East of this is the Ejin Banner, Inner Mongolia, west is Hami County, Xinjiang, to the north is the Outer Mongolia, and to the south is Guazhou County and Yumen City, Gansu. The Mazongshan region is collectively part of the Xinjiang-Mongolian Highlands. The terrain rises toward the southwest and falls to the northeast with an average altitude of around 2000m asl and is made up of a series of small mountains and hills covering an area of 38,000sq km. Between the hills are areas of barren or half-barren grasslands, an area that constitutes part of the arid Gobi region and is rich in mineral resources.

From 2007 to 2013, Gansu Provincial Institute of Cultural Relics and Archaeology conducted survey, mapping and excavation at the Mazongshan jade quarry sites. The survey covered an area of 20sq km, excavations exposed 1035sq m, while a total of 650ha was mapped. Through this work, a basic understanding of the surface remains across the Mazongshan jade quarry sites were established as well as awareness of the nature and types of buried contexts and artifacts. In order to develop further an understanding of the settlement patterns of different periods at the Mazongshan quarry sites, understand the mining practices of different periods, and techniques used and decisions made about the selection of materials from the sites, the Gansu Provincial Institute of Cultural Relics and Archaeology continued survey and excavations in the 2014 season. Through excavations at the Jing-Bôr Pasture Locality, important new remains were unearthed, and a more complete understanding of the Mazongshan settlement arrangements of different periods has emerged based on these rich new data. While conducting excavations at Jing-Bôr Pasture Locality we also conducted survey in a larger part of the surrounding area and newly discovered the jade quarry site at the Hanyaozi Pasture, which has great significance for understanding the raw material selection process of the time. This report concerns the results of these 2014 survey and excavations.

Hanyaozi Pasture Locality

The Hanyaozi Pasture Locality is located 37km northeast of Mazongshan Township in the Hanyaozi Pasture. The
jade source is oriented in an east west direction and the remains of the veins run parallel on both sides of the foothills. The site is approximately 1000m long from west to east, 500m wide from north to south, and covers an area of around 50ha (Figure 2). In total, six mining pits were discovered, one inclined shaft, two piles of raw jade material, and one defensive structure.

Mining pit K1 is located on the north side of the hill in the northeastern part of the site. It is more or less circular in plan and served as an open mine that was 2–3m deep (Figure 3). The quarry spoil heaps around the pit included large amounts of stone material discarded during the collecting of jade, fragments from the extracting of jade material, and hammerstones.

The inclined shaft pit KJ1 is located east of the middle of the site on the midsection of a hill. The is roughly in an oval plan with the major diameter of 2m and minor diameter of 1m (Figure 4). About 16m from the opening along the inclined section, the shaft goes down vertically toward the ore, on the north wall of the inclined shaft, there remain some unquarried jade materials distributed in a stratified bedding.

The Hanyaozi Pasture Locality is relatively small and primarily characterized by open air ore collection. Around the mine and on either side of the foothills we collected large amounts of fragments of jade material (Figure 5), hammerstones (Figure 6), whetstones, potsherds and porcelain fragments. Most of the jade is blue-green nephrite (qingyu 青玉). The earliest collection at the site can be dated to the Shanma 白马 Culture period and it is possible that quarrying continued through the Ming and Qing Dynasties.

Figure 2  Hanyaozi Pasture Locality of the Mazongshan jade quarry sites (NW–SE).

Figure 3  Mining pit K1 of the Hanyaozi Pasture Locality (N–S).

Figure 4  Inclined shaft KJ1 found at Hanyaozi Pasture Locality (S–N).
Excavations at the Jing-Bôr Pasture Locality

In 2014, excavations continued at Jing-Bôr Pasture Locality at the location of the 2011–2013 excavations with an additional excavation of 1000sq m. A total of 44 feature loci were uncovered including 10 piles of stone material, 11 pits, two ditches and 21 house foundations.

1. The stratigraphy. The stratigraphy of this locus is relatively thick, ranging between 40 and 140cm and consisting of four levels. We can use the west profile 2014SMYDT0501 as an example to describe the strata (Figure 7).

Stratum 1: light yellow sandy soil that is relatively soft. This level is fairly flat and covers the entire excavation grid. It includes large amounts of plant matter and roots, and is about 2–3cm thick. It is an aeolian deposit that covers pit H46.

Stratum 2: yellowish-gray sandy soil that is relatively soft and discontinuously scattered across the excavation grid. Included in this level are potsherds, jade material, animal bones, mixed together with many plant roots and stones. This level is 4–20cm in thickness and is an anthropogenic level superimposed over the house foundation F12.

Stratum 3: yellowish-white sandy soil that contains large amounts of grit and is relatively compact. This level is distributed over most of the grid and includes plant roots and small numbers of bone and stone fragments. It is 6–28cm thick and is dated to the Han Dynasty.

Stratum 4: light gray sandy soil with some areas of grayish-white, this level is anthropogenic and relatively soft. It is distributed discontinuously across most of the excavation area and contains potsherds, jade material, animal bones, and flecks of charcoal mixed with large numbers of plant roots and stone fragments. This level is 2–10cm thick and also dates to the Han Dynasty. It covers house foundations F18 and F19 and pit H48.

2. Features. During this excavation season we discovered features below each stratigraphic level including piles of stone material, pits, ditches and house foundations. Below Stratum 4, for example, we identified a total of five pits, two ditches and 19 house foundations. In order to more fully address the concern with the spatial arrangement of the settlement at the site, here we introduce the features superimposed by Stratum 4.

The pits: the five pits come in three plan shapes: circular, oval, and irregular.

Pit H48 is circular in plan with an irregular wall that is relatively straight on the north side but curved on the east, north and south. The bottom is not flat. The pit is 1.5m in diameter and 82cm deep (Figure 8). Within the pit the sediment is grayish-brown coarse sandy soil and is not separated into levels. Mixed within this relatively compact level are fragments of charcoal, animal bones and stone fragments.

The ditches: the two ditches are irregular long strips. G2: neither the walls nor the base of the G2 ditch are even, and in some places the walls of the ditch have exposed the natural bedrock strata (Figure 9). The ditch is relatively shallow in the east, deeper in the middle, and in the west is superimposed by house foundation F22. The ditch measures 5.8m long, 30–90cm wide, and 20–128cm deep. Within the ditch are two separate strata. The upper stratum (Level 1) is light yellow sandy soil that is rather compact and distributed throughout the ditch. It is about 35cm thick and contains potsherds and animal bones. The second stratum (Level 2) is yellow sandy soil that is relatively soft and approximately 1m thick. It contains small numbers of animal bones.

House foundations: there are 19 house features at the site below Level 4. These can be classified into two types – houses that consist of walls built on the ground surface and structures that are semi-subterranean. The latter are more common, with only one example of the former being present. The house features are concentrated in the west of the excavation area. The spatial arrangement of these structures is in an orderly fashion, and one can see they cluster in a number of groups, each group comprising
unequal numbers of one to five house foundations. The structures of the houses in each group are roughly similar, but it is not clear whether they are therefore all functionally complementary to each other. This arrangement may have reflected the form of the quarrying production organization at the site during the period of occupation. Here we introduce the five house structures that make up one group: F16, F18, F19, F21 and F25.

All of the houses in this group are semi-subterranean structures and can be divided into two types: single room and multi-room houses (Figure 10). The single room structures are smaller than the multi-room ones and their internal structure is also simpler. Among the five houses in the group, the lower part of the north wall of F25 superimposes the lower part of the south wall of the store terrace 2 of F16, and pit H3 in F16 intrudes into the west wall of the room 2 of F21. Also F16 and F18 are linked to each other by a rectangular doorway. Based on these relationships we can tell that the features in this group can be ordered chronologically in terms of their date of construction and use as follows: F25 → F16 and F18 → F21. Although there is no direct stratigraphic relationship between F19 and the others in this group, nevertheless, based on the overall distribution of these features, it should be part of this house cluster. During the period when this group of houses was in use there was a transition in the form of the houses. Based on the excavations, the multi-room structures can be put in chronological order. The later examples are all built based on the form and scale of earlier house rooms, and all involved the rebuilding and remodeling of the internals of the rooms. The clearest embodiment of this sort of partial remodeling or rebuilding involved the destruction and rebuilding of the hearth area of the house. The hearths were altered, usually involving a shift from a position on the south side to a position on the north side, a change that was possibly related to the change in the directions of seasonal winds.

F16 is a semi-subterranean structure with a single room that has a regular structure and is oriented at 105°. This house has the early and late phases of use (Figure 11).

In the early phase, this house has a room that includes a doorway, hearth (Z1), two pits (H3 and H4), two store terraces (1 and 2) and two postholes (D1 and D2). The plan of this house is roughly rectangular with rounded corners, and the west wall and the northern part of the east wall were built with rocks. The west wall is slightly curved and the north wall has a narrow strip of burned earth about 38–42cm wide and 22cm high. The edges of this terrace were built with stone as well. F16 is 6.08m long, 2.38–2.46m wide, and is 68–74cm deep, covering an area of 14.4sq m. The house has a single doorway.
in the middle of the east wall that is rectangular in plan and angled down to the living surface within the house. Within the doorway there is a clear packed-down surface that is hard and covered by about 0.5cm of black ash. This doorway is 1.58m long, 0.58m wide and 0–44cm thick. Hearth Z1 is located in the southwest corner of the structure with a slight outward curve, but since it is mostly damaged by the later remodeling, mostly all that remains are the burned surface and the smoke flue. Pit H3 is located in the southeast part of the house and has a roughly square plan, straight walls, flat bottom, and walls principally made of rock on the west, north and south. H3 is 1.40–1.64m long, 1.34m wide, and 44cm deep. Pit H4 is in the southwestern part of the house and is an auxiliary facility for house F16 and linked to terrace 2 in the south. The north and east walls of this pit are constructed of rocks mortared together using loess mud. The pit is rectangular in plan, with straight walls and a flat bottom which is distinguished by a clear yellow earth floor above which are clear areas of gray ash. This pit is 1.47m long, 1.26m wide, and 1m deep. Terrace 1 is located in the northwest part of the house and its east wall is part of the house structure. It has an L-shaped plan with straight walls and a flat bottom and is 2.34m long, 0.32–0.84m wide and 36cm high. Terrace 2 is in the south section of the house and its north wall is connected to the house structure and to pit H4. The bottom of the south wall is superimposed by the bottom of the northern wall of house F25. This terrace is rectangular with straight walls, and a flat bottom that is made of stone on the eastern end.

Figure 10 General plan of the house foundations F16, F18, F19, F21, F25 at Jing-Bôr Pasture Locality.
It is 2.74m long, 1.25m wide, and 36cm high. Posthole D1 is located in the southeast corner of the house and is circular with straight walls and contained remnants of wood. It has a diameter of 12cm, and a depth of 12cm. D2 is located along the south wall of the doorway and also is circular with straight walls. Likewise, it contains some wood remnants and has a diameter of 10cm and depth of 20cm.

During the later phase of use, the internal of the house underwent remodeling and rebuilding. Hearth Z1 was demolished and in its place pit H2 was created. Also, pit H1 was dug next to the eastern side of terrace 1 and near the middle of the west wall hearths Z2 and Z3 were constructed. In addition, in the northeast corner a doorway was created to connect to house F18 thereby changing the early single room structure of F16 into a later phase as a multi-room building. Pit H1 is situated in the southern part of the house and is in an L-shaped plan. Both the north and west walls were lined with stone and the pit had a flat bottom, a leaning east wall and a straight west wall. It was 1.82–1.9m long, 0.62–1m wide and 30–80cm deep. Pit H2 is located in the southeast corner and semicircular in shape. The north side was opened to the main body of the house structure. It has straight walls, a flat bottom and a diameter around 1.18m and a depth of 70cm. Hearth Z2 is roughly rectangular in plan and constructed in the loess with a fuel entrance and firebox but no flue was present. In front of the fuel entrance was a deposit containing large amounts of ash. The fuel entrance is 10cm long. The firebox is close to circular with straight walls, a diameter of 42cm and depth of 26cm. Hearth Z3 is square in plan and constructed of loess and stones. It contains a fuel entrance, firebox and flue. A large amount of ash was deposited in front of the fuel entrance. The hearth surface was 70cm long on each side and the fuel entrance was 10cm long. The firebox was round in shape with straight walls, a 36cm diameter and was 28cm deep. The flue is 20cm in diameter and 50cm deep. The doorway 2 of the house is located at the north of the east wall, which is rectangular and wider on the east than the west. The doorway slopes down to the living surface in the house. The east end of F16 connects to F18 while the north edge as a second-level ledge cut out of the primary soil. This ledge is 20–22cm wide and 16cm tall. The doorway is 1.64m long, 40–70cm wide, and 18–70cm deep.

The sediment inside the house is separated into three levels. The first level contains fragments of light green sandy soil and was quite loose with large amount of bones, potsherds and jade material. The second level was grayish-green sand and contained large amounts of ash.
and charcoal. The sediment is rather loose and there are small numbers of bone, jade material, pottery and iron fragments. The third level is more yellowish-gray in color and contains lots of ash and charcoal. It is soft in texture and contains large numbers of animal bones and small numbers of jade material, pottery and iron objects.

House F18 is a single-room semi-subterranean structure that became a multi-room building together with F16 in the later phase (Figures 12 and 13). The room is regular in shape and oriented to 186°.

The room of the early phase makes up the house with a doorway, hearth Z1 and an earthen terrace. The house is roughly in square plan with rounded corners while the floor stretches out in southeast. Below the north and south walls some rocks are distributed and this leads to a conclusion that perhaps the walls were constructed of stone. The house is 3.88m long east to west, 2.44–2.6m wide north to south and 76cm deep, covering an area of 9.85sq m. The doorway is located in the south wall toward the west. It is rectangular and slopes down to the house structure. The doorway is 1.18m long, 0.78m wide and 0–30cm deep. Hearth Z1 is located in the southeast corner of the house. The remains of this feature include part of a firebox and rocks for building the hearth, among which are chunks of burned earth clod and ash. The firebox is circular with a diameter of 28cm and depth of 14cm. The earthen terrace is located within the eastern part of the house and is rectangular, built of loess, and has stone lining walls. The terrace is 1.9m long and 0.88m wide.

The late phase of this building involved remodeling and new construction on top of the early house foundation. There were two important changes: one was the tearing down of hearth Z1 and construction of a north-south stone wall dividing the house structure and the creation of storeroom pit H1. The stone wall has an orderly structure with yellow mud mortar between the stones. It is 2.02m long and 20–24cm thick. The storeroom pit H1 is located in the eastern part of the house and has straight walls, a flat bottom and is 0.84–1.3m long, 74cm wide. The bottom of H1 contains a clear living surface that can be connected to the surface within the house, and the burned surface of hearth Z1 is superimposed by the stone wall of H1, all of which collectively indicates that hearth Z1 was indeed earlier than H1 and provides clear evidence that F18 went through distinct early and later phases of use. The second was the creation of a new hearth, Z2, in the middle part of the north wall. All that remains preserved of hearth Z2 is part of the fired earth floor and flue. On top of the fired floor was a segment of decayed wood. The flue was created by digging a hole through the primary soil. The opening was surrounded by a semicircle of rocks which protected and reinforced the flue. The flue was circular, 12cm in diameter and 34cm deep.

Inside the room excavations revealed four separate strata. Stratum 1 comprised yellowish-gray fine sandy soil that included large amounts of ash and charcoal. This level was relatively soft and flat, and included small numbers of jade material, potsherds and animal bones.

Stratum 2 was grayish-brown coarse sandy soil that was soft and horizontally distributed. It also contained small amounts of jade material, potsherds and animal bones. Stratum 3 was yellowish-brown sandy soil that was soft and distributed on a slope. This level contained small amounts of jade material, potsherds and animal bones. Finally, Stratum 4 was white-gray coarse sandy soil that was quite compact and distributed on the western side of the house. It contained large amounts of jade material, animal bones, and small numbers of potsherds.

It is important to reiterate that there was a doorway that connects F16 and F18, which is doorway No. 2 of F16 and connects F18 down to the surface of F16. Through this connection, during the later phase of F18 it became part of the multi-room structure of F16.

House F19 is a semi-subterranean single-room structure that contains the room, one pit (H1) and six postholes. No doorway was found and the orientation of this house is unclear (Figure 14). The room is regularly structured and roughly in a square plan with rounded corners. The southeast corner stretches out. The room is 2.28m long from east to west, 1.94–2.38m wide from north to south, and 8–20cm deep. In total it covers about 5.6sq m. Pit H1 is located in the center of the house, slightly to the south, and is circular in shape with straight walls and a rounded bottom. In the north there is a rectangular terrace that is 10cm high. The diameter of H1 is 82cm, and it is 42cm

![Figure 14](image.png) Plan and section of the house foundation F19 at Jing-Bôr Pasture Locality.
deep. The postholes are circular and each of a different depth. They are situated next to the east, west and north walls on the exterior. Diameters range from 10–12cm, and depths 9–20cm. The deposit within the house is yellowish-gray sandy sediment that is relatively soft and contains jade material, animal bones, rocks, iron pieces and bronze arrowheads, etc.

House F21 is also a semi-subterranean house but has multiple rooms. It is oriented at 124° and the remains can be divided into early and later phases (Figure 15).

Dating to the early phase remains in this feature are rooms 1 and 2, doorways 1 and 2, hearth Z1 and pit H1. Room 1 is a rectangular room with round corners that is 2.52m long, 1.96m wide and 84cm deep. In total it covers 5.4sq m. Room 2 is located north of room 1 and is square with rounded corners. Its west wall is cut by pit H3 of house F16. This room is 2.7m long, 2.52m wide and 26–30cm deep, for an area of 6.2sq m. Doorway 1 is positioned in the center of the east wall of room 2 and is rectangular in shape with its long axis oriented east-west, sloping down toward the house surface. This doorway is 1.12m long, 0.76m wide and 0–18cm deep. Doorway 2 is located in the northeast of room 1 and oriented north-south. It also is sloping down to the surface of the house and is 1.14m long, 44cm wide and 0–70cm deep. Hearth Z1 is located in the southeast corner of room 1. The only parts that remain are a burned base and part of a flue. Pit H1 is located outside the northwest corner of room 1, circular in plan with straight walls and a flat base, a diameter of 52cm and depth of 18cm.

The later phase of this house is situated above the structure of the early phase and the result of reconstruction of the house rooms. The other features continued in use. Hearth Z1 in room 1 was abandoned and hearth Z2 was built in room 2. Z2 is poorly preserved – all that remains is a hearth pit and stone blocks of the lining wall. To the north of the wall is a 10cm deposit of ash, below which was a burned surface. The hearth diameter is around 40cm.

The deposits within the house rooms include two strata. Stratum 1 is greenish sandy soil that is compact and contains small numbers of animal bones. Stratum 2 is grayish-green sandy soil that includes large amounts of ash and charcoal, is relatively soft, and includes large amounts of animal bone, small amounts of jade material, potsherds, iron pieces and some hammerstones.

House F25 is a semi-subterranean house that has a single room. The components of this house include the room, doorway, hearth, loess terraces on the north and south, and a terrace with subsidiary pits H1 and H2. It is oriented at 139° (Figure 16). The house has a neat structure that is square with rounded corners and whose north and east walls are built of stones that are plastered with a yellow mud mortar. The stone walls are 22–26cm thick and 85–100cm tall. In the northeast corner of the stone walls are traces of burning which leads us to believe that this was the location of a hearth. The house is 2.6m long from north to south, 3.32m east to west, and 1.08m deep, covering an area of 11.8sq m. The doorway for the house is found on the east wall.
toward the south and is a rectangular area oriented east to west and angled down to the house floor. The doorway is 1.22m long, 0.74m wide and 0–54cm deep. The hearth is positioned in the southwest corner with its eastern part and southern edge connected to the earthen terrace. It has a roughly circular shape and is made of stones and sandy sediment. On the hearth surface there remains a layer of yellow clay. The hearth is about 1.06m in radius. The hearth is made up of a fuel entrance, a firebox, and a flue. The fuel entrance is a 22cm long strip that is lined by stones, the upper part of which is covered by a flat stone slab. The firebox is round and bag shaped. All four sides are burned very hard. The firebox is 46cm in diameter and 40cm tall, and the flue was dug up at an angle. It is 12cm in diameter and 59cm deep. On both the north and south sides of the house there is a rectangular artificial earthen terrace the sides of which are lined with stone. The north terrace is a bit wider – 1.36–1.42m wide, whereas the south one is more narrow – 50cm wide. An operation terrace is located between the hearth and the earthen terrace on the northern side. It is roughly rectangular in shape and has an arc-shaped edge build of loess. Within this loess arch there is a shallow pit that based on its shape may have been used as a place to put a whetstone. Storage pits are located on the north and south sides of the doorway. Pit H1 is on the south side of the doorway and is roughly semicircular with a rounded bottom. It shares a stone wall with the doorway and has a diameter of 1.68m and is 42cm deep. Pit H2 is located on the north side of the doorway and is roughly square. The north side of the pit is not clear and the bottom edge is slanted. It shares a side with the doorway built of stone. The pit is 1.42m long, 52–80cm wide and 20–48cm deep.

Inside the house the deposit comprises mostly yellowish-gray sandy soil with large amounts of ash and charcoal that is loosely packed and includes large amounts of rocks, jade material, potsherds, animal bones, iron material and bronze arrowheads, etc.

3. The Artifacts. The artifacts recovered from the Jing-Bôr Pasture Locality include potsherds, lithic, bronze, iron, and bone artifacts, and jade material. Potsherds are similar to those discovered in the three previous excavation seasons and can be classified into two types which we refer to as A and B, A being Han Dynasty sherds and B being associated with the Shanma Culture. Stone artifacts include whetstones (Figure 17), hammerstones (Figures 18 and 19), stone knives (Figure 20) and stone chisels (Figure 21). The whetstones are mostly made of greenish-gray sandstone or slate, the working surfaces of which were in a regular fashion. The central part was ground into a concavity with different degrees of fineness presumably to be selected for use on different types of jade material. The hammerstones are all black-brown basalt both round and cylindrical in shape and have clear use-wears. Bronze arrowheads (Figures 22 and 23), bronze crossbow trigger lever (Figure 24), bronze tubes, bronze rings, bronze bosses (Figure 25), bronze beads, bronze ornaments (Figure 26) and other fragments of bronze were found, along with small numbers of bronze granules. Most of the iron objects are preserved only as remnants of iron that are heavily rusted but it is possible to identify as iron nails (Figure 27), iron arrowheads (Figure 28), and iron spearheads (Figure 29). Bone artifacts (Figure 30) and glass beads (Figure 31) are also found but rare.

The outside of the jade material is covered by a thick or thin layer of stone cortex. In cases where this is black on the outer...
Figure 20  Stone knife (DT0401 ② :5).

Figure 21  Stone chisel (F17 ② :1).

Figure 22  Bronze arrowhead (F16 ① :1).

Figure 23  Bronze arrowhead (DT0301 ② :1).

Figure 24  Bronze crossbow trigger lever (AT0301 ② :4).

Figure 25  Bronze boss (DT0701 ① :3).

Figure 26  Bronze ornament (F16② :1).

Figure 27  Iron nails (F16 Living surface:1 and 2).
layer this is due to the presence of magnesium. Examples that have a brown color are characterized by their iron content. In a few examples, the outer layer is white and opaque. These have fibroblastic texture and basically are characterized by amphibole with small amounts of impurities. Some jade materials have been partly polished (Figures 32 and 33) and some show evidence of burning. The sizes of jade material are small. A few pieces of jade that were selected for use have been found, but most examples are waste products removed from the edges of the jade. Most jade material is yellow, green, blue-green or white in color (Figure 34). In addition, a small amount of Gobi jade has been uncovered as well (Figures 35 and 36).

Based on the features and the artifacts we can preliminarily date the site to the Warring-States to Han period, possibly including some Siba Culture material.
Conclusion

The survey and excavations of the Mazongshan jade quarry sites in 2014 involved discovery of materials in every level that not only are quite varied but also include stratigraphic relationships that allow us to better understand the spatial organization of the settlement at the site and clarify the settlement patterns and changes over time.

The semi-subterranean structures can mostly be shown to have been areas for selecting raw material. They are varied in shape and in addition to single room structures also include multi-room structures that have chronological relationships and signs of change. During the use of the multi-room workshops they underwent structural remodeling and interior change. This represents a very useful set of data for understanding the variety of workshops and their evolution. The structural change in workshops clearly involved the moving around of the hearths, which were related to changes in the location of the fire access points, which in turn may have changed positions in relation to changes in the direction of winds. We propose that the change in wind direction may have been related to seasonal changes. This suggestion reflects a new understanding of the seasonal nature of jade quarrying.

Jade quarrying at the Hanyaozi Pasture Locality started already in the Shanma Culture period, and overlaps to some extent with the jade quarrying activity at the Jing-Bör Pasture Locality. The discovery of these sites provides important data to develop a new understanding of the nature of jade quarrying and allows us to improve our impression of the pattern and nature of settlements at quarry sites.

References

Gansu Provincial Institute of Cultural Relics and Archaeology 甘肃省文物考古研究所 et al. 2010. 甘肃省肃北马鬃山璧玉矿遗址调查简报 (Survey of Mazongshan ancient jade mine site in Subei County, Gansu). Wenwu 文物 (Cultural relics) 10:27–33.


Postscript

The original report published in Kaogu 考古 (Archaeology) 2015.7:3–4 with 36 illustrations was authored by Guoke Chen 陈国科, Chaonian Jiang 蒋超年, Hui Wang 王辉 and Yueguang Yang 杨月光. This English full-text translation is done by Rowan Flad 傅罗文.