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Source: *Bulletin of the Asia Institute*, 2004, New Series, Vol. 18 (2004), pp. 69-95

Published by: Bulletin of the Asia Institute, a Non-Profit Corporation

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Ancient Chorasmian Mural Art

F. KIDD, M. NEGUS CLEARY, V. N. YAGODIN,
A. BETTS, AND E. BAKER BRITE¹

Mural art is found throughout the ancient world in both religious and secular contexts. It has its roots in prehistory² but first saw widespread application as a medium for propaganda of various kinds with the rise of the great states and empires of the last two to three millennia B.C.E.³ In Central Asia, mural art reached its apogee between the 5th and 8th century C.E. at sites such as Afrasiab, Panjikent, and Varakhsha,⁴ yet little is known about its early development in the region. Some of the best preserved early Central Asian wall paintings have been found in Chorasmia (fig. 1).

Several Chorasmian sites, dated between the 5th century B.C.E. and the beginning of the 2nd century C.E., have yielded important evidence of mural art. However, the significance of this art form is underlined by recent discoveries of extensive paintings at Kazakly-yatkan.⁵ The site was founded in the late 3rd to early 2nd century B.C.E. but the surviving paintings so far recovered come from later buildings, and can almost certainly be dated to the 1st century B.C.E.⁶ According to current periodisation, early Chorasmian mural art flourished during the late Archaic and early Antique periods, up to the early "Kushan" period (see Table 1).⁷ Historically, this time span encompasses the end of the short period of Achaemenid rule in Chorasmia and the ensuing period of Chorasmian independence.⁸ The published surviving fragments of mural art from earlier Soviet era excavations present a somewhat limited corpus for comparative study, but the recent discoveries at Kazakly-yatkan provide a new platform for understanding these fragments. Perhaps the best known corpus of mural art in Chorasmia comes from the later "Kushan"- "Afrighid" period site of Toprak-kala.⁹

Preliminary observations indicate elements of continuity between the Kazakly-yatkan and Toprak-kala paintings. This paper surveys the development of earlier Chorasmian mural art, contextualising the unique finds at Kazakly-yatkan and providing a background for future re-interpretation of the rich cultural legacy of Toprak-kala. The presentation of sites is broadly chronological,¹⁰ concluding with a discussion of the Kazakly-yatkan material.

Kalaly-gyr 1

Kalaly-gyr 1 is the largest and one of the earliest Chorasmian sites at which wall paintings have been found (fig. 1).¹¹ Located in Chorasmia, the site has been credited as the seat of the 16th Achaemenid satrapy of Chorasmia, Sogdiana, Aria, and Parthia.¹² It comprises a large fortified enclosure with a regular rectangular plan (fig. 2) dating from the end of the 5th/beginning of the 4th century B.C.E.,¹³ with some partial later occupation in the 4th to 2nd centuries B.C.E.¹⁴ The interior of the site remains empty except for a monumental "palace" building attached to the western fortification wall in which paintings were found.¹⁵ The absence of internal structures has led to varied interpretations of the site. Some scholars believe that it was abandoned before it was even completed.¹⁶ Tolstov suggested that the rectangular layout and architectural form of these early Chorasmian fortresses reflected an eastern Indo-Iranian tradition, as described in the *Avesta*.¹⁷ The presence of the palace building indicates that the site also served (or was intended to serve) an administrative or ritual function.

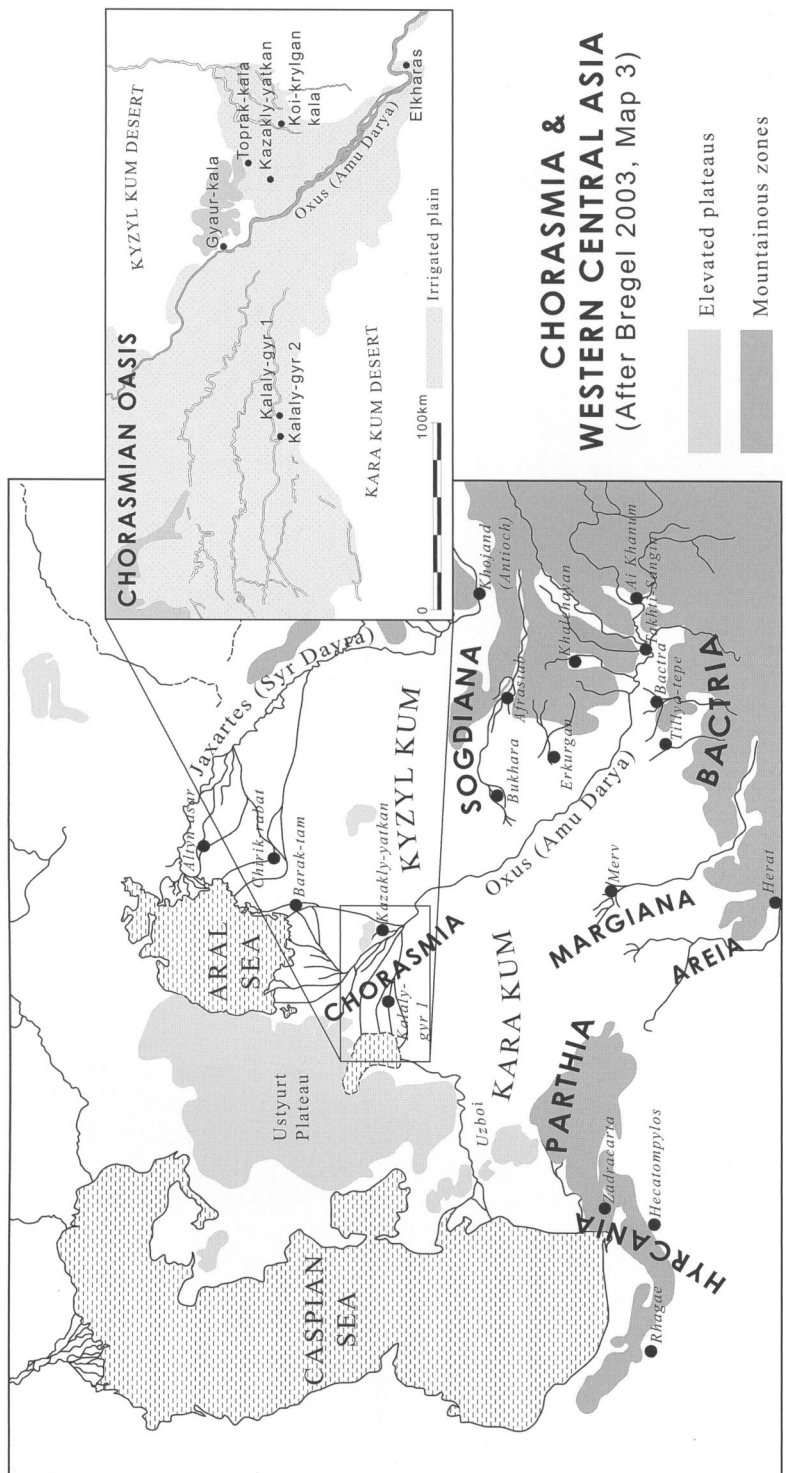


Fig. 1. Map of western Central Asia, with inset map showing the location of Chorasmian sites discussed in the text.

TABLE 1. Current Chorasmian Periodisation

| ARCHAIC | |
|-----------------------|---|
| Archaic I | Kiuzeli-gyr 7th/6th century B.C.E. |
| Archaic II | Dingil'dzhe 6th/5th century B.C.E. |
| Archaic III | Kalaly-gyr 1 5th century B.C.E. |
| Archaic IV | Khazarasp 5th/4th century B.C.E. |
| ANTIQUÉ | |
| "Kangui" I (early) | 4th–3rd century B.C.E. |
| "Kangui" II (late) | 2nd century B.C.E.–early 1st century C.E. |
| "Kushan" I (early) | 1st–2nd century C.E. |
| "Kushan" II (late) | 3rd–4th century C.E. |
| EARLY MEDIEVAL | |
| "Afrighid" | 4th–9th century C.E. |
| Islamic period begins | C.E. 712 Arab invasion |

Architectural Context of the Paintings

The palace is the earliest of its kind discovered in Chorasmia, and represents the beginning of a new building type and site layout. It measured approximately 75 × 80 m, and was well laid-out with a series of adjoining rectangular courts and halls in a planning style that appears to have been completely new to Chorasmia (fig. 2).¹⁸ The significance of the palace is reflected in its location within the fortifications, its size, the large, multi-columned halls, and the 2 m-thick mud-brick walls. Ornamentation included painted plaster walls, recessed niches, and stone column bases characteristic of Chorasmia during the ancient period.¹⁹ Wall painting fragments were found in the small hall 8, located in the south-western corner of the palace building.²⁰

Hall 8 measures approximately 80 m² in area and is considered a cultic sanctuary due to the combination of elite architectural elements such as the column bases, niches, and the traces of wall painting in combination with a large stepped altar.²¹ The walls of the hall were inset with wide, shallow niches that bore traces of polychrome painting. The walls were preserved to a height of 1.5 m to 3 m above the floor and the sills of the niches were at a height of 1.5 m.²² Against the east wall was located what is thought to have been a stepped altar, constructed of clay and measuring 2.1 × 1 × 1 m high.²³ The excava-

tors note that there were indications that this mud-brick "altar" may have had a niche above it, similar to that at Gyaur-kala Sultan-uiz-dag²⁴ (see below), but this niche was destroyed by a later burial.²⁵ In the centre of the hall were two stone column bases that presumably once supported timber columns holding up a timber framed roof.²⁶ The appearance of wall paintings located within shallow niches is the earliest occurrence of a trend which became relatively common in the monumental buildings of ancient Chorasmia.

Description of the Paintings

The excavators describe the paintings from Kalaly-gyr 1 as the oldest in Chorasmia,²⁷ but published details are limited. Rapoport et al. refer to polychrome wall paintings in association with low, wide niches.²⁸ No information is provided regarding pigments.

Technique

No details regarding the techniques are provided.

Elkharas

Elkharas is located on the left bank of the Amu Darya in southern Chorasmia (modern Turkmenistan, fig. 1) and comprises an Antique (Kangui) period unfortified, monumental building complex.²⁹ The ruins are preserved on a natural elevation, approximately 9 m higher than the surrounding flood plain. There is some evidence that the lower area surrounding the mound was built up in antiquity³⁰ but this has not been confirmed due to poor site preservation. The excavators interpret the monumental building complex on the high ground as the citadel or palace of the ruler, and the built-up area on the plain below as the settlement.

Excavations revealed that the original extent of the monumental complex measured over 130 × 80 m. Two buildings are preserved in the complex, the eastern and western buildings. While both are rectangular in plan and orthogonally laid out, it is likely that each building served a

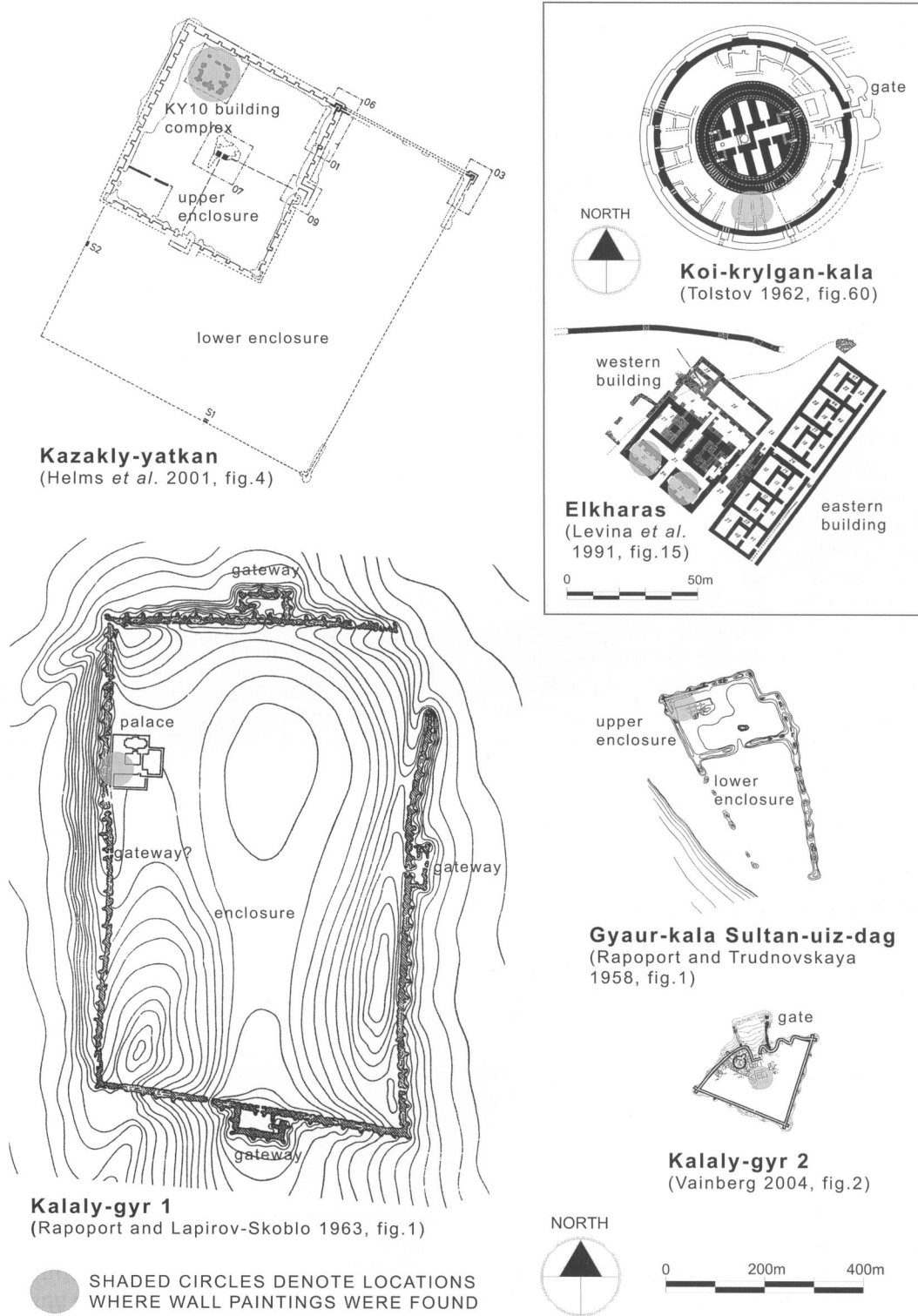


Fig. 2. Plans of sites discussed in the text.

different function. The two buildings are structurally connected, and are surrounded by a wall (fig. 2).³¹

Architectural Context of the Paintings

The walls of the corridors and halls of the western building were painted with mono- and polychrome paintings. Wall painting fragments were found in the north-eastern section of room 32. Of the two buildings, the western one is considerably better preserved. It is monumental and has remains preserved to a height of 5 m. The plan of the building is formal, perhaps indicating a ceremonial function. The building is entered from the north, and a central corridor covered by a mud-brick vault links the double sets of halls on either side. There are two northern, two central, and two southern halls, with a large hall and ancillary rooms at the southern end of the building. All rooms have the same continuous floor level (except hall 26). The thickness of the walls and the presence of a stair strongly support the possibility that the building once had a second storey.³² The walls of all rooms and corridors throughout both the eastern and western buildings were plastered with a thick layer of clay or mud plaster then finished with a pale pink coating of gypsum plaster—the same construction technique found at Koi-krylgan-kala.³³

Room 32 is a rectangular hall, with large arched niches lining three of the walls. The walls of the southern and northern halls (32, 33, 5, 6) all had the same niches in the walls surmounted by rounded arches. Each hall had a larger niche that extended down to the floor (the other niches had mud-brick ledges) and was always located in the southern wall. Opposite these largest niches was a hearth niche.³⁴

Description of the Paintings

The mono- and polychrome paintings of the western building were found both *in situ* and on the floors and in the fill of the halls and corridors. On the lower parts of almost all the walls, and on the walls of niches that began at floor level, was a red panel or dado, approximately 45 cm above the floor. This panel was divided from an upper tier by a narrow (4–8 cm) line of

white and black pigment. Above this line, on a white background of gypsum plaster, were poorly preserved traces of mono- and polychrome paintings comprising geometric and vegetal motifs. The palette was limited to black, brown, red, yellow, and green.³⁵ There is no evidence of anthropomorphic or zoomorphic imagery on the paintings, although anthropomorphic clay sculpture was found in association with niches.³⁶

The most concentrated finds of paintings were made in room 32 where painted fragments showing various types of vegetal and geometric ornamentation were found (fig. 3). The majority of fragments show that varying tones of red-brown were painted onto a white gypsum plaster background. A pedestal associated with a niche was decorated with bands of various colours (pink and black), in some examples drawn on a smooth red surface (see fig. 3, left, top).³⁷ More complicated geometric ornamentation comprised dark brown contour panels approx. 4.5 cm wide, interspersed with coarsely drawn rectangular shapes of various colours including dark brown and white. Some fragments show additional dark brown and bright red lines which are not possible to understand (see fig. 3, left, bottom). Vegetal motifs comprised simple illustrations of branches or twigs with pointed leaves on a white background in black or grey lines (fig. 3, centre). Occasional traces of green pigment support the idea that these patterns represent plant motifs.

Technique

Wall paintings were painted on an alabaster primer approximately 1 mm thick.³⁸ Analysis showed that the pigments were ochre based and only black was made using charcoal.³⁹ The presence of green paint at Elkharas is significant as it is considered extremely rare during this early period (it is also found at Gyaur-kala). Analysis of green paint did not show the presence of copper, characteristic of paint prepared with malachite or chrysocolla, from which green paint was made in Central Asia during the early medieval period.⁴⁰ Evidently, the paint was prepared using clay with some sort of green tint with traces of iron.⁴¹ The excavators suggest that the limited colour range used in the paintings was probably prepared locally following much older methods of preparation.⁴²



Fig. 3. Wall painting and painted sculpture fragments from room 32 at Elkharas. After Sokolovskiy 1991, figs. 1 (left), 2 (centre), and 3 (right, no scale on original).

Kalaly-gyr 2

Kalaly-gyr 2 is an irregular, sub-triangular shaped, fortified enclosure located on the left-bank of Chorasmia (figs. 1, 2). Dating from the mid 4th to early 2nd century B.C.E.,⁴³ the site has been interpreted as a cultic ritual centre.⁴⁴

Architectural Context of the Paintings

Within the enclosure many intramural structures were preserved, although Vainberg states that there was no evidence that any of them were used as dwellings.⁴⁵ The only monumental architecture was the "temple," a round tower-like building with small ancillary rooms built up against it, located in the sheltered north-western corner of the enclosure. The ancillary rooms adjoined some larger, more regularly laid-out rooms in the centre of the enclosure, which were probably surrounded by a corridor, or open gallery. Vainberg⁴⁶ refers to this complex of rooms as the central building, but unfortunately it is poorly preserved, with walls remaining only to a height of 20–25 cm.⁴⁷ Fragments of wall paintings were excavated in 1990–1991 in one of the western halls of this building,⁴⁸ possibly rooms 1 or 4, but Vainberg does not elaborate. There is no discussion regarding the details of these spaces.

Description of the Paintings

Small fragments of figurative wall paintings were found in the lower fill level above the floor of the hall.⁴⁹ The excavators note that it was only possible to establish that scenes were painted on the walls of the building depicting figures of different sizes, including a rider on a horse.⁵⁰ There is no published image of this figure.

Technique

No details regarding the technique are provided.

Gyaur-kala (Sultan-uiz-dag)

The fortress of Gyaur-kala (Sultan-uiz-dag) is located on the right bank of the Amu Darya (fig. 1). The 3rd century B.C.E.–1st/2nd century C.E.⁵¹ site is a large fortified enclosure measuring 7 ha

in area, with a citadel or upper enclosure in the north, and a larger lower enclosure adjoining it to the south (fig. 2). The site is strongly fortified with huge double storey walls defended by archer's galleries, two tiers of loopholes, and regularly spaced towers. Due to its strategic position in a narrow gap between the river and the western end of the Sultan-uiz-dag, Gyaur-kala is thought to have housed a garrison and served as one of a chain of border fortresses defending Chorasmia from incursions from the north.⁵²

The site is not well preserved because of repeated river flooding over much of its area, and the use of the site by nearby mining operations. However, the north-western corner of the upper enclosure has survived in good condition due to its location on higher ground and the immensely thick fortified walls that had been in-filled in antiquity with clay and rubble.⁵³ Wall painting fragments were found in a small hall in this area.

Architectural Context of the Paintings

The "ceremonial hall" in which the paintings were found was an unexpected find considering the poor condition of the rest of the site. It was built against the inside of the northern fortification wall, as one of a row of single rooms. The other six rooms were identical and unremarkable, being 5–6 m wide with no architectural decoration or artefacts, and no preserved cultural layers found within.⁵⁴ These rooms are considered to have served as accommodation for the garrison.⁵⁵ The ceremonial hall measured 6.86 × 8.05 m in size (55 m² in area) and, like the sanctuary in the Kalaly-gyr 1 palace, it contained a "fire altar," two stone column bases, and stepped niches.

The fire altar or hearth was centered in the west wall in a recessed niche, with an arched opening and a ledge at its base on which the "sacred" fire rested.⁵⁶ The arched opening was emphasized by a second decorative arch in relief that protruded from the plane of the wall and had unusual curved ends (see the reconstruction in fig. 4). In front of the hearth were two carved stone column bases of the ancient Chorasmian type.⁵⁷ On the eastern wall of the hall were three niches, located at a distance of 1.5 m from one another, and a fourth in the west wall opposite. These were rectangular niches measuring 1.7 m

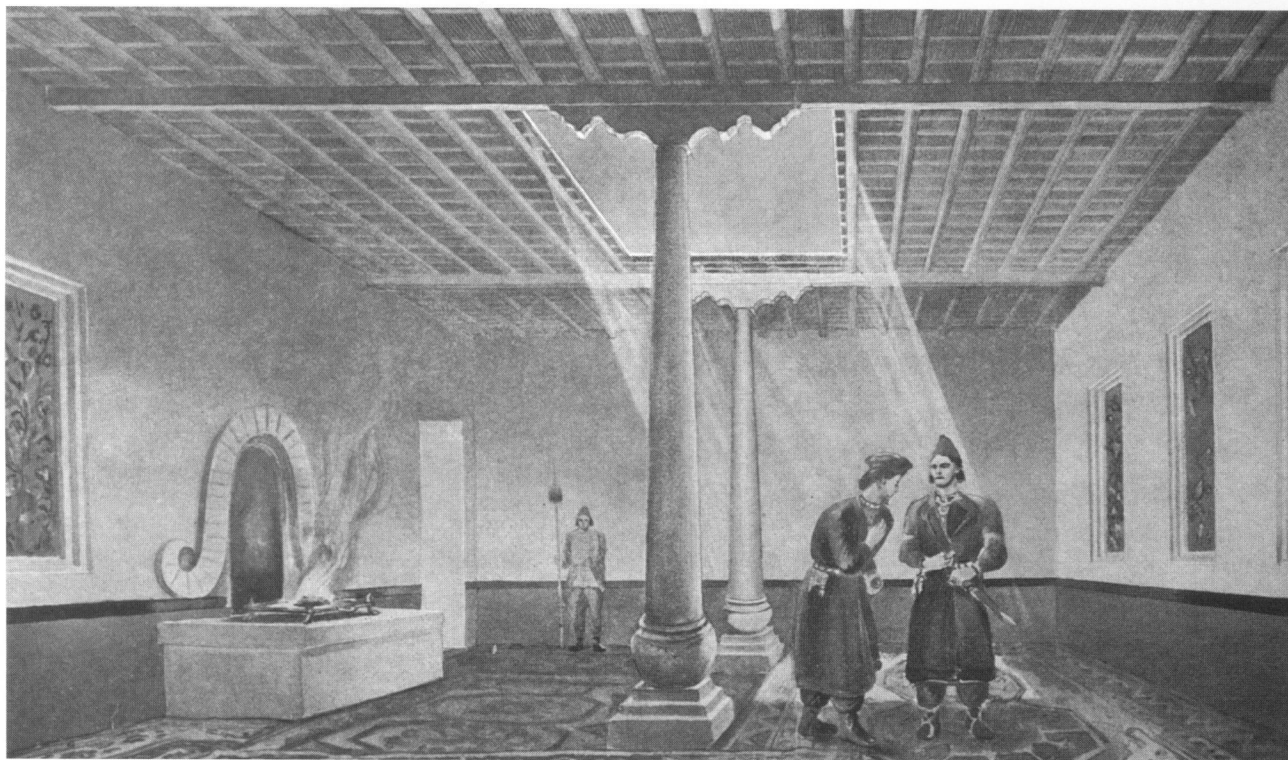


Fig. 4. Reconstruction of the wall paintings from Gyaur-kala. After Rapoport and Trudnovskaya 1958, fig. 8.

high, 1.1 m wide, and 0.2 m deep, with a stepped reveal surrounding the sides and top. This type of stepped niche appears to have been associated with altars and cultic spaces in ancient Chorasmian architecture.⁵⁸

Description of the Paintings

No figurative images have been defined on the poorly preserved Gyaur-kala paintings. A dark blue panel on gypsum plaster lined the lower section of the northern and parts of the eastern and western walls to a height of 0.65 m above the floor and may be interpreted as a dado.⁵⁹ Above this was a narrow black strip, approximately 0.18 m wide, separating the blue from white (see fig. 4). Although the plaster was only preserved to a height of 0.75 m, the excavators assume that the remaining wall above these panels was white as no other fragments of coloured plaster were found in the fill.⁶⁰

Wall paintings were found in association with the stepped niches in the eastern and western walls of the room. The niche on the southern

part of the western wall preserved some traces of polychrome paint including pink, orange, red, green, and black on a white gypsum plaster.⁶¹ Given this diversity of colour it is possible that originally there was a figurative image or ornamental pattern, but no trace of this survives.⁶² None of the recovered painted fragments have been published, although the excavators do provide a reconstructed view of the room (fig. 4).⁶³

Technique

Mud-brick walls were covered with a clay and straw plaster on top of which was painted a thin layer of gypsum plaster. Gypsum was also used as a white paint.

Koi-krylgan-kala

The fortress of Koi-krylgan-kala is located in eastern Chorasmia within an ancient agricultural zone (fig. 1).⁶⁴ The site is perfectly circular, with a well-defended central building, 42 m in

diameter, encircled by a fortified enclosure wall 87.5 m in diameter with nine towers and a labyrinthine gateway⁶⁵ (fig. 2). Based on the formal architecture of the central building the site has been variously interpreted as a fortified sanctuary,⁶⁶ a mausoleum,⁶⁷ a temple mausoleum devoted to a dynastic cult,⁶⁸ a temple devoted to a dynastic/fertility cult,⁶⁹ or a temple devoted to an astral cult.⁷⁰

Koi-krylgan-kala was constructed during the "Early Kangiui" period, 4th/3rd century B.C.E. In its early stage the central building had a ceremonial function. During the 2nd–1st centuries B.C.E. the fortress was abandoned. It was re-occupied in the late 1st century B.C.E./1st century C.E. until the 3rd/4th century C.E. when it was destroyed by fire.⁷¹ During this period the enclosure was built up and the fortress was probably used as the centre for the large Koi-krylgan-kala rural estate rather than its previous ceremonial function.⁷²

Architectural Context of the Paintings

Wall painting fragments were found in three rooms, S53, S56, and S57,⁷³ of the later period occupation (late 1st century B.C.E./1st century C.E. until the 3rd/4th century C.E.) (fig. 2). These rooms adjoined the central building wall and the fragments were found in the fill, 112 cm above the floor level. The rooms were small circulation spaces, leading into other rooms. Rooms S53 and S56 were the only two built directly against the central building wall. It is possible that the fragments were part of collapsed walls from the upper level of the central building.

Description of Wall Paintings

Fragments found in the fill of room S53 reveal traces of pink pigments only. Only very faint traces of black pigment on white plaster were found on the walls of room S57.⁷⁴ The most impressive image came from room S56. In addition to faint traces of pink, pink-orange, and black pigments on a white background⁷⁵ two fragments of a so-called archer figure were found, preserving the head and the fist (fig. 5). The personage, represented in a quarter natural size, is shown in profile, facing to the right. Details are shown in black outline. The hair is black, the

nose long and straight, and the lips full. The eye and eyebrow are carefully drawn. The skin is a rich orange-brown tone. There is no facial hair on the preserved fragment. The fist fragment shows orange-brown fingers wrapped around a long, narrow object, possibly with a flat head, just visible above the grasping fingers. The fist is shown at face level. A curved black line around the wrist may indicate a cuff.⁷⁶

Technique

The paintings were painted on an alabaster undercoat or primer.⁷⁷ There is no discussion of the composition of the pigments.

Kazakly-yatkan (Akcha-khan-kala)

Kazakly-yatkan has been the focus of excavations by the Karakalpak-Australian Expedition to Chorasmia since 1994.⁷⁸ It is a large rectangular site, covering an area of up to 50 ha,⁷⁹ making it the second largest in ancient period Chorasmia. The site is divided into two fortified enclosures—an upper enclosure located in the north-western corner of the larger, lower enclosure (fig. 2). The upper enclosure has at least three monumental structures within it: a centrally located structure tentatively identified as a mausoleum or *naus*; a possible *temenos* in the south-western corner; and a monumental building complex in the north-western corner, part of which appears to be associated with cultic activities, and which is the find spot of the wall paintings.

It has been suggested that the site may have acted as a regional capital.⁸⁰ However, its function is unclear, not least because the internal layout of both enclosures remains largely unknown due to deep sand coverage. Excavations to date support the notion that the upper enclosure functioned as a sacred/ceremonial space of "religious and political significance."⁸¹ The lower enclosure may have served more secular functions as "a city or at the very least an enclosure which perhaps saw periodic occupation or congregation for commercial use."⁸²

Calibrated C14 determinations suggest the earliest possible date so far for the upper enclosure fortification walls is the late 3rd/2nd century B.C.E.⁸³ and the lower enclosure slightly



Fig. 5. Wall painting fragment from Koi-krylgan-kala showing the "archer" figure. After Abdullaev, Rtveladze, and Shishkin 1991, catalogue no. 332.

later.⁸⁴ After a siege of the upper enclosure in ca. 50 B.C.E. and a short period of abandonment, the fortifications were repaired in the 1st/2nd century C.E. The site was finally abandoned sometime in the 2nd century C.E. at the latest.⁸⁵

Architectural Context of the Paintings

Painting fragments have been found in almost all of the excavated areas of the monumental building complex to date (fig. 6). The complex comprises a central square structure, approximately 55 × 55 m, surrounded by a series of corridors and other rooms, at least in its western section, where excavations have focused. The core building has thick, double mud-brick walls forming a gallery around the perimeter. There are rounded towers at the corners and in the middle of the gallery walls.⁸⁶ Reconstruction of

the building at this stage is preliminary because of the small area that has been excavated.

The greatest concentration of paintings to date has been found *in situ* and in the fill of the western corridor of the central structure. The gallery was approximately 1.9 m wide, with the external wall 1.6 m thick and the internal one 1.3 m thick on average. The walls were preserved to an approximate maximum height of 3 m. It is unclear whether or not this gallery was roofed, although the presence of the paintings would suggest that it was. There are no indications of windows or light apertures in this space although an entrance at the centre of the corridor joining the external area and the interior of the central building would have let in some light. It is assumed from wall outlines visible on the ground surface that this gallery continued around the entire perimeter of the core building. Wall painting fragments have also been found close to walls

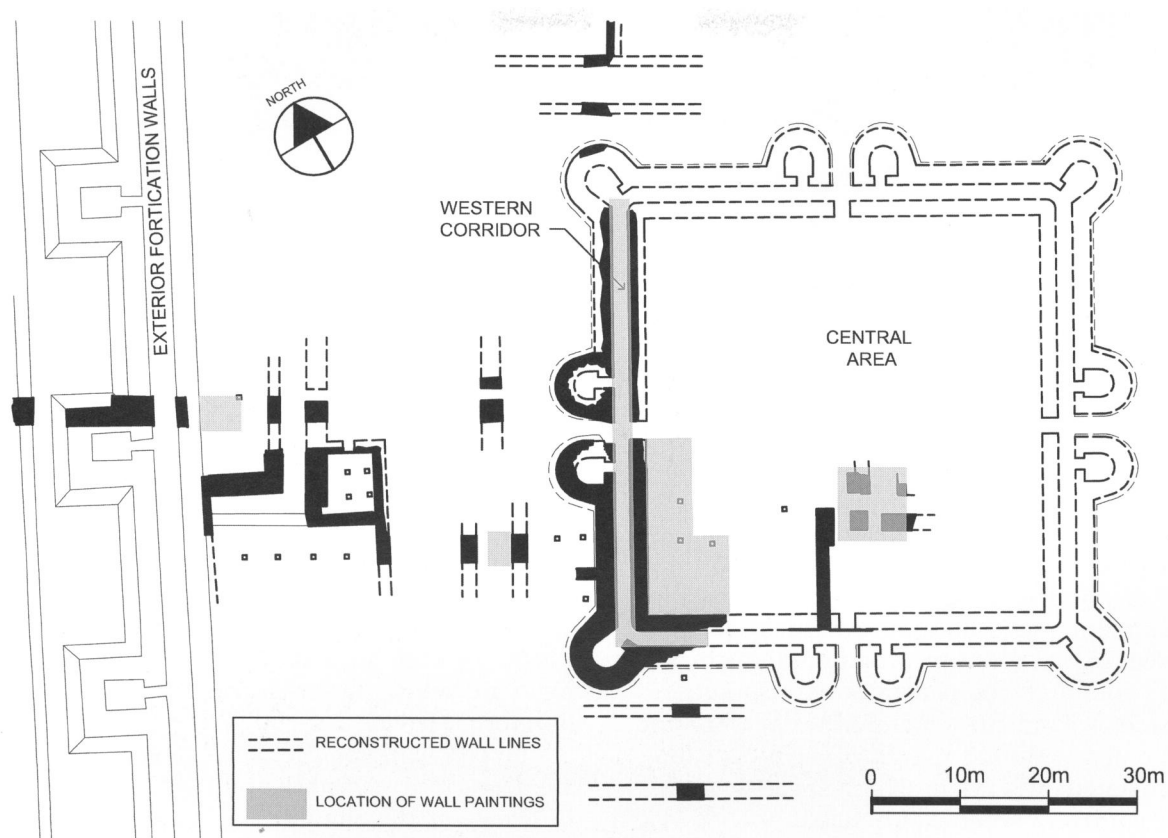


Fig. 6. Preliminary plan of the monumental building at Kazakly-yatkan.

in the interior of the core building. Excavation in the south-western area of the building shows that the interior may have been divided into different spaces by at least one wall extending into the centre from the southern perimeter, and several mud brick walls near the centre of the building. That at least part of the space was roofed is indicated by the typical Chorasmian column bases⁸⁷ found along the interior western side—perhaps forming a small columned hall in the south-western corner. Small, often deep, circular pits and shallow, rectangular bi-concave “altars” were excavated in the area in front of the western entrance. The altars in particular have analogies with steppic nomad “altars” from the Ustyurt plateau.⁸⁸ Such installations point to the cultic character of this area.

Excavations to the west, south, and north of the central building indicate a complex of walls forming narrow streets and corridors surround-

ing the core building. Several rooms have also been exposed to the west. Wall painting fragments have been found in all of the areas to the west. The presence of column bases in the rooms in the west of the complex suggests that they were roofed. The presence of further galleries or corridors surrounding the core building possibly hints at the importance of circulation spaces of a perambulatory nature, although the exact nature of these walls is yet to be clearly determined.

The ornamentation of the monumental building was both extensive and diverse and indicates the elite nature of the spaces. While the wall paintings are the most expressive remains of this ornamentation found to date, they were probably just one element of a planned and integrated scheme of visual art and architectural decoration. In addition to the carved stone column bases mentioned above,⁸⁹ moulded copper

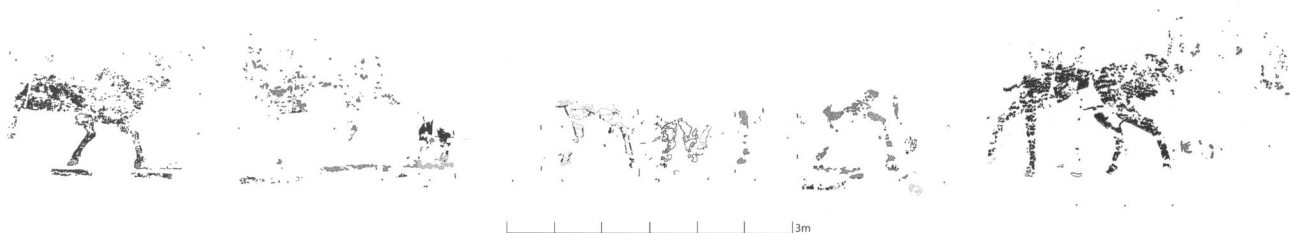


Fig. 7. Preliminary reconstruction of the *in situ* procession scene from the western corridor of the monumental building at Kazakly-yatkan.

alloy fragments and nails have been found extensively in the northern section of the western corridor and the area immediately to the west.⁹⁰ Low relief moulded gypsum plaster, sometimes painted, and a rare example of mud plaster covered in gold foil may have formed a decorated cornice or architrave. Painted high relief sculptural fragments have also been found. Fragments of carved ivory, possibly ornamental furniture pieces,⁹¹ found in the central area also suggest that spaces within the decorated walls were not always empty. Mobile pieces of furniture may have impacted on ways in which space was used and the paintings were experienced.

Description of Wall Paintings

The Kazakly-yatkan wall paintings are varied in both style and subject matter, and include ornamental and figurative designs in addition to several inscriptions. The style of the paintings is simple. Black is the main outline colour. Fill colours are typically shades of yellow, orange, red, brown, blue-grey, and a distinct raspberry red. On some fragments a very narrow brown line is just perceptible next to the black outline.

Paintings from the Western Corridor—the Procession

In situ paintings were found on the eastern face of the southern half of the western corridor.⁹² The scene preserves the lower bodies of alternate animals and humans, evidently in a procession moving towards the north (fig. 7). The procession is headed by a black quadruped, probably a horse. Traces of red pigment behind this animal

may be the remains of another animal. In front and behind the next animal—a blue-grey quadruped—are two sets of poorly preserved human legs. Another pink and red quadruped follows, and finally, another black quadruped, probably a horse. Apart from the black horses (?), the identity of the remaining animals is unclear. It is also unclear if the human figures were leading or following each animal. Traces of pink and black pigment below the procession may have been a horizontal frieze.

The colouring of the animals appears to have a pattern to it, possibly pointing to a deeper significance of the choice of colour used to portray each animal. Although the southernmost extent of the corridor is not yet fully excavated, it nevertheless appears that the blue-grey animal is for some reason distinguished among the black and red/pink animals. The completion of excavation in the southern section of the gallery, including the area opposite the eastern face of the wall in front of the *in situ* scene, may further assist in understanding the procession.

Paintings from the Western Corridor—the “Portrait” Gallery

In the northern half of the western gallery a “portrait” gallery has been uncovered. Individually framed bust portrait fragments have been found in the fill along the entire northern section of the corridor, although it is not yet possible to say how many personages were depicted. No personage is completely preserved. One large fragment shows that there were at least three vertical tiers of framed portraits. The background of the portraits is predominantly white, although rare examples also show yellow/gold.

The portraits typically show the face and upper body (figs. 8, 9). The shoulders are depicted frontally while the face is in profile looking either to the left (i.e. south) or to the right (i.e. north). The schematised physiognomy shows full red lips and a long and straight nose. The distinctive eyes, in the form of an elongated, sideways drawn U converging to a single line on the side of the face towards the temple, look straight ahead. The circular pupil is balanced between the lines of the upper and lower lids. On the upper lid there is another much smaller, delicately curved black line, perhaps a schematised interpretation of the upper eyelash. The eyebrow is long and often has a slight upwards curve on the end. No facial hair is shown on any of the portraits. The white skin of the face is framed by shoulder-length black hair. The simple style of the portraits reflects a sense of confidence and strength, yet the faces seem almost expressionless. The gender and identity of each personage is unclear.

Despite the uniform physiognomy of the portraits, personages are distinguished by elements of costume, such as jewellery, headdress, and clothing ornamentation and colour. The figures appear to wear a V-necked upper body garment that can be plain, striped, or solid in colour. Two different types of headdresses have been identified. One shows a crouching feline set into an ornamented base, tied at the back of the head (fig. 9). The other shows the feathered upper body of a bird positioned at the front of the headdress (fig. 8). Not all personages wear a headdress. Jewellery includes earrings and spiral torques with zoomorphic terminals. The spiral torques are clear indicators of high status in the wider Iranian world.⁹³ The differentiation in costume is significant because of the role costume plays in signifying status.⁹⁴ The portraits represent personages of defined elite status categories. Although these categories are unclear, the homogeneity of the physiognomy may serve to highlight the significance of the status of these personages, rather than the personages as individuals.

Other Figurative Images

Several other fragments of figurative images underline the diversity of styles and subjects shown on the paintings. Assuming that the different

styles are contemporary, the simplicity of the portraits in the corridor is instructive and must be understood as deliberate. A "crowd" scene (figs. 10, 11) partially preserves three faces in three quarter profile, with the eyes apparently fixed on an object to the right of the scene. Slightly curving strips of darker and lighter flesh tones give the face a fuller and more realistic effect and at the same time differentiates the style of these faces from the portraits.

Another fragment shows a partially preserved face (figs. 12, 13) in three-quarter profile, similar to the crowd scene faces. The skin is white. The preserved background to this face shows what appears to be a vine leaf, outlined in several colours. Also present are numerous touching circular shapes outlined in black, possibly grapes. A curving panel of three parallel colours appears to come from behind the head. It is unclear what this panel represents. Possible comparative motifs for the shape of the edge of the leaf and the grapes are found on fragments from Elkharas (see fig. 3, centre and right).

The fragment of a fantastic animal (?) was the largest of a small, isolated area of finds in the fill in the vicinity of the western upper enclosure fortification wall. The fragment shows the curving form of two forked horns (?). The dark charcoal coloured horns are outlined in black. The charcoal colour is to date unknown on other fragments. The animal is set against an orange/brown background.

Ornamental Fragments

Very fragmentary remains of forms, possibly ornamental, have been found close to the walls in the south-western corner of the central building, although clear images can rarely be defined on the majority of these pieces. However, one well-preserved fragment shows two mushroom-shaped elements, joined together, possibly forming a patterned frieze (see fig. 14 for a possible reconstruction). A double row of stone column bases in this corner of the building, perhaps forming a columned hall or a portico, suggests that this area was roofed and the possibility of ceiling decoration here, and in other areas of the building, cannot be ruled out.⁹⁵

Another ornamental fragment showing a single white tulip against a pink/orange background,



Fig. 8. Portrait showing a "bird" headdress (conserved by V. V. Yagodin). Kazakly-yatkan.

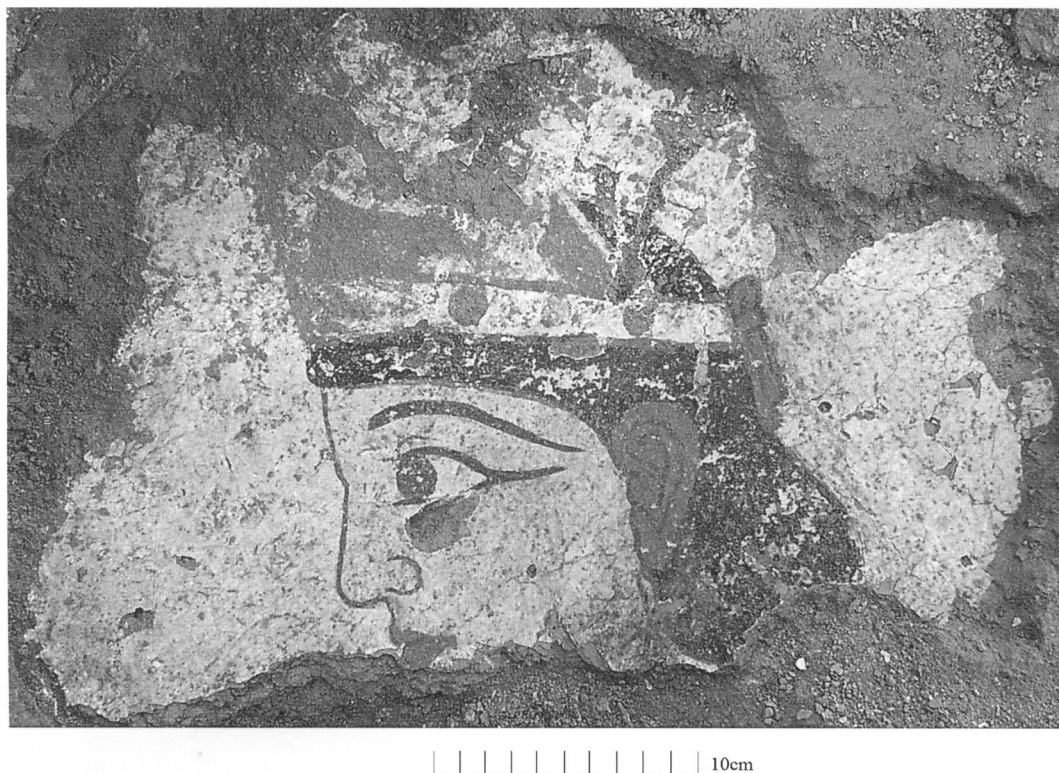


Fig. 9. Portrait of the “crouching feline” headdress (untreated fragment; field photo). Kazakly-yatkan.

and partially framed by a double curving line (fig. 15) may also be evidence of a different style of ornamentation. This piece was found in the area of the 2007 altar complex. The black outline of the tulip is delicate, the contour line finer than on other fragments discovered to date. The different style raises questions of dating, but also other relevant issues such as the function of the paintings in this part of the complex, and the artisans who worked in this area.

Technique

Analyses of the techniques of pigment and plaster preparation at Kazakly-yatkan suggest that artisans used locally available minerals in the production of paints and plaster materials.⁹⁶ Preparation of the painting ground consisted of an approximately 1 to 5 mm-thick layer of white gypsum plaster placed directly on top of the mud plaster wall. No admixtures or complex layering processes were used in the painting ground

preparation. Paint was applied to a gypsum-based plaster surface once it had dried.⁹⁷ The use of gypsum plaster indicates that plaster production at Kazakly-yatkan involved low temperature firing, suggesting a local level of production.⁹⁸ The poor preservation of the paintings to some degree may be attributable to the application of paints to this dry, gypsum base.

Pigment analysis shows that in addition to black, which is charcoal based, the palette included white (gypsum), blue-grey (gypsum and charcoal) and various shades of yellow, red, and brown (iron oxides).⁹⁹ A clearly distinctive rich red pigment was found to be cinnabar.¹⁰⁰ Analysis of the layering of the pigments shows that black was very often painted on top of other colours.¹⁰¹ It is possible that images were first sketched and filled in with colour and then, as a final step in the painting process black was added as an outline. This may provide some insight into the physical construction of the painting, and how artisans worked. Laboratory analysis of the Kazakly-yatkan paintings demonstrates



Fig. 10. Digitisation of preliminary in-field tracing of the "crowd" scene. Kazakly-yatkan.



Fig. 11. Detail of a face from the "crowd" scene (untreated fragment; field photo). Kazakly-yatkan.

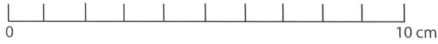


Fig. 12. Digitisation of preliminary in-field tracing of a face in three-quarter profile with grapes (?) and a vine leaf motif (?) in the background. Kazakly-yatkan.

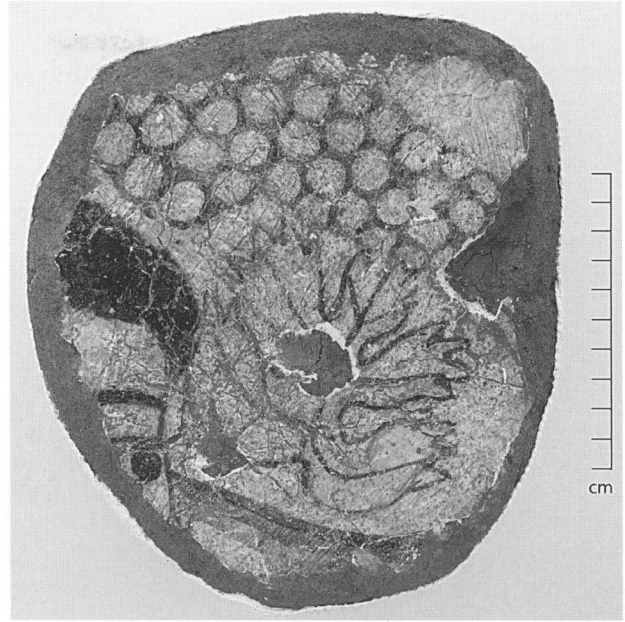


Fig. 13. Photo of fig. 12 (untreated fragment; laboratory photo).

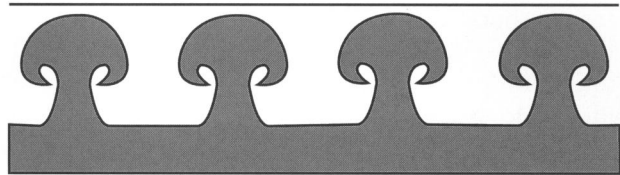


Fig. 14. Possible reconstruction of the "mushroom frieze." Kazakly-yatkan.



Fig. 15. Digitised tracing of a wall painting fragment from Kazakly-yatkan showing a tulip (in the centre) with parallel curving lines above it.

several re-plastering events in the life of some of the paintings, which complicates the dating of the paintings. For example some fragments indicate two re-plastering events with different colours found on each of the plaster surfaces.¹⁰² Comparative evidence from Chorasmia and other regions of Central Asia suggest that the binding agent used at Kazakly-yatkan was a plant gum, possibly apricot or sour cherry.¹⁰³

Analysis

A summary of the various site and wall painting attributes discussed above is shown in Table 2. Early Chorasmian wall paintings appear to be almost exclusively located within secluded and protected spaces, with Elkharas being the exception. At Elkharas the paintings and painted sculpture decorating niches and walls are found within a series of large, easily accessible halls in an unfortified context. At all other sites, the wall paintings were located within monumental buildings inside strongly fortified enclosures. At all sites, the paintings were associated with monumental architecture and formal spaces seemingly associated with ceremonial or ritual activities and often incorporating altars or niches. At Gyaur-kala and Kalaly-gyr 1 the wall paintings were in halls of almost identical architecture including stepped niches, highly ornamental hearth niches, and two stone column bases. Room 32 at Elkharas also has paintings associated with a richly detailed space, including niches, sculptures, and a hearth niche. Except at Koi-krylgan-kala, they were also associated with elements of elite architectural ornamentation such as carved stone column bases, stepped niches, and ornate decoration such as low and high relief painted and moulded sculpture and, in the case of Kazakly-yatkan, moulded copper and gold fixtures.

Wall paintings are associated with rectangular niches at Kalaly-gyr 1, Elkharas, and Gyaur-kala. The relationship between niches and cultic spaces in Central Asia goes back to the Bronze Age.¹⁰⁴ The early date of the niches with painted ornamentation at Kalaly-gyr 1 and the continuity of this feature into the early centuries C.E., for example at Toprak-kala,¹⁰⁵ may be a specific Chorasmian tradition, despite absence of evidence from several other sites. Three-stepped rectan-

gular niches have been found in association with fire altars (but not wall paintings) at Tashkyrman-tepe, which has been interpreted as a fire temple by Betts and Yagodin.¹⁰⁶ It is possible that the rectangular form of the niches, including the three-stepped sides on some of them, had a deeper ideological significance.¹⁰⁷ The presence of the three steps in other architectural forms is also widespread in Chorasmia. For example, the rectangular, three-stepped niches are often found in combination with three-stepped column bases. At Kalaly-gyr 1 there is a three-stepped rectangular altar (see above), while at Kazakly-yatkan there is a non-functional three-stepped base of the upper enclosure platform.¹⁰⁸ The significance of this formal device is underlined by the repeated combination of some of these elements in the same types of spaces. If there is an ideological significance to the niches it is probable that the associated wall paintings would also have a specific meaning. It is possible that the niches served as specific visual focal points for the paintings. There may also be an economic consideration in the use of niches: while the niche served as additional architectural ornamentation, at the same time it provided a clear and deliberate physical limitation of an area to be painted. The extent to which the structure of the labour force, together with issues of accessibility to and cost of materials, impacted on the design of monumental art in early Chorasmia is unclear.

One of the most unusual aspects of the Kazakly-yatkan paintings is the location of a major corpus within a corridor. The tradition of circulatory spaces surrounding ritual spaces in temples is well attested in Central Asia.¹⁰⁹ It is likely that the gallery or corridors surrounding the central structure of the monumental building complex at Kazakly-yatkan played an important role in the activities taking place in the centre of the building, in which case the message of the paintings found on these walls was certainly significant.

There is little doubt about the aesthetic value of early Chorasmian wall paintings. However, it is unlikely that the paintings were purely decorative. The paintings are found in various architectural contexts. At Kalaly-gyr 1, Gyaur-kala, and Elkharas the paintings were all found in niches in small halls that were incorporated in larger, monumental building complexes. At

TABLE 2. Summary of Information Discussed in the Text

| | Kalaly-gyr 1 | Elkharas | Kalaly-gyr 2 | Gyaur-kala (Sultan-uz-dag) | Kazakly-yatkan | Koi-krylgan-kala |
|--|--|---|---|---|--|---|
| Date of Site/ Paintings | 5th /4th century B.C.E. (relative dates) | 5th/4th–3rd century B.C.E. (relative dates) | Mid 4th–early 2nd centuries B.C.E. (relative dates) | 3rd century B.C.E.– 2nd century C.E. (relative dates) | Late 1st century B.C.E. (C ¹⁴ dates) | ? 4th/3rd century B.C.E.–4th century C.E. (relative dates) |
| Preservation of Paintings | No published images | Fair | No published images | Poor un-reconstructable fragments. No published images | Very good | Fair |
| Site Type | Refuge and administrative center | Monumental building complex, temple? | Fortified cultic/ritual center | Border Fortress | Urban center? Sacred centre and refuge? | Fortified cultic structure. Later a rural manor |
| Location of Paintings | Within fortified enclosure: monumental “palace” building: in small hall 8 or “sanctuary” | On high ground: unfortified. Monumental buildings. | Within fortified enclosure: central monumental building | Within fortified enclosure: citadel, north-west corner room—cultic sanctuary? | Within upper fortified enclosure: citadel. Monumental building complex, associated with ritual | Small circulation spaces/rooms in the enclosure area, against the central building |
| Associated Architectural Elements | Niches, stone column bases, stepped altar. | Niches, pedestal, sculpture | Unknown | Niches, stone column bases, niche fire altar | Fortified gallery walls, stone column bases, low and high relief plaster | Unknown |
| Technique | Details not given | A clay-sand plaster and alabaster primer | Details not given | Clay and straw plaster covered by a thin layer of alabaster to which pigment was applied | Pigment applied to dry gypsum plaster on mud plaster wall | Pigment applied to an alabaster primer |
| Colours | Polychrome | Red-brown, green, black, dark brown, white, light red, grey, violet-grey | Details not given | Dark blue, white, black, pink, red, orange, green | Black, white, grey-blue; shades of yellow, orange, red, brown; distinct bright red | Pink; red; orange-red; black; white background |
| Iconographic Elements | Details not given | Geometric and Vegetal motifs | Horse and rider | Vegetal | Animals and human procession, portraits, figurative scenes, ornamental; floral motifs | Human figure |

Kalaly-gyr 2 and probably Koi-krylgan-kala they were found in small to medium-sized rooms. At Kazakly-yatkan paintings are found in various types of spaces throughout the monumental building complex. Paintings in the western corridor may indicate a more dynamic nature to these particular images and point to their specific role in processions in this building. The idea of movement conveyed by the *in situ* procession, which moves northwards towards the portrait gallery in the northern half of the corridor, may also indicate a northerly flow of movement in the corridor, although the relationship between the procession and the portrait gallery is unclear. Yet the width of the gallery indicates that no more than three people could have walked comfortably through it, thereby suggesting that the paintings could only have been experienced simultaneously by relatively small groups. Irrespective of their meaning, the various contexts in which the paintings are found may indicate the various roles played by the paintings.¹¹⁰ The physical space in which the paintings are situated would also have impacted on how they were experienced by the audience.

Certain stylistic traits of early Chorasmian paintings may be cautiously defined despite scant evidence. The use of black contour lines is a common element of the paintings. The simple style of portraying figures at Kazakly-yatkan and Koi-krylgan-kala may also be typical. Both the Koi-krylgan-kala archer fragment and the personages in the Kazakly-yatkan portrait gallery are depicted in full profile. The figures have rich black hair and a similar form of the nose and lips. None of the figures have facial hair. There are, however, important differences, in particular in the dark flesh colour of the Koi-krylgan-kala figure, and the details of the lines of the nostril, eyebrows, and eyes. The coloured facial skin finds some similarities with the crowd scene from Kazakly-yatkan, although the use of the two-tone facial skin colour in this scene is more sophisticated, and finds closer parallels with later examples from Toprak-kala.¹¹¹ Where the evidence exists, it also seems that artisans in ancient Chorasmia used similar techniques in painting and pigment preparation. The well-developed style of painting at sites such as Koi-krylgan-kala and Kazakly-yatkan clearly demonstrates that mural art was not in its infancy in Chorasmia during the 1st century B.C.E. The presence of wall paintings at large monumental

sites such as Kalaly-gyr 1 and Kazakly-yatkan underlines the potential of other monumental structures in Chorasmia at sites such as Bazar-kala¹¹² in yielding monumental wall paintings.

This survey of early Chorasmian mural art highlights the importance of this rich visual form of expression that was popular also in other regions of Central Asia and Iran during this period. The Kazakly-yatkan paintings are significant in preserving the remains of an early flourishing visual art genre in Chorasmia. However, poor preservation of sites and wall paintings and the extent of excavation at some sites make it difficult to comment on the degree to which the Kazakly-yatkan paintings should be distinguished from other early Chorasmian mural art. The size and monumentality of Kazakly-yatkan indicate the importance of this site in a regional context, hinting that its visual art has much to reveal about the socio-political situation in early Chorasmia. Regardless of their meaning, the Kazakly-yatkan paintings are remarkable in Chorasmia, and Central Asia, for their extent and diversity. These traits, together with the early date of the Kalaly-gyr 1 paintings, raise questions about the origins of, and influences on, early Chorasmian wall paintings. Preliminary studies¹¹³ suggest Iran and the steppe are fruitful areas of research into these questions.

Notes

1. Kidd, Negus Cleary, and Betts, Department of Archaeology, University of Sydney, Australia; Yagodin, Institute of History, Archaeology and Ethnography, Karakalpak Branch of the Academy of Sciences of the Republic of Uzbekistan; Baker Brite, Department of Anthropology, University of California, Los Angeles.

2. Some of the earliest Iranian paintings are found at Pessejik-depe in Turkmenistan. See Sarianidi 1992, 117, fig. 1, and Kohl 1984, 51, for discussion.

3. For an overview of Near Eastern wall paintings see Nunn 1988.

4. Al'baum 1975; Belenitzky 1959, 1973; Shishkin 1963.

5. Excavations at Kazakly-yatkan are carried out by the Karakalpak-Australian Expedition to Ancient Chorasmia under the direction of V. N. Yagodin and A. V. G. Betts. The project is funded by the Australian Research Council (Grants A10009046 and DP 0556232), National Geographic (Grants 762604 and 797106) and a volunteer programme.

6. The most recent calibrated C14 analyses indicate a late 1st century C.E. date for the wall paintings in the western corridor. C14 analyses were largely funded by support from ANSTO (AINSE Grant 00/008).

7. Except for sites excavated by the Karakalpak-Australian Expedition, Chorasmian chronology is relative, based on ceramic assemblages (see Vorob'eva 1959) and bronze trefoil arrowheads (Helms et al. 2001, 136–37; Rapoport and Lapirov-Skoblo 1963, 141–43). For discussions of Chorasmian chronology see Helms 1998; 2006, 14–15; Khozhaniyazov 2006, 27–28. For the work of the Khorezm Expedition see especially Tolstov 1948a; Tolstov 1948b. The present article follows Tolstov's chronology for all sites except Kazakly-yatkan, where recent calibrated C14 dating has been employed (see Helms et al. 2001, 136–37; Helms et al. 2002, 23; and Yagodin et al. forthcoming).

8. For a detailed outline of Chorasmian history during this period see Helms et al. 2001, 119–22. The terminology used by Tolstov is also problematic, in particular use of the terms "Kangiui" and "Kushan." For use of the term "Kangiui" see Khozhaniyazov 2006, 22, n. 55. There is no conclusive evidence to demonstrate that Chorasmia was formally under Kushan control.

9. The best-known wall paintings in Chorasmia are from the High Palace and the extra-mural outer palace complex at Toprak-kala (Sultan-uiz-dag). See Koshelenko 1985, 334; Rapoport et al. 2000, 56–64; Rapoport and Nerazik 1984. The paintings are thought to date from the 4th–6th centuries C.E. (Rapoport 1994, 182; Tolstov 1946, 173). Another example of Chorasmian mural art comes from Kzyl-kala, where figurative wall paintings fragments have been found that appear to be contemporary with Toprak-kala (Khozhaniyazov 1986, 58–60). Nerazik mentions fragments of figurative paintings at Ayaz-kala II palace although they are unpublished and are not described further (Nerazik and Bulgakov 1996, 218, n. 31). Other sites dated to between the 4th century B.C.E. and the early centuries C.E. are also reported to have yielded remains of monochrome painted plaster. However, at sites such as Kaparas these are not extensive and therefore are not included in this survey. According to the published literature the painting comprised a pink coating on the wall of tower 5 (Itina 1991, 166), room 5, and the walls of the steps leading to this room (Itina 1991, 176). The use of pink-coloured plaster as an interior wall finish also appears at Elkharas (Levina et al. 1991, 86, and see above), and Koi-krylgan-kala (Rapoport 1967, 214, and see above).

10. See n. 8 regarding Chorasmian chronology.

11. Rapoport and Lapirov-Skoblo 1963, 141, fig. 1.

12. Khozhaniyazov 2006, 37; Rapoport and Lapirov-Skoblo 1963, 156; Tolstov 1962, 106–17. Evidence for this interpretation is debatable. Helms' idea that the site was the seat of a local Chorasmian ruler, perhaps

built with Persian influences in mind, seems more probable. For further discussion see Helms' comments in Khozhaniyazov 2006, n. 91, Helms 1998, 89; see also Vogelsang 1992, 29, and Negus Cleary forthcoming 1, n. 39.

13. Rapoport and Lapirov-Skoblo 1963, 141–42; Rapoport et al. 2000, 33.

14. Rapoport and Lapirov-Skoblo 1963, 143.

15. Lavrov 1950, 15; Tolstov 1948a, 79, and 1948b, 94.

16. Khozhaniyazov 2006, 72; Rapoport et al. 2000, 31; Tolstov 1960, 17.

17. *Vendidad* 2.25–30. In this text, Yima, a legendary king, acting on orders from Ahura Mazda, built a square fortified settlement (*var*) to house and protect people and cattle. See further Tolstov 1948a, 80; Tolstov 1948b, 94. See also Helms and Yagodin 1997, n. 13; Helms 1998, 88; Helms et al. 2001, 140, n. 29. See *contra*, Francfort 1979, n. 114, who discredits Tolstov's idea based on the *Avesta* that the inhabitants lived within the walls of the fortified settlements.

18. The only other previous monumental building constructed in Chorasmia was at Kiuzely-gyr. The complex of rooms and small "cellas" at Kiuzely-gyr are quite haphazardly arranged (Rapoport et al. 2000, 26–28, pt. 1, pls. 3 and 4) and do not exhibit the orthogonal organisation of the palace at Kalaly-gyr 1 (see plan in Rapoport and Lapirov-Skoblo 1963, fig. 2, and Rapoport et al. 2000, 32, fig. 9).

19. These sandstone column bases are composite with a square, three-stepped plinth and a round, pot-like torus that was circular in plan and often had a beaded edge or incised lines round the middle. See Rapoport and Lapirov-Skoblo (1963, 146–47, fig. 3) for a discussion of the column bases at Kalaly-gyr 1 and the possible parallels with Achaemenid and Assyrian column bases. Other examples have been excavated at Kazakly-yatkan (Helms et al. 2001, 132, fig. 17), Gyaur-kala Sultan-uiz-dag (Rapoport and Trudnovskaya 1958, 359), Pil'-kala (Manylov 1965, 47), and Toprak-kala Sultan-uiz-dag (Rapoport and Nerazik 1984, fig. 21, and Rapoport 1993, 169, fig. 4). The three-stepped bases may have had religious symbolism given the parallels with the stepped column bases of the temple at Takht-i Sangin and the Zoroastrian stepped altar bases depicted on Sasanian coins (Helms et al. 2001, 133). According to Invernizzi timber columns on torus stone bases are descended directly from Achaemenid architectural models (2000, 32).

20. Rapoport and Lapirov-Skoblo 1963, 147, n. 32.

21. Rapoport and Lapirov-Skoblo 1963, 147.

22. Rapoport and Lapirov-Skoblo 1963, 147, n. 32, and Rapoport et al. 2000, 33.

23. Rapoport and Lapirov-Skoblo 1963, 147 n. 32, and Rapoport et al. 2000, 34, pt. 1, fig. 12.

24. Rapoport and Lapirov-Skoblo call this a "ceramic niche-screen" located in the wall above the "altar" and

state that it was similar to the “hearth-niche” with the arch surround with horn-shaped ends found at Gyaurkala (1963, 147 n. 32).

25. Rapoport and Lapirovo-Skoblo 1963, 147, n. 32.
26. See reconstruction in Rapoport and Lapirovo-Skoblo 1963, fig. 4, and Rapoport et al. 2000, pt. 1, fig. 10.
27. Rapoport et al. 2000, 33.
28. 2000, 33. See also Rapoport and Trudnovskaya 1958, 362.
29. Levina et al. 1991, 80.
30. Archaic and early Kangiui surface sherds have been found at the site. See Levina et al. 1991, 80.
31. Levina et al. 1991, 81–88.
32. This is also true of temple V in the extra-mural temple/palace complex of Toprak-kala (Rapoport 1994, 177). For a discussion of wall thickness and the possibility of second storeys in ancient Central Asian mud-brick monuments, see Boucharlat et al. 2005, 484–86.
33. At some Chorasmian sites a finer wall plaster was used that had gypsum added, giving a pinkish colour when a mix of local clay and gypsum was used in the plaster mix (for example at Kaparas, Elkharas, and Koi-krylgan-kala) or pure white finish, when more gypsum was included in the mix (Kolyakov and Vorob’eva 1991, 166, 176; and Levina et al. 1991, 86).
34. Levina et al. 1991, 88.
35. Levina et al. 1991, 89, 91, and 103.
36. Levina et al. 1991, fig. 33, shows a clay sculpture of a human foot from room 32 in the western building, fig. 35 shows a naked torso of a female with the right hand across the stomach, from the eastern half of room 32, and fig. 32 shows a pedestal for sculpture found in association with niches in room 32. The sculpture fragments were of plaster covering a reed core and were ornamented with geometric and floral motifs. See also Sokolovskiy 1991, 275–76.
37. Sokolovskiy 1991, 271.
38. Sokolovskiy 1991, 271.
39. Sokolovskiy 1991, 271.
40. Kosolapov and Marshak 1999, 78.
41. Sokolovskiy 1991, 273.
42. Sokolovskiy 1991, 271.
43. Vainberg 1994, 75, and 2004, 3.
44. Vainberg 1994, 77.
45. Vainberg 1994, 75.
46. Vainberg 2004, 4.
47. Vainberg 1994, 72.
48. Vainberg 1991, 30.
49. Vainberg 2004, 187.
50. Vainberg 2004, 187.
51. Initially Rapoport dated the construction of the site to the Kushan period (Rapoport and Trudnovskaya 1958, 366) but later changed his mind (Rapoport et al. 2000, 50) to agree with Tolstov (1948a, 169) that it was constructed and occupied for a short time in the 3rd

century B.C.E., then re-inhabited with some modifications in the 1st/2nd century C.E. Rapoport noted the paucity of ceramics at the site and thus the poor material on which to base the site dating (Rapoport and Trudnovskaya 1958, 363). The wall paintings may date to either period of occupation.

52. Khozhaniyazov 2006, 74; Rapoport and Trudnovskaya 1958, 366; Rapoport et al. 2000, 50.
53. Rapoport and Trudnovskaya 1958, 348, 354.
54. Rapoport and Trudnovskaya 1958, 358.
55. Rapoport and Trudnovskaya 1958, 362.
56. Despite the obviously rich decoration of this room and hearth, there is no conclusive evidence that it was used for religious ceremonies. Rapoport and Trudnovskaya suggest it may have been the quarters of the garrison commander, or for official (secular?) ceremonies (1958, 362). The reconstruction (fig. 4 above) shows the fire within a container resting on the altar. It is not clear from the report (Rapoport and Trudnovskaya 1958) whether this reconstruction is justified by the material evidence but at Tash-kyrman-tepe evidence of burning at the back of the altar niche clearly indicates that the fire was held within a container. See Betts and Yagodin forthcoming.
57. See above n. 19.
58. For example in Hall 8 of Kalaly-gyr 1 (see above), at Tash-kyrman-tepe (Betts and Yagodin 2007; Helms et al. 2002, fig. 12) and later at Toprak-kala (Rapoport et al. 2000, pt. 1, pl. 34).
59. Rapoport and Trudnovskaya 1958, 359. Similar coloured panels or “dados” are found at Elkharas (see above) (Levina et al. 1991, 89) and possibly at Kalaly-gyr 1 (see the reconstruction of Hall 12 in Rapoport and Lapirovo-Skoblo 1963, 148, fig. 4).
60. Rapoport and Trudnovskaya 1958, 359.
61. Rapoport and Trudnovskaya 1958, 362, suggest that Kalaly-gyr 1 may be the prototype for this style of ornamentation.
62. Rapoport and Trudnovskaya 1958, 359.
63. Justification for the figurative designs in the reconstruction is unclear.
64. Tolstov and Vainberg 1967, 7, fig. 3.
65. Tolstov 1960, 13.
66. Khozhaniyazov 2006, 77, and Negmatov 1994, 447.
67. Tolstov 1960, 14.
68. Frumkin 1970, 95; Rapoport et al. 2000, 37.
69. Vainberg 1994, 77.
70. Negmatov 1994, 449 and Tolstov 1960, 14.
71. Rapoport et al. 2000, 46.
72. Tolstov and Vainberg 1967, 310.
73. According to Rapoport (1967, 215) it is possible that the paintings in rooms S53 and S56 came from room S57.
74. Rapoport 1967, 215.
75. Rapoport 1967, 214.

76. This line is clearly visible in the image reproduced in Rapoport 1967, fig. 80.

77. Rapoport 1967, 215.

78. See n. 5 above.

79. Khozhaniyazov suggests 47.7 ha (2006, 76) and Helms et al. (2001, 123) suggests an area of up to 50 ha. The true area is difficult to confirm at present due to deep sand dune coverage of the southern half of the site.

80. Helms et al. 2001, 138; 2002, 22.

81. Helms et al. 2002, 19.

82. Helms et al. 2001, 138.

83. Helms et al. 2002, 23; Yagodin et al. forthcoming.

84. This is at odds with the ceramic dating, which is "early Kangiui," 4th–3rd century B.C.E. (Helms et al. 2002, 23). See nn. 7 and 8 above.

85. See "Chronology" in Yagodin et al. forthcoming.

86. The area within the monumental gallery walls was originally thought to have been a hypostyle hall (see Helms et al. 2001, 133–34 and 2002, 18), or an open courtyard surrounded by a double-columned portico, but the results of 2006 and 2007 field seasons indicate that neither of these reconstructions are accurate.

87. These bases are very similar to those mentioned above at Kalaly-gyr 1 and Gyaur-kala. See n. 19 above.

88. Olkhovskiy 2000, fig. 9.

89. The use of stone in building construction was very limited due to the scarcity of good building stone locally.

90. It is assumed that these finds are associated with architectural ornamentation. Bronze bands and nails recovered from the fortress-temple of Ayanis in Urartu are thought to have decorated the walls—the nails used to fix the bronze to the mud-brick walls in horizontal bands (Çilīngiroğlu 2003, 205). However, bronze beads at Elkharas have been interpreted as part of the ornamentation of sculpture. See Levina et al. 1991, 106.

91. The pieces are currently being prepared for publication. Comparative furniture pieces come from the Achaemenid and Parthian worlds. See for example Bernard 1970, fig. 13; Pugachenkova 1969, figs. 3, 4, and 6; and Jamzadeh 1996, 105. These carved ivory pieces are especially important because of the rare evidence they provide of the use of organic materials. The use of other organic materials, such as textiles, could also be considered. It is possible that large wall hangings, such as those found at Pazyryk, were used for both heating and decoration.

92. See Daly and Kidd forthcoming regarding the methodology followed in documenting the *in situ* paintings.

93. See Kidd in press.

94. See for example Sørensen 1997 and Roach-Higgins and Eicher 1992.

95. Little is known about ceiling decoration in pre-Islamic Central Asia. For structural details in early

medieval Sogdiana see Marshak 2000. A painted ceiling in geometric design is known from the Iron Age fort at Baba Jan. For reconstruction see Henrickson 1983.

96. Baker Brite 2006, 61–65.

97. Daly and Kidd forthcoming.

98. Approximately 130–170 degrees Celsius is required to process gypsum plaster, compared with 700–1000 degrees Celsius for lime plaster (Sengupta 1980, 83).

99. Baker Brite 2006.

100. We are grateful to David Scott, Ioanna Kakoulli, Sebastian Warmlander, and the UCLA/Getty Conservation Program staff and students for their assistance in the technical analysis of the Kazakly-yatkan paintings. La Vaissière proposes that the material "sink-abrush," noted in the Charter of Susa alongside lapis lazuli as a product extracted from Sogdiana and used in the construction of Darius' palace, is cinnabar. He further suggests that both lapis and cinnabar were specifically used in mural painting at Susa (La Vaissière 2005, 18–19). Known sources for cinnabar are the Fergana Valley (Gettens et al. 1972, 46) and in north-western Iran (Briand 1963).

101. Baker Brite 2006, 59–60.

102. Baker Brite 2006, 59–60.

103. Baker Brite 2006, 58–59; Birshtein 1975; and Birshtein and Tul'chinskii 1977.

104. For example Dashly-3 (Sarianidi 1998, 102 and 128) and Gonur North third temple (Sarianidi 1998, 120–22 and 124–25).

105. Rapoport et al. 2000, 54 and 62, pt. 1, pls. 34, 35, and 58.

106. Betts and Yagodin, 2007; Helms et al. 2002, 21.

107. The use of three-stepped altar podiums (associated with indented wall niches) at the main temple of Ai Khanum, (Temple à niches indentées), and the second Ai Khanum temple is interpreted by Boyce and Grenet to have been a local Central Asian device used to reproduce the look of the cultic terraces open to the sky (Boyce and Grenet 1991, 166 and 171). Sarianidi traces such niches to northern Mesopotamia and Iran in his analysis of the three-stepped niches excavated at Gonur-depe North. Sarianidi assumes that such niches had a symbolic meaning (Sarianidi 2002, 78).

108. Helms et al. 2001, 123, figs. 7 and 9. At Tashkyrman-tepe the main fire altar is backed by a three-stepped niche (Betts and Yagodin 2007, 439, 441, fig. 3).

109. The outer palace temple (Building VI) at Toprak-kala has a corridor surrounding the central cella (Rapoport 1994, 180). At Surkh-kotal, which has a very similar plan to Building VI at Toprak-kala, the cella at the centre is surrounded by a corridor on three sides (Schlumberger 1961, 80). At Takht-i-Sangin is the same plan with a four-columned *eyvan* at the centre

surrounded by corridors (Litvinskii 1994, 52). Both Surkh-kotal and Takht-i Sangin were constructed within fortified enclosures also.

110. See, however, Laurence (1995, 313–14) who underlines the difficulty of defining a relationship between decoration and function in mural art.

111. Marshak 2002, fig. 11.

112. Surface investigations have identified a monumental structure buried in sand within the upper enclosure of Bazar-kala, which has a very similar context to the building complex at Kazakly-yatakan (see plan in Tolstov 1948a, fig. 48). This structure has yet to be investigated.

113. Kidd in press.

on the Silk Road and across Inner-Asian History: Proceedings from the Fifth Conference of the Australasian Society for Inner Asian Studies (A.S.I.A.S.)," ed. K. Parry. Sydney.

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V. Ya. Birshstein. "On the Technology of Central Asian Wall Paintings: The Problem of Binding Media." *Studies in Conservation* 20.1:8–19.

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