

NEWLY DISCOVERED ROCK ART IN THE ULUU-TOO AREA (SOUTHERN KYRGYZSTAN): ARCHAEOLOGICAL CONTEXT, TECHNOLOGY AND PRELIMINARY INTERPRETATION

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Received: 26 January 2026

Accepted: 01 July 2026

Available online: 20 December 2026

Abstract: Over the past few decades, the importance and necessity of paying attention to rock art in archaeological studies have increased, and this art has been identified and documented across the world. Central Asia, due to its geographical and environmental characteristics, has witnessed the creation of a wide variety of motifs on rocks during different periods, and today, the region has a high potential for rock art research. During a recent archaeological survey in Kyrgyzstan, a newly discovered rock art complex was identified in the Aravan Mountains, in the southern part of Ferghana Valley. This paper presents the first documentation and preliminary analysis of this complex at the Uluu-Too site. The site was found during the 2025 field season and consists of seven sandstone panels with a total of 15 motifs, including zoomorphs, anthropomorphs, geometric shapes, a solar motif, and unknown shapes. The motifs were created using three different techniques: engraving, engraving-pounding, and scratching. The abundance of horse representations indicates the importance of this animal in the economic and cultural life of nomadic communities. The degree of weathering and patination indicates that they were created at different times. However, absolute dating is not currently possible, so laboratory-based analysis is necessary to provide a more secure scientific dating framework. This site, along with other petroglyphs identified in Kyrgyzstan, indicates the high potential of the region for rock art research and tourism development.

Keywords: Kyrgyzstan, Rock Art, Petroglyphs, Nomadic Communities.

چکیده: طی چند دهه اخیر، اهمیت و ضرورت توجه به هنر صخره‌ای در مطالعات باستان‌شناختی به‌طور چشمگیری افزایش یافته و شواهد این گونه هنری در نقاط مختلف جهان شناسایی، مستندسازی و مطالعه شده است. آسیای مرکزی، به‌واسطه ویژگی‌های جغرافیایی و زیست‌محیطی منحصر به فرد خود، در دوره‌های مختلف تاریخی و پیش‌اتاریخی بستر شکل‌گیری طیف گسترده‌ای از نگاره‌های صخره‌ای بوده و امروزه از ظرفیت بالایی برای پژوهش‌های مرتبط با هنر صخره‌ای برخوردار است. در جریان یک بررسی میدانی باستان‌شناختی اخیر در قرقیزستان، مجموعه‌ای تازه از نگاره‌های صخره‌ای در کوه‌های آراوان، واقع در بخش جنوبی دره فرغانه، شناسایی شد. مقاله حاضر نخستین گزارش مستند و تحلیل مقدماتی این مجموعه را در محوطه اولوع‌تو (*Uluu-Too*) ارائه می‌کند. این محوطه در فصل میدانی سال ۲۰۲۵ کشف شد و شامل هفت پل از جنس ماسه‌سنگ است که در مجموع ۱۵ نقش را دربر می‌گیرد. این نقوش شامل جانورنگاره‌ها، انسان‌نگاره‌ها، اشکال هندسی، یک نقش خورشیدی و تعدادی نقوش با ماهیت نامشخص هستند. نگاره‌ها با بهره‌گیری از سه شیوه اجرایی متفاوت شامل حکاکی، حکاکی همراه با کوبش و خراش‌نگاری ایجاد شده‌اند. فراوانی نقش اسب در میان نقوش، بیانگر جایگاه برجسته این حیوان در حیات اقتصادی، اجتماعی و فرهنگی جوامع کوچ‌نشین است. همچنین، تفاوت در میزان هوازدهی و تشکیل پتینه بر سطح نگاره‌ها نشان می‌دهد که این آثار در دوره‌های زمانی متفاوتی ایجاد شده‌اند. با این حال، در حال حاضر امکان تاریخ‌گذاری مطلق این مجموعه وجود ندارد؛ از این رو، انجام مطالعات آزمایشگاهی برای دستیابی به چارچوبی علمی و قابل اتکا جهت تعیین قدمت آثار ضروری است. این محوطه، در کنار دیگر مجموعه‌های سنگ‌نگاره شناسایی شده در قرقیزستان، نشان‌دهنده ظرفیت چشمگیر این منطقه برای گسترش پژوهش‌های هنر صخره‌ای و نیز توسعه گردشگری فرهنگی است.

کلیدواژه: قرقیزستان، هنر صخره‌ای، سنگ‌نگاره‌ها، جوامع کوچ‌نشین.

I. Introduction

Rock art is one of the most important and widespread manifestations of archaeological heritage throughout the world (Agnew et al., 2015; Moradi et al., 2013; Mohammadi Sefidkhani & Sarhaddi-Dadian, 2022). By presenting zoomorphic motifs, anthropomorphic motifs, and symbolic motifs, it provides valuable information about the life, culture, beliefs, and economic interactions of past societies. The study of these works allows archaeologists to reconstruct the lifestyles, social structures, and cultural and economic interactions of

ancient communities. Rock art is also considered an important source for understanding symbolic behavior and ritual practices in past societies, especially in areas where written records do not exist (Clottes, 2008; Deacon & Agnew, 2012; Gao, 2017; Horn et al., 2022; Khanipour, 2024a; Salimi & Azizi Kharanaghi, 2025).

So far, numerous studies have been conducted on rock art in different parts of the world (Bonneau et al., 2011; 2017; Sarhaddi-Dadian et al., 2015; Sarkhosh et al., 2015; Molaie Kordshouli et al., 2022), but the importance of rock art in Central Asia is particularly

noteworthy, because this region, due to its location on major communication and trade routes and cultural diversity, has rich collections of petroglyphs and pictographs. Over the past few decades, scholarly attention to the documentation and study of rock art in Central Asia has increased significantly (Augustinová & Stančo, 2016; Hermann, 2017; 2019), and so far, numerous sites of petroglyphs and pictographs have been recorded and surveyed. In Kyrgyzstan, previous studies have mainly focused on well-known areas such as the Kochkor Valley, the Issyk-Kul Basin, and parts of the Fergana Valley. These studies have provided researchers with a better understanding country's rock art and the research potential of this region.

However, the northern part of the Aravan Mountains and the Tuya-Muyun Massif were less studied before 2023 due to border delimitation, and only limited information about the petroglyphs in this area was available. Recent archaeological surveys have shown that there are numerous archaeological sites in this area, one of the most prominent of which is the Uluu-Too Petroglyph Complex. The discovery of this new petroglyph complex on Mount Uluu-Too has provided a unique opportunity to expand our knowledge of Central Asian rock art. This article aims to provide comprehensive documentation and preliminary analysis of the Uluu-Too petroglyphs and to assess the archaeological and cultural significance of the site, with an emphasis on the possibility of developing conservation, future research, and even rock art tourism (Deacon, 2006) in the region.

With these objectives in mind, the research question is: What are the stylistic and technical characteristics of the Uluu-Too petroglyphs, and what are their similarities and differences with other known collections in the region? This study is based on systematic field surveys, photographic documentation, and stylistic analysis of the newly identified petroglyphs. In this article, while reviewing research related to Central Asian rock art studies, the motifs and execution style of the newly discovered Uluu-Too petroglyphs will be examined.

II. Research Background and Previous Studies

Rock art is one of the most common and important forms of archaeological heritage in Kyrgyzstan (Amanbaeva et al., 2011). Despite the geographical spread of these works, scholarly attention to them has not been uniform, and some areas have been studied more than others. Among the most important of these areas are the Kochkor Valley, the Issyk-Kul region, and several sites in the Fergana Valley. Among them, well-

known complexes such as Saimaluu-Tash and the sites around the city of Osh, including Suleiman-Too, Surot-Tash, and Aravan, have been studied more than others (Sher, 1980; Amanbaeva et al., 2009).

Among the areas that are important for their abundance of petroglyphs, the Aravan Mountains, located between the Aravan and Nokat districts in southern Kyrgyzstan, have a special place (Fig. 1). At least three rock art sites have been identified in the region. One of the most famous is the complex known as the “Heavenly Horses” of Aravan rock or Dul-Dul-Ata, which was identified and described in the 1950s by Alexander N. Bernshtam (Bernshtam, 1952; Amanbaeva et al., 2009). In addition, a series of petroglyphs has been identified along the Aravan River near Nokat, together with several historical inscriptions. Additional rock art has also been reported at the entrance to Chil-Ustun Cave (Amanbaeva et al., 2009).

In 2023, following the completion of the border delimitation process between Kyrgyzstan and Uzbekistan, the northern part of the Aravan Mountains was administratively included in the territory of Kyrgyzstan, and the Aravan Mountain region and the Tuya-Muyun Massif were officially incorporated into the territory of Kyrgyzstan. These geographical and administrative changes have not only highlighted the archaeological importance of the region but also highlighted the need for systematic surveys and more accurate documentation of rock art complexes in the area.

III. Geographical setting

During the 2025 field season, researchers identified a new rock art site in Aravan District. The site is located near Mountain Uluu-Too in the Aq-Terek area, approximately 700 meters south of the Kyrgyzstan-Uzbekistan border. Administratively, the site is located in Aravan District. Due to its proximity to this mountain, the site was named the Uluu-Too Petroglyphs site. Spatially, the site consists of several rock art panels that are distributed sequentially along the dry valley corridor. These motifs are carved on several rock panels, and their distribution suggests that the site was likely used during different periods. The geographical coordinates recorded for this complex are as follows: N 40°24.929'; E 72°20.534'; N 40°24.930'; E 72°20.558'; N 40°24.932'; E 72°20.482'.

These coordinates identify the area of the valley where the highest density of rock carvings has been observed and appear to form the Core Area of the Uluu-Too Petroglyph Complex.



Figure 1: Geographical location of the Uluu-Too rock art site (map prepared by the authors).

IV. Documentation Methods

The petroglyph panels are located in a narrow gorge next to a dry channel, where sandstone outcrops provide suitable surfaces for engraving. Panels were numbered from east to west to create a consistent reference system for recording the location and analysis of each petroglyph. Standard archaeological methods were used to document the petroglyphs. First, the coordinates of each panel were recorded using GPS. This data was used to produce topographic maps and examine the distribution of petroglyphs across the surrounding hill and valley. All petroglyphs were photographed with a high-resolution digital camera under various lighting conditions. Natural color, high contrast, and raking light techniques were used to enhance the detail of the engraving marks and shadows. The length, width, and height of each motif, the distance between motifs, and their relative position on the rock surface were recorded. The thickness and depth of the impact marks were also measured to enable more precise technical analysis. The preservation status of the motifs, the extent of rock surface erosion, and color changes due to desert varnish were also examined.

This information was used to determine the quality of preservation and predict future erosion trends.

V. Description of Rock Panels and Motifs

The Uluu-Too Petroglyphs consist of seven rock panels located on sandstone outcrops in an ephemeral valley (Fig. 2). Some panels have multiple motifs, while others have only one. A total of 15 motifs were identified in the collection. Most motifs are zoomorphic motifs. In addition, two anthropomorphic figures and a solar symbol were also found among the motifs. Among animal motifs, horse and ibex are the most common, while Bactrian Camel (*Camelus bactrianus*) and Bird are represented by only one example each.

In terms of Execution Technique, most motifs were created using scratching. In many cases, the contour of the motif was created first, and then the inner part was filled with scratching. The shape and size of the pecking marks indicate that these motifs were probably created using a hammerstone and without the use of an intermediary tool (Direct Percussion). In some cases, evidence of overlapping motifs is also observed, which could indicate that the creation of the motifs was multi-stage.



Figure 2: Landscape of the study area and the location of selected rock art panels (Photograph by S. Alisher Kzyzy).

Panel 1

The first panel is on a small sandstone block and contains three horse figures and several unknown shapes. The stone surface is in a relatively good state of preservation, and the designs are highly legible. All three figures have similar stylistic features and are executed in the same technique.

Horse 1: This motif shows a horse in profile view, oriented to the left. The four legs, tail, and genital representation are clearly shown. The silhouette of the figure was created by removing desert varnish within the contour. The body measured 40 cm in length and 43 cm in height. Horse 2: This horse is oriented to the right and morphologically very similar to the first horse, but is larger (55 cm long and 50 cm high). Its front legs overlap with the motif of the third horse, which is an example of superimposition. Third horse: This motif is also oriented toward the right, but its size is smaller (about 20 × 20 cm). The legs of the second horse overlap with the back of this horse.

Among these horse petroglyphs, several indeterminate motifs are seen that do not have a specific form and are classified as Unknown Shapes (Fig. 3).

Panel 2

The second panel shows an anthropomorphic motif with unusual features. This motif is shown in frontal representation with the hands fully extended upwards and to the sides. One of the striking features of this

petroglyph is its large fingers, which are clearly separated from one another (Exaggerated Fingers). In the lower part of the motif, heeled footwear is indicated, and the toes are oriented towards the east. The motif is approximately 15 cm high, and the arms measure about 20 cm in length. Below this motif, a geometric motif in the form of an inverted L shape is seen, the engraving depth of which is greater than that of the anthropomorphic motif (Fig. 4).

Panel 3

This panel shows an anthropomorphic motif with its arms extended to the sides. The motif is executed in a simplified anthropomorphic form; the fingers are not shown in detail, and the feet are oriented toward the east. It is about 12 cm high. Next to this motif is a petroglyph of a horse with clearly defined body features, and is similar in style to the horses in the first panel (about 25 × 20 cm). A horse bridle is depicted on one of the anthropomorphic arms, which may indicate the domestication of the animal and its use for riding or transport. On the left side of this panel is a motif of a Bactrian Camel. In the upper part of the panel, there is also a motif that probably shows a bird with outstretched wings, possibly in flight. The patina on this motif is lighter than on the other motifs, which could indicate that it was created in a later period. Below the anthropomorphic petroglyph, there is also a motif that is probably a zoomorphic motif (Fig. 5).



Figure 3: Motifs recorded on Panel 1. Left: photograph taken under natural light; right: DStretch enhancement using the YDT algorithm (Photograph by S. Alisher Kyzy).

Panel 4

This panel contains only a single animal motif. In this motif, the body, head, and two legs are clearly visible, but due to lichen growth, part of the petroglyph is not clearly recognizable. The animal is shown in a standing position and oriented toward the right (Fig. 6).

Panel 5

One of the most prominent motifs in the collection is a spiral solar symbol. The preservation state of this motif is very poor, and it is difficult to accurately reconstruct its original form. This pattern is located on a high vertical rock surface, and due to its location, precise measurements were not possible; however, the diameter of the spiral is approximately 70 cm.

Panel 6

This petroglyph depicts a quadruped animal, probably belonging to the group of probably belonging to the caprid family, and is depicted in profile facing left. The body of the animal is elongated and relatively large, while the head is not easily recognizable due to erosion of the rock surface. The hind legs and tail of the animal are clearly distinguishable from each other and are considered the best-preserved parts of the petroglyph. In contrast, the front legs are not distinguishable from each other due to the method of execution and are seen as an indistinct part. Digital image processing with DStretch increased the

clarity of the petroglyph and confirmed the presence of a zoomorphic figure that is difficult to see in natural light. One of the striking features of this petroglyph is the lack of recognizable horns.

In Central Asian rock art, caprid are usually depicted with long and exaggerated horns, and horns are often considered the most important identifying element of these animals. No traces of horns are visible in this specimen, although the possibility that the motif belongs to a species other than a caprid cannot be ruled out. Despite the poor state of preservation, the motif is still recognizable as a depiction of a quadruped (Fig. 7).

VI. Techniques for Creating Petroglyphs

Due to the mountainous landscape of Kyrgyzstan, suitable substrates for carving motifs are readily available, and past societies have created a variety of motifs in this region throughout history. In Kyrgyzstan, various methods have been used to create petroglyphs, such as engraving, pecking, or simply scratching the surface of the rock. In some areas, the motifs were created linearly, but in others, the entire inner surface of the motif was engraved or scratched. In the Uluu-Too petroglyph complex, most motifs were created in this way. The techniques used to create the motifs demonstrate the skill of the artists, and at Uluu-Too, most motifs were executed with high precision. In general, three main techniques of creating motifs can be distinguished at this site.

1. Engraving

In this technique, the motifs are engraved on the rock surface to a depth of about 2 to 3 millimeters and are completely incised. In this collection, 4 motifs have been recorded using this technique. These motifs are more eroded than those in other groups, which may

indicate an older age, as discussed in the dating section. For example, the inverted L-shaped motif in Figure 3 and the zoomorphic figure in Figure 4 were created using this method, and their indentation is clearly visible.

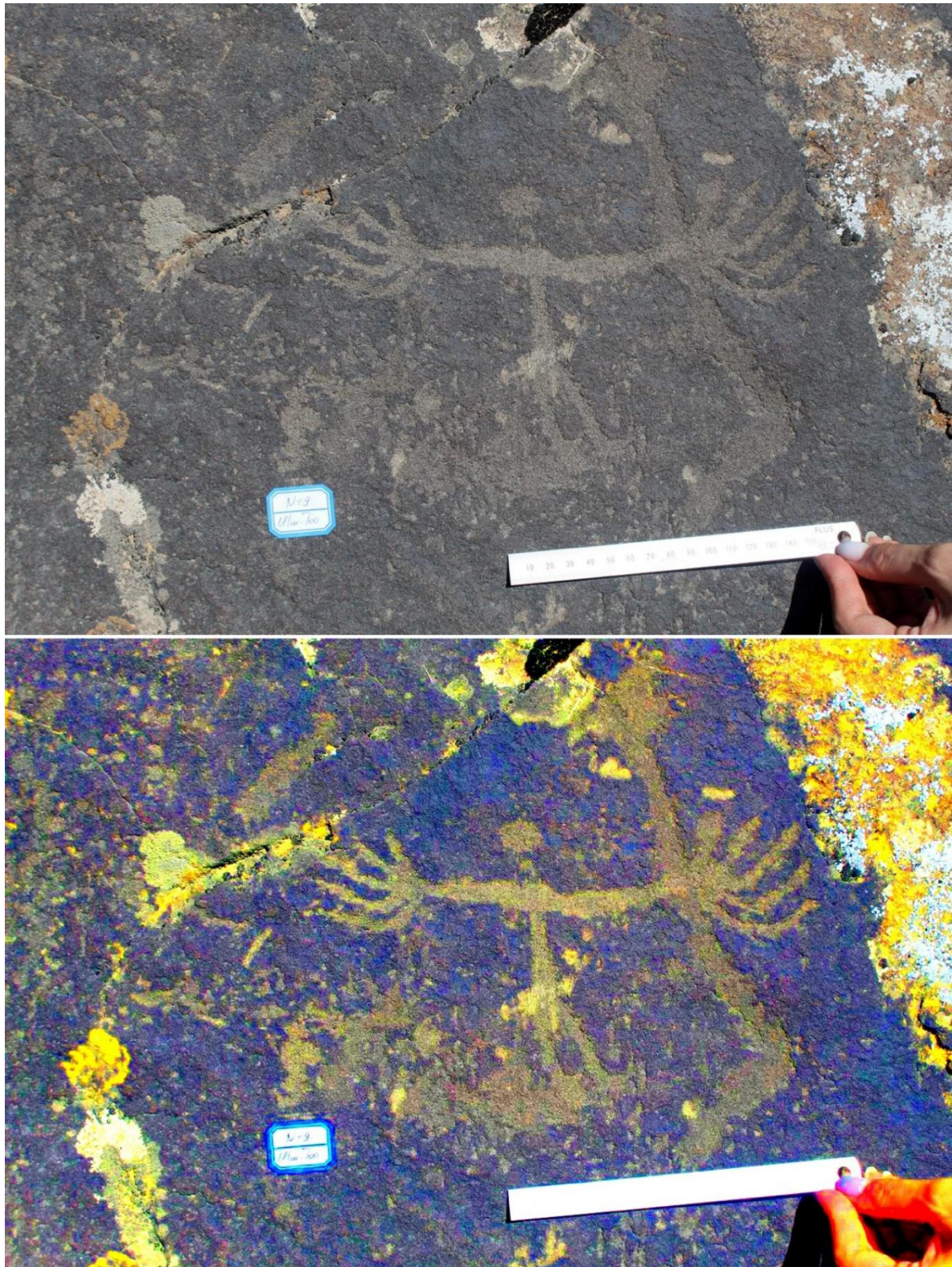


Figure 4: Anthropomorphic and geometric motifs on Panel 2. Top: photograph taken under natural light; bottom: DStretch enhancement using the YDT algorithm (Photograph by S. Alisher Kyzy).

2. Engraving-Pounding

The second technique is to create motifs by combining engraving and pounding simultaneously. In this technique, the motifs are about 1 millimeter deep and were created by pounding with a hard tool. Four

motifs were produced using this technique. As seen in Figure 5, the motifs are shallow; in fact, a thin layer of bedrock has been carved, and the motifs have been created by pounding.

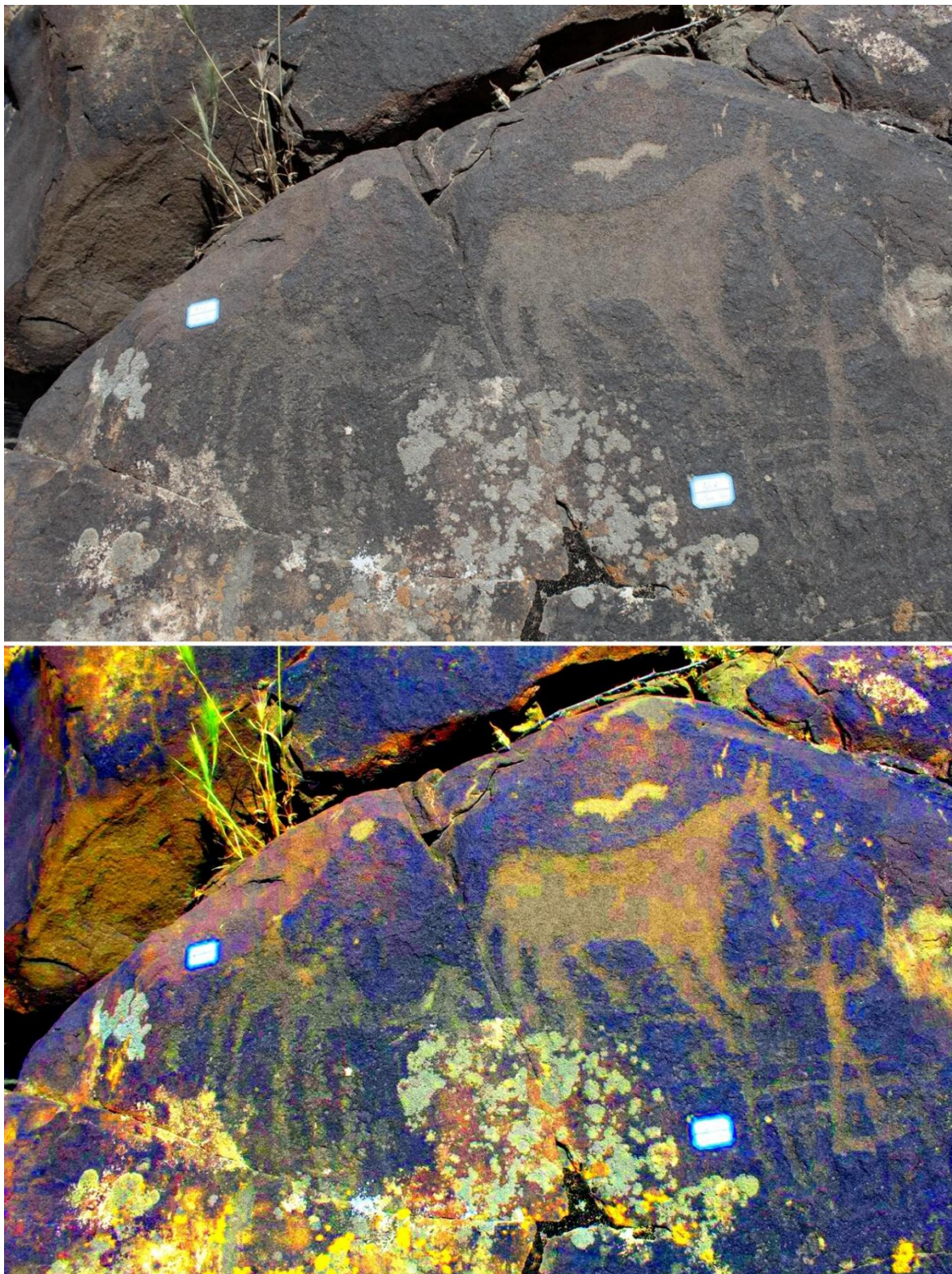


Figure 5: Motifs recorded on Panel 3. Top: photograph taken under natural light; bottom: DStretch enhancement using the YDT algorithm (Photograph by S. Alisher Kyzy).

3. Scratching

The most common technique of creating motifs at this site is rock surface scratching. In this technique, a hard tool such as a stone or metal implement was used to scratch the rock surface, forming the motif. The motifs are not very deep in this technique, and only the patina of the rock surface has been removed. The motifs are recognizable due to the difference in color

between the rock and the patina; as seen in Figures 6 and 7, the color of the rock surface is dark brown/gray, but the motifs are lighter. Since this technique does not create a depression in the rock, over time, patina may cover the surface, making the motifs difficult to identify. Therefore, motifs in this group have less patina than those in the engraving and engraving-pounding groups and are likely to be more recent.

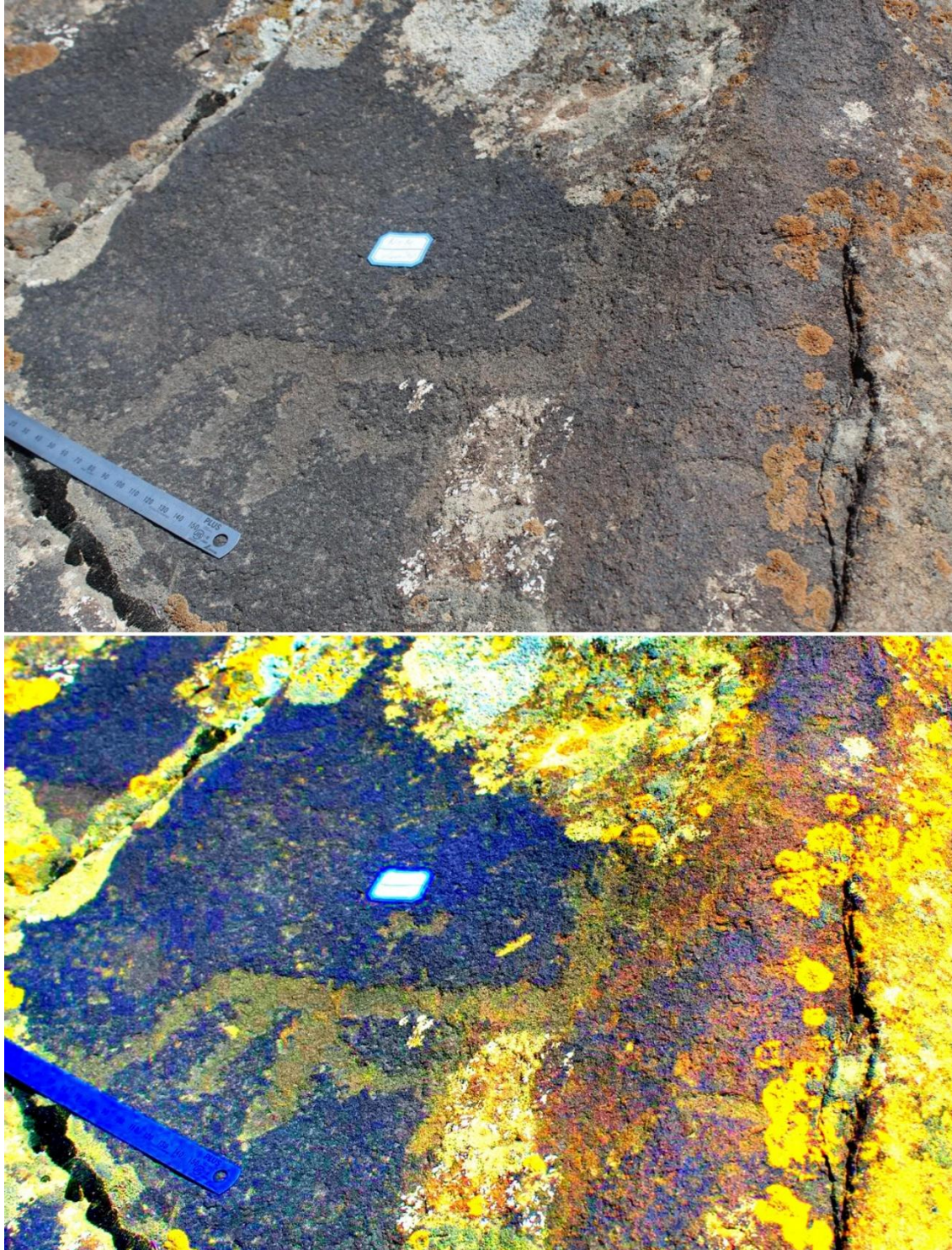


Figure 6: Zoomorphic motif on Panel 4. Top: photograph taken under natural light; bottom: DStretch enhancement using the YDT algorithm (Photograph by S. Alisher Kyzy).

VII. Dating

Researchers have different opinions about the dating of Central Asian Petroglyphs (Davis-Kimball & Martynov, 1993; Francfort, 1998; Lasota-Moskalewska & Hudjanazarov, 2000; Khujanazarov, 2001; Rogozhinskiy, 2011; Muradova, 2011; Rozwadowski & Lymer, 2012). Some researcher considers them to be works produced by contemporary nomadic groups, while others have attributed them to the Prehistoric Period. In fact, without absolute dating methods, any chronological interpretation remains relative and cannot be accepted with certainty. However, the presence of patina on some petroglyphs and stylistic variations indicate that the motifs were created in different time periods. One of the major obstacles in the study of Central Asian rock art is the lack of sufficient laboratory facilities for absolute dating methods, which has made it difficult to provide an accurate time frame for this field. In this study, three dating approaches were used: 1. Motif Comparison; 2. Domestication Timeline of Horse and Camel; 3. Comparative Analysis with Other Rock Art Sites in Kyrgyzstan and Central Asia.

Based on observations within the panels, in some panels, such as the motifs in Figure 3, a geometric motif was first carved, and later an anthropomorphic motif was created on it. This indicates that at least these motifs were created in two different phases.

Also, differences in patination can be seen in the motifs in Figure 3. Since patina forms on stones over time, it can be concluded that the motifs were created in at least three time periods: The camel motif and the lower right zoomorphic motif have heavier patination and therefore appear to be older. The central anthropomorphic and horse motifs have less patina and belong to a relatively more recent period. The bird motif at the top of the panel has the least patina and is considered one of the newest motifs. Therefore, under similar environmental conditions, the degree of patination can be used as an indicator of the relative chronology of the motifs. In addition, motifs created by the engraving technique are usually older, while those created by the scratching technique are considered newer. Since the scratching technique does not create significant depth in the rock, older motifs in this technique may have been lost over time. Considering the presence of horse and camel motifs, and based on previous studies, horses and camels (Ming et al., 2022) were domesticated by the late 4th to the 3rd Millennium BCE. Since one of the motifs of a horse has a bridle, it can be said that these motifs were created after the domestication of horses and cannot be older than the 3rd Millennium BCE.

Previous studies of rock art in Kyrgyzstan have mainly been attributed to the Early Iron Age and Medieval Periods. The Uluu-Too motifs, with their relatively realistic representations and stylistic features similar to those of the late Bronze Age and early Scythian/Saka period, mainly feature horses. These

motifs share similarities with the “Heavenly Horses of Aravan” and Airymach-Too series (Amanbaeva et al., 2009), although there are differences in the way the body is depicted, the representation of the genitals, and the curvature of the tail. Closer similarities are seen in the Saka-Scythian Layers of the Saimaluu-Tash site. A camel has also been identified from the Ur-Maral region in Kyrgyzstan, which has been dated to the Iron Age (Hermann, 2017).

Giant Anthropomorphic motifs are characterized by their distinctive body posture and physical features. Similar examples from the Late Bronze Age and Early Iron Age in Central Asia and Southern Siberia are often characterized by large size and splayed fingers (Devlet & Devlet, 2005; Maryashev & Rogozhinsky, 1991). Scenes of humans leading animals are sometimes seen with “giant” images and are relatively common (Akmatov & Useev, 2025).

Although relative dating suggests that the Uluu-Too petroglyphs were probably created in the Late Bronze Age to Early Iron Age, these dates cannot be definitively determined without laboratory-based absolute dating.

VIII. Discussion

The creators of the petroglyphs have always been a matter of debate among scholars, but most believe that these motifs were created by pastoralists and nomadic communities. Given that no settled sites have been identified near the Uluu-Too Petroglyph Site, it seems that these petroglyphs were created by nomadic pastoralist communities, in which horses appear to have played a significant role. In many nomadic societies, mare breeding is common, but the Uluu-Too petroglyphs clearly show male horses through the representation of visible genitalia. This highlights the importance of the stallion in the societies that created the petroglyphs. Stallions were commonly used for breeding, power displays, fast riding, and war riding.

Compared with regions such as Uzbekistan (Kabirov, 1976; Khujanazarov, 2001; 2011) and Iran (Ghorbani et al., 2022; Khanipour, 2024b), where ibex motifs are more abundant, horse motifs are more common in the petroglyphs of Uluu-Too. This indicates the significance of the horse in the economic and cultural life of the nomadic communities of this region. Even today, horse breeding and equestrianism are of particular importance among the Kyrgyz people.

The motif of the Bactrian Camel at this site is also notable. In many Central Asian petroglyphs, camels are present, which shows that in the nomadic societies of this region, the camel played an important role alongside the horse and was probably used for transportation and economic activities. In terms of stylistic analysis, the motifs are often depicted in a simplified or stylized form. However, the fine representation of animal morphology is well observed.

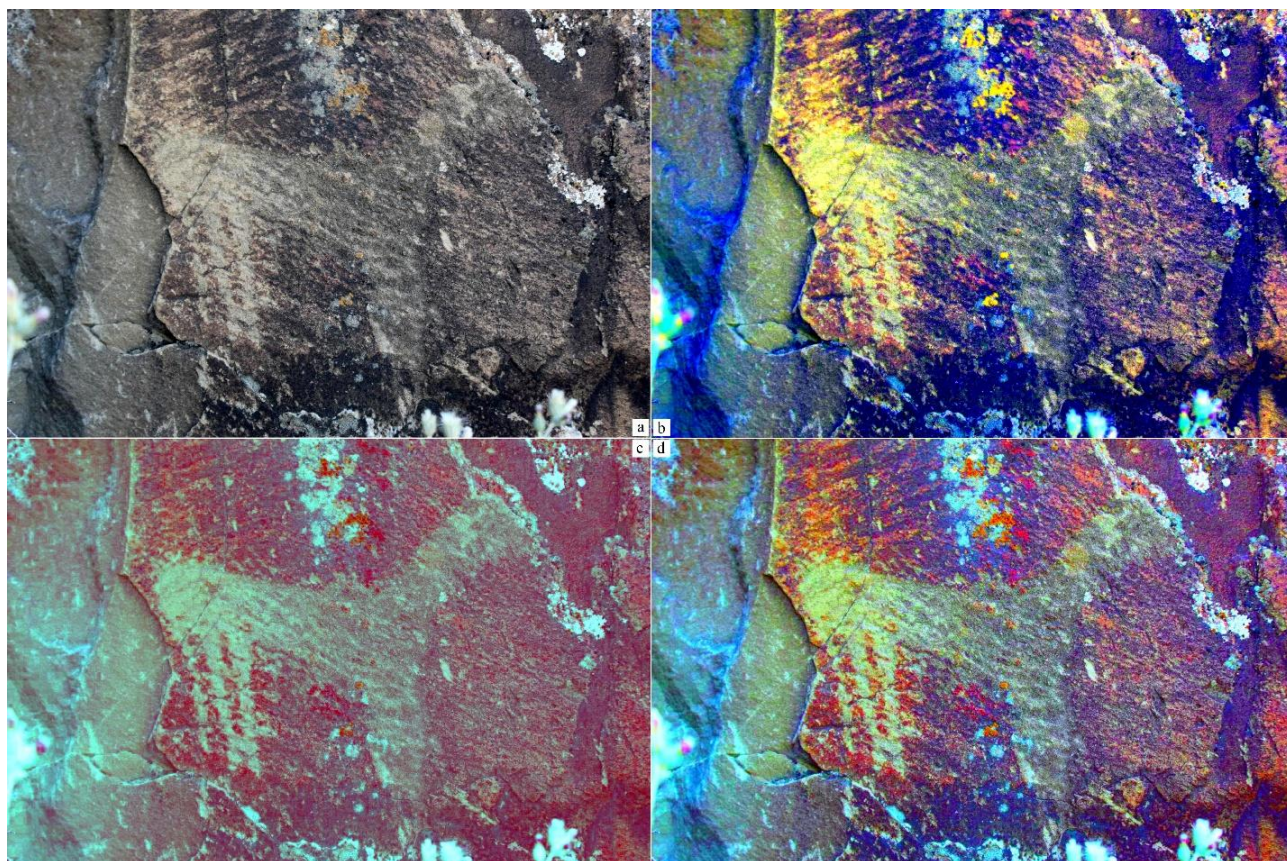


Figure 7: Zoomorphic motif on Panel 6. (a) Photograph taken under natural light; (b) DStretch enhancement using the YDT algorithm; (c) DStretch enhancement using the YRE algorithm; (d) DStretch enhancement using the YRD algorithm (Photograph by S. Alisher Kzyz).

IX. Conclusion

The archaeological survey conducted in Aravan District has identified petroglyphs carved into rocks in several separate panels, comprising a total of 15 motifs. These motifs depict zoomorphs, anthropomorphs, solar symbols, geometric shapes, and unknown shapes. They were created using three techniques: engraving, engraving-pounding, and scratching. The petroglyphs are arranged in seven panels and, in some cases, have been subjected to significant weathering. The degree of weathering and patination indicates that they were created at different times. However, absolute dating is not currently possible, so laboratory-based analysis is necessary to provide a more secure scientific dating framework.

The presence of rock art in this region of Kyrgyzstan can enhance our understanding of the culture and art of

nomadic communities and also contribute to the development of rock art tourism. The mountainous region of Aravan, rich in historical monuments and geotourism landscapes, has a significant but largely untapped potential for tourism and cultural heritage development.

The Uluu-Too petroglyphs are unique in this region due to their diversity, scale, and scientific value. However, the conservation of these monuments is affected by environmental threats such as natural weathering and seasonal temperature fluctuations, which can lead to cracking and exfoliation of rocks; continued degradation could lead to the loss of the legibility of some motifs. The current state of the site is unstable, and immediate and comprehensive documentation, along with protective interventions, is essential to safeguard this valuable archaeological heritage.

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