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## Newly Discovered Petroglyphs of Bardah Serkha in Badreh County, Ilam Province, Western Iran

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**Abstract:** *The Ilam province, includes the western part of the Central Zagros, is less known in terms of rock art and petroglyphs, and no serious research has been done in this field so far. The collection of new Bardah Serkha petroglyphs was created in the middle of Dezan Valley and next to the road that passes through the western terrace wall of the valley. The collection includes 4 petroglyphs. These petroglyphs include two male mountain goats with long horns and linear bodies, shown in detail and moving westward. On the opposite side, two hunters with bows are shown shooting at goats. These two archers are standing and pulling the bow string. The bows in their hands are curved and the two ends to which the string is tied are turned outwards. These bows were common only in the Central Zagros region. Despite the similarities in shape and size with Assyrian and Elamite bows, they are different. Based on the investigations, it is believed that the origin of this type of bow is from Ilam, which has become endemic in this region. The chronology of these petroglyphs is based on the bows in the hands of hunters, which belong to the Iron Age III and contemporary with the Neo-Assyrian and Neo-Elamite periods.*

**Key words:** Ilam, Badreh, Kabir Kuh, Bardah Serkha, Rock Art, Petroglyphs, Mountain Goat, Bow

### Introduction

Man has long tried to convey the events and incidents that happened to him during the day or years to his contemporaries and his opponents in some way. To achieve this goal, the best way is to use an image or a symbol that mankind has used from the beginning to the present. Today, with their help, he has been able to convey his

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achievements, history, mentality, culture and beliefs to his fellow human beings, one of these tools being petroglyphs.<sup>1</sup>

The importance of these petroglyphs and the need to study them is not hidden from anyone, because these motifs provide us with information about history and anthropology, and in addition, in examining the evolution of artistic styles from prehistoric times to the contemporary era, the techniques of art painting are used. It is used to interpret the role of motifs in connection with the ideas of the painter of motives and finally achieve interpretations close to reality from the past life.<sup>2</sup> Therefore, rock art in its general concept refers to all the motifs and pictures that have been depicted on rocks in different styles and with different execution techniques in all periods. But rock art in its modern meaning only includes paintings whose main subjects are small and sometimes miniature images of animals, shapes, symbols, plants and humans, as single images or in scenes and gatherings of hunting, battles, dances and ceremonies. It is social and religious.<sup>3</sup>

Petroglyphs, despite the many similarities in terms of motifs, often include the scene of hunting, battle and monogram of an antelope, and in terms of technique, the execution is in the form of percussion, which are created by hitting the stone with hard and solid objects and with a very shallow depth. The subjects of petroglyphs are shaped by the geographical, cultural, and environmental conditions of each region. Today, petroglyphs can be found from various historical periods, spanning from the Paleolithic to contemporary times. Due to the importance of clarifying the content, meaning and age of these cultural data, they are researched from different aspects such as archeology, anthropology, art, semiotics.<sup>4</sup>

## Research background

The research on rock art and petroglyphs in the Central Zagros regions is related to the researches of Izadpanah in Kuhdasht and Chalge Shaleh of Lorestan,<sup>5</sup> as well as to the researches that were later carried out by McBurney and Bewley took place in this area, it is returned.<sup>6</sup> Among them, we can examine the petroglyphs of Homian Lorestan,<sup>7</sup> the re-examination of the caves of Mir Malas and Homian near Kouhdasht by an Iranian and Belgian delegation,<sup>8</sup> and in recent years, several petroglyphs have been identified and investigated in the neighboring areas of the complex, including

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<sup>1</sup> Nourallahi & Aliloo, 2010; Khanipour, 2024: 141-142.

<sup>2</sup> Adeli, Garajian & Paply Yazdi, 2001.

<sup>3</sup> Rezaei & Judi, 2010.

<sup>4</sup> Rezaei & Judi, 2010.

<sup>5</sup> Izadpanah, 1971.

<sup>6</sup> McBurney, 1969; Izadpanah, 1969, 1970, 1971; Bewley *et al.*, 1984.

<sup>7</sup> Adeli, Garajian & Paply Yazdi, 2001.

<sup>8</sup> Remacle *et al.*, 2006, 2009.

the petroglyphs of Bauki in Azna,<sup>9</sup> Qeshlagh,<sup>10</sup> Divin Valley in Hamadan,<sup>11</sup> Maiwaleh,<sup>12</sup> Cheshmeh Sohrab near Meravza,<sup>13</sup> but the study and research on the petroglyphs of Ilam province started much later than the other places that were mentioned.

The first research in this area started with the investigation of the petroglyphs of Bahram Chubin Strait, in which a large number of humans and goats' motif were carved in the rock on the way of the road that passed through the gorge.<sup>14</sup>

During the investigation of the region's roads in 2010-2011, the residents of Kolm Khovarg village mentioned a collection of petroglyphs in Dezan Valley. However, due to certain issues, it was not possible to investigate them at that time. In 2022, the authors examined and documented this collection of petroglyphs for the first time.

Therefore, in this article, we aim to provide an introduction to the rock art of the region and the background of previous research conducted in this and neighboring areas. We then examine the state and conditions of the region, followed by a review, description, analysis, and chronological assessment of the Bardah Serkha petroglyphs.

### **The geography of Badreh county**

The Kabir Kuh mountain range in the Central Zagros with a length of about 160 km in the northwest-southeast direction has divided Ilam province into two parts Poshtkuh and Pishkuh. It is possible through the gorges and gaps that existed in its mountains. This mountain range and its gorges have played an important role in the formation of prehistoric and historical cultures and later in this part of the Central Zagros and their livelihoods. In general, despite numerous archaeological researches,<sup>15</sup> this region is still not fully known to researchers. The regions of Ilam, Malekshahi, Mehran, Abdanan are located on the western slopes and Darreh Shahr and Badreh are located on the eastern slopes of this mountain range. In addition, parts of this mountain range are located in other regions of Ilam.<sup>16</sup>

The Badreh region is geographically located at 47 degrees east longitude and 33 degrees north latitude, in the central highlands of the Zagros range. To the south, it borders the Kabir Kuh mountain range and the areas of Malekshahi, Zarin Abad, and partially Abdanan. To the north, it is adjacent to Shesh Pir and the Seymareh River, near the Tarhan district in the Kuhdasht County. In the northwest, the Taluk, Bezwale,

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<sup>9</sup> Rahimi *et. al.*, 2021.

<sup>10</sup> Mohamadifar & Azandaryani, 2015.

<sup>11</sup> Saraf, 1997.

<sup>12</sup> Shidrang, 2007.

<sup>13</sup> Biglari, Moradi Bisotuni & Jamshidi, 2007.

<sup>14</sup> Sharifinia, Ahmadi & Ghanbari, 2015.

<sup>15</sup> Habibi, 2024.

<sup>16</sup> Nourallahi, 2013: 433-461.

and Sayvan mountains separate it from the Shirvan region. To the east, it transitions into lowland areas, while the banks of the Seymareh River and the Darreh Shahr region form part of its eastern boundary. To the west, it is bordered by the forested areas of Mela Painjah and the Meya Khas district in the central part of Ilam province.

The height of Badreh region compared to other neighboring regions and its location on the northern slopes of Kabir Kuh has created an impenetrable barrier against the scorching heat of Mehran and Dehloran plains. To have even though Badreh region is considered as one of the border regions between the cold northern and tropical southern regions of Ilam province, in late autumn, winter and spring, it has more rain and snow on average, and most of its areas – except its eastern regions – are around the region.

The geographic area of Badreh is approximately 70 x 9 km in length and width and with an area of 625 square km. It has a mountainous and forested nature and a relatively mild climate. So that 80% of the area of this basin is covered with oak trees. This area is surrounded by high mountains as a natural fortress and has deep valleys, access to it is possible only through narrow gorges in mountain gaps.

This issue has caused the area to have a special place for a long time. However, this area has four fertile plains with the names of Banparvar, Byrae-Badreh, Dol i Golav, Kher Javar, and the flat lands along the Seymareh River. This basin is very watery and its average annual rainfall is more than 500 mm. Access to each of these basins is possible through cracks in the mountain wall that surrounds them, which are also used by herders, nomads, and wild animals.

### **Bardah Serkha Petroglyphs**

At the geographical coordinates of 33°22'2.12"N and 46°56'22.24"E, at an altitude of 830 meters above sea level, lies a place called Bardah Serkha, situated between a mountain valley and the inaccessible Dezan Valley, in the northwest of Kher Javar. It is located approximately 25 kilometers northwest of Badreh city and 120 kilometers southeast of Ilam city. Dezan Valley, which is located in a lush green valley between the mountains and heights of Kabir Kuh, with an average height of 1000 meters above sea level – it decreases in height towards the northeast to the Seymareh Basin – has a moderate and mountainous climate and its weather in the spring and summer season is moderate and cold in winter. It is one of the winter pastures (Sardsir) of Kabir Kuh [Fig. 1].

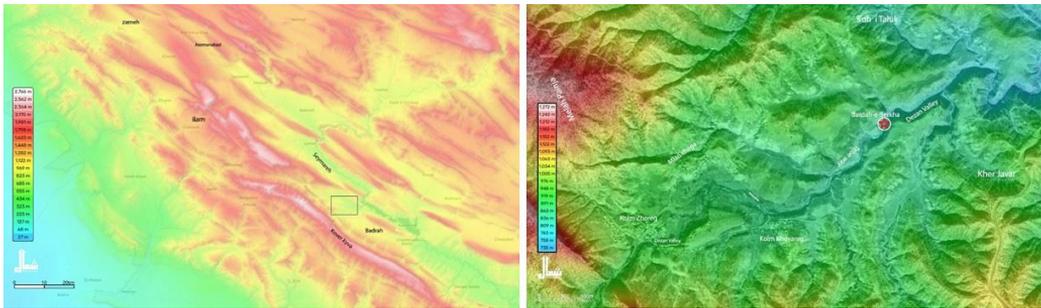


Fig. 1. The location of Bardah Serkha petroglyphs in Dezan Valley (by A. Nourallahi).

The petroglyphs were carved on the eastern wall and terrace of Bardah Serkha in Dezan Valley and on the limestone rocks on the side of the tribe way which diagonally cuts the width of the valley and continues on the same rocky wall to the south, at a height of about 25 meters from the river level. Today, the place where the petroglyphs were created on its rock beds is located about 700 meters north of the fish breeding pond and industrial poultry complex that were created in recent years. In addition to the slopes and walls on both sides, the authors examined the rocks on both sides of the road and its path, but they did not find any other collections or petroglyphs. This area is one of the karst areas and has limestone rocks,<sup>17</sup> the area and location of these petroglyphs are always exposed to the annual and daily traffic of nomads and local people. It is believed that there were more petroglyphs that the effect of rock fracture, erosion, and passing over time have disappeared [Figs. 2-4].



Fig. 2. Overview of Bardah Serkha petroglyphs (by A. Nourallahi).

<sup>17</sup> Motiei, 1993: 192.



Fig. 3. The bed of Bardah Serkha tribe way in Dezan Valley leading to petroglyphs (by A. Nourallahi).

## The petroglyphs Description

Bardah Serkha petroglyphs created near tribe way and western terrace of Dezan Valley. They include a collection of four petroglyphs that were found on a rock with measuring 1.80 x 3 meters. This rock is 1.5 meters higher than the road. These petroglyphs were created by knocking. They are divided into two categories, human and animal. The creator has made the mountain goats bigger. This is due to his emphasis on mountain goats and their hunting [Figs. 5-7].



Fig. 4: The location of rock canvas with broken parts and tribe way (by A. Nourallahi).

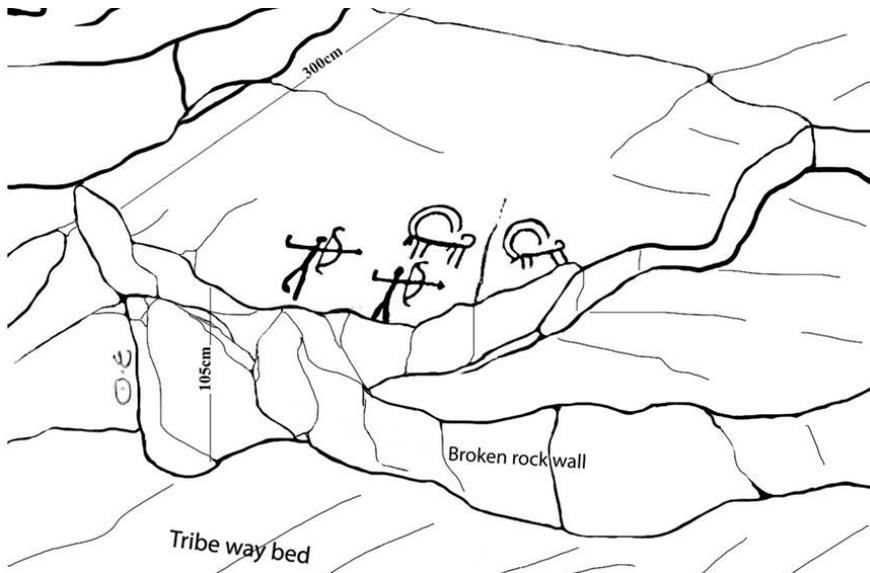


Fig. 5. Bardah Serkha petroglyphs (by A. Nourallahi).



Fig. 6. Bardah Serkha petroglyphs collection (by A. Nourallahi).



Fig. 7. Design of Bardah Serkha petroglyphs (by A. Nourallahi).

### ***Petroglyph No. 1***

An antelope with semicircular arched horns so that the artist tried to exaggerate the size of the horns to show the type and size of an antelope with the tail turned up and a linear body and beard, which is 18 cm high. And the length is 22 cm, the depth of the stump is 2 to 3 mm, and its width is 21 mm. The painter has shown an ibex moving towards the west. In this image, the legs are perpendicular to the linear body [Figs. 8-9]. Part of the rock is broken due to the passage of the road. Probably, there was a goat or other goats under the feet of this painting, which were destroyed due to the fracture of the rock. This mountain goat is moving behind the picture of the mountain goat number 2 towards the hunter petroglyph (petroglyph No. 4).

### ***Petroglyph No. 2***

A petroglyph of a mountain goat with semicircular arched horns and a turned tail, and a linear body and beard, and the gender of the goat is depicted. This petroglyph is 27 cm long and 26 cm high. The depth of its trunk is 2-4 mm and its width is 20-22 mm. The goat's legs are created perpendicular to the goat's linear body, and the goat's body is drawn linearly, and care has been taken to show details such as its beard and gender this petroglyph, like the petroglyph No. 1, is moving towards the west, that is, toward to the hunters [Figs. 10-11].

### ***Petroglyph No. 3***

A human figure with a bow (hunter) This petroglyph was created at the bottom of petroglyph No. 2. It shows a person pulling and releasing the string of the bow with the arrow in it while standing and shooting. There is no mountain goat in front of this petroglyph. The details of the bow and string as well as the triangular spearhead are well carved. The bow is in the form of an arc, where the string is attached to the two ends of the bow. This bow has a height of 17 cm, and the height of the person holding the bow is 20 cm, which is believed to be more because part of its legs was lost due to a rock fracture. The head and hair or its hat and headband are engraved in a circular oval shape and the engraver tried to show the hair or the hat and headband of the archer by showing the head bigger and also the artist tried to depict the moment when the string is released to shoot the arrow. This pattern has a height of 24 cm, which seems to have been a little higher because of the fracture of the rock. The width of this petroglyph is 25 cm from the right hand that has released the bowstring to the tip of the soldier, the depth of the engraving is 2-3 mm, the width of the body of the human figure is 2-2.5 cm, and the width of the hands and the body of the bow and its string is 10-12 mm. [Figs. 10-11].



Fig. 8. Petroglyph No. 1  
(by A. Nourallahi).

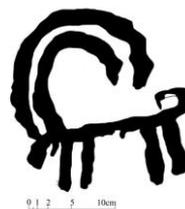


Fig. 9. Design of petroglyph no.1  
(by A. Nourallahi).



Fig. 10. Petroglyphs No. 2 and No. 3  
(by A. Nourallahi).



Fig. 11. Design of petroglyphs No. 2 and No. 3  
(by A. Nourallahi).



Fig. 12. Petroglyph No. 4  
(by A. Nourallahi).



Fig. 13. Design of petroglyph No. 4  
(by A. Nourallahi).

### ***Petroglyph No. 4***

A human figure shooting a bow. This petroglyph is quite similar to the petroglyph of the archer and hunter of the past with the right hand letting go of the string, with details of the head and hair or hat and headband. This petroglyph was created in the south of petroglyph No. 3 (almost behind the head of the hunter No. 3) and in front of petroglyph No. 2 and at a distance of 25 cm from it. This petroglyph has a height of 27 cm and its width from the right hand that has released the string to the tip of the bow is 20 cm, and the depth of the petroglyph is 2-3 mm, the width of the body is between 18-21 mm, and the width of the bow and the hunter's hand is 10-11 mm.

The height of the bow in this figure is 20 cm. Here the right leg, which was leaned on while shooting, is cut in a bent position. The curved depiction may have been intended to show a shooting position, with the archer leaning on it while shooting [Figs. 12-13]. Two figures of hunters are shown facing east (on top of the terrace of valley), shooting. The engraver depicted two hunters with bows shooting at mountain goats, recreating a scene of mountain goat hunting in Dezan Valley [Fig. 6-7].

### **Methods of creating motifs**

There is not much information about how to create motifs and how to carve on rocks, but according to geological studies and investigations,<sup>18</sup> the type of stone in each region exhibits specific characteristics that influence the creation of motifs. And for carving on them, an object or tool that has a higher degree of hardness than this type of stone texture should be used. The method of creating motifs can be explained based on the depth, width or the amount of wear or scratch of the stone, and on the other hand, it reveals the various ways of creating motifs, such as engraving, carving, scratching, and wear, and it will be determined according to the way of creating these works. What method was used (scratching, abrasion or pounding) and what tool (metal or other stone with a higher degree of hardness) was used.

The petroglyphs of Bardah Serkha were created by knocking on white-cream limestones according to the irregular shape of the lines of the petroglyphs from flint carcasses as a tool that has a higher texture and degree of hardness than stone and texture. The rocky limestone of this place has been used. There are streaks and scattered pieces of flint around and among the rocks of the place, which strengthens this suspicion. Even today, villagers and shepherds use flint to carve and write memorials on stones. For this reason, the effect created on the rock is somewhat irregular and does not have the same depth and width [Fig. 14].

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<sup>18</sup> Motiei, 1993; Darvishzadeh, 2003.



Fig. 14. Contemporary petroglyphs created with flint in Asmanabad, Ilam (by A. Nourallahi).

### **Analysis and chronology**

One of the fundamental problems regarding rock Arts is their dating. Laboratory methods are the most reliable way to measure rock patterns. Since such studies have not been conducted in Iran so far,<sup>19</sup> and in the absence of laboratory analyses, the approximate dating of rock art is typically based on archaeological analysis of the landscape where these artworks are located.<sup>20</sup> Therefore, in addition to this approach, a comparative method has been applied, analyzing these motifs in relation to similar decorative motifs found in previous archaeological research and excavations in this and neighboring areas.

For the chronology of the Bardah Serkha petroglyphs, in the absence of reliable laboratory dating methods, the depiction of the bow in the hands of hunters plays a crucial role. Notably, this type of bow, based on its shape and the way it is drawn on stone, belongs to the category of composite bows. Based on this, and through comparisons with examples of bows engraved in petroglyphs and paintings, as well as those engraved on bronze objects discovered during the exploration of cemeteries in the region, as well as on forehead bands, bronze belts, bowls, bridles, cups, slings, axes, etc. And the Assyrian reliefs, as well as Elamite seals and bullae, can determine

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<sup>19</sup> Karimi, 2007: 32.

<sup>20</sup> Roustaei, 2007.

the time of creation of these petroglyphs to some extent. In addition to the bow, the mountain goats depicted in these petroglyphs can also be compared in terms of shape with other petroglyphs and bronze objects.<sup>21</sup>

In these petroglyphs, the same elements of the antelope nature of the neck, beard, tail, and horns can be seen in the manner of creating the petroglyphs. Because the number of these petroglyphs is few and they were created only on one rock. It can be said that all the motifs are simultaneous and were created by a person, who is believed to be hunter or shepherd, who was lurking in the path of the herd of mountain goats during their free time or to record the memory of the hunt after they returned from drinking water in the heights above Bardah Serkha, carved in two hours or less.

In the Iron Age of the Central Zagros, which coincides with the presence of Kassites and Assyrians, and to some extent the influence of the Elamites in this region, many evidences of spears and arrows, quivers have been found in the graves of this period.<sup>22</sup> However, there is little evidence of the bows used in this period, which also refers to the materials used to make these bows, which were made of a wooden core, covered with leather, tendon, and horn bone. The compound bows that were used in these areas in the Iron Age have differences in structure and shape from the bows that were made later in the Achaemenid period, which indicate that these types of bows were a precursor to the construction of the curved compound bows of these times.

Because the motif of the bow that can be seen in the petroglyphs of Bardah Serkha, according to its dimensions and size compared to the image of a human and an archer, is about half the size and height of the archer. The shooter shows more height.<sup>23</sup>

The compound bows that were used in the Iron Age in Zagros have their two end parts, where the bow string is connected, turned outwards, and this, in addition to helping the balance of the bow, was effective in stretching the bow and its range. It has made it easier to use.

No research has been done on the origin of the curved bow with the handle turned outwards, but based on the stele of lion hunt from Uruk [Fig. 15], and also the seal's sample. which was found in the 17th layer of the Acropolis of Susa, which are similar in terms of image and subject. Researchers cautiously believe that this type of bow spread from Uruk to Susa as a result of economic and cultural exchanges.<sup>24</sup>

However, Zutterman's researches based on the study of Assyrian reliefs show that the use of the curved bow was not very popular in the Neo-Assyrian period and this type of bow constitutes a small percentage of the bow (unlike arched and triangular

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<sup>21</sup> Shepherds sometimes carve their names with other motifs on the rocks with flint to pass the time. It usually takes less than two hours, depending on the number of patterns.

<sup>22</sup> Haerinck & Overlaet, 1998, 1999, 2004; Overlaet, 2003; Farrokh *et al.*, 2022; Nourallahi, 2022.

<sup>23</sup> See: Zutterman, 2003: 125-126, 165, fig. 8.

<sup>24</sup> Alvarez-Mon, 2023: 266; Rezaei, Arab & Entezarian, 2024: 17.

bows) in the Assyrian reliefs. It is only in the Neo-Assyrian reliefs of Palace II that the use of this bow is noticed.<sup>25</sup>

In the Neo-Elamite period, curved bows were the primary type of bow. Elamite archers and bowmen played a prominent role in the written and visual records of Neo-Assyria. For instance, in 784, during the reign of Adad-nirari III (810-783), the presence of an Elamite ambassador in Nimrud and the production of Elamite bows for the Assyrian troops were mentioned.<sup>26</sup>

In addition, the Kassites, who were nomadic tribes living in this area, had cattle breeding as their main occupation, and according to historians,<sup>27</sup> all members of these tribes were warriors and archers. Its archers were known among the Elamite and Assyrian neighbors. Due to the multiple nature of this weapon, which was used in combat (hunting, etc.), it has been a sign of the popularity of this weapon in this region. Unfortunately, no examples of bows from the Central Zagros have been found in archeological excavations, only engravings on the walls of Mir Malas, Homian and Dosheh caves, as well as bronze works related to hunting, such as bronze belts, knee braces, bridles, etc., have remained. We will discuss it further.



Fig. 15. Stele of lion hunt, from Uruk, Iraq, 3000-2900 BCE. Iraq Museum inv. no. IM 23.477 (Photo by Osama Shukir Muhammed Amin) [Public Domain: [https://commons.wikimedia.org/wiki/File:Stele\\_of\\_lion\\_hunt,\\_from\\_Uruk,\\_Iraq,\\_3000-2900\\_BCE.\\_Iraq\\_Museum.jpg](https://commons.wikimedia.org/wiki/File:Stele_of_lion_hunt,_from_Uruk,_Iraq,_3000-2900_BCE._Iraq_Museum.jpg)].

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<sup>25</sup> Zutterman, 2003.

<sup>26</sup> Barnett, 1976: Pl. V. XVI; Alvarez-Mon, 2023: 269.

<sup>27</sup> Strabo, 11.13.6, 16.1.18.

## *Bows*

A/ Paintings of Mir Malas and Homian caves: Among the paintings examined from these two caves in the Kuhdasht region, several motifs of archer hunters with horses and footmen chasing and hunting mountain goats have been introduced and identified. The bows in the hands of these hunters are of the curved type with two handles turned outwards. In drawing these pictures, painters have tried to show the details of hair and so on. In general, based on the pictures published by Mr. Izadpanah and later by Remacle,<sup>28</sup> two types of bows can be identified in the paintings of the Mir Malas and Homian caves, as well as Chalgeh Sholeh, the curved bow (of the Central Zagros or Lorestan type) and the material bow.<sup>29</sup> The curved bows in the hands of hunters (mounted and standing) are based on the images of the paintings of the southern and northern caves, including two types of arched and curved. The bow in the hands of two petroglyphs of Bardah Serkha hunter of Dezan Valley are very similar to the paintings of standing archers in Mir Malas and Homian caves in terms of the shape of the bow and the type of drawing and even the subject.

B/ A bronze bowl with a hunting scene was found in grave No. 37 of Chamahzi Mumah belonging to the Iron Age III,<sup>30</sup> which can shed some light on the hunting situation in this period. The scene shows hunters shooting at an antelope, and in another part, a bird of prey chasing two antelopes with a rabbit between them, and in another part, a hunter with a drawn bow lurking between two trees. These scenes are taken from the life of the native people of the region and inspired by the ecology of the region.<sup>31</sup> The bow that is in the hunter's hand is of the type of combined bows and ear or two ends of bow are turned outward and has an arc curve and bow string is tied to the bend of the two ends or the ear, which is made of horn, and with the bow that is in Bardah Serkha petroglyph. Dezan Valley is similar and comparable.

C/ The composite bow found on bronze belt in Lorestan shows the closeness of the art of Kassite, Medes and Persians. This bow is of the type of bows that were found in Bagoz (Irzi or Yarzi) area on the left bank of the Euphrates and belongs to the Parthian period. This type of bow can be seen on several objects from the Achaemenid period in Susa and Persepolis. The evolution of the art of archery is attributed to the Medians and the Persians. Examining the motifs on the belt that was found in the Lorestan region is very important because it allows us to accept that the combined bows of Lorestan (Ilam and Lorestan today), with the ends bent outward,

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<sup>28</sup> Remacle *et al.*, 2006; 2009: fig. 14.4.

<sup>29</sup> Izadpanah, 1969: 8-13; 1971: 342-350, 440, fig. 39, 46, 56.

<sup>30</sup> Haerinck & Overlaet, 1998: 25, 29, fig. 58-59.

<sup>31</sup> Nourallahi, Talaei & Firouzmandi Shireh-jini, 2016.

are older than the bows of the Achaemenid period, and this the type of bow has continued to evolve during these times.<sup>32</sup>

The bow that is in this forehead band in the hand of the kneeling hunter is with two ends turned outward and an arched body, and the bow string is tied to this bent part of the two ends of the bow. On another belt, dating to the 8th-7th century BCE, an archer is depicted kneeling with bow and end turned outwards while shooting. In front of him, a group of warriors is shown taking captives, armed with bows.<sup>33</sup>

D/ On the forehead of a silver band attributed to Lorestan, the archer hunter with his dog is shooting and chasing antelope and rabbit.<sup>34</sup> The bow in the hunter's hand is type of compound bow, the way the hunter shoots the bow is similar to the petroglyph of the archer hunter engraved in Bardah Serkha petroglyphs.

E/ An archer warrior on a horse-drawn chariot is shooting an arrow. The bow that can be seen in this bronze bridle is arch-shaped and the two ends of the bow are turned outward, and in terms of shape and the way of drawing it is similar to the bow of hunters that are found in the petroglyphs of Bardah Serkha of Dezan Valley. This bronze bridle is dated at 8th-7th century BCE.<sup>35</sup>

F/ On the sheets on the beams decorated with square-shaped houses, Assyrian soldiers are shown holding compound bows. These sheets are the covers of archers belonging to the Neo-Assyrian period.<sup>36</sup> But here, according to the ratio of the size of the bow to the height of the soldiers, the bow is smaller and lighter. While the role of the Central Zagros type bows is bigger.

G/ On a bronze plate obtained from the mountain plain, an archer standing in a long dress is shown shooting arrows at unidentifiable animals,<sup>37</sup> this bronze plate is dated at 8th-7th century BCE.

H/ On the blade of the bronze ax, an archer warrior running and shooting an arrow is drawn, whose bow is arc-shaped and its two ends are turned outwards, and it is a compound bow type. and an archer is carrying a number of arrows on his back.<sup>38</sup>

I/ Among the objects attributed to Kalmakareh cave, a silver figurine measuring 2.5 x 4.5 cm was seized from smugglers, which is kept in Falak El-Flak Museum in Lorestan. This figure shows an archer with a short skirt, bare legs and a bare torso, with a beard and long hair, and an arc-shaped bow with the two ends of the string turned outwards. This bow is a type of compound bows. He holds the bow with his right hand and pulls the string with his left hand. However, the authenticity of the objects attributed to Kalmakareh is doubtful.

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<sup>32</sup> Ghirshman, 1963.

<sup>33</sup> Moorey, 1974: 135.

<sup>34</sup> Ghirshman, 1963: fig. 95.

<sup>35</sup> Ghirshman, 1963; Godard, 1965: 82, fig. 95.

<sup>36</sup> Calmeyer, 1969.

<sup>37</sup> Godard, 1965: 69, 71, fig. 67.

<sup>38</sup> Godard & Godard, 1931: Pl.XIX; Godard, 1965: fig. 100.

## *Mountain goats*

Mountain goats with a linear and simple body have horns that are cut in a semi-circle. The details in these motifs were not intended, the painter only tried to show generalities. All these petroglyphs are shown from the side and in profile.

In other regions of Iran, there are many petroglyphs with the same motifs as the examples of Bardah Serkha. Goat Mountains have been carved on the rocks of large areas of Iran, among which examples can be identified in Teymareh, Ghido, Khazab, Ashnakhor<sup>39</sup> and Farahan in central province,<sup>40</sup> caves in Lorestan province,<sup>41</sup> Arnan in Yazd province,<sup>42</sup> Maiwaleh and Cheshmeh Sohrab in Kermanshah province,<sup>43</sup> also in Hamedan province<sup>44</sup> and in North Khorasan province.<sup>45</sup>

Sites such as Koh Dokhtar Rashm (Damghan),<sup>46</sup> Bardsir and Meymand (Kerman),<sup>47</sup> and the petroglyphs of goats with linear bodies carved in Bahram Chubin Strait<sup>48</sup> share stylistic similarities. Additionally, the petroglyphs of goats with bodies in the Homian calligraphy style<sup>49</sup> and the petroglyphs of goats and calligraphy in Bauki (Azna)<sup>50</sup> exhibit comparable artistic elements. Furthermore, depictions of goats in the petroglyphs of Khra Hanjiran (Mahabad) and Kyva Sur Aqrab Levi Bukan (Sur Aghrab Levi mountain) in West Azerbaijan,<sup>51</sup> the Horand petroglyphs in East Azerbaijan, and those in Soungoun,<sup>52</sup> demonstrate similar iconographic patterns. Comparable motifs also appear in the petroglyphs of Kurdistan,<sup>53</sup> Gerdi Dagh Zanjan,<sup>54</sup> and Davah Dashi in the Sefid River basin.<sup>55</sup> Other noteworthy parallels include the petroglyphs around the Qarasu River (Arjaq Castle) in Meshkin, Ardabil province,<sup>56</sup> the rock art in southern Qazvin,<sup>57</sup> and the Yazli Chai petroglyphs, as well as those at Gandum Kuh near Tafresh county<sup>58</sup> and Sangston Kahak in Qom.<sup>59</sup> These sites exhibit

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<sup>39</sup> Farhadi, 1996.

<sup>40</sup> Pourbakhshande, 2008.

<sup>41</sup> Izadpanah, 1969; 1970.

<sup>42</sup> Shahrzadi, 1996.

<sup>43</sup> Biglari, Moradi Bisotuni & Jamshidi, 2007; Shidrang, 2007.

<sup>44</sup> Saraf, 1997.

<sup>45</sup> Vahdati, 2010.

<sup>46</sup> Roustaei, 2007.

<sup>47</sup> Farhadi, 1996.

<sup>48</sup> Sharifinia, Ahmadi & Ghanbari, 2015: 28, fig. 6.

<sup>49</sup> Adeli, Garajian & Papy Yazdi, 2001.

<sup>50</sup> Rahimi *et. al.*, 2021.

<sup>51</sup> Mohammadi, 2007; Mohammadi & Naderi, 2007.

<sup>52</sup> Rafifar, 2002.

<sup>53</sup> Lahafian, 2004.

<sup>54</sup> Nourallahi & Aliloo, 2010; Nourallahi, 2018.

<sup>55</sup> Nourallahi, 2017.

<sup>56</sup> Horshid, 2007.

<sup>57</sup> Mollasalehi *et al.*, 2007.

<sup>58</sup> Nourallahi, 2016.

<sup>59</sup> Mohammadi, 2007.

striking similarities in subject matter and artistic style, regardless of chronological differences.

The hunters or shepherds of the Central Zagros were aware of the behavior and lifestyle of mountain goats. For this reason, the artist has tried to show the behavior of the animal and its quick reaction to the hunter with full skill. These technical skills (how to draw an antelope horn and its details) show their experiences, while also indicating that the artists were closely aware of the nature of antelope and probably skilled hunters themselves. Naturalism and realism can be clearly seen in the goat figures. For this reason, there is close similarity between the antelope motifs the Bardah Serkha collection of Dezan Valley with the bronze figures of antelope belonging to the 8th-7th century BCE.<sup>60</sup>

### **Conclusions**

Bardah Serkha petroglyphs in Dezan Valley include 4 motifs (two mountain goats and two hunters), which were created on the western part of the valley next to the road that goes south and towards Sar Kolm. The goat petroglyphs include an antelope with long arched horns and details of a beard and tail turned up. In engraving these two antelope figures, their gender is also shown, which evokes a herd of antelopes with the dominant male returning from the Kolm Valley and going to the heights. In terms of images, the motifs of these goats are like bronze figures and motifs of mountain goats created on Lorestan bronzes and color motifs of shelters and mountain caves and goat petroglyphs that have been studied in other areas.

Standing hunters are pulling their bows and shooting at antelopes coming up from the river bank and taking aim at them. The engraver has shown the details of the bow and arrow well in carving these roles. However, due to the way of beating, the patterns are irregular and it seems that the archers have hats or headbands. These two motifs are very important from the point of view that based on and relying on these two archer images in which the details of the bow are shown, an approximate chronology can be provided for these petroglyphs. Visually, the way of archery and the position of the archers while shooting are similar to the archers and hunters of the caves and shelters of Kuhdasht in Lorestan. Also, this type of bow is on a bronze bowl obtained from Chamahzi Mumah in the hand of a hunter who is chasing an antelope in the middle of the forest with a bird of prey.

On the other hand, according to the shape of the bow, which is a type of curved bow with two ends turned outward, it is called the Lorestan type (Ilam and Lorestan today). It is similar to the Elamite bow and is based on stone base obtained from Uruk that dates back to the 4th millennium BCE. The Lorestan bow is derived from the Elamite

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<sup>60</sup> Godard & Godard, 1931; Ghirshman, 1963.

curved bows, which originated in Uruk and southern Mesopotamia, and then entered Ilam. Scholars disagree about whether this type of bow came from Susa to Mesopotamia or from Uruk to Ilam. These types of bows were common until the end of the Neo-Elam period.

Based on the comparison (the bow motif on Lorestan bronzes, especially the bronze cup obtained from Chamahzi Mumah, and Kuhdasht paintings) and also the analysis of the hunting scene and the bow and archers and the way they stand, this collection of petroglyphs probably belongs to the Iron Age III (i.e. around the 8th-7th century BCE). In the end, based on the placement and creation of these petroglyphs, as well as a number of petroglyphs in Qalveh Malekshahi – located along the tribal route passing through Kolm – it can be said that their creation is related to this path and the tribal way.

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