

Original Research Article

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بررسی ساختار اجرایی و ریخت‌شناسی نقوش حیوانی رنگین‌نگاره‌های استان لرستان (مطالعه موردی: نگاره‌های رنگی کوه‌دشت و پلدختر)

## **Examining the Executive Structure and Morphology of Animal Motifs in the Pictographs of Lorestan Province (Case Study: Pictographs of Kuhdasht and Poldokhtar)**

### **Abstract**

**Problem Definition:** Petroglyph (Rock Carving) is one of the most common ways of expressing and conveying the message of societies, which is reflected in stone-rock panels. The abundance of these works in most areas of the Iranian plateau causes more efforts to explore them. In the meantime, Lorestan province in Zagros is one of the special regions in presenting this type of artistic representation in the pictograph style; Therefore, in this research, the executive structure and morphology of animal motifs in the pictographs of Lorestan province in two cities of Kuhdasht and Poldokhtar have been investigated. The question is: «What is the executive structure, design, visual features, and theme of animal motifs in the pictographs of Lorestan province?»

**Objective:** This research aims to investigate the visual characteristics, thematic perception, and narrative scenes of animal motifs in the pictographs of Lorestan province.

**Research Method:** This research is conducted using descriptive-analytical and comparative methods and the data collection is done by field-, laboratory-, and library-based procedures.

**Results:** Sixty-three animal motifs (horse, ibex, camel, deer, and dog) were identified. The drawing style of the characters is mainly realistic and with no background, and sometimes, (ibex and dog) an abstract style has been used. All motifs lack volume and perspective as well as failure to observe proportions can be seen in some motifs. Motifs are drawn with red, black, and orange colors on the surface of the stone, with no contrast. Based on laboratory studies, the color used in creating the motif elements is a combination of Iron Oxide II and III. From a comparative point of view, the motifs in question are similar to the petroglyphs of the Iranian plateau (Zagros) only in terms of the type of pattern (merely the pattern, not the nature of the pattern). Finally, by examining the animal motifs in Lorestan province, the importance of these animals in the lives of the people living in this land and a general understanding of their lifestyle can also be obtained.

### **Keywords**

Pictographs, Executive Structure, Drawing Style, Animal Motifs, Kuhdasht, Poldokhtar

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## **Introduction**

Rock art is an obvious example of a universal art that contains powerful aesthetic and spiritual images from a cultural point of view. In this art, aspects of ceremonies, beliefs, and history are recorded visually which reminds us of the artistic skills and complex belief system of ancient people. This rock art has been found in two forms, petroglyph, and pictographs, which have been identified in many parts of Iran such as Lorestan, Kurdistan, Ardabil, Kermanshah, South and Razavi Khorasan, Arak, etc. Unlike the huge number of petroglyph collections in different parts of Iran, pictographs or color paintings, only a few of them have been identified in Iran, which is one of the most prominent collections discovered in Lorestan province. On the flat walls of the mountains of Lorestan province, there are hundreds of patterns painted in black, orange, and red. The dominant theme of these works is hunting and scenes of nomadic migration, pastures, and hunting grounds. The color motifs of this province have special features in terms of form, which have not been carefully investigated so far. The purpose of this research is first to introduce these motifs in the two cities of Kuhdasht and Poldokhtar in Lorestan province, and then to investigate the executive structure and morphology of animal motifs in this region of Iran. The necessity and importance of the pictographs of this region can be important to conduct art history, archeology, and anthropology studies. Considering the rich cultural and historical background of Lorestan province and the existence of various places where these patterns were created, many descriptive reports have been presented and introduced about the color patterns of this province, but no research has been done on the discussion of patterns, i.e., visual morphology, the reason for drawing, anthropology, and the type of pigment used in these patterns. This research seeks to answer the following question: «What is the executive structure, design, visual characteristics, and theme of animal motifs in the pictographs of Lorestan province in the two cities of Kuhdasht and Poldokhtar?»

## **Research Method**

This research is descriptive-analytical and comparative. Research instruments are library-based procedures, field research (patterns and anthropology research), and laboratory methods. In this regard, the collection of rock pictographs (petroglyph) in Lorestan province in two cities of Kuhdasht and Poldokhtar has been selected as the statistical population under research, and its animal motifs have been analyzed by qualitative analysis. One reason for choosing animal motifs for research is that animal motifs are among the motifs that have been dominantly and repeatedly observed in many ancient civilizations, including Iran, and especially in rock art. Therefore, this research seeks to evaluate the reason for this repetition of animal motifs by relying on the anthropology and morphology of motifs in Lorestan province.

## **Research Background**

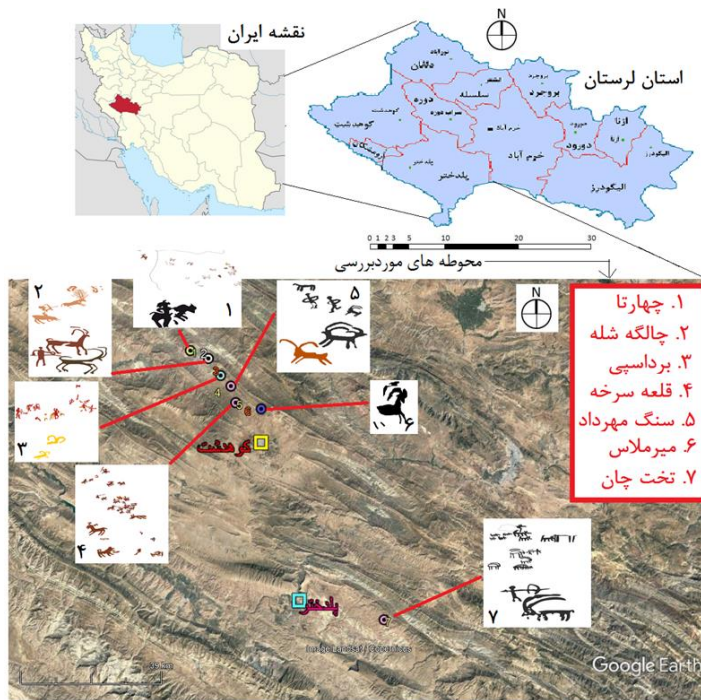
The research studies about rock art in Iran, especially pictographs, date back more than a few decades. Many times, these studies are focused on the descriptive as well as historical-analytical methods, and sometimes, relying on the formal and morphological methods of motifs. In total, the studies done on pictographs can be introduced: «Bernie» (1969) published an article entitled «Preliminary report on investigation and excavation in the caves of Kuhdasht in Lorestan to determine the date of prehistoric paintings in this region». In this article, he introduced and identified the motifs of this area, which included horses, ibex, and riders. «Izadpanah» (1969) published an article entitled «Paintings of Dousheh

Cave». Besides introducing and examining this area, he went further and started a chronology of these works. «Vahdati» (2020) in an article entitled «Hunting in the mountain: Pictographs of Take rock shelter in Nargeslu-ye Olya Village, Bojnurd» discussed the motifs of this area and expressed the results of his work: for technical and iconographic reasons, Take's pictographs are probably the oldest collection of rock motifs identified in Great Khorasan and Iran, and because of their location in the mountains, it was probably created by mobile or semi-nomadic populations. In an article entitled «Analytical and comparative study of ibex motifs in the petroglyphs of the Shotorsang region of Razavi Khorasan with similar motifs in the plateau of Iran», «Najafi» (2020) discussed the morphology of the ibex motif and concluded that according to the morphology, it can be said that the engraving style of most of the rock carvings of Iran and the Shotorsang region is the petroglyph style. In an article entitled «Research on the formal features of the petroglyphs of Dousheh Cave, Lorestan», «Ahari Mostafavi and Asadi» (2021) visually examined the motifs of this cave and expressed the results of their work: the motifs of Doucheh Cave are abstract and narrative in nature, and all the motifs lack volume while the failure in observing the proportionality in some motifs are clear. In an article titled «Visual matching of the ibex motif in the petroglyphs of Lemgerdoo and Kiyaras in Khuzestan with the petroglyphs of Teymareh, Mazayen, and Khoravand in Isfahan and Markazi provinces» «Ashtari Larki and Kolahkaj» (2022) investigated the morphology of the ibex motif in these regions and concluded that irrespective of the time and the early and late creation of these petroglyphs, which have not been determined so far, there is a cultural continuity between the ibex motifs of both regions. The reason for this claim is the continuation of the state of the horn of the ibex until the end of the tail or close to the head in both regions with the well-known clay ibex horn of Susa, the date of which has been considered by archaeologists as the fourth millennium BC. Therefore, it should be mentioned that all these research studies have been done as a single site and with the approach of visual arts, and no specific description and analysis has been done regarding the style, technique, executive structure, belief foundations in these sites, and the anthropology of the motifs based on referring to archaeological and ethnographic data. Accordingly, the upcoming research has been done with an emphasis on morphology and the reason for drawing motifs, anthropology, and with a partial view on the experimental method and the type of materials used by the creators of rock paintings in Lorestan province.

### **Geography of the Region and Studied Samples**

**1. Pictographs of Kuhdasht:** These pictographs were created in the foothills of the Sarsarkhan mountain range. This mountain range stretches from east to west and its rocks are limestone. On the south side of the Sarsarkhan mountain range, there are Mirmalas pictographs, on the north side of this mountain range, Humiyan pictographs are located. In the field surveys, 6 areas were investigated, which are located at a distance of approximately 500 meters from each other. The areas investigated in the field include: Chaharta, Chalgah Shalah, Bardaspi, Qaleh Sorkheh, Sang Mehrdad, and Mirmalas, were investigated (See Figure 1). Most of the motifs are created in red and a few in black and orange.

**2. Pictographs of Poldokhtar:** Takht Chan's new pictographs are at the base of the mountains of the Kiyalan mountain range in Poldokhtar city in the west of Lorestan province (See Figure 1). Takht Chan motifs are carved on limestone rocks in a valley. Most of the motifs are created in black and a few in red.



**Figure 1.** The location of the investigated areas in Lorestan province in Kuhdasht and Poldokhtar cities.  
Source: Authors.

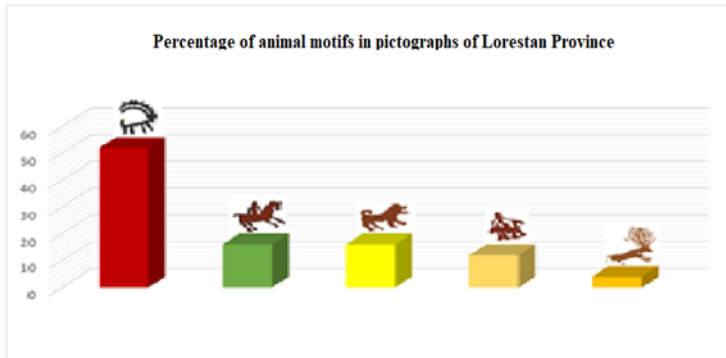
### Visual Analysis of Pictographs of Lorestan Province

The display of different animal species among the petroglyphs shows the value, importance, and special place of these animals in the life of the people of that era, whose life was based on nomadism, animal breeding, and hunting of these animals or domesticating these animals. The way these animals are designed is very similar to the animal patterns of prehistoric pottery, which itself expresses the effects of nomadic cultures that lived in different parts of Iran. One of the cultural data that dates back to the Paleolithic era is the petroglyphs that have been found in all parts of the world. In Iran, especially in the central Zagros, these motifs have been found abundantly. Therefore, in the following, the pictographs of Lorestan province in two regions of Kuhdasht and Poldokhtar have been investigated. Animals such as horses, ibex, deer, camels, and dogs are carved. Animal motifs in these two investigated cities include the following motifs: 1. Ibex (33 pieces); 2. Horse (10 pieces); 3. Dog (11 pieces); 4. Camels (7 pieces); 5. Deer (2 pieces) (See Diagram 1 & See Table 1).

**Table 1.** Animal motifs investigated in the pictographs of Lorestan province. Source: Authors.

Motif	Pictograph
Ibex	
Horse	
Dog	

Motif	Pictograph
Camel	
Deer	



**Diagram 1.** The percentage of animal motifs obtained from the pictographs of Lorestan province. Source: Authors.

### **Ibex Motif**

Ibex is one of the most frequent motifs found in the pictographs of Lorestan province. The people of Lorestan province, because of their long history in herding, ibex plays an essential role in their lives. Due to the mountainous nature of the region and ibex's compatibility with nature, they pay attention to animal breeding. On the other hand, having an ibex, in terms of the number, gave a person a special identity and personality that would show to others that he belongs to the upper classes or that he is a nobleman. Another noteworthy point is the interaction between humans and animals. The importance and value of the ibex is as a human being, not a side creature that lives next to humans. Ibex has been respected as a sacred animal, not only in the culture of Lorestan. The holy attitude or belief in having power beyond the material of this animal can be recognized in the region and in different parts. One ritual in which ibex and ibex horns are important is the mourning ceremony that is held especially in Lorestan province. In this ritual, for the memory of the deceased, the horns of the ibex or Pazan, which have already become traditional, are used and maquettes of these animals are placed. Sometimes they put a gun on the ibex's neck, which alludes to the deceased being a hunter (See Figure 2). Gravestones (See Figure 3) and handwoven (See Figure 4), tattoos (See Table 2) are full of human, plant, and animal motifs, especially ibex motifs. These sometimes simplified designs of natural patterns have been changed to a geometric and completely abstract form over the centuries, such as the S pattern, and among these, it should be mentioned about the medallions that are surrounded by simplified animal heads, which are probably the remnants of the same symbolic image of the Bird-Ram (rain amulet) and have come into various and very diverse forms over time (See Figure 5).



**Figure 2.** A scene of a mourning ceremony (Cheshmepar village, Aligudarz). Source: Farzin, 2005, p. 35.



**Figure 3.** Gravestone with an image of an ibex in Shineh cemetery, Aleshtar. Source: Farzin, 2005, p. 50.



**Figure 4.** Ibex in Khorram Abad handwovens. Source: Authors.

**Table 2.** Collection of pictures of women's tattoos with ibex motifs. Source: Authors.

Image, design, and archaeological sample	Meaning and theme of the motifs
	<p>The tattooed image of an ibex and Asurig tree on the left side is comparable to a silver statue of Kalmakreh. The ibex is on top of the tree. In the ancient world, the Asurig tree means the tree of life, and placing an ibex on top of it represents the position of this animal in ancient times. In the Lorestan civilization of the first millennium BC, figures of ibex can also be seen in abundance.</p>
	<p>The image of the tattoo on the woman's hand on the left side is comparable to the petroglyphs of Bovaki village in Azna city, in Lorestan province, and the collection of prehistoric pottery.</p>
	<p>The image of an ibex tattoo as stylization, traces of this pattern can be seen on the prehistoric pottery of Lorestan, as well as the pewters of this region in the Iron Age and the petroglyphs of Azna in Lorestan.</p>
	<p>The tattoo with the image of an ibex on the left side is comparable to the pewter bridles of the Iron Age in Lorestan, and it is also similar to the style seen on the petroglyphs of this region.</p>



**Figure 5.** Ibex motif, Bakhtiari's horse manta in vertical form. Source: Opie, 1992, p. 22.

**1. Executive structure and morphology of the ibex motif:** The largest number of animal motifs found in the investigated areas is the ibex motif. Thirty-three motifs were examined in this province in the following sites: Sang Mehrdad, Chalgah Shalah, Chaharta, Qaleh

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Sorkheh, Bardaspi, Mirmalas, and Takht Chan. In terms of anatomy, the body of ibex has been observed in three forms: linear, heavy and bulky, and square bodies (See Table 3). The motifs are displayed in profile, with thick lines and a few with thin lines in a solid form. Most of the ibex motifs have long arched horns turned back and the shape of the horns is exaggerated and displayed to the end of the animal's body (See Table 3). The tail of the ibex is short and turned up. All ibex heads are triangular and their muzzles are shown with thick lines attached to the horns and neck. The legs of the ibex are drawn with thin and thick lines, and the front legs are drawn longer than the hind legs. According to the type of design, the ibex motifs can be compared with the rock motifs of «Gandom Kuh» (Nurollahi, 2016, p. 103), «Sungun» (Rafifar, 2005, p. 151), «Lakh Chamanzar» (Sadeghi, Ghorbani, & Hashemi, ZarajAbad, 2015, p. 96), «Zarine» (Sadeghi & Feyzi, 2021, p. 495), and «Zhivar» (See Table 4).

**Table 3.** Anatomy of ibex in color pictures of Lorestan province in Kuhdasht and Poldokhtar. Source: Authors.

Type	Image	place
Linear body		
Heavy and Bulky body		
Square body		

**Table 4.** Ibex motif in the color paintings of Lorestan province and other regions of Iran. Source: Authors.

Ibex motif	Place	Ibex motif	Place
	Takht Chan, Poldokhtar City, Lorestan Province. Source: Authors		Gandom Kuh, Tafarsh City, Markazi province. Source: Nurollahi, 2016, p. 96.
	Sungun, Varzaghan City, East Azerbaijan Province. Source: Rafi Far, 2005, p. 151.		Lakh Chamanzar, Darmyan city, South Khorasan province. Source: Sadeghi et al., 2015, p. 96.
	Zarineh, Qorve city, Kurdistan province. Source: Sadeghi & Feyzi, 2021, p. 495.		Zhivar, SarvAbad city, Kurdistan province. Source: Authors.

**2. The theme of the motifs:** The content and theme of most of the ibex, often show pasture and hunting grounds (See Table 5). Motifs 3 and 10 in Table 5 show ibex, with a human archer aiming at the ibex, and they depict a scene of a hunting ground.

**3. Motif design and style:** The design of ibex was a combination of line and surface. The style of ibex drawings is often realistic and some of them are abstract. Its realistic appearance has been carefully shown, the animal's body is like the real one, and the relative

size of the body and horns can be seen. The method of performing these motifs is entirely as paintings.

**4. Color:** Three types of colors, black, red, and orange, have been used to depict the ibex. Regarding the orange color of ibex, it can be said that the amount of iron element (Fe) is low. According to experimental tests, the red-colored ibex is made of iron oxide, and the black color is made of iron oxide or manganite (See Figures 11 & 12).









**5. Depth of view (perspective):** Regarding the perspective of the gathering of ibex in the scenes where there are two more images, a kind of proportional depth of view can be seen. In Table 5, motif 1, ibex is drawn with lines, and this depth view is more clear and we are facing a change in size. This change seems to be about the amount of bigness and smallness of the ibex (See Table 5, See Motif 3).

**6. Volume processing:** In the study of the ibex motifs, volume processing is not observable. So that in the nearer and farther legs of these motifs, no color tonality is used, and the entire ibex motifs are drawn without bright shadows and lack volume processing.




**7. Proportions:** In Table 5, Motifs 3, 4, and 9 of the drawn ibex are in exact proportion, considering the actual size of the other ibex (See Table 5, See Motifs 3, 4, and 9). In Motifs 1 and 2 in this Table, two ibexes are drawn together and appear to be giving birth. The mother ibex and the born ibex are smaller than their side ibex (because of their size and small horns) and the correct proportions are followed (See Table 5, See Motifs 1 & 2). In Motifs 4, 6, and 10, an ibex is drawn with a human figure of an archer, which is drawn larger than the archer and it seems that the ibex figure is exaggerated and the motifs do not follow the correct proportions (See Table 5, See Motifs 4, 6, & 10).

**8. Composition:** There is a precise composition among all the ibexes, that is, a regular geometric ratio has been established and the artist has considered this type of composition before drawing the work. For example, the heads are drawn first, then the horns, legs, body, and tail are drawn in a precise order. The ibexes are concentrated and in some motifs; they are jumping, which creates a dynamic composition.

**Table 5.** The ibex motif in the pictographs of Lorestan province. Source: Authors.

No.	Ibex motif/place	No.	Ibex motif/place
1	 Takht Chan of Poldokhtar	2	 Qaleh Sorkhe of Kuhdasht
3	 Chaharta of Kuhdasht	4	 Chalgah Shalah of Kuhdasht
5	 Bardaspi of Kuhdasht	6	 Qaleh Sorkhe of Kuhdasht
7	 Mirmalas of Kuhdasht	8	 Mirmalas of Kuhdasht



No.	Ibex motif/place	No.	Ibex motif/place
9	 Mirmalas of Kuhdasht	10	 Takht Chan of Poldokhtar
11	 Sang Mehrdad of Kuhdasht		

**Horse Motif**



The horse in Lorestan province has a close connection with people's life in all periods, in terms of economic, cultural, social, political, and belief issues. The life of the nomads and people of Lorestan has a deep and ancient connection with horses and riding. The battle and mourning of the people of this ancient land, with its rich culture and historical and archaeological monuments, is tied to the horse. This province was one of the oldest horse breeding centers in old Iran, which sent its beautiful and powerful horses to other places. The horse is an integral part of the life of the nomads of the region. A horse is saddled for battle, at times of joy and weddings, this horse is the carrier of a cheerful message; at work, the horse accompanies the family or carries burdens. At the time of mourning (dañ çamar/, kotal/ to dress the horse in black), the horse wears black clothes (See Figure 6). In the gravestones (See Figure 7), in the epic song «Dayeh Dayeh», in the legends of mothers, horses and brave men who run horses, the horse has a special presence. In short, there is nothing in the life of the people of the region that are not directly or indirectly connected with horses.

**Figure 6.** A slaughtered horse in Lorestan province. Source: Authors.









**Figure 7.** A gravestone in Shineh Qalaei, Alashtar. Source: Farzin, 2005, p. 35.

**1. Executive structure and morphology of the horse motif:** 10 horses were examined in the pictographs of Lorestan province in the areas (Mirmalas, Sang Mehrdad, Chaharta, Chalgah Shala, and Bardaspi) (See Table 7). In all the pictographs, the anatomy of the horse's body is shown in a profile, with thin and thick lines in a solid shape. The ears of all the horses are drawn as short and sharp and facing upwards and the tails facing downwards. In only one image, the image of a horse can be seen, which is linear and the inside of the image is empty of color (See Table 7, See Motif 4). All horses have reins and saddles, and the rider holds the reins with one hand and with the other hand is either galloping the animal or holding a tool and attacking other animals (See Table 7). The neck of all the horses has taken a curve-like shape by pulling the reins by the rider, the type of details of the neck painting has a gentle curve from the back of the neck and continues to the end of the waist. The legs of the animals are drawn with thin and thick lines. Similar examples with the horse

motif can be seen in the paintings of «Sorkheh Lize 4» (Shidrang, 2007, p. 80), «Jorbat» (RashidiNejad, Delfani, & Mustafazadeh, 2009, p. 168), «Tangeh Panjeshir» (Hashmi ZarajAbad, 2013, p. 189), «Asoo» (Sadeghi et al, 2015, p. 97), «DerehNagaran» (HosseinAbadi & Safura, 2020, p. 70) (See Table 6).

**Table 6.** The horse motif in the petroglyphs of Lorestan province and other regions of Iran. Source: Authors.

Horse Motif	Place	Horse Motif	Place
	Mirmalas, Kuhdasht city, Lorestan province. Source: Authors.		Sorkhe Lize 4, Myoolh, Kermanshah province. Source: Shidrang, 2007, p. 80.
	Jorbat, Jajarm city, South Khorasan province. Source: RashidiNejad et al., 2009, p. 168.		Tange Panjeh Shi, Nehbandan City, South Khorasan Province. Source: Hashemi ZarajAbad, 2013, p. 189.
	Asoo, Birjand City, South Khorasan Province. Source: Sadeghi et al., 2015, p. 97.		Dere Negaran, Saravan city, Sistan and Baluchistan province. Source: HosseinAbadi and Safura, 2020, p. 70.

**2. The theme of the motifs:** The theme of the horse motifs in the pictographs are mostly similar and include attack scenes and migration scenes. In Table 7, Motifs 1 and 4, tools in the rider's hand can be seen, which include a long spear, a short spear (deshneh), a bow and arrow, and in some images, hunting animals such as ibex.

**3. Motif design and style:** Motifs are often designed on a surface. Their method of execution is completely realistic and the method of execution of motifs is in the form of painting.

**4. Color:** Visually, black and red other colors are used for horses. According to experimental tests, iron oxide is used for red-colored horses, and iron oxide or manganite is used for black color (See Figures 11 & 12).

**5. Depth of view (Perspective):** The horse figures in Table 7, considering the size of one rider as a criterion, have a change in size, and this stretching of the figures can show the smallness and age of the riders. However, in Table 7, Motif 5, the smallness and bigness of the motifs seem to be related to the distance and proximity of the images to each other on the surface of the rock. Because of this size change, it can be said that these motifs comprise perspective (See Table 7).

**6. Volume processing:** The painted horses in Lorestan lack volume processing. By looking at them, it can be said that the front legs, hind legs, and far and near images of the horses have no difference in terms of color and are all painted with the same tonality.

**7. Proportions:** In Table 7, the images of horses and riders have true proportions and the rider is smaller than the horse. These proportions are correctly executed regarding the tools that are drawn in the hands of the riders.

**8. Composition:** In Table 7, all the horses are moving, and the front legs of the horses differ from the hind legs, which have assumed a bent position, and in terms of composition, it has a special dynamic and harmonious composition (See Table 7, See Motif 5).

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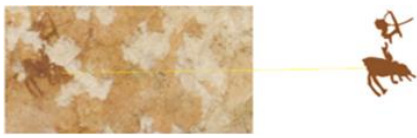



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**Table 7.** Horse in the pictographs of Lorestan province. Source: Authors.

No.	Horse Motif/Place	No.	Horse Motif/Place
1	 Chaharta of Kuhdasht	2	 Bardaspi of Kuhdasht
3	 Sang Mehrdad of Kuhdasht	4	 Chalgah Shalah of Kuhdasht
5	 Mirmalas of Kuhdasht		

## Dog Motif

In the pictographs of Lorestan province, 11 dog paintings were found in Takht Chan and Sang Mehrdad regions. From the anthropological point of view, the dog is currently an important animal in rural and nomadic areas, especially for farmers and stockbreeders, and it is used to guard and protect them, and that is why protection and loyalty are a stronger interpretation of the symbolization of this animal in rock art. The main purpose of the nomads of this region to keep dogs is the role of this animal in guarding the herd against various threats. Another reason for keeping a dog is to inform the landlord when a guest is about to enter the house. In nomadic life, houses do not have sanctuary and protection, and these dogs inform the owner of the arrival of a guest or a stranger. Dogs also play a very important role during migration, so sometimes they accompany more than several migration dogs (See Figure 8).

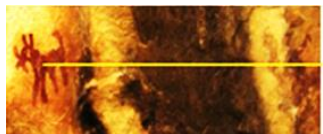
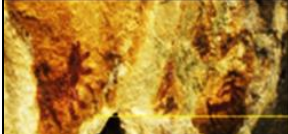




**Figure 8.** A scene of Lor nomadic migration with herd dog. Source: SafiNejad, 2002, p. 39.







**1. The executive structure and morphology of the dog motif:** All the studied dogs are shown in profile, with thick lines in a full and voluminous form. The anatomy of the animal's

body is drawn as horizontal lines. In **Motif 1 of Table 8**, a dog with small ears facing upwards, a long muzzle facing forward, and a short tail turned back can be seen. In this motif, the details of the character are also drawn, including his eyes and mustache (See **Table 8, See Motif 1**). In the next image, in the same area, a powerful dog, whose leg muscles are also drawn can be seen (See **Table 8, See Motif 2**). In the Takhte Chan, there is a set of dogs painted in black. The group of dogs is bulky and drawn with thick and solid lines (See **Table 8, See Motif 3**). In Mirmalas, a stylized dog with a linear body (See **Table 8, See Motif 4**). The tails of all the examined dogs are short and upturned. According to the body anatomy of dogs, three types of dog breeds similar to the native dogs of the Lorestan region can be identified: The Saluki (greyhound) , Qahdarijani dogs, and Sarabi dogs. Painted dogs in Lorestan province, comparable to Qeshlaq Dali motifs (Mohammadifar & Hemmati Azandariani, 2014, p. 32), Dodangeh (Sabzi & Hemmati Azandariani, 2020, p. 97), Marzbanik ((Moradi, Sarhaddi Dadian, Soltani, Abul Rahman, & Chang, 2013, p. 346), Nargeslu-ye Olya (Vahdati, 2020, p. 76), Gandon Kuh (Nurollahi, 195, p. 103), and DerehNagaran (Hosseinabadi & Safura, 2020, p. 69) (Table 9).

**Table 8.** The dog motif in pictographs of Lorestan province. Source: Authors.

No.	Dog Motif/Place	No.	Dog Motif/Place
1	 Sang Mehrdad of Kuhdasht	2	 Bardaspi of Kuhdasht
3	 Takht Chan of Poldokhtar	4	 Mirmalas of Kuhdasht

**Table 9.** The dog motif in the petroglyphs of Lorestan province and other regions of Iran. Source: Authors.

Dog Motif	Place	Dog Motif	Place
	Sang Mehrdad, Kuhdasht city, Lorestan province. Source: Authors.		Marzbatik, Sistan and Baluchistan province. Source: Moradi et al., 2013, p. 346.
	Qeshlaq Dali, Azandariani Malayer City, Hamedan province. Source: Mohammadifar et al., 2014, p. 32.		Nargeslu-ye Olya, Bojnurd city, Razavi Khorasan province. Source: Vahdati, 2020, p. 76.
	Dodangeh, Broujerd city, Hamadan province. Source: Sabzi & Hemmati Azandariani, 2020, p. 97.		DerhNegaran, Saravan City, Seistan and Baluchistan province. Source: HosseinAbadi & Safura, 2020, p. 69.

**2. The theme of the motifs:** The theme of the painted dogs in Lorestan is often scenes of nomadic migration, protection from other animals, and hunting grounds. In the Takht Chan region, dogs are drawn as herds and have a direct connection with the nomads of the region. The dog in Sang Mehrdad area has shown scenes of tribes, nomadic migrations, and their protection from other animals. In the Mirmalas region, according to the anatomy of the dog's body, it seems to be a hunting dog and depicts a scene from a hunting ground.

**3. Motif design and style:** The dog drawing style in the two regions of Poldokhtar and Kuhdasht is generally a visual element of the surface, and the body shape is a drawing of abstract and realistic styles. The method of performing these motifs is in the form of painting.

**4. Color:** Visually, black and red ochre colors are used to draw dogs. According to experimental tests, with red dogs, iron oxide and black color, iron oxide, or manganite were used (See Figures 11 & 12).

**5. Depth of view (Perspective):** Due to the change of sizes (horses and human motifs drawn with dogs), it can be said that these motifs have a clear depth of view. In Table 8, Motif 3, some dogs look big and others look smaller, so the artist has shown an interesting depth of view in this image.

**6. Volume processing:** In the drawing of the dog, no color tone is used to showing the volume of the body and its far and near parts, and the colors are very flat; In a way that they are two-dimensional and free of any volume processing.

**7. Proportions:** According to Table 8, Motif 3, Takht Chan dogs have precise proportions, so that some dogs are large and others are smaller. However, in Motif 2, Table 8, a dog that is the same size compared to the ibex in front of it can be seen, and the motifs do not follow the correct proportions (See Table 8, See Motif 2).







**8. Composition:** The painted dogs in Lorestan were individually carved on the surface of the cave wall and created a harmonious composition. In Motif 2, Table 8, a dog barking, displaying some kind of dynamic composition, can be seen.

### Camel Motif

Using camel motifs in nomadic and rural carpets in Iran has been of interest for a long time; however, in addition to handwoven, on various works and objects such as reliefs or wall paintings, it shows the symbolic validity of this animal. Various historical evidences and archeological samples show that at least since the 4<sup>th</sup> millennium BC, there have been two types of two-humped camels (known as bactrian camels) and one-humped camels in different regions of Asia, including Iran (Zeuner, 1955, p. 161). This motif is abundantly engraved on the metal headstones of the third millennium in the graves of the Sistan region, Shah-e Sukhte (burned city), the reliefs of Takht Jamshid Palace (Persepolis), Sassanid clay rhytons. In Lorestan's pictographs, this motif has been found in a collection. In Figure 9, motifs of camels and riders where some riders are moving on two-humped camels with a rope attached to the animal can be seen. In fact, this image is very similar to the movement of the nomadic people in this region. Through the research of «Abdullah Shahbazi», it is known that Qashqai nomads of Zagros raised camels (Shahbazi, 1979, pp. 129-131). The two-humped camel was domesticated in 2500 AD in the eastern part of Iran (Abdi & Biglari, 2014, p. 27) and eventually reached Zagros. Today, such camels are kept only in the Ardabil province of Iran. Due to the climatic conditions, this animal has lived in an inhospitable environment (Shahabi & Tahmurethpour, 2015, p. 164).

**1. Executive structure and morphology of the camel motif:** Seven camels were found in the Sang Mehrdad region, which are drawn in red. The executive structure of the painting has been shown in a solid and voluminous form. The anatomy of the animal's body is designed by horizontal lines. The direction of all camels is to the right and in profile. Four of the camels have distinct ears and the next three have small ears. All seven camels are two-humped, with or without a rider. The tail of camels with a rider is down and for those without a rider, the tail is up. It seems that camels without a rider are younger than the other ones. The heads of camels in this region are oval and their muzzles are shown with thick lines attached to the ears and neck (See Figure 9). Sang Mehrdad painted camels with Dasht-e Toos motifs (Bakhtiari Shahri, 2009, p. 42), Teymareh (Farhadi, 1995, p. 36), Asoo (Sadeghi et al., 2015, p. 97), Marzbanik (Moradi et al., 2013, p. 344), Nakhlestan (Sadeghi, 2014, p. 178) (See Table 10).

**Table 10.** The camel motif in Iranian rock art. Source: Authors.

Camel Motif	Place	Camel Motif	Place
	Sang Mehrdad, Kuhdasht City, Lorestan Province. Source: Authors.		Asoo, Birjand City, South Khorasan Province. Source: Sadeghi et al., 2015, p. 97.
	Dasht-e Toos, Dali, Mashhad City, Razavi Khorasan Province Source: BakhtiariShahri, 2009, p. 42.		Marzbanik, Sistan and Baluchistan Province. Source: Moradi et al., 2013, p. 346.
	Teymareh, Arak city, Markazi Province. Source: Farhadi, 1995, p. 36.		Nakhlestan, Nehbandan City, South Khorasan Province. Source: Sadeghi, 2014, p. 178.

**2. The theme of the motifs:** The theme of the camels of this region is often scenes of the nomadic migration, which is directly related to the nomads of the area. In these pictures, in addition to camels, horses, dogs, and ibexes can be seen, which are part of the rider's property.

**3. Motif design and style:** The drawing style of camels is realistic and the visual element of the surface is used, and it is all as painting.

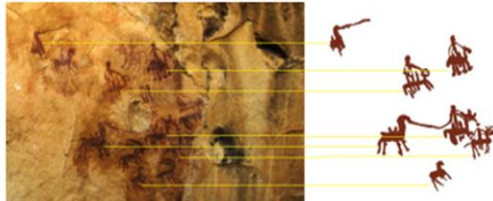
**4. Color:** The camels found in Sang Mehrdad region are visually ochre red. Based on experimental tests, the pigment used in drawing the camels of this region was iron oxide (See Figure 11).

**5. Depth of view (Perspective):** In Figure 9, the animal motifs have a change in size, considering their size as a criterion, and this bigness and smallness of the camels can show the proximity and distance of the camel motifs to each other (See Figure 9).

**6. Volume processing:** Volume processing is not observed in the Sang Mehrdad camel motifs; So by looking at the near and far legs of the camels and the front and back camels, no color tonality has been used and all the motifs have been drawn flat and without shading.

**7. Proportions:** Regarding the camel motif and the proportions among other motifs, it can be said that there is a proportional size between other paintings and camels. The type of camels and their size, their humps, reins, and human motifs on camels are suitable and the motifs follow the correct proportions.

**8. Composition:** By examining the camel paintings in [Figure 9](#) and paying attention to the human motifs and tools (reins) that are placed right next to them, it can be said that there is a coherent composition between the motifs, and a state of dynamism and mobility has been created.



**Figure 9.** The camel motif in the Sang Mehrdad of Kuhdasht.  
Source: Authors.

### Deer Motif



The deer was sacred to Indo-European and Central Asian peoples and was mostly used in their art. In Roman and Greek mythology, the deer was the embodiment of the goddess Diana and Artemis and in the form of a hunter ([Hall, 2018, p. 91](#)). In ancient Iran, it was a symbol of dignity, quickness, longevity, and its antlers were the symbol of the sun. The symbolic meaning of the deer is related to the tree because of the similarity of its antlers with the branches of the trees. Exaggeration in the display of antlers is a sign of herding and agriculture. The antlers themselves have become the branches of the tree, which means that the society is both a farmer and a shepherd at the same time. The deer's antlers, which naturally fall off and grow again, have led to the animal's symbolic association with regeneration and youth, symbolizing periods of renewal. This annual cycle has caused the connection between the agricultural regeneration of the deer and also the male sexual power. This thinking makes the deer a suitable animal for sacrifice ([Cirlot, 2009, pp. 662-663](#)). In [Figure 10](#), the shape of the deer in the pewters and goblets of the Kassites in Lorestan province can be seen ([See Figure 10](#)).

**1. The executive structure and morphology of the deer motif:** Two deers were found in the pictographs of Kuhdasht in Chalgah Shalah and Chaharta, which are drawn in profile with long and exaggerated antlers. Deer are drawn in profile with a relative and realistic volume. One of the deer is drawn with thin and thick lines and the other is drawn with a thin line. Chalgah Shalah deer are drawn with thin and thick lines and in a thick shape that one of its legs has been damaged over time, and the Chaharta deer is drawn with a thin line. Both deer have tails. The anatomy of the animal body is drawn as horizontal lines with body elongation ([See Table 11](#)). The deer's antler in this painting is jagged. Deers painted in Lorestan are comparable with the petroglyphs of Karaftu Cave ([Sadeghi, 2020, p. 120](#)), Bavaki ([Sadeghi, Rahimi, Afkhami, & Hemmati Azandariani, 2021, p. 203](#)), Sibak Pass, Zafarabad and Zainabieh Shelgerd, Dasht-e Toos ([Bakhtiari Shahri, 2009, p. 42](#)) ([See Table 12](#)).









**Figure 10.** A. The deer motif in Lorestan pewters, B. The deer motif in the caves of Lorestan.  
Source: Ghasemi, 1996, pp. 19 & 42.

**Table 11.** Deer in pictographs of Lorestan province. Source: Authors.

No.	Deer Motif/Place	No.	Deer Motif/Place
1	 Chaharta of Kuhdasht	2	 Chalgah Shalah of Kuhdasht

**Table 12.** Deer in pictographs of Lorestan province and other regions in Iran. Source: Authors.

Deer Motif	Place	Deer Motif	Place
	Chalgah Shalah, Kuhdasht City, Lorestan Province. Source: Authors.		Sibak pass, Arak City, Markazi Province Source: Authors.
	Karafu cave, Saqez City, Kurdistan Province. Source: Authors.		ZafarAbad, Dehgolan City, Kurdistan Province. Source: Authors.
	Bavaki, Azna City, Lorestan Province. Source: Sadeghi et al., 2021, p. 203.		Zeinabieh Shelgerd, Mashhad City, Razavi Khorasan Province. Sources: Bakhtiari Shahri, 2009, p. 42.

**2. The theme of the motifs:** The content and theme of the motifs are deer of the hunting ground, which are targeted by archers. In Table 11, an archer aiming at a group of deer and ibexes can be seen. Therefore, it can be said that these images are scenes of a narrative of deer and ibexes that are grazing in a herd, and with the presence of an archer, the scene becomes a hunting ground (See Table 11).

**3. Motif design and style:** The drawing style of deer is realistic and the visual element of the surface is used and it is completely painted.

**4. Color:** Visually, the color of deer painted in the Sang Mehrdad is ocher red. According to SEM-EDS tests, the pigment used for the red color has iron oxide compounds (See Figure 11).

**5. Depth of view (Perspective):** In Motifs 1 and 2, in Table 11, the motif of two deer moving to the right can be seen, and in both images, archers are aiming at these deer. The deer are drawn larger than the human figures. Due to this size change, a certain depth of view can be seen in these images.

**6. Volume processing:** In the images that include the deer motifs, even though they are in different states, there is no color tonality to draw the body parts, and the desired color for



drawing this animal is placed flat and with no contrast on the surface of the stone and does not have volume processing.

**7. Proportions:** By examining the proportions between the deer motif and the human motif behind him, it can be concluded that the deer motifs are drawn with different proportions; so that the deer motifs are drawn much larger than human motifs, and in these images, the change of real proportions between the size of deer and humans and tools can be seen.

**8. Composition:** Deer motifs painted in Kuhdasht are concentrated somewhere on the surface of the wall, and one deer has shown a dynamic composition due to the movement of its legs. Therefore, a concentrated and coherent composition with the central role of deer on the surface of the rock can be seen.

### Microscopic study and elemental analysis of the pictograph sample

To identify the samples of pigments used in the studied pictograph motifs (for three colors: red, orange, and black) using an electron microscope equipped with an analyzer (FE-SEM-EDS MIRA3 model manufactured by TESCAN company with resolving 1.5 nm at 15 KV voltage and 4.5 nm at 1 KV voltage). In the following, the results are mentioned below.

**1. Red color:** The major elements of most samples are Ca and Mg related to the rock layer. Also, Al, Si, and K, which are the elements found in the soil composition, are among the other elements identified in this sample. Na and Cl can be related to soluble salts of sodium chloride or sodium salt, which penetrates the rock structure in the form of nitrate (See Figure 11). The presence of this element in the surface layer is related to the red pigment of iron oxide III (hematite) in it. In orange color, together with red color under the microscope, they have similar properties and most likely have the same composition; Of course, their color is distinct according to their concentration. As a result, it can be concluded that the above pigment is ocher type and the amount of Fe element in this sample is also low.

**2. Black color:** The key elements of this sample are calcium (Ca) with small amounts of Mg related to the rock layer. Al, Si, and K are also other identification elements that are usually present in soil compounds. In the distribution map, these elements are scattered in all sections, including the most superficial section. The presence of significant amounts of element S is clear in it (See Figure 12). Considering the blackness of the pigment used and the lack of identification of the carbon element, the presence of an iron element in the surface layer can be related to iron oxide II or magnetite, which is black. The presence of significant amounts of element S in the sample is clear.

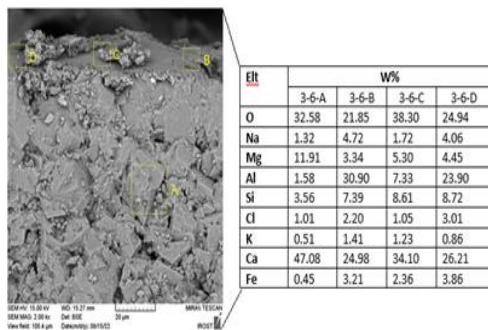


Figure 11. Elemental analysis of 4 points of red pigment, Sang Mehrdad in Kuhdasht, by SEM-EDS. Source: Authors.

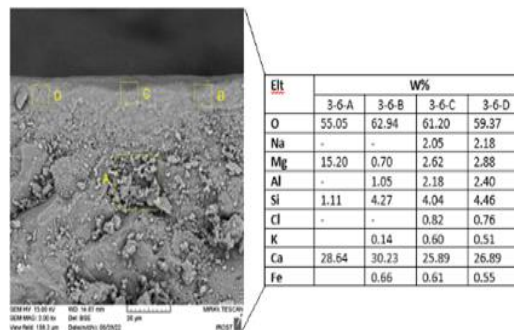


Figure 12. Elemental analysis of 4 points of black pigment, Mirmalas of Kuhdasht, by SEM-EDS. Source: Authors.

### Conclusion

The pictographs of Lorestan province are one of the most prominent petroglyphs in the plateau of Iran, which show a different artistic style compared to other motifs found in Iran. According to what was proposed in the research question about the characteristics of the pictographs of Lorestan province in the two regions of Poldokhtar and Kuhdasht, the paintings of these two cities were analyzed from the perspective of visual characteristics, executive structure, morphology, and the theme of motifs. The results show that the pictographs of the studied area include 63 animal motifs (Ibex, horse, camel, dog, and deer). From a visual point of view, these paintings are two-dimensional and with no volume processing. In most of the motifs, especially in the horse, camel, and deer motifs, the proportions are considered, while the proportions are not properly observed in the ibex and dog motifs. The perspective of the paintings has been done for all the motifs. The executive structure of motifs includes all the details - horns, ears, tail, legs, hoofs, body, muzzle - in most paintings. The motifs are mainly realistic and with no background, in some cases abstract style has been used in the two motifs of ibex and dog. In terms of composition, animal motifs have created a state of dynamism and mobility, and there is a coherent composition among the motifs. Motifs with red, black, and orange colors are placed on the surface of the stone with no contrast, and according to the investigations carried out in pigments used in making colors, it was found that the red color has a combination of iron oxide (hematite-ochre) and black is iron II oxide or magnetite. One of the fundamental characteristics of the pictographs of Lorestan province is the narrative aspect of the motifs. From a semantic point of view, these motifs include religious and non-religious purposes. Finally, animal motifs in Lorestan province are important because this animal has a close connection to the most important aspects of life, including economic, cultural, social, political, and religious aspects, in all historical periods until today.

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