

Epipaleolithic Site Discovery in Southeastern of Iran, Rayen

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(Received: 13/ 02/ 2013/ ; Received in Revised form: 04/ 04/ 2013 ; Accepted: 11/ 11/ 2013)

In the spring of 2012 an archaeological survey was conducted within the Rayen region in order to explore all archaeological periods in this state and document all archaeological settlement patterns of this region. In general 52 archaeological sites were discovered and documented which included all prehistoric and historic sites. Among these sites, three of them seems to belong to the Paleolithic periods. This paper aims to describe one which, based on the available materials, technological and typological characteristics is most likely from the Epi-Paleolithic, which is not well known from other parts of Iran. This specific era in Iranian Paleolithic studies and its existence and all its characteristics, complexity and their distributions around the country are highly unknown, especially from the south of Iran. Since this site is an open-air location, the only way to determine its approximate age is based on the available materials. To achieve this, we have done some analysis over the technological and typological characteristics of this site's lithics. In this paper, we describe the lithics and their technological and typological characteristics in order to determine the main production techniques and approximate age.

Keywords: *Epipaleolithic; Rayen; Southeast Iran; Lithic; Technology; Typology*

Introduction

For a long time in the history of Paleolithic Archaeological studies in Iran most of the Paleolithic research was largely focused on the western part of the country with the aim of studying lithic materials and settlement patterns of caves and rock shelters of the Zagros Mountains . This focus over Zagros and the northern part of the country somehow, left a vast unstudied area, with a lot of questions regarding Paleolithic settlement patterns. It has only been in recent years that the extent of Paleolithic surveys and excavations have largely been drawn to areas other than the well-known Zagros sites (Biglari *et al* 2009, Conard *et al* 2006; 2009). Even during the discovery of new Paleolithic sites in different parts of the country some areas, especially southern and eastern parts, have had a lower chance in attracting the attention of Paleo-archaeologists which has led to a lack of clear understanding of the characteristics of Paleolithic period in these regions. This paper aims to introduce one of the newly discovered open air sites known as site 004, near Rayen city in Kerman province, south

of Iran (Mortazavi and Khodabakhshi Parizi 2012). Here we try to give a description of technological and typological characteristics of its lithic materials with the main goal of determining the period which this site might belong to. This could encourage other researchers to shift their attention to other unknown or less well known regions for a better understanding of different aspects of human scatter in Iran before the Neolithic period. This study will create a better understanding and will provide some insight into how the different Paleolithic eras and how different waves of moving hunter-gatherer populations were able to occupy distinctive bio-geographical zones within different cultural and technological differences. Apart from this it would inform us at least in this part of Iran how these hunter-gatherers could cope with different landscape and were able to adopt their toolkit with available resources around them.

Geographical Setting

Rayen lies in large flat lands located in the center of the Kerman province in southern Iran (Fig. 1). This area is surrounded by mountain chains from the north and the south. The city lies 25 km north of

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the Hezar Mountains which is the highest mountain range in the south of Iran with an elevation of 4465 meters above sea level. The geomorphologic features of the region belong to the Jurassic and Paleozoic geological periods, which in this case most of the area is a large igneous formation. The great amount of sediments in the low open lands of the area is a visible sign of Quaternary intensive eroding activities which also are the cause of movement of large blocks of granit and other volcanic rocks. The flat lands are mostly farms and villages around

the seasonal or permanent rivers. In mountainous parts, however, like the low land ones there are villages which are occupied either seasonally or permanently. Superficial and underground waters comprise water sources of Rayen with Tahroud as the main river of the entire region which originates from the south of the city and is mainly fed by Hezar mountains streams. The main distinctive the environmental feature here is basically dry and cold during the winter and mild during spring and summer. The major vegetation cover in the area can

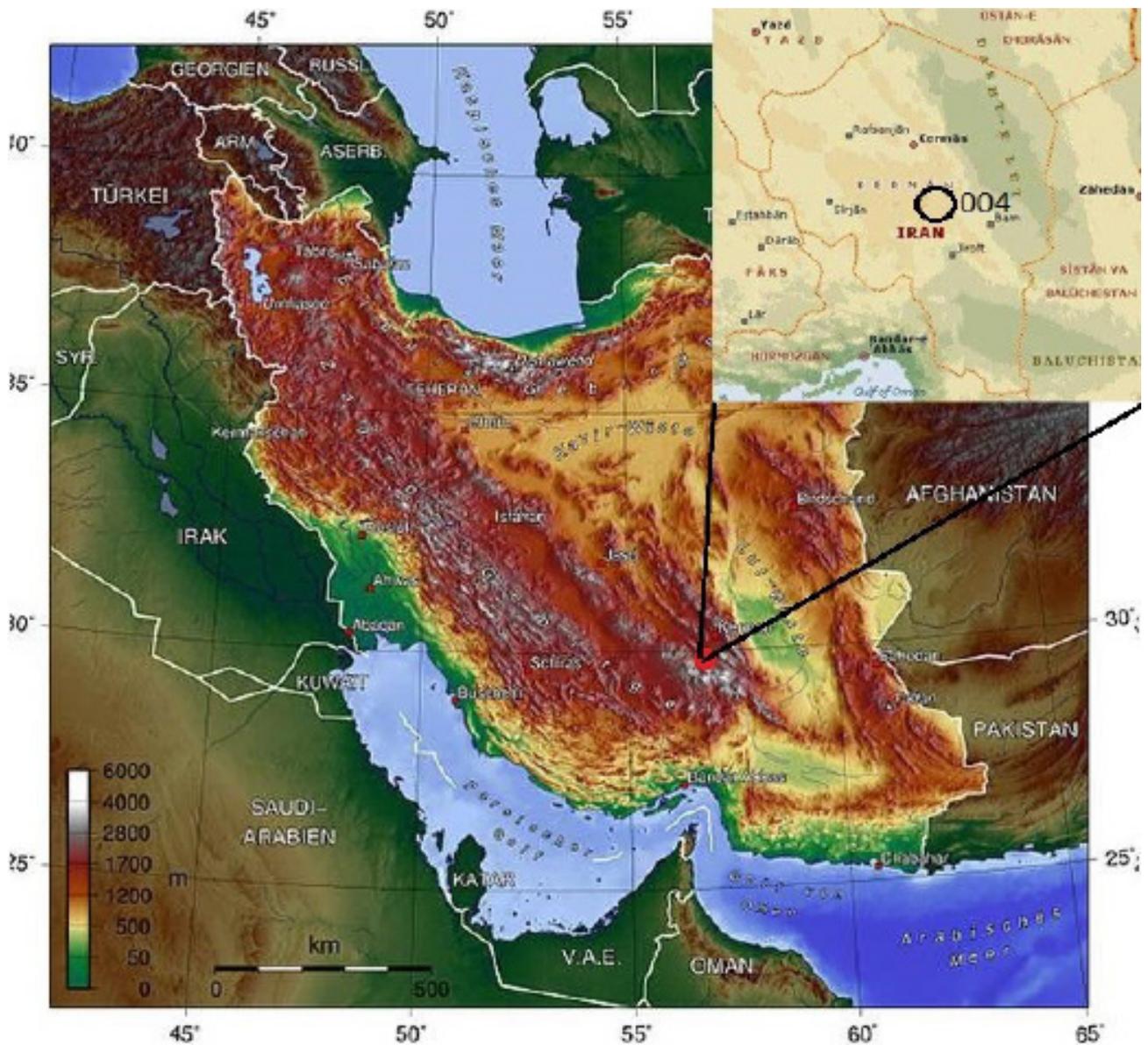


Fig.1: Map of the Rayen region showing the location of oo4 sites (After: Mortazavi and Khodabakhshi Parizi 2012).



be considered as hugely diverse because of climatic differences between mountains and low-flat lands. However, mainly wild almonds, wild pistachio, willow, and many different local bushes and shrubs are the most visible vegetation in this area.

Survey of the Area

As mentioned above our main goal of the survey of Rayen area was to identify and document all the prehistoric and historic sites of the region. Meanwhile sites with signs of belonging to the Paleolithic period were of greater interest to us. Most of sites were introduced to us by local people and one of the members of the local NGO who was fairly aware of the entire area and historical archaeological sites. Because of water sources like rivers, streams and springs which have been a main factor in attracting humans groups and societies to various places we decided to pay more attention to areas which were near or touch the water sources, like dried springs and river beds. This strategy turned out successful in helping us find a few more sites. Among these sites were 3 open air sites with apparently evidence of Paleolithic times which were located near Tufa springs. All the objects which could help us to get a clearer understanding of the age and important features of the sites were collected. At the final stage all more informative objects and all the sites were photographed and documented. After identifying all the archaeological sites in Rayen region we focused our attention on one open site which appeared to have lithic materials from the Paleolithic period. In order to collect the materials, team members (including 4 individuals) stood and walked in 20 meters distance from each other in order to cover a 200 by 200 meter area which was the extent to which lithic materials were scattered at the site suspect to have any lithics and to know if this place was disturbed or not. Afterward it became clear to us that there was only one place which was spotted at first place by our team, that yielded a good amount of concentrated lithics. This case made us sure that we are dealing with almost intact lithics group in one surface which were not very distributed around. The result of survey was a collection which had a concentration of finds over 5m diameter extent with 482 lithic objects which were sorted out and labeled

(Mortazavi and Khodabakhshi Parizi 2012).

Site Description

Site 004 is located exactly in the northern edge of Rayen (Fig. 2) with an elevation of 2193m above sea level. The site formation is associated with alluvial washed sandy sediments. This formation is mostly fine sand and clay in some occasions sandwiched between the sand layers. It is obvious, however, for us by looking at Google-earth pictures from above, that these sediments have been brought into the site from southwestern parts of Hezar Mountains slopes and were accumulated here over a considerable amount of erosion activities. Based on our observations it seems that most of the sediments were consistently and frequently deposited in this spot. Due to lack of big pebbles or cobbles, it became clear by observing the sediments in the profile, that erosion activities happened at regular and stable intervals in this alluvial place. Likewise, it was evident after we visited one section right on the site which was removed and all of strata was exposed. The total accumulated amount of sediments in this site reaches about 6 meters at the highest to the lowest visible point. The sediments contained almost no pebble or rocks as mentioned and it may have been because of the sedimentation and accumulation process which was frequent and consistent. In this case, nevertheless, it made us suspicious that this formation character may have been created during a very wet and rainy climate. In the north side of the site there is a creek which flows from west to the east and also comes from the Hezar mountain slopes. Most of the surface is disturbed today because of the need for sand for building material. By mentioning the situation, we were suspicious that probably because of these activities we were able to detect the site. From the present expansion and size of the site it is not clear but the main spot that our assemblage is coming from, it was very concentrated and there is a possibility that this place is not very disturbed.

Materials and Methods

Our assemblage included 483 lithic pieces (Figs.





Fig. 2: a general view of 004 site from above (After: Adapted from Google Earth, 10/2/2011).

3-6) containing cores, tools, blanks, and debris (Table. 1). Blanks were divided into 3 technological groups of flake, bladelet, and blade of which flakes comprise 81% (N= 216) of the blanks, indicating the assemblage is dominated by flakes. Bladelets are the most common blanks after flakes accounting for 17% (N=44) of the whole blanks followed by blades with only 6 (2%) (Table. 2). Whole removals make up 55% (N=266) of the assemblage, while there are only 84 incomplete blanks which include proximal, medial and distal parts respectively account for 41% (N=34), 13% (N=11), 56%(N=39) of the incomplete removals. It's likely these parts were snapped during production, use or post-depositional process was responsible for their occurrence (Baumler & Downum 1989 Prentiss 1998). The type of raw material although could have a role in the manufacturing broken pieces (Anderefsky 1998; Cotterell & Kamminga 1987). Among whole removals there are equal numbers of

cortical (i.e. 50%) and non-cortical blanks. Cortical ones were grouped into two groups of blanks with the amount of cortex greater than or equal with 50% in one group and less than 50% in the other. From what was observed 90% of the blanks had cortex less than 50%. Presence of cortical pieces shows at least part of the reduction process occurred at the site. This could also be proved by the presence of cortical cores, plain and cortical platforms, debris (70% of whole assemblage) and the huge number of small flakes in the assemblage. Given that assemblage 90% percent of blanks are less than of 50% cortical it shows further stages of reduction also happened at the site.

Platforms are classified into 8 groups including: plain, punctiform, linear, crushed, cortical, faceted, broken, and dihedral, with plain platforms the most common group (68%) and Dihedral the smallest group (1%) (Table. 3). As partly mentioned above,



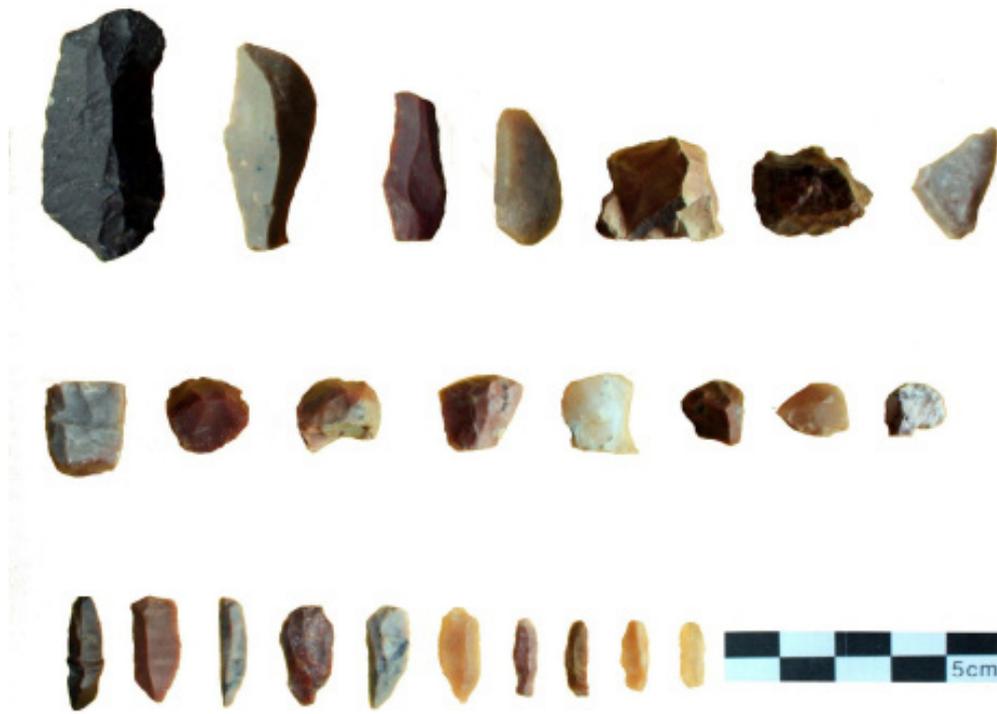


Fig. 3: Selected artifacts from 004 site (After: Mortazavi and Khodabakhsi Parizi. 2012).

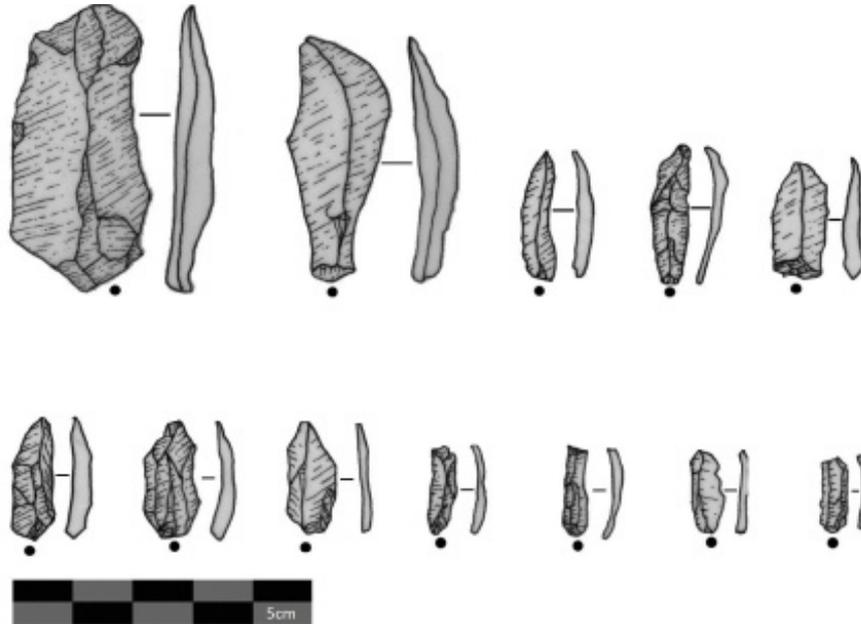


Fig. 4: Drawings of blades and bladelets from 004 (After: Mortazavi and Khodabakhsi Parizi. 2012).



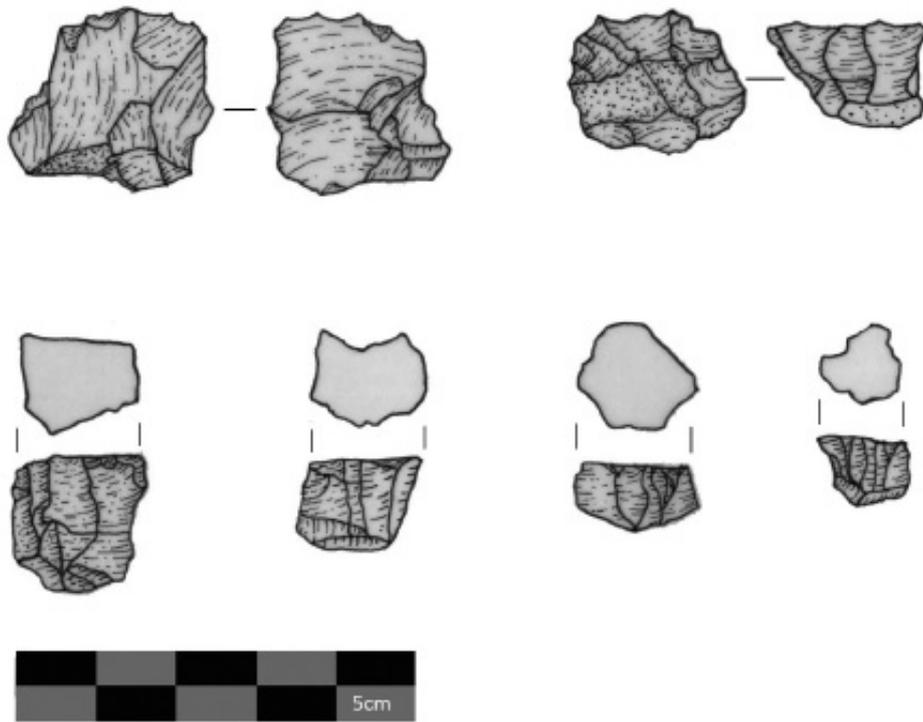


Fig. 5: Drawings of cores from 004 (After: Mortazavi and Khodabakhshi Parizi, 2012).

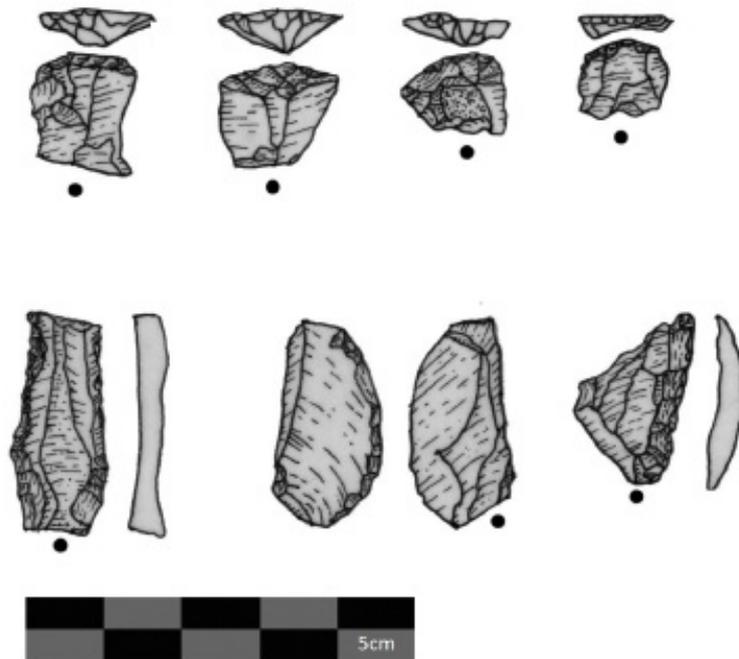


Fig. 6: Drawings of scrapers and retouched artifacts from 004 (After: Mortazavi and Khodabakhshi Parizi, 2012).



various types of platforms ranging from cortical to crushed and faceted indicate the occurrence of the whole reduction process at the site. The high number of plain platforms is possibly due to being manufactured during early stages of the reduction process or expedient of production of artifacts (Litwinaonek 1997). The most important group in our assemblage is the group of tools. Tools only comprise 3% (N=18) of the whole assemblage. These include: 5 end scrapers, 2 thumbnail scrapers, 4 side scrapers, 3 burins, 3 retouched flakes, and 1 notch which all are produced on flakes (Table. 4). Retouch on the tools are classified into 3 groups of light, medium and heavy, which there are equal numbers of them in the class of tools. The low number of the tools in the assemblage, the low amount of heavy retouch along with the low occurrence of utilized blanks (observed by naked eye) all could point to the lack of heavy exploiting of raw materials at the site. There are 23 cores in the assemblage including 15 bladelet cores, 5 flake cores, and 3 mixed cores (with flake and bladelet removals). All the cores are of varied small size with the largest ones being only 2.5 cm in length. This may be because of the small size of raw materials, not as a result of heavy reduction process. The average length for the whole blanks in the assemblage is 18.5mm with maximum and minimum length 58 and 5mm respectively. This could be taken as evidence for there being small available raw material size in general. There

Table. 1: All discovered lithic species from 004 site.

Stone pieces	Number
Blanks(complete & incomplete)	350 (73%)
Tools	18 (4%)
Cores/fragment core	31 (6%)
Debris	84 (17%)
Total	483

Table. 2: Removal types discovered from 004 site.

Complete	Number
Flakes	216 (81%)
Bladelets	44 (17%)
Blades	6 (2%)

Table. 3: Different platforms discovered from 004 site.

Platforms	Number
Plain	178 (60%)
Punctiform	35 (12%)
Linear	29 (10%)
Crushed	24 (8%)
Cortical	11 (4%)
Faceted	8 (3%)
Broken	7 (2%)
Dihedral	4 (1%)

Table. 4: Tool types from 004 site.

Tool Types	Number
End scraper	5 (28%)
Thumbnail scraper	2 (11%)
Side scraper	4 (22%)
Burin	3 (17%)
Retouched flake	3 (17%)
Notch/End scraper	1 (5%)
Total	18

are 9 core fragments and one tablet core, 8 core rejuvenation pieces which could point to again on-site reduction process. As mentioned there are 6 blades in assemblage for which we couldn't find any Blade core. This might be because we couldn't recover them at the site or because of large size of core they were transported from the site. But because of the small size of the whole assemblage it could be probable that these cores entered into the site from some other places.

Conclusion

Based on the recovered lithics from 004 site our study shows that the 004 locality at least might have functioned as a workshop. Presence of core, debris, small flakes and different stages of reduction sequence and low number of tools in general attest to this conclusion. Discovery of one river pebble which was clearly used as a hammer stone can be used to support our argument. Although determining



chronology of the site is difficult because of lack of reliable dating methods and the fact that collection was recovered from a surface survey. There are indexes fossils of Epi-Paleolithic such as end scrapers, bladelet, burins and thumbnails but the assemblage obviously is flake based, which is a characteristic of Epi-Paleolithic. As mentioned based on our available evidence it is not easy to be convinced to what period it could belong. We believe that human groups in their expansion path appeared in this region, and based on the recent discovery this site could be the most southern site for this age. Based on our observations and present evidence we believe this assemblage can be attributed to the Epi-Paleolithic. Finding this site also has opened a new window to all researchers which may give them some clues regarding human expansion in this age around the southern part of Iran. This study also gave us some hope that in spite of the semi harsh and arid climate as visible today in this area, we will be able to understand the ecological and technological characters of past hunter-gatherers and predict their migration paths and their daily life complexities.



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