# Journal of Archaeological Studies

24

ISSN: 2251-9297

Winter 2021 ■ No.4 ■ Vol.12

Table of Contents

ISSN: 2251-9297

**Journal of Archaeological Studies**

**(The former Journal of Faculty of Literature and Humanities)**

**University of Tehran**

**No. 4, Vol. 12, Serial No. 24**

**Fall 2021**

**Publisher:** University of Tehran

**License Holder:** Faculty of Literature & Human Sciences, University of Tehran

**Managing Director:** Gholam Hossein Karimi Dustan

**Editor-in-chief:** Hassan Fazeli Nashli



**Address:** Literature and Human Sciences Faculty of Tehran University, Enqelab Avn, Tehran, Iran.

**E-mail:** Jarcs@ut.ac.ir **Phone & Fax:** 021-66978883 **Price:** 100000 RIs

According to Notice No 90/3/11/18073 dated 02/05/2011 issued by Supervisory Commission of State Scientific Journals affiliated to Ministry of Science, Researches & Technology**, the Scientific** was granted to **Journal of Archeological Studies.**

Indexed at: www.sid.ir Indexed at: www.isc.gov.ir

Indexed at:www.Ulrich's international periodicals directory. (Journal, magazine)

## Table of Contents

Journal of Archaeological Studies
Vol 12, Is 4 - Serial Number 24, Winter 2021

Formerly "the Journal of the Faculty of Literature and Humanities"... University of Tehran

# The Hasanlu VII Culture in the Southern Lake Urmia Basin, Northwest Iran: A New Archaeological Outline

**Ghader Ebrahimi**[1] & **Reza Rezaloo** [2] & **Michael Danti**[3] & **Ardeshir Javanmardzadeh** [4] &**Akbar Abedi** [5]

**(1-22)**

## Abstract

Hasanlu archaeological joint project in partnership with Iranian-American archaeologist is the one of the rare long-term archaeological projects carried out in northwest of Iran. In the process of this project (1957-1978), the layers from the Neolithic period to the historical period have been excavated. The Seventh period of Hasanlu Tepe is contemporary of early bronze age and the beginning of massive economic and social mutation in the cultural developments context of Middle East. Cultural materials of this period in Hasanlu Tepe have illuminated the obvious cultural differentiation between southern area of Urmia lake and the whole of Iran northwest region. Although the short report on this period material have been published, but there is still very little awareness on this period around the pottery types and its distribution, burial traditions and relationship between neighbors. Therefore, the present study intends to introduce the general characteristics of the culture of the seventh period of Hasanlu by referring to the findings of Hasanlu project and other excavations carried out in this area. cultural materials of this period illuminates that during the third millennium BC, there have been a distinguished socio-cultural zone from the Kura-Araxes area with painted Orange and Red pottery characteristic in the southern part of Lake Urmia to the southern slopes of Sahand Mountains. Which on the one hand interacted with northern Mesopotamia in west and on the other hand interacted with the Kura-Araxes communities in whole of north, eastern and southern area.

**Keywords:** Hasanlu, Northwest Iran, Early Bronze Age, Painted Orange Ware, Kura-Araxes.

Received: 12 October, 2020; Accepted: 10 March, 2021

10.22059/jarcs.2020.311746.142936
Print ISSN: 2676-4288- Online ISSN: 2251-9297
https://jarcs.ut.ac.ir

1. Corresponding Author Email: Ebrahimqader@ut.ac.ir. Ph.D. Candidate in Archaeology, University of Mohaghegh Ardabili, Ardabil, Iran.
2. Professor, Department of Archaeology, University of Mohaghegh Ardabili, Ardabil, Iran.
3. Researcher at University of Pennsylvania and ASOR; PHD, University of Pennsylvania, Philadelphia, USA.
4. Assistant Professor, Department of Archaeology, University of Mohaghegh Ardabil, Ardabil, Iran.
5. Associate Professor, Department of Archaeology and Archaeometry, Tabriz Islamic Art University, Tabriz, Iran.

## 1.Introduction

The heightened scholarly interest in the recent decades in the Bronze Age, notably the Early Bronze Age (EBA), of northwestern Iran has brought about increases in our understanding of the period.[1] On the other hand, a statistical evaluation of the pertinent scholarship and fieldwork reveals a heavy focus on the Kura-Araxes period (e.g. Alizadeh and Azarnoush 2003a, 2003b; Omrani 2006; Abedi et al. 2014b; Abedi 2016; Alizadeh et al. 2018). Chronological and cultural attributes of the Bronze Age of northwestern Iran are currently studied and discussed on the basis of the results of earlier excavations at such sites as Hasanlu (Dyson and Pigott 1975), Yanik Tepe (Burney 1964), Haftavan (Burney 1976), Geoy Tepe (Burton-Brown 1951), Kordlar (Lippert 1979), and Gijlar (Belgiorno et al. 1984: 241-299) as well as a series of more recently excavated sites, including Kul Tepe of Hadishahr (Abedi et al. 2014b), Köhne-Shahar of Chaldoran (*Alizadeh et al. 2015, Alizadeh et al. 2018*) and Kohne-Pasgah Tepesi in Kaleibar (*Maziar 2010; Aghalari and Abdollahzadeh 2015*). Yet, the advent of the Hasanlu Project marked a turning point in the archaeology of not only Iranian Azerbaijan but also Iran as a whole, with the Project's 12 seasons of excavations between 1956 and 1977 (*Dyson 1969, 1972, 1983*) establishing a general cultural and archaeological sequence for the Urmia Lake Basin, in particular its southern quadrant, spanning the Neolithic to historic times (Y*oung 1965; Dyson 1983; Voigt and Dyson 1992; Danti 2004*). Today, the general framework proposed by the Hasanlu Project enables comparative analysis of the related individual periods in the archeology of Iran and neighboring regions based on the existing data on technological trends in manufacture of ceramic and metal objects, social systems, architectural styles, burial traditions and even clothing and personal ornament of certain periods.

In the Hasanlu sequence, Periods VII-V represented the Bronze Age material culture, encompassing the third and second millennia BC (*Danti et al. 2004; Danti 2013*). Period VII, characterized by the so-called Painted Orange Ware, postdates the Late Chalcolithic Pisdeli Period typified by a painted Buff Ware assemblage (*Dyson and Young 1960*) that ends around the beginning of the 3rd millennium BC. Hasanlu VI is defined by a distinctive painted Buff Ware tradition, which is regarded as a link between the southern Lake Urmia region and the Khabur Ware Horizon of northern Mesopotamia (*Hamlin 1971; Kroll 1994*).[2] The contemporary assemblages also contain sherds, albeit in smaller numbers, which point to connections with the areas to the north of Lake Urmia and Caucasia (*Rubinson 2004; Danti, 2013: fig. 17b*). The cultural complex was attested at Hasanlu in the upper strata of the Period VII deposits[3] (*Dyson 1958, 1960, 1973; Young 1959; Dyson and Pigott 1957*) as well as at Dinkha, some 27 km west of Hasanlu, similarly excavated by the Hasanlu Project during 1966-1968 (*Muscarella 1968; Dyson et al. 1969*).[4] Finally, Hasanlu V marks the Late Bronze culture in the region at the time of its historical turning point, which would culminate in the Iron Age and the emergence of empires.

The Lake Urmia region and northwest Iran was apparently settled by two distinct archaeological cultures in the EBA, with cultural attributes rooted in Caucasia and the Bronze Age archaeological culture evidenced at Hasanlu as well as the recent finds from Tepe Se-Girdan of Mahabad (*Binandeh 2014; Sohrabi and Ebrahimi 2015*), Tepe Qara-Qouzlou

(*Kharazi et al. 2013*) and the extensive excavations at Tepe Silveh of Piranshahr (*Abedi 2018; Abedi and Ebrahimi 2019*). While a few sites reflect connections and overlap of the two cultures, we are progressively documenting a marked north-south distinction in their geographic distribution. With a special emphasis on the cultural material deriving from several excavations in southern Lake Urmia, the present paper attempts to propose an outline of the archaeological culture of the Hasanlu Period VII in terms of ceramic assemblages, burial practices, urban form, and settlement patterns.

## 2.History of Excavation in Hasanlu VII Deposits

Period VII materials at Hasanlu are attested on both the High Mound (Dyson 1960; Dyson and Pigott 1975) and the Low Mound as architectural remains and burials. A human burial of this date was also discovered at the nearby site of Tepe Hajji-Firuz (Voigt, 1976: 805). Period VII was first documented in1957 in Operations IV, V and VI opened on the Low Mound (Dyson 1958). In 1958, excavation was resumed to study the pottery sequence identified in the previous season (Young 1959) and continued down to sterile soil. Later, in 1960 Dyson dug a deep well[5], the Well Sounding, from a surface 10 meters below the highest point of the mound (Danti, 2013: 59-61). This small sounding produced a sequence spanning the Iron Age, Early Bronze Age characterized by Painted Orange Ware, the Pisdeli ceramics, and the Dalma material (Dyson 1960, 1961). Again in 1974, limited excavations were carried out on the High Mound in Grid U22, which probed Period VII material down to a depth of 3.80 m beneath the Period VI deposits and stopped at the level of the Pisdeli layers (Dyson and Pigott 1975).

Based on the short available reports from the Hasanlu Project covering the excavations on the Low Mound and on the excavation records and collections at the University of Pennsylvania Museum, Period VII materials mainly were encountered in Operations IV, V, VI and X at the depth of 8.5 meters above sterile soil, and this was also the case with all other operations opened in the east and north quarters of the High Mound. Hence, the earliest attested cultural and archaeological deposits on the Low Mound date to Period VIIc, and after this period Law Mound spaces alternatively used between cemetery and occupation (Danti, 2013: 119-141). In Operation VI, the small houses of Period VII were invariably made of mudbrick and had clean floors (Dyson, 1958: 25-26).

Apart from Hasanlu, the excavations for the Hasanlu Project directed by M.M. Voigt at Hajji Firuz Tepe to examine the earlier periods brought to light a human burial with Hasanlu VII ceramics (Voigt, 1976: 805, fig. 115). This single burial is the only published grave from the period. It was made in a 30-cm deep rectangle pit. The grave fill consisted of a loose brown soil containing a mixture of animal and human bones. Fragments of clay were also present, in particular by the edges of the grave pit, suggesting that the latter were probably lined in wooden planks or wattle and daub. The burial was of an adult male laid in a fetal position in an east-west orientation, with the arms flexed against the chest and five vessels flanking the body (Figure 1). A sixth vessel, of Painted Orange Ware, which occurred in the fill above the burial, was presumably part of the burial gifts but made its way to the overlying layers as a result of later pitting (Voigt, 1976: 805). It is notable that other Period VII burials have been mentioned from the areas around Tepe Hasanlu without

any further details (Dyson, 1958: 26; Danti, 2013: Appendix IVb). Only two pottery vessel from the contemporary burials has been published from the Low Mound (Figure 2: 1-2).

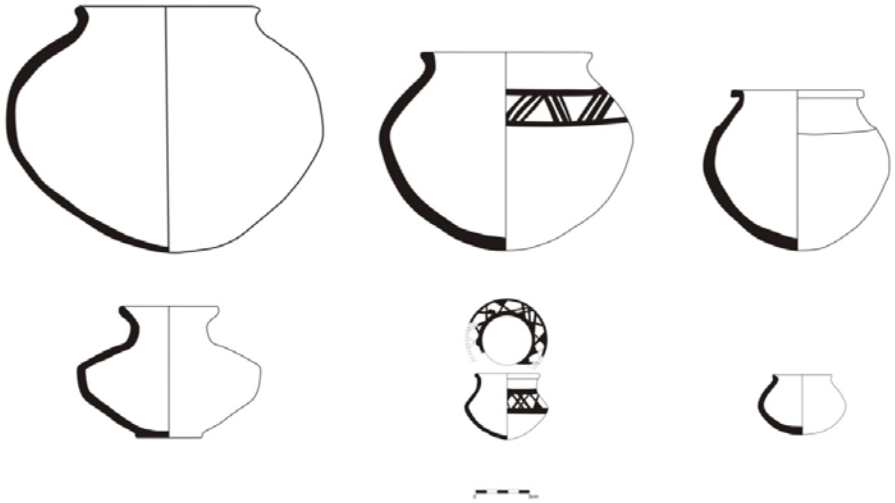


**Figure 1: Hasanlu VII assemblage pottery from Hajji Firuz H11 Burial1**

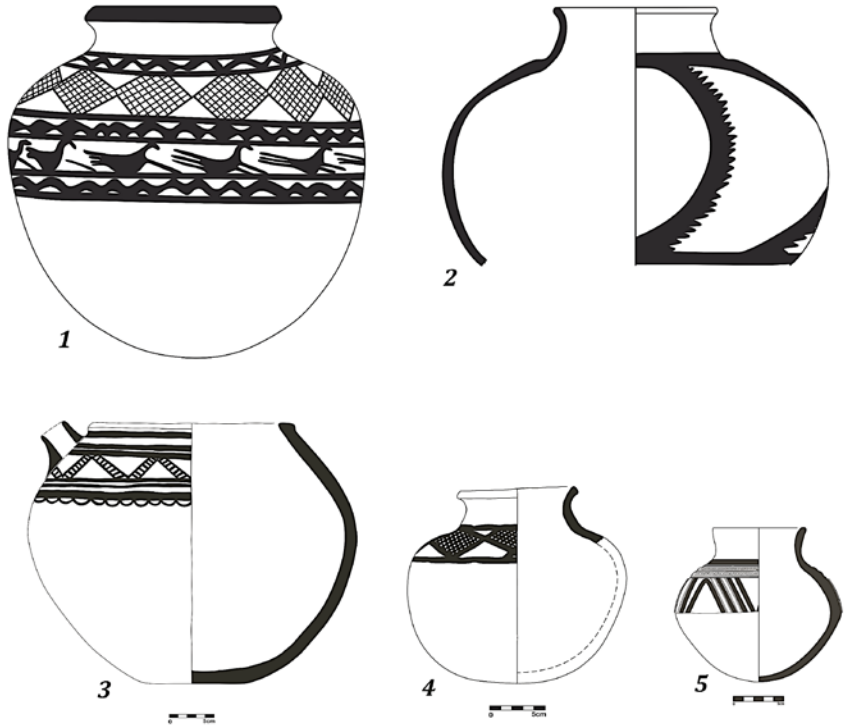



**Figure 2: Orange Pottery Ware from Hasanlu: 1-2 (Dyson 1968), 3 (Sadraei and Elliyoun 2019a: Fig. 52) and 4-5 (Sadraei and Elliyoun 2019b: Fig. 45, 112)**

## 3.EBA Pottery Traditions of the South Urmia Basin in the Context of the Stratigraphy of Hasanlu

Excavations in the Hasanlu High Mound to establish the cultural and archaeological sequence of the site (Dyson 1960, 1967; Dyson and Pigott 1975) exposed Hasanlu VII materials below those of Period VI (Middle Bronze Age) and above the Pisdeli (Late Chalcolithic) deposits. In the well sounding made in the 1960 season, Period VII was encountered beneath the middle and late Bronze levels as a 6.5 meters deposit. Most importantly, excavations in the 1972 and 1974 seasons aimed at completing a deep sounding in Grid U22 below levels below Period V revealed 32 stratigraphic units, of which strata 19 to 42 represented Hasanlu VII (Danti, et al. 2004: 586). The U22 Sounding clearly showed that Hasanlu flourished in the Early Bronze Age with a long sequence of presumably continuous occupation—archaeological surveys and excavations at other sites in the Southern Lake Urmia Basin demonstrate this represents a pattern in the wider region.

In light of the changes observed in the painted wares and motifs, Dyson preliminarily divided the period into three *phases* VIIa-VIIc, with VIIa being the latest (Dyson and Pigott 1957). Strata 19 and 20, the uppermost layers, contained globular jars with short necks and everted rims, decorated with a band of cross-hatched lozenges running around the shoulder. Below this, a band consisting of an undulating line framed by two straight, parallel lines runs all around the body. This group of vessels belongs to Phase VIIa. Strata 21-30, relating to the intermediary phase (VIIb), yielded jars with larger mouths and the same decorations as phase VIIa, except for the presence ofa band of birds below the lozenges (Fig. 2: 1). In the lowermost layers, strata 31-42, the Painted Orange Ware disappeared, although undecorated Orange Ware predominates, and sherds from small bowls decorated with parallel vertical lines framing dotted circles emerged. Dyson designated the assemblage as phase VIIc given its relation with the material from the upper phase and its difference from that of the Pisdeli period (Dyson and Pigott, 1975: 182). The above categorization was however proposed in a short report in early years by Dyson on the excavated pottery assemblages of a period spanning almost a millennium. Notably, a series of popular motifs on the contemporary pottery, such as dentate circles (branch-like or flame-like spirals in Kroll, 2004: 680) are absent from Dyson's periodization scheme, while they often occur at other Period VII sites in the region (Dyson, 1958: Fig. 27; Dyson 1968) (Fig. 2: 2).

The assemblages from phase VIIc have been split into five stratigraphic phases, labeled as VIIC:1-5 (Danti et al., 2004: 589-594), by virtue of the five architectural levels recorded in the 1974 excavations. The predominate ceramic types in the VIIC:2-5 assemblages are slipped, wet-smoothed forms "often with lustrous streaks," termed by Danti as Streaky Ware. Their surface color ranges from light brown/pale orange to reddish orange/red and light gray to black. The paste is tempered with a mixture of chaff and grit (Danti et al., 2004: 590). In this phase (strata 42 and 42a-c), two classes of painted wares occur: Black on Orange and Black and Red on Orange (Figure 3). The vessels are invariably wheel-made.

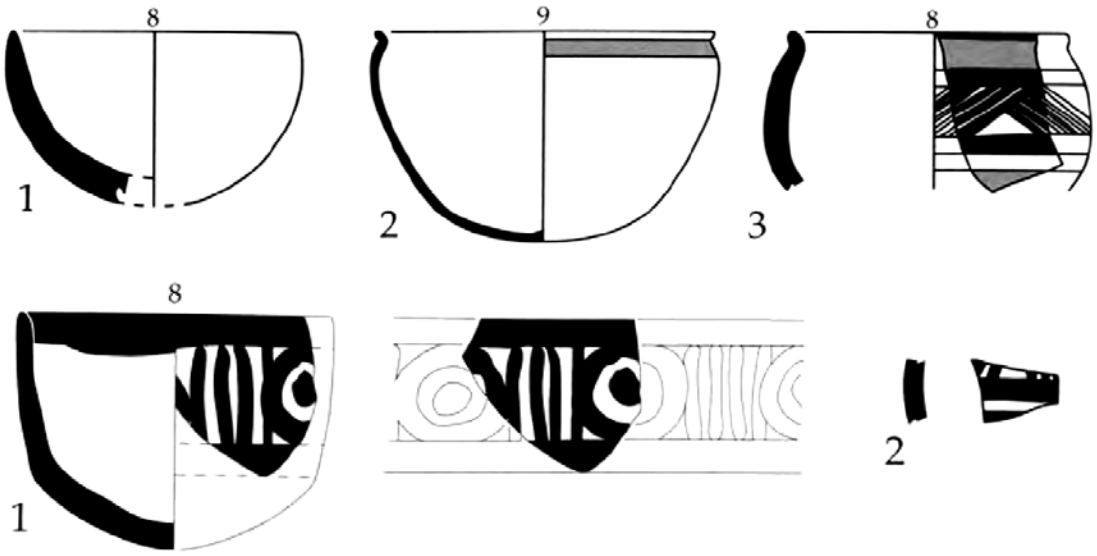



**Figure 3: Hasanlu VIIc Painted Wares (Danti et al., 2004: Fig.3, 4)**

In the VIIC:4 (strata 40-41) assemblage, the sherds tend to be from simple hand-made bowls with flat bases in Streaky Ware.

Among the finds from Phase VIIC:3, strata 37-39, a large bowl with a fragment of a small, presumably triangle lug at the rim and deep open-mouthed bowls with almost vertical walls are in Streaky Ware. The assemblage also contains two painted examples: a cup with a pointed base decorated with circles confined within horizontal lines and punctuated by vertical lines, and a necked, closed vessel with a cream slip and painted motifs in reddish brown.

With larger exposed contexts than the lower subphases, VIIC:2 is represented by greater architectural remains and a larger pottery assemblage. The latter consists of the same material as the three earlier subphases. It yields the first attestations of the wheel-made Orange Ware as fine, uniformly fired orange vessels with grit temper. As regards morphology, vessels tend to be open bowls with straight walls. The major change in the pottery is the emergence of carinated bowls with everted rims fashioned in Streaky Ware. Other typical forms are hand-made jars with short necks, everted rims and globular bodies. The necks and bodies of these jars were separately made and joined together, and in some cases the body shows a circular depression. A few close-mouthed and short-necked jars with simple rims in Streaky Ware and Orange Ware also occur, as are medium to large wheel-made jars in Orange Ware. Two fragments of Soapy Ware are also present.

VIIC:1 occurs in strata 31a-f, 32a and 32, which comprise three architectural phases on the basis of the excavation records. The most noticeable intra-phase change in the pottery is the drop in the frequency of Streaky Ware and the absolute lack of so-called casserole forms. The mottled surface colors characteristic of the Streaky Ware assemblages in earlier subphases virtually vanishes, giving way to highly burnished ceramics.[6] The true black

burnished pottery of the Kura-Araxian type emerges in this subphase. The bowls are in Streaky or Orange wares and are smaller and shallower than those of the early subphases. Also, a small group of finer bowls or cups in Orange Ware with grit temper are conspicuous in the assemblage. Red-slipped vessels in Streaky Ware and Cooking Pot Ware vessels are among the open forms of VIIC:1.

Medium-to-small jars with a fairly thin body, mainly in Orange Ware, account for the majority of the closed forms. Also present are a few Streaky Ware jars, as is a unique vessel in the shape of a handled jar of Cooking Pot Ware. Bag-shaped jars with simple rim in Orange Ware, Cooking Pot Ware, and Streaky Ware predominate the closed forms category, replacing casseroles as the vessels of choice for food preparation. In one case, in Orange Ware, has a tab or regular handles below the rim. As stated above, the earliest attestations of the Kura-Araxian pottery are found in VIIC:1. Surface decorations are utterly absent, bar the lenticular depressions on a single Kura-Araxian sherd (Danti et al., 2004: 81-86).

## 4.Burial Traditions in Hasanlu Period VII

Little is known about the mortuary customs, places used in the disposal of the dead, and the grave goods in the Bronze Age northwest Iran. The situation might be related to several factors: the scarcity of extensive and targeted excavations at the contemporary sites, the lack or insufficiency of scientific research approaches, and ignorance of the spatial criteria of the places used for burial purposes.

In the southern Lake Urmia region, burial evidence from the 3rd millennium BC comes from the two mounds of Hasanlu and Hajji Firuz. As stated earlier, H11 Burial 1 from Hajji Firuz Tepe stands as the only fully published human burial dating to the Hasanlu VII period.[7] This grave indicates that the dead appear to have been buried following special ceremonies and funerary customs. A rectangular pit was dug, and the body was interred together with offerings after the pit walls were coated in clay or cased in wooden planks (Voigt, 1976: 805). Alongside the one from Hajji Firuz, the graves excavated at Hasanlu provide a relative picture of the mortuary practices of the period. In the operations completed around the central area of Tepe Hasanlu, several burials belonging to the POW traditions were unearthed, though exact information on the contexts in which they were made is unavailable. Dyson reports that:

**"One complete Burial, VI B 21, was recovered in which the body of an adolescent child lay on its right side in a slightly contracted position, oriented east-west with its head to the west and facing southeast."**(Dyson, 1958: 27)

The skeleton was associated with six jars of varying sizes. A small jar was above the skull. Dyson also provides the following description of this burial:

**"The body was clad in a tunic of some sort fastened by a slender copper pin at the left shoulder. There was a coiled copper ring in the hair just over the left ear and a necklace of white paste beads was hung around the neck." (**Dyson, 1958: 27**)**

This is the only description Dyson ever provided on Operation VI Burial 21 excavated on the northern Low Mound. It is noteworthy however that it is not the sole excavated burial from Period VII as hints of several others occur scattered in the preliminary publications (Figure 4).

A recent review of the Hasanlu excavation records at the University of Pennsylvania Museum shows that a total of six Period VII graves were recovered in the Hasanlu Low Mound excavations, includingSK9 (i.e., Skeleton 9), SK10, SK31, SK458, SK508, and SK509 (Danti and Ebrahimi forthcoming). These burials were all simple, single in humations located in the area of the Period VII northeast Low Mound settlement, but probably not within contemporary houses, but rather in the intervening open areas. Grave goods consisted of Orange Ware and Painted Orange Ware vessels and personal ornament, including copper/bronze garment pins, copper/bronze coiled wire earrings, stone pendants, and bead necklaces of paste and semi-precious stones.


**Figure 4: Operation VI Stratum 5 showing Burial 21/SK31 looking south (Danti and Ebrahimi forthcoming: Fig. p)**

While the number of Period VII graves is small, the available sample exhibits few status distinctions in terms of the mortuary assemblages and method of burial. The Hasanlu cemetery was apparently attached to a contemporary settlement, while the aforementioned grave at Hajji Firuz Tepe appears to have been unattached. Such a pattern of both attached and unattached (viz. extramural) cemeteries in the region also typifies the Late Bronze Age (Hasanlu Period V) and the Iron I and Iron II periods (Hasanlu Period IVc–IVb), suggesting the region was simultaneously inhabited by both sedentary and non-sedentary populations. In the attached cemeteries, the dead were disposed of at points outside but close to the residential areas. Such a situation would well have been dictated also by the regional geography as the high soil moisture of the Solduz plain prompted by its location in a basin precluded the interment of the deceased in areas lower than the peripheries of settlements. Though the paucity of Hasanlu VII burials hinders in-depth analysis of the social status of

specific individuals or the social hierarchy that prevailed at Hasanlu in Period VII, what one may conjecture is that the dead were buried with certain types and amounts of grave gifts according to their social status. Such funerary traditions in this chronological horizon are widely known from West Asia and are not specific to the Lake Urmia region. Though the exact date of the Hajji Firuz burial will continue to elude us,[8] a cemetery of the Kura-Araxian culture has been identified to the north at Köhne-Shahar in Chaldoran (Alizadeh et al. 2015), where the dead were buried outside of the settlement within isolated chambers. Further evidence of burial practices concurrent with the Hasanlu VII community comes from a royal grave at Arslan Tepe in Turkey (Frangipane et al. 2001) and royal tombs of Ur (Woolley and Litt 1934), which attest to the arrival of distinctive funeral practices at the time. Indeed, lack of recovered contemporary burials by no means imply there were no burial traditions, but Hajji Firuz demonstrates the existence of burial grounds detached from settlements. Thus, a superficial understanding of the burial traditions coupled with the lack of targeted investigations to spot related cemeteries has limited our knowledge of the cultural characteristics of the Bronze Age populations of the southern Lake Urmia. However, in this context the kurgans at Se Girdan are particularly interesting. The site today contains 11 kurgans[9] dating to the early Bronze Age, of which six were excavated in 1968 and 1970 (Muscarella 1969, 1971). Based on the characteristics recorded for those of the Maykop culture[10] of Caucasia, these kurgans suggest a date between the late 4$^{th}$ and 3$^{rd}$ millenniums BC (Muscarella 2003). A deeper look into similar kurgan-type traditions in Iranian Azerbaijan (northwest Iran) suggests that the kurgan tradition could have sustained throughout the Lake Urmia Basin. The hypothesis is supported by the presence of two related kurgans in the Takht-e Soleiman region (Wiegartz 1965) and Kleiss' reports from the eastern edge of Lake Urmia (Kleiss, 1972: 143). Furthermore, objects that closely resemble an artifact from the third kurgan of Se Girdan (Muscarella, 1969: 25) possibly derived the kurgans east of the Lake Urmia region (Figure 5).

Overall, the range of diversity exhibited in the mortuary practices of the Ushu-Solduz region in the Early Bronze Age indicates that the region constituted a shatter-zone or border region between distinct cultures. In this regard, the Early Bronze Age is similar to better attested proto-historic and historic periods.

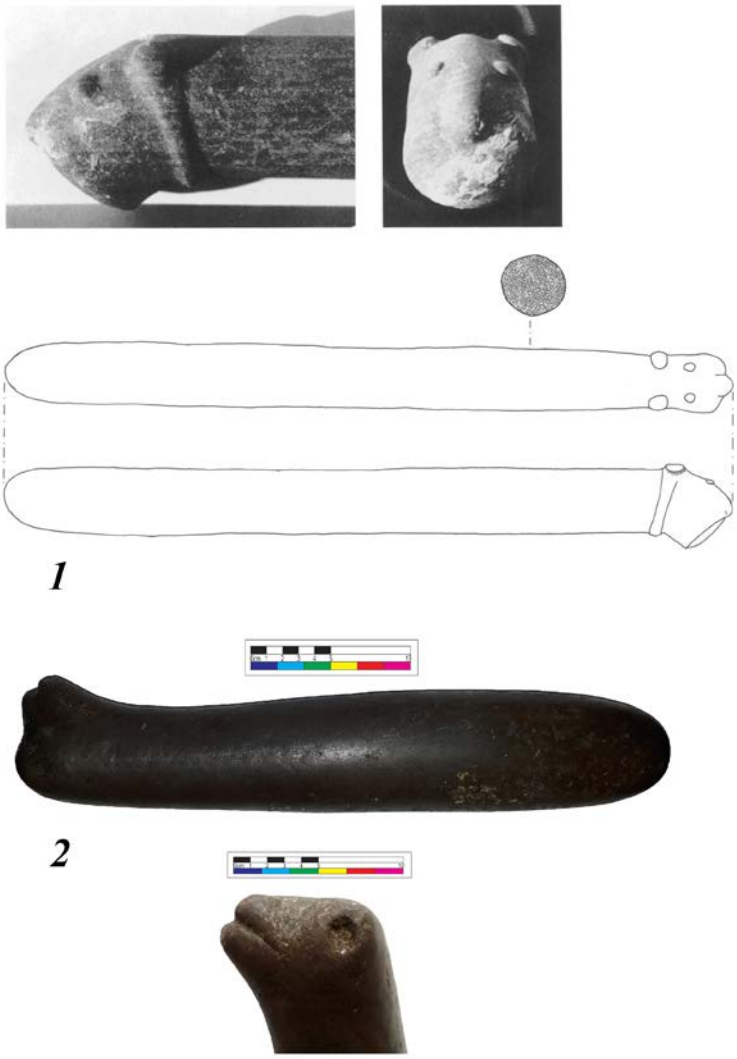



**Figure 5: Stone grinders or whetstones: 1 from Se Girdan near Ushnu (Muscarella 1969: Fig. 25-27) and 2 the Eastern Shore of Urmia Lake**

## 5.Cultural Continuity in Light of Multilateral Interactions in Southern Lake Urmia

Developments accompanying the inception of the Bronze Age (at the end of the 4th millennium BC) in northwest Iran and other major regions of West Asia lay the foundations for substantial social and economic changes that in turn precipitated a marked transformation in the social structure of local communities. For precisely that reason, G. Childe designated the period as the Urban Revolution (Smith 2009). Archaeological work that has long been underway in southern quarter of this general region, .i.e. in northern Mesopotamia and adjacent regions, has suggested that at the beginning of the period a distinct cultural horizon, known as Uruk, dominated large parts of southwestern Asia. Related material is reported from Mesopotamia (Algaze 1993), and southern (Wright 1997) and western Iran (Young 1969; Gopnik and Rothman 2011), and Uruk colonies have been recorded more recently

in central to northeastern parts of Iran (Hesari 2011; Ghasemi et al. 2018). Surveys have also identified related settlements in the valleys of the neighboring Northwest Iran (Nobari et al. 2012; Binandeh 2016; Abedi et al. 2019). The Uruk declines around the end of the 4th millennium BC.In other hand, investigations in Caucasia, East Anatolia through the Levant, and Northwest Iran have demonstrated that a prominent tradition with a distinct, fairly consistent material culture began to be paramount across these regions at the Late Uruk culture. According to scholars, this culture are Known as Kura-Araxian or Transcaucasian culture, with Black and Red Burnished pottery with distinct lug on it, and round houses.[11] Relevant cultural material occurs in the Iranian Azerbaijan at such sites as Yanik Tepe (Summers 2004) east of Lake Urmia, Haftavan (Burney 1972, 1975), Geoy Tepe (Burton-Brown 1951) and Gijlar (Belgiorno et al., 1984: 241-300) in the western Lake Urmia Basin, KöhneShahar (Alizadeh et al. 2015) in the northwestern and Kul Tepe of Hadishahr (Omrani et al. 2012; Abedi et al. 2014b; Abedi 2016), Kohne Pasgah Tepesi (Maziar 2010) and Nadir Tepesi (Alizadeh et al. 2018) in the northern quarter of the region. The latest research has revealed the material cultures of these communities along with a round house decorated inside in Ardabil region (Ebrahimi 2020). In West Iran, the culture was for the first time attested during excavations at Godin (Young, 1969: 10; Mason and Cooper 1999) and the surface surveys in the region (Young 2004). The farthest extension of the culture based on the available evidence is the northwest central Iran (Alibaigi and Khosravi 2009; Fazeli et al. 2013; Abedi et al. 2014a).[12] The Kura-Araxes culture, known as the Yanik culture in Iran, continues well into the late 3rd millennium in parts of western Iran and throughout the Iranian Azerbaijan.

Yet, results of excavations at Hasanlu and a series of other sites suggest that the southern Lake Urmia Basin together with the headwaters of the Zab have proceeded along a quite different route. Quite contrary to other parts of northwest and west Iran where the Kura-Araxian black burnished pottery began to predominate, here the Pisdeli pottery tradition is followed by some painted styles exhibiting continuity with the late Chalcolithic traditions. Though the archaeological culture proper is yet to be fully known, its pottery traditions have been published under various designations. At Hasanlu, Dyson termed them as Painted Orange Ware after their surface color (Dyson and Piggott, 1975: 182), while Kroll (2004) published the related material from Stein's excavations at Tepe Hasan Ali as Hasan Ali Ware. It is particularly notable that prior to Tepe Hasan Ali, Stein had excavated the same material at Dinkha but had inadvertently attributed them to the Chalcolithic period (Stein, 1940: 361-376) as the ware type was unknown to him at the time. More importantly, in Kroll's research, he nominated a painted pottery collection that was distinct from Late Chalcolithic and Iron Age pottery as Hasan Ali Ware, simply because it was first discovered from Hasan Ali. and more interestingly, Kroll classified these potteries considering to the Kura-Araxes period in the northwest Iran and the preliminary dating from Hasanlu VII period in Middle Bronze Age (Kroll 2017), while most recently, the Tepe Silveh excavation (Abedi 2018), located in the adjacent Ushno valley in South, demonstrated some of this collection (Kroll, 2004: Ab.3 n.18-19) in the early 3th millennium and some types (Kroll, 2004: Ab.1 n.5) in the late 3th millennium B.C. Therefore, use of Hasan Ali Ware for these types of pottery is excluded. The general impression is that the period followed the Late Chalcolithic and apparently continued up to the Middle Bronze Age, traditionally

known as the Khabur Ware period. Related material is reported from other plains in the southern Lake Urmia region, not to mention those excavated by the Hasanlu Project. Results of surface surveys in the southern and eastern parts are suggestive of its distribution over a vast region of the southern Lake Urmia Basin.

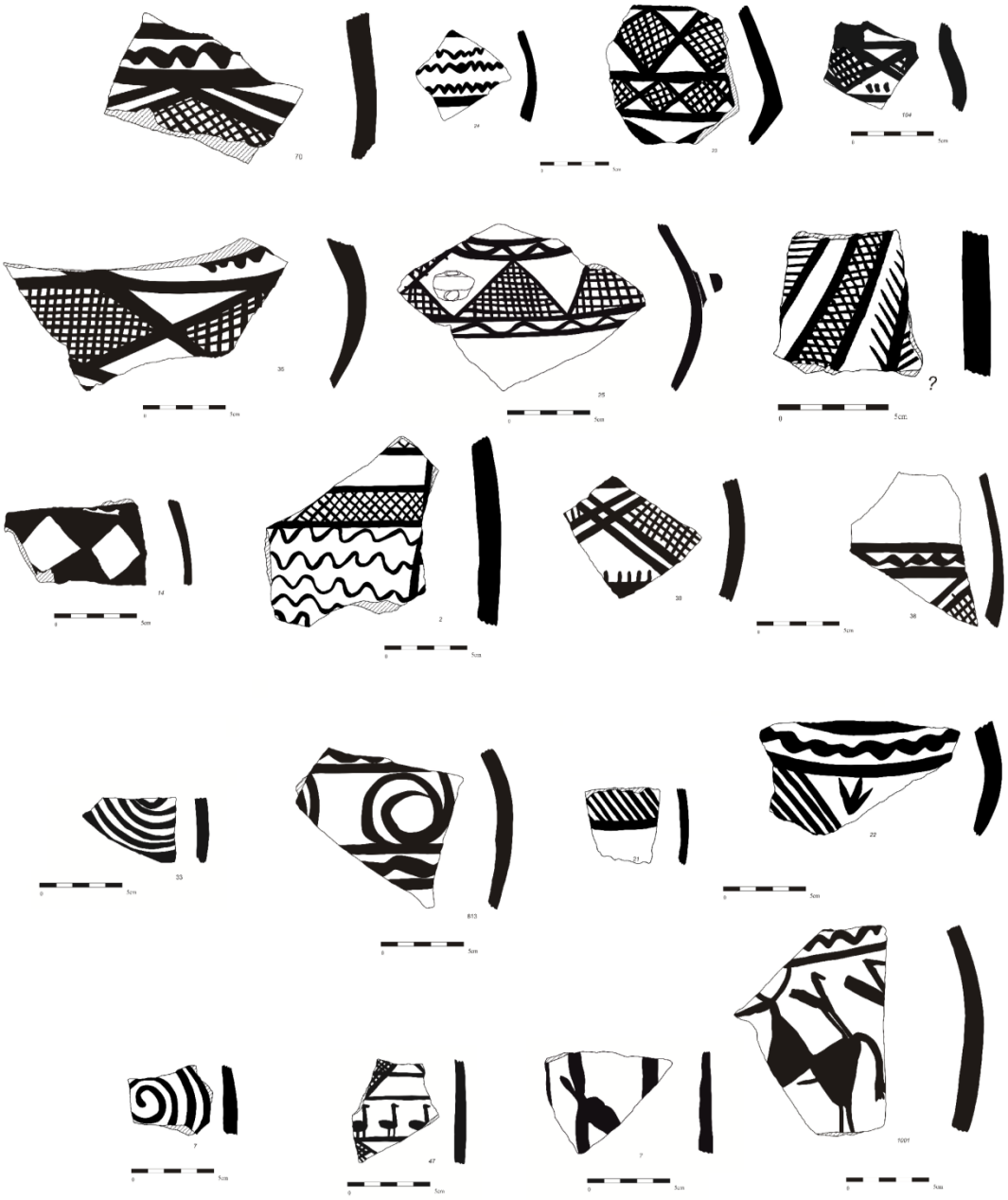


**Figure 6: Tepe Se-Girdan Painted Ware (Binandeh 2014; Sohrabi and Ebrahimi 2015)**

Around the Lake Urmia, related pottery was excavated at Qara Qouzlou (Kharazi et al. 2013) in the Miyanduab Plain. Excavations at Se Girdan (Binandeh 2014; Sohrabi and Ebrahimi 2015) near Mahabad drew light on the presence of such material in the southern basin (Figure 6). Beyond the southern plains, assemblages a kin to Hasanlu VII pottery, especially its earlier phases, are known from the intermontane valleys in southern slopes of the Sahand Mountain at Kul Tepe of Hashtrud as well as Topraghli Tepe in the Aydoghmush River basin of Mianeh (Omrani, 2006: 51). The excavated dataset is supplemented with the Hasanlu VII type pottery collections from the surveys of Sumuk Tepe[13] (Kroll, 1984: 37; Kroll, 2005: 120) about 40 km south of Yanik Tepe and Kul Tepe of Ajabshir (Talai 1984; Voigt and Dyson, 1992: 175) (Figure 7). Ceramics comparable to those from earlier phases of Hasanlu Period VII were found in the Charuymaq Region, and the material from Kul Tepe of Ajabshir and Qara Qouzlou finds parallels at Qara Aghaj (Ghandgar, 2005: 1). On the southern as well as eastern slopes of the Sahand Mountains, such ceramics occur at Deyirman Tepe in the Ujan plain (modern Bostan-Abad) associated with Kura-Araxian material (Chaychi and Omrani 2008). Sherds from Yanik Tepe (Burney, 1962: pl. XLIV n.21) and Geoy Tepe (Burton-Brown, 1951: fig. 12 n.1249; Kroll, 1984: 37) link these peoples with the residents of Yanik Tepe and the Kura-Araxes cultural realm of the eastern Lake Urmia and the regions to the west.

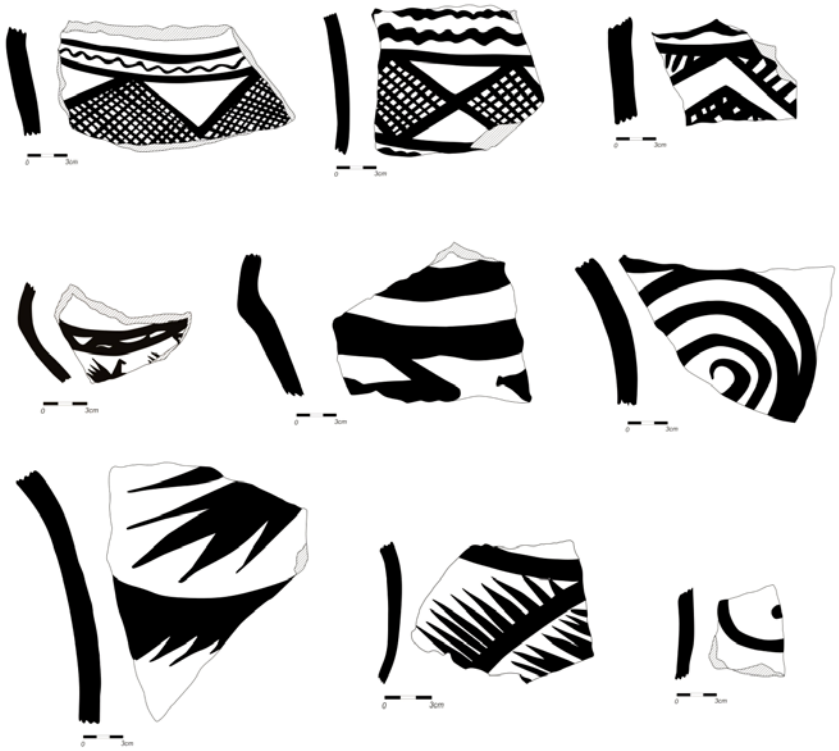
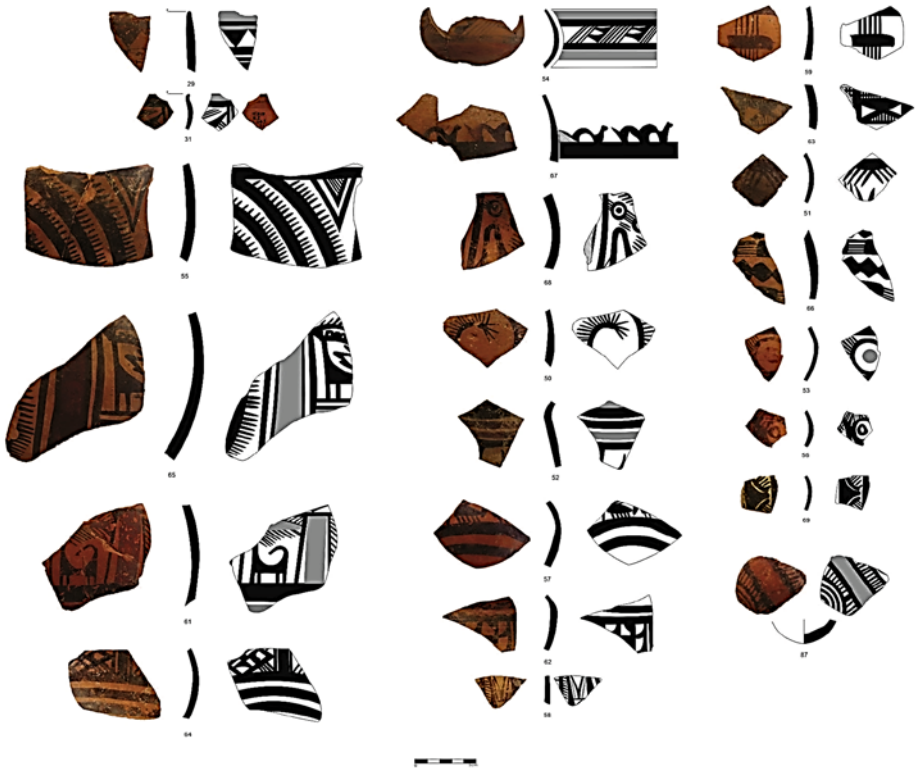


**Figure 7: Kul Tepe Ajabshir; Orange Painted Ware (Surface sherds)**

As noted, the valleys and plains of the Zab headwaters were in full contact with the entire Lake Urmia region, and the 3rd millennium BC cultures there show cultural alignment with

the southern half of the lake. Excavations at Lavin Tepe in the Piranshahr plain pointed to the presence of two different cultures in the late 4th and early 3rdmillennium BC (Nobari et al., 2012: 104). On the other hand, excavations at Tepe Silveh in the intermountain plain in northern Piranshahr revealed a sequence spanning the Chalcolithic through the late 3rd millennium BC (Abedi 2018; Abedi and Ebrahimi, 2019: 243-246). At Silveh, with an about 8 meter of deposits dating between the late 4th and late 3rd millennium BC, there are no indications of the Uruk or Kura-Araxian presences, but the local culture is predominated by painted orange and buff wares (Figure 8). Although Kroll speaks of the existence of Kura-Araxian sites in the region (Kroll, 2005: 119), the recent excavations (Sharifi 2019, 2020) have highlighted two facts about the late 4thand 3rdmilleniaBC cultures. Firstly, the region was inhabited by populations of the Painted Orange Ware horizon, which is related mainly to the southern Lake Urmia Basin, but also slightly to Northern Mesopotamia. Secondly, the Kura-Araxian and Beveled Rim Bowls (BRB) materials collected in various surface surveys do not testify to the dominant presence of the respective cultures that dominated large parts of the Middle East, but rather evince inter-regional ties (Figure 9). Therefore, the persistent and dominant presence of the bearers of Painted Orange Ware in the region resisted the Kura-Araxian settlements and Uruk conquest.



**Figur.8: Monochrome and Bichrome Painted Orange Ware from Tepe Silveh Piranshahr; Tr. I Locus 1143 (Abedi 2018)**

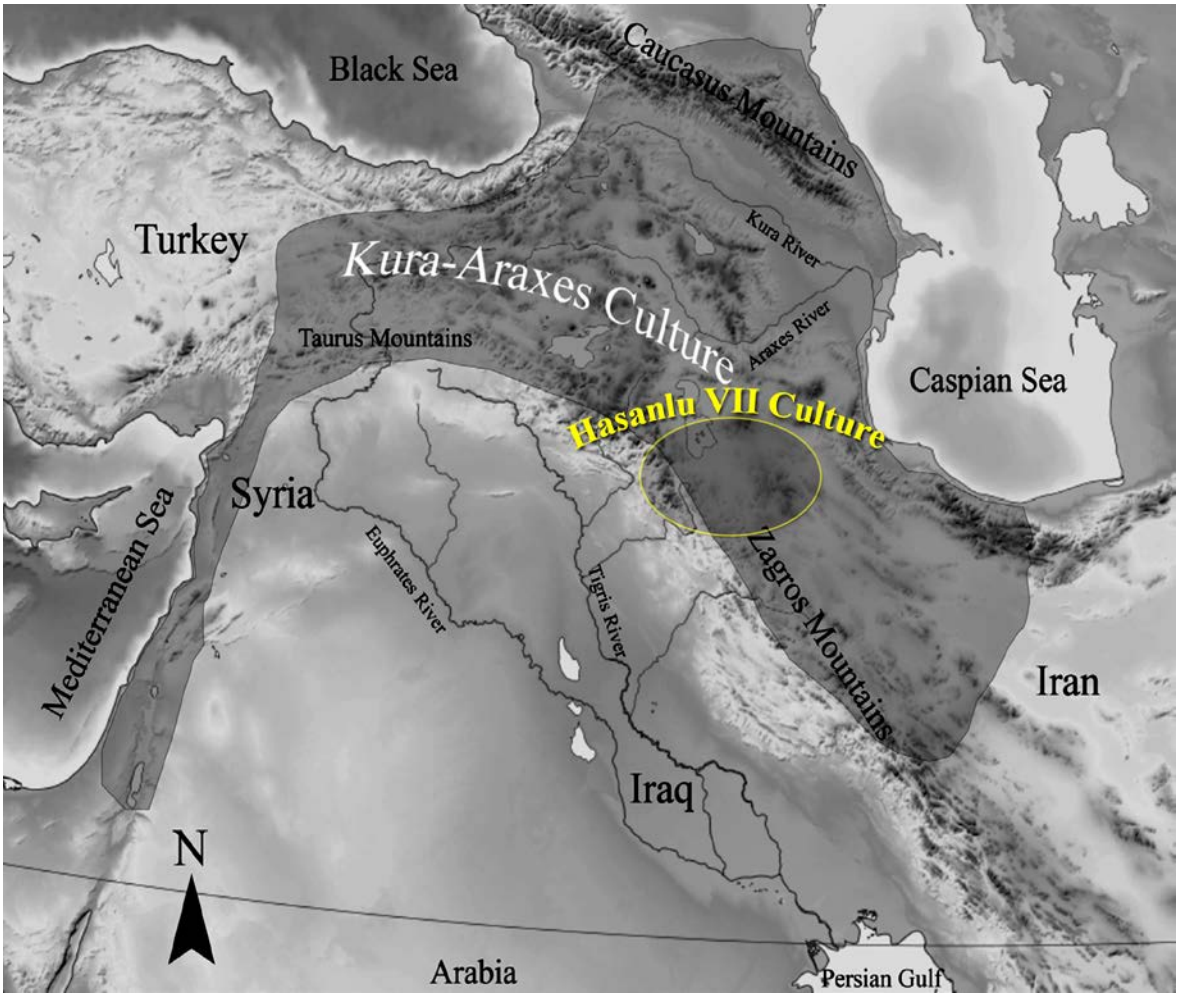



**Figure 9: Distribution of Hasanlu VII Communities in interaction with Kura-Araxes (modified map from Wikimedia.org, after Alizadeh et al. 2019: Fig. 1)**

## 6.Conclusions

The results from fieldwork in Northwest and West Iran as well as the central Iranian Plateau précised above show a discrete distribution of related archaeological material belonging to a large community over a vast region, which is generally regarded as the region dominated and settled by the bearers of the Kura-Araxian culture. On the other hand, excavations in the southern Lake Urmia Basin, particularly at Hasanlu, as well as the lack of dominant presence of the Kura-Araxians in the southern shores of the lake have presented a cultural zone with a material culture distinct. Distribution of Hasanlu VII type assemblages over a vast area extending from the Ushnu region to the vicinity of the Alborz Mountains in the Mianeh Region reveals a region dominated by the bearers of the Hasanlu VII type ceramics. The original pottery culture of the period was characterized by bowls and storage jars, which were replaced in later phases by the POW culture. The sequence of

pottery phases of this period at the concerned sites shows that the Hasanlu VII culture emerged concurrently with the Uruk and Kura-Araxian cultures and sustained its evident and dominant presence across its area of influence up until the end of the third millennium BC. Contemporary mortuary practices evince social complexities and genesis of social classes. Ceramics reminiscent of the Ninevite V material—as the dominating culture of northern Mesopotamia—attests to links with the latter region, though the extent of these links and comparisons in material culture cannot be answered with the current limited excavations. What is certain is that the culture and its bearers were totally independent and engaged in full interaction with the Kura-Araxians of the southern Lake Urmia Basin, and controlled the headwaters of the Zab River, and also maintained wide-ranging ties with Mesopotamia particularly its northern regions.

**Footnote**

1. The enthusiasm might be said to have its roots in the similitude between the material cultures of the Kura-Araxian communities of Caucasia (Kohl 2007), Northwest Iran (Alizadeh and Azarnoush 2003b), eastern Anatolia and Syria as well as the Levant.
2. INAA and petrographic analyses of the Late Bronze (Khabur type) pottery from Hasanlu and Dinkha show they were local products (Bedal et al. 1995).
3. There is now a Hasanlu VIc, VIb, and VIa in the sequence. Hasanlu VIc provides the late 3rd/early 2nd millennium transition from “classic” Hasanlu VII to “classic” Hasanlu VI with Khabur Ware. Dyson never published this material and few areas of the Hasanlu High Mound, where Period VIc levels are present, were excavated by the Hasanlu Project through deep soundings. The U22 Deep Sound is the main exception.
4. While the sequence established by the Hasanlu Project for Dinkha consists of four periods (Muscarella 1968), the depth of the excavated deposits and the comparative analysis of the pottery excavated by Stein (1940: 361-376, Pls. XXI, XXII, XXIX, XXX) at the base of the mound’s northern slope seem to strongly suggest that the settlement history at Dinkha extends far back into the Chalcolithic and Early Bronze times.
5. Operation LXXX in the Gird W28
6. It is notable that these ceramics are comparable to the smoke-blackened and polished Red Ware of the Late Chalcolithic type of the eastern Lake Urmia region, just as the Streaky ware occurs on the surface of Kul Tepe of Ajabshir, located on the eastern shores of the lake.
7. Note that many of the detailed Excavation Reports of the Hasanlu excavations, in particular Hasanlu VII, are still pending.
8. In her published report, Voigt (1976: 805) dates the burial to 2500-2000 BC, but fails to describe the procedure that led her to this chronology.
9. While the original excavator recorded them as tumuli, the term kurgan appears a more proper designation for these royal tombs as they date to the early Bronze.
10. The culture is generally dated between 3700-3000 BC.
11. Some scholars suggest that Kura-Araxes Communities may have contributed to the collapse or abandonment of Uruk colonies and enclaves in highland areas, which in turn, led to the collapse of the whole Uruk system (Algaze 2001; Kohl, 2007: 97-98)
12. In West Iran, related material is known from the excavations of Tappeh Pisa (Mohammadifar et al. 2009) and Malayer (Khaksar et al. 2014) as well as surveys of eastern Zagros (Motarjem and Niknami 2011).
13. Shiramin in the latest Reports

## References


Abedi. A. 2018. *Silveh Dam Excavation Project Report*. Tehran: Iranian Center for Archaeological Research. (In Persian)

Abedi. A. 2016. New Evidence from Neolithic to Achaemenid Periods in North-Western Iran: Excavations at Kul Tepe (Hadishahr), Second Preliminary Report 2013, *Iranian Journal of Archaeological Studies* 6(1): 59-82.

Abedi. A. and Ebrahimi. Gh. 2019. Tepe Silveh Piranshahr Excavation Report in First Season: Dalma-Iron Age Evidences. In Ruhollah Shirazi (Ed.), *16th Annual Symposium on the Iranian Archaeology*, Tehran: Research Institute of Cultural Heritage & Tourism, 242-245. (In Persian)

Abedi. A. and Heidari. R. and Salimi. S. 2019. New Uruk Findings in NW Iran; Hasanlu VIII -VII and the Lack of Kura-Araxes Evidence in Southern Parts of the Lake Urmia Region, *Journal of Archaeological Studies* 11 (1): 167-183.

Abedi. A. and eskandari. n. and khatib-shahidi. h. and sharahi. I. and shirzadeh. G. 2014a. New Evidence from Dalma and Kura-Araxes Culture at Tapeh Qale-ye-Sarsakhti. *Iran and the Caucasus* 18: 101-114

Abedi. A. and Khatib-Shahidi. H. and Chataigner. Ch. And Niknami. K. and Eskandari. N. and Kazempour. M. and Pirmohammadi. A. and Hosseinzadeh. J. and Ebrahimi. Gh. 2014b. Excavation at Kul Tepe (Hadishahr) North-Western Iran 2010: First Preliminary Report. *Ancient Near East Studies* 51: 33-165.

Aghalari. B. and Abdollahzadeh. A. 2015. Circular Architectural New Finds from Northwest of Iran According Finding from Kohne Pasgah Tepesi. In: Mohammad Hossein Azizi Kharanaghi & Morteza Khanipour & Reza Naseri (Ed.), *Proceedings of the International Congress of Young Archaeologists*, University of Tehran Press, 187-196. (In Persian)

Algaze. G. 2001. The Prehistory of Imperialism: The Case of Uruk Period Mesopotamia. In: Rothman, M.S. (Ed.), *Uruk Mesopotamia & Its Neighbors: Cross-Cultural Interactions in the Era of State Formation*, School of American Research Press and James Currey Ltd, Santa Fe and Oxford, 27–83.

Alibaigi. S. and Khosravi. Sh. 2009. Kura-Araxes pottery in Qazvin plain. *Antiquity* 320.

Alizadeh. K. and Azarnoush. M. 2003a. Systematic Survey of Baruj Tepe: Cultural Relations between the North and the South of Araxes River. *Iranian Journal of Archaeology and History* 34: 3-22. (in Persian with English abstract)

Alizadeh. K. and Azarnoush. M. 2003b. Systematic Survey of Baruj Tepe: Sampling Method and Analytical Results. *Iranian Journal of Archaeology and History* 33: 3-16. (in Persian with English abstract)

Alizadeh. K. and Eghbal. H. and Samei. S. 2015. Approaches to Social Complexity in Kura-Araxes Culture: A View from KöhneShahar (Ravaz) in Chaldran Iranian Azerbaijan. *Paléorient* 41(1): 37-54.

Alizadeh. K. and Sepideh. M. and Mohammadi. M. R. 2018. The End of the Kura-Araxes Culture as Seen from Nadir Tepesi in Iranian Azerbaijan. *American Journal of Archaeology* 122 (3): 463-477.

Alizadeh. K. and Samei. S. and Mohammadkhani. K. and Heidari. R. and Tykot. R. H. 2018. Craft production at Köhne Shahar a Kura-Araxes settlement in Iranian Azerbaijan. *Journal of Anthropological Archaeology* 51: 127–143.

Bedal. Leigh-Ann and Fleming. S. and De Schauensee. M. and Hancock. R. 1995. Second Millennium BC Pottery at Hasanlu Tepe and Dinkha Tepe: INAA and Petrographic studies. ed. P. Vandiver, J. Druzik, J. Galván Madrid, I. Freestone, and G. Wheeler, *Material Issues in Art and Archaeology IV*, Philadelphia, Materials Research society, 453– 67.

Belgiorno. M. R. and Biscione. R. and Pecorella. P. E. 1984. Il Saggio e i Materiali di Tappeh Gijlar. (eds.) P. E. Pecorella and M. Salvini, *Tra lo Zagros e l'Urmia: Ricerche Storicheed Archeologiche Nell' Azerbaigian Iraniano*, Edizionidell'Ateneo, Rome: 241-299.

Binandeh. A. 2014. Excavation in Tepe Se-Girdan: South Lake Urmia. *In: Brief Articles 12th Annual Symposium on the Iranian Archaeology*, 19-21 May 2014, Tehran: Research Institute of Cultural Heritage & Tourism, 105-107.

Binandeh. A. 2016. Signs of Commercial and Cultural Relation of the Societies of Northwestern Iran and Northern Mesopotamia in Late Chalcolithic. *Journal of Historical Sociology* 8(2): 21-37.

Burney. C. A. 1962. The Excavations at Yanik Tepe, Azerbaijan, 1961 Second Preliminary Report. *Iraq* 24(2): 134-152.

Burney. C. A. 1964. The Excavations at Yanik Tepe, Azerbaijan, 1962: Third Preliminary Report. *Iraq* 26(1): 54-61.

Burney. C. A. 1972. Excavations at Haftavan Tepe 1969: Second Preliminary Report. *Iran* 10: 127-142.

Burney. C. A. 1975. Excavations at Haftavan Tepe 1973: Fourth Preliminary Report. *Iran* 13: 149-164.

Burney. C. A. 1976. The Fifth Season of Excavations at Haftavan Tappeh: Brief Summary of Principle Results. In: F. Bagherzadeh (ed.), *Proceedings of the 4th Annual Symposium on Archaeological Research in Iran 1975*, Ministry of Culture and Arts, Iranian Center for Archaeological Research, Tehran, 257-271.

Burton-Brown. T. 1951. *Excavations in Azarbaijan 1948*. Murray, London.

Chaychi. A. A. and Omrani. B. 2008. *Deyirman Tepe Excavation Report: First Season*. Tehran, Iranian Center for Archaeological Research. (in Persian).

Danti. M. D. 2013. *Hasanlu V: The Late Bronze and Iron I Periods*. Philadelphia, University of Pennsylvania Museum.

Danti. M. D. 2004. *The Ilkhanid Heartland: Hasanlu Tepe (Iran) Period I, Hasanlu Excavation Reports 2*. Philadelphia, university of Pennsylvania Museum.

Danti. M. and Ebrahimi. Gh. forthcoming. Hasanlu VII Graves: Funeral Tradition in Early Bronze Age of Solduz Plain (Iranian Azerbaijan) Northwest Iran.

Danti. M.D. and Voigt. M. M. and Dyson. R. H. 2004. The search for the Late Chalcolithic/ Early Bronze Age Transition in the Ushnu-Solduz Valley, Iran. In: A. Sagona (ed.), *A View from the Highlands: Archaeological Studies in Honour of Charles Burney*, Ancient Near Eastern Studies, Supplement 12, Peeters Press, Louvain, 584-616.

Dyson. R. H. 1958. Iran 1957: Iron Age Hasanlu. *University Museum Bulletin* 22(2): 25-32.

Dyson. R. H. 1960. Hasanlu - Azerbaijan Project. *Explorers Journal* 38 (4): 10-11.

Dyson. R. H. 1961. Hasanlu 1960 Campaign. *Archaeology* 14 (1): 63-64.

Dyson. R. H. 1967. Archaeological Activity in Iran (F); Early Cultures of Solduz, Azerbaijan. In: Pope Arthur Upham Ed., Assisted by P. Ackerman, *A Survey of Persian Art 14* (New York: Oxford University Press), 2951-70.

Dyson. R. H. 1969. A Decade in Iran. *Expedition* 11 (2): 39-47.

Dyson. R. H. 1972. The Hasanlu Project, 1961-67. In: The Memorial Volume of the Vth International Congress of Iranian Art and Archaeology, 11th-18th April 1968, Tehran-Isfahan-Shiraz Ministry of Culture and Arts, 39-58.

Dyson. R. H. 1968. Hasanlu and the Solduz and Ushnu Valleys: Twelve Years of Exploration. *Archaeologia Viva* 14 (1/1): 83-101.

Dyson. R. H. 1973. Hasanlu. *Iran* 11: 195-196.
Dyson. R. H. 1983. Introduction the Genesis of the Hasanlu Project. In: Voigt, Mary M., *Hajji Firuz Tepe Iran: The Neolithic Settlement*, University Museum Monograph 50 (Hasanlu Excavation Reports I) Philadelphia, The University Museum, xxv-xxviii.
Dyson. R. H. and Pigott. V. 1975. Hasanlu. *Iran* 13: 182-5.
Dyson. R. H. and Young. T. C. 1960. The Solduz Valley Iran: Pisdeli Tepe. *Antiquity* 34 (133): 19-28.
Dyson. R. H. and Muscarella. O. W. and Voigt. M. M. 1969. Hasanlu Project 1968: Hajji Firuz, Dinkha Tepe, Se Girdan, Qalatgah. *Iran* 7: 179-8.
Ebrahimi. Gh. 2020. *Kul Tepe Sarein Excavation Report*. Ardabil, Cultural Heritage Tourism and Handicrafts Organization of Ardabil Province. (In Persian)
Fazeli. H. and Valipour. H.R. and Azizi Kharanaghi. M. H. 2013. The Late Chalcolithic and Early Bronze Age in the Qazvin and Tehran plains: a chronological perspective. In C. Petrie (ed.), *Ancient Iran and Its Neighbours: Local Developments and Long-range Interactions in the 4th Millennium BC*, British Institute of Persian Studies, Archaeological Monographs Series III, Oxford, 107-129.
Frangipane. M. and Di Nocera. G.M. and Hauptman. A. and Morbidelli. P. and Palmieri. A. and Sadori. L. and Schultz. M. and Schmidt-Schultz. T. 2001. New Symbols of a New Power in a "Royal" Tomb from 3000 BC Arslantepe, Malatya (Turkey). *Paléorient* 27(2): 105-139.
Ghandgar. J. 2005. *Report of Archaeological Survey on Aydoghmush River Direction in Aydoghmush Dam Area*. Tehran, Iranian Center for Archaeological Research. (in Persian).
Ghasemi. S. and Hessari. H. and Akbari. H. 2018. Zavarehvar the Central Site from of the Urbanization Period (Protoliterate) of Varamin Plain: Studying Pottery Features. *Parseh Journal of Archaeological Studies* 2 (4): 51-68. (Persian with English Abstract)
Gopnik. H. and Rothman. M. S. (2011). *On the High Road: The History of Godin Tepe*. Iran, Mazda Publishers.
Hamlin. K. C. 1971. The Habur Ware Ceramic assemblage of northern Mesopotamia: an analysis of Its Distribution, Ph.D thesis, University of Pennsylvania, Department of Anthropology, Philadelphia
Hesari. M. 2011. New Evidence of the Emergence of Complex Societies Discovered on the Central Iranian Plateau. *Iranian Journal of Archaeological Studies* 1(2): 35-48.
Khaksar. A. and Hemati. A. S. and Noruzi. A. 2015. The Analysis of Yanik Culture at Tappeh Gourab of Malayer, Based on Stratigeraghical Excavation. *Journal of Pazhohesh-ha-ye Bastanshenasi Iran* 4 (7): 47-66. (Persian with English Abstract)
Kharazi. E. and Khanipur. M. and Julayi. V. 2013. Dating of the Qara Quzloo Mound Near Miandowab on the Basis of Pottery Assemblages, *Iranian Archaeology* 4: 97-107. (In Persian with English Abstract)
Kleiss. W. 1972. Bericht Uber Erkundungsfahrten in Iran im Jahre 1971. *Archäologische Mitteilungenaus Iran* 5: 135-242.
Kohl. P. 2007. *The Making of Bronze Age Eurasia*. Cambridge, Cambridge University Press.
Kroll. S. 2017. Early to Middle Bronze Age Transition in the Urmia Basin. *Subartu* XXXVIII: 203-211.
Kroll. S. 2005. Early Bronze Age Settlement Patterns in the Orumiye Basin. *Archäologische Mitteilungenaus Iran und Turan* 37: 115-121.
Kroll. S. 2004. Aurel Stein in Hasan Ali: Bemalte Frühbronzezeitliche Keramikim Gebiet des Urmia-Sees: "Hasan Ali Ware." In: A. Sagona (ed.), *A View from the Highlands: Archaeological*

*Studies in Honour of Charles Burney*, Ancient Near Eastern Studies, Supplement 12, Peeters Press, Louvain, 677–92.

Kroll. S. 1994. Habur ware im Ostenoder: Der TAVO auf Irrwegen im Iran Hochland. In: edited by p. Calmeyer et al, Beitragezur Altorientalischen Archaologie und Altertumskunde, Wiesbaden, Harrassowitz, 159-166.

Kroll. S. 1984. Archaologische Fundplatze in Iranisch-Qst Azarbaidjan. *Archaologische Mitteilungenaus Iran* 17: 13-133.

Lippert. A. 1979. Die österreichischen Ausgrabungenam Kordlar Tepe in Persisch-West Aserbaidschan (1971-1978). *Archäologische Mitteilungenaus Iran* 12: 103–154.

Mason. R. B. and Cooper. L. 1999. Grog Petrography and Early Trans-Caucasian at Godin Tepe. *Iran* 37: 25-31.

Maziar. S. 2010. Excavations at Kohne Pasgah Tepesi the Araxes Valley Northwest Iran: First Preliminary report. *Ancient Near East Studies* 47: 165-193.

Mohammadifar. Y. and Motarjem. A. and Torabzadeh. Kh. H. 2009. Tepe Pissa New Investigations at a Kura-Araxes Site in Central Western Iran. *Antiquity* 83 (320).

Motarjem. A. and Niknami. K. 2012. Early Bronze Age at Central Zagros Iran. *Journal of Archaeological Studies* 3 (2): 35-54.

Muscarella. O. 1968. Excavations at Dinkha Tepe 1966. *Bulletin of the Metropolitan Museum of Art* 27: 187–96.

Muscarella. O. W. 1969. The Tumuli at SéGirdan: A Preliminary Report. *Metropolitan Museum Journal* 2: 5-25.

Muscarella. O. W. 1971. The Tumuli at SéGirdan: Second Report. *Metropolitan Museum Journal* 4: 5-28.

Muscarella. O. W. 2003. The Chronology and Culture of Se Girdan: Phase III. *Ancient Civilization from Schytia* 9: 117-131.

Nobari. A. H. and Binandeh. A. and Neyestani. J. and Nasab. H. V. 2012. Excavation at Lavin Tepe in northwest Iran. *Ancient Near Eastern Studies* 49 (1): 95-117.

Omrani. B. 2006. *Early Bronze Age in NW Iran*, PhD thesis, University of Tarbiat Modares, Tehran. (In Persian with English abstract)

Omrani. B. Khatib-Shahidi. H. and Abedi. A. 2012. Early Bronze Age New Migrants and the Beginning of Township in Azerbaijan NW Iran. *Iranica Antiqua* XLVII: 1-27.

Rubinson. K. 2004. Dinkha Tepe, Iran and So-Called Urmia Ware. In: ed. A. Sagona, *A View from the Highlands*, Louvain, Peeters Press, 661–76.

Sadraei. A. and Elliyoun. S. 2019a. Naghadeh Museum Catalog of Objects from Hasanlu. Tabriz, Hasanlu Translation Project Press. (In Persian)

Sadraei. A. and Elliyoun, S. 2019b. Hasanlu Museum Catalog of Objects from Ushnu-Solduz Valley, Tabriz: Hasanlu Translation Project Press. (In Persian)

Sharifi. M. 2020. Excavations at Barveh Tepe: New Insights into the Early Bronze Age in Northwest Iran. *Journal of Near Eastern Studies* 79 (2): 287-303.

Sharifi. M. 2019. *Excavation of Barde Zard Piranshahr Northwest Iran*. Tehran, Iranian Center for Archaeological Research. (in Persian).

Smith. M. E. 2009. V. Gordon Childe and the urban revolution: an historical perspective on a revolution in urban studies. *Town Planning Review* 80: 3–29.

Sohrabi. A. and Ebrahimi, Gh. 2015. Classification and Typology of Tepe Se-Girdan Early Bronze Age Potteries. In: Mohammad Hossein Azizi Kharanaghi & Morteza Khanipour & Reza Naseri (Ed.), *Proceedings of the International Congress of Young Archaeologists*, University of Tehran.

Stein. S. A. 1940. *Old Routes of Western Iran*. London, MacMillan.

Summers. G. 2014. Yanik Tepe and the Early Trans-Caucasian Culture: Problems and Perspectives. In: A. Sagona (ed.), *A View from the Highlands: Archaeological Studies in Honour of Charles Burney*, Ancient Near Eastern Studies, Supplement 12, Peeters Press, Louvain, 617-643.

Talai. H. 1984. Notes on New Pottery Evidence from the Eastern Urmia Basin: Gol Tepe. *Iran* 22: 151-156.

Voigt. M. 1976. Hajji Firuz Tepe: An Economic Reconstruction of a sixth Millennium Community in Western Iran, Ph.D thesis, University of Pennsylvania, Department of anthropology, Philadelphia.

Voigt. M. and Dyson. R. H. 1992. The Chronology of Iran ca. 8000–2000BC. In: R. W. Ehrich (Ed.), *Chronologies in Old World Archaeology*, 3rd, Chicago: University of Chicago Press, 122–178.

Wiegrtz. W. 1965. Die Ausgrabung am Tumulus Tepe Majid. *Archaeologischer Anzeiger* 4: 788-799.

Woolley. C. L. and Litt. D. 1934. *Ur Excavations Volume II the Royal Cemetery*. Publications of Join Expedition of the British Museum and of the Museum of the University of Pennsylvania to Mesopotamia.

Wright. H. T. 1977. Uruk States in Southwestern Iran. In: edited by Gary M. Feinman and Marcus. J., *Archaic States*, School of American Research Press, 173-197.

Young. T. C. 1959. Successful Season at Hasanlu. *Archaeology* 12 (1): 65-66.

Young. T. C. 1965. A Comparative Ceramic Chronology of Western Iran 1500-500 BC. *Iran* 3: 53-86.

Young. T. C. 1969. *Excavations at Godin Tepe: First Progress Report*. Art and Archaeology, Occasional Paper 17, Royal Ontario Museum, Toronto.

Young. T. C. 2004. The Kangavar Survey-Periods VI to IV. In: A. Sagona (ed.), *A View from the Highlands: Archaeological Studies in Honour of Charles Burney*, Ancient Near Eastern Studies, Supplement 12, Peeters Press, Louvain, 645-660.

# درآمدی بر دورهٔ فرهنگی حسنلوی VII در جنوب دریاچه ارومیه، شمال غرب ایران

**قادر ابراهیمی***
دانشجوی دکتری باستان شناسی، دانشگاه محقق اردبیلی، اردبیل، ایران.
**رضا رضالو**
استاد گروه باستان شناسی، دانشگاه محقق اردبیلی، اردبیل، ایران.
**مایکل دانتی**
دانشیار گروه باستان شناسی، دانشگاه پنسیلوانیا، فیلادلفیا، آمریکا.
**اردشیر جوانمردزاده**
استادیار گروه باستان شناسی، دانشگاه محقق اردبیلی، اردبیل، ایران.
**اکبر عابدی**
دانشیار گروه باستان شناسی، باستان سنجی و مرمت، دانشگاه هنر اسلامی تبریز، تبریز، ایران.
تاریخ دریافت: ۱۳۹۹/۰۷/۲۱؛ تاریخ پذیرش: ۱۳۹۹/۱۲/۲۰

## چکیده

پروژه مشترک ایرانی-آمریکایی حسنلو از معدود پروژه‌های باستان‌شناسی انجام یافته در محدوده شمالغرب ایران است که در فرایند این مطالعات لایه‌های فرهنگی دوران نوسنگی تا تاریخی مورد کاوش و مطالعه قرار گرفته است. هفتمین دورهٔ فرهنگی این محوطه معاصر با عصر مفرغ قدیم و شروع دگرگونی‌های شگرف اقتصادی و اجتماعی در بستر تحولات فرهنگی منطقه خاورمیانه است. یافته-های این دوره تمایز آشکار مواد فرهنگی این محوطه را با سایر محوطه‌های مفرغ قدیم منطقه شمالغرب ایران از جمله یانیق تپه نشان می‌دهد. علیرغم انتشار گزارشهای جسته گریخته از این دوران فرهنگی، هنوز آگاهی از این دوران و ویژگی‌های سفالی و توزیع پراکنش آن، سنن تدفین و ارتباط آن با سایر مناطق فرهنگی بسیار اندک است. از اینرو، پژوهش حاضر در صدد است با استناد به یافته‌های پروژه حسنلو و سایر کاوشهای انجام یافته در این منطقه ویژگی های کلی فرهنگ دوران هفتم حسنلو را بازسازی نماید. مواد فرهنگی این دورهٔ فرهنگی نشان میدهد در طول هزاره سوم پیش از میلاد یک پهنه فرهنگی- اجتماعی متمایز از فرهنگ کور-ارس (یا فرهنگ یانیق) با شاخصه های سفالی نارنجی و قرمز منقوش در محدوده جنوب دریاچه ارومیه تا دامنه های جنوبی کوهستان سهند شکل گرفته است که از طرفی در تعامل با شمال بین النهرین و از طرف دیگر در تعامل با جوامع کورا-ارس قرار داشته اند.

**واژه‌های کلیدی:** حسنلو VII، عصر مفرغ قدیم، شمالغرب ایران، سفال نارنجی منقوش، حسنلو.

* رایانامه‌ی نویسنده مسئول: ebrahimiqader@gmail.com

Journal of Archaeological Studies

Vol 12, Is 4 - Serial Number 24, Winter 2021

Formerly "the Journal of the Faculty of Literature and Humanities"... University of Tehran

# Dig it Up: A Reconsideration of Old Excavations at the Urban Center of Shahdad

**Nasir Eskandari**[1]

**(23-45)**

## Abstract

Shahdad is an important Bronze Age city on the western edge of the Dasht-e Lut in Iran. Previous investigations at the site, with its burials containing rich and sophisticated artifacts, fully justified its definition as an advanced early urban center. After half a century of Shahdad excavations, it is time to have a new look at Shahdad and its finds in light of our present knowledge from the archeology of southeastern Iran. Here is an assessment of the Shahdad data obtained from Shahdad 1970s excavations including ceramics, stones, seals, and metal and clay objects. In addition, I will present two seals from Shahdad excavations at area D (known as industrial area) discovered by A. Hakemi which have been remained unpublished. Also, this paper presents a revised chronology for Shahdad in order to determine the syntax of the different parts of the excavated areas. This suggested dating is mostly based on the burial goods of the cemeteries of Shahdad. Here, both already-suggested horizontal and vertical chronology for cemetery of Shahdad is questioned. This comparative research on the various goods from site of Shahdad showed that Dasht-e Lut appeared to be a key region in the interaction sphere of Southwest Asia during the second half of the 3rd millennium BC.

**Keywords:** Shahdad, Early Urbanization, Bronze Age, Chronology, Burial Goods

Received: 11 December, 2020; Accepted: 10 March, 2021

10.22059/jarcs.2021.315193.142962

Print ISSN: 2676-4288- Online ISSN: 2251-9297

https://jarcs.ut.ac.ir

1. Corresponding Author Email Nasir.eskandari@ut.ac.it. Assistant Professor, Department of Archaeology, University of Tehran. Tehran. Iran.

## 1. Introduction

Following the thirteen seasons of archaeological excavations and surveys at Shahdad, led by A. Hakemi (Hakemi 1997), M. Kaboli (Kaboli 1997, 2001, 2002) and N. Eskandari (in 2016), the site was identified as a very important urban center during the Bronze Age in the Iranian plateau. Hiebert and Lamberg-Karlovsky have also mentioned it as an important city which had all the economic and political processes of the neighboring regions in control (Hiebert and Lamberg-Karlovsky 1992). The excavations before the Islamic revolution of Iran were mainly concentrated on the cemetery which led to the discovery of many graves containing several thousand spectacular grave goods, including impressive human statuettes, numerous stone and ceramic containers and ornamental finds. The main trench, trench A, with a dimension of 100×50 meters, had been excavated during all the seasons. Five smaller trenches, situated to the east and north of trench A, were also excavated. The trench which was situated 50 meters to the east of trench A, was called the eastern cemetery and the trench located at the north of the main trench was called the northern trench. The other 3 trenches were numbered from I to III by Hakemi. In this article, the northern Trench is introduced as trench IV. The trench A with all the 5 surrounding excavated areas is called as the cemetery A (Fig 1). In addition to this area, 2 other small cemeteries situated to the north (trench B) and to the northwest of the cemetery A (trench C). As a result of the excavations, a total of 383 graves and more than 4 thousands funerary goods were uncovered. In this research, I state a new review of Shahdad excavations based on the burials goods.

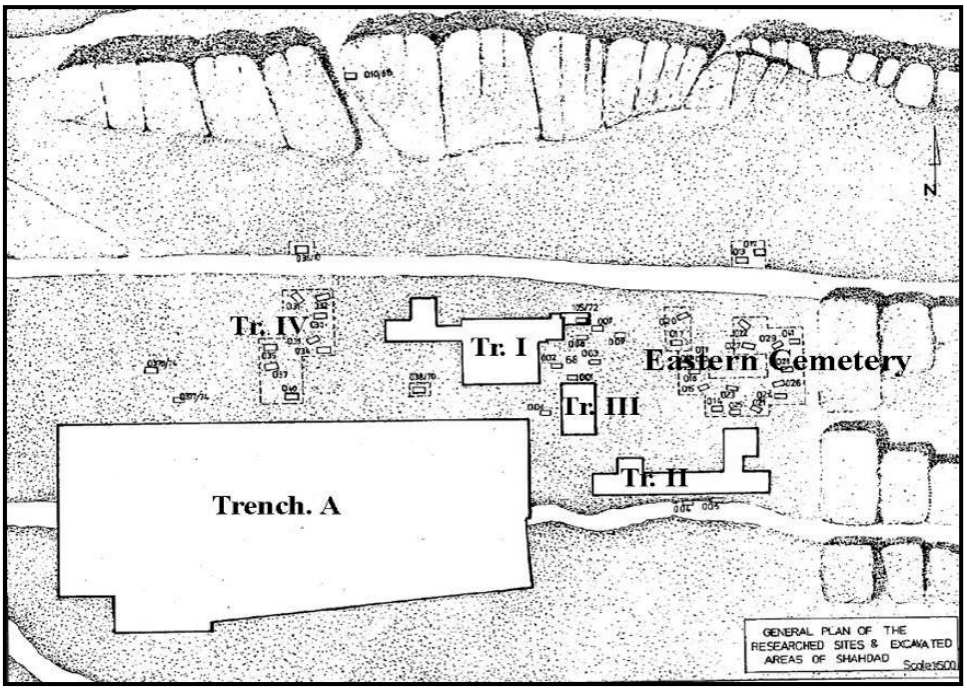



**Fig 1: Excavated Areas of Cemetery A of Shahdad (After Hakemi 1997: 45, modified by author)**

## 2. Contextualizing the Uncovered Graves of Cemetery A

As a result of the excavations, a total of 383 graves were uncovered which were labeled from 1 to 383. In the excavation reports of Shahdad, the distribution of graves are not clear enough especially the graves which situated outside of the main trench are not fully documented. We tried to relocate the graves based on the given information in the

catalogues to bring to the light the distribution pattern of burials (Table 1). Two of the burials (39 and 104) were described in the catalogues but they don't exist on the map of the burial pattern. Two kilns were also labeled as graves 173 and 383 by mistake. Burials 187 and 188, represent 2 graves each on the map. Except the 16 graves which were found from trench B and C, the others are from the cemetery A. In other words, 367 graves were uncovered from the cemetery A. This cemetery also includes several trenches and a number of graves outside the trenches. Trench A, which is known as the main trench of the cemetery A, includes 289 graves. Five small trenches in the north and the east of the trench A cover 62 graves. The distribution of graves in these trenches is mentioned above: 19 in the eastern cemetery, 25 in trench I, 11 in trench II, 4 in trench III, 3 in northern trench or trench IV and finally 16 from the outside of trenches.
According to Shahdad excavator, all the burials do not belong to the same period and he believed in a horizontal chronology for trench A graves while he applied a vertical chronology for the trench A burials. He considers the graves of the east of the cemetery A as the oldest ones, which have simple or incised buff wares. He also divided the burials with red wares (the graves of trench A of Cemetery A) into two different periods. These graves are found in two levels. Upper-level graves were found at depth of 10 to 60 cm, and low-level had reached at the depth of 60 cm downward (some graves were also up to 240 cm deep). The authors disagree with the horizontal chronology of cemetery A and also the chronology given based on the depth of the graves which will be discussed later. In the burials containing red wares, there also existed painted buff wares, green and grey potteries. In addition to the graves of cemetery A, eight graves were discovered from area B (10 x 10 m) and eight graves from area C. It should be noted that grave number 55 was found at trench C, but in terms of chronology is not simultaneous with the other seven graves of the trench and its burial goods reveal a great similarity with the burials of trench A. The burials are mostly deteriorated by the environmental factors. The only intact skeleton was from area C.

Hakemi proposed three dating for each cemetery; cemetery A from 2750 to 1900 BC, 1900-1700 BC for cemetery B and 1700-1500 BC for cemetery C (Hakemi 1997: 47). The tomb structure is divided into 2 groups; simple pits (which covers almost 80 percent of the graves) and the second group which has clay structures such as walls or platforms inside. Except for 3 graves of cemetery C, most of the second type burials were found from the graves with red wares of the cemetery A. According to graves structures, Ali Hakemi classified them into 7 groups (Hakemi 1997: 47). The clay bricks used in some of these burials have dimensions of 21×10 ×10 cm. All graves are solitary except the grave 187 which can be identified as a family grave. This grave consisted of two burials from which, one female and one male clay sculpture were yielded. The existence of burial rituals is proved in Shahdad. Some traces of tissues reveal that people were buried with their clothes on. Bodies were sometimes covered by reed matting. In some cases, the body is placed on a platform with all funerary goods around it. The burial orientation of almost all graves is east-west with the head to the east with the exception of a few north-south burials. In some burials, remains of baskets were also found which reveals the tradition of putting food in graves which is also found in Shahr-i-Sokhta II-IV. Each grave contained approximately from 1 to 29 funerary goods. Graves differ in terms of size, number of burial goods and their materials from each other which reveal the social position of each person. The number of graves compared

to the size and population of the Bronze Age city of Shahdad is insignificant. In this regard, it should be accepted that Shahdad cemetery, has a far greater extent than what is known so far or given that deceased in this cemetery.

**Table 1: placement of the uncovered graves from Shahdad**

| Excavated Area | Graves | Grave Number |
|---|---|---|
| Trench B | 7+1[1] | 10, 11, 42 – 47 |
| Trench C | 8 | 48 – 55 |
| Eastern Cemetery of the Cemetery A | 19 | 12, 28, 37, 41 |
| Trench A of the Cemetery A | 289 | 29, 33, 38 – 40, 92 – 105, 110 – 375[2] |
| Trench I of the Cemetery A | 25 | 56-80 |
| Trench II of the Cemetery A | 11 | 81-91 |
| Trench III of the Cemetery A | 4 | 106-109 |
| Trench IV of the Cemetery A | 3 | 34-36 |
| Cemetery A, the graves outside of the trenches | 16 | 1-9, 376-382 |

## 3. Material Culture of Shahdad

### Pottery

Most of Shahdad potteries are the funerary containers. They are mostly wheel-made and simple. The ceramic assemblage of the site could be classified into three general groups: red, buff and grey wares. Red wares are the most frequent finds of Shahdad (90 percent) and grey wares are the least frequent ones (less than 0.50 percent). Potteries of Shahdad are not described and presented according to a standard classification. Hakemi divided the pottery of the cemetery A into three categories based on the areas they were found; buff wares discovered from the east of trench A named the eastern cemetery. The excavator considers the buff wares of the eastern cemetery older than the red wares of the main trench (trench A) of the cemetery A. The red wares were found from both levels of the graves of the cemetery A. The third type is painted ware which is found from all the cemeteries. A very small number of this type of pottery was found in the eastern part of the cemetery. Although they are smaller in the number than red wares but in terms of forms and decorations, they are more diverse. Most of their decorations are geometric shapes, curved lines, zigzag or plants. These potteries were discovered from one grave with red wares so they are simultaneous (Hakemi 2006:118). A few potteries are also found from the graves of areas B and C, which are different from the cemetery A. The area B potteries are all plain except for some jars which are carved with parallel or wavy lines (Hakemi 2006:85). The buff wares of area C are similar to area B potteries (Hakemi 2006:90). The area D potteries are also comparable with the cemetery A ceramics based on their form and decoration. According to potteries, we state that

Shahdad dates back from the mid-third millennium BC to the early second millennium BC, but this dating does not correspond to all parts of the site. Based on the comparative chronology, two periods are proposed for the Shahdad graves. The first one relates to the graves of cemetery A dating back to 2500-2000 BC and the second period dates back to 2000 to 1800/1700 BC covering a few graves of areas B and C. The potteries found from the excavations of different areas of Shahdad have comparable examples with the early and middle Bronze Age sites of the southeast of Iran and neighboring areas (Table 2). In the following table, the word NO corresponds to the number of each pottery given by Hakemi and the letter g relates to the word "grave".

Comparative analysis on the potteries of Shahdad reveals similarities with other southeastern Iran Bronze Age sites and neighboring areas such as Pakistan, Afghanistan and Central Asia. The study of Shahdad potteries is important for two reasons; the intra-site and ultra-site analyses. The intra-site studies help us to identify the connections between the excavated areas in the site of Shahdad and also the chronology of different excavated parts of this site. Ultra-site studies will reveal the connection and the regional and interregional interactions of this urban center over time.

**Table 2: Comparison of the Shahdad ceramics with the contemporaneous sites of the other regions**

| Shahdad Pottery | Form/Decoration | Similar Parallel |
|---|---|---|
| No.0118. g 018 (Eastern Cemetery)<br>No.0094. g 013 (Eastern Cemetery)<br>No.0173. g 027 (Eastern Cemetery)<br>No.0112. g 017 (Eastern Cemetery)<br>No.0182. g 028 (Eastern Cemetery) | Palm with 1-3 branches between single or double bands on wide-mouthed globular pots, and globular jars with high collar and flaring rim | Bampur I-III (de Cardi 1970: Fig.17.12; 22.126); IV (Fig.23.185 & 187; 25.239 & 258); V (Fig.34.326; 36.98; 37.108; 38.375); VI (Fig. 43.483)<br>Miri Qalat III (Besenval 1994: Fig.6.3)<br>Khurab (Stein 1937: Pl.XIII.Kh.B.ii.199)<br>Konar Sandal South (Madjidzadeh 2008:Fig. 24) |
| No.3505. g 291 (Tr. A)<br>No.2996. g 241 (Tr. A) | Truncated Conical Bowls | Yahya IVB4-1 (Potts 2001: Fig.5.3)<br>Khurab (Stein 1937: Pl.VI.Khur.L.i.276)<br>Mehrgarh VIII (Jarrige et al. 1995: Fig. 5.19.b; 7.25.d-e),<br>Nausharo IV and Dauda Damb (Jarrige 1994: 297)<br>Togolok 1 and 21 (Sarianidi 1986: Fig.12.6; Hiebert 1994a: Fig.4.10) |
| No.0854. g 091 (Tr. II)<br>No.0999. g 109 (Tr. III) | hatched “M” | Bampur I-IV (de Cardi 1970: Fig.20.81-83, Fig.34.326; V (de Cardi 1970: Fig. 34.326; 36.100; VI (de Cardi 1970: 302)<br>Konar Sandal South (Madjidzadeh 2008:Fig. 24)<br>Mundigak III.6 (Casal 1961: Fig.61.141) |
| No.0218. g 032 (Tr. IV)<br>No.3972. g 327 (Tr. A)<br>No.4395. g 375 (Tr. A) | Hatched Wavy Bands | Yahya IVB (Potts 2001: 8, Fig.1.17)<br>Tell Abraq (Potts 2001: 8, 114, with refs) |

| | | |
|---|---|---|
| No.3082. g 254 (Tr. A)<br>No.4218. g 354 (Tr. A)<br>No.0219. g 032 (Tr. IV)<br>No.0187. g 029 (Tr. A) | Hatched semicircles | Shahr-i Sokhta III (Lamberg-Karlovsky & Tosi 1973: Fig.56)<br>Mundigak III, IV (Casal 1961: Fig.57.104; Fig.87.359; 97.464.a)<br>Konar Sandal South (Madjidzadeh 2008:Fig. 24) |
| No.0109. g 016 (Tr. E.A)<br>No.0175. g 027 (Eastern Cemetery)<br>No.1164. g 120 (Tr. A) | Hatched Chain Design | Bampur V (de Cardi 1970: Fig.38.377)<br>Amri IIIC (Casal 1964: Fig.82.373; 86.411) |
| No.0172. g 027 (Eastern Cemetery) | hatched hourglass | Bampur II-IV (de Cardi 1970: Fig.21.113; 22.160; 25.233) |
| No.0182. g 028 (Eastern Cemetery)<br>No.0110. g 016 (Eastern Cemetery)<br>No.0999. g 109 (Tr. III) | High-collared globular jars with flaring rim | Bampur I-IV (de Cardi 1970: Fig.18.28 & 29; 22.129; 23.180; 31.50) |
| No.0888. g 096 (Tr. A)<br>No.4466. Room10 (D)<br>No.0247. g 034 (Tr. IV)<br>No.1383. g 134 (Tr. A) | Painted Spouted Vessels | Yahya IVA (Lamberg-Karlovsky 1970: Fig.16.p)<br>Shahr-i Sokhta II (Lamberg-Karlovsky & Tosi 1973: Fig.24)<br>Jiroft (Majidzadeh 2003: 159) |
| No.1056. g 115 (Tr. A)<br>No.0982. g 107 (Tr. III)<br>No.0832. g 088 (Tr. II) | Trough-spouted Vessels | Hissar IIIC (Schmidt 1937: Pl.XLI. H3315); Togolok 21 (Sarianidi 1986: fig.47)<br>Yahya IVC2-IVB5 (Potts 2001: Fig.1.10)<br>Altyn " Burial 281" (Masson 1988: Pl.XL.7)<br>Konar Sandal North (Madjidzadeh 2008:Fig. 27) |
| No.3104. g 275 (Tr. A)<br>No.3454. g 288 (Tr. A)<br>No.0508. g 058 (Tr. I)<br>No.0117. g 018 (Eastern Cemetery)<br>No.4489. Room 18 (D) | Tubular-spouted Vessels | Yahya IVC2-IVB5 (Potts 2001: Fig.1.10; 4.16.c)<br>Konar Sandal North (Madjidzadeh 2008:Fig. 27)<br>Togolok 21 (Sarianidi 1986: fig.47) |
| No.1721. g 159 (Tr. A) | Appliqué Decoration | Bampur II-VI (de Cardi 1970: Fig.19.60; 20.67; 22.172; 24.224 ;39.389)<br>Konar Sandal South (Madjidzadeh 2008:Fig. 23)<br>Khurab burials (Stein 1937: Pl.XIII. Khur. B.ii.198 & 199)<br>Miri Qalat (Besenval 1997: Fig.21)<br>Umm al-Nar (Frifelt 1991: Fig.82). |
| No.0172. g 027 (Eastern Cemetery) | Globular jars decorated with one or more rows of | Yahya IVC1 (Potts 2001: Fig.2.12.a; 2.23.c)<br>Mundigak IV (Casal 1961: Fig. 74.243) |

| | | |
|---|---|---|
| | crosshatched triangles | |
| No.4442. Room 2 (D) | Relief snake-cordons | Konar Sandal South (Madjidzadeh 2008: Fig. 23)<br>Yahya IVC1-IVB4-2 (Potts 2001: Fig. 2.18); Damin (Tosi 1974: Fig.35)<br>Kulli (Possehl 1986: Fig.XV.Kulli.I.viii.8)<br>Mundigak IV.1-2 (Casal 1961: Fig.79)<br>Umm al-Nar (Potts 2001: 59, with refs) |
| No.0101. g 014 (Eastern Cemetery)<br>No.0366. g 041 (Eastern Cemetery)<br>No.0683. g 074 (Tr. I)<br>No.4482. Room 13 (D)<br>No.4191. g 351 (Tr. A) | Coarse buff/red-ware jars with incised decoration | Yahya IVB (Potts 2001: Fig.7.9.a); Shahr-i Sokhta II-III (Lamberg-Karlovsky & Tosi 1973: Fig.48)<br>Takhirbai 3 (Gotzelt 1996, no.872)<br>Mundigak IV (Casal 1961: Fig.87.365)<br>Gonur North (Sarianidi 1998: Fig. 11.9.b & 15.1); Konar Sandal North (Madjidzadeh 2008:Fig. 27) |
| No.0510. g 058 (Tr. I) | Incised Grey Ware | IVB5 (Lamberg-Karlovsky and Tosi 1973: 44; Bampur IV-VI (During-Caspers 1970: 320, Fig.45); Damin (Tosi 1974: Fig.37); Shahr-i Sokhta IV (Lamberg-Karlovsky & Tosi 1973: Fig.147-50); Persian Gulf Sites including Umm al-Nar, Hili and Tarut (Mery 2000: 204-217) |
| No.0067. g 010 (B)<br>No.0399. g 047 (B)<br>No.0386. g 045 (B)<br>No.0443. g 052 (C) | Incised/undecorated Narrow-Necked Globular Bottles | Gonur 1 graveyard (Salvatori 1995: G432/2, G.C.7/5)<br>Mehrgarh VIII (Jarrige et al. 1995: Fig.6.22) |
| No.0068. g 010 (B)<br>No.0066. g 010 (B)<br>No.0375. g 043 (B) | Buff-Ware Globular-Oval Flasks | Gonur South (Sarianidi 1993: Fig.5)<br>Mehrgarh VIII (Santoni 1988: Fig.1) |
| No.0405. g 048 (C)<br>No.0440. g 052 (C)<br>No.0413. g 049 (C) | Narrow-necked Bottle | Chanhu-Daro (Mackay 1943: Pl.XLI.46-47); Anau (Khlopin 1981: Fig.5.X)<br>Mundigak IV.3 (Casal 1961: Fig.96.456) |
| No.4438, Room3 (D)<br>No.4456, Room29 (D)<br>No.4465, Room10 (D)<br>No.4497, Room27 (D)<br>No.4500, Room28 (D) | Intersecting or nested zig-zags, chevrons or triangles between 1-3 horizontal bands | Bampur II-IV (De Cardi 1970: Fig.18.25 & 42; 24.203; 29.308)<br>Yahya IVB (Potts 2001: 7, Fig.1.6.j)<br>Konar Sandal South (Madjidzadeh 2008:Fig. 23) |
| No.4482. Room 13 (D) | Wavy comb-incised decoration | Yahya IVB5 (Potts 2001: 4.29.g); Bampur I-IV (de Cardi 1970: Fig.17.8; 18.30-34; 22.133; 30.33 & 49); Amri IIIA (Casal 1964: Fig.78.344); Damin (Tosi 1974: Fig.36) |

The comparative studies on the potteries of the cemetery and the residential area of Shahdad with the other regions[3] suggest the dating of mid-third millennium BC to the early second millennium BC. The earliest chronology that could be suggested for Shahdad is Mid-3rd Millennium BC based on pottery similarities with Konar Sandal

South, Shahr-i Sokhta II & III, Bampur I-IV, Yahya IVB and Umm al-Nar. There is no evidence to prove the dating suggested by Hakemi. He believed that the cemetery A dates back to the first half of the third millennium BC. One of the reasons of this suggestion is the discovery of one single pottery with writings (from the grave 030) which was taken by mistake as Proto-Elamite script while it belongs to linear Elamite writing system which is a few centuries later than Proto-Elamite writing. Potteries of area D and most of the potteries of trench A are similar which suggest the same dating for the area D that is known as industrial area. The graves of areas B and C contained the most recent finds of Shahdad, dating back to the early second millennium BC. Hakemi divided the graves of trench A into 2 groups based on their depth although there is no difference between their potteries and cannot be related to two different periods. Since there is no topographic map of the cemetery before the excavations, it is not easy to discuss the two level cemetery. This depth difference might be due to the natural topographical condition of the terrain. As it was mentioned before, Shahdad is formed among Kaluts, on the other hand Hakemi had mentioned before that some parts of cemetery were bulldozed for agricultural purposes. There exists also wind erosions which may differ from one part to another parts of the area. It is clear that the graves might differ in depths but not in their cultural materials.

Painted potteries of trench A and area D show strong similarities with the sites situated in southeastern Iran and neighboring regions such as Central Asia, Pakistan, Afghanistan and the Persian Gulf belonging to the second half of the third millennium BC. Suggesting a precise dating for these pottery similarities is difficult because of two reasons; first of all, most of the decorations and forms lasted for a very long time, from the mid-third millennium to the early second millennium BC. The second reason is the problem with the chronology of southeastern Iran and neighboring regions which is not exact and trusted and there are some disagreement on the chronology of the different periods of the Bronze Age. In general, not only Shahdad's potteries described the situation inside Shahdad area, but also revealed the status of the regional and trans-regional interactions of the site. As a result of this study, we argue that this site had been inhabited for a long time from the mid-third millennium BC to the early second millennium BC. The flourishing period of this city is the second half of the third millennium BC. Potteries reveal the cultural similarity to other civilized areas of South-East of Iran including Sistan area, Halilrud Basin and Baluchistan. This cultural similarity arises through the establishment of a commercial-communications network along the urban period of Southeastern Iran.

Although potteries indicate Shahdad appear to continue in 2$^{nd}$ millennium BC but this period can be regarded as the time after the collapse of the urbanization of southeastern Iran and the city of Shahdad. The pottery related to the first quarter of the second millennium of the city of Shahdad, uncovered from the areas B and especially C, shows a shift in the pottery tradition patterns of Shahdad. It seems that after the decline of urbanization of southeast Iran and the vanish of the urban centers of this region, there has been a fundamental shift in the pottery pattern of the early second millennium BC settlements on the western margin of the Lut plain; in a way that there was a decline in interaction with southern cultures (Halilrud basin and the Persian Gulf) and east (Sistan and Baluchistan), Instead, cultural integration with the north (Central Asia) had increased.

## 4. Stone objects

### Chlorite

About two hundred chlorite objects have so far yielded from Shahdad excavations while only less than half of them have been published and introduced. Chlorite vessels have been found in a wide geographical range from Mesopotamia to the central Asia and Pakistan. Most scholars consider the southeastern Iran as one of the main chlorite production centers during the Bronze Age. The chlorite workshops were found from Yahya IVB (Lamberg-Karlovsky 1970:39, Potts 2001). Interdisciplinary studies revealed that chlorite resources existed in the East of Iran in the areas such as Soghun valley, Khorasan and Sistan (Kohl *et al.*1980) and Jiroft (Emami *et al.* 2017). Surveys and studies have not yet revealed any traces of chlorite productions in Shahdad area. There are also no chlorite sources around Shahdad (Hakemi 1997: 57). Most Shahdad chlorite vessels belong to the *Série Ancienne* (de Miroschedji 1973) or the *intercultural style* (Kohl 1974). *Série ancienne* vessels were primarily found during the Early Dynastic II, III in Mesopotamia (Lamberg-Karlovsky 2001: 277). Some of the known motifs of *Série ancienne* chlorite vessels exist in Shahdad[4] such as mat-weave ( No.0345, g 039, A), imbricate (No.0403, g 047, C) hut-pot (No.4449, Room 7, D) zig-zags (No.0161, g 025, Tr. IV), rope (No.0178, g 027, Tr. V). Some similarities in the forms with *Série ancienne chlorite vessels* can be seen in Shahdad chlorite wares e.g. squat goblets (No.1269, g 125, A), compartmented boxes (No.1103, g 116, A) house-model (No.4077, g 338, A), square-based, round-necked vials (No.3579, g 296, A), Bell-shaped bowls (No.1211, g 122, A). Chlorite vessels similar to the ones found from Shahdad, were abundantly yielded from Jiroft, Tepe Yahya, Shahr-i Sokhta and Bampur. Kohl believes some of Shahdad vessels had been brought from Tepe Yahya however there were some samples which were not found from Yahya (Kohl 2001:212).
Based on the variability in the quality and color of Shahdad chlorite vessels, it can be said that various chlorite mines were used during the Bronze Age in southeastern Iran. Although there has not yet found any chlorite production workshop in Shahdad, but due to the discovery of these vessels in a very large number in Shahdad, as well as their variety in colors and quality, and also the presence of some forms such as compartmented boxes and house models in abundance unlike the other areas, it can be said that at least some of these vessels had been produced in Shahdad.

On the other hand, we know that working with chlorite, which is a soft rock, should not have been difficult for Shahdad artists, so it is reasonable to assume that raw materials were imported to Shahdad, where the vessels were produced.

Given the little similarity in the form and iconography of the Shahdad vessels with those of *Série ancienne* of the Southeast of Iran, in particular Halilrud basin, it can be claimed that they all date back to the same period; the second half of the third millennium BC. some types of *Série ancienne* vessels such as hand bags do not exist in Shahdad, which can be interpreted as a cultural difference not a chronological one (Kohl 2001:212).

## 5. Calcite vessels

Overall 112 calcite objects have been found in Shahdad including bowls, goblets, pins, canes and miniature pillars which are not fully and thoroughly described and published. These calcite objects have only uncovered from areas A and B. Most of them are found from area A graves along with red wares. Although calcite mines exist in the west of

Shahdad in the mountains of Kerman (Hakemi 1997:19) but there is no evidence of calcite productions in Shahdad. Shahdad calcite vessels resembles to those of Shahr-i Sokhta and Mundigak (Casanova 1991:49, Tableau.10). Shahr-i Sokhta as the only known calcite production center of southeastern Iran, is the most probable origin of Shahdad objects (Piperno and Tosi 1975: 194; Ciarla 1981: 46-7, 58, n4). But the fact that there is variety in colors and forms of Shahdad calcite vessels which doesn't exist in Sistan, suggests the existence of other production origins which can be Afghanistan or the other areas in Southeastern Iran (Ciarla 1981, Casanova 1991, Potts 1994, Moorey 1994). Shahdad calcite vessels are comparable to those of Central Asia, Northeastern Iran and Indo-Iranian borders. Despite the studies, it is not possible to state with certainty their chronology, origin and the trade roads. For example the miniature columns of Shahdad had lasted for a long time, one similar item was found from Kara Depe in the east of Kopet Dagh (Hiebert 1994:381) which dates back to the early third millennium BC and the other from Togolok 21 dating back to the early second millennium BC (Sarianidi 1998: 52, Fig.20). In general, we can say that the calcite objects of Shahdad are comparable to those of Shahr-i Sokhta II & III dating back to the mid to late third millennium BC.

## 6. Metal Objects

The origins of arsenical copper smelting in the Iranian plateau often argued to date to the fifth millennium BC (Thornton *et al.* 2002). Analysis of the data of Tal-i Iblis confirm the presence of smelting at Tal-i Iblis at least in the early fifth millennium BC if not earlier (Caldwell 1967; Frame 2004). Excavations in workshop D or artisan's area of Shahdad led to the discovery of a great complex of the Bronze Age copper smelting processes. Most of Shahdad metal artifacts are made of arsenical copper and only a few of them have tin in their composition (Hakemi 1997: 59; 110-14, Meier 2011). Furnaces, crucibles, moulds and metal objects were found in situ in workshop D which prove the early and secondary metal production in Shahdad. A metallurgy area, with an extent of 0.5 hectare, was found near the workshop D (800 meters to east) which its surface is covered with metal furnaces and metal slags. It may be in use by inhabitants of Shahdad in 3$^{rd}$ millennium BC.

More than 700 metal objects have yielded from Shahdad excavations which are made of bronze, lead, silver and gold. 670 Of them are bronze objects, including 350 vessels, 239 pins and 81 other objects, such as axes, stamp seals, rings, bracelets, instruments, plates, flags and weapons. Most of the metal objects are not yet published. Overall, the Shahdad collection provides interesting information about the origins and methods of the metallurgy of the southwestern Asia. More than 80 percent of Shahdad graves contained bronze artifacts. You can see Shahdad metal objects with their comparable parallels of other regions in the below table (Table 3) in order to understand the chronology, the regional and intra-regional interactions of the site during the Bronze Age.

**Table 3: Comparison of the Metal Objects of Shahdad with the Contemporaneous Sites of the Other Regions**

| Object Number | Object | Similar Parallel |
|---|---|---|
| No.3555, g294 (Tr. A)<br>No.0816, g084 (Tr. II) | Spouted Vessels | Varamin-e Jiroft (Eskandari *et al.* in press) |
| No.0071, g010 (B)<br>No.0312, g037 (Tr. IV) | Hemisphereical Bowls with trough spout | Hissar IIIC (Schmidt 1937: Pl.LVII.H4883 & 3270)<br>Khinaman (Curtis 1988: Fig.19-20) |
| No.1011, g111 (Tr. A)<br>No.3934, g325 (Tr. A)<br>No.2576, g212 (Tr. A) | Carinated bowls | Bani Surmah (Bellelli 2002: Tav.16.67);<br>Bani Surmah and D'um Avize (Schmidt et al. 1989: Pl.119.r; Bellelli 2002: Tav.20.113) |
| No.1044, g114 (Tr. A)<br>No.1759, g161 (Tr. A) | Round-bottomed carinated jars with a raised centre seam | Harappa (Vats 1940: Pl. CXXI.277)<br>Mohenjo-Daro (Mackay 1938: Pl.CXVI.5 & 7) |
| No.2890, g232 (Tr. A)<br>No.1070, g115 (Tr. A)<br>No.1219, g122 (Tr. A) | Dishes with relief zoomorphic decoration | Hissar III (Schmidt 1937: Fig.112)<br>(Majidzadeh 2003: 156) |
| No.2420, g203 (Tr. A)<br>No.1701, g158 (Tr. A) | Undecorated dishes with wide lip | Khurab (Stein 1937: Pl.XVIII.Khur.B.i.130, B.i.298)<br>Hissar and Kamtarlan II (Bellelli 2002: Tav.4.7 & 4.8, with refs) |
| No.0898, g096 (Tr. A)<br>No.0084, g011 (B)<br>No.1441, g139 (Tr. A) | Goblets | Khurab (Stein 1937: Pl.XVIII.Khur.E.i.251).<br>Mohenjo-Daro (Marshall 1931: Pl.CXL.8)<br>Ur (Muller-Karpe 1993: no.1131-1133) |
| No.1168, g120 (Tr. A)<br>No.1068, g115 (Tr. A) | Pear-shaped vessels with hanging cords | No found somewhere else |
| No.0402, g047 (B)<br>No.0393, g045 (B)<br>No.0302, g036 (Tr. IV)<br>No.4302, g363 (Tr. A) | Ornamental axe-heads | Khinaman (Curtis 1988: Fig.1 & 2)<br>Khurab (Stein 1937: Pl. XVIII.Khur.E.i.258) |
| No.2259, g193 (Tr. A)<br>No.2421, g203 (Tr. A)<br>No.2444, g204 (Tr. A) | Undecorated shaft-hole axes | Yahya IVB5 (Potts 2001: Fig.4.44, p115)<br>Damin (Tosi 1970: Fig.17a & 54)<br>Susa (Collon1987: vol. I, 96, no.73). |
| No.1117, g117 (Tr. A)<br>No.0573, g063 (Tr. I) | Pins | Jiroft (Majidzadeh 2003: p155) |
| No.1049, g114 (Tr. A) | The Shahdad`s Standard | No found somewhere else |

The comparative study of the metal artifacts of Shahdad with those of the sites of Southwestern Asia revealed some results. First, the interactions of Shahdad with long-

distance areas such as Indus valley, Central Asia, East, West and southwest of Iran were identified, then the evidence of the existence of a very homogenous style in metal objects in a wide geographical area was revealed and third, Shahdad was a metal production center with its own characteristics. Due to the comparative chronology, Shahdad metal artifacts date back from the mid-third millennium BC to the early second millennium BC.

There are some metal objects such as tubular containers and standard Shahdad which do not have any similar parallels in other areas which not only show the art and specialty of the metalworkers of Shahdad, but also reveal the unique characteristics of Shahdad metallurgy. The Shahdad standard was found from the grave 114 of area A. It is consisted of a squared metal piece, mounted on a 128-centimeter metal axle which the flag can turn over it. An eagle with opened wings which is in a landing position can be seen on top of the axle. The flag is engraved with some designs (Fig 2). The scene depicted on the plaque presents a picture of a person in power receiving gifts. Ali Hakemi has described the scene very well-detailed (Hakemi 1997:649). Hakemi introduced the gift recipient in this scene as a goddess and believed that all gift holders are females and it corresponds to a spiritual scene while these people do not have any feminine factors such as breasts which is not usual because on the seals of Shahdad, women can be spotted with big breasts that distinguished them from men. Pierre Amiet also consider the recipient as a man (Amiet 1986: 165). But the more important question is whether this scene is a spiritual one or not. Despite the fact that Hakemi believes it belongs to a spiritual ceremony, there is no evidence to prove it. None of the depicted people in this scene have god's signs on Shahdad seals such as crowns or horns.

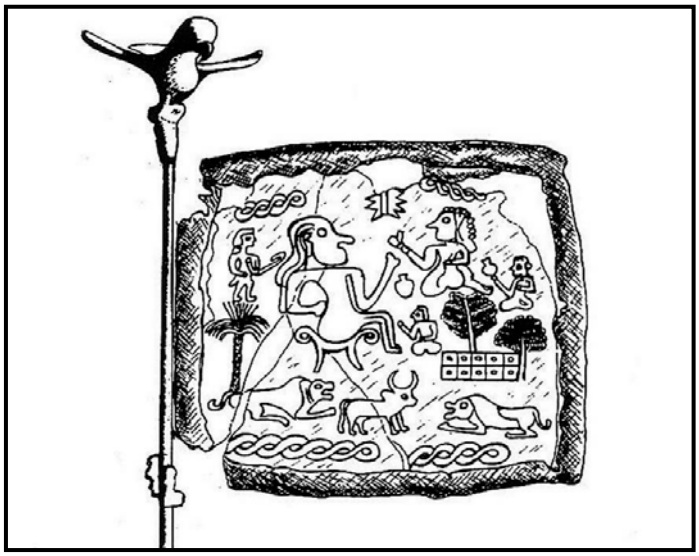


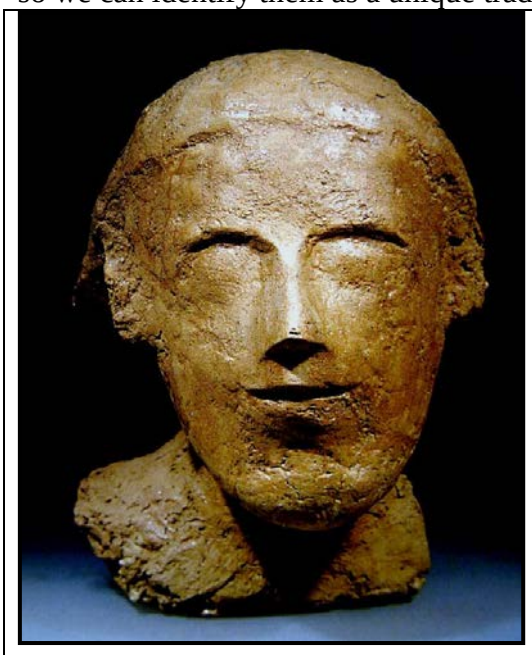
**Fig 2: Drawing of the sense of the Standard of Shahdad (After; Hakemi 1997:649)**

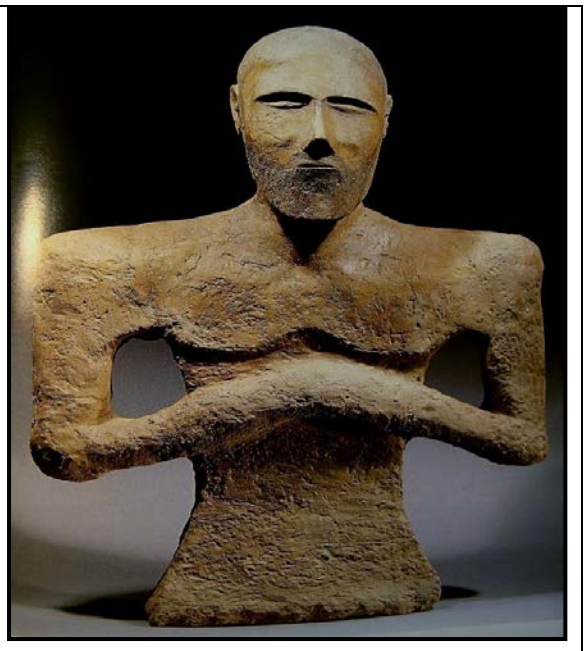
To sum up, the bronze objects of Shahdad were produced in Shahdad, and the presence of the workshop D in the east of the site of Shahdad, along with a large metallurgical site at 800 meters east of it, indicates a large metallurgical area in the eastern part of the city of Shahdad in the third millennium BC. Most scholars state that Anarak (700 km to the northwest of Shahdad) supplied the arsenical copper of the prehistory societies of eastern Iran (Heskel & Lamberg-Karlovsky 1980: 258-9; Pigott 1999) and the Indus

valley (Kenoyer & Miller 1999: 116-17). Meanwhile, there are copper-rich mines around the Lut plain in which there are signs of being exploited during the ancient times. It seems more reasonable to assume that Shahdad inhabitants used these mines rather than those in Anarak which were too far. More interdisciplinary studies are needed to prove or reject this hypothesis.

## 7. Clay Objects

Two unique artifacts were found from Shahdad; one human statues (Figs 3 & 4) and one house models. In total, 24 human clay statues were discovered from Shahdad cemetery (Hakemi 1994, 1997) which had ritual functions. In some of them, some traces of burial routines and rituals such as reed mating body coverage can be seen. Because of the destruction of bodies and burials, the relations between the statues and the body cannot be seen. It can be argued that these statues were buried as their dead companion, or that the body of the deceased was destroyed during certain ritual ceremonies and instead their statue was placed in grave. Although the clay statues compared with the ones of Mesopotamia and the Indus Valley, the similarities between them were superficial, and the differences in the size, style, materials and the context in which they were found, reveal the unique tradition of Shahdad. The other special finds of Shahdad are the house models. The clay house models were uncovered from 33 graves of the cemetery of Shahdad. They are cubical and 20-30 centimeters long. Some researchers take them as a 3D example of house motifs on chlorite vessels. Hakemi called them shrines (Hakemi 1997:62). The house models and human statues, both, they were uncovered from the cemetery A, so they date back to the second half of the third millennium BC. House models and human statues have not yet found in any other cemetery other than Shahdad so we can identify them as a unique tradition of Shahdad.





**Figs 3 & 4: Two clay statues recovered from Shahdad (photo: National museum of Iran)**

## 8. Shahdad Seals

Despite the discovery of the cylindrical seals, the only evidence of the use of stamp seals can only be seen on red wares of the cemetery A and no seal impressions have so far found. The function of the cylindrical seals of Shahdad has not yet documented. 32 seals were uncovered during the pre-revolution excavations. Except for 2 seals found from the workshop D (Hakemi 1997: 72, 97), the rest of them, all, have found from the cemetery A.

6 seals have yielded from the cemetery of Shahdad which are not yet published including a stone seal, no. 0766, grave 079; a stone seal, no. 2572, grave 212; a bronze seal, no 3109, grave 257, a bronze seal, no. 4175, grave 349; a bronze seal, no. 4185, grave 350; a bronze seal, no. 4289, grave 362). Two other seals of the cemetery do not have proper and clear drawings including a stone cylinder seal, no. 2263, grave 193; a bronze compartmented seal, no 2489, grave 207). The seals of Shahdad are made of metal, stone and clay. 11 other seals were also collected during the surface surveys. You can see Shahdad stamp seals with their comparable examples of other regions in the below table (Table 4).

**Table 4: Comparison of the Seals of Shahdad with the Contemporaneous Sites of the Other Regions**

| Shahdad Seal | Description | Similar Parallel |
|---|---|---|
| Bronze stamp seal: no. 0315, g037 (Tr. IV) | The duck-like bird | |
| Bronze stamp seal: no. 4404, (Tr.A) g377 | A double-headed bird | |
| Bronze stamp seal: no. 0362, (Tr. A) g040 | The eagle with spread wings | Comparable with Chlorite Objects from Yahya and Jiroft |
| Bronze stamp seal: no. 0236, (Tr. A) g033 | The bearded human figure | |
| Bronze stamp seal: no. 0222, (Tr. A) g032 | The trefoil design | |
| Bronze stamp seal: no. 1217, (Tr.A) g122 | An insect | |
| Stone stamp seal: no. 0751, (Tr.I) g078 | The opposed feet | Yahya IVB2 (Pittman 2001: Fig.10.56)<br>Shahr-e Sokhta II-III (Lamberg-Karlovsky & Tosi 1973: Fig.49)<br>Mundigak IV.3 (Casal 1961: Pl.XLV.4) |
| Stone stamp seal: no. 2858, (Tr.A) g230 | Eight-lobed rosette | Dashly 1, Murghab Delta and North Afghanistan (Baghestani 1997: no. 114, 115, 111, 171) |
| Stone stamp seal: no. 1933, (Tr.A) g170 | Eight-point star | Togolok (Hiebert 1994: 60, Fig.4.32.2) |
| Bronze stamp seal: no. 1830, (Tr.A) g166 | A cross inside a circular collar | Many sites in Bactria and Margiana (Baghestani 1997: no.330-345) |

According to the comparative studies, Shahdad seals share some similarities and characteristic with those of Early Bronze Age sites such as Shahr-e Sokhta, Jiroft, Tepe

Yahya and the remote areas such as Central Asia and the Indo-Iranian borderlands. It was also revealed that most of Shahdad seals are not comparable with those found from other regions and they had their own local characteristics. One cylinder seal was also uncovered from workshop D that is not yet published. Due to erosion, its motif is not very clear. It seems to represent a winged goddess (Fig 5). Another unpublished seal from Area D is a stamp seal made of clay bearing a geometric impression (Fig 6). M. Kaboli found a clay stamp seal (6.5×5.3 cm) in the residential area in the northern part of the site which representing animal motif (Kaboli 1997) (Fig 7).

The cylinder seals of Shahdad are made of silver and stone with human, vegetal and animal motifs. Pittman groups them with the seals of Yahya IVB5-IVA (Pittman 2001: Fig.10.46-10.51) and called them "Southeastern Style" or the central southern of the Iranian plateau. Based on the context in which these seals where discovered, they date back to the second half of the third millennium BC.

**Figs 5&6: Two unpublished seals recovered from area D of Shahdad, found by Hakemi's excavations**

**(Courtesy to National Museum of Iran)**

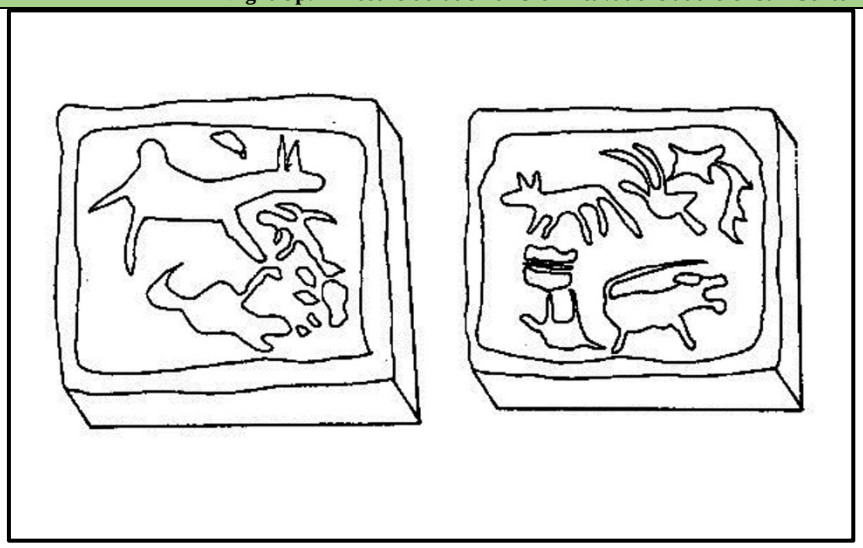


**Fig 7: Seal impression of a clay stamp seal from architectural complex excavated by M. Kaboli (After Kaboli 1997)**

## 9. A Revised Chronology for Shahdad

It is hard to present an absolute chronology of Shahdad due to the lack of an organized settlement sequence in order to compare the funerary goods with and also the lack of absolute C14 dating results. All we have relate to the one and only C14 dating result which is not sufficient. The other problem is that all the cultural materials are uncovered from the burials and not from the settlement layers and the fact that the cemetery is dated both vertically and horizontally poses another problem.

There is no excavated site in Shahdad or in Northern Kerman to compare the data of Shahdad with and in case there are some comparable sites in Southeastern Iran such as (Shahr-e Sokhta, Bampur and Yahya) or in neighboring areas (Mundigak, Tureng Tepe and all sites of the central Asia), their chronology is so arguable and challenging. Hakemi suggested the dating of 3100 to 1500 BC for Shahdad (Hakemi 1997:75). He used the term of Takab for the sequence of Shahdad so that Takab $IV_2$ (Identified from surface survey of Shahdad) dates back to 3100-2750 BC. Takab $IV_1$ (2750-2400 BC) is related to the Eastern cemetery A (19 graves containing buff wares in the east of the trench A). Takab III is divided into two subgroups; $III_2$ (2400-2200 BC) and $III_1$ (2200-1900). Takab III relates to the cemetery A, for the graves with the depth of 60 to 240 cm the period $III_2$ is suggested and for the rest the period $III_1$. Hakemi suggested the period Takab $II_2$ (1900-1700BC) for the graves discovered from the cemetery B and Takab $II_1$ (1700-1500 BC) for the cemetery C.

He also suggested the dating of 2200-2000 BC for the area D. The only absolute dating we have got from Shahdad relates to this area which reveals the date of 2050 BC (Hakemi 1997: 112). This chronology needs to be revised (Table 3). As it was mentioned before, Hakemi applied both horizontal and vertical chronology for Shahdad. According to the author, none of them can't be correct based on the evidence and documents. First, we will discuss the horizontal chronology. Hakemi presents a horizontal chronology from east to west from the oldest to the latest period so that the eastern cemetery with buff wares is considered as the oldest part (2750-2450 BC). Then there is the cemetery A with red ware in its west (2450-1900 BC). The author believes that the graves of both areas are simultaneous and date back to the second half of the

third millennium BC. The suggested dating is based on the pottery similarities between the burial goods of Eastern cemetery and those of cemetery A, Bampur, Yahya and Konar Sandal. The painted potteries found from the eastern cemetery's graves, show a very close resemblance to the cemetery A and the mentioned-above third millennium BC sites. They mostly share same motifs such as palm trees between two lines, hatched chains, hatched sandglasses, hatched semicircles, hatched wavy lines, engraved motifs and applique decoration. There are also some analogies in their forms such as spouted vessels. There are also potter's marks on the potteries discovered from the graves of both areas. Hakemi admitted the very close resemblances of painted potteries of the cemetery A and the eastern cemetery. In fact the reason why Hakemi presented two different chronologies for these 2 areas was the lack of red wares in the eastern cemetery. However, unlike the cemetery A, the buff wares were used instead of the red wares along with the burial goods in the eastern cemetery. The author considers the graves of both areas contemporaneous and this difference (in using the red and buff wares and the amount of chlorite vessels) arises from the social or ethnic hierarchy rather than the chronological diversity. The reason why we believe all graves belong to the same time, is the existence of both red wares and buff wares in the graves 85 and 87 of the cemetery A (Hakemi 2006: 372, 373). So, as a result of the simultaneity of the eastern part and the cemetery A, the hypothesis of Shahdad west-east ward horizontal growth is questioned. Hakemi had also proposed a vertical sequence for the main trench of the cemetery A. According to him, the graves with the depth of 15-60 cm date back to 2200-1900 BC while the rest (60-240 cm) go back to 2450 to 2200 BC. Hakemi divided the graves of area A into 2 groups based on their depth although there is no difference between their potteries and cannot be related to two different periods. Since there is no topographic map of the cemetery before the excavations, it is not easy to discuss the 2 level cemetery. This depth difference might be due to the natural topographical condition of the terrain. On the other hand Hakemi had mentioned that some parts of cemetery were bulldozed for agricultural purposes. There exists also wind erosions which may differ from one part to another parts of the area. It is clear that the graves might differ in depths but not in their cultural materials.

Although Hakemi stated the depths of the graves between 15 and 240 centimeters; of the 289 graves of the trench A, only 6 graves (incl. 294, 203, 189, 188a, 188b and 132) have a depth of more than one and a half meters, and all other graves have a lesser depth. The interesting point is that each of the six graves that are deeper than the others, are located in the southern side of the trench A near the southern wall of the trench.

According to the north-south slope of the Shahdad Cemetery A, it is natural that the graves of the southern part of the main trench have a greater depth, based on a fixed benchmark (probability in the northwest corner of the trench). It seems that if the trench A had been excavated several meters further to the south, the depth of the graves would have reached up to three meters with this method, which reveals the topographic condition of the cemetery and the error in the data registration had a direct impact on the depth measurement of some burials in the southern corner of the trench. The comparative analysis of the funerary goods reveals that the cemetery A of Shahdad dates to the mid-third millennium BC and lasts until the late third millennium BC (2500-2000). This dating is based on the comparative studies on pottery, chlorite and marble vessels, bronze objects and seals of Shahdad with the contemporaneous areas of

southeastern Iran and neighboring regions such as Shahr-i Sokhta, Jiroft, Bampur, Tepe Yahya, Mundigak, Umm-al Nar, Susa and the sites of the central Asia.

There is no evidence to prove the dating suggested by Hakemi. He believed that the cemetery A dates back to the first half of the third millennium BC. One of the reasons of this suggestion is the discovery of one single pottery with writings (from the grave 030) (Hakemi 1997: 183, no.0193, Db.5) which was taken by mistake as Proto-Elamite script (Hakemi 1997: 576) and he compared it with the late fourth millennium BC and the early third millennium BC examples of Tepe Yahya, Shahr-i Sokhta, Malyan and Sialk while it relates to linear Elamite which is a few centuries later than proto Elamite writing. Linear Elamite is a writing system used during the reign of Puzur-Insusinak. The existence of a linear Elamite script in the Shahdad Cemetery does not necessarily relate the graveyard to the time of Puzur Insusinak. The latest archaeological discoveries in Konar Sandal of Jiroft, yielded new information about the linear Elamite writing system. The discovery of linear Elamite tablets in Konar sandal, which date back to the mid to the late third millennium BC (Majidzadeh 2012), suggests Jiroft as the origin of this writing system because it was invented and used in Jiroft before the reign of Puzur-insusinak. It also reveals that the existence of the linear Elamite scripts in Shahdad should not be linked to the time of Puzur-Insusinak, the king of Avan.

**Table 3: Revised Chronology of Shahdad**

| Excavated Area | Hakemi's proposed Chronology and Periodization | Proposed Chronology of Authors |
|---|---|---|
| Surface Data | Takab $IV_2$ (3100-2750 BC) | Aliabad Culture (3700-3300 BC) |
| Eastern Cemetery | Takab $IV_1$ (2750-2450 BC) | 2300-2000 BC |
| Cemetery A | Takab $III_2$ (2450-2200 BC)<br>Graves with the depth of 60-240 cm | 2500-2000 BC |
| | Takab $III_1$ (2200-1900 BC)<br>Graves with the depth of 15-60 cm | |
| Cemetery B | Takab $II_2$ (1900-1700 BC) | 2000-1800 BC |
| Cemetery C | Takab $II_1$ (1700-1500 BC) | 1800-1600? BC |
| Area D | 2200-2000 BC | $2^{nd}$ half of $3^{rd}$ millennium BC |

## 10. Concluding Remarks

In order to evaluate the old excavations of Shahdad, we confronted several restrictions in our studies; first of all; the common approaches of Shahdad excavations and interpretations was historical-cultural under the influence of the archaeology of decades 60s and 70s, second of all, the lack of interdisciplinary studies on cultural materials of Shahdad didn't let us to have detailed information on production processes, their livelihood, cultural complexities and environmental factors. On the other hand, due to the glorious finds of the cemetery, most of the excavations were conducted in this area and the other parts of the city were neglected. Overall, the revision of Shahdad data yielded some new information. the dating of the second half of the third millennium BC was proposed for the cemetery A, the artisans 'area (area D), the residential areas excavated by Kaboli and, in general, the entire area of the city of Shahdad. In other words, the flourishing period of this city is the second half of the third millennium BC. Furthermore, the early 2nd millennium BC was proposed for the culture after the collapse of the urbanization of Shahdad (cemeteries B and C). The other conclusion of this study was the fact that the graves of the eastern cemetery were not the oldest ones and both sequences west-east ward sequence and the one based on the depth of the graves of cemetery A are disapproved. According to a study of data obtained from Shahdad excavations, the city of Shahdad in the second half of the third millennium BC had a cultural interaction with other civilized areas of South-East of Iran and southwest Asia. This cultural similarity arises through the establishment of a commercial-communications network along the urban period of Southeastern Iran. Despite all the cultural interactions with all these regions, the local and regional cultural traditions dominated in Shahdad and it has all the characteristics of a city with local cultural factors during the early and middle Bronze Age on the west of Lut desert. These cultural local factors include the burial patterns, grave goods such as human clay sculptures, house model and the presence of platforms in graves.

## Acknowledgment

This is dedicated to the memory of Mir Abedin Kaboli. I would like to thank ICAR and also the field staff for supporting the recent Shahdad archaeological project. Also, I thank Dr. M. Shafiee for her helpful comments and editing work.

## Footnote

1. the grave number 10 is an individual grave in the south of the trench B where is situated between two streams and its burial goods are comparable to those of trench B. Excavator of Shahdad has mentioned that he was able to discover another grave below this grave at the depth of 60 cm that its good are similar to the red ceramics of cemetery A. unfortunately, the mentioned grave has not been documented.

2. Each of Graves 187 and 188 includes two graves that were distinguished by letters a & b by its excavator.

3. To compare the ceramics of Shahdad with Central Asia, Paklayan's BA dissertation (2004) was helpful.

4. Here, the word NO corresponds to the number of object given by Hakemi (1997) and the letter g relates to the word "grave"

## Refrences

Amiet. P. 1986. *L'age des Échanges Inter-iraniens 3500-1700 avant J. -C.* Paris: Éditions de la Réunion des Musées Nationaux.

Baghestani. S. 1997. *Metallene Compartimentsiegel aus Ost-Iran, Zentralasien und Nord-China.* Archaologie in Iran und Turan Band 1. Rahden: Verlag Marie Liedorf.

Bellelli. G. M. 2002. *Vasi Iranici in Metallo dell'Eta dell Bronzo.* Prahistorische bronzefunde Abteilung II, Band 17. Stuttgart: Franz Steiner Verlag.

Besenval. R. 1994. The 1992-1993 field seasons at Miri Qalat: new contributions to the chronology of Protohistoric settlement in Pakistani Makran. In A. Parpola and P. Koskikallio (eds), *South Asian Archaeology 1993.* Helsinki: Suomalainen Tiedeakatemia, pp81-91.

Caldwell. R. J. (ed.). 1967. *Investigations at Tal-i-Iblis* (Illinois State Museum Preliminary Reports 9). Springfield: Illinois State Museum Society.

Casal. J. M. 1961. *Fouilles de Mundigak.* Mémoires de la Délégation archéologique française en Afghanistan 17. Paris: C. Klinksieck.

---------- 1964. *Fouilles d'Amri.* Publication de la Commission des fouilles archéologique. Fouilles de Pakistan. Paris: C. Klinksieck.

Casanova. M. 1991. *La vaisselle d'alabatre de Mésopotamie, d'Iran et d'Asie Centrale aux IIIe et IIe millénaires av. J. –C.* Mémoires de la Mission archéologique francais en Asie Centrale 4. Paris: Éditions Recherche sur les Civilisations.

Ciarla. R. 1981. A Preliminary Analysis of the Manufacture of Alabaster Vessels at Shahr-i Sokhta and Mundigak in the 3rd Millennium BC. in H. Hartel (ed), *South Asian Archaeology 1979.* Berlin: Dietrich Reimer Verlag, p45-63.

Collon. D. 1987. *First Impressions: Cylinder Seals in the Ancient Near East.* London: British Museum Publications.

Curtis. J. 1988. A Reconsideration of the Cemetery at Khinaman, South-East Iran. *Iranica Antiqua* XXIII: 97-124.

De Cardi. B. 1970. *Excavations at Bampur: A Third Millennium Settlement in Persian Baluchistan 1966.* New York: Anthropological Papers of the American Museum of Natural History 51(3).

During-Caspers. E. C. L. 1970. "A Note on the Carved Stone Vases and Incised Grayware." In B. de Cardi, *Excavations at Bampur: A Third Millennium Settlement in Persian Baluchistan 1966.* New York: Anthropological Papers of the American Museum of Natural History 51(3), p319-325.

Eskandari. N. F. Desset. M. Shafie. M. Shahsavari. S. Anjomroz. I. Caldana. A. Daneshi. A. Shahdadi. M. Vidale. Preliminary report on the survey of Hajjiabad-Varamin, a site of the Konar Sandal settlement network (Jiroft, Kerman, Iran), Journal of IRAN (in press).

Frame. Lesley. 2004. Investigations at Tal-I Iblis: Evidence for Copper Smelting during Chalcolithic Period, M.S Dissertation, Massachusetts Institute of Technology, (Unpublished).

Frifelt. K. 1991. *The Island of Umm al-Nar, vol.1. The Third Millennium Graves.* Aarhus: Jutland Archaeological Society Publications 26 (1).

Gotzelt. T. 1996, *Ansichten der Archaologie Sud-Turkmenistans beu der Erforschung der "mittleren Bronzezeit" (Periode Namazga V).* Archaologie in Eurasien, Bd.2. Espelkamp: M. Leidorf.

Hakemi. A. 1994. Some Statues Discovered in the Excavations at Shahdad. in A. Parpola and P. Koskikallio (eds), *South Asian Archaeology 1993.* Helsinki: Suomalainen Tiedeakatemia, pp 217-224.

---------- 1997. *Shahdad: archaeological excavations of a Bronze Age center in Iran*. Rome: IsIAO.

---------- 2006. *The Report of eight seasons of excavation and survey at Shahdad (Dasht-e Lut),* (ed) M. Mousavi, Pazhoheshgah-e Miras Farhangi, Tehran (In Persian).

Heskel. D. L. and C. C. Lamberg-Karlovsky. 1980. An Alternative Sequence for the Development of Metallurgy: Tepe Yahya, Iran. In T. A. Wertime and J.D. Muhly (eds), *The Coming of the Age of Iron.* New Haven: Yale University Press, p229-265.

Hiebert. F. T. and C. C. Lamberg-Karlovsky. 1992. Central Asia and the Indo-Iranian Borderlands. *Iran* 30, pp 1-15.

Hiebert. F. T. 1994. *Origins of the Bronze-Age Oasis Civilization in Central Asia*. Cambridge Mass.: Peabody Museum, Harvard University. American School of Prehistoric Research Bulletin 42.

Jarrige. C. 1994. The final phase of the Indus occupation at Nausharo and its connection with the following cultural complex of Mehrgarh VIII." In A. Parpola and P. Koskikallio (eds), *South Asian Archaeology 1993.* Helsinki: Suomalainen Tiedeakatemia, p295-313.

Jarrige. C. J-F. Jarrige. R.H. Meadow and G. Quivron (eds.), 1995. *Mehrgarh. Field Reports 1976-85. From Neolithic Times to the Indus Civilization.* Karachi: Department of Archaeology and Museums.

Kaboli. M.A. 1997. The Report of the tenth season of excavation at the ancient Shahdad, *Gozaresh-ha-ye Bastan Shenasi*, Tehran: 87–124 (In Persian).

---------- 2001. The Report of the twelfth season of excavation at the ancient Shahdad, *Pajoheshnameh*, Tehran: 239–266 (In Persian).

---------- 2002. The Report of the eleventh season of excavation at the ancient Shahdad, *Pajoheshnameh*, Tehran: 141–181 (In Persian).

Kenoyer. J. M and H. M. L. Miller. 1999. Metal Technologies of the Indus Valley Tradition in Pakistan and Western India. In V. C. Pigott (ed.), *The Archaeometallurgy of the Asian Old World*. Philadelphia: MASCA, the University Museum, University of Pennsylvania, pp 107-151.

Khlopin. I. N. 1981. The Early Bronze Age cemetery of Parkhai II: The First Two Seasons of Excavations: 1977-78. In P. L. Kohl (ed), *The Bronze Age Civilization of Central Asia; Recent Soviet Discoveries*. New York: M. E. Sharpe, pp 3-34.

Kohl. P.C. G. Harbottle and E. V Sayre. 1980. Physical and Chemical Analyses of the Soft Stone Vessels from Southwest Asia, *Archaeometry*, 21(2):131-159.

Kohl. P.C. 1974. *Seeds of Upheaval: The Production of Chlorite at Tepe Yahya and an Analysis of Commodity Production and Trade in Southwest Asia in the Mid-Third Millennium.* Ph.D. Dissertation, Department of Anthropology, Harvard University.

---------- 2001. Reflections on the Production of Chlorite at Tepe Yahya: 25 Years Later. In D. T. Potts (ed), *Excavations at Tepe Yahya, Iran, 1967-1975: The Third Millennium.* Cambridge, Mass.: Peabody Museum (American School of Prehistoric Research Bulletin 45), pp 209-230.

Lamberg-Karlovsky. C. C. and M. Tosi. 1973. Shahr-i Sokhta and Tepe Yahya: Tracks on the Earliest History of the Iranian Plateau. *East and West* 23: 21-53.

Lamberg-Karlovsky. L.C.C. 1970. Excavations at Tepe Yahya, Iran, Iran, 1967-1969, American school of Prehistoric Research, Bulletin 27, Peabody museum, Harvard University.

Mackay. E. J. H. 1938. *Further Excavations at Mohenjo-Daro: being an official account of excavations at Mohenjo-Daro carried out by the Government of India 1927-1931*. Delhi: Manager of Publications.

Mackay. E. J. H. 1943. *Chanhu-Daro Excavations.* New Haven: American Oriental Society Publications, no. 20.

Madjidzadeh Y. 2003. *Jiroft: The Earliest Oriental Civilization.* Teheran: Printing and Publishing Organization of the Ministry of Culture and Islamic Guidance.

---------- 2008. Excavations at Konar Sandal in the region of the Jiroft in Halil Basin: First preliminary report (2002-2008), *Iran*, Vol.46, Pp 69-103.

---------- Y. 2012. Jiroft tablets and the origin of the Linear Elamite writing system, in: Osada T. & Witzel M. (eds.), *Cultural relations between the Indus and the Iranian plateau during the third millennium BCE ; Indus project, Institute for humanities and nature, June 7-8, 2008*, Harvard oriental series, opera minor vol. 7, Department of Sanskrit and Indian studies, Harvard University.

Marshall. S. J. 1931. *Mohenjo-daro and the Indus Civilization: being an official account of archaeological excavations carried out by the Government of India 1922-1927.* London: Probsthain.

Masson. V. M. 1988. *Altyn Depe.* (Trans. H. N. Michael). Philadelphia: University of Pennsylvania Press. University Museum Monograph 55.

Meier. D. 2011. Prelimenary Archeometallurgical Investigations of Bronze Age Metal Finds from Shahdad and Tepe Yahya, *Iranian Journal of Archaeological Studies 1:2*, pp 25-34.

Mery. S. 2000. *Les céramiques d'Oman et l'asie moyenne: Une archéologie des échanges a l'Age du Bronze.* Paris : Éditions Centre National de la Recherché Scientifique.

Miroschedji. P. de. 1973. Vases et Objets en Stéatite Susiens du Musée du Louvre. *Cahiers de la Délégation Archéologique Française en Iran* 3: 9-80.

Moorey. P. R. S. 1994. *Ancient Mesopotamian Materials and Industries: The Archaeological Evidence.* Oxford, New York: Clarendon Press.

Muller-Karpe. M. 1993. *Metallgefabe im Iraq I (Von den Anfangen bis zur Akkad-Zeit).* Prahistorische bronzefunde Abteilung II, Band 14. Stuutgart: Franz Steiner Verlag.

Paklayan. S. 2005. An Analysis of the Site of Shahdad (Khabis), Kerman, Iran: Internal Chronology and External Relations during the Third and Early Second Millennia BC, BA Dissertation, University of Sydney.

Pigott. V. C. 1999. The Development of Metal Production on the Iranian Plateau: An Archaeometallurgical Perspective." In V. C. Pigott (ed), *The Archaeometallurgy of the Asian Old World.* Philadelphia: MASCA, The University Museum, University of Pennsylvania, pp73-106.

Piperno. M. and M. Tosi 1975. The Graveyard of Shahr-i Sokhta, Iran. *Archaeology* 28, pp 186-197.

Pittman. H. 2001. Glyptic Art of Period IV. In D. T. Potts (ed), *Excavations at Tepe Yahya, Iran, 1967-1975: The Third Millennium.* Cambridge, Mass.: Peabody Museum, Harvard University. American School of Prehistoric Research Bulletin 45, p231-267.

Possehl. G. L. 1986. *Kulli: An Exploration of Ancient Civilization in Asia.* Durham, N.C.: Carolina Academic Press. Centers of Civilization 1.

Potts. T. F. 1994. *Mesopotamia and the East: An Archaeological and Historical Study of Foreign Relations ca. 3400-2000 BC.* Oxford: Oxford University Committee for Archaeology, Monograph 37.

Potts. D.T. 2001. Excavations at Tepe Yahya, Iran, 1967-1975, The Third Millennium, American school of Prehistoric Research, Bulletin 45, Peabody museum of Archaeology and ethnology, Harvard University.

Emami, M. M. Razani. N. Soleimani and Y. Madjidzadeh. 2017. New insights into the characterization and provenance of chlorite objects from the Jiroft civilization in Iran, *Journal of Archaeological Science: Reports*, 16. p194-204.

Salvatori. S. and M. Vidale. 1982. A Brief Surface Survey of the Proto-Historical Site of Shahdad (Kerman, Iran), *Rivista di Archeologia* 6, p5–10.

Salvatori. S. 1995. "Gonur-Depe I (Margiana, Turkmenistan): The Middle Bronze Age Graveyard. Preliminary Report on the 1994 Excavation Campaign". *Rivista di Archeologia* XIX: 5-37.

Santoni. M. 1988. "Aspects matériels des cultures de Sibri et de Mehrgarh VIII (plaine de Kachi, Balûchistân, Pakistan) a la fin du troisième et au début du deuxième millénaires." In *L'Asie centrale et ses rapports avec les civilisations orientales des origines a l'age du Fer.* Actes du Colloque franco-soviétique de Paris 1985. Paris : Diffusion de Boccard, p135-141.

Sarianidi. V. I. 1986. Le complexe cultuel de Togolok 21 en Margiane. AA XLI: 5-21.

---------- 1993. Excavations at Southern Gonur. *Iran* 31: 25-37.

---------- 1998. *Margiana and Protozoroastrianism.* Athens: Kapon Editions.

Schmidt. E. F. 1937. *Excavations at Tepe Hissar, Damghan.* Philadelphia: University Museum.

Schmidt. E. F. M. N. van Loon and H. H. Curvers. 1989. *The Holmes Expeditions to Luristan*, vol. I-II. Chicago: Oriental Institute Publications 108.

Stein. S. A. 1937. *Archaeological Reconnissances in North-Western India and South Eastern Iran*, London.

Thoronton. C. P. C. C. Lamberg-Karlovsky. M. Liezers and M. M. Young. 2002. On Pins and Needles: Tracing the Evolution of Copper-base Alloying at Tepe Yahya, Iran, via ICP-MS Analysis of Commonplace Items. *Journal of Archaeological Science* 29, pp 1451-1460.

Tosi. M. 1970. A Tomb from Damin and the Problem of the Bampur Sequence in the Third Millennium BC, *East and West* 20. p 9-50.

Tosi. M. 1974. "Bampur: A Problem of Isolation." *East and West* 24: 29-50.

Vats. M.S. 1940. *Excavations at Harappa: being an account of archaeological excavations at Harappa carried out between the years 1920-21 and 1933-34.* Calcutta: Government of India.

# نگاهی نو به کاوش های قدیمی محوطه شهداد

**نصیر اسکندری***

**استادیار گروه باستان‌شناسی، دانشگاه تهران، تهران، ایران.**

**تاریخ دریافت: ۱۳۹۹/۰۹/۲۱؛ تاریخ پذیرش: ۱۳۹۹/۱۲/۲۰**

## چکیده

شهداد یک مرکز شهری مربوط به هزاره سوم پ.م است و در حاشیه غربی بیابان لوت در جنوب شرق ایران واقع شده است. کاوش‌ها و بررسی‌های باستان شناختی پیشین صورت گرفته در این محوطه، وجود یک شهر اولیه در منظر فرهنگی بیابانی لوت را محرز کرده است. پس از حدود نیم قرن از شروع کاوش‌های محوطه شهداد، زمان آن رسیده تا نگاهی نو به شهداد و یافته‌های فراوان و متنوع آن بیندازیم. این مقاله، بر اساس شناخت کنونی ما از باستان شناسی عصر مفرغ جنوب شرق، به بررسی کاوش‌های قدیمی دهه چهل و پنجاه خورشیدی محوطه شهداد می‌پردازد. در اینجا، دو مهر منتشر نشده که از کاوش‌های علی حاکمی در منطقه صنعتی شهر بدست آمده است نیز معرفی و ارائه گردیده است. همچنین، مقاله حاضر به بررسی و نقد گاهنگاری‌های پیشنهاد شده برای بخش های مختلف محوطه شهداد پرداخته است و در نهایت یک گاهنگاری جدید برای محوطه عصر مفرغی شهداد ارائه کرده است. در این پژوهش بر اساس مطالعه مقایسه تطبیقی اشیای تدفینی گورستان شهداد، به ارتباطات درون و فرامنطقه‌ای محوطه پرداخته شده است و در آخر این نتیجه حاصل شد که منطقه شهداد در هزاره سوم پ.م یک منطقه کانونی در چرخه برهمکنش‌های فرهنگی جنوب غرب آسیا به شمار می‌رفته است.

**واژه‌های کلیدی:** شهداد، شهرنشینی اولیه، عصر مفرغ، گاهنگاری، اشیا تدفینی.

* رایانامه‌ی نویسنده مسئول: Nasir.eskandari@ut.ac.it

Journal of Archaeological Studies

Vol 12, Is 4 - Serial Number 24, Winter 2021

Formerly "the Journal of the Faculty of Literature and Humanities"... University of Tehran

# A Brief Report on New Radiocarbon Dates from Tappeh Sofalin, Pishva, Iran

**Morteza Hessari**[1] & **Reinhard Bernbeck** [2] & **Susan Pollock**[3]

(47-57)

**Abstract**

In the summer of 2017, renewed fieldwork was undertaken at Tappeh Sofalin in the Varamin Plain. A total of 20 samples for absolute dating were collected during this season, several of which have been analyzed. We present this new evidence for the dating of the site and compare it briefly with published dates and analyses from other sites. Finally, we discuss implications for the chronology of the Proto-Elamite spread to the Central Plateau and other areas of Iran.

**Keywords**: Absolute dating, Tappeh Sofalin, Proto-Elamite horizon.

Received: 16 July, 2020; Accepted: 10 March, 2021

10.22059/jarcs.2021.306385.142902

Print ISSN: 2676-4288- Online ISSN: 2251-9297

https://jarcs.ut.ac.ir

1. Corresponding Author Email: Mhessari@yahoo.de. Associate Professor of Iranian Center for Archaeological Research, Research Institute of Cultural Heritage and Tourism Teheran, Iran.

2. Institute for Near Easten Archaeology, Freie Universität Berlin, Germany.

3. Institute for Near Easten Archaeology, Freie Universität Berlin, Germany.

## 1. Radiocarbon Sampling during the 2017 Season

In the summer of 2017, fieldwork was continued at Tappeh Sofalin, in a project directed by Morteza Hessari, Reinhard Bernbeck, and Susan Pollock as a collaboration between the Iranian Center for Archaeological Research and the Freie Universität Berlin. Sofalin is located at the eastern edge of the Varamin Plain just northeast of the modern town of Pishva, on a slope of the Pishva fault that overlooks the easternmost arm of the Jajrud, a river that has created a massive gravel fan (Fig1).

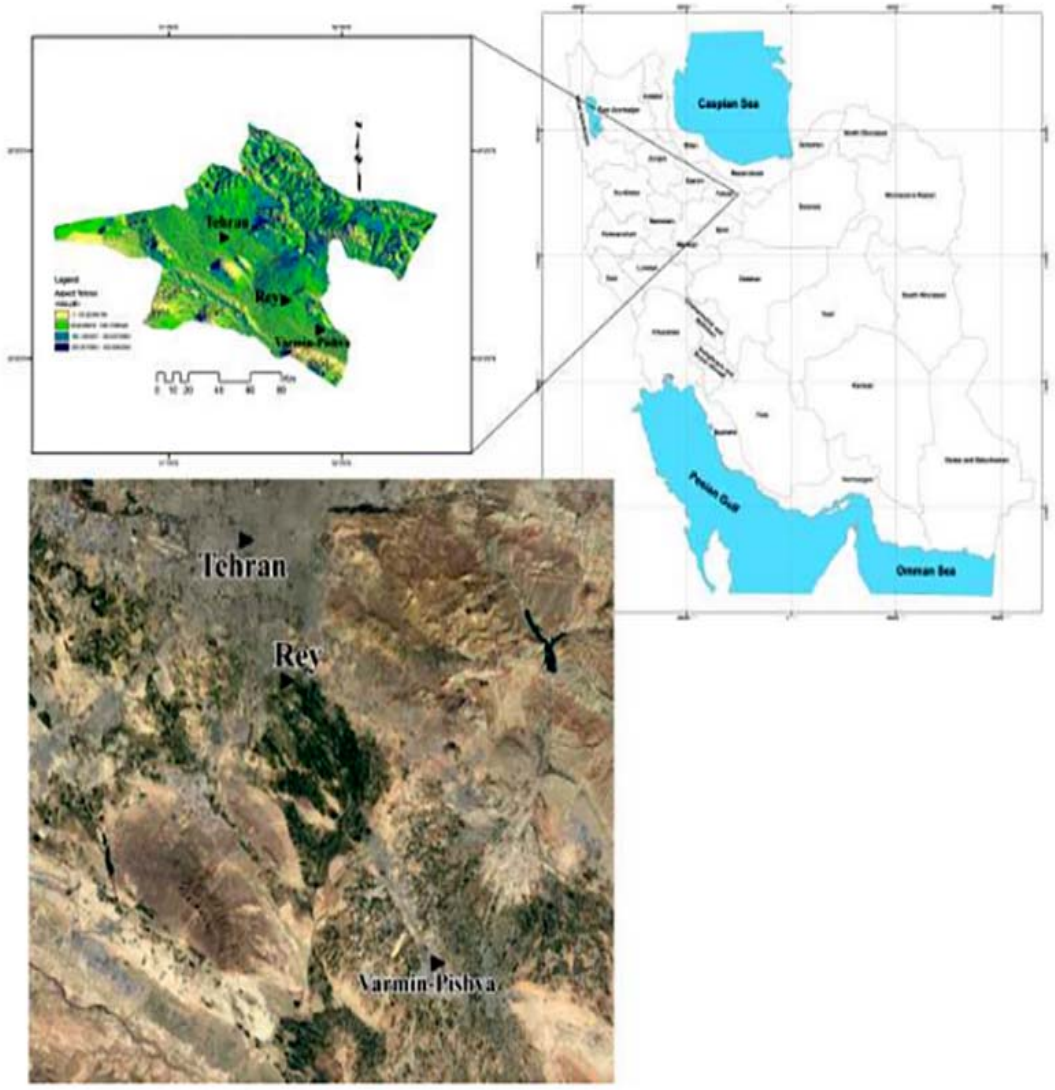



**Figure 1: Location of the Varamin Plain and Tappeh Sofalin**

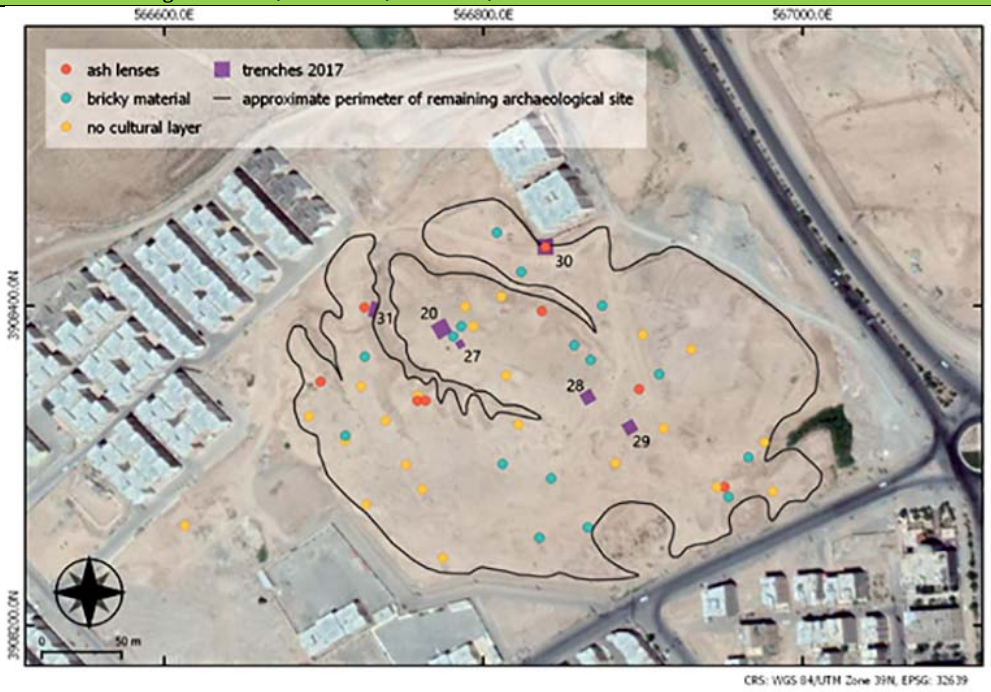



**Figure 2: Location of trenches and augering from the 2017 season at Tappeh Sofalin**

Five trenches were opened during this season, and a sixth continued from an earlier season (Fig 2). Trench 20 had already been excavated in 2011 and is of particular interest because of the architecture it contains (Fig 3; see Hessari 2011). It was situated in the lower reaches of the sloping plateau on which the site is located and had an irregular outline due to our intent to trace the walls and installations connected with them. A small stratigraphic trench 27 was placed just to the south of it in 2017. This trench revealed a sequence of no more than 0.50-0.75 m depth of cultural deposits before reaching sterile soil. Of these shallow archaeological layers, 0.20-0.35 m consisted of mixed surface materials, leaving in this part of the site an approximate depth of 0.30-0.40 m of well-stratified archaeological layers.

**Figure 3: Architecture in Trench 20, Tappeh Sofalin, 2011.**

Trench 28 with a total size of 5 x 5 m was opened in a spot where a deep, recent looting hole had exposed ashy layers. Based on previous experience at the site, the combination of ashy deposits and looting led us to assume the likelihood of encountering contexts with artifacts of an administrative nature such as sealings and/or tablets. Careful cleaning of the 0.85 m deep plundering hole revealed that the looters had hit on an ancient depression with almost vertical sides and had continued to dig below its lowest level. The depression itself may have originally been a natural cavity lined with gypseous matter or could even have been a fire installation, as it was filled with dense ash layers. The looters had left intact approximately one third of its original stratigraphic layers in the eastern part of the pit. The excavation and screening of all of the matrix from these layers led to the discovery of a number of Proto-Elamite cretulae, both sealed and unsealed, as well as tokens, figurines and a few copper objects (Figures 4 and 5).

**Figure 4: Sealing, depicting an ibex with the head turned backwards, from Trench 28, Locus 2809, Tappeh Sofalin.**

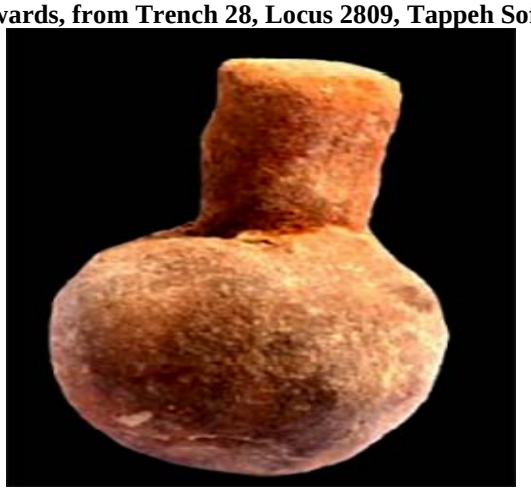


**Figure 5: Token in the shape of a vessel or pomegranate from Trench 28, Locus 2806. Tappeh Sofalin.**

Trench 29, with a size of 5 x 5 m, was placed southeast of Trench 28, but it turned out

to contain no archaeological remains whatsoever. This negative result is of significance, as it indicates either that the ancient site has undergone severe destruction through erosional processes or that it consisted of a number of distinct locations that remained disconnected from each other. Trench 30 was situated in the northeastern confines of the site. The goal of excavating it was to expose a pit visible in a high profile that had been cut during construction of the housing that destroyed much of the northernmost part of the site. The pit could not be excavated in its entirety due to the dangerous working conditions; instead, only its southern profile was cut back and sampled. Finally, an augering survey of the site identified a number of places with ashy layers (Figure 2). We excavated one of them since it was very close to the surface and unlikely to survive even one more year. In this Trench 31 two adjacent fire installations were discovered that were already in such a bad state of preservation that their original shape could no longer be determined.

A total of 20 samples with charred plant remains were taken from these trenches for absolute dating purposes, eight from Trench 20, five each from Trenches 30 and 31, and two from Trench 28. Many of these samples were too small even for AMS dating. After determining the weight of the samples, we made a selection of six of them to be dated by the Poznan radiocarbon lab in Poland (Table 1). Of the samples submitted, one is from a general building context in Trench 20. The sample from the former looting hole in Trench 28 derives from Locus 2809, one of the major extant loci with administrative objects. This locus contained a total of 13 fragments of sealings, four of them with seal impressions. This is also the locus from which the sealing in Figure 4 comes. While not well preserved, this sealing shows the image of an ibex or goat with the head turned towards the back, cut carefully in a “classic style” (see Pittman 1994: 61-64).

Two radiocarbon samples come from the pit in Trench 30 from the northeastern edge of the site. One is from Locus 3002, in the upper part of this pit, the other from one of its lowest loci, Locus 3008. Finally, two samples derive from the two neighboring fire installations in Trench 31. Locus 3115 is an ashy layer with a dense deposit of small sherds in it. Locus 3117 is similar in character, except that it also contained burnt stones and one large bone. Pottery from Trench 31 is remarkable for the elevated proportion of “Banesh trays” in the assemblage.

| | Lab No | Age 14C | Trench | Locus | Context | Find No | cal. date (2 sigma) |
|---|---|---|---|---|---|---|---|
| late | Poz-103892 | 4310 ± 80 BP | 30 | 3002 | upper level of a pit close to northern edge of the site | 30003 | 3328 - 2672 BCE |
| middle | Poz-103644 | 4465 ± 30 BP | 28 | 2809 | ashy layer from pit, partly destroyed by a looting hole | 28106 | 3337 - 3024 BCE |
| | Poz-103645 | 4480 ± 35 BP | 31 | 3117 | inside a fire installation | 31072 | 3342 - 3029 BCE |
| | Poz-103643 | 4510 ± 35 BP | 20 | 2050 | general architectural context | 20004 | 3354 - 3097 BCE |
| early | Poz-103891 | 4640 ± 35 BP | 31 | 3115 | inside a fire installation | 31068 | 3518 - 3357 BCE |
| | | | | | | | |
| | Poz-103889 | 4440 ± 400 BP | 30 | 3008 | lower level of a pit close to northern edge of the site | 30017 | (4054 -2035 BCE) |

**Table 1: Radiocarbon dates from Tappeh Sofalin; calibrations using OxCal 4.3, IntCal 13 curve**

Of the six samples, the one from the lowermost levels of the pit in Trench 30 was too small to provide useful results (Poz-103889; see Table 1). The others fall into three distinct time brackets.

The date from Locus 3115 in Trench 31, the base level of one of the largely eroded fire installations, is clearly earlier than all others and would seem to date to the initial occupation of the site. Three determinations from Trenches 20, 28 and 31 yield more or less identical date ranges that span almost 300 years each. This relatively wide bracket is due to a plateau at that particular point in the calibration curve (as noted by numerous scholars, including Dahl et al. 2013; Petrie 2014). The last date, Poz-103892, from one of the uppermost loci of the pit in Trench 30 indicates a later occupation phase at the site; its range is larger than that of the four other dates.

These dates reconfirm an impression already arrived at through an analysis of the tablets from Tappeh Sofalin, namely that the site has a relatively long occupation span (Dahl, Hessari, and Yousefi Zoshk 2012:70–71; Dahl, Petrie, and Potts 2013: Fig. 18.17), potentially reaching from the Late Uruk (Susa Acr. I: 17) through the late Proto-Elamite period. In addition, the spatial distribution of the samples could suggest that archaeological remains at Tappeh Sofalin consist of short sequences that display the character of a shifting settlement. This does not preclude the existence of superimposed strata elsewhere in the settlement that might have been substantially eroded away, a possibility that is in need of further research.

**2.Discussion**

Renewed interest in the Late Chalcolithic to Early Bronze periods of the Iranian plateau has brought with it a wave of new excavations and absolute dates. A major obstacle for all attempts at absolute dating of the late fourth millennium BCE is a plateau in the calibration curve at ca. 3350-3100 BCE that leads to wide ranges for calibrated data at 95% levels (see Petrie 2014: 149-150, fig. 9.3 and 9.6). A substantial set of data that are relevant for the Iranian Plateau, including the Proto-Elamite period, has recently been analyzed using Bayesian modeling by Pollard et al. (2013). They conclude that the transition from Late Chalcolithic to the Early Bronze Age occurs somewhere in the middle of the fourth millennium BCE. The Proto-Elamite period itself is dated by them to ca. 3100 - 2900 BCE. Following a suggestion first made by Robert H. Dyson (1987) and later elaborated by Barbara Helwing (2006: 35–37, Table 1), Pollard et al. propose that there is a transitional period between the end of Sialk III/Late Chalcolithic (Sialk sub-level III,7) and the Early Bronze Proto-Elamite horizon as it is known from Sialk IV,2 and perhaps including Level IV,1 (see Amiet 1985). This “Transitional Proto-Elamite” or “pre-Proto-Elamite” period is supposed to occupy the remaining time between ca. 3500/3400 BCE and 3100 BCE (Pollard et al. 2013: 47).

The question thereby raised is, what corresponds to a “transitional Proto-Elamite” phase in the development of Proto-Elamite administrative technologies? The reconstruction of writing developments proposed by Jacob Dahl, Cameron Petrie and Daniel Potts (2013) does not fit the model advanced by Pollard et al., who suggest a short period of only 200 years for the Proto-Elamite phenomenon. Based on the evidence of the development of writing in Susa, Dahl et al. compare format, internal structure and paleographic elements of tablets from multiple sites in order to suggest an early spread of these administrative technologies to northern highland Iran (Tappeh Sialk, Tappeh Sofalin, Tappeh Ozbaki) and only later towards the southeast (Tall-e Malyan and Tappeh Yahya).

The new radiocarbon dates from Tappeh Sofalin seem to support the model advanced by Dahl et al. Three of the Sofalin dates (Poz-103644, Poz-103645, and Poz-103643) show an extensive overlap (Table 1, Figure 6). In the terminology of Helwing and

Pollard et al., this date range would fall almost entirely into the "Transitional Proto-Elamite" horizon.

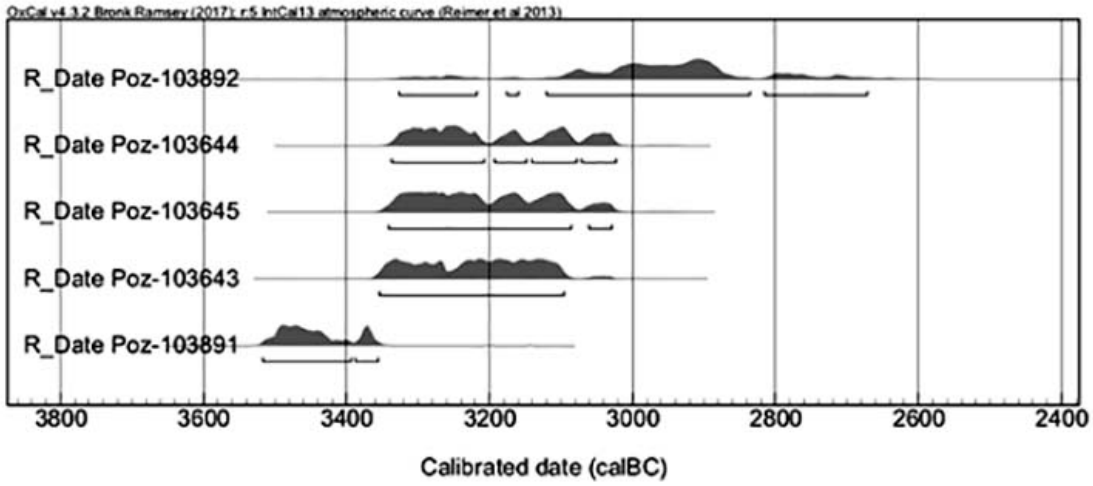



**Figure 6: Graphical representation of calibrated radiocarbon dates from Tappeh Sofalin (Poz-103889 is excluded as unreliable)**

In order to render our dates comparable to those analyzed by Pollard et al., a Bayesian model based on five dates (Poz-103889 was excluded as unreliable) was devised in OxCal, with boundary ranges calculated on the assumption that these five dates all belong to one phase (Fig 7). This is justified as we have, unfortunately, no indications for any stratigraphic sequence for any of these dates. They suggest a span from approximately 3500 to 2900/2800 BCE for the Sofalin Proto-Elamite occupation.

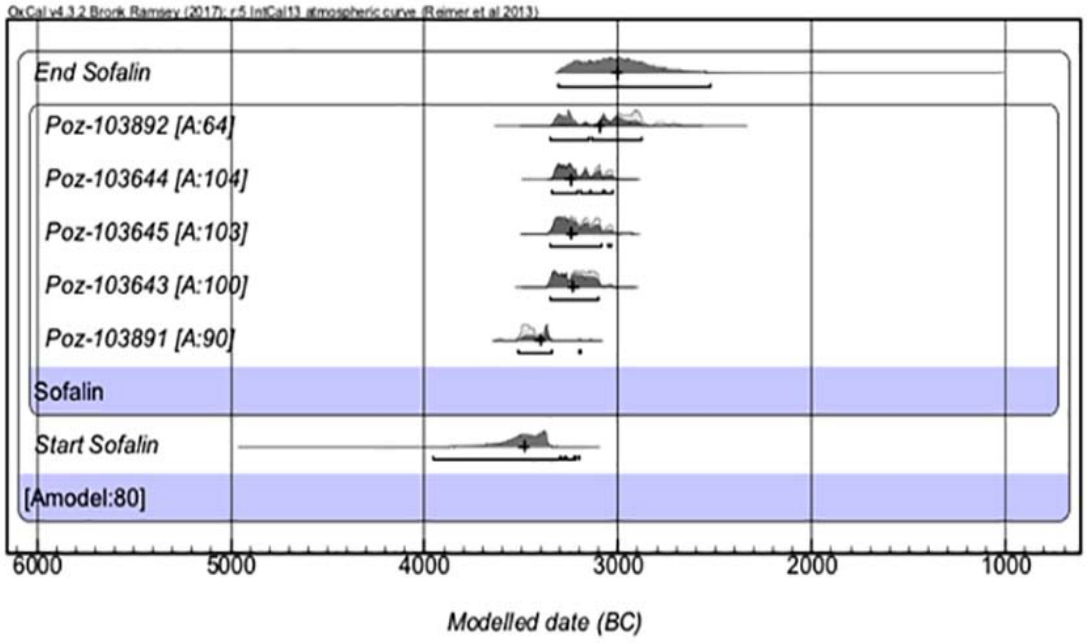



**Figure 7: Modeled dates from Tappeh Sofalin (modeling using OxCal 4.3)**

| | | unmodeled | | | | modeled | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site | Sample | from | to | % | median | from | to | % | median | A |
| Tappeh Sofalin T.30 | Poz-103892 | 3328 | 2672 | 95.3 | 2954 | 3347 | 2877 | 95.4 | 3100 | 63.3 |
| Tappeh Sofalin T.28 | Poz-103644 | 3337 | 3029 | 95.3 | 3217 | 3341 | 3027 | 95.4 | 3246 | 103.4 |
| Tappeh Sofalin T.31 | Poz-103645 | 3342 | 3024 | 95.4 | 3217 | 3349 | 3036 | 95.4 | 3242 | 103.5 |
| Tappeh Sofalin T.20 | Poz-103643 | 3354 | 3097 | 95.4 | 3213 | 3355 | 3102 | 95.4 | 3234 | 99.6 |
| Tappeh Sofalin T.31 | Poz-103891 | 3518 | 3357 | 95.4 | 3457 | 3517 | 3197 | 95.4 | 3401 | 89.6 |
| Qoli Darvish II.2 | OxA-18095 | 3339 | 3017 | 95.4 | 3180 | 3109 | 3025 | 95.4 | 3068 | 100.1 |
| Qoli Darvish II.2 | OxA-18094 | 3322 | 2919 | 95.4 | 3047 | 3095 | 3022 | 95.4 | 3054 | 120.3 |
| Qoli Darvish II.2 | OxA-18040 | 3263 | 2911 | 95.4 | 3002 | 3093 | 3012 | 95.4 | 3047 | 92.1 |
| Qoli Darvish II.2 | OxA-17944 | 3340 | 3028 | 95.4 | 3220 | 3122 | 3025 | 95.4 | 3086 | 76.5 |

**Table 2: Comparison of unmodeled and modeled radiocarbon dates from Tappeh Sofalin and Qoli Darvish; Qoli Darvish data based on information from Pollard et al. 2013: Table 7; Tappeh Sofalin data modelled using OxCal 4.3**

Still, these dates provide some further hints for the development of a more robust chronology of the Proto-Elamite period. Qoli Darvish is of particular interest here, as it is located not far from Tappeh Sofalin and has typical Proto-Elamite finds in level II.2, including administrative items such as sealings and a few tablet fragments. There are four radiocarbon determinations from Qoli Darvish II.2 (Alizadeh, Aghili, and Sarlak 2013: 162). While there is substantial overlap of these dates with those from Tappeh Sofalin, the former seem to fall somewhat later (Table 2). Our comparison is based on the modeled data provided by Pollard et al. (2013, Tab. 7) and those from Tappeh

Sofalin reported here. On a more general level, these dates can be set in relation to those dates from Eanna Level IV and the White Temple in Uruk. The Uruk determinations are attributable to the Late Uruk period, and new laboratory studies have yielded determinations that date these levels to the 36th to mid-33rd centuries BCE (Van Ess 2013; Van Ess and Heußner 2015). Contrary to Desset's (2016) more recent assertion, the absolute dating of Late Uruk levels in southern Mesopotamia is thereby earlier than the Proto-Elamite radiocarbon samples from Tall-e Malyan, but also than ours reported here for Tappeh Sofalin or those from Arisman (Görsdorf 2011; Helwing 2011).

In conclusion, the new absolute dating evidence from Tappeh Sofalin indicates a relatively long span of settlement for the Proto-Elamite occupation at the site. It also tentatively supports the conclusions reached by Dahl et al. (2013) on the complex chronological patterns of the adoption of writing across the Iranian plateau. According to these authors, writing spread from Susa towards the northern plateau in a first phase. Archaeological evidence seems to confirm that this horizon on the Iranian plateau appears somewhat earlier than so far assumed. Any closer correlation of archaeological finds with Dahl et al.'s division into an "early", "middle" and "late" Proto-Elamite will need further investigation of the associated ceramic and sealing assemblages and especially a large number of absolute dates from well-stratified contexts. Most likely, the inclusion of the southeastern Iranian sites into the realm of Proto-Elamite writing followed only later. It is obvious that more evidence from Tappeh Sofalin itself, but also from related sites is needed for a critical evaluation of the results presented here.

## Refrences


Alizadeh. A. S. Aghili, and S. Sarlak. 2013. Highland-Lowland Interaction in the Late 4th and Early 3rd Millennium BCE: The Evidence from Qoli Darvis, Iranian Central Plateau. *Archäologische Mitteilungen aus Iran und Turan* 45: Pp.149–168.

Amiet. P. 1985. La Période IV de Tépé Sialk reconsiderée. In *De l'Indus aux Balkans. Recueil à la mémoire de Jean Deshayes*. Jean-Louis Huot, M. Yon and Yves Calvet, eds. Pp. 293–312. Paris: Maison de l'Orient.

Dahl. J. M. Hessari, and R. Yousefi Zoshk. 2012. The Proto-Elamite Tablets from Tape Sofalin. *Iranian Journal of Archaeological Studies* 2 (1): Pp. 57–73.

Dahl. Jacob. C. A. Petrie, and D. T. Potts.2013. Chronological Parameters of the Earliest Writing System in Iran. In *Ancient Iran and Its Neighbours: Local Developments and Long-Range Interactions in the 4th Millennium BC.* Cameron A. Petrie, ed. Pp. 353–378. Oxford: Oxbow Books.

Desset. F.2016. Proto-Elamite Writing in Iran. *Archéo-Nil* 26: Pp.68-104.

Dyson. R. H. 1987. The Relative and Absolute Chronology of Hissar II and the Proto-Elamite Horizon of Northern Iran. In *Chronologies Du Proche Orient / Chronologies in the Near East: Relative Chronology and Absolute Chronology, 16.000- 4.000 B.P.* Olivier Aurenche, Jacques Evin, and Francis Hours, eds. Pp. 647–678. International Series, 379. Oxford: British Archaeological Reports.

Görsdorf. J. 2011. Radiocarbon Datings in Arisman. In Abdolrasool Vatandoust, Hermann Parzinger and Barbara Helwing, eds.: *Early Mining and Metallurgy on the Western Centrall Iranian* Plateau, Pp.370-373. Mainz: Philipp von Zabern.

Helwing. B. 2006. The Rise and Fall of Bronze Age Centers Around the Central Iranian Desert - A Comparison of Tappe Hesar II and Arisman. *Archäologische Mitteilungen aus Iran und Turan* 38: Pp. 35–48.

Helwing. B. 2011. Archaeological Comments on the Radiocarbon Datings. In Abdolrasool Vatandoust, Hermann Parzinger and Barbara Helwing, eds.: *Early Mining and Metallurgy on the Western Centrall Iranian* Plateau, Pp.374-375. Mainz: Philipp von Zabern.

Hessari. M. 2011. Preliminary Report of the 6th Season of Excavations at Tappeh Sofalin. *Iranian Center for Archaeological Research*. In Persian.

Petrie. C. 2013. Ancient Iran and Its Neighbours: The State of Play. In *Ancient Iran and Its Neighbors: Local Developments and Long-Range Interactions in the Fourth Millennium BC*. Cameron Petrie, ed. Pp. 1–24. Oxford: Oxbow Books.

Petrie. C. 2014. Iran and Uruk Mesopotamia: Chronologies and Connections in the Fourth Millennium BC. In *Preludes to Urbanism: The Late Chalcolithic of Mesopotamia*. Augusta McMahon and Harriet Crawford, eds. Pp. 137-155. Cambridge: McDonald Institute for Archaeological Research.

Pittman. H. 1994. *The Glazed Steatite Glyptic Style.* Berlin: Dietrich Reimer.

Pollard. M. H. Fazeli Nashli, H. Davoudi, et al. 2013. A New Radiocarbon Chronology for the North Central Plateau of Iran from the Late Neolithic to the Iron Age. *Archäologische Mitteilungen aus Iran und Turan* 45: Pp. 27–50.

Van Ess. M. 2013. Neue Radiokarbondatierungen aus Uruk. In Nicola Crüsemann, Margarete van Ess, Markus Hilgert and Beate Salje, eds.: *Uruk. 5000 Jahre Megacity,* Pp. 362-364. Petersberg: Michael Imhof-Verlag.

Van Ess. M. and Karl-Uwe Heußner. 2015. Absolute Chronology of the Uruk and Jemdet Nasr Periods at Uruk, Southern Mesopotamia: The Interpretation of Additional $^{14}$C Samples. *Zeitschrift für Orient-Archäologie* 8: Pp.10-37.

# گذری بر نتایج جدید نمونه‌های کربن ۱۴ به منظور تاریخ‌گذاری مطلق تپهٔ سفالین پیشوا، ایران

**مرتضی حصاری***

دانشیار گروه باستان‌شناسی پیش از تاریخ، پژوهشکدهٔ باستان‌شناسی، پژوهشگاه میراث فرهنگی و گردشگری، تهران، ایران.

**راینهارد برنبک**

استاد مؤسسهٔ باستان‌شناسی شرق باستان، دانشگاه مستقل برلین، آلمان.

**سوزان پولاک**

استاد مؤسسهٔ باستان‌شناسی شرق باستان، دانشگاه مستقل برلین، آلمان.

تاریخ دریافت: ۱۳۹۹/۰۴/۲۶؛ تاریخ پذیرش: ۱۳۹۹/۱۲/۲۰

## چکیده

در تابستان ۱۳۹۶، درچارچوب برنامه میدانی باستان شناسی طرح مشترک، کاوش مرحله جدید در تپه سفالین، واقع در دشت ورامین آغاز گردید. در این فصل تعداد ۲۰ نمونه کربن ۱۴ برای تاریخ گذاری مطلق جمع آوری گردید، که تعدادی از آنها مورد آزمایش قرار گرفت. در این مقاله نتایج بدست آمده از آزمایشگاه ارائه خواهد گشت و در یک مطالعه تطبیقی با سایر محوطه های هم افق خود در محدوده پژوهش قرار خواهد گرفت. در نهایت این پژوهش، درباره گاه نگاری و گسترش آغازایلامی در مرکز فلات ایران و سایر مراکز هم افق در ایران، مورد کنکاش قرار و بحث قرار می‌گردد. در تابستان ۱۳۹۶، درچارچوب برنامه میدانی باستان شناسی طرح مشترک، کاوش مرحله جدید در تپه سفالین، واقع در دشت ورامین آغاز گردید. در این فصل تعداد ۲۰ نمونه کربن ۱۴ برای تاریخ گذاری مطلق جمع آوری گردید، که تعدادی از آنها مورد آزمایش قرار گرفت. در این مقاله نتایج بدست آمده از آزمایشگاه ارائه خواهد گشت و در یک مطالعه تطبیقی با سایر محوطه های هم افق خود در محدوده پژوهش قرار خواهد گرفت. در نهایت این پژوهش، درباره گاه نگاری و گسترش آغازایلامی در مرکز فلات ایران و سایر مراکز هم افق در ایران، مورد کنکاش قرار و بحث قرار می گردد.

**واژه‌های کلیدی:** گاه نگاری مطلق، تپه سفالین، دشت ورامین، افق آغاز ایلامی، ایران.

* رایانامه‌ی نویسنده مسئول: mhessari@yahoo.de

Journal of Archaeological Studies

Vol 12, Is 4 - Serial Number 24, Winter 2021

Formerly "the Journal of the Faculty of Literature and Humanities"... University of Tehran

# Analysis Settlement Patterns of Prehistoric Sites of Mazandaran

**Narjes Heydari** [1] & **Rahmat Abbasnejad Seresti** [2] &**Mojtaba Safari** [3]

**(59-75)**

## Abstract

Present paper review 350 sites from Middle Paleolithic, upper Paleolithic, Epipaleolithic, Neolithic, Chalcolithic, Bronze and Iron Ages, respectively, 4, 9, 6, 28, 36, 15 and 252 sites. Pearson correlation coefficient test indicates a meaningful relationship between number of sites through every single period and other variations including longitude, distance to river and climate. Some 60.9% of sites located at -26 m to 500 m longitude, including fertile plains and foothills that reward seashore and marine sources. Most of the sites locates at the eastern part of the region that is generally plains with low humidity and precipitation. There are 18.1% of Iron Age sites at 1000-1500 m longitude that consist of seasonal settlements of mountain valleys. There is not meaningful relation between number of sites and slope variable. Most of the sites locates at 0-1500 m far from rivers. Considering analysis about settlement patterns in prehistoric sites of the region, number of Middle Paleolithic to Chalcolithic sites suggest an ascending process, however, they the number decreases during Bronze Age. Then, the sites increase during Iron Age, which indicate ties between high density of settlements and high capacity of environment. Finally, the average area of settlements increased from Neolithic to Bronze Ages, then decreased during Iron Age.

**Keywords:** settlement pattern, Mazandaran, Prehistory, Geographical analyzing system, environmental variables.

Received: 1 November, 2020; Accepted: 10 March, 2021

10.22059/jarcs.2021.312939.142945

Print ISSN: 2676-4288- Online ISSN: 2251-9297

https://jarcs.ut.ac.ir

1. Corresponding Author Email: Narjes.Heydari@gmail.com. Assistant Professor, Department of Archaeology, University of Nima, Mahmod abad, Iran.

2. Associate ProfessorT Department of Archaeology, Faculty of Arts and Architecture, University of Mazandaran, Babolsar, Iran.

3. PHD Candidate, Department of Archaeology, University of Mazandaran, Babolsar, Iran. Faculty Member of Nima University, Mahmod abad, Iran.

## 1-Introduction

Understanding significance of the ancient societies within their environmental contexts emerged since the early formation of "New Archaeology" during 1940s to 1960s. It is a view that insists the significance of settlement pattern in recognizing relation of human organizations to environmental sources. It was one of the main topics of research proposals within New Archaeology, especially from processual point of view. Gordon Willey, a Harvard anthropologist, pioneered the researches. He attempted to understand settlement system of Incas at Viru Valley of Peru (Willey, 1953). Settlement pattern is distribution of human activities at the landscape and any relation to the activities and the landscapes and social environment (Schreiber 1996). The plan of life and settlement quality, which roots in human-human and human-environment relations emerges following economic, social, and religious functionality (Fagan, 2006). Therefore, analysis of settlement patterns not only enlightens internal social dynamics, but discover local and regional political dependence (Volta, 2007: 8).

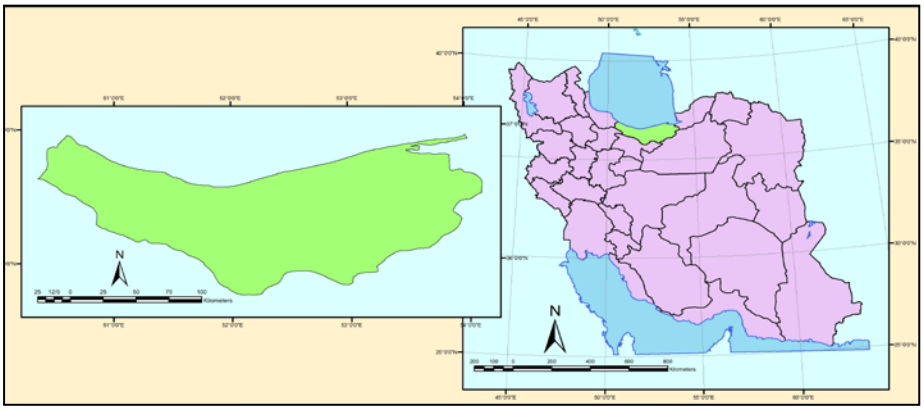
Tracing and general understanding of settlement patterns of ancient sites enable us to recognize demographic or settlement pattern distribution changes comparing to earlier period(s), and know distribution of human activities within a landscape, any relation between the activities, landscapes, and social environments (Schreiber 1996). It can be a hard issue to understand how ancient social organizations and subsistence in every single region formed, ignoring variables of demographic changes and settlements. Settlement pattern studies create a desirable regional vision of settlement and demographic changes through timeframe and lead to an increase of understanding regional cultural evolution (Greenfield & Van Schalkwy, 2008: 131). However, enlightening ancient human-environment interactions is the most important aim of archaeologists that research settlement pattern. Accordingly, they study human influences in the regional landscape (Volta 2007: 8). Big and small monuments, mounds, gullies, dikes, ancient routes, residues of exploitations of ancient agricultural fields, meadows, and mines that have transformed lands during time, reflect human settlement through various activities. The settlements manifested environmental factors, technologies, level of building technologies, and different structure of social interactions. Earlier cultural patterns are understandable and identifiable following studying the settlement patterns. We know that field of development of cultural patterns is relatively wide and roots in cultural demands. Therefore, researches in settlement patterns at ancient sites can be regarded a strategic focal point of fundamental interpretations of cultural archaeology (Willey, 1953). One can enjoy conclusions of researches about settlement patterns in order to vast area of problems from subsistence to cosmology (Volta, 2007: 22).

As mentioned above, present paper attempts to explain distribution of prehistoric sites at Mazandaran Province, relying on archaeological data within ecosystem, distribution of sites comparing to natural factors and knowledge of their changes during different prehistoric times influence to understanding settlement patterns of ancient societies. The recognition helps to better understanding of chronological changes of the region. On the other hand, organizing information and defining future research methods could be other achievements of the paper, which works as data bank in recognition of weak points and deficiencies of information of the region, however, influential on new horizons of regional archaeology and presentation of plans and proposals.

## 2-Area of the study

Since past times environmental and geographical conditions played decisive role in human life. It makes us to study environmental and geographical conditions in order to understand cultural evolutions and evolutionary trajectory of societies; otherwise, one cannot know how past cultures evolved. Actually, it is necessary to recognize geographical and environmental conditions that our ancestors lived in, to know how ancient cultures and civilizations generally changed (Alizadeh, 2001). Geographically, present paper covers entire Mazandaran Province. Mazandaran is located at 35˚36″to 36 ˚58 ″latitude and 50 ˚21 ″to 54 ˚8 ″longitude from Greenwich meridian (Map 1), with 23833 $Km^2$ area (Geographical Organization of the Armed Forces, 2000: 313) that covers 1.46% of area of Iran. the province northwardly reaches to Caspian Sea, southwardly ends to Semnan, Tehran and Qazvin provinces, while limits westwardly to Gilan Province. Some 43% of urban centers of Mazandaran locates along the coastal strip (Eshaghi and Shidfar, 2003). Considering characteristics environmental parameters of Mazandaran including water, fertile soil, rich marine and forest sources, it was potentially an appropriate environment in formation of prehistoric societies. On the other hand, however, Alborz mountain range stretched from east to west as a barrier that limited relations between northern and southern regions, the plain has worked as a corridor between northwestern, central north, and northeastern cultural zones of Iran and southwest of Turkmenistan (Heidari, 2016: 300).

Because of environmental factors of rich water sources, fertile soils, rich forest and marine sources, Mazandaran province was appropriate in formation of societies during prehistoric times, while influenced by neighboring cultures. There are three mountainous, middle parts of lowland and up land, and plain ecosystems in northern front of central Alborz. Condition and capacity of mountainous regions created various circumstances for human societies evolution and development, and intra and inter relations from prehistory to, at least 2nd millennium BC. In other words, whereas high ridges limited relations, mountain valleys created an appropriate context for cultural development of human societies in the region. In order to recognize intra and inter regional relations, one should comprehensively understand details of chronological evolutions of the region, then study prehistoric cultural developments and transitions from one period to a later one. From earliest archaeological activities, Mazandaran attracted foreigner archaeologists since 19th century (Vandenberg 2000; Gabriel 1348). Meanwhile, the regional cultural, economic, social, and chronological problems are less known, comparing to other regions of Iran. Maybe, the most important reason of the loss is lack of coherent and purposeful archaeological activities, and question-based research projects.



**Map 1. Area of Mazandaran Province and field of study**

## 3-Material and methods

As the first step in the study, present paper enjoyed field and bibliographical methods to gather information. In order to create a context for settlement pattern analysis method, geographical information and coordinates gathered from reports from archaeological surveys and excavations. However, the sources had deficiencies that influenced the gathering process. Next, descriptive and basic information organized as a data bank. Later, following gathering geographical coordination of prehistoric sites, there was revision of the point using Google Earth software. Then, there was locating the point using ArcGIS software, while data processed as maps and numerical charts following combination of descriptive and locative information. Variables selected for this analysis included area of sites, altitude, distance to rivers, slope of location of the sites, and climate. It was purposed to understand natural context of settlements and distribution the prehistoric sites comparing to the variables. Finally, there were statistical analysis and general conclusion using Pearson Correlation Test and SPSS software.

## 4-Settlement pattern analysis of the sites

Referring to earlier archaeological researches and studies about the field of study, there is a list of sites from every single period that totally sums up to 350 sites, consisted of 4 Middle Paleolithic, 9 Upper Paleolithic, 6 Epipaleolithic, 28 Neolithic, 36 Chalcolithic, 15 Bronze, and 252 Iron Age sites. Map 2 presents distribution of prehistoric sites at Mazandaran Province. Sites from Iron Age, the most abundant sites, consist 73% of the volume. Respectively, the other periods are available as 1% Middle Paleolithic, 3% Upper Paleolithic, 2% Epipaleolithic, 8% Neolithic, 10% Chalcolithic, and 4% Bronze Ages in the volume (Figure 1). Environmental variables will be discussed using settlement pattern analysis as follows.

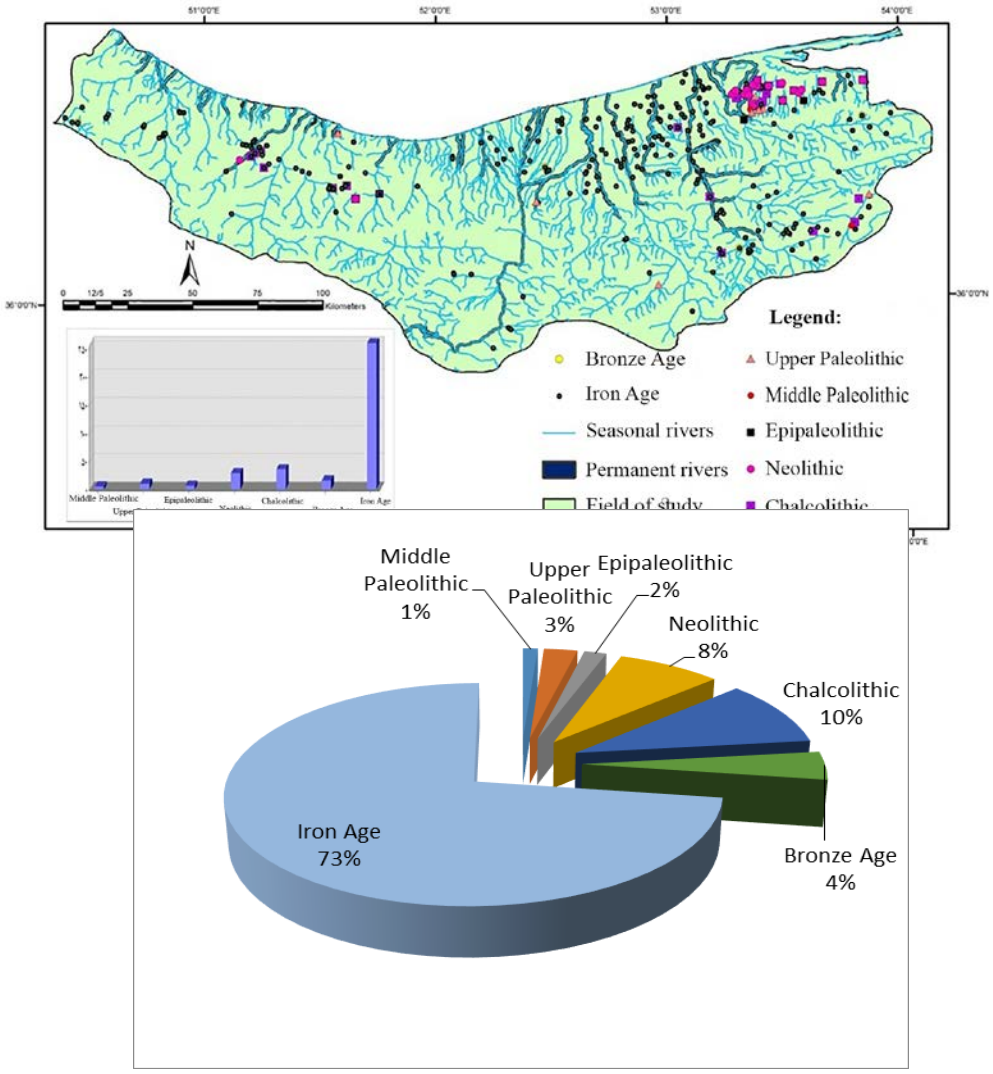


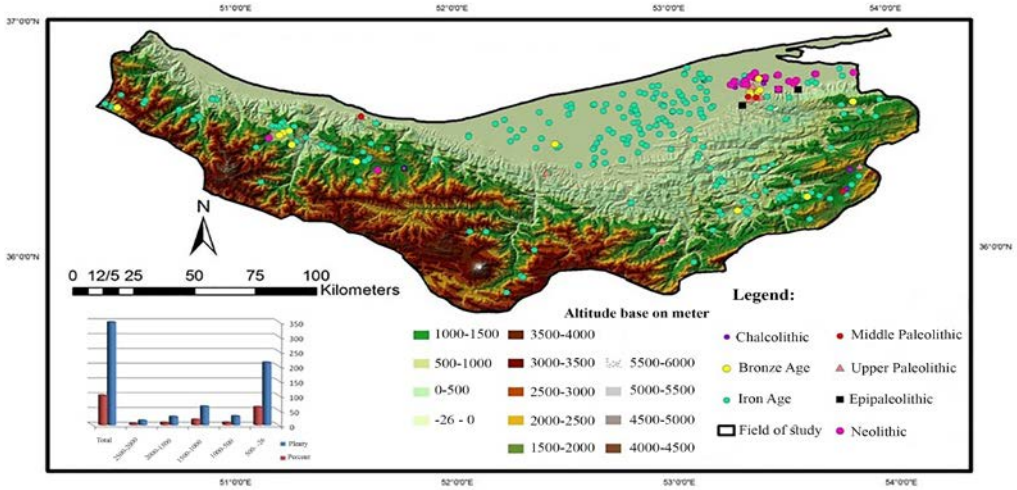

**Figure 1: share of the prehistoric settlements of Mazandaran**

## 4-1 Evaluation of sites based on altitude parameter

Generally, the altitude of the field of study ranges between -26 m, Caspian Sea level, and 5671 m, height of Damavand (Khoshravan and Vafaei 2016:4). Accordingly, the field of study would be categorized to 13 altitudinal levels. Considering location of the points, 60.9% of prehistoric sites located between -26 m to 500 m ranges, which is highest abundancy of the sites. The range consists of foothills and plain lands with fertile soil, on the other hand, with the most accessibility to sea shore to exploint marine sources.

The environmental advantages were favorable and appropriate for formation and continuity of settlements.

There are locations of 8.6%, 18.1%, 8%, and 4% of the sites, respectively, at 500 m to 1000 m, 1000 to 1500 m, 1500 to 2000 m, and 2000 to 2500 m altitude. There has not seen any settlement higher than 2500 m altitude (Map 3, Table 1). By increasing altitude from sea shores to plain lands, southwardly to Alborz heights, moderate mountainous climate dominates within a strip from 150 m to 3000 m altitude. Reduction of temperature and transformation of precipitation to snow include main regional factors that appear as cold, long and glacial winter, with short and temperate summer. These regions present appropriate circumstances for formation of seasonal settlements and migration of societies during warm seasons of the years, which should be considered when analyzing distribution of settlements during various periods.




**Map 3: distribution of prehistoric sites considering altitude**

| altitudinal levels in meter | Plenty of sites (Number) | Percent of sites |
|---|---|---|
| -26-500 | 212 | %60/9 |
| 500-1000 | 30 | %8/6 |
| 1000-1500 | 63 | %18/1 |
| 1500-2000 | 28 | %8 |
| 2000-2500 | 15 | %4/3 |
| Total | 350 | %100 |

**Table 1: distribution of prehistoric sites considering altitude**

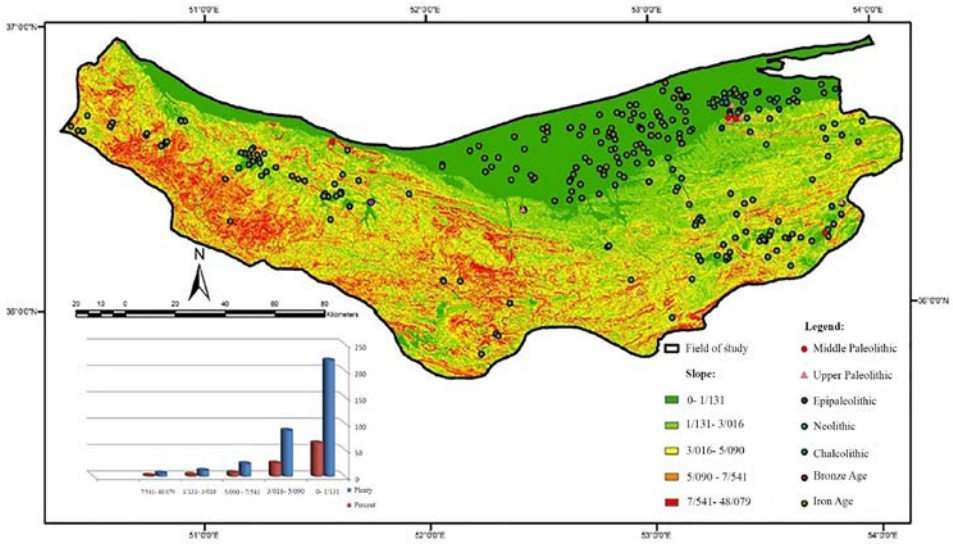
## 4-2 evaluation of sites relying on slope parameter

The field of study categorized to five groups considering percentage of slope. The most abundant sites, 63.2% of prehistoric sites, locate at 0% to 1.131% of slopes. Then, 25%,

6.9%, 3.2%, and 1.7% of the sites locate, respectively, at 1.31%-3.016%, 3.016%-5.09%, 5.09%-7.541%, and 7.541%-48.079% slopes. Therefore, increasing percentage of slope inversely relates to abundance of the sites, which means increasing slope follows decrease of number of the sites and vice versa (Table 2, Map 4).

**Table 2: distribution of prehistoric sites relying on slope**

| slope | Plenty of sites (Number) | Percent of sites |
|---|---|---|
| 0-1/131 | 220 | %63/2 |
| 1/131-3/016 | 87 | %25 |
| 3/016-5/090 | 24 | %6/9 |
| 5/090-7/541 | 11 | %3/2 |
| 7/541-48/079 | 6 | %1/7 |




**Map 4: distribution of prehistoric sites relying on slope**

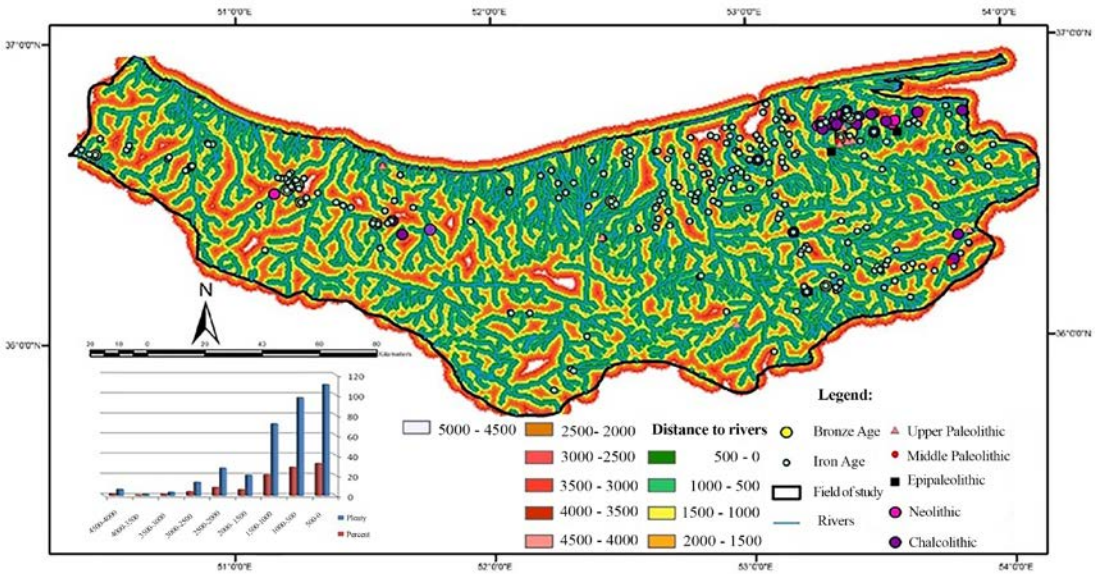
## 4-3 evaluation of the sites relying on distance to rivers

Mazandaran Province is the territories of rich water sources and lots of rivers. "The rivers consist Mazandaran water basin that flow to Caspian Sea" (Riahi 2002: 14). "The rivers are short and relatively low" (Badiei 1999: 148). "The length of the rivers is shorter than the eastern rivers, because of proximity of ridges to the sea, however, rate of flow of Mazandaran Rivers is more the latter's (Bayat 1988: 14). Like other territories, Mazandaran has both permanent and seasonal rivers. Important and big rivers of Mazandaran are Haraz, Tajan, Neka, Farim, Babolrood, Talar, and Chaloos. Considering map of rivers area of the field of study, there are 31.6% of sites at 0-500 m distance and 27.9% at 500-1000 m distance from rivers. Also, there are 20.4% of sites at

1000 to 1500 m distance and 5.7% of sites at 1500 to 2000 m distance from the rivers. However, 89% of sites locates at lesser than 2000m from the rivers (Table 3 and Map 5).

**Table 3: distribution of prehistoric sites of Mazandaran, considering distance from rivers**

| distance from rivers | Plenty of sites (Number) | Percent of sites |
|---|---|---|
| 0-500 | 110 | %31/6 |
| 500-1000 | 97 | %27/9 |
| 1000-1500 | 71 | %20/4 |
| 1500-2000 | 20 | %5/7 |
| 2000-2500 | 27 | %7/8 |
| 2500-3000 | 13 | %3/7 |
| 3000-3500 | 3 | %0/9 |
| 3500-4000 | 1 | %0/3 |
| 4000-4500 | 6 | %1/7 |
| Total | 350 | %100 |



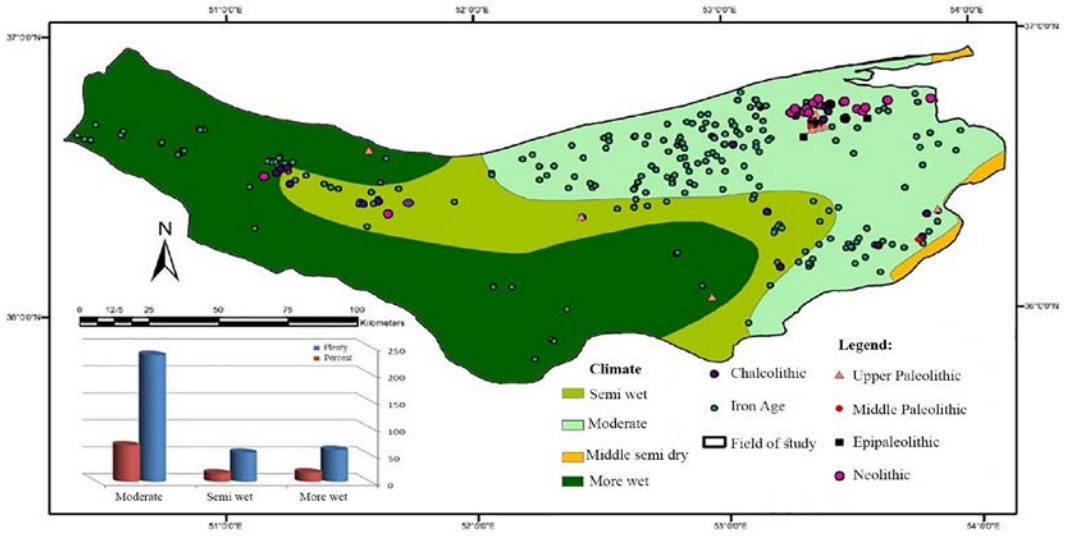

**Map 5: distribution of prehistoric sites of Mazandaran considering distance to rivers**

## 4-4 evaluation of the sites considering climate

The influential factors on formation of the climate of Mazandaran consist of Caspian Sea, Alborz range, and rainy winds that create varieties of climates for the regions. Continuous precipitation, high humidity, and slight difference in annual temperature include climatic characteristics of Mazandaran. However, Alborz mountain range is a natural barrier at south of Mazandaran that separates, geographically, northern and southern lands and prevents penetration of humidity into Iranian Plateau, and constraints the humidity in northern regions. Summing up positioning of the site in the environment, one can suggest that most of the sites, 67.5%, locate at moderate climate. "Hot summers, and moderate and wet winters are of the most major characteristics of the climate" (Zendedel 2000). Then, there are 17% of sites at wet climate, while only 15.5% of sites locate at semi wet climate. For average precipitation at west of the province is more than east of the region, one can witness more wet and semi wet climate at west and central regions of the province, however, prehistoric sites reveal less density in these regions (Table 4 and Map 6).

**Table 4: distribution of prehistoric sites of Mazandaran, considering climate**

| Climate | Plenty of sites (Number) | Percent of sites |
|---|---|---|
| More wet | 59 | %17 |
| Semi wet | 54 | %15/5 |
| Moderate | 235 | %67/5 |
| Total | 350 | %100 |



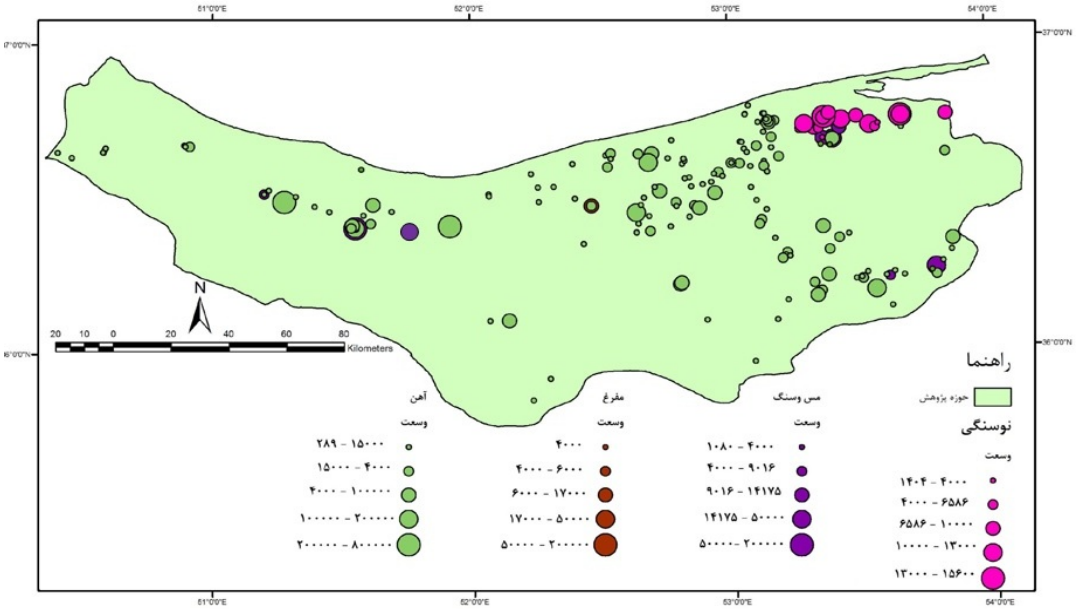

**Map 6: distribution of prehistoric sites of Mazandaran Province considering climate**

## 4-5 evaluation of sites relying on area

By Neolithic and later periods, settlement patterns formed as sedentary, semi sedentary, seasonal and non-seasonal, permanent and temporary, rural and urban styles. The area of settlement pattern is one of important factors of definition of sites. Naturally, one can think of vast settlements as the indicator of density of more population and developed social and economic activities. Furthermore, social, political, and economic influences of bigger sites on the peripheral smaller ones can be the other characteristic and significant hypothesis that usually formulated within researches. However, defining form and pattern of settlements is not a simple issue and relates to different factors including affiliation of sites to every given prehistoric period, environmental, economic, social, and political variables (Roberts 2003), spatial relation of discovered architectural plan to subsistence and social structure (Parsons 1972; Trigger 1967), spatial interrelation of sites according political and environmental setting, and central location and secondary location issues (Darvill 2002), and regional systematic methods that lead to definition and reconstruction of a regional settlement pattern and understanding regional political cycle (Underhill et. al 2008). Furthermore, defining area of settlements at every single prehistoric period, regarding surficial surveys, is one of the most important future challenges.

Generally, present paper presents analysis of settlement pattern for Neolithic, chalcolithic, bronze, an Iron ages in order to draw an overview of condition of settlement areas. However, considering discussed limitations and lack of vertical and horizontal excavations at the field of the study, the authors attempted prevent further analysis. However, regarding available data one can say that the area of settlements averagely increased since Neolithic to bronze Ages, but it decreased during Iron Age. The other conclusion is area of 21% of settlements between 0.15% to 0.4% hectares, whereas 32% of settlements cover 0.4% to 1 hectares that both consist about 53%, 107 of sites (Table 5 and Map 7).

**Table 5: distribution of Neolithic, Chalcolithic, Bronze and Iron Age sites of Mazandaran, considering area**




**Map 7: distribution of prehistoric sites of Mazandaran considering area**

## 5- The effect of water level fluctuations in the Caspian Sea on prehistoric settlements

Fluctuation of water level during Pleistocene and Holocene eras is the other influential factor on spatial distribution of prehistoric settlements of Mazandaran. As a lake,
Caspian Sea is not connected to Seas. Separation from seas caused water level of Caspian Sea increases slowly, while reaches to the highest altitude, it decreases altitude with the same speed. In most of the cases, ruins of earlier settlements bury under sedimentations following advances of water (Moshiri 2010). By analyzing available information, one can suggest rate of discharge of the rivers, as one of the reasons of fluctuation of water level of the sea (Froehlich et al., 1999). Intensity of water evaporation is another reason (Moshiri 2010: 29). On the other hand, sudden short fluctuations root in meteorological and hydrological factors at sea coasts that depend on climatic conditions of different coastal regions, and lead to different consequences in various regions. The fluctuations in Caspian Sea also appear seasonally, while water level increases following increasing water discharge of the rivers during warm seasons (Qanqormeh and Malek 2005: 3, 4). The morphology of sea shores differs in response of the fluctuations (Firoozfar et al., 2012: 141). Caplin and Silviano suggested a model indicating Caspian Sea's response to the increase of water level regarding slope of different position of shores. Undoubtedly, low slope coastal regions have more sensibility. Southeastern regions of Caspian Sea is sensitive to water level, however, morphological changes of regional coasts have not been so noticeable in other areas of Caspian Sea. So this would be one of the most appropriate regions to reconstruct water level of Caspian Sea (Kakroodi 2013: 35, 43). Qamari Fatideh studied water levels of Caspian Sea since 3$^{rd}$ millennium until modern times and combined the results to archaeological information to conclude that the fluctuations, especially the latest increase of water level at 700 hundreds years earlier (1300 AD) was the most significant factor that buried human settlements under sedimentations at southeastern regions of Caspian Sea. He suggested that far location of the sites from the sea shore is because of rising the water and consequent burying of the sites following every single fluctuation. Regarding Caspian Sea altitude as -35 m at about 6600 years earlier, coast line was considerably further than modern coastal lines, especially at south and southeast of Caspian Sea. On the other hand, rising the sea water could bury and destroy earlier generations. Actually, tides gradually wash and hide upper and surficial parts of settlements, and now we can only witness the sites that located upper than -20 m altitude (Qamari et al., 2015: 38-54).

## 6-Conclusion

Of the total 350 sites, Middle and Upper Paleolithic, Epipaleolithic, Neolithic, Chalcolithic, Bronze and Iron sites, respectively, consist of 4, 9, 6, 28, 36, 15, and 252 sites. Regarding nature of data, the authors used Pearson Correlation Coefficient Test to understand relations between number of sites and variables including slope, altitude, climate, distance to the rivers, area of sites, and definition of types and rate of relation

between the quantitative variables and the rate of significance of their interrelationship. The values of Pearson Correlation Coefficient Test vary between 1 to -1, however, proximity to 1 leads to more correlation of two variables. Conclusions (Table 6) indicate significant relation between number of the sites at every given period and variables of altitude, distance to the rivers, and climate, while there is no significant relation between number of sites and slope. Considering the measured correlation between number of sites and the altitude variable (0.164), and the estimated level of significance (0.002), one can claim there is a positive and significant relation with 99% confidence between them. In other word, the altitude directly influenced on the number of the sites during every single period. The most number of the sites, 60.9%, locate at -26 m to 500 m altitude, where is plain and foothill with fertile soil and close to coastal lines and marine sources. These factors are ideal and appropriate environmental condition for formation and continuation of settlements.

**Table 6: The correlation between factors of environmental condition and number of sites**

| Correlation coefficient Between factors and sites | Area | Distance to rivers | Altitude | Slop | Climate |
|---|---|---|---|---|---|
| The amount of correlation | 0/088 | *0/117 | **0/164 | 0/087 | *-0/127 |
| Significant | 0/212 | 0/03 | 0/002 | 0/106 | 0/018 |
| Number of sites | 203 | 350 | 350 | 350 | 350 |
| Explanation of correlation | Nonsense | and Significant positive | Significant and positive | Nonsense | Significant and Reverse |
| *Correlation is significant at the 0.05 (2-tailed) | | | | | |
| ** Correlation correlation is significant at the 0.01 (2-tailed) | | | | | |

It should be noted that the main part of the area of the plains locate at eastern part of the field of the study, where the highest density of the sites appeared. Next, most of the sites, 18.1%, locate at 1000 m to 1500 m altitude that consist of mountain valleys and provide an appropriate environment for seasonal settlements. One can use area of sites as a criterion to understand seasonality of the sites. The area of the sites is small in seasonal settlements. Surprisingly, most of the sites that distributed within the altitude date to Iron Age[4]. Despite of not see a significant relation between the number of sites and the slope variable, the highest density of the sites is at -1.131% that indicates most of the prehistoric sites emerged at low slopes. On the other hand, considering the estimated correlation between the variable of the number of the sites and the variable of distance from the river, 0.117, and also the estimated significance of relation of these two variables, 0.030, one can acknowledge there is a significant and positive relation between the variables; in other words, most of the sites locate 0 m to 1500 m away from

the rivers. However, considering the estimated rate of correlation of number of the sites of every single period and the climate variable, -0.127, and the estimated significance between these two variables, one can conclude a significant and inverse relation; in other word, most of the sites distributed at the regions with lower precipitation, temperate, that is eastern front of Mazandaran.

The authors noted earlier that most of plain areas locate at east of Mazandaran. Settlement pattern of Mazandaran indicate the settlements at eastern region of the province. Regarding available information, if one ignores focus of archaeological researches at eastern Mazandaran and scarcity of field studies at central and western regions of the province, there will be attraction to relations between climate and altitude variables, from one hand, and distribution of sites from the other hand. Therefore, people desired occupy low and plain lands with moderate climate that naturally was available at east of Mazandaran. Eastern regions consist of foothills and plains with marine sources and fertile soil.

Regarding the analysis of settlement pattern of prehistoric sites of the field of the study, number of the site increase from Middle Paleolithic to Chalcolithic periods, however, there is a decrease in number of the sites during Bronze Age. Later, during Iron Age, number of the sites considerably increased. The settlements increased from 15, at Bronze Age, to 258 at Iron Age. It is probable that the region over populated during Iron Age when people exploited most of the regions with environmental possibilities, which is an indication of relation between high density of the settlements and high environmental capacity.

The area of the settlements that is recognizable considering definition of area and distribution of material during every given period, has not had so much accuracy in field studies since earliest researches. It is one of the challenges in the studies of settlement pattern of the prehistoric sites of the region. Considering available information, average area of the settlements increased from Neolithic to Bronze Ages, however, it decreased during Iron Age. The average area of the settlements, during Iron Age, was 18 hectares that considerably decrease comparing to the average area of the settlements during Bronze Age that is about 40 hectares. This is a transformation that indicates a change in the type of occupation that means transformation of permanent settlements to seasonal ones. High density of settlements during every single period makes them probable seasonal settlements, however, present information never leads to a precise conclusion. Nomadic and semi nomadic life style with pastoralist subsistence strategy always were fundamental elements of the field of the study. Most of these societies include foothill and mountain valley peasants, and semi nomadic pastoralists that commuted summer and winter residences within plain and mountain ecosystems.

Continuation of settlement levels at the sites, is another parameter defining appropriate ecological condition in a region. There have been scarce stratigraphical trenching and study of sequences of strata, considering absolute and relative chronology

and typology of potteries, to understand sites with multi-period settlements. On the other hand, considerable amount of information resulted of survey projects leads to absence of understanding lower strata of the discovered sites. Therefore, large amount of available data about the chronology of the sites resulted of typology and comparative studies at the excavated sites.

Fluctuation of water level of Caspian Sea is the other influential factor on the spatial distribution of prehistoric settlements at Mazandaran Province. Caspian Sea experienced fluctuations since early formation during Pliocene. Just the opposite of seas that have very slow fluctuations, Caspian Sea have had sudden and speedy fluctuations. Therefore, the fluctuations directly effect on distribution of human settlements, life style, and subsistence strategies. The fluctuations follow the other factors including catchments of the rivers that reach to Caspian Sea and intensity of evaporation that influenced, undoubtedly, on sea shores and distribution of the settlements. Parts of lowlands of northern Iran sank following every single advance of water of Caspian Sea. The morphology of sea shores varies in response to the fluctuations and vastly ranges characteristics, considering slope of the coast and the sea. Naturally, water level advancements in shallow parts was more effective than the regions with deep water on formation of the sites.

Finally, one should acknowledge what present paper discussed about settlement pattern of prehistoric sites at Mazandaran Province relied on few archaeological surveys and excavations, and naturally not far from research deficiencies. However, the authors confirm that present paper has identified information losses, in addition to primary conclusions about settlement patterns. Therefore, future archaeological researches at Mazandaran can exploit present paper, in order to purposefulness and questioning, saving budget and human source, and more importantly more successful scientific achievements.

## Footnote

1. This research was conducted in 2016 based on information collected from excavation and survey reports. It is notable that the sites used in this article as Iron Age sites have been introduced as Iron Age sites by relative chronology based on gray pottery and by archaeologists with traditional method and many Iron Age studies in this area have been based on surveys so Many of these pieces of information may change over future studies**.**

## References

Alizadeh. A. 2001. *Theory and Practice in Archeology*. ehran: Country Cultural Heritage Organization (in Persian).

Badiee. R.1999. *Detailed Geography of Iran*. Volume One. Tehran: Iqbal Publications (in Persian).

Bayat. A. 1988. *Generalities of Natural and Historical Geography of Iran*. Tehran: Amirkabir Publications (in Persian).

Darvill. T. 2002. *The Concise Oxford Dictionary of Archaeology*. New York: Oxford University Press.

Fagan. B. 2006. *Introduction: An Introduction to Archeology (Principles, Foundations and Methods)*. translated by Gholam Ali Shamloo. Volumes I and II. Tehran: Organization for the Study and Compilation of University Humanities Books (Position) (in Persian).

Firoozfar. A. 2012. *Southern Caspian Sea Coast, Morphology, Sediment Characteristics, and sea level change*. Proceedings od the Annual International Conference on Solis. Sediments. Water and Energy. Volume 17. Article 12. pp. 122-150.

Froehlich. K. Rozanski. K. Povinec. P. Oregioni. B. Gastaud. J. 1999. *Isotope studies in the Caspian Sea*. The Science of the Total Environment. pp. 419-427.

Gabriel. A. 1969. *Geographical Research on Iran*. Translated by Fath Ali Khajeh Nourian. Tehran: Ibn Sina Publications (in Persian).

Geographical Organization of the Armed Forces. 2000. *Geographical culture of the country's mountains*. Volume 4. Tehran: Publisher of the Geographical Organization of the Armed Forces (in Persian).

Ghamari Fatideh. M. Vahdati Nasab. H. Mousavi. S. M. 2015. *Fluctuations of the Caspian Sea from the third millennium BC to the last millennium and its effect on the distribution of settlement centers in the southeast of the Caspian Sea*. Journal of Geographical Research Natural. University of Tehran. No. 47. pp. 37-56 (in Persian).

Greenfield. H. J. Van Schalkwyk. L. O. 2008. *Early Iron Age Regional Settlement and Demographic Patterns along the Eastern Seaboard of South Africa: A view from the lower Thukela River Valley*. In Animals and People: Archaeozoological Papers in Honour of Ina Plug. (S. Badenhorst, P. Mitchell and J. C. Driver) eds. British Archaeological Reports. International Series 1849. Oxford: Archaeopress. pp. 131-151.

Heidari. N. 2016. *Study of settlement patterns in prehistoric sites of Mazandaran province from Paleolithic to Iron Age*. PhD thesis of Mazandaran University (in Persian).

Ishaqi. R. Shidfar. M. R. 2003. *Travel Planning Guide in Mazandaran Province*. Sari: Publication of Iran Tourism Organization of Mazandaran Province (in Persian).

Kakroudi. A. 2013. *Fluctuations of the Caspian Sea and its impact on the southeastern shores of the Caspian Sea*. Quantitative Morphological Research. Second Year. No. 3. pp. 44-33 (in Persian).

Khoshravan. H. Vafaei. B. 2016. *Caspian Sea water level fluctuations (past, present and future)*. Abstract of the 18th International Conference on Marine Industries. Kish Island. Iranian Marine Engineering Association (in Persian).

Moshiri. M. H. 2010. *Investigation of fluctuations in the water level of the Caspian Sea*. Mapping Quarterly. No. 107. pp. 29-31 (in Persian).

Parsons. J. R. 1972. *Archaeological Settlement Patterns*. Annual Review of Anthropology 1. pp. 127-150.

Qangarmeh. A. Malek. J. 2005. *Peaceful coexistence with Caspian Sea water fluctuations for sustainable development of the Iranian coast (Case study of the southeast coast)*. Geographical Research. No. 54. Winter. pp. 1-11 (in Persian).

Riahi. V. 2002. *Mazandaran*. second edition. Tehran: Cultural Research Publishing Office (in Persian).

Roberts. B. K. 2003. *Landscapes of Settlement*. Prehistory to the present. London.

Schreiber. K. 1996. *Settlement Archaeology, The Oxford Companion to Archaeology*. Oxford University Press. pp. 635-636.

Trigger. B. G. 1967. *Settlement Archaeology: Its goal and promise*. American Antiquity32 (2). pp.149-160.

Underhill. A. Feinman. G. M. Nicholas. L. M. Fang. H. Luan. Fengshi. Yu. Haiguang. Cai. Fengshu. 2008. *Changes in regional settlement patterns and the development of complex societies in Southeastern Shandong, China*: Journal of Anthropological Archaeology 27. pp.1-29.

Vandenberg. L. 2000. *Archeology of Iran.* translated by Issa Behnam. Tehran: University of Tehran Press.

Volta. B. P. 2007. *Archaeological Settlement Patterns in the Kingdom of the Avocado*. M. A Thesis. Department of Anthropology. University of California. Sandiego.

Willey. G. R. 1953. *Prehistoric settlement patterns in the Viru Valley*. Peru. Bureau of American Ethnology Bulletin. no. 155. Washington D.C: Smithsonian Institution.

Zende Del. H. 2000. *Comprehensive guide to tourism in Mazandaran province*. first edition. Tehran: Published by Irangardan (in Persian).

# تحلیل الگوهای استقرار محوطه‌های پیش از تاریخی مازندران

**نرجس حیدری***
استادیار گروه باستان‌شناسی، مؤسسهٔ آموزش عالی نیما، محمودآباد، ایران.
رحمت عباس‌نژاد سرستی
دانشیار گروه باستان‌شناسی، دانشکده هنر و معماری، دانشگاه مازندران، بابلسر، ایران.
مجتبی صفری
عضو هئیت علمی گروه باستان‌شناسی، مؤسسهٔ آموزش عالی نیما، محمودآباد، ایران.
تاریخ دریافت: ۱۳۹۹/۰۸/۱۱؛ تاریخ پذیرش: ۱۳۹۹/۱۲/۲۰

## چکیده

۳۵۰ محوطه پارینه‌سنگی میانی، پارینه‌سنگی جدید، فراپارینه‌سنگی، نوسنگی، مس‌سنگی، مفرغ و آهن مازندران در مقاله حاضر با روش تحلیل الگوی استقرار مورد مطالعه قرار گرفتند که سهم هر یک از دوره‌های مذکور به ترتیب ۴، ۹، ۶، ۲۸، ۳۶، ۱۵ و ۲۵۲ محوطه است. آزمون ضریب همبستگی پیرسون، بیانگر وجود رابطه‌ای معنادار بین تعداد محوطه‌های هر دوره و متغیرهای ارتفاع از سطح آب‌های آزاد، فاصله تا رودخانه و اقلیم است. ۶۰/۹ ٪ از محوطه‌ها، در ارتفاع بین ۲۶- و ۵۰۰ متر (شامل اراضی جلگه‌ای و کوهپایه‌ایِ حاصلخیز و بهره‌مند از خط ساحلی و منابع دریایی)، واقع شده‌اند. بیش‌ترین تعداد محوطه‌ها در بخش شرقی حوزه پژوهش که عموما جلگه‌ای و دارای رطوبت و بارش کم‌تر است، پراکنده شده‌اند. در محدوده بین ۱۰۰۰ تا ۱۵۰۰ متر ارتفاع (شامل دشت‌های میان‌کوهی مناسب برای استقرارهای فصلی)، ۱۸/۱٪ از محوطه‌های دوره آهن واقع شده‌اند. رابطه معناداری بین تعداد محوطه‌ها و متغیر شیب وجود ندارد. بیش‌ترین تعداد محوطه‌ها در فاصله ۰ تا ۱۵۰۰ متر از رودخانه‌ها قرار دارند. با توجه به تحلیل‌های صورت‌گرفته در مورد الگوی استقراری محوطه‌های پیش از تاریخی در حوزه پژوهش، شمار محوطه‌ها از دوره پارینه‌سنگی میانی تا دوره مس‌سنگی، سیر صعودی را نشان می‌دهد اما در دوره مفرغ، از تعداد آنها کاسته می‌شود. پس از آن، در دوره آهن به طور چشمگیری بر شمار محوطه‌ها افزوده می‌شود. این احتمال وجود دارد که در دوره آهن، تقریباً تمامی مناطقی که دارای امکانات زیست‌محیطی قابل بهره‌برداری بودند، مورد استفاده قرار گرفتند. این موضوع، نشانگر وجود رابطه بین تراکم زیاد استقرارها و ظرفیت بالای زیست‌محیطی است. همچنین میانگین وسعت استقرارها از نوسنگی تا مفرغ سیر صعودی و در دوره آهن سیر نزولی داشته است. که این دگرگونی احتمالا نشانگر تبدیل استقرارهای دائمی به فصلی است. این جوامع اغلب شامل روستانشینان کوهپایه‌ها و دره‌های میان‌کوهی و عشایر نیمه‌کوچ‌رو بودند که در میان زیست‌بوم‌های دشت و کوه، ییلاق و قشلاق می‌کردند.

**واژه‌های کلیدی:** الگوی استقرار، پیش از تاریخ مازندران، سیستم مطالعات جغرافیایی، متغیرهای زیست‌محیطی.

* رایانامه‌ی نویسنده مسئول: narges.heydari@gmail.com

Journal of Archaeological Studies

Vol 12, Is 4 - Serial Number 24, Winter 2021

Formerly "the Journal of the Faculty of Literature and Humanities"... University of Tehran

# An Overview on Three Seasons of Archaeological Excavations in Jahangir Site, Ilam

**Leila Khosravi**[1]

(77-94)

## Abstract

Jahangir is one of the most prominent Sasanian sites In the west of Iran that excavated due to locating in the flood level of Kangir dam (Eyvan). The deficiency of knowledge about the manner of constructing, settlement areas, causes of formation, collapse and chronology of these structures, specify the type of livelihood, study the industries and various arts such as stucco decorations, glasses, metallurgy, pottery, determining the elements, architectural decorations and materials, functions and effective factors in different artistic styles are the questions and aims of excavation. In order to answer mentioned questions, a descriptive-analytical method with the help of excavation and historical texts have been used. At the end of three seasons of archaeological excavations, the plan of a huge building included 11Spaces had been revealed. These Spaces consisted of two (Eyvans) porches and some rooms, with a courtyard and interior area that built with rubble and a mortar of Semi-baked and Semi-pressed plaster and brick for ceilings. Asymmetric geometric structure, division of interior and exterior areas, spatial variations and significant role of Eyvans in spatial organization of the complex are the most important features of the three phases of architecture. Various artworks in this complex are influenced by the current Sasanian art, but it has own independent and native identity. According to the archaeological data, it could be claim that Jahangir site have been designed for official requirements. The construction of this site could be interpreted in the base of natural landscape and counted as a manor house with ritual/settlement function among the other palaces of this period.

**Keywords**: Sasanian, Jahangir, Kangir River, Eyvan, Ilam.

Received: 28 July, 2020; Accepted: 10 March, 2021

10.22059/jarcs.2020.306917.142906
Print ISSN: 2676-4288- Online ISSN: 2251-9297
https://jarcs.ut.ac.ir

1. Corresponding Author Email: L.Khosravi1357@gmail.com. Assistant Professor, Department of Archeology, Archaeological Research Institute, Tehran, Iran.

## 1. Introduction

Despite of a long-term life of Sasanian period, there are a few architecture remains from this era. So there are some difficulties in typological studies, dating and different aspects of Sasanian architecture (Mohammadi, 2011: 80). West of Iran had been attracted the Sasanians from Shapur II kingdom, because of adjacency to Ctesiphon (Genito, 1997: 538). The archaeological excavations in Jahangir Site are worthy in order to discover the monuments and artifacts. After the decomposition of Kangir dam in 2015, Jahangir site remained in 300 meters distant to Kangir Border River and according to the potentials and archaeological finds, decided to be protected as a historical site next to the touristic site in Kangir dam, for long-term researches and touristic goals. The actual core-zone of Jahangir is an area in 173877 $m^2$ and its buffer-zone is 208197$m^2$ (Khosravi, 2017). In this 17 Hectares site there are some huge monuments and two cemeteries. The most important part of the site, central mound surrounding the main rectangular hall have been excavated during three seasons (Fig: 2). In addition to locating in Kangir dam basin, our deficient knowledge about construction, reasons of formation, collapse and dating of these monuments those are belonged to the Early Islamic period in some cases, determination the type(s) of livelihood, study the industries and arts such as, stucco, glasses, metallurgy, pottery, specify the attributes, architecture decorations and materials, function and effective features in various artistic styles are the purposes of research, and in order to answering below questions have been designed:

-What are the reasons of formtion, collapse and dating of this monument, and How was the quality of these type of buildings in the West of Iran?

-Which factors have been effected the materials, main elements and ornamation of Jahangir site and its artistic styles?

- What are the main functions, similarities and differences between Jahangir site and the other finds with simultaneous ones?

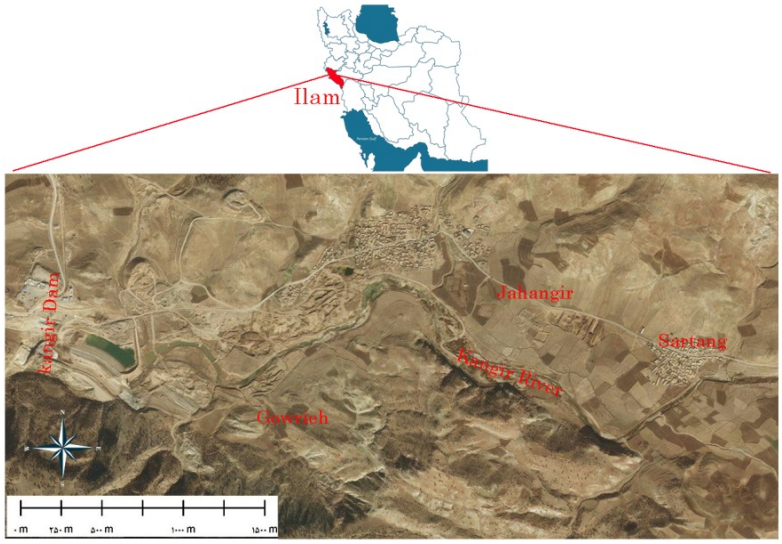
To achieve to the answers of these questions a descriptive-analytical method of study with the help of historical texts and field studies have been used. Also the presented hypothesis are based on some historical texts those related this monuments to the Early Islamic centuries. Since there were not enough time and motivations in this period, it seems that the construction of this monuments goes back to the Pre-Islamic period and it used again in Early Islamic with small changes. The materials are vernacular like slabs, Semi-baked and Semi-impressed plaster and bricks with decorated stuccos. Also it seems that in addition to political-social factors, environmental and climate modifications are effective in both formation, life and collapse of this site. The designers of this monument were impressed by common artistic traditions of this period, beside the domestic patterns of art. According to the architecture style and the other archaeological finds this monument had settlement-ceremonial function.

## 2. Research Background

The first studies in this region is belonged to Louis Vandenberghe in 1970, with excavations in Joub Gowhar, Peliyeh cemeteries, Siahgel fire-temple and Kouria Building (VandenBerghe, 1971). In subsequent, Freya Stark visited the remains around Kangir River and then traveled to Iraq (Stark, 1979). After an archaeological survey in this region led to identify Kouria, Shemiran Castle, Janagir and Gowriyeh (Pirani, 2001). In continue, another Surveys have been done by Ali Nourollahi and Sayyad Soltani in 2002. Ebrahim Moradi did another survey in Kangir River Basin that eventually to identifying 11 Sites in this region (Moradi, 2007). In 2015 Some test trenches Sounded in rectangular hall of Jahangir by Hamid Amanollahi, and finally had been excavated by the author since 2016-2019 in three seasons.

## 3. Geographical Location of Jahangir Site

Jahangir is located in (38s:X:606595, y:3752695) about 65 km(s) in the North of Ilam, Zarneh County, in the West of Sartang Village in contact with the other simultaneous sites such as Kouria, Gowriyeh, Shemiran Castle and Siahgel fire-temple in the alongside of Kangir river (Fig1). Current Ilam was part of the Pahleh territory in Parthian and Sasanian periods and Arabs called that Jebal in later period (Ibn-e Khordadbeh, 1991: 42). The mentioned State divided into two parts: Northern part, Maspazan, with the centrality of Sirvan and Southern part, Mehrjan Qazaq, with the centrality of Seymareh. In historical text three cities mentioned: Sirvan, Ariyohan and Alraz from Maspazan County. According to this division, Jahangir site was located in a part of Maspazan named Ariyohan. Rawlinson believed that current Zarneh, previously was Ariyohan and was known by this name until 13th Century A.D (Rawlinson, 1983: 43). This city brought with different forms such as Azivjan, Ariyohan and Arboujan. There are two signs from Ariyohan: A town that a fountain could be seen from far distance and the river of this city goes to the Mandali (Bandjin) river (Qouchani, 1994: 51-52). Nevertheless, Kangir is the only river of this region that join to the Mandali in Iraq after passing Soumar lands. Due to the high taxes of this region, the presence of opponents (Akbari, 2015: 56) and highland climate with the emersion of Abbasids, this area named the moon of Kufa (Mazaheri, 2010: 45). This region was abandoned from 3-4 centuries A.H. because of earthquakes (Kambakhs Fard, 1989: 62).




**Figur 1. Geographical Location of Jahangir Site in Aerial Photo (Author, 2020)**

## 4. Excavation Method and Performance

While at the first, the excavation was salvage and precious and scientific documentation because of dam intake, it has some basic goals and questions. The geometric-horizontal excavation had been selected by the author. There were a huge amount of soil and stone, because of debris falling and illegal excavation. The main excavation had been started after cleaning, documentation and systematic surveys of surrounding areas. The height of the debris was 2-4 meters to the main floor of the site. It is worth noting that the excavation in Historical and Islamic sites will be faced some difficulties if it based on mapped grids and the interference to the building range. So on, the best method of excavation is to reveal the traces of walls and the architecture remains or Organic excavation method. At the end of this method, it is possible to draw the architecture remains on map. The method of register and documentation of cultural materials was layer, feature and phenomenon (for movable finds). During the digging, various architecture finds and their

decorations (stuccos), pottery, stone, glass, bone and botanical finds had been discovered inside the debris.

**5. Architecture Finds**

According to the surveys, study the old and new aerial photos and the results of the sounding for determination of core-zone and buffer-zone, the expanse of the site is in North-South direction and the first settlement goes back to the Neolithic and Chalcolithic in the Northern part. After that, this site have been dwelled again in Parthian period. There are a complex of buildings, especially in the central part from Sasanian period. The nomadic settlements were existed until 4-5 centuries A.H. There are some significant reasons in formation of this site in different stages of human settlements, such as Kangir River, proximity to one of the most important ways to the Mesopotamia, climate and an environment that was suitable for both nomadic-husbandry and sedentary societies. Some enormous buildings are obvious in this site. In Southeastern side of central mound, there is rectangular hall in 11×19 meters. A square-shaped building in approximately in 58×58 meters, with four round-shaped towers is located in the West and Northwest of the hall. The size of the towers is 14×10 meters. The destruction caused small low-heighted mounds in the Southern parts. The cemetery of Sartang village located in the North of Jahangir site and there are the traces of walls belonged to the rectangular area. Eventually, after feasibility and anticipate to find complete constructions, the excavations at the central mound had been started from 2017 until 2019 (Fig 2). After three seasons of excavations in central mound, the plan of some parts of an enormous building including 11 Spaces and an area in 832 $m^2$ have been revealed. Jahangir building include hall, Eyvans, rooms and courtyard. The walls, round or square columns, arcades, arcs and stuccos exist in this building and the mortars are rubbles and Semi-baked and Semi-impressed plaster. These materials are quick and pressure and stretching persistent (Mirdrikvandi et al, 2015: 45). The height of the walls are different, those made by floating the slabs in mortars and covered them with a plaster/gypsum layer. The widespread use of gypsum/plaster, brick and related methods of vaulting are the tradition of Sasanian period. According to the importance of this monument, like the other ceremonial and palaces of this time, it adorned with valuable stuccos. Some phases of architecture have been identified in this site. In the first phase, the building had been made by slabs and Semi-baked gypsum on a wide Parthian site. In the second phase another buildings added to the main one and probably some reconstructions have been done. In the third phase, the monument had been abandoned and dwelled by nomadism populations. Simple and basic constructions, re-using the materials of debris such as mud mortar are the methods of architecture in this phase. The most damage of the monument belongs to the upper layers. Barrel vaults with bricks and gypsum mortar have been applied for covering the areas. The remains of them were found in the debris of the rooms. Absolutely, the form and size of the arcs were differed to the size of the rooms. In some cases, the bricks have been used vertical with gypsum mortar in Sasanian period. This pattern also used in Parthian sites such as Ashur, base of the Taq-I Kasra and Damqan Palace (Reuther, 1938: 642-643).

Darkness, the cold and the bad ventilation are the problems of the rooms without window of this type of architecture. Another important attributes are asymmetric geometric architecture, division of inner and outer parts, spatial variety, religious part and important role of the Eyvan in the spatial organization of the complex (Tahmasebi, 2013: 153). The architecture context of Jahangir was without niches and daily life stuffs. As mentioned, 11 spaces have been revealed by the excavations and **S** show it.

**S.I.** This space is approximately rectangular-shaped in size of 11×4.5 meters. The excavation started in the height of +30 cm from the bench mark and ended in the depth of -282 cm. S.IV in the North, S.II in the West and S.III is located in the North and Northwest. There is a rectangular entrance in the

Northern wall and two steps in the Southwest join this area to S.II. There is also a platform in the Southern side.

**S. II.** In fact, this space was a square Eyvan in size of 5.45×4.5 meters and the remains of its walls in the width of 80 cm(s) are in the Northern, Eastern and Western sides. Discovering a stone heel in the central mound of the site, indicate the existence of a wall and gate in the Southern part and perhaps they are related to the nomadic settlements. In the center of this space, an oven with consequence layers of charcoals and ashes and different settlement floors of nomadic phase have been found. The both sides of the walls of this space coated by plaster and it some cases their thickness are 10 cm(s). In the inner side of the walls, there are some cornices those have 15-18 knob. In the South of this small Eyvan in Southern, Eastern and Western sides, there are three steps in order to prepare a connection with surrounding spaces and entering the Eyvan . Also there is a gate in the width of 100 cm(s) in the North of space. This gate connects S.II to SIII (courtyard) with three steps. Two stucco friezes with winged horse in particular and symmetric have been discovered in the two sides of this gate. Apparently, there were some reconstructions with the low quality materials such as stone and mud after the site had been abandoned.

**S. III.** This rectangular space in the size of 13×6.5 meters located in the Northwest of the excavation area, which limited to S.II from the South, to S.I from the Southeast, to S.IV from the West and to S.VI from the Northeast. According to what discovered until now, the function of this hypaethral Space is to create a connection between different parts of the site, such as the courtyard (Fig 3-1,4).

**S. IV.** This is a rectangular room with East-West direction in the Eastern half of excavation area, in size of 8.85×8.25 meters in the North of S.I and the East of S.III. Two symmetric buttresses have been applied on the Southern and Northern walls inside of this room. A rectangular gate in the Southern side, connects this room to S.I. The main entrance is located in the Northwestern corner, between S.IV and S.III. The walls of this room are covered by plaster/gypsum in width of 10 cm(s). Parts of a colored coverage with green, yellow, blue and red had been discovered from the Western wall. An integrated debris of a ceiling with the bricks in size of 31×31×7 cm(s) with the plaster/gypsum mortar and plates had been found during the excavation (Fig 3-6). The primer plaster floor of the room which located in the depth of -260 cm(s), ruined and damaged by continuous usage and heavy weight of the debris (Fig 3-3).

**S.V.** A corridor in West-East direction of the monument, with 9.25 meters length in Southern part, 17.5 meters width in the North of S.IV and East of the S.III and S.VI and the South of SVIII have been revealed. A part of the center of this space covered with an arc in length of 1.6 meters. The height of the highest part is 3 meters above the level floor. This corridor ended to the most Eastern point to an entrance and surrounded the Eyvan such as previous samples, which access to both Eyvan and side room. Also it is possible to enter from outside (Fig 3-5). The emerge of this type of ceiled corridor which makes the direct passing from one space to another one impossible, goes back to the Parthian, and re-used in Sasanian and Early Islamic palaces such as Qasr-I Shirin and Ukhaizar (Reuther, 1938: 435).

**S.VI.** A rectangular space in size of 11.20× 8.65 meters, located in Northern of S.III and West of S.V and S.VII, which is a connection between S.VIII and S.VII.

**S.VII.** In fact, this rectangular space in size of 9.84×8.5 meters, is the main Eyvan of the monument, which located in the North of S.V and in the East of S. VI. Its entrance is placed in the Western side. There are some symmetric knobs in the last 2 meters of the Northern and Southern walls, like the Eyvan of S.II.

**S.VIII.** This square-shaped Space in the size of 6.40×6.25 meters, located in the North of S.VII and East of S.X. This Space has an arced gate in the Western side, which connects to S.X and an entrance with two buttresses in front of the arced gate. There is a division between Southern and

Northern parts in nomadic dwellings. There is no obvious function for this space. Maybe, it was one of the entrances of the monument or connected the inner parts together.

**S.IX.** This Space Located in the Northwest of excavation area, in the size of 7.5×7 meters. One of the most significant finds from this space, are pottery sherds, which some of them, have some inscriptions in their neck. There is no evidence from ceiling in this space and probably covered with organic materials such as wood or mud, according to its importance.

**S.X.** This Space Connects S.VI to the outer part, with a North-South direction in the North of excavation area. The gate of the S.VIII opens to this space. The length of this space is 9.45 meters in a North-South direction, but its width is different because of the return of wall. Its width to the middle (Southern part) is 1.165 cm and increases to 2.72 cm in the Northern part. The floor of this space made by mud/clay, which continued until.

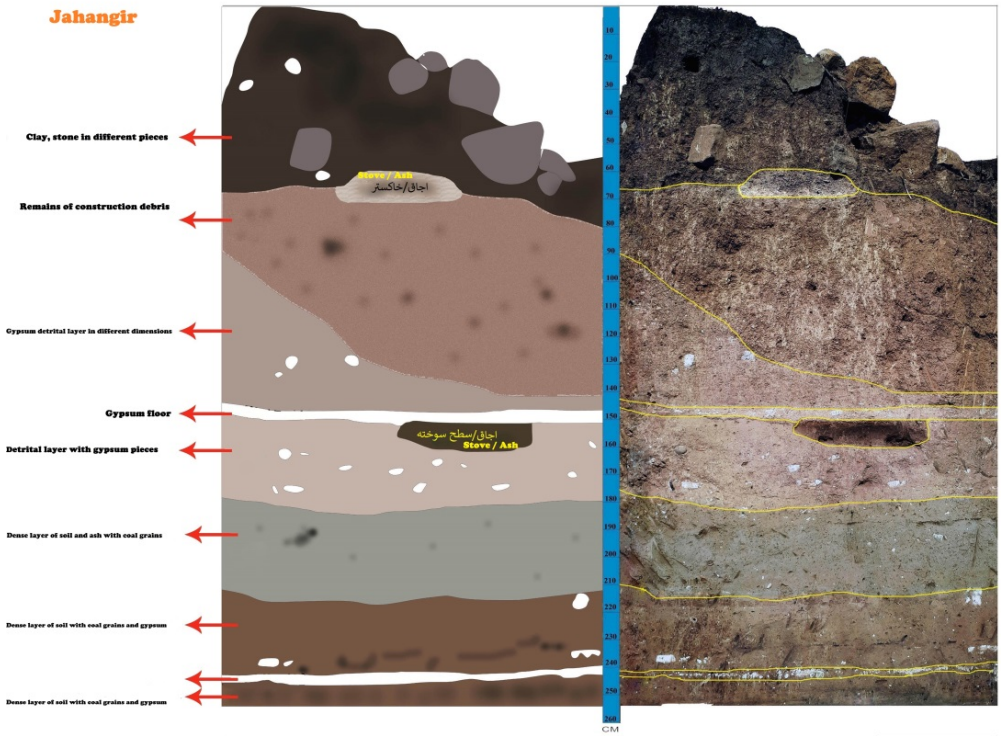
**S.XI.** This space in the size of 15×12.45 meters, in fact is the continue of the S.I which excavated in the third season, in order to revealing the connection between central mound and rectangular halls. The Western gate of rectangular and a round-shaped construction made by slabs and plaster in 2.45 meters distant from the West of the entrance have been found. In order to forming the round-shaped Space, especially in outer part, the molded stuccos with a curve into the inside. The diameter of this construction is between 2.30 to 2.45 meters and depth of 64 cm(s). In the Northeast of the floor, there is a round curved part, which is a closed Space and have not any pores, and covered by plaster/gypsum. In the absence of any cultural materials related to this structure, it is hard to recognize the function. There were even no traces of debris inside inner part and intentionally filled with a soft brown clay, and there were no trashes or ruin. This structure related to the second settlement plaster floor. In other words, the round-shaped structure with 45cm(s) height from the first settlement floor, had been built in later periods.Maybe a religious function could be imagined for this structure Or it can be a structure for fermenting materials for beer and wine production. The only similar and comparable specie is in Kish palace, which are round-shaped lavers with covered floor besides the vaulted room (Kroger 2017:410). this part of the site, leads us to the religious part. A single step without another surrounding construction, indicates that some parts of the monument have been ruined in Southern parts and further excavations will be revealed this issue.


**Figur 2. Plan of Central Mound of Jahangir before and after Archaeological Excavations (Author, 2020)**


**Figur 3. A Selection of Appeared Areas in Central Mound of Jahangir Site (Author, 2020)**

## 6.Test Trenches

In order to recognizing the various settlement floors and type of the foundation and construction, some test trenches in some rooms, and eventually the results show that the methods of building floors are different in different parts. There is also a section of the debris in the North of S.XI for identifying the sequences of settlements That 9 layers have been identified in the section of debris. Existence of two settlement plaster/gypsum floor is completely obvious in the section, and according to the other finds, there were two important settlements in the monument, and some of them related to the later settlements. The lowest layer is an impressed brown floor in the depth of -252 cm(s), which belonged to the Parthian period and Jahangir site have been built above in Sasanian period (Fig 4). So, The progressive trench of S.II in size of 1×1 meter, built in order to recognizing the grounds and probable floors, and distinguishing the end of the walls. The starting point of the excavation was in the depth of -120 cm(s) from the bench mark. The texture of soil was from clay and brown. The seeds of the plaster in the soil was concentrated somehow. There are also small layers and gray lenses, but there are not significant changes in the context and color of cultural materials. In the depth of -137 cm(s) there is an evidence of a settlement floor with the width of 10 cm(s). After that, in the depth of -183 cm(s), the cornice of the Northern wall in the width of 17 cm(s) have been appeared and ended in the depth of -267 cm(s). There is a sand layer in 11 cm(s) thickness exactly below the walls, which seems a kind of foundation or basement for building a wall. After this layer, there is a layer of an unmixed brown clay .




**Figur 4. A Section of Debris of Jahangir Site (Author, 2020)**

## 7.Stucco Decorations

Stuccos are the most prominent finds of the excavation, those are mostly used as coverage of walls and gates. The human, animals and botanical motifs in the frames with geometric decorated frames, show the influence of Sasanian common artistic tradition, while they kept their domestic identity. Botanical ornaments as the filler of empty Spaces and between the human and animal motifs in the margins. Elimination of the figurative human and animal elements those happened in the Early Islamic period, are sensible in the stuccos of Jahangir, with this different that they are only covered the animal motifs. Creating the motifs on stuccos with repeat and symmetrize and molding technique, which are simple methods, in order to prepare the friezes and decorated margins in architecture with the unmixed context and repeated motif (Ferrier, 1995: 72). The delicacy and accuracy have been applied in presenting the portraits, and transformation methods and reflective symmetric in spreading the motifs could be seen. Besides the various methods and motifs, some rules were common such as symmetry, repeat, bi-meaning motifs, and square-shaped frames (Mesbah Ardakani & Lezgi, 2008: 39). The motifs are included mythical concepts and presented an imaginal and decorative combination (MakiNejad, 2009: 12). Of course in some cases they only played the decorative and ceremonial role. Plaster/gypsum finds are divided into two groups of stuccos and plaster objects and each group divided into below groups:

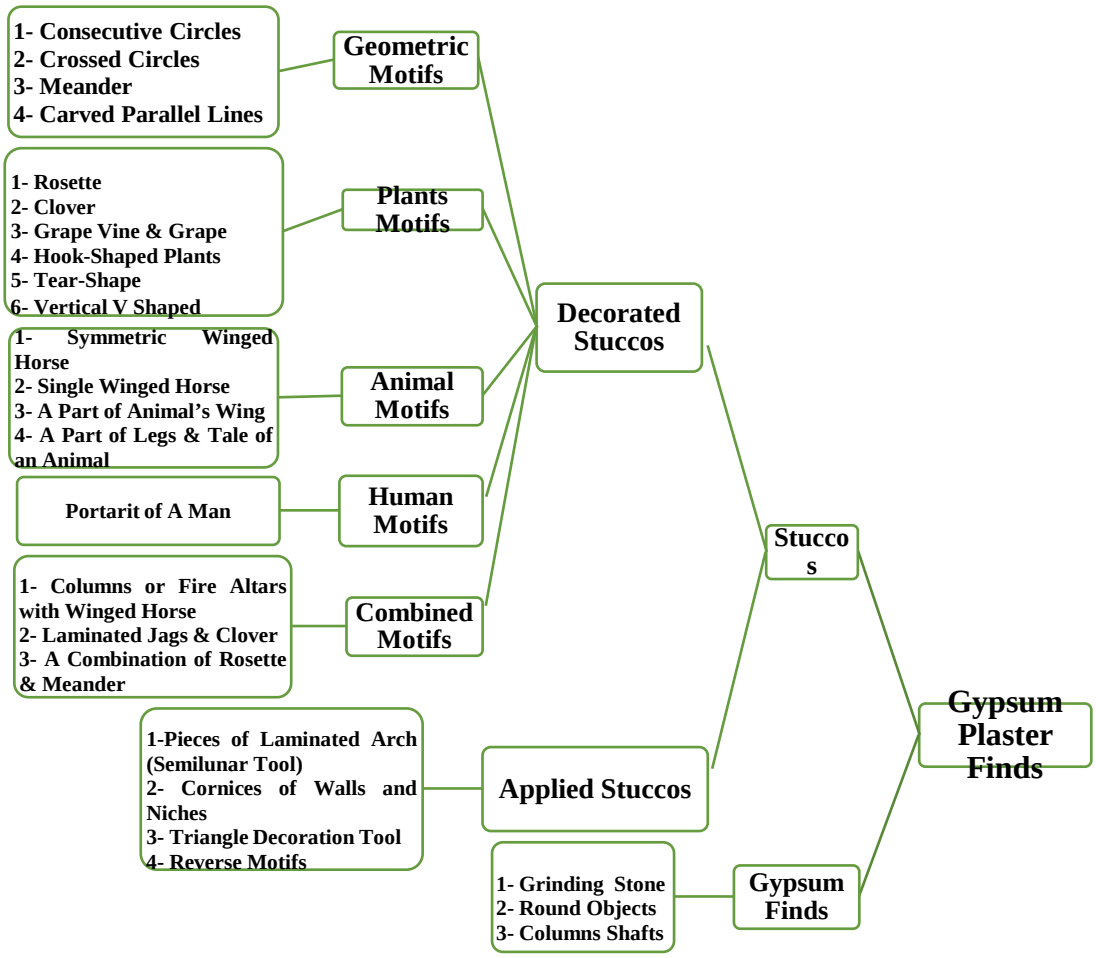



**Diagram 1. The Typology of Gypsum Plaster Finds**

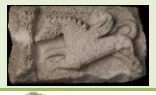
Between the found stuccos, there were friezes decorated with winged horse, those are covered in Islamic period. According to the importance of these friezes and for recognizing the sources of plaster, two sample of stuccos and their coverages have been analyzed in XRF laboratory of RCCCR.

**Table 1. Results of Elements Analysis of a Frieze Stucco with Symmetric Winged Horses Motif**

| Sample | NA2 O | Mgo | Al203 | Sio2 | P2o5 | S03 | CL | K20 | CaO | TiO2 | Cr203 | MnO | Fe203 | SrO | 0I |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | - | 0.14 | 0.27 | 1.2 | 0.06 | 39.1 | - | 0.01 | 37.5 | 0.02 | - | - | 0.20 | 0.018 | 21. 45 |
| 2 | - | 0.16 | 0.27 | 1.2 | 0.07 | 39.3 | - | 0.01 | 37.3 | 0.019 | - | - | 0.20 | 0.20 | 21. 40 |

The abundance of Sulfur and Calcium Oxide, shows the formation of Gyps or Plaster. Secondary minerals such as Magnesium, Aluminum, Cilice, Phosphor, Sulfur, Potassium, Titanium, Ferrous and Strontium Oxide indicate that two plaster have been supplied from the same resource (Madani, 2016). The used gypsum had been extracted from the gypsum mines near Sartang village, which are used in the past in the form of gypsum (Afshar Sistani, 1993: 489).

**Table 2. A Selection of Stuccos**

| Type of Material | Type of Decoration | Name of Motif | Area | Measure (cm) | | | | Photo |
|---|---|---|---|---|---|---|---|---|
| | | | | Diameter | Height | Width | Length | |
| Stucco | Animal | Symmetric Winged Horse | II | - | - | 45 | 83 |  |
| Stucco | Animal | Single Winged Horse | II | - | - | 15.5 | 29 |  |
| Stucco | Human | A Man | III | - | - | 30 | 53.5 |  |
| Stucco | Plants | Clover in the Jagged Frame | v | - | - | 2 | 24 |  |
| Stucco | Plants | Rosette | IV | - | - | 17 | 24.5 |  |

## 1.Potteries

Different forms of pottery such as jug, plates, cauldrons and jars in differents sizes (Fig 5). The results of Petrography analyze on some selected pottery sherds, show that the entire region composed of Lime sediments, sandstones, ciltstone, evapourating stones and related sediments. Some potteries are local, and some are not (Beheshti, 2017: 10). The paste colors are buff, orange-buff and grayish buff and their tempers are mineral. From decorations, they are plain and slipped and there are also some Sasanian ostrakas.

**Figur 5. A Selection Potteries from Jahangir Site (Author, 2020).**

**Table 3. The Attributes of the Selection of Potteries from Jahangir Site**

| No | Descriptions (Sherd Type, Technique, Quality, Temper, Decoration, Coating, Fire) | Period |
|---|---|---|
| 1 | Rim, Cauldron with Everted Rim, Buff, Wheel, Medium, Mineral, Carved Applique Pinched, Dense Slip, Well-ired | Sasanian |
| 2 | Rim, Cauldron with Everted Rim, Buff, Wheel, Medium, Mineral, Carved Pinched, Dense Slip, Well- Fired | Sasanian |
| 3 | Rim, Cauldron with Everted Rim, Buff, Wheel, Medium, Mineral, Carved, Dense Slip, Well-Fired | Sasanian |
| 4 | Rim, Cauldron with Everted Rim, Buff, Wheel, Medium, Mineral, Carved, Dense Slip, Well-Fired | Sasanian |
| 5 | Goblet with Bag-Shaped Everted Rim, Wheel, Medium, Mineral, Carved, Dense Slip, Well-Fired | Sasanian |
| 6 | Rim & Handle, Ewer, Buff, Wheel, Medium, Mineral, Applique, Dense Slip, Well-Fired | Sasanian |
| 7 | Rim with Bag-Shaped Everted Rim & Handle, Ewer, Buff, Wheel, Medium, Mineral, Applique, Dense Slip, Well-Fired | Sasanian |
| 8 | Bag-Shaped Everted Rim & Handle, Buff, Ewer, Wheel, Medium, Mineral, Carved, Dense Slip, Well-Fired | Sasanian |
| 9 | Ewer with Bag-Shaped Everted Rim, Buff, Wheel, Medium, Mineral, Geometric Carved, Dense Slip, Well-Fired | Sasanian |
| 10 | Ewer with Everted Rim, Buff, Wheel, Medium, Mineral, Carved?, Dense Slip, Well-Fired | Sasanian |
| 11 | Rim & Neck, Ewer, Buff, Wheel, Medium, Mineral, Geometric Carved, Dense Slip, Well-Fired | Sasanian |
| 12 | Ewer with Everted Rim & Two Ringed Handles, Buff, Wheel, Medium, Mineral, Geometric Carved, Dense Slip, Well-Fired | Sasanian |
| 13 | Handled Goblet, Buff, Wheel, Medium, Mineral, Plain, Dense Slip, Well-Fired | Sasanian |
| 14 | Handled Goblet, Buff, Wheel, Medium, Mineral, Parallel Carved, Dense Slip, Well-Fired | Sasanian |
| 15 | Bowl with Everted Rim, Buff, Wheel, Medium, Plain, Dense Slip, Well-Fired | Sasanian |
| 16 | Bowl with Short Upright Rim, Buff, Wheel, Medium, Mineral, Plain, Dense Slip, Well-Fired | Sasanian |
| 17 | Bowl with Everted Rim, Buff, Wheel, Medium, Mineral, Plain, Dense Slip, Well-Fired | Sasanian |
| 18 | Rim, Cauldron with Everted Rim, Buff, Wheel, Medium, Mineral, Carved Pinched, Dense Slip, Well-Fired | Sasanian |
| 19 | Rim, Cauldron with Everted Rim, Buff, Wheel, Medium, Mineral, Carved Pinched, Dense Slip, Well-Fired | Sasanian |
| 20 | Rim, Cauldron with Everted Rim, Buff, Wheel, Medium, Mineral, Carved Pinched, Dense Slip, Well-Fired | Sasanian |
| 21 | Rim, Cauldron with Everted Rim, Buff, Wheel, Medium, Mineral, Carved Pinched, Dense Slip, Well-Fired | Sasanian |

## 8.Glass Objects

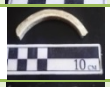
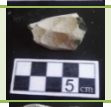
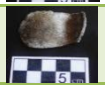
Many glass object pieces have been discovered that 7 pieces are prominent and delivered to Van de Graaff in method of micro-pixi. The glass objects included censers, base and body of the wares (Fig 6-4), cosmetics and jewelleries wares, those are cylinder-shaped or round and mostly plain. The color spectrum contains green, cream, yellow and streaks of red and brown. The identified elements are: (Na20), (Mgo), (Al2o3), (Sio2), (P2o), (So3), (Cl), (K2o), (Cao), (Tio2), (Mno), (Fe2o3) and (Cu2o). But the value and percentage weight are different in various samples. Glasses are contained from Silicon Oxide, Sodium and Calcium. According to the upper 2.5% of Sodium and Magnesium in samples, all of the glasses are from the Cilica-Soda-Lime type, those normally made from sand, flint stone or plants ashes as gassing Soda (Henderson, 2013). One of the most important attributes of the Sasanian glasses is the high percentage weight of Magnesium Oxide, and this analyzes show the 3.5%.Glasses have a low amount of Silicon Oxide and high amount of Sodium Oxide. Their resources are different from the samples found in Iraq. So that, the Silica which uses in Iran has more Aluminum and the proportion of the Magnesium Oxide to Calcium rather the found ones in Iraq. It could be resulted

that Soda and Silica basically supplied from the local resources. Also the examinations show that the Cupper and Ferrous have been applied as a pigment element, and Magnesium Oxide as the opposite function, and deliberately added to the paste (Agha Ali Gol et al, 2019: 51-98).

**Table 4. The Amounts of Existing Elements in Analyze Sample in order of Oxide and Weight Percentage**

| Sample | Main color | $Na_2O$ | MgO | $Al_2O_3$ | $SiO_2$ | $P_2O_5$ | $SO_3$ | Cl | $K_2O$ | CaO | $TiO_2$ | MnO | $Fe_2O_3$ | $Cu_2O$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E6 | Green | 13.96 | 4.64 | 4.00 | 66.71 | 0.88 | 0.30 | 0.77 | 2.06 | 5.45 | 0.12 | 0.04 | 1.07 | Nd |
| E10 | Green | 18.20 | 5.12 | 2.67 | 62.25 | 1.14 | 0.62 | 0.47 | 4.01 | 4.86 | 0.06 | 0.02 | 0.57 | Nd |
| E13 | Green | 16.62 | 4.52 | 3.34 | 62.96 | 1.10 | 0.60 | 0.54 | 3.61 | 4.87 | 0.08 | Nd | 0.86 | Nd |
| E14 | Green | 19.63 | 4.88 | 2.74 | 60.41 | 1.08 | 0.48 | 0.66 | 4.19 | 4.78 | 0.11 | 0.02 | 0.66 | 0.03 |
| E15 | Green | 15.26 | 4.74 | 4.64 | 64.22 | 0.89 | 0.38 | 0.64 | 2.53 | 5.33 | 0.16 | 0.03 | 1.09 | Nd |
| E17 | Green | 16.57 | 6.38 | 2.85 | 64.22 | 0.44 | 0.13 | 0.79 | 2.19 | 5.88 | 0.02 | 0.22 | 0.31 | Nd |
| E19 | Colorless | 15.73 | 5.18 | 3.59 | 60.71 | 0.59 | 0.37 | 0.68 | 5.13 | 6.20 | 0.06 | 0.33 | 0.90 | Nd |

**Table 5. Technical & Appearance Attributes of Glasses**

| No | Measure (mm) | Color | Form-Decoration | Photo |
|---|---|---|---|---|
| E6 | H: 35 , W: 29, D: 1-4 | Green | Base of A Round Base Cylinder Ware |  |
| E10 | H: 70, W: 7, D: 5 | Green | Flat Bangle, Plain |  |
| E13 | H: 50, D: 7 | Green | Round Bangle, Plain |  |
| E14 | H: 72, W: 7, D: 5 | Green | Flat Bangle, Plain |  |
| E15 | H: 38, W: 24, D: 2 | Green | A Piece of Ware, Hive Decoration |  |
| E17 | H: 79, W: 40, D: 5 | Sand Coating | Base, Hive Decoration |  |
| E19 | H: 47, W: 30, D: 2 | Sand Coating | A Part of Base, Plain |  |

## 9.Botanical Finds

Many botanical remains have been found during the excavation. The results of the Microscope studies on seeds remains and fruits, led to identifying various plants with different frequency. The diagram of Seeds shows that some cereals such as wheat and barley have the most frequency (Fig 7-6) and the other plants like agricultural and non-agricultural grains, fruits and wild plants have a low frequency. Also 25 pieces of wood charcoal belonged to the four types of trees, which have hydrophilic structure, wood-steeps and desert-steeps such as almonds, willow and chenopodiaceae have been identified those have various frequency (Shirazi, 2019).

## 10.Other Finds

Stone objects such as grindstone, quern, mortar (Figurs 6-5), weighing stone, whittler, metal objects like bracelet, rings (Figurs 6-3), earrings, silver coin of Shapur II (Fig 6-1) and bronz coin (Figurs 6-2) those are under laboratory studies.


**Figur 6. A Selection of Prominent Finds of Jahangir Site (Author, 2020)**

## 11.The Proposal of Function and Chronology

Jahangir site includes some rooms with courtyard and inner Space, and the designers were completely conscious of natural potentials and existing architecture elements, according to the map and predefined patterns. The method of construction and materials of Jahangir evoke all of the Sasanian architecture characteristics, while the local elements inside it. This Sasanian monument such as the other Sasanian buildings is without basement and the walls directly built on the ground and the ceiling are barrel vaults (Azad, 2013: 97). There is no special style about the residential are from the Sasanian period. Lack of expanded excavations, biodiversity and different traditions, make the residential architecture different (Mohammadi, 2011: 88). The movable and unmovable finds from Jahangir site from the abundancy of the rooms, could be compared with simultaneous sites in Ctesiphon such as Um-I Za'tar, Um-al Ma'arid (Azarnoush, 1994: 79) and Kish palace (Bier, 1993: 65). Jahangir site could be named by different titles such as palace, summer-palace, manor house, castle, royal villa and hunting-palace and so on. However, there were the accommodation of a high-ranking dignity, which have royal elements, even they are asymmetric. In the excavated houses of Ctesiphon also the inner and outer parts with asymmetric pattern (Tahmasebi, 2013: 162). There is another method for building palaces in the highlands. Because of lack of the flat platforms for making the courtyard, the designers followed the environmental situations and royal monuments have been built in small spaces (Kleiss, 1987: 236-237).

The plan of the Jahangir also obeyed the royal plans. According to the finds can be acclaimed that Jahangir have been planned for official demands and counted as a manor summer-palace with ceremonial-residential function. Dispreading the princes and aristocrats in different points of the government was in order to prevent the dissociation, present the power of kingdom in the other parts, build up various parts and maintain the peace with the different tribes are the reasons of construction of this type accommodations in different parts of the territory. Construction of this site is related to environmental landscape and can be known as a royal Sasanian village and accommodation. There were some small villages out of the big cities in Sasanian cities, which were a place for hunting and entertainment of the kings and rulers (Pigulveskaya, 1998: 290). Ariyohan was a part of Maspazan state and a promenade in Sasanian and Early Islamic periods. There are some reasons for abandoning this place such as political-social and environmental and also earthquakes.

According to the historical texts, two heavy earthquakes have been occurred in 3-4 centuries A.H. (Masoudi, 1965: 48 & Akbari, 2015: 65) which are conformed to the Seismotectonical and Morphotectonical studies. Most of the historical recorded earthquakes are bigger than 6 Richter, which are obvious as cracks, ruining the walls and tilt horizontal and vertical lines of the construction (Khosravi & Ghorbani, 2018). According to the dating examinations in Thermoluminescence method on two samples of bricks and three samples of potteries and comparison studies, all of them confirm the Late Sasanian for Jahangir (Bahrololoumi, 2018: 4-5). But finding a silver coin of Shapur II in the Recent Season of excavation Shows that habitation probably began in the middle Sasanian to the 4th centuries A.H. and then dwelled by nomads.

**Table 6. Results of Thermoluminescent Analyzes**

| N0 | Sample Type | Depth | Location | Percentage of Sodium Oxide (K20%) | The Concentration of Thorium (ppm) | The Concentration of Uranium (ppm) | Dating | Year |
|---|---|---|---|---|---|---|---|---|
| 1 | Pottery | -180 to -250 | Area 9 | 2.07 | 3.21 | 40.04 | 1468 ± 55 Y.A. | 551 ±606 496 |
| 2 | Pottery | -25 from Trench Surface | Burial 1 | 50.77 | 3.52 | 5.97 | 1470 ± 60 Y.A. | 549 ±609 489 |
| 3 | Pottery | Nomadic Settlements in Recent Years | S.II | 5.218 | 5.22 | 3.81 | 227 ± 23 Y.A. | 1792±181 5 1769 |
| 4 | Brick | - | S.IV | 1.96 | 2.27 | 4.94 | 1462 ± 74 Y.A. | 557±631 483 |
| 5 | Brick | - | S.V | 1.75 | 2.88 | 4.66 | 1450 ± 43 Y.A. | 569±612 526 |

## 12.Conclusion

At the end of three seasons of excavation in the central heap of Jahangir area, the plan of parts of a large building including 11 Spaces was revealed. Jahangir building includes a hall, Eyvan, portico, rooms, open Space (courtyard) and so on. In this building, gypsum arches and gypsum decorations have been used and its materials are rubble and semi-baked, semi-impressed gypsum mortar. Extensive use of plaster and brick and related arched methods is the heritage of the Sassanid period, which due to the importance of this building, like other palaces and aristocratic buildings of this period, is decorated with valuable decorative stucco. Existence of Kangir River, proximity and being on one of the important roads to Mesopotamia, climate and pristine and rich environment that could meet both nomadic and livestock communities as well as monogamous and inhabited communities can be of the most important reasons for the formation of the Jahangir area during different settlement periods. The area is north-south and the beginning of settlement in it dates back to the Neolithic and Chalcolithic period in its northern part. Then, during the Parthian period, it gained attention and then during the Sassanid period, a series of buildings were created, especially in its central part.

According to historical texts and seismotectonic and morphotectonic studies conducted in this area, in addition to socio-political and environmental factors, the occurrence of earthquakes in the region can also be one of the reasons for the decline of habitation in it. Dating texts on the artifacts all confirmed that the site dates to the late Sassanid period, but with the discovery of the silver coin of Shapur II in the recent season of the excavation, it shows that habitation probably began in the middle of the Sassanid period and continued up to the fourth century AH. And has ever since been used by nomads. In this building, three phases of architecture can be distinguished. In the first phase,

the building was built on a large Parthian area with carcasses of semi-baked stone and semi-baked gypsum mortar. In the second phase, other structures were added to the building and possibly repairs were made and in the third phase, the building was abandoned and used by nomads. Darkness, cold and lack of air flow in rooms without windows are the architectural problems of this type of building and their most important architectural features are asymmetric geometric structure, internal and external separation, great spatial diversity, religious part and the important role of Eyvan in the spatial organization of the complex. Jahangir's architectural texture has been without a niche and ordinary everyday objects in terms of function. Its geometry designers have committed themself to using features and variables such as natural features, ecology and even belief in construction and decoration. Its various works of art are influenced by the common art of the Sassanid era with their independent local identity. According to the findings, it can be claimed that Jahangir was designed for formal needs and can be considered among the types of palaces of this period as a noble summer residence with ceremonial-residential function. The construction of such a building can be interpreted in relation to the natural landscape around and it can be considered as a esidence of Sassanid aristocrats. The material and immaterial artifacts found in Jahangir, especially in terms of the number of rooms, are comparable to other contemporary buildings in Ctesiphon, Iraq, such as Umm al-Za'tar, Umm al-Ma'ārid, and Kish Palace. The process of building small aristocratic palaces continues even until the Umayyad period, when the architectural style of Qasr Kharaneh and Al-Hair is an example of such palaces. By better understanding the quality and different areas of Sassanid habitation of which Jahangir is an example, we can have a better evaluation of the works of this period.

**Refrences**

Afshar Sistani. I. 1993. Ilam and Its Civilization. Tehran: Publication of the Ministry of Culture & Islamic Guidance, [in Persian].

Agha Ali Gol. D. Sodaei, B. Khosravi, L & Karimi, M. 2019. A Survey study of glass artifacts of the Sassanid period; Case Study: Glass artifacts from Gonbad Jahāngir & Gowrieh Tepe via Micro-PIXE method. Bāstān-Sanji. 5(2):47-70, [in Persian].

Akbari. M. 2015. Study and analysis of the position of Masabazān and Mehrjānqazaq provinces of Ilam during the Abbasid period. Farhang-i Ilām.16(46/47):55-74, [in Persian].

Azad. M. 2013. Continuation of Sassanid religious architecture in the historical mosque of Damghan: a comparative analysis of the fire temple of Hesar Tepe and the historical mosque of Damghan. Sofeh. 23(2):85-104,[in Persian].

Azarnoush. M. 1994. The Sasanian Manor House at Hajiabad, Iran. Monografie di Mesopotamia III, Florence and Casa Edit rice Le Lettere,.

Bahroloumi. F. 2018. Report on the results of dating 5 samples of bricks and pottery from the excavation of Jahangir in Ilam province. Tehran: Research Institute for Conservation and Restoration. Cultural Heritage Research Institute.[in Persian].

Beheshti. I. 2017. Report of Microscopic study of twenty pottery samples of Gonbad-I Jahangir (Ilam province). Tehran: Research Institute for Conservation and Restoration. Cultural Heritage Research Institute, [in Persian].

Bier. L. 1993. The Sasanian Palaces and Their Influence in Early Islam. ArsOrientalis. Vol. 23:57-66.

Ferrier. W.R. 1995. The Arts of Persia. Parviz Marzban (trns.). Tehran: Farzan Publication,[in Persian].

Genito. B. 1997. The Sasanian Manor House at Hajjabad. A review Article. Annali dell'Istituto Orientale. Napoli:537-548.

Ghouchani. A. 1994. The realm of the rule of Abu al-Najm Badr Ibn al-Hasnawiyyah based on coins. Journal of Archeology & History. 8(2):46-65, [in Persian].
Henderson. J. 2013. Ancient glass: an interdisciplinary exploration. Cambridge University Press.
IbnKhordādbeh, A.U. 1991. Al-Masālek va Al-Mamālek, H. Qarehchanlu (trns.). Tehran: Maharat Publications, [in Persian].
Kambakhsh Fard. S. 1989. Darreh Shahr. in the book Cities of Iran. vol. 3. Mohammad Yousef Kiani (ed.). Tehran: Jahad-i Daneshgahi:107-150, [in Persian].
Khosravi. L & Ghorbani, E. 2018. Geological, hydrological, geomorphological, seismotectonic and morphotectonic study of Jahangir ancient zone along the Kangir River, Eyvan County, Ilam province. Iran Quarterly. 3(1):75-93, [in Persian].
Khosravi. L. 2017. Archaeological stratigraphy Report In Jahangir site. Tehran: Archaeological Research Institute Documentation Center,[in Persian].
Kleiss. W. 1987. Palaces. Alireza Mahini (trns.). in the book of Iranian architecture in the Islamic era. Mohammad Yousef Kiani (ed.). Tehran: Jahad Daneshgahi:236-273,[in Persian].
Kroger. J. 2017. Sassanid stucco. Faramarz Najd Samiei (trns.). Tehran: Samt, [in Persian].
Madani. F. 2016. Report of XRF test results on two stucco samples obtained from excavation of Jahangir site in Ilam province. Tehran: Research Institute for Conservation and Restoration. Cultural Heritage Research Institute, [in Persian].
Makin Nejad. M. 2009. History of Iranian Art in the Islamic Period: Architectural Decorations. Tehran: Samt, [in Persian].
Masoudi. A. H. 1965. Al-Tanbiyyah wa al-Ashraf. Leiden,[in Persian].
Mazaheri. Kh. 2010. Ancient Texts and the Māsbazān State in the Early Islamic Centuries. Proceedings of the First Congress in Honor of Imamzadeh Ali Saleh (AS). Ilam: Ilam Azad University Press, [in Persian].
Mesbah Ardakani. N. a. M. Lezgi. S. 2008. Study of the effect of imapact of motifs of the Sassanid stucco on those of Islamic period. Honar-hāye Tajasomi Naghshmāye. 1(2):37-50, [in Persian].
Mirdrikvandi. M. Haj Ebrahim Zargar. A & Heidari Bani, D. 2015. Identification of ancient mortars of Khorramabad Shapoori Bridge and feasibility of using them in bridge restoration through laboratory methods. Journal of Restoration and Iranian architecture (restoration of historical and cultural works and textures). 5(9):45-58, [in Persian].
Mohammadi. M. 2011. Study of typology, elements and components of Iranian Architecture in the Sassanid period. Nāme-ye Bāstanshenāsi. 1(1):83-104, [in Persian].
Moradi. E. 2007. Kangir Dam Archaeological Survey Report. Tehran: Archaeological Research Institute Documentation Center,[in Persian].
Pigulveskaya. N. 1998. Iranian Cities in the Parthian and Sassanid Era, translated by Enayatollah Reza. Tehran: Elmi-Farhangi, [in Persian].
Pirani. B. 2001. Survey report of Eyvān County in Ilam province, Ilam: Cultural Heritage Documentation center of Ilam province, [in Persian].
Rawlinson. H. 1983. Rawlinson's travelogue (crossing Zohab to Khuzestan. Eskander Amanollahi Baharvand (trns.). Tehran:Agah, [in Persian].
Reuther. O. 1938. Sasanian Architecture. In: A survey of Persian Art. Vol.5. Ed. Arthur Upham Pope. Oxford University:493-578.
Rutter. O. 2008. History of Architecture in the Sassanid Period. in the study of Iranian art. by Arthur Pope and Phyllis Ackerman. Tehran. Elmi-Farhangi:7-639.
Shirazi. Z. 2019. Report on Plant Archaeological Studies of Gonbad Jahangir. Zahedan: Shahr-I Sukhta World Base,[in Persian].

Stark. F. 1979. The Valleys of the Assassins: And Other Persian Travels. Ali Mohammad Saki (trns.). 2nd Edition. Tehran: Scientific/Cultural Publications, [in Persian].

Tahmasebi. E. 2013. Comparative analysis of Sasanian Palaces and Royal residences. Pazhohesh-ha-ye Bastanshenasi Iran. 4(3):153-168, [in Persian].

Vanden Berghe. L. 1971. Archaeological Exploration in Persepolis Plain of Lorestan. Iranian Journal of Archeology and Arts. No. 6. Tehran: Ministry of Culture and Arts Publications:32-37.

# مروری کلی بر نتایج سه فصل کاوش در محوطه جهانگیر، ایلام

**لیلا خسروی***
**استادیار گروه باستان‌شناسی، پژوهشگاه باستان‌شناسی، تهران، ایران.**
**تاریخ دریافت: ۱۳۹۹/۰۵/۰۷؛ تاریخ پذیرش: ۱۳۹۹/۱۲/۲۰**

## چکیده

جهانگیر یکی از محوطه‌های شاخص ساسانی در غرب ایران است که به دنبال مسئله قرارگیری در تراز سیلابی سدکنگیر ایوان، فرصت کاوش در آن فراهم شد.کمبود اطلاعات ما درباره چگونگی ساخت، عرصه‌های سکونتی، علل شکل‌گیری، افول و تاریخ‌گذاری این نوع سازه‌ها، تعیین نوع معیشت، بررسی صنایع و هنرهای مختلف گچ‌بری، شیشه‌گری، فلزگری، سفال‌گری، مشخص نمودن شاخصه‌ها، تزئینات معماری و مواد و مصالح، نوع کاربری و عوامل مؤثر در سبک‌های هنری مختلف آن، از سؤالات و اهداف کاوش بود که جهت پاسخ‌گویی به آن‌ها از روش تحقیق توصیفی- تحلیلی، با بهره‌گیری از متون تاریخی و کاوش استفاده شد. در انتهای سه فصل کاوش در پشته مرکزی، پلان بخش‌هایی از یک بنای بزرگ شامل ۱۱ فضا نمایان شد. بخش‌های پدیدار شده متشکل از دو ایوان و تعدادی اتاق، با حیاط و فضای داخلی بوده که مصالح آن از قلوه‌سنگ و ملات گچ نیم‌پخته نیم‌کوب و پوشش سقف‌ها از آجر است. ساختار هندسی نامتقارن، جدایی بخش اندرونی و بیرونی، تنوع فضایی فراوان و نقش مهم ایوان در سازمان فضایی مجموعه، از مهم‌ترین ویژگی‌های سه فاز معماری قابل تشخیص در بنا است. آثار هنری گوناگون آن، متأثر از هنر رایج دوران ساسانی با هویت مستقل محلی خود هستند. با توجه یافته‌ها می‌توان ادعا کردکه جهانگیر برای نیازهای رسمی طراحی شده است. ساخت چنین بنایی در ارتباط با چشم انداز طبیعی پیرامون آن قابل تفسیر است و می‌تواند در میان انواع کاخ‌های این دوران به عنوان یک دسکره و اقامتگاه ییلاقی اعیانی باکارکرد تشریفاتی/مسکونی مطرح باشد.

**واژه‌های کلیدی:** ساسانی، جهانگیر، رود کنگیر، ایوان، ایلام.

*رایانامه‌ی نویسنده مسئول: L.khosravi1357@gmail.com

Journal of Archaeological Studies

Vol 12. Is 4 - Serial Number 24. Winter 2021

Formerly "the Journal of the Faculty of Literature and Humanities"... University of Tehran

# The Chinese Ceramics Unearthed from the Site of Jahan Nama Palace

**Hakimeh Razeghi Mansor**[1] & **Ran Zhang** [2] & **Bagher Soljo**[3] & **Binbin Chen**[4] &**Guangyao Wang**[5]

(95-116)

## Abstract

As an important type of ancient artwork, the Chinese blue and white porcelain entered Iran through the artists and merchants during the Safavid era (1501–1736 AD), and it strongly influenced the Islamic ceramic industry at that time. Chinese blue and white porcelain wares can be considered as the most decorative ceramic art. Bowls and plates with a floral rim and teacups were exported from China to the overseas markets. The influence of this art and its motifs can be seen in the examples obtained from the excavations at Jahan Nama Palace in the old city of Farahabad. Not only the Chinese ceramic finds from this excavation show the long-distance trade from China, the artistic imitation in the porcelain manufacturing and porcelain also can be seen in different areas of Iran. According to the historical sources and accounts, the Farahabad historical complex is a part of the city with the same name, which was built on Tahan village by the order of Shah Abbas I, and the early history of this city dates to 1612 AD in an area of about 40 hectares along the Tajan River and close to the littoral area of the Caspian Sea. The purpose of this research is to study and discuss the blue and white porcelain of Jahan Nama Palace and the extensive trade and port status of the important city of Farahabad in the Safavid era.

**Keywords**: Mazandaran, Farahabad, Jahan Nama, blue and white porcelain.

Received: 30 December, 2020; Accepted: 10 March, 2021

10.22059/jarcs.2021.323643.143019

Print ISSN: 2676-4288- Online ISSN: 2251-9297

https://jarcs.ut.ac.ir

1. Corresponding Author Email: Razeghi.mansoor2021@gmail.com. Research Base of the historical city of Farahabad, Sari, Ministry of Cultural Heritage, Handicrafts and Tourism Organization of Iran.

2 .Department of Archaeology, Durham University, Science Site, South Road, Durham, UK, DH1 3LE.

3. Director of Farahabad Cultural Heritage Center, General Directorate of Cultural Heritage, Tourism and Handicrafts of Mazandaan. Mazandaran. Iran..

4. Institute of Archaeology, The Palace Museum, No. 4, Jingshan Front Street, Dongcheng District, Beijing, China.

5. Department of Archaeology, Durham University, Science Site, South Road, Durham, UK, DH1 3LE.

## 1. Introduction

For both archaeologists and museum curators, the Persian blue and white ceramics are considered as one of the finest artworks of the Safavid period. Not only did it strongly link to the trade of East Indian Company at the contemporary period, it was also impacted by the Chinese blue and white porcelain imports. The development in commercial and cultural relations between Iran and China led to a great evolution of the art of pottery of the Islamic ceramic industries. The impact of this well-growing relationship on the art of painting and pottery can be clearly demonstrated both directly and indirectly by the remains and artworks from the industrial and artistic centres of cities such as Isfahan, Kerman, Tabriz and Mashhad. Economic and cultural exchanges with foreign countries also had a huge effect on the art of pottery during this period. For example, the Safavid kings were interested in a type of Irani local pottery that was directly influenced by the ceramic imports from the Ming China (1368–1644 AD). This is known well that Chinese ceramics was imported in large quantities from the Far East, and the Iranian potters imitated Chinese ceramics and produced similar Irani local pottery (Mohammadifar, 2008: 95).

While the art of Ming China was featured by the fine porcelains and the high-quality decorative calligraphic paintings, this was also the golden age of Islamic blue and white ceramics. During the Qing period (1644–1912), a political continuation of the Ming period, the ceramic industry still flourished. The visual features of Islamic blue and white ceramics continued to develop until the early Eighteenth century AD (Nafisi, 2005: 11), and was as influential as the art of pottery in the Safavid period.

Shah Abbas (1571-1629 AD), the fifth Safavid Shah of Iran, gathered art masters in his great empire, settled them around Isfahan, established numerous royal industrial workshops and aided small craftsmen and private industries. When he heard from the merchants and representatives of the Dutch East India Company (the VOC), which had a fortress on Hormuz island in the Persian Gulf where they were busy trading Chinese porcelain, he invited Chinese merchants to send their beautiful porcelain to Iran by land for re-exporting to Europe. Therefore, there was strong competition in ceramic trade between Iranian ceramic industries and the Dutch East India company.

Shah Abbas invited some 300 Chinese potters to Iran to train the local potters in the porcelain industry (Woolf, 1993: 134). He played an important role in promoting ceramic industries of Iran. With his ingenuity and tact, he created a great change in the Iranian art and pottery industry, and generated economic growth in this period. Since the reign of Shah Abbas, namely the period of the Ming China, blue and white porcelain had become the most important type of trade ceramics in the commercial market (Sarmadi & Masoumeh, 2010: 114; Zhang, 2016: 295-297). With important cities such as Ashraf, Sari, Amol, Natel, Barforosh and the newly built city of Farahabad of the Caspian Sea, Mazandaran also became an important centre in commercial, artistic and cultural exchanges. Palatial buildings were built in this city, and their inhabitants were the major consumers of the luxurious commodities and artworks.

Although the historical background of the Persian blue and white ceramics had been well-studied, the chronological difficulties of them are problematic for archaeologists and historians. Different types of chronological classifications are introduced from 1950s to 2000s, and sometimes the identification and dating of Persian blue and white porcelain were mainly based on the Chinese ceramic imports (c.f. Lane 1957; Crowe 2003). Rare archaeological evidence could be able to directly investigate the technical and

cultural communications between ancient Iran and China. This paper, therefore, aims to provide an initial understanding on the ceramic finds from Jahan Nama Palace of Farahabad. By no means this paper is going to provide a conclusive and all-inclusive chronological development of Persian blue and white ceramics, it only hoped that the well-dated Chinese ceramic finds could enhance the understanding of all artefacts unearthed from the site, and give some parallelled evidence for supporting the further investigations of the Persian blue and white ceramics.

In 2007 and 2011, due to the importance of the old city of Farahabad, surface surveys and excavations were carried out and, as a result, parts of architecture and related decorations, including bedding and tiling, as well as beautiful pottery and porcelain from the Safavid period were found. It appears that the artistic style of the Isfahan school was quite evident in these works (Razeghi and Solhjoo, 1399: 8). The evidence unearthed from the archaeological excavations of Jahan Nama Palace in Farahabad clearly shows the cultural exchange between Iran and China. On one hand, porcelain finds and Irani local pottery yielded from surface surveys and excavations of the Jahan Nama Palace show the decorative and ceramic firing technical influences from Chinese ceramics; on the other hand, the Irani local made pottery utensils surpassed Chinese ceramics in terms of ceramic shapes, patterns, variety of functions, colours and decorations. They had therefore been exported to other countries in a large quantity. This intensified the artistic independence of artists and potters in the ceramic centres of Iran during the Safavi period. In the excavations of the old city of Farahabad and Jahan Nama Palace, a large number of pieces of blue and white porcelain and Irani local pottery were found. Selected examples of these are introduced in this article, and they are categorised as remarkable pottery and top findings. By examining the historical accounts, the authors will attempt to outline and analyse the role of the motifs used in this porcelain, and discuss their roles in the cultural exchange between Iran and China.

## 2. A brief history of Jahan Nama Palace

A number of European tourists and businessmen have seen the Jahan Nama Palace up close and described it in their travelogues. In his travelogue, Stoddart describes this palace in the period of prosperity as follows:

It was a great and pleasant place, the gate is very simple and has nothing interesting (Figure 1). After going through a yard full of greenery that was planted with trees on both sides of the road, we reached another gate that was as simple as the first one. After passing through it, we reached a very pleasant garden full of orange and orange trees. There are several beautiful pools in the middle of this garden and in the middle of the pool there was a room made of beams and wood and it was the place for the king. On one side of the garden is his harem which has beautiful and interesting rooms. The sizes of these rooms are exactly the same. Their floors are furnished with Turkish carpets. The walls and tops of the rooms are gilded and painted with photos of men and women and painted traditionally in gold and other colours. Some rooms are filled with interesting porcelains for drinking coffee and wine while having fun among his wives (Sardnis, 1960: 197).

In 1844 AD, Holmes visited Jahan Nama Palace in Farahabad and described its increasingly desolate state as follows:

This palace has a central hall. And in the corners of this palace, there are rooms with smaller rooms inside them. On the lower and upper floors, there are many rooms and some of which are categorized. This categorization shows the main purpose of this

palace, which is for different people, as inhabitants say, this special palace has been for women in the harem. All these rooms are decorated with different types of arts. Not only painting such as flower, bush and imaginary decorations had been seen, but also the calligraphic arts including contrary to Muslims' belief, pillars and ledges in form of sculptures. But they have been damaged so much by the wind and rain that they can be hardly discerned. From what I could see, I came to a conclusion that these subjects or painters must have been Chinese because instead of stiff drawing seen in Iranian paintings, these paintings were very soft and fluid (Sotoudeh, 1985: J4, 583).

Jahan Nama Palace has become famous for its architectural grandeur and integration of Eastern and Western art, which is in the form of paintings on walls.

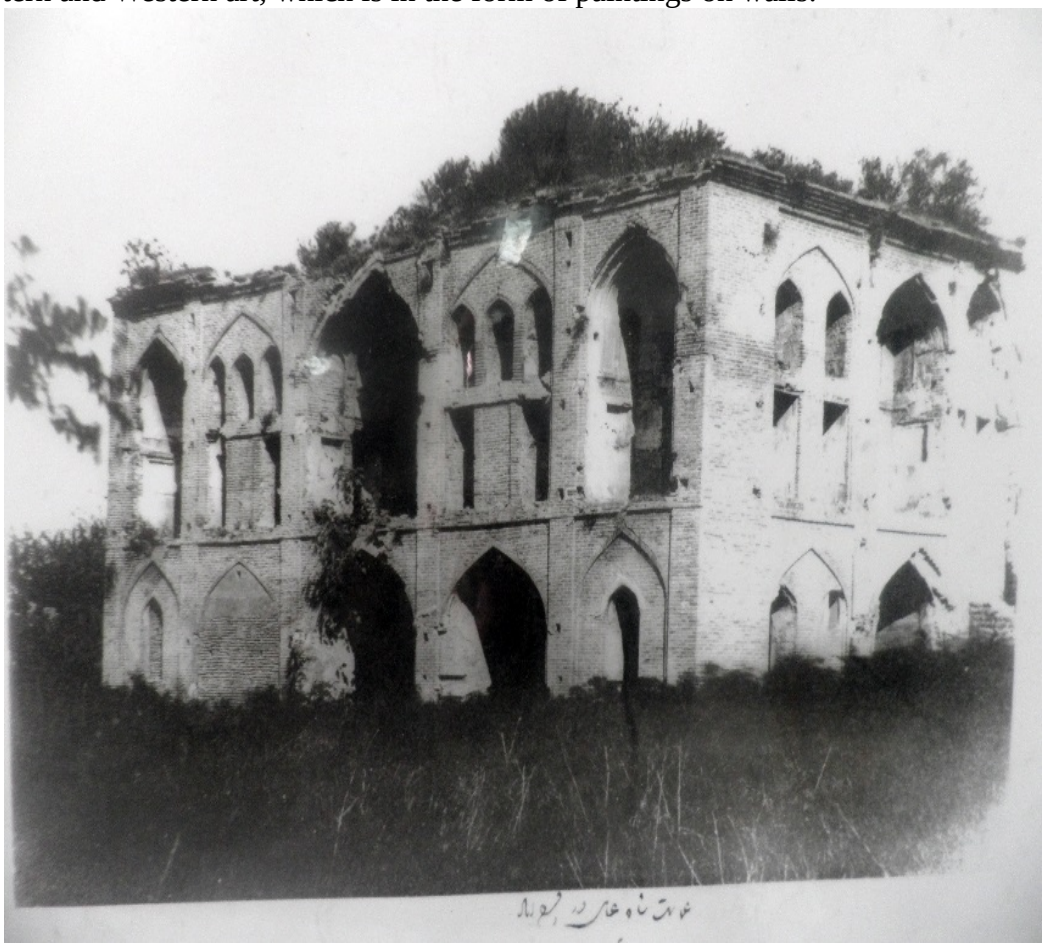


**Figure 1: Remains of Jahan Nama Palace from Nasreddin Shah's album (Archival source of historical city, Farahabad)**

## 3. Investigations at the site of Jahan Nama: Preliminary results from the auger-hole survey:

In order to gain some preliminary understanding, 24 auger-holes are drilled in 2007 in different parts of the site of Jahan Nama, including the main walls of the palace, architectural remains and the brick pavement area (Figures 2 & 3). Along the bank of Tajan River of the City, a part of remains of the main wall is survived, and it is the most important architectural components of the site.

**Figure 2: An Overview of the Site of Jahan Nama**

**Figure 3: A Part of the Survived Wall Remains of the Jahan Nama Palace**

Several insights are gained from the post-archaeological processes of the auger-holes survey. A significant number of the broken sherds consisting of varied types of glazed potteries, such as plain pottery, polychrome pottery and blue and white pottery tiles with geometric pattern, are obtained. This preliminary discovery delivers some key clues to re-construct the details of these buildings of the site, including the architectural decorations, potteries for display, the plasterwork and colourful tiles. All of these details can be well identified to the arts that were created by Safavid artists. It is also interesting to see that the pottery findings and tiles from the survey were all in the imitations of the contemporary Chinese and Ottoman ceramics.

It can be seen that this survey is against the well-known historical backdrop of the Old City of Farahabad, which describes that the site of Jahan Nama Palace is with a historical and cultural greatness of the architectural remains, including bridges, mosques, bathrooms and so forth (Figure 4).

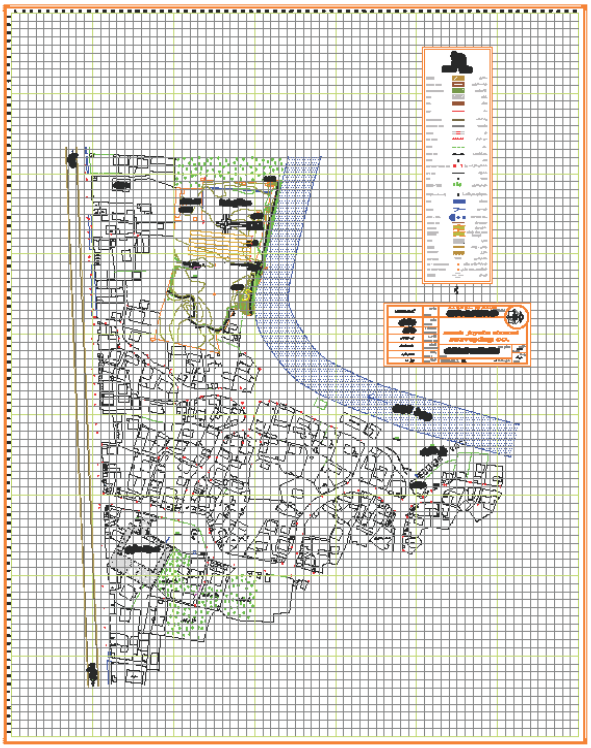


**Figure 4: Location of the Site of Jahan Nama in Farahabad**

Therefore this survey can suggest that the economic and cultural exchange activities of the City of Farahabad are well demonstrated by the survey findings including these Safavid period dated ceramic imports, the local potteries and decorations from the gardens and buildings of the Jahan Nama Palace. The economic and cultural environment of the city was clearly comparable to the other cities at Safavid period.

## 4. Excavation of Jahan Nama Palace in 2011

In order to further explore the Jahan Nama Palace's history, culture and art, excavations are conducted to reveal different areas of the site. The architectural style, decorative arts of the palace are therefore being able to be confirmed to the Safavid period, by recording and identifying the arrangements of the palace architectural structures. According to the results of the excavation, brick-floors, a prey-niche, and an unidentified structure are yielded (Figure X4).

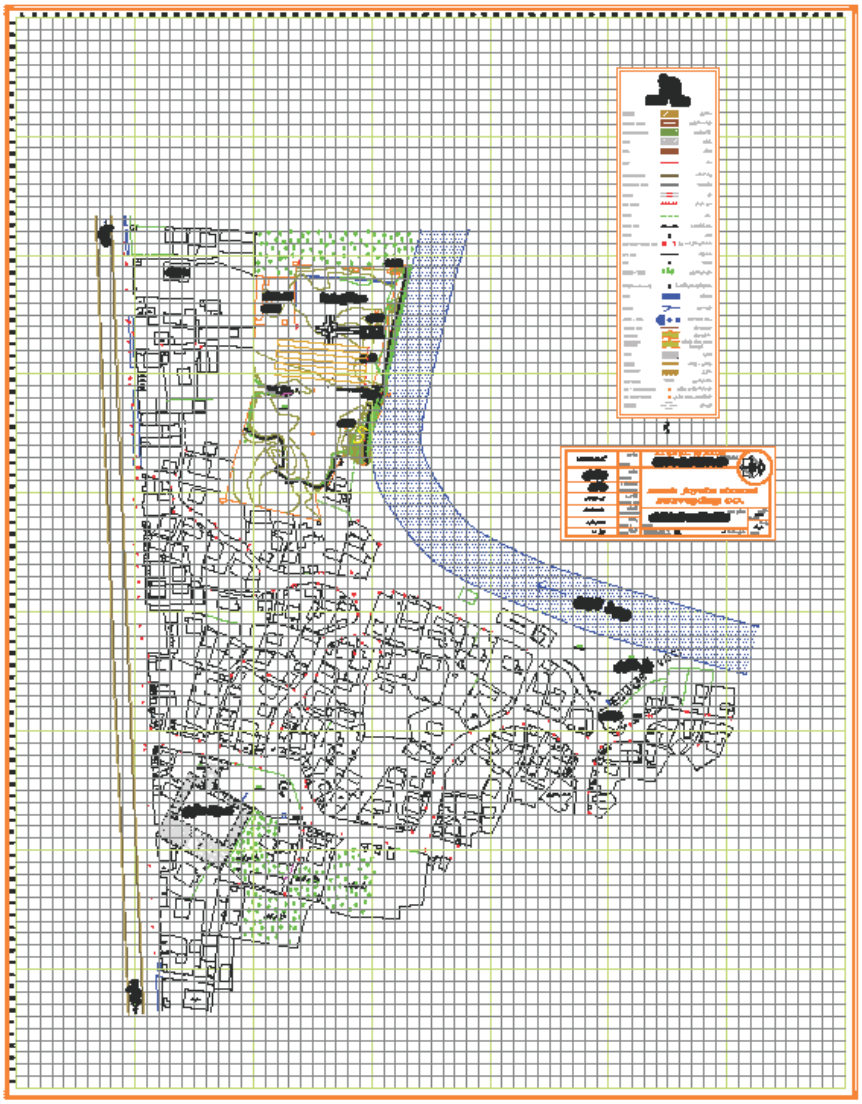


**Figure 5: Plan of the Excavated Area of the Jahan Nama site**

A summarised description of the excavated structures is outlined below: (1) one of the key featured patterns of floor arrangement is the herringbone pattern that laid out in the middle and was outlined by the running bond pattern (Figure 6); (2) the most complete prey niche is excavated. It was built with bricks and bonded by sandy lime mortar [25 height × 25 width × 5 depth] (Figure 7); (3) an important but unidentified platform structure with a height of 46 cm is discovered, and on which the blue and white pottery tiles dated to the Safavid period are decorated (Figures 8 & 9).

**Figure 6: Floor Brick Arrangement Pattern of the Site Jahan Nama**


**Figure 7: A Well Preserved and Completed Prey Niche**


**Figure 8: Platform with Tile Decorations**

**Figure 9: Glazed Pottery Tiles**

More importantly, the purpose of this archaeological excavation is to investigate the cultural and historical artifacts in the past, because a great number of archaeological findings are obtained, including local produced glazed potteries, imported ceramics from China and so forth (Figure 10 and see below). The Chinese ceramic imports will be introduced and discussed in the following sections.

**Figure 10: Local produced pottery wares**

## 5. Chinese porcelain unearthed from Jahan Nama Palace

With the economic and diplomatic development between Ming China and the Safavid Iran, especially during the reign of Shah Abbas, large quantities of blue and white porcelain earthenware entered Iran and were traded in a number of newly built small and large cities. Based on the archaeological evidence, one of cities dated to this period, Farahabad in Sari, was involved in the contact with Ming and Qing China regarding ceramic imports. Following the surveys and excavations carried out at the site of Jahan Nama Palace, many finds of blue and white porcelain are yielded. The Irani local pottery that were strongly influenced by Chinese art were found as well. The trade, art and economy of the city developed considerably.

Seven assemblages of broken Chinese porcelain wares from the excavation of the site of Jahan Nama are classified into four groups. They are listed below with an introductory description and archaeological dating evidence. The description aims to introduce the bodies, glazes, shapes, decorations or patterns and marks of these wares, and the archaeological dating evidence is used in the discussion of the possible dating ranges:

**A. Group 1**

**Name: Blue and white porcelain bowls**

**Possible dating: From the mid-sixteenth century to the early seventeenth century AD**

**Place of manufacture: Jingdezhen, Jiangxi Province, China**

**Shape: Plates**

**Description**

In the grounds of Jahan Nama Palace, a very thin and fine blue and white porcelain sherd was discovered. This sherd has a pure white, fully fused porcelain body with a smooth shiny glaze with a fine surface (Figure 11). It has a floral rim and on the thin and flattened edge, the square-shaped panels, called *kaiguang* (开光) in Chinese, can be seen. The inside of the panels is decorated with repeating geometric patterns and a simplified sea wave. There is also a plant motif that has an Iranian identity, which is the chrysanthemum, with pointed petals of dark blue colour and abundant leaves. The prints are all enclosed within blue lines. Another Iranian motif is the Shah-Abbasi flower, which is used inside the dish. On the back of the dish, it can be seen that branches and leaves of trees are painted in cobalt blue. This type is usually called the Kraak porcelain, which comes from the blue and white porcelain wares that were found in the cargo of the Portuguese merchant ship called Kraken (carracks) in Dutch. This ship was captured in the seventeenth century by sailors from Holland and Zeeland (Van der Pijl-Ketel, 1982: 46).

## 6. Dating evidence and discussion

In the middle of the Ming dynasty, the city of Jingdezhen in Jiangxi Province in southern China became the capital of Chinese porcelain production (cf. Jiang, 1991: 47; BJDXKGWBXY *et al*., 2009; Chen, 1973; GGBWY *et al*., 2007). It has been found that the Kraak style was manufactured at kiln sites in the Guanyin Ge and Luoma Qiao site of Jingdezhen (BJDXKGWBXY *et al*., 2009: 57, Qin, Gao & Weng, 2020: 90-92).

Van der Pijl-Ketel discussed the porcelain found in the Witte Leeuw shipwreck (dated to 1613 AD) and stated that the panel patterns first occurred in around 1595 AD and were popular until at least 1613 AD ((McElney, 1979, p. 50; Van Der Pijl-Ketel, 1982).

Similar dating can be confirmed by the kiln sites of Luoma Qiao, and it is suggested that a small amount of the Kraak type was produced between the 1620s and 1644 AD, namely the late Ming dynasty (Qin, Gao & Weng, 2020). A very similar type can be observed within the Bennebroek shipwreck assemblage dated to 1713 (Klose, 2000), and it is suggested that this type lasted until the early eighteenth century.

The ceramic technique exchange between Iran and China can be seen in the gradual integration of designs on porcelain pottery in Iranian production centres. The pottery found in the grounds of Jahan Nama Palace is similar to the ware discovered in the excavations of Abbas Abad Garden in Behshahr (Figure 12). By covering the pottery interior with patterns, the Iranian potter has attempted to avoid from the influence of Chinese art. The application of the Chinese herbal and geometric designs became less popular. In general, according to the surface surveys and excavations carried out in Jahan Nama Palace, we encounter an abundance of porcelain and Irani local pottery. By using the pattern and theme of Chinese motifs on Chinese ceramic imports, and trying to represent designs and decorations, the Iranian potters of this period gradually formed their own different styles on ceramic making and decorations. Some of these Iranian porcelain dishes were manufactured so carefully and delicately. By naked-eye examination it is hard to distinguish the Irani made and Chinese porcelains. However, the technique of Irani local pottery shows a clear difference from the Chinese porcelain wares, in terms of the clay, the form of wares and the designs. Iranian local pottery was manufactured in important kilns of Mashhad, Kerman and Tabriz and exported to different parts of the Safavid territory.

**Figure 11: Pottery piece No.14 (Archival source of historical city, Farahabad)**

**Figure 12: Blue and white pottery in Behshahr and Abbas Abad (Archival source of Abbas Abad Garden)**

**B. Group 2**

**Name: Blue and white porcelain bowls**

**Possible dating: From the mid-seventeenth century to the early eighteenth century AD**

**Place of manufacture: Jingdezhen, Jiangxi Province, China**

**Shape: Bowl**

**Description**

In this group, there are two types of Chinese blue and white porcelain ware. The first type consists of a couple of blue and white porcelain sherds, which can be reconstructed into a bowl. They have a fine body fabric: white, dense, hard and thin. No inclusion can be on the body. The glaze is transparent with a very slight bluish-white tone. The glaze is very thin and evenly applied on the body. The cobalt blue pigment pattern is finely outlined and filled with lighter blue pigment. The pattern is decorated with the so-called 'Eight Daoist Immortals Crossing the Sea (八仙过海)'. In terms of the painting styles of these figures, it can be seen that they all have thin eyes and a smiling face, and some of them have a beard and are dressed in billowing robes to indicate that they are men. Some of them are holding Chinese musical instruments in their hands. All these features are rooted in the Chinese traditional religion and customs (Figure 13). A mark with a double-circled outline on the base of this porcelain bowl has the content of *Daming Chenghua Nian Zhi* (大明成化年制) (Figure 14), which can be translated as 'manufactured during the reign of Chenghua Emperor of the Great Ming Dynasty'.

The second type is a small assemblage of blue and white porcelain sherds. It can be reconstructed into a bowl, and the fabric and firing techniques are very similar to the former type. On the inside of the bowl, a pattern of an immortal is outlined with a double circle. This immortal has small almond-shaped eyes, a beard and a headband. In his right hand, there is a gourd-shaped container that is probably used to carry liquids. He is dressed in a billowing robe and is in a cloud. The main motif on the outside of the ware has been lost, and there is only the remains of an incomplete sea wave pattern, on

which some incomplete figures can be seen. This could indicate that the outside motif is probably linked to the theme of the immortals crossing the sea. On the base, a Chinese mark is positioned within a double-lined rectangular frame. The content is written in cobalt blue, showing six Chinese characters of *Daming Chenghua Nian Zhi*, the same as the mark on the other type (Figure 15).

**7. Dating evidence and discussion**

This decorative motif of 'Eight Immortals Crossing the Sea' is a simplified version of the similar sense on the imperial porcelain wares dated to the early Qing dynasty, although its first application on Chinese ceramics was dated from the fourteenth century (Harrison-Hall & Krahl, 2009) and, like the cobalt blue decoration, might start from the late Ming dynasty (late sixteenth century to early seventeenth century AD) (Xiong, 2003: 68). Developed from the Taoist tales dated around the middle of the seventeenth century, this Taoist tale was finally formed and developed into the sense of the eight immortals attending the Peach Festival of the Queen Mother of the West. Similar bowls with the imperial qualities testify to the great developments of this story on porcelain products during the reigns of Kangxi and Yongzheng (1661–1735 AD). As one of the earliest examples, a bowl with a similar but exquisitely painted motif housed in the Art Museum of Tsinghua University, Beijing, is dated to the Kangxi period. Moreover, a very similar but also exquisitely painted motif on an imperial blue and white porcelain bowl housed in the Gardiner Museum in Canada (object number: G99.19.18) is dated to the Yongzheng period (Figure 16).

In terms of the mark on the base of these two bowls, Chenghua is the reign name of the eighth emperor of the Ming dynasty named Zhu Jianshen, who ruled Ming China from 1465 to 1487. However, it is well known that the Chenghua reign mark on Chinese blue and white porcelain was also used by the later emperors, including the Wanli Emperor in the Ming dynasty (1620-1573) and the Kangxi Emperor and Yongzheng Emperor in the Qing dynasty. According to the mark on this bowl, this is a clearly a later imitated mark rather than the mark that can be dated to the Chenghua reign of the Ming dynasty. In summary, according the motif, manufacturing techniques and marks on the bases, this group of sherds can be safely dated from the mid-seventeenth century to the early eighteenth century AD.

**Figure 13: Pottery piece No.1 (Archival source of historical city, Farahabad)**

**Figure 14: Pottery piece No.1 (Archival source of historical city, Farahabad)**

**Figure 15: Pottery piece No.3 (Archival source of historical city, Farahabad)**

**Figure 16: An imperial blue and white porcelain bowl with the exquisitely painted motif of 'Eight Immortals Crossing the Sea', Gardiner Museum, Canada (object number: G99.19.18) (Do we need to consider the copyright? If so we should delete this figure).**

## C. Group 3

**Name: The Batavia porcelain wares**

**Possible dating: From the mid-seventeenth century to the early eighteenth century AD**

**Place of manufacture: Jingdezhen, Jiangxi Province, China**

**Shape: Cups and bowls**

**Description**

In this group, there are two types of the so-called Batavia porcelain, which are featured with a brown glaze coated on the outside of wares. The first type refers to a cup that was discovered on the site of Farahabad. It has a very fine, white, dense, thin and hard body fabric. The brown glaze on the outside is not evenly applied. This cup has a straight rim, a round body and a short, thin foot ring. On the base, there is a mark with four Chinese characters of Cheng Hua Nian Zhi, meaning 'Manufactured in the reign of Chenghua' (Figure 17). The second type is a bowl unearthed from the excavation of Jahan Nama Palace. It has the same glaze and fabric as the other type, but on the brown glaze, there is a white-colour decoration in the form of a tree-like pattern (Figure 18).

**9. Dating evidence and discussion**

As mentioned above, this group is known as the Batavia porcelain (Figure 19). This type might have been in production from the late Ming dynasty, and its circulation in the Indian Ocean trade might have lasted until the middle Qing dynasty. This means that the earliest example of the Batavia type can be dated to the late seventeenth century, though most examples are from the eighteenth century. Similar examples were found in a number of late seventeenth century wrecks, such as the Wanjiao No. 1 (cf. Zhang, 2008), Vung Tau (Jörg, 2001) and Osterland (Klose, 2000). The type appears to have become more common in the eighteenth century, and the material from this later phase includes examples with reserved panels in white on the exterior combined with an underglaze painted cobalt blue on white or polychrome enamel painted decoration. This is because that the Batavia porcelain appears to have been produced particularly for the export market to Europe and is especially associated with the Dutch East India Company operating via Batavia (Jakarta). There are many finds also coming from the middle-eighteenth century examples, such as the Cà Mau wreck (1723–1735) (Chien, 2002), the Gotheborg wreck (1745) ((Wästfelt, Gyllensvärd, & Weibull, 1991) and the Geldermalsen wreck (1752) (Jörg, 1986). Further examples are known from the Gulf area from al-Ain (Power, 2015: 12–14, 19 'BATAVIA'), Al-Hamara of Ras al-Khaimah in the UAE (Priestman and Zhang, 2021, forthcoming), Freiha in Qatar (Bystron, 2015: 106–07, Fig. 8.21), and six coastal sites in southern Iran (Priestman, 2005: 313, pl. 268). Furthermore, similar to the marks of group one, this group has the mark read as Cheng Hua Nian Zhi. However, according to its writing, this mark is dated from the late seventeenth century to the mid-eighteenth century rather than the reign of Chenghua Emperor of the Ming dynasty.

The use of the porcelain motifs and the pottery transparency on both interior and exterior surfaces imitates the images on wares with slight changes in the production technique. The use of these materials to make Iranian porcelain vessels and Irani local pottery started in centres such as Kerman, Mashhad and Tabriz. Imitation of human, animal, plant and abstract motifs and natural elements was gradually found on Iranian porcelain products and Irani local pottery. It should be noted that the form and shapes of pottery produced in these centres are varied, including hollow plates, plates with smooth edges, cups, porcelain bowls and wares with a floral rim.

**Figure 17: Pottery piece No.2 (Archival source of historical city, Farahabad)**


**Figure 18: Pottery piece No.6 (Archival source of historical city, Farahabad).**

**Picture 19: The famous Batavia bowl (Li, 2012: 29)**

## D. Group 4

**Name: Monochrome blue porcelain**

**Possible dating: From the mid-seventeenth to the early eighteenth-century AD**

**Place of manufacture: Jingdezhen, Jiangxi Province, China**

**Shape: Cups and bowls**

**10. Description**

In this group, these two samples have the same dimension and size, as well as the

same form and characteristics. They have a pure, refined white porcelain body with no voids or inclusions and a glassy matrix. The outside of these two wares is coated with pure monochrome cobalt blue. The white and tree-like overglaze decoration can also be seen. On the bases of these two bowls, there are two similar marks within a square frame. The content of the marks is fu, meaning auspicious luck (Figure 20).

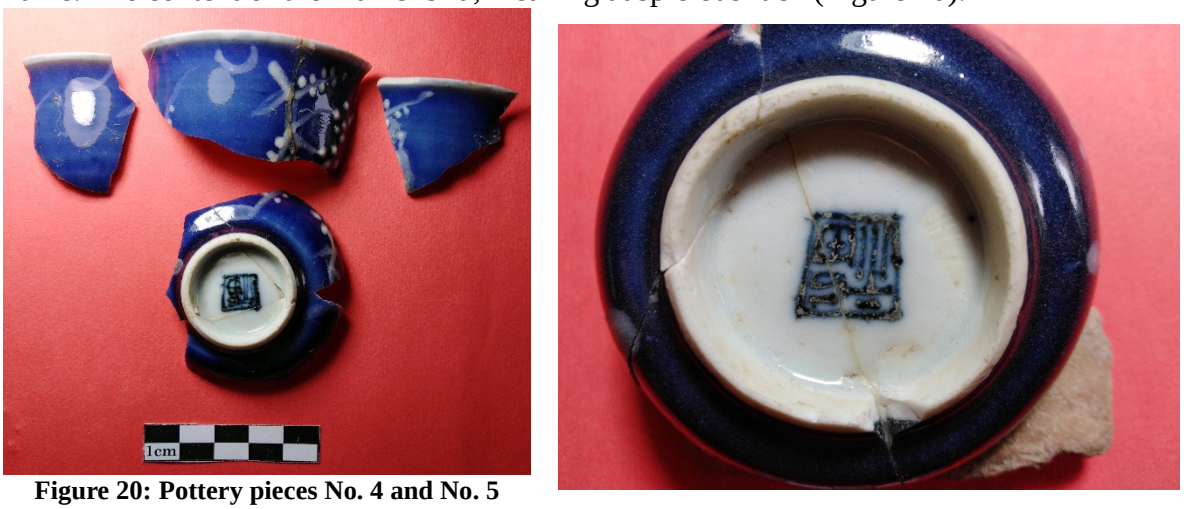



**Figure 20: Pottery pieces No. 4 and No. 5**
**(Archival source of historical city, Farahabad)**

## 11. Dating evidence and discussion

The class appears to be closely related stylistically and in terms of the dating of production to Batavia ware (group 3, see above). Most vessels are small cups and bowls that can be monochrome cobalt blue on the exterior or have reserved panels of white and further decoration added with enamel or gilding. Similar examples have been recovered from the middle-eighteenth century Umm Lajj wreck in the central northern Red Sea off the coast of Saudi Arabia (Visconti, 2018: 105, Fig. 6). On the Griffin shipwreck, monochrome blue porcelain vases had been found (Goddio *et al.*, 1999: 266-69, pls XLI and XLII).

## 12. Discussion: economic and cultural exchanges of ceramics in the Safavid era Iran and Ming-Qing China

The large-scale economic, cultural and technical exchanges between ancient Iran and China could trace back to Abbasid Caliphate /China's Tang dynasty (c.f. Lin and Zhang 2018; Northedge and Kennet 1994; Qin 2013; Wen 2018; Zhang 2013). During the ninth and eleventh centuries AD, the cities of Neishabour and Samarkand, where the caravan merchants were vastly travelling around, gained a privileged position for the trading between ancient Iran and China. Due to this long-distance trade and cultural exchanges, the influence of Chinese ceramics on Iranian pottery could be firstly seen. The decorations of the Irani local potteries were often in a concentrated manner and on a cream-coloured background with brown, yellow, brick-red and green splashes, sometimes along with the incised decorations.

In the sixteenth century AD (tenth century AH), the Safavid kings were interested in a type of Irani local pottery that was created directly under the influence of the Ming dynasty. Large quantities of this pottery were imported into Iran. Iranian potters imitated the Chinese imports and produced local types of Irani ceramics. Rather than only Chinese ceramics, a rich diversity of ceramic imports, such as Ottoman Iznik pottery in Anatolia and pottery from Europe dated to the middle and late eighteenth century, were

traded to the Near East in a large quantity. The coarse quality Irani local pottery trade was therefore in decline during the Zand dynasty and the Qajar dynasty (Fehérvári, 1973: 135). Among the pottery products in Kerman and Mashhad, so-called blue and white pottery with the imitation patterns of Chinese motifs could be seen in abundance. More importantly, however, it should be noted that during the Safavid period these Irani local potteries were not merely the imitations of Chinese ceramic imports, because they had a richer, finer, and more diversified decorations and patterns than the high-fired Chinese imports (Frieh, 1374: 267).

In the study of blue and white pottery in the Safavid period, some differences can be seen between Mashhad and Kerman, two ceramic industrial centres. In particular the Mashhad's potteries were more influenced by Chinese motifs, and two shades of blue colour were used in their patterns. Plates, bowls and dishes were copied from similar Chinese ceramic imports. In their decorations, Chinese landscape motifs and Buddhist symbols were vastly imitated (Fahuri, 1388: 75). Conversely, it is believed that the result of this Iranian artists' experiment in the Safavid period led to the production of blue and white pottery and it can be well distinguished from Chinese blue and white porcelain. This is known well that many Chinese porcelain items were imported into Iran during the Safavid period. It is very clear that the Iranian potters were familiar with Chinese designs and decorations, and they adapted some decorative designs from Chinese porcelains. However, the firing techniques of Iranian blue and white porcelain were very different from Chinese ceramics (Karimi & Mohammad, 1986: 63). The pottery kilns of Kerman and Mashhad in the seventeenth century AD did have the design of porcelain on dishes that was impacted by the transitional period dated Ming Chinese ceramics, and in many cases, the six Chinese characters as the marks on wares were replaced by some un-readable signs (Figure 21). Otherwise, at Kerman and Mashhad kilns they also produced new types of pottery with Iranian motifs (Salehi *et al.*, 2013: 8).

**Figure 21: Iranni pottery sherds with un-readable signs on the base to imitate Chinese marks (The Williamson Collection of the Survey in south Iran, housed at Durham University, UK)**

The evidence gained from archaeological excavations at Jahan Nama Palace in Farahabad clearly shows the cultural exchange in this city during the Safavid period. In particular, the Chinese porcelain wares, including the Chinese ceramics dated to the late Ming dynasty and early Qing dynasty, are parallel to the Timurid and Safavid periods in Iran. All these wares were made at the kiln sites of Jingdezhen in China, and the Dutch East India Company based in Indonesia had the monopoly for exporting them from China. This shows that Iran had extensive trade with the Far East and that Farahabad was involved in these extensive relations in Safavid.

Otherwise, these Irani local pottery discovered from the site of Jahan Nama was highly likely manufactured in the important Iranian pottery centres in Safavid period, such as Mashhad, Kerman, Tabriz, and even Farahabad. It can be found out that not only did some of these potteries entirely imitate Chinese ceramics, and are strongly impacted by Chinese art and designs, but also in many cases they could surpass the Chinese ceramic imports in terms of appearance, pattern designs, vessel shapes, colours and decorations. Sometimes, it is very difficult to distinguish the local Irani potteries from Chinese ceramic imports. This may show the artistic independence of Safavid artists in these ceramic production centres. Otherwise, the coarse quality local potteries also had been found from the site. By retaining the basis of making blue and white pottery, the Irani local artists also tried to include creativity, innovation and motifs in the utensils in a traditional way.

## 13. Conclusion

In conclusion, it can therefore be suggested that on the basis of these art works, Farahabad was a centre for importing artistic and luxury products from the 17$^{th}$ century AD. Research on artefacts from archaeological excavations reveals the dark corners of the city and proves the descriptions and definitions of this city and Jahan Nama Palace in the travelogues. Due to the great interests of Shah Abbas I, the architectural decoration arts and the exchanges of technologies in the pottery industries between Iran and China were experiencing a great development in the old city of Farahabad.

More than the archaeological contributions as mentioned above, the importance and value of the survey and excavation of the site of Jahan Nama clearly not only deliver a better environment for the further research and conservational works, it is also hoped that these works could offer a good demonstrate of tourist facility, as a museum site, for the archaeological education to public.

## References

BJDXKGWBXY. JXSWWKGYJS. & JDZSTCKGYJS. 2009. Brief Report of the Excavation of the Guanyinge Kiln at Jingdezhen of Jiangxi [江西景德镇观音阁明代窑址发掘简报]. Wenwu [文物], 12, 39-58.

Blair. S. S. & Bloom. J. M. 1995. The art and architecture of Islam 1250-1800: Yale University Press.

Bystron. A. M. 2015. Qatar Islamic Archaeology and Heritage Project: University of Copenhagen and Qatar Museums.

Chen. Q. 1973. Jiangxi Leping Mingdai QInghua Yaozhi Diaocha [江西乐平明代青花窑址调查]. Wenwu [文物], 3, 46-48.

Chien. N. D. 2002. Tau Co Ca Mau. The Ca Mau Shipwreck 1723–1735. Ha Noi: The National Museum of Vietnamese History.

Crown. Y. 2003. Persia and China: Safavid Blue and White Ceramics in the V&A Museum

1501-1738:Thames & Hudson.
Fahruri. G. 2009. Pottery of the Islamic World in the Tariq Rajab Museum in Kuwait, translated by Mahnaz Shayestehfar, Tehran : Institute of Islamic Art Studies, First Edition.
Frieh. R.W. 1995. Iranian Arts. Translated by Parviz Marzban. Tehran: Bright Day Research Publishing House.
Fehérvári. G. 1973. Islamic pottery: A comprehensive study based on the Barlow collection: Faber and Faber.
GGBWY. JXSWWKGYJS. & JDZSTCKGYJS. 2007. 江西景德镇丽阳碓臼山元代窑址发掘简报 A Brief Excavation Report on the Kiln of the Yuan Dynasty Located in Duijiushan,Jingdezhen City,Jiangxi Province. Wenwu, 3, 9-16.
Goddio. F. de Saint Michel. E. J. G. & Juncqua-Naveau, D. 1999. Griffin: on the route of an Indiaman: Periplus Publ.
Harrison-Hall. J. & Krahl. R. 2009. Chinese Ceramics: Highlights of the Sir Percival David Collection: London: British Museum Press.
Jiang. J. 1991. Brief Report of the Survey of Ceramic Industries at Jingdezhen [景德镇窑业遗存考察要述]. Relics from Jiangxi [江西文物], 3, 44-79.
Jörg. C. J. 1986. The Geldermalsen: history and porcelain: Kemper Pub.
Jörg, C. J. A. 2001. Porcelain from the Vung Tau Wreck: The Hallstrom Excavation: Sun Tree Pub.
Karimi. F. & Mohammad. Y. K. 1986. Islamic pottery at the Islamic period. Tehran: Archaeological Center of Iran.
Klose. J. 2000. Oriental ceramics retrieved from three Dutch East India Company ships wrecked off the coast of southern Africa; the Oosterland (1697), Bennebroek (1713) and Brederode (1785). Transactions of the Oriental Ceramic Society (1999-2000), 64, 63-81.
Lane, A. (1957). later Islamic pottery: Faber and Faber, London.
Li. B. 2012. Batavia' Style Chinese Export Porcelain: Origins, Recent Finds, and Historic Significance. In S. A. Buslig, N. D. Chién, & B. Li (Eds.), The Cà Mau Shipwreck Porcelain (1723–1735) (Vol. 2, pp. 23-30). Budapest: Magyar Indokína Társaság Kft.
Lin. M. & Zhang. R. 2018. The Silk Road: Intercontinental Trade and the Tang Empire. In L. C. Niziolek (Ed.), China: Visions through the Ages. Chicago: Chicago University Press.
McElney. B. S. 1979. The Blue and White Wares (post 15th century). South East Asian and Chinese Trade Pottery.
Mohammadifar. Y. & Belmaki. B. 2008. The Art of Pottery in the Safavid Period, A Study of Art Techniques and Patterns. Fine Arts, Architecture and Urban Planning, 35, 93-102.
Nafisi. N. D. 2005. The Presence of Nature in the Blue and White Porcelain Collection of Sheikh Safiuddin Astana in Ardabil. Tehran: Academy of Arts, First Edition.
Northedge. A. & Kennet. D. 1994. The Samarra Horizon. Cobalt and Lustre: The first centuries of Islamic pottery. The Nasser D. Khalili Collection of Islamic Art, 9, 21-35.
Power. T. 2015. A Ceramic Chronology for Late Islamic al-Ain, UAE. Journal of Islamic Material Culture, 2(1): 1-33.
Priestman. S. 2005. Settlement & ceramics in Southern Iran: An analysis of the Sasanian & Islamic periods in the Williamson collection. Durham University,
Priestman. S. & Zhang. R. 2021. East Asian Ceramic Imports from the Site of Jazirat al-Hamra, Internal Report of Jazirat al-Hamra Project, Ras al-Khaimah, UAE, 2018-2020. Retrieved from forthcoming.
Qin. D. 2013. China's First Ceramic Export Trade Peak-Focus on the Volume and Charactics of Ancient Chinese Ceramics Foreign Trade in the 9th and 10th Century [中国古代陶瓷外销的第一个高峰—9~ 10 世纪陶瓷外销的规模和特点]. Journal of the Palace Museum [故宫博物院院刊](5), 32-49.

Qin. D. Gao. X. & Weng. Y. 2020. Research Outcomes and Relative Questions of the Remains of Luoma Qiao Kiln Site of Ming and Qing Dynasty [落马桥窑址明清遗存发掘的收获及相关问题]. Wenwu [文物], 11: 48, 79-96.

Rezeghi. M. H. & Solhjoo. B. 2020. The Effect of Isfahan School Painting on Human Designs of Tiles of Jahand Nama Farahabad Palace. Quarterly Journal of Mazandaran History and Archaeology, First Year No. 1, 36-45.

Salehi. K. Hossein. S. & Majid. M. Z. 2013. Study of the production process of blue and white pottery in Iran during Islamic period. Semiyearly Art Research. Isfahan Art University. Third year. No. 5. 1-14.

Sardnis. R. 1960. Stodart Travelogue, translated by Ahmad Tavakoli. Farhang-e Iran Zamin, 8, 161-220.

Sarmadi. N. & Masoumeh. T. B. 2010. Reflections on blue and white pottery of China and Iran in the Ming and Safavid eras. Quarterly Motif. third year. Vol.6. 111-120.

Sotoudeh. M. 1985. From Astara to Astarabad (Vol. 4, Part 1). Tehran: Ministry of Culture and Islamic Guidance.

Van Der Pijl-Ketel. C. 1982. The Ceramic Load of the Witte Leeuw 1613. Amsterdam: Rijks Museum.

Visconti. C. 2018. A Cargo of Chinese Porcelain from a Shipwreck in the Red Sea.

Wästfelt, B., Gyllensvärd, B., & Weibull, J. (1991). Porcelain from the East Indiaman Götheborg: Wiken.

Wen. W. 2018. Chinese Ceramics in the Islamic World from the 8th to 10th Centuries CE. PhD thesis, University of Oxford, Unpublished Thesis.

Woolf. H. A. 1993. Ancient Iranian Handicrafts, Translated by Sirus Ebrahimzadeh. In: Tehran.

Xiong. L. & Xiong. H. 2003. Canon of Porcelain Decoration Through the Ages of China [中国历代瓷器装饰大典]. Shanghai: Shanghai Wenhua Chubanshe.

Zhang. B. 2008. Complete Collection of Ceramic art Unearthed in China-Vol. of Fujian [中国出土瓷器全集 - 福建卷]. Beijing: Kexue Chubanshe.

Zhang. R. (2013). 唐末印度洋大规模陶瓷贸易的兴盛——兼论邢窑与越窑在陶瓷贸易中的地位 A Sudden Rise of Chinese Ceramic Trade in the Late Tang Period. In ZGGTCYJH (Ed.), 中国古陶瓷研究 Zhongguo Gutaoci Yanjiu (pp. 409-422). Beijing: Gugong Chubanshe.

Zhang. R. 2016. An Exploratory Quantitative Archaeological Analysis and the Classification of Chinese Ceramics Trade in the Western Indian Ocean, AD c. 800- 1500. PhD Thesis, Durham University.

# چینی‌های آبی و سفید شهر قدیم فرح‌آباد

**حکیمه رازقی منصور***
استاد گروه باستان‌شناسی، وزارت میراث فرهنگی ، صنایع دستی و گردشگری ایران.
**ران ژانگ**
استاد گروه باستان‌شناسی، دانشگاه دررهام، دورهام، انگلستان.
**باقر صلجو**
مدیر پایگاه میراث فرهنگی فرح‌آباد، اداره کل میراث فرهنگی، گردشگری و صنایع دستی مازندران. مازندران. ایران.
**بینبین چن**
استاد گروه باستان‌شناسی، موسسه باستان‌شناسی، دونگچنگ، چین.
**گوان جیو وانگ**
استاد گروه باستان‌شناسی، دانشگاه دررهام، دورهام، انگلستان.
**تاریخ دریافت: ۱۳۹۹/۰۷/۲۱؛ تاریخ پذیرش: ۱۳۹۹/۱۲/۲۰**

## چکیده

شاه عباس اول(۱۵۸۷-۱۶۲۸میلادی) پس از تسلط بر مازندران به سال‌های ۱۵۹۶ میلادی همواره این منطقه را به عنوان استراحتگاه سلطنتی در نظر داشت. این منطقه در سال ۱۵۹۹ میلادی با فرمانی به ایالت خاصه بدل شده و به عنوان ملک شخصی شاه تحت نظرحکومت مرکزی درآمد. با دستور شاه عباس به سال۱۶۱۲ میلادی دهکده طاهان در نقطه تلاقی رودخانه تجن و دریای مازندران به شهری بزرگ و بندرگاهی مهم بدل شده و فرح‌آباد نام گرفت. از جمله سیاحان خارجی که در این دوره از شهر دیدن کردند، پیترو دلاواله ایتالیایی می‌باشدکه در سال۱۶۲۸ میلادی در زمان سلطنت شاه عباس صفوی به ایران آمد و مدتی در فرح آباد اقامت گزید، وی در سفرنامهٔ خود، فرح آباد را مانند رم و قسطنطنیه بسیار وسیع حتی از آنها بزرگ‌تر و از آن به‌عنوان یکی از شهرهای مهم بندری مازندران نام می‌برد و به بناهای ساخته شده در این شهر و هم‌چنین کاخ جهان نما نیزاشاره کرده است. در مازندران عصر صفوی در کنار شهرهای مهمی همچون اشرف، ساری، آمل، ناتل و بارفروش، شهر تازه شکل‌گرفته فرح‌آباد در کنار دریای مازندران نیز به مرکز مهمی در داد و ستد تجاری، هنری و فرهنگی تبدیل شده و بناهای فاخری در آن ساخته شده‌بود که ساکنان آن مصرف‌کننده عمده آثار هنری زمان خود بودند.
محوطه کاخ جهان‌نما یکی از این بخش‌های مهم مجموعه تاریخی فرح آباد بود که در سال‌های۲۰۰۷و۲۰۱۱ مورد مطالعه و بررسی قرار گرفت و طی گمانه زنی و کاوش در آن، بخش‌هایی از معماری و تزیینات وابسته به آن شامل گچ‌بری و کاشی‌کاری؛ همچنین ظروف سفالی و چینی به دست آمدکه الگوبرداری از سبک هنری مکتب اصفهان در آن کاملاً مشهود است. شواهد به‌دست‌آمده در کاوش‌های باستان‌شناسی صورت‌گرفته در کاخ جهان‌نمای فرح‌آباد به خوبی نشان‌دهنده این پویایی فرهنگی است.
پرسش اصلی این تحقیق این بود که ظروف به دست آمده در محوطه کاخ جهان نما در کجا تولید شده اند و دارای چه ویژگی هایی از نقطه نظر طرح، رنگ و فرم هستند؟
نتایج این تحقیق نشان داد که آثار چینی به‌دست‌آمده از کاخ جهان نما به دو گروه کلی تقسیم می‌شوند: گروه اول ظروف تولید شده شهر «جینگ دژن» و یا ظروف معروف به باتاویا هستند. آثار به دست آمده تجارت گسترده ایران با شرق دور را نشان داد. گروه دوم شامل ظروف چینی و بدل چینی‌هایی است که در مراکز مهم سفالگری ایران دوره صفوی همچون مشهد، کرمان و تبریز ساخته شده است. سفالگران ایرانی این دوره با الگو و دست‌مایه قراردادن نقش‌مایه‌های چینی در کارگاه‌های تولیدی سفال و با کوشش در بازنمایی طرح‌ها و تزیینات، مکتب‌های هنری زیادی را سرمشق و سرلوحه خود قرار دادند.
پرسش‌های این پژوهش عبارتند از:

- ظروف به دست آمده در محوطه کاخ جهان نما در کجا تولید شده اند؟
- این ظروف دارای چه ویژگی هایی از نقطه نظر طرح، رنگ و فرم هستند؟
- مضامین و نقوش و خطوط ظروف به دست آمده درکاخ جهان نما چیست؟

در این مقاله شیوه تحقیق تاریخی و با روش میدانی با ابزار مشاهده و همچنین کتابخانه ای با ابزار بررسی اسناد و مدارک برجای مانده بود.
**واژه‌های کلیدی:** مازندران ، فرح آباد ، جهان نما ، چینی آبی و سفید.

* رایانامه‌ی نویسنده مسئول: Razeghi.mansoor2021@gmail.com

Journal of Archaeological Studies
Vol 12, Is 4 - Serial Number 24, Winter 2021

Formerly "the Journal of the Faculty of Literature and Humanities"... University of Tehran

# Eastern Iran Prehistoric Archaeological Project:First Season of Archaeological Excavations at Kale Kub, South Khorasan Province (2018), Relative and Absolute Chronology

**Mohammad Hossein Azizi Kharanaghi[1]&Masashi Abe[2]& Sepideh Jamshidi Yeganeh[3]& Afshin Akbari[4]**

**(117-141)**

## Abstract

Eastern Iran, especially in the prehistoric period, is a completely unknown region on the Iranian archaeological map. More than one hundred years after the beginning of archaeological excavations in Iran, the eastern regions have received little or no attention from archaeologists for various reasons, and there are very limited publications as well. Kale Kub is a prehistoric site that is located in Ayask town, in Sarayan District, South Khorasan Province, eastern Iran. It has sufficient cultural deposits to provide a chronological timeframe of cultural sequence for the prehistoric cultures of this region. The first season of Kale Kub excavations, carried out in 2019, led to the identification of unknown prehistoric cultures in the region, which are introduced in this article. Perhaps the most significant achievement of this excavation was the identification of the 4th millennium BCE cultures, which are well known in the southwest of Iran and Mesopotamia and for which evidence has been obtained far from the centre of this culture. These cultural evidences, which can be considered to belong to the Susa II horizon or late Uruk cultures, include the typical pottery of this period, such as bevelled rim bowls, rough Banesh trays, tubular and nose handle jars, and fine and painted wheel-made pottery, which is well known in the south-western, western, north-western, south-eastern regions and central plateau of Iran, but which have now been identified and introduced for the first time in eastern Iran. In general, based on the excavation of two stratigraphic trenches (A and B) in this site, three cultural periods have been identified so far. They have been classified from the bottom level and the top of the virgin soil are: 1: KALE KUB I (Chalcolithic period, fifth millennium BCE), 2: KALE KUB II (Susa II horizon, fourth millennium BCE), and 3: KALE KUB III (Bronze age, third and second millennia BCE).

**Keywords**: Kale Kub, Stratigraphy, Relative and absolute Chorology, Susa II horizon

Received: 20 April, 2020; Accepted: 10 March, 2021

10.22059/jarcs.2020.301243.142867
Print ISSN: 2676-4288- Online ISSN: 2251-9297
https://jarcs.ut.ac.ir

1. Corresponding Author Email: m.azizi@richt.ir. Assistant Professor, Department of Archeology, Iran Archaeological Research Institute, Tehran, Iran.
2. Tokyo National Research Institute for Cultural Features, Tokyo, Japan.
3. Graduate of Master of Archeology, University of Tehran. Tehran. Iran..
4. Graduated from the Department of Archaeology, University of Tehran. Tehran. Iran.

## 1. Introduction

Kale Kub is located in Ayask town, Sarayan District, which is in South Khorasan Province, eastern Iran (58°21'53.20"E–3°52'56.97"N), 1360 m above sea level (Figures 1 and 2). Archaeological prehistoric studies are very limited in the eastern parts of Iran and almost all such studies have been focused in the southeast and northeast of Iran; the eastern part has received less attention because of the special climatic conditions and vast deserts of Lut and Dasht-e Kavir. Although in recent years almost the entire province of South Khorasan has been surveyed by local archaeologists, the quantity of materials identified that were related to the prehistoric period was very limited, and Kale Kub is perhaps one of the few prehistoric sites in this area with sufficient cultural deposits to make archaeological study possible.

Because the site is located at the edge of three very active alluvial fans, the sedimentation rate in the plain is very high. Therefore, fine-grained alluvial sediment layers measuring between one and one and a half meters cover this region, attracting local farmers who use this land for agriculture. High quality agricultural lands and gardens are located in the western and south-western parts of the city. Agriculture is the main occupation of the people, and in recent years the digging of several deep wells in the region has resulted in the planting of crops such as wheat, green cumin, and particularly saffron and pistachios in most of the areas with arable land. Kale Kub is located between these fields, which has resulted in the destruction of the surface levels of the site to provide for agriculture land. Consequently, those surface layers which probably belonged to the Iron and Bronze Ages, have been damaged.

Kale Kub was excavated for the first time between 2009 and 2012 (Anani, 1391: 1). The total dimension of the site is about seven hectares based on two seasons of excavation, and it was registered (No. 23005) among the national monuments of Iran in March 2008. Stratigraphic excavations at the site began in 2019 with the permission of the Cultural Heritage and Tourism Research Institute and the Archaeological Research Institute. The main purpose of this excavation was to conduct a stratigraphic study to present the relative and absolute chronology of the site and to identify the prehistoric cultural sequence of its settlements. For this purpose, two small trenches (2 ×2 meters) have been excavated in the central part of the site next to the previously excavated trenches (Azizi Kharanaghi et al.2018).

### Geographical Location of South Khorasan

South Khorasan province is located in the east of Iran measuring about 89,830 square kilometres ($34^0$ 6’ 42” N–$52^0$ 12’ 13” E). This province covers about 5.4 percent of Iran, and borders Afghanistan on the east, Khorasan Razavi in the north, Yazd in the northwest and west, Kerman in the southwest, and Sistan and Baluchestan Provinces in the south. Greater Khorasan was divided into three administrative divisions in 2004: North Khorasan, centred on Bojnourd, Khorasan Razavi, centred on Mashhad, and South Khorasan Province, centred on Birjand. The most important cities of this province are: Birjand, Ghaenat, Nehbandan, Sarbisheh, Darmian, Ferdows, Sarayan, and Boshravieh (Deputy of Culture and Communication, 1384: 15–14).

Sarayan District is located in the northwest of South Khorasan Province at about $33^0$ 52’ N–$58^0$ 30’ E. Sarayan is bordered on the north by the Kakhk part of Gonabad District; on the south by Birjand City; on the east by Ghayen City; and on the west by Tabas City, and is 156 km from Birjand (the centre of the province). The region is

characterised by a cold climate, due to the mountain ranges to the north of the city, and a hot and dry climate due to the presence of the desert plains in the south. The northern regions are cold in winter and temperate in summer due to the existence of numerous mountain ranges and green valleys, but most of the region is covered with dry deserts (Anani, 2012: 13–12).

In the south of Sarayan, there are vast fertile plains for agriculture, most of which are fed from the rivers in the rainy winter. The rural districts of this region are Se Qale (which is mostly comprised of deserts) and Aisak, (which has a relatively milder climate). Most people in this region are engaged in agriculture because of the existence of motor wells. Although in the past they used the Qanat system to provide water for drinking and agriculture, after they started using the deep motor wells, most of these Qanats dried up, which resulted in many people from these villages migrating to Sarayan (Sarayan County Master Plan, 2009, vol. 2: 8).

**Figure 1. Geographical location of Kale Kub**

## 2.Research Background

Iran's rich culture and brilliant historical civilization have always been of interest to archaeological studies. Khorasan witnessed the rise of fundamental movements and events throughout Iran's past; however, because of the hostile environmental conditions in South Khorasan Province (dry mountainous regions and large deserts) it has attracted fewer archaeologists and consequently continues to lack a clear archaeological chronology or archaeological timescale, especially for the prehistoric periods.

The lack of sources and reasoned historical and archaeological sources in South Khorasan combined with very little research has also resulted in many ambiguities in the field of archaeology in this region (Soroush, 2012).

From 1900 to 1979, 727 archaeological programs were conducted in Iran; however, only 18 (less than 2.5%) were allocated to Khorasan. However, since the Islamic Revolution the process of archaeological research in Khorasan has accelerated, and such research has helped us to better understand the historical ambiguities of Khorasan (Labaf Khaniki, 2012: 28). This paper focuses on archaeological studies of South Khorasan Province. Jamal Rezaei and Sadegh Kia introduced the Parthian inscriptions of Kal Jangal for the first time during their archaeological survey in 1941 (Behnia, 2002: 371). In

1328, Carlton Coon (1951) from the University of Pennsylvania excavated the Khonik Cave, 18 km from Qaen, and identified settlements from 35,000 BC (Samadi, 1951: 71; Vandenberg, 1348: 14–15). A systematic archaeological survey of Khorasan from north to south was conducted in 1977 and 1978 under the supervision of Faeq Tawhidi, and a relatively full knowledge of the cultural and historical capabilities of each part of Khorasan was obtained (Tawhidi, 1977, 1978). Qasbeh Gonabad Qanat was constructed in 1990 by Labaf Khaniki during a one-month research program. The Qanat measures about 33/113 Kilometres and 472 wells have been drilled along it; the depth of the mother well is about 300 metres. Next to one of the wells of the main branch, some pottery sherds similar to those found at Dahaneh Gholaman/Sistan were unearthed, and based on this similarity it was estimated to be more than two thousand years old (Labaf Khaniki, 1997: 298–271). During the Birjand archaeological survey in Lakhmzar village, a wide collection of petroglyphs was discovered that revealed the beliefs and the art of the past and also established the presence of people and tribes such as the Heptalians in this part of Iran (Labaf Khaniki, Bashash, 1994: 76–74).

The archaeological surveys in Ferdows District in 1996 by Mahmoud Bakhtiari, in Ghaen District for two seasons in 1997 and 1998 by Ali Hassanabadi, in Bardaskan District in 1998 by Mahmoud Bakhtiari, in Sarayan District in 2004 by Alireza Nasrabadi, in Takhcharabad in 2000 by Ali Hasnabadi (Labaf Khaniki 2012: 152–142), and of Kale Kub in 2009 and 2010 (Yousefi, 2009), in addition to the surveys in 2009 in Kundari, a prehistoric settlement during the historical period in Ghainat 2, the Paleolithic cave of Chel Dokhtaran in Sarbisheh (Behnia, 2002: 383), and the prehistoric site of Sar Takht-e-Baghistan in 2005 (Zafranloo, 2004) have studied the archaeological sites which were organized by the Cultural Heritage Organization of South Khorasan Province. Takhcharabad is perhaps the only site belonging to the late prehistoric period which has been excavated in South Khorasan for four seasons (Dana, 2019: 406). This site is located near Birjand and archaeological studies are currently underway in the site. The chronology proposed by the excavator for this site is late Iron Age III and pre-Achaemenid (Dana, 2019).

## 3.Excavation Method

The context method and the Harris Matrix were used to present the priority and latency of different contexts. Layers that had a completely different texture, colour, density, or cultural data from the previous layer were considered a new context. For example, most of the texture was ash and different contexts were considered with the texture of the dense soil. Different contexts have different sizes, thicknesses, and dimensions based on their specific texture, and effort was made not to dig in different contexts at the same time so as to avoid data confusion. In different trenches, different numbers have been used to indicate different contexts. The context numbers for Trench A start from 1000, and the last context is numbered 1028. 28 different contexts were identified and excavated in this trench. The context numbers for Trench B start from 2000 and end at 2028, meaning that 28 different contexts were identified and explored in this trench as well. The Harris Matrix method was used to indicate the priority and latency of different contexts and the architectural or related contexts such as wall, lining, clay mass, floor, and oven, which are denoted by a square shape, while other contexts such as soil texture and ash were denoted with a circle (Figure 5).

To accurately record the different cultural data based on different contexts and different dates, the Registry Number method (RN) was used for each set of data on

different dates; hence, the data for each context and each day were given a specific number that differed in different trenches. For general findings obtained in large numbers during the course of each day, such as pottery and bone, only one number was considered per day in each context; however, a special number was allocated for specific findings. To accurately record the location of each artifact, the northeast corner of each trench was considered a fixed point of reference, and the length, width, and depth (X,Y and Z) of each find from this location was measured.

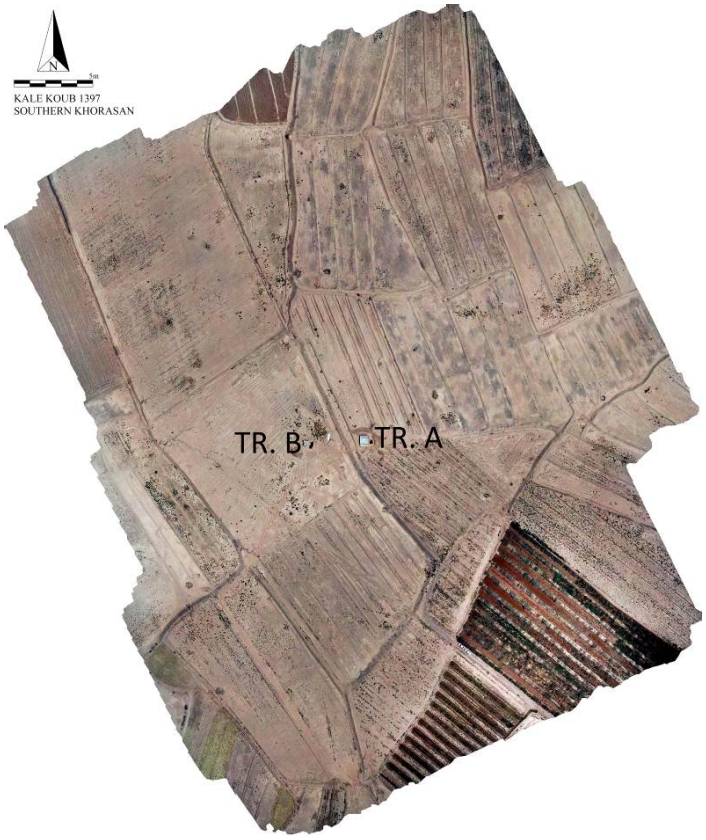



**Figure 2. Arial photo of Kale Kub and location of Trenches A and B**

## 4.Trench A

This trench was excavated in the central part of the site east of the previously excavated trench along the north-south direction with the dimensions 2.5 × 2 metres. The height of the fixed measuring point of this trench is 1360 metres above sea level (Figure 2). Excavations at this trench continued from the surface level to the virgin soil for cultural deposits, amounting to a depth of 5 metres, which included 28 different contexts (Figures 3 and 5). This trench was selected in a place that is somewhat higher than the rest of the site. The whole site was covered with alluvial sediment, which we believe dates to the late Iron Age period. Special objects have been found in this trench, including clay animal figurines, pottery objects, various stone objects, stone beads, gold-plated bitumen beads, bone objects, clay objects of various shapes, and a raw rectangular clay object with a smooth surface. The excavation of this trench ended at a depth of 1355 metres above sea level.

Based on the simple burnished grey pottery been found in the upper layers of the trench, these layers can be considered to belong to the Bronze and Iron Age periods, which

continue from the surface context of 1000 to 1006. Because of the high numbers of bevelled rim bowls, Banesh trays, nose handle jars, pipes, and drains of Shush II (Uruk type) as well as edge, body, and base types similar to the Silk $III_{III-7}$ period, which have been found in contexts 1006 to 1011, these contexts can be dated to the 4th millennium BCE and the beginning of urbanization. Changes in the pottery types in the middle and lower layers of this trench indicate that the changes in the technology of making pottery seem to be related to a more local; however, in the lower levels, several fine red ware potteries similar to the Cheshmeh Ali or the Silk II period were dated to the 5th millennium BCE, which point to a relation between the east of Iran and the central plateau.

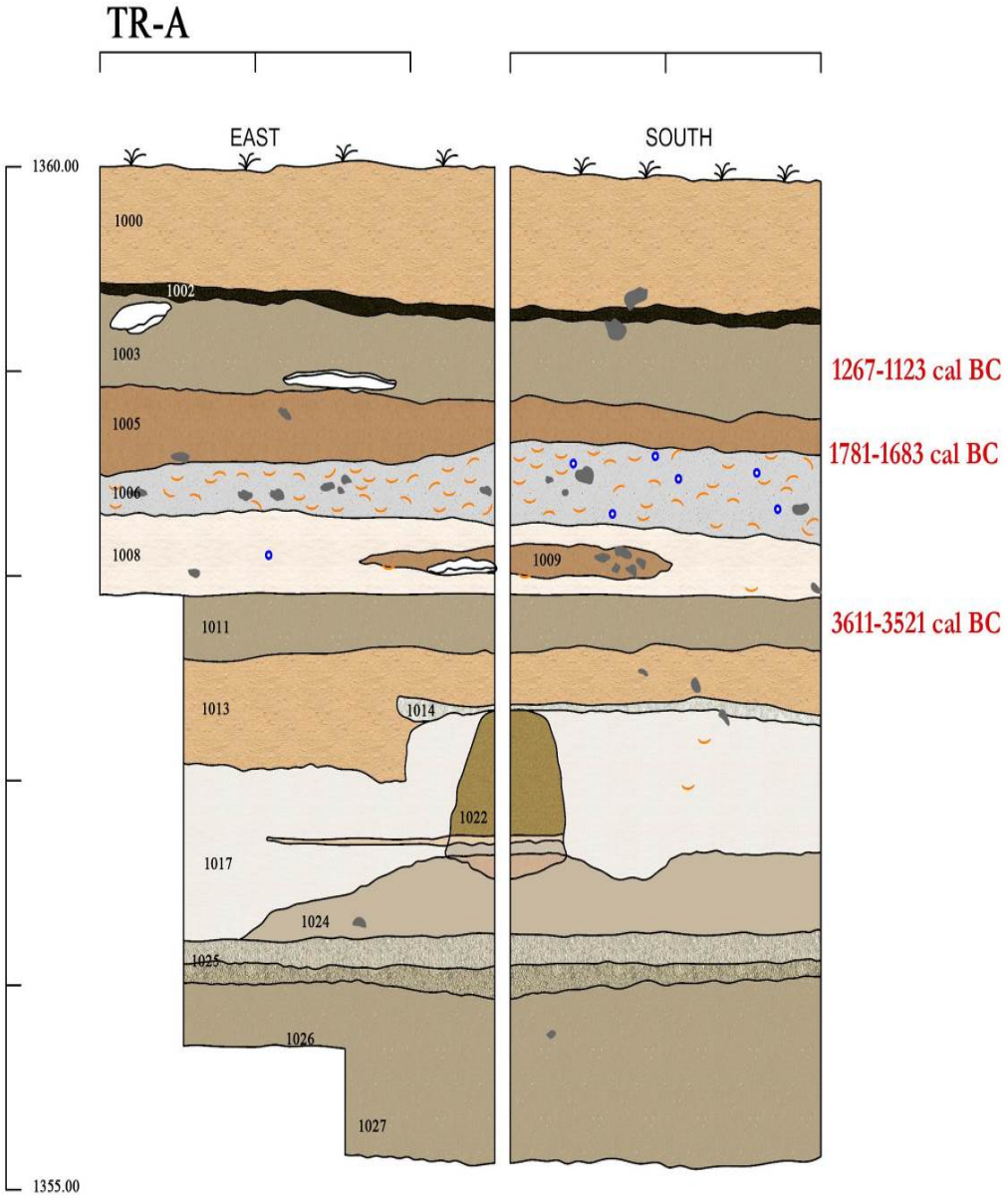



**Figure 3. Eastern and Southern sections of TR. A**

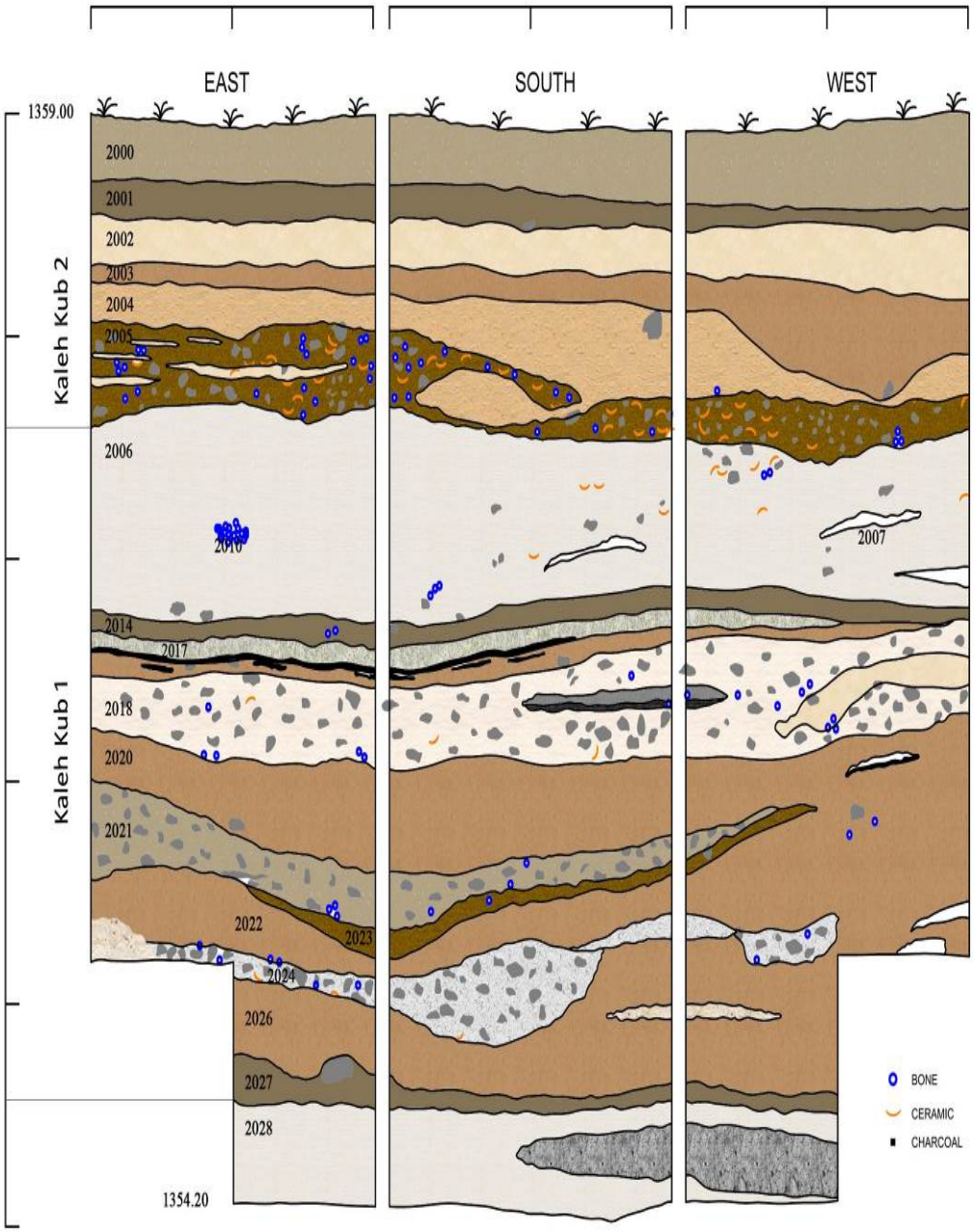



**Figure 4. Eastern, Western and Southern sections of TR. B**

## 5.Trench B

This trench is located approximately in the central part of the site with a dimension of 2×2 meters (Figure 2), including 28 contexts (Figures 4 and 5), and the fixed point of this trench is 1359 metres above sea level. Trench B has been opened and excavated along the southern wall of a previously excavated trench. The cultural sequence and cultural materials of this trench are quite similar to those of Trench A, and there is no significant difference between the two trenches. The thickness of the cultural layers in this trench was recorded as 4.15 metres.

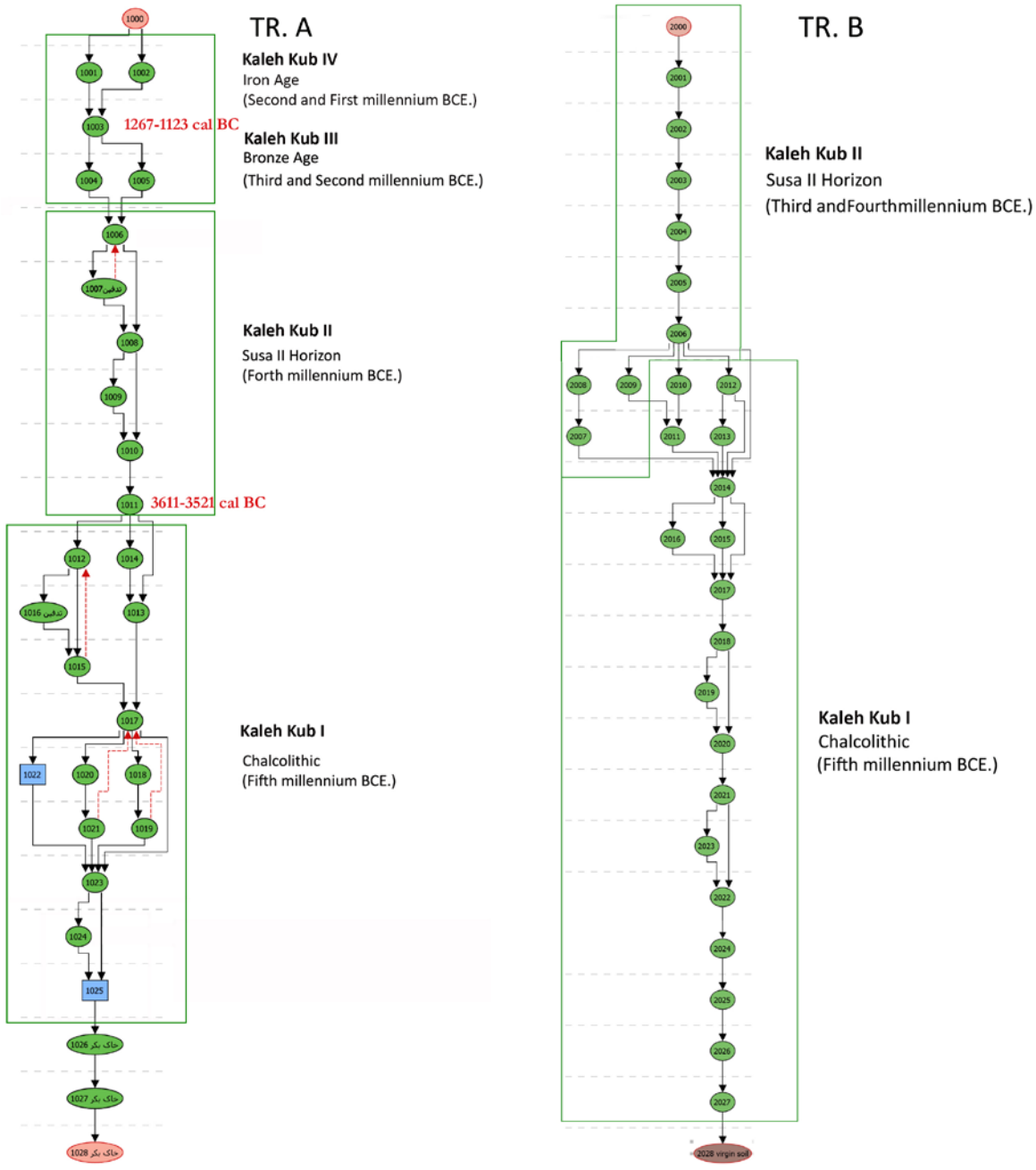



**Figure 5. Harris matrix charts and stratigraphical sequence of TR A and B**

## 6.Pottery typology

In general, from the excavations that were carried out in 2019 at trenches A and B of Kale Kub, six different types of pottery have been identified (Figure 13), which also have subsets. The variety and sequence of pottery types is based on the relative chronology of the site, which is presented below. The pottery study was conducted in two steps: First, the initial classification was made, in which all the pottery pieces were counted according to different types, weight, and classification and second, the locations of the diagnostic potteries were selected and accurately measured, describing each piece. In

general, 5197 (Trench A: 3116, Trench B: 2081) sherds were identified from the two trenches, which have been classified into six different categories:

A) Grey ware: Very few pieces of this type of pottery were from the upper disturb contexts of Trench A and in the chronological sequence of the site belonging to the Bronze and Iron Ages (Third and second millennium BCE). These potteries are handmade, have a mixture of sand, thin clay coating, and improper firing and include simple long bowls with simple rims (Figure 20).

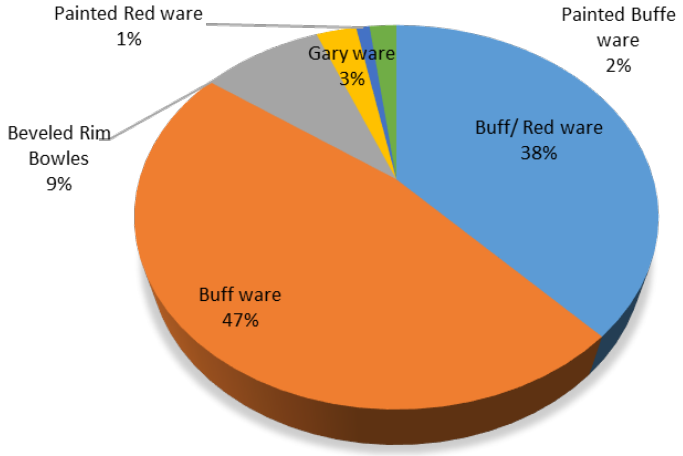



**Figure 6. Chart of different Pottery types from TR A and B**

B) Buff ware: Most of the pottery collections are of this type, and they can be divided into five main sub-types:

1. Simple Buff/reddish/orange ware: This type of pottery is found in almost all stratigraphic sequences of the excavated trenches. The lower layers comprise a coarser mix with sand and in the upper layers a finer mix with fine sand. It is handmade with colours ranging from orange to reddish, usually covered with a thin clay layer, and did not receive sufficient heat. The different forms are generally simple open-mouthed bowls with simple rims or small pots (Figure 14 and Figure 20, Nos. 1 to 3). Unfortunately, this type of pottery cannot be dated because of its simple form and its presence in all sequences with minor changes.

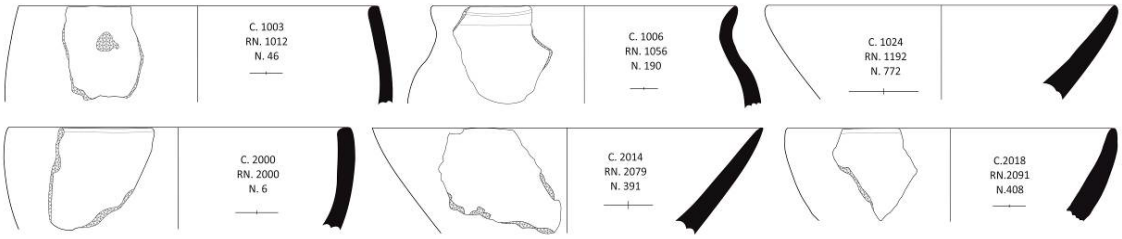



**Figure 7. Samples of Simple Buff ware willing to reddish or orange of Kale Kub**

2. Banesh Trays: This is a type of course, handmade tray that has a protruding rim, low height (3–4 cm), and a wide mouth (Figure 15), and they are one of the common forms of Susa II (Late Uruk) cultures and the Banesh period in Fars (Alden, 1979: 253, Figure 33) and are found in the 4th millennium BCE layers along with other types of diagnostic pottery of this period. This pottery has a mix of coarse chaff which is covered with a thin clay layer, and the outside and inside are generally rough and coarse (Figure 21, numbers 9 to

11). Many different types of this kind of pottery have been found from Kale Kub, period II.

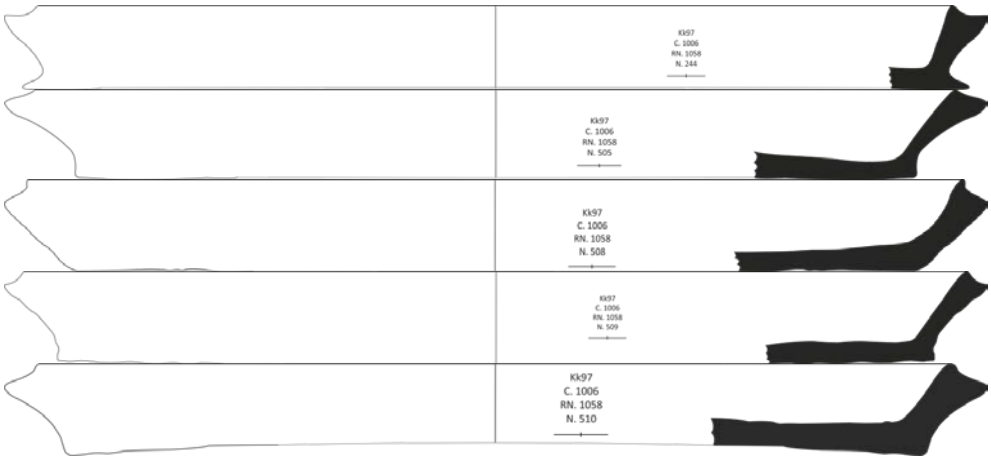



**Figure 8. Samples of Banesh trays of Kale Kub**

3. Wheel-made Buff ware: This type of pottery has been found along with other types of diagnostic 4th millennium BCE potteries and were identified as Kale Kub II period. They are wheel-made with a very fine sand temper, received adequate heat, and are covered with a thin layer of clay. They are generally decorated on the outside with parallel lines and the rims are turned outwards (Figure 16 and Figure 20, numbers 7 to 9).

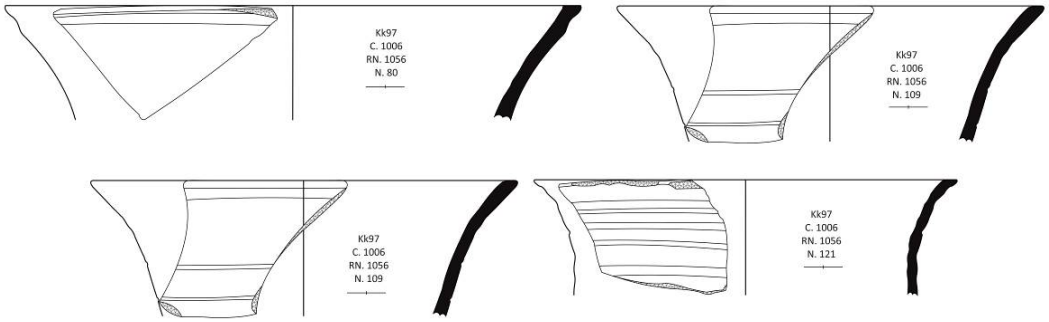



**Figure 9. Samples of Wheel-made Buff ware of Kale Kub**

4. String-cut base bowls: This type of pottery has been found along with other types of diagnostic 4th millennium BCE potteries that were identified as Kale Kub II period. They are simple, open-mouthed, wheel-made (possibly slow-moving) that used sand for tempering with enough heat, and covered with fine clay. The core colour ranges from Buff to orange, and some lines are visible on the base of pottery, which is an effect of the potter's wheel (Fig. 17 and Fig. 20, Nos. 18 and 20). Similar sherds have been found in the central plateau from the Tapeh Qabristan in the Qazvin plain (Fazeli Nashli, 2006: 147: Figure 21-4).

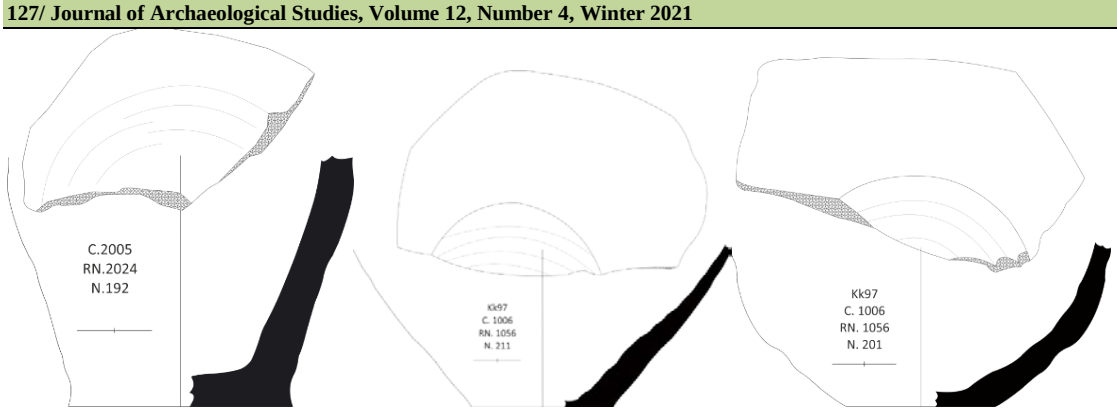



**Figure 10. Samples of String-cut base potteries of Kale Kub**

5. Nose-handle and tubular Buff pottery (Uruk types): This type has been found along with other types of diagnostic 4th millennium BCE potteries that were identified as Kale Kub II period, which are all simple, wheel-made, used sand for tempering, and have an orange-coloured core with adequate heat and covered with thin clay. Two diagnostic sherds of the Uruk nose handle and curved pipes of tall vessels from this period can be observed in this collection (Figure 18 and Figure 20, Nos. 16, 17, 19, 21, 22 and 23).

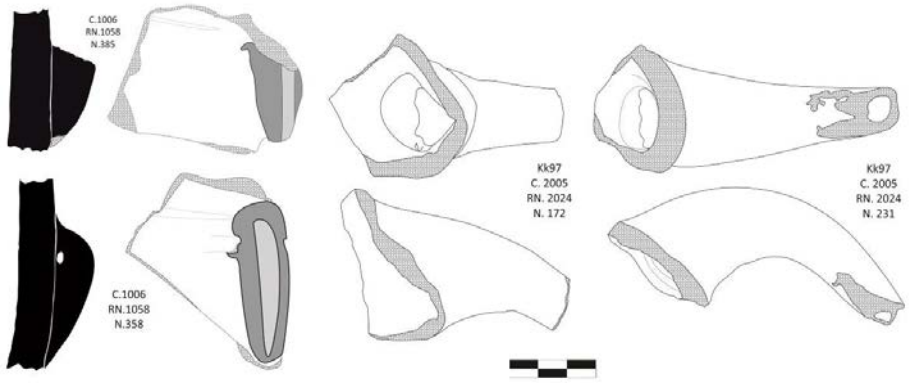



**Figure 11. Samples of Nose-handle and tubular Buff pottery (Uruk types) of Kale Kub**

C) Bevelled-rim bowls: Although Bevelled-rim bowls are also a part of Buff ware pottery, based on their special importance and characteristics, they have been introduced as a separate classification. Bevelled-rim bowls are coarse, hand-made bowls with an unsmooth rim, most of which have a porous outer surface and an inner surface slightly smoothed with a wet hand (Fig. 19 and Fig. 21, Nos. 1–8). Bevelled rim bowls have been identified from several areas in Mesopotamia, Iran, and a few areas in Pakistan. They have also been found in several areas from southwest to southeast and in the central and western regions of the Iranian plateau. The geographical distribution area of the bevelled-rim bowls reveals the widespread nature of the pottery culture in the Mesopotamian and the Iranian plateau. Bevelled-rim bowls have been recognized from southern Turkey to south-western Pakistan, however, no samples of these types have been found in Khorasan or Sistan (Mutin 2013, 61–62). Bevelled-rim bowls are considered to have appeared between 3500 and 2700 BCE, a long time, about 800 years (Abdi 1378, 66). Both trenches A and B display a layer of pottery accumulation, including bevelled-rim bowls and a Banesh tray (Azizi Kharanaghi, 1399), and a few of these pottery have turned green-grey due to high heat, which indicates that they may have been locally

produced in this area. These and other types of pottery that date from the 4th millennium BCE have been identified.

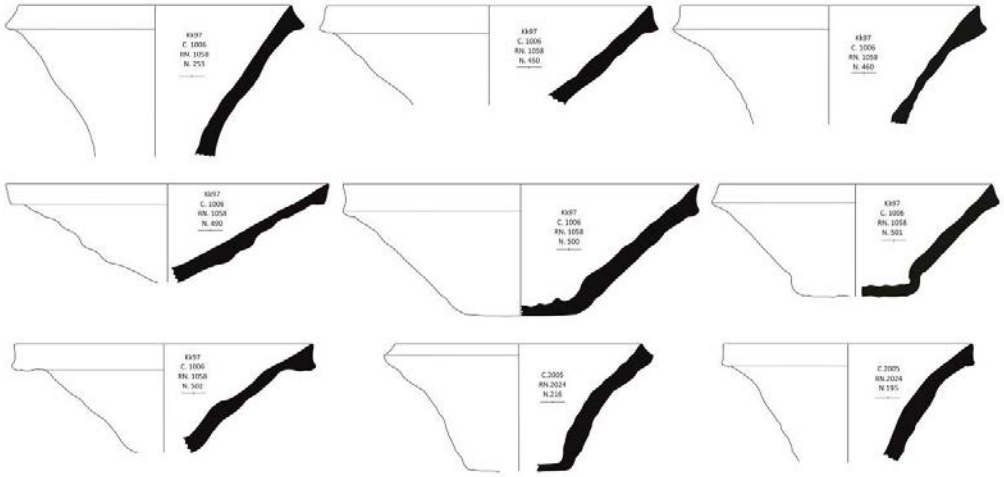


**Figure 12. Samples of Bevelled-rim bowls from Kale Kub**

D) Painted Buff ware: This type of pottery has been found along with other types of diagnostic 4th millennium BCE potteries that were identified as Kale Kub II period, which are wheel-made, fine, covered with a thin layer of clay, an orange-green Buff core, exposed to adequate heat, and decorated with black or brown geometric patterns on the outside surface of the vessels. The designs are generally wide parallel or diagonal lines, and the predominant forms are bowls with a simple open rim; however, cup-shaped forms and bowls with relatively high walls are also observed (Figure 20 and Figure 21, numbers 10 to 15).

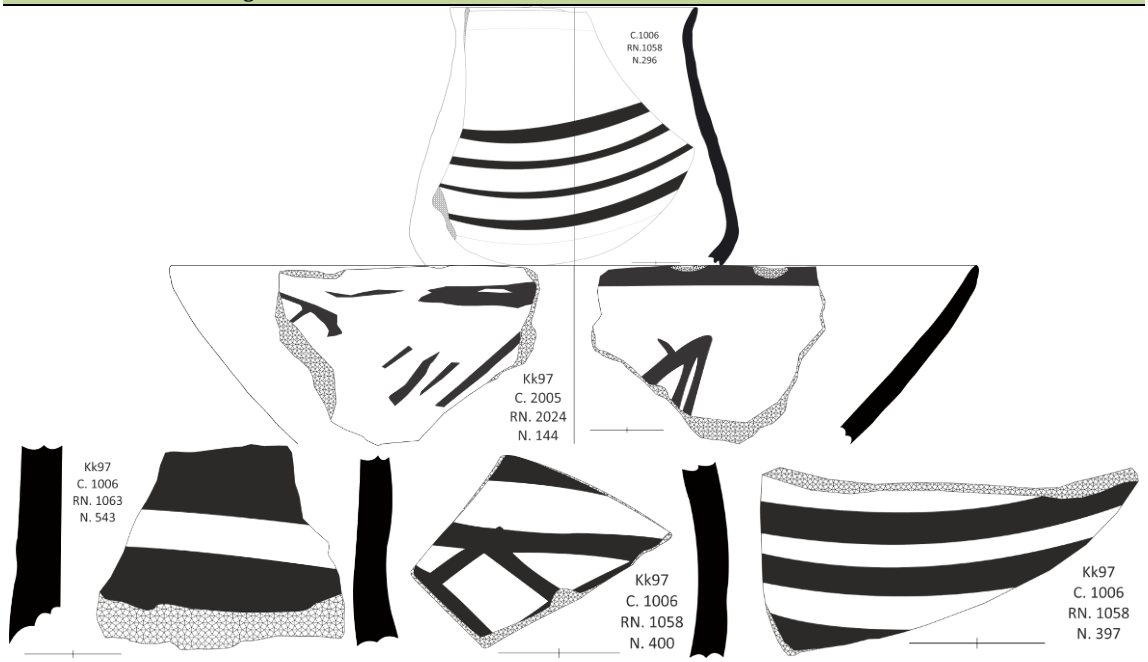



**Figure 13. samples of painted Buff wares of Kale Kub**

E) Painted red ware: This type of pottery comprises only one percent of the pottery collection of Kale Kub that were obtained from the lower layers of trenches A and B and in the stratigraphic sequence of the site belonging to the Kale Kub period I, and the proposed date is the 5th millennium BCE. These potteries are fine, handmade with enough heat and a very soft sand temper, which has a red slip, and the core is generally grey, decorated with simple geometric or intersecting lines in black. The predominant forms are simple bowls with an open mouth and simple rim (Figure 21: Numbers 24 to 28).

**Table 1. Figure 21 pottery information**

| Pottery information | Reference |
|---|---|
| Tr. A, Context 1000, NO. 1, Pot rim, dimension 130, height 64, thickness 8 mm, handmade, core colour light grey, sand temper, orange thin clay slip. | |
| Tr. A, Context 1010, NO. 2, Buff ware rim, dimension 180, height 35, thickness 5 mm, handmade, fine chaff temper, buff thin clay slip. | |
| Tr. A, Context 1023, NO. 3, Buff ware rim, dimension 270, height 85, thickness 9 mm, handmade, fine chaff temper, buff thin clay slip. | |
| Tr. A, Context 1003, NO. 4, Grey ware rim, dimension 200, height 50, thickness 6 mm, handmade, sand temper, coarse slip, burnished surface. | |
| Tr. A, Context 1006, NO. 5, Grey ware rim, dimension 170, height 65, thickness 13 mm, handmade, sand temper, coarse slip. | |
| Tr. A, Context 1003, NO. 6, Grey ware rim, dimension 140, height 84, thickness 7 mm, handmade, sand temper, coarse slip, burnished surface. | |
| Tr. A, Context 1006, NO. 7, Buff ware rim, dimension 210, height 59, thickness 7 mm, wheel-made, fine sand temper, buff thin clay slip. | |
| Tr. A, Context 1006, NO. 8, Buff ware rim, dimension 140, height 37, thickness 5 mm, wheel-made, fine sand temper, buff thin clay slip. | |
| Tr. A, Context 1006, NO. 9, Buff ware rim, dimension 170, height 29, thickness 8 mm, wheel-made, fine sand temper, buff thin clay slip. | |
| Tr. A, Context 1006, NO. 10, Painted Buff ware body, Geometric brown cross lines on the surface, length 37, width 34, thickness 6 mm, wheel-made, fine sand temper, Buff thin clay slip. | |
| Tr. A, Context 1006, NO. 11, Painted Buff ware body, Geometric brown cross and parallel lines on the surface, length 67, width 177, thickness 5 | |

| | |
|---|---|
| mm, wheel-made, fine sand temper, Buff thin clay slip. | |
| Tr. A, Context 1006, NO. 12, Painted Buff ware body, Geometric brown parallel lines on the surface, height 310, dimension 85, thickness 5 mm, wheel-made, fine sand temper, Buff thin clay slip. | Alden, 1979, P:275, No: 12. |
| Tr. A, Context 1006, NO. 13, Painted Buff ware body, Geometric brown parallel lines on the surface, length 80, width 66, thickness 6 mm, wheel-made, fine sand temper, Buff thin clay slip. | Grishman, 1938, P: 176, Pl. XXVI, No. 3 |
| Tr. A, Context 1006, NO. 14, Painted Buff ware body, Geometric brown parallel lines on the surface, length 56, width 39, thickness 4 mm, wheel-made, fine sand temper, Buff thin clay slip. | Grishman, 1938, P: 176, Pl. XXVI, No. 3 |
| Tr. A, Context 1006, NO. 15, Painted Buff ware body, Geometric brown parallel lines on the surface, length 18, width 35, thickness 2 mm, wheel-made, fine sand temper, Buff thin clay slip. | |
| Tr. A, Context 1006, NO. 16, pottery carved pipe, height 70, thickness 9 mm, handmade, fine sand temper, Buff thin clay slip. | Delougaz, Kantor, 1996, P: 44. |
| Tr. A, Context 1006, NO. 17, pottery carved pipe, height 50, thickness 10 mm, handmade, fine sand temper, Buff thin clay slip. | Alizadeh, 2014, P: 151, D. |
| Tr. A, Context 1006, NO. 18, string cut base, dimension 60, height 65, thickness 5 mm, wheel-made, fine sand temper, Buff thin clay slip. | Delougaz, Kantor, 1996, Plate: 17, Q.<br>Alizadeh, 2014, P:129, J. |
| Tr. A, Context 1006, NO. 20, string cut base, dimension 80, height 35, thickness 9 mm, wheel-made, fine sand temper, Buff thin clay slip. | Fazeli Nashli, 1385: 147, Fig: 4-21<br>Copnik, Rasman, 1395:77, Fig: 4, 15 |
| Tr. A, Context 1006, NO. 19, Body, Added Geometric motif, nose handle, length 66, width 48, thickness 12 mm, wheel-made, fine sand temper, Buff thin clay slip. | Delougaz, Kantor, 1996, P: 92.<br>Alizadeh, 2014, P:156, D. |
| Tr. A, Context 1006, NO. 21, Body, Added Geometric motif, nose handle, length 52, width 42, thickness 14 mm, wheel-made, fine sand temper, Buff thin clay slip. | Alizadeh et al., 2015, P:158, No: 8.<br>Sarlak, 1390:540, AV35:302:31 |
| Tr. A, Context 1006, NO. 22, pottery pipe, length 44, width 20, thickness 8 mm, handmade, fine sand temper, Buff thin clay slip. | Delougaz, Kantor, 1996, P: 44. |
| Tr. A, Context 1006, NO. 23, pottery Spouted, length 60, width 30, thickness 5 mm, handmade, fine sand temper, Buff thin clay slip. | Alden, 1979, P:270, No: 9.<br>KARLOVSKY, Potts, 2001, PHASE IVC2: 1.54A |
| Tr. B, Context 2024, NO. 24, Painted red ware body, Geometric black parallel lines on the surface, length 38, width 28, thickness 4 mm, handmade, fine sand temper, Red thin clay slip. | Majidzadeh, 1389:24, No. 7 |
| Tr. B, Context 2024, NO. 25, Painted red ware body, Geometric black parallel lines on the surface, length 23, width 27, thickness 3 mm, handmade, fine sand temper, Red thin clay slip. | |
| Tr. B, Context 2024, NO. 27, Painted red ware body, Geometric black parallel lines on the surface, length 29, width 27, thickness 5 mm, handmade, fine sand temper, Red thin clay slip. | Vahdati, 2014: 14, fig: 2: h.<br>Azizi Kharanaghi et al., 2016: 74, fig: 17<br>Azizi Kharanaghi et al., 1396: 96, No. 38. |
| Tr. B, Context 2024, NO. 26, Painted red ware body, Geometric black parallel lines on the surface, length 38, width 30, thickness 3 mm, handmade, fine sand temper, Red thin clay slip. | |
| Tr. B, Context 2024, NO. 28, Painted red ware body, Geometric black parallel lines on the surface, length 41, width 25, thickness 4 mm, handmade, fine sand temper, Red thin clay slip. | Vahdati, 2014: 14, fig: 2: c.<br>Malek Shamirzadi, 1391: 92, No. 17: 10. |


**Figure 14. Pottery collection found from the 2019 season of the Kale Kub excavation**

**Table 2. Figure 22 pottery information**

| | |
|---|---|
| Tr. A, Context 1006, NO. 1, Bevelled-rim bowls, dimension 200, height 120, thickness 15 mm, handmade, Chaff temper. | Delougaz, Kantor, 1996, Plate: 80, S.<br>Helwing, 2011: 247, fig 35: 202<br>Kopnik, Rathman, 195: 78, Fig: 4-16 |
| Tr. A, Context 1006, NO. 2, Bevelled-rim bowls, dimension 200, height 85, thickness 13 mm, handmade, Chaff temper, Orange thin clay slip. | Alizadeh, 2008, P: 261, F.<br>Grishman, 1379: 202. |
| Tr. A, Context 1006, NO. 3, Bevelled-rim bowls, dimension 240, height 73, thickness 16 mm, handmade, Chaff temper, Orange thin clay slip. | Delougaz, Kantor, 1996, Plate: 17, B. |
| Tr. A, Context 1006, NO. 4, Bevelled-rim bowls, dimension 220, height 80, thickness 16 mm, handmade, Chaff temper, Buff thin clay slip. | Hesari, 1396: 40, Fig: 1:4<br>Fazeli Nashli, 1385: 147, Fig: 4- 22 |
| Tr. A, Context 1006, NO. 5, Bevelled-rim bowls, dimension 200, height 70, thickness 17 mm, handmade, Chaff temper, Buff thin clay slip. | Delougaz, Kantor, 1996, Plate: 17, F. |
| Tr. A, Context 1006, NO. 6, Bevelled-rim bowls, dimension 160, height 116, thickness 16 mm, handmade, Chaff temper, Orange thin clay slip. | Majidzadeh, 2008: 117, fig: 43: 3 |
| Tr. A, Context 1006, NO. 7, Bevelled-rim bowls, height 30, thickness 16 mm, handmade, Chaff temper, Buff thin clay slip. | Chasemi et al., 1397: 60, Fig: 6<br>Zagarel, 1387: 185, Fig: 7-27 |

| | |
|---|---|
| Tr. A, Context 1006, NO. 8, Bevelled-rim bowls, dimension 200, height 55, thickness 8 mm, handmade, Chaff temper, Buff thin clay slip. | Delougaz, Kantor, 1996, Plate: 83, L.<br>Sarlak, 1390: 477, Fig: 18 |
| Tr. A, Context 1006, NO. 9, Banesh tray, height 40, thickness 5 mm, handmade, Chaff temper, Orange thin clay slip. | Delougaz, Kantor, 1996, P: 59, XLVII.<br>Helwing, 2011: 246, fig 34: 188 |
| Tr. A, Context 1006, NO. 10, Banesh tray, height 27, thickness 7 mm, handmade, Chaff temper, Orange thin clay slip. | Delougaz, Kantor, 1996, Plate: 86, DD.<br>KARLOVSKY, Potts, 2001, PHASE IVC2: E.<br>Helwing, 2011: 247, fig 35: 191.<br>Sarlak, 1390: 539, AV38: 303: 7 |
| Tr. A, Context 1006, NO. 11, Banesh tray, height 60, thickness 10 mm, handmade, Chaff temper, Orange thin clay slip. | Alden, 1979, P:256.<br>Kopnik, Rathman, 195: 115, Fig: 4-55, VI: 2 ،VI:2. |


**Figure 15. Samples of bevelled-rim bowls and Banesh trays from Kale Kub**

## Production Technology and Typology of Lithics Collection

A total of 753 flaked stone artefacts were excavated from Trench A and Trench B at Kale Kub (Table 1). Based on the excavated pottery, the samples can be dated to the period between the end of the 6th millennium BCE and the early 3rd millennium BCE. Because there are so few samples, it is currently challenging to undertake a quantitative and chronological analysis. Therefore, all the flaked stone artefacts excavated from Trench A and Trench B have been categorised together here. The stone tool production at Kale Kub can be divided into three categories: blade production, bladelet production, and flake production.

**Table 3. Different types of lithic collections from Kale Kub (TR. A & B)**

| | Obsidian | Chert and White Chalcedony | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Debitage | Cores | | | Debitage | | | | | | | | | | Tools | | | | | | | |
| | Obsidain Bladelets | Flake Cores | Blade Cores | Bladelet Cores | Bladelets | Blades | Partially Cortical Blades | Cortical Blades | Flakes | Partially Cortical Flakes | Cortical Flakes | Core Tablets | Crested blades | Chunks /Chips | Hammerstones | Sickle Blades | End Scrapers on Blades | Retouched Blades | Backed Bladelets | Notched Flake | Flake Scrapers | Retouched Flake | Arrowhead |
| Trench A Early 3rd Millennium BC and 4th Millennium BC | 1 | 6 | 0 | 2 | 3 | 17 | 1 | 0 | 210 | 32 | 20 | 1 | 0 | 26 | 1 | 0 | 0 | 0 | 0 | 1 | 9 | 2 | 0 |
| Trench A 5th Millennium BC (Chalcolithic Period) | 0 | 1 | 0 | 0 | 2 | 5 | 1 | 0 | 51 | 9 | 7 | 1 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 |
| Trench A End of 6th Millennium BC and Beginning of 5th Millennium BC (Transitional Chalcolithic?) | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 16 | 1 | 3 | | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Trench B 4th Millennium BC | 0 | 2 | 0 | 2 | 2 | 6 | 1 | 0 | 25 | 11 | 3 | 2 | 1 | 7 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Trench B 5th Millennium BC (Chalcolithic Period) | 0 | 6 | 1 | 3 | 11 | 26 | 1 | 1 | 127 | 16 | 7 | 2 | 0 | 21 | 0 | 2 | 1 | 1 | 1 | 0 | 10 | 2 | 0 |
| Trench B End of 6th Millennium BC and Beginning of 5th Millennium BC (Transitional Chalcolithic?) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 1 | 16 | 1 | 7 | 19 | 55 | 4 | 1 | 429 | 69 | 40 | 6 | 1 | 67 | 1 | 2 | 1 | 2 | 1 | 1 | 23 | 5 | 1 |

For blade production, chert was mainly used as the raw material (Figure 23). Chert blocks procured from outcrops were probably preferred for blade production. It is likely that there are several chert outcrops in the eastern and western mountains. The chert blocks procured from outcrops are fresher and contain fewer internal fractures than riverbed cobbles. Therefore, the chert blocks procured from outcrops were more suitable for blade production. The colour of chert varies from white to green, and includes reddish, cream, brown, grey, and dark grey; even the same chert block displays internal colour variations. The morphology of the blades and blade cores excavated from the site strongly suggests that the blades were detached by pressure flaking rather than direct or indirect percussion (Figures 23–24). The blades were probably pressure-flaked using a long chest crutch. Blades were used as blanks for sickle blades, end scrapers, and retouched blades. It is noteworthy that blades were continuously produced from the end of the 6th millennium BCE to the early 3rd millennium BCE.

**Figure 16. Blades and bladelets (Trench A Context 1006)**

**Figure 17. Blade core, bladelet cores, end scraper on blade, and blades (Trench B Context 2022)**

**Figure 18. Bladelet cores, bladelets, and blades**

White transparent chalcedony was preferred as a raw material along with chert to produce bladelets (Figure 25). The chalcedony was probably procured from the eastern and western mountains. The preference of chalcedony as raw material for bladelet production is also reported at other transitional Chalcolithic sites. Bladelets were probably pressure-flaked using a hand-held pressure flaking tool. One backed bladelet was excavated from a 5th millennium layer of Trench B. It is noteworthy that bladelets were still produced even during the early 3rd millennium BCE/4th millennium BCE.

**Figure 19. Flakes and partially cortical flakes (Trench B, Context 2022)**

For the flake industry, chert cobbles collected from the adjacent river beds were used as raw materials. Unlike chert blocks procured from outcrops, the chert cobbles are generally coarse and have more internal fractures. Unlike blades and bladelets, flakes were detached by direct percussion with a stone hammer from flake cores (Figures 26). Although several flake tools such as notched flakes, retouched flakes and arrowhead were excavated from the site (Figure 28), flakes were mainly used as blanks for scrapers (Figure 27). In particular, thick flakes were preferred as blanks for flake scrapers.

**Figure 20. Flake scrapers (Trench B, Context 2022)**

**Figure 21. Obsidian bladelet (Trench A Context 1006)**

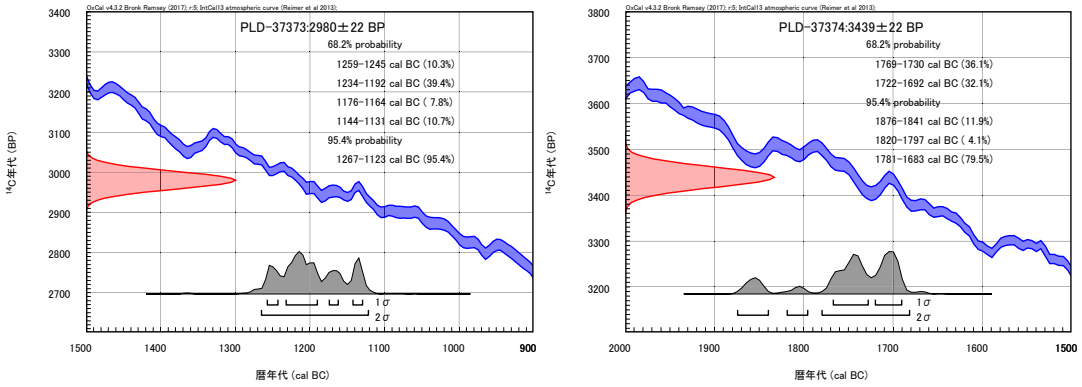
It is also noteworthy that one obsidian bladelet was excavated from an early 3rd millennium BCE/4th millennium BCE layer of Trench A (Figure 28). It is likely that this obsidian bladelet was not produced on site because no other obsidian debitage was excavated from the site. Kale Kub is probably one of the easternmost sites where obsidian was discovered. It is also noteworthy that several hoes were also collected on the surface at the site (Figure 29). Similar hoes were reported from other transitional Chalcolithic sites.

**Figure 22. Stone Hoe (Surface collection)**

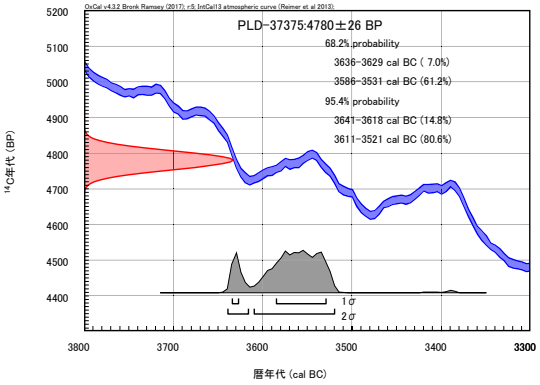
## 7.Absolute and Relative Chronology

One of the problems of Iranian archaeology, especially in the prehistoric period, is a lack of absolute dating and a reliance on relative and comparative dating; however, this has changed in recent years and C14 dating has become common. Archaeological research in eastern Iran is no exception to this problem, but unfortunately, unlike the other parts of the country, it has not been published. It is thus not possible to provide a relative chronology in this area for the prehistoric era. As mentioned at the beginning of

the paper, Kale Kub is perhaps one of the few prehistoric sites in the South Khorasan Province that has sufficient cultural deposits to provide a chronological sequence for the region. This article presents a relative date for each phase in the introduction and pottery typology sections; however, it is not yet possible to provide sufficient comparative evidence for the upper layers of this site (Kale Kub III period) entirely because of the location of the pottery types. In addition to the relative chronology, four coal samples from the upper, middle, and lower layers of Trench A, which had a more complete stratigraphic sequence than Trench B, were sent to the Tokyo Paleo Lab to perform a C14 dating (Figure 5). Of these, unfortunately, the bottom layer sample (Context 1024) displayed an error and no specific date was obtained. The date obtained is for context 1003, which is roughly the first relatively stable layer of Trench A, with a 95% probability of 1267–1123 BCE.




TR: A C.1003 RN:1011 TR: A C.1006 RN:1047




TR: A C.1011 RN:1112

**Figure 23. TR. A, absolute dating**

The second date is related to the beginning of context 1006, which is actually the gathering layer of different types of pottery belonging to the 4th millennium BCE; however, the results indicate that the tested sample was not present and had penetrated from the upper layers. This date with 79% probability is 1683–1781 BCE. The last example is related to Context 1011, the oldest layer from which the bevelled-rim bowls were obtained, which is in fact the transition stage from the 5th to the 4th millennium BCE. This date with an 80% probability is 3521–3611 BCE (Figure 30). The beginning of the settlement and the absolute date of the pottery belonging to the beginning of urbanization in Kale Kub are not known, and it is hoped that in the coming seasons, the

determination of more dates will make it possible to correct and complete this absolute chronology.

## 8.Conclusion

Archaeological excavations at Kale Kub of Ayask town, Sarayan District, South Khorasan Province, were carried out in June 2016 with the permission of the Research Institute of Cultural Heritage and Tourism and with the financial support of the General Directorate of Cultural Heritage, Handicrafts and Tourism of South Khorasan Province. This site was excavated for three seasons to determine the buffer zones and stratigraphy. Unfortunately, due to the lack of reports from the excavations, previous research data were not available. There are very few prehistoric sites in South Khorasan Province and very few sites where archaeological excavations can be conducted. Therefore, the General Administration of the province has sought re-financing to continue archaeological research in Kale Kub, which is one of the few prehistoric sites in the region that can be excavated.

Archaeological studies in the eastern regions of Iran are very limited and there have been very few archaeological research conducted in this area, most of which are not available, and this lack of information is more evident for the prehistoric period. Archaeological information from the northeast and southeast of Iran for the prehistoric period, although sparse, is remarkable; however, the eastern regions show striking differences for many reasons. Recent archaeological surveys conducted by local archaeologists have provided a general relative chronology for South Khorasan Province.

Kale Kub is located in South Khorasan Province and is one of the few prehistoric sites in eastern Iran that has a cultural sequence and adequate cultural deposits suitable for archaeological studies. The purpose of the excavations in this season was to present a relative and absolute chronology of this site with two excavations measuring 2 × 2 metres in stratigraphical trenches. The surface of the site has been completely disturbed due to agricultural activity and cultural materials have been scattered, rendering it impossible to identify the centre of the site. During the excavations which were carried out in this season in Trenches A and B from the surface to virgin soil, and according to the identified cultural materials, the stratigraphic sequence of the three cultural periods, which are called Kale Kub 1 to 3 from oldest to newest, have been suggested as follows: Kale Kub I: The oldest cultural evidence of Kale Kub, which is directly on the virgin soil, represents Early Chalcolithic culture, which is known in the central plateau of Iran as the Silk II or Cheshmeh Ali period. The diagnostic pottery of this period in the Central Plateau of Iran is a type of fine painted red ware, of which several samples have been identified in the lower layers of both Trenches A and B. In addition to the few pieces of fine painted red ware mentioned above, the main potteries of the lower layer are generally coarse simple handmade buff wares. The proposed date for the beginning of settlement in the Kale Kub is early 5th millennium BCE.

Kale Kub II: The next period of Kale Kub, which is the top layer of the 5th millennium BCE layers, has provided perhaps the most important results from this season's excavation. Significant types of potteries, which were the most popular in the southwest of Iran, have been found from this period. These include the bevelled-rim bowls, Banesh trays, tubular pottery, nose-handle, string-cut base and buff-painted Buff ware with black/brown motifs, which have a similarity to Khuzestan (Alizadeh, 2014, P: 129), Godin (Kopnik, Rathman, 2016: 77, Figure 4.15) in Central Zagros, and Silk (Grishman,

1938, P: 176, Pl. XXVI, No. 3), Arisman (Helwing, 2011) and Gholi Darvish (Sarlak, 1390: 540), and other types of wheel-made Buff ware similar to the final phase of Silk III culture (Late Chalcolithic period). The existence of this type of 4th millennium BCE pottery like those found in eastern Iran is very interesting and perhaps the most important discovery of this excavation.

Kale Kub III: The surface layers have been disturbed and most of the pottery is simple and coarse Buff type that cannot be dated at all. However, a few samples of grey wares have been found from the upper layers, and based on the presence of this type of pottery in addition to C14 dating indicate that this layer belongs to the Bronze and Iron Ages (3rd and 2nd millennium BCE).

**Acknowledgment**

Archaeological excavations at Kale Kub have been carried out with the support of the General Directorate of Cultural Heritage, Handicrafts and Tourism of South Khorasan Province. We also thank our colleagues from this department, in particular, Ms. Roghayeh Zafaranloo, Mr. Seyed Ahmad Barabadi, Mr. Mohammad Farjami, and Mr. Mohammad Arab. We also thank Mr. Ali Barazandeh and Mr. Ayask Sheriff. We also thank the Tokyo National Research Institute for Cultural Affairs for the absolute dating funding.

**Reference**

Abdi. K. 2008. *Beveled Rim Bowls: Its Application and Dispersion, in Archeology and Art of Iran, 32 articles in honor of Ezatullah Neghaban*, by Abbas Alizadeh, Yousef Majidzadeh and Sadegh Malek Shahmirzadi, Tehran, University Publication Center Pp: 64-84.

Alden. JR. 1979. *Regional Economic Organization in Banesh Period Iran*, the University of Michigan, PHD.

Alizadeh. A. 2008. *Choqa Mish II, The Development of a Prehistoric Regional Center in Lowland Susiana, Southwestern Iran, Final Report On the Last Six Seasons of Excavations, 1972- 1978*, The Oriental Institute of the University of Chicago, Oriental Institute Publications, Vol: 130.

Alizadeh. A. 2014. *Ancient Settlement System and Cultures in the Ram Hormuze Plain, Southwestern IRAN, Excavations at Tall-e Geser and Regional Survey of Ram Hoemuz Area*, with contributions by Loghman Ahmadzadeh and Mehdi Omidfar, Oriental Institute of the University of Chicago, Oriental Institute Publications, Vol: 140.

Alizadeh. A. Aghili Sh. Sarlak S. 2015. *Highland-Lowland interaction in the late 4th and early 3rd millennium BCE: the evidence from Qolı¯ Darvı¯sˇ, Iranian Central Plateau*, Archäologische Mitteilungen aus Iran und Turan 45: 149- 168.

Anani. B. 1391. *Interaction Spaces in Eastern Iran Based on Findings from the Kale Kub, Sarayan*, MA Thesis, Zahedan, Sistan and Baluchestan University, unpublished.

Azizi Kharanagh. M.H. Masashi A. Jamshidi Y.S. Anani B. Akbari A. Goodarzi P. 2018. *Archaeological Report of strati graphical excavation at kale Kub, Sarayan, South Khorasan Province*, Archive report, Library of Archaeological Research Institute (unpublished).

Azizi Kharanaghi. M.H. in collaboration with Jamshidi Y.S. Akbari A. Pour Momen Sh. Kasraei N. Khajeh A and Beizai Doust S. 2017. *Archaeological Report of the second seasons of archaeological excavation of Tape Pahlavan, Jajarm District*, Library of Archaeological Research Institute (unpublished).

Azizi Kharanaghi. M.H. Jamshidi Y.S. Masashi A. Akbari A. 2020. *New Evidence of Beveled Rim Bowls from Kale Kub, South Khorasan Province*, Parseh Journal of Archaeological Studies, Vol: 12, Pp: 29-48.

Azizi Kharanaghi. M.H. Thomalsky J. Khanipoor M. Jafari J. 2016. *Archaeological research at Tappeh Pahlavan, North Khorasan Province (Northeastern Iran): Report on the 2014 season*, Journal of Ancient Near Eastern Studies (ANES), Vol: 53, pp: 59-79.

Behnia. M.R. 2002. *Birjand the jeweled of desert*, Tehran, University of Tehran publication.

Buikstra J.E. Ubelaker D.H. 1994. *Standards of Data Collection from Human Skeletal Remains*, Fayetteville: Arkansas Archaeological Survey Research Series.

Coon. C. S. 1951. *Cave explorations in Iran 1949*, Philadelphia university of Pennsylvania.

Dana. M. 2019. *Late Iron Age and Achaemenid Pottery Traditions in Eastern Iran*, Proceedings of the International Conference on Iron Age Archeology in Western Iran and Neighboring Areas, by Yousef Hassanzadeh, Ali Akbar Vahdati and Zahed Karimi, Kurdistan: Cultural Heritage, Handicrafts and Tourism of Kurdistan, Pp: 410-392.

Dana. M. Rafiei. S.R. 2019. *Preliminary report of the fourth Seasons of excavation at Takhcharabad, Birjand*, Proceedings of the 17th Annual Iranian Archaeological Conference, by Ruhollah Shirazi and Shaghayegh Horshid, Tehran: Cultural Heritage and Tourism Research Institute, Pp: 184 -182.

Delougaz. P. Kantor H.J. edited by: Alizadeh. A. 1996. *Choqa Mish I, The First Five Seasons of Excavations, 1961- 1971, Part 1: Text*, The Oriental Institute of the University of Chicago, Oriental Institute Publications, Vol: 101.

Delougaz. P. Kantor H.J. edited by: Alizadeh. A. 1996. C*hoqa Mish I, The First Five Seasons of Excavations, 1961- 1971, Part 2: Plates*, The Oriental Institute of the University of Chicago, Oriental Institute Publications, Vol: 101.

Deputy Minister of Culture and Cultural Heritage Communications. 2005. *South Khorasan Red Gold Land*, Tehran, Iranian Cultural Heritage and Tourism Organization.

Fazeli. N.H.2006. *Socio-political changes in Qazvin plain, Archaeological excavations of the Tepe Chabristan (Season 3 report)*, Tehran, Cultural Heritage, Handicrafts and Tourism Organization, Archaeological Research Institute, P.147.

Gershman. R. 2000. *Kashan Sialk, Vol: I*, translated by Karimi. A. Cultural Heritage Organization Publications.

Ghasemi. S. Hessari. M. Akbari. H. 2018. *Zavarehvar, the Central Site from of the Urbanization Period (Protoliterate) of Varamin Plain: Studying Pottery Features*. Parseh J Archaeol Stud. 2018; 2 (4) :51-68

Gopnik. H. Rothman. M.S. 2016. *On The Highroad, The History of Godin Tape, Iran*, Translate by: Mirghaderi. M.A and Saburi.H, Tehran, The Center for the Great Islamic Encyclopedia (center for Iranian & Islamic Studies).

Grishman, R, 1938, *Fouilles De Sialk, Pres De Kashan, 1933, 1934, 1397*, Vol: I.

Helwing. B. 2011. *Proto- Elamite pottery from areas A, C, D and E*, in Early Mining and Metallurgy on the Western Central Iranian Plateau, the first five years of work, editors: Vatandoust. A. Panzinger. H. Helwing. B. Archäologie in Iran und Turan, Band: 9, P: 196-253.

Hessari. M. Akbari. H. Sardari Zarchi. A. 2017. *Bard Panir: A Station or Settlement of Proto-Writing in the North of Khouzestan*. Parseh J Archaeol Stud. 2017; 1 (1): 35-48

Karlovsky. L. Potts. D.T. 2001. *Excavations at Tepe Yahya, Iran, 1967-1975, The Third Millennium*, BUFFBODY MUSEUM OF ARCHAEOLOGY AND ETHNOLOGY, Harvard University, Cambridge, Massachusetts.

Labaf Khaniki. R.A. 1997. *Archaeological Survey of Gonabad Qanats*, Archaeological Reports (1), P: 289- 271.

Labaf Khaniki. R.A. 2012. *Review of Khorasan Archaeological Activities from the Beginning to the Present*, Proceedings of the 80 years of archeology in Iran, the first volume, edited by Hassanzadeh. Y. Miri. S. Tehran, Parineh publications, collaboration with the National Museum of Iran, P: 127- 158.

Labaf Khaniki. R.A. Bashash. R. 1994. *Lakh Mazar Birjand Petroglyphs*, Research Articles 1, Tehran, Deputy of Introduction and Education of the Iranian Cultural Heritage Organization.

Majidzadeh. Y. 2008. *Excavation At Tepe Gharistan, IRAN*, IsIAO, ROMA.

Majidzadeh. Y. 2010. *Excavations of Ozbaki, Vol: I, Pottery*, Cultural heritage, Handcrafts and Tourism of Tehran Province.

Malek Shahmirzadi. S. 2012. *Sialk Villagers*, Proceedings of The Review of Sialk, Research Institute of Cultural Heritage and Tourism.

Mutin. B. 2013. *Ceramic Traditions And Interactions On The South-Eastern Iranian Plateau During The Fourth Millennium BC. In Ancient Iran And Its Neighbours: Local Developments And Long-Range Interaction In The Fourth Millennium BC*, edited by Cameron A Petrie, 253–85. Oxford: Oxbow books.

Samadi. H. 1951. *Eight months of effort to follow the effects of the Stone Age of Iran*, Education Monthly, Vol: 25, No. 70- 85- 6.

Sarayan Town master plan, sustainable consulting engineers of structural design. 2009.

Sarlak. S. 2011. *Archeology and history of Qom, the results of archaeological excavations and stratigraphy of Gholi Darvish and Shadgholi Khan sites, Archaeological studies in the historical, cultural and religious axis of Qom*, Cultural Heritage, Handicrafts and Tourism Organization of Qom Province.

Sołtysiak. A. 2010. *Death and decay at the dawn of the city. Interpretation of human bone deposits at Tell Majnuna, Areas MTW, EM and EMS*, Warszawa: Instytut Archeologii UW.

Soroush. M.R. 2012. *Archaeological Research in South Khorasan*, Proceedings of the 80 years of archeology in Iran, the first volume, edited by Yousef Hassanzadeh and Sima Miri, Tehran, Parineh publications, collaboration with the National Museum of Iran.

Tohidi. F. 1977. *Khrasan (Sabzavar) archaeological survey report*, Khorasan Cultural heritage documentary center (unpublished).

Tohidi. F. 1978. *Khrasan (Bojnord) archaeological survey report*, Khorasan Cultural heritage documentary center (unpublished).

Vahdati. A. 2010. *Tepe Pahlavan: A Neolithic- Chalcolithic Site in the Jajarm Plain, North-Eastern Iran*, Iranica Antiqua, vol. XLV.

Yousefi. S. 2008. *Report of Buffer Zone determined of Tape Kondori*, South Khorasan Province cultural heritage and Tourism Archive, unpublished.

Yousefi. S. 2009. *Report of Buffer Zone determined of Kale Kub*, South Khorasan Province cultural heritage and Tourism Archive, unpublished.

Zafaranloo. R. 2004. *Archaeological Report of Buffer Zone Determining of Sardakht Baghistan Ferdows*, Archive of the Cultural Heritage and Tourism Organization of South Khorasan (unpublished).

Zagarell. A. 2008. *The Prehistory of Northeast Bakhtiari Mountains, The Rise of a Highland Way of Life*, Transtate by Roustaei. K. Cultural Heritage, Handicrafts and Tourism Organization of Chahar Mahal va Bakhtiari Province.

# پروژۀ باستان‌شناسی پیش‌ازتاریخ شرق ایران؛ نخستین فصل کاوش در محوطۀ کله‌کوب آیسک، استان خراسان جنوبی (۱۳۹۷)

**محمد حسین عزیزی خرانقی***

استادیار گروه باستان‌شناسی، پژوهشکده باستان‌شناسی ایران، تهران، ایران.

**ماساشی آبه**

مؤسسۀ تحقیقات ملی توکیو برای ویژگی‌های فرهنگی، توکیو، ژاپن.

**سپیده جمشیدی یگانه**

دانش‌آموخته کارشناسی ارشد باستان‌شناسی، دانشگاه تهران. تهران ایران.

**افشین اکبری**

دانش‌آموخته کارشناسی ارشد باستان‌شناسی، دانشگاه تهران، تهران، ایران.

تاریخ دریافت: ۱۳۹۹/۰۲/۰۱؛ تاریخ پذیرش: ۱۳۹۹/۱۲/۲۰

## چکیده

شرق ایران در نقشه باستان‌شناسی، مخصوصاً در دوره پیش‌ازتاریخ، منطقه‌ای کاملاً ناشناخته است. با گذشت بیش از صد سال از شروع کاوش‌ها و مطالعات باستان‌شناسی در ایران، به دلایل مختلف مناطق شرقی کمتر یا اصلاً مورد توجه باستان شناسان قرار نگرفته و انتشارات بسیار محدودی از فعالیت‌های باستان‌شناسی در این بخش از ایران وجود دارد. محوطه باستانی کله‌کوب آیسک، یکی از محدود محوطه‌های پیش‌ازتاریخی استان خراسان جنوبی و در کل شرق ایران است که دارای نهشته‌های فرهنگی کافی به منظور ارائه گاهنگاری و شناخت توالی فرهنگی؛ فرهنگ‌های پیش‌ازتاریخ این منطقه است. کاوش‌های صورت گرفته در خرداد و تیر سال ۱۳۹۷ در این محوطه منجر به شناسایی فرهنگ‌های پیش‌ازتاریخی ناشناخته‌ای در منطقه شد که در این مقاله معرفی می‌گردند. شاید شاخص‌ترین دستاورد نخستین فصل کاوش در این محوطه شناسایی فرهنگ‌های هزاره چهارم پیش از میلاد با خاستگاه جنوب غربی و بین‌النهرینی است که شواهد آن بسیار دور از مرکز در این محوطه به دست می‌آیند. این شواهد فرهنگی که می‌توان آن‌ها را هم افق با فرهنگ شوش II یا اوروک جدید دانست، شامل انواع سفال‌های شاخص این دوره از قبیل سفال‌های لبه واریخته، سینی‌های خشن نوع بانشی، ظروف لوله‌دار و خمره‌های دسته دماغی، سفال‌های منقوش و سفال‌های چرخ‌ساز ظریفی هستند که در نواحی جنوب غربی، غربی، شمال غربی، جنوب شرق و فلات مرکزی ایران شناخته شده هستند ولی در شرق ایران برای نخستین بار شناسایی و معرفی می‌گردند. به طور کلی بر اساس کاوش در دو ترانشه لایه‌نگاری (A و B) در این محوطه سه دوره فرهنگی تاکنون شناسایی شده است که آن را از قدیم به جدید با عنوان کله‌کوب ۱ (دوره مس‌سنگی، هزاره پنجم پیش از میلاد)، کله‌کوب ۲ (افق فرهنگی شوش II، هزاره چهارم پیش از میلاد) و کله‌کوب ۳ (عصر مفرغ، هزاره سوم و دوم پیش از میلاد)؛ معرفی می‌کنیم.

**واژه‌های کلیدی:** کله‌کوب، لایه‌نگاری، گاهنگاری نسبی و مطلق، افق فرهنگی شوش II

* رایانامه‌ی نویسنده مسئول: m.azizi@richt.ir

Journal of Archaeological Studies

Vol 12, Is 4 - Serial Number 24, Winter 2021

Formerly "the Journal of the Faculty of Literature and Humanities"... University of Tehran

# Sassanian Pottery of Tesmijan, Kashan: A Study of Surface Materials

**Samaneh Asgarnejad**[1] & **Mohsen Javeri**[2]

**(143-163)**

## Abstract

The historical site of Tesmijan, 300 hectares in area, is located northeast of Kashan city. According to archaeological data, this site was used during the Iron Age, Parthian, Sassanid, and early Islamic periods. According to the surface archaeological materials, the peak of settlement in Tesmijan was during the Sassanid period, during which the site has probably been a Sasanian city. The site is one of the few Sassanid sites in Kashan that has been expanded during the Parthian period. According to the quantity and quality of data, this site can help understand the Sassanid period in the Iranian Central Plateau. In the present study, we want to answer these questions: What are the basic characteristics of the Sassanid pottery typology and forms in the site; how does a comparative analysis of these forms with other Sassanid sites help to gain a better understanding of the archaeological processes in the region? What are the main arguments regarding the origin of stylistic forms and decorations of local types in this site? For this purpose, the ceramics were sampled through systematic survey and networking of the Tesmijan site to determine the typology and forms of Sassanid pottery in the site, and a comparative analysis of these forms with other Sasanian sites has been presented We have attempted to investigate the local origin of the pottery in the site; Although the cultural material of the site is comparable to various Sassanid sites, especially in western Iran. Some local forms are also identified and introduced in this research using descriptive-analytical methods.

**Keywords:** Kashan, archaeology, systematic survey, Sassanid's, Historical Pottery, Ceramic Typology.

Received: 10 September, 2020; Accepted: 10 March, 2021

10.22059/jarcs.2021.309750.142924

Print ISSN: 2676-4288- Online ISSN: 2251-9297

https://jarcs.ut.ac.ir

1. Graduate of Archeology, Babolsar University. Babolsar. Iran.

2. Corresponding Author Email: Mohsen.Javeri@gmail.com. Assistant Professor, Department of Archaeology, University of Kashan. Kashan. Iran.

## 1-Introduction

Kashan county is located in the central part of Iran in north of Isfahan province. The ancient region of Tesmijan is located approximately 16 km northeast of Kashan and 5 km south of Meshkāt (Mashkān) along the ancient Kashan-Rey road (Marquart, 1896: 31; and Ghirshman, 1379: 17) (map 1). Tesmijan Historical district has been registered with the number 3336 in the National Monuments of Iran in 2000. In the central part of the historical area of Tesmijan and southwest of Aminābād Plain with an area of 120 hectares, which was systematically surveyed concerning distribution of cultural materials; the distribution of Surface Pottery of Sialk III, Iron Age, Parthian (Figure14), Sassanid, and different Islamic periods is observed, but the peak of settlement at the site is related to the Sassanid period (Asgarnejad, 2015). Here an attempt is made for conducting classification, typology, and relative chronology on the ceramics of the Sassanid period to assess the related pottery traditions in this part of Kashan Plain.

## 2-Research Methods

A survey was carried out in a methodical and surface sampling of 100 square meters meshes to conduct this research (Map 2). The Sampling methods for collecting and analyzing cultural materials in the present study are systematic surface sampling, documentation (including photography, drawing and extraction of data), classification, and analysis of data along comparative analysis. The method of study is descriptive-analytical.

## 3-Research Literature

The studies of the historical sites of Vigol and Harasgan are among the cited studies of Sassanid sites in the region (Javeri, 2009). The introduction of the Torshab Fortress and the remaining Pahlavi scripts on its different parts are also related to the Sassanid period (Solat, 2012). The site of Tesmijan with a brief description has been listed among several sites of the Sassanid period in the Kashan Plain (Sarokhani and Heidari, 2016). Despite its importance, until just before 2015, the site has been considered only for the archive preparation of national monuments record (Cultural Heritage Organization of Kashan, 2000). There are also brief references to its prehistoric ceramics in a general research (Sarokhani, 2001). In the meantime, the systematic survey of the site is the first purposeful scientific effort that has examined the pottery of different historical periods and architectural structures of the site (Asgarnejad, 2015). Subsequently, the sounding for delimitation was carried out. The most important finding of this sounding was to obtain an ostracon of the Parthian period (2019).

## 4-Tesmijan Site:

This site is located at 34°17'56" N and 51°17'10" E and an elevation of 1443 mas level (Figure 1). The site is almost flat topographically and the only parts remaining are the historical ruins and mouth of the aqueducts that rise 1.5 to 2 meters. In the historical region of Tesmijan with an area of 300 hectares, archaeological finds and architectural remnants, including ceramics, clinker, pottery kilns, and architectural remains like traces of walls and spaces such as a castle called Ghale Sefid (Figure 2), remains of a mudbrick caravanserai of Islamic period called Aminabad Castle (Figure 3) and another ruined castle with only part of a tower can be identified. One-third of this site's area is agricultural land, and the site has been heavily damaged by the farmlands, encroachment by ranchers, construction of dirt roads and the creation of two asphalt roads on both east and west sides of the site. The old road of Kashan to Qom has also crossed the east side to the north of the site and has split it. The Ghale Sefid, with an

area of 1 hectar - which is the most important relics of the remains of the Tesmijan site - has two towers in the corners and arches and trace of adobe. The eastern side of the castle has been completely destroyed due to the land leveling for agriculture. There are various pottery shreds inside the castle that have been sampled, especially food containers scattered on the surface of the site. In addition to ceramic remains, which are one of the most important data on the site, one of the many data is the scattering of clinker and the remnants of several pottery kilns, indicating the activity of pottery workshops in the Sassanid period in this site.

**5-Description of the Sassanid Pottery characteristics of the site**

The basis of the classification of ceramics in the present study is the form of ceramic vessels (vessel shape, the shape of the vessel mouth) and their motifs. The typology of ceramics is based on the dominant types, and the rare samples have been ignored. The vessels' shape in order of abundance includes various types of vat, bin, bowl, jar, flat vessels, lids, cups and tubular vessels (Chart 1). The base shape can be seen in two types; disc base 42% and flat base 58% (Chart 2). Containers' mouth forms are divided into three forms: open-mouthed, vertical-mouthed and closed-mouthed. Most of them are wheel-made ware and rarely handmade. Containers paste is divided into two categories. Washed smooth clay and sand temper, including forms such as bowls, some lids, small vats, cups, tubular containers, and washed smooth clay with coarse sand temper, also include some bins, large and medium vats, and some lids.

**5-Vessel form:**

**5-1- Bowls:** All bowls, except for two samples, are cooked at the right temperature. The pottery surface was polished in two types (Figure4: 8) and was without burnishing in the other ceramics. The bowls can be divided into three groups in terms of shape: **the open-mouth bowl** (Figure4: 1 to 9), in which several samples have incised decoration on the edge of the vessel (Figure4. 1: 9). **The bowl with a closed mouth** has a spherical body (Figure5:10) and the third group is the **bowl with a vertical mouth** (Figure5: 9).

**5-2- Bins:** Among the samples studied, four containers were polished after making (Figure5: 5). These forms are also divided into three groups. **Deep open-mouthed bin** (Figure5: 4 to 7). **The bin with a closed mouth** has a spherical body and some of them have a compressive decoration (Figure5: 1) and a **vertical-mouth bin** with a thick and shallow rim (Figure5: 2).

**5-3- Cups:** Cups are rarely found in an open-mouthed form (Figure5: 8) among the studied ceramics.

**5-4- Jugs:** All the jugs have a uniform surface without any special burnishing. The jugs are divided into two groups of **short-necked jugs** (Figure6: 1 and 4) and **long-necked jugs** (Figure6: 2 and 3).

**5-5- Vats:** The vats are divided into different groups in terms of the structure and shape of the lip. From the technical point of view, the construction is wheel-made and hand-made, and the surface of some ceramics is burnished with the wet hand, and a piece of pottery has a thick clay coating. In some samples, medium and coarse sands have been used as temper in pottery paste. These vessels contain vertical, open and closed mouth. The vats are divided into three types. The first type of earthenware is dedicated to **the vat without a neck**. The mouth angles of these vessels are in three forms: open-mouthed (Figure6: 6), closed mouth (Figure6: 7 and 9, Figure7: 4 and 7, Figure8: 7) and vertical mouth (Figure6: 8 and Figure8: 3). Some of them have a spherical body (Figure6: 7, Figure7: 4 and Figure8: 2), and the bodies of some are obliquely attached to the rim (Figure8: 7). The

second group, **the short neck vat**, can be classified as the open mouth (Figure7: 1), the closed mouth (Figure7: 6), and the vertical mouth (Figure7: 2 and Figure9: 1, 2 and 4). Some vats of this group have ridged rim (Figure9: 3) and some have two rims (Figure7: 3); the third group can be separated to long neck vat with an open mouth (Figure9: 6) and long neck vat with a vertical mouth (Figure7: 5 and Figure9: 5).

**5-6- Tubular vessels:** The upper part of the obtained spouts is straight and flat, but the lower part is open and bent downwards. The above spouts are decorated in two simple and imprinted (additional decoration) types (Figure9: 7).

**5-7- Lids:** All lids baked in enough heat except one. The lids are separable in different sizes and shapes (long rim and short rim), (Figure10: 2, 3 and 6, 7).

**5-8- Flat dishes:** Flat dishes are divided into two groups: plate and tray. These vessels are not mud-coated and burnished. The plates have short edges (Figure10: 1, 8 and 10), and the tray can be with (Figure10: 9) or without edges (Figure10: 4 and 5).

**5-9- Local forms:** Among the types of vessels introduced in the Sasanian period, some ceramics forms cannot be cited or compared with other sites in the present study. This indicates the existence of a local pottery form and style that can be identified and introduced in the Tesmijan site. Among these forms are the double-rim closed mouth vat (Figure13: 1 and 4), the open-mouth vat (Figure13: 3), the closed mouth bin (Figure13: 2), and the open-mouth bowl (Figure13: 5). The creation of these forms may indicate the existence of a continuous settlement from the Parthian to the Sasanian Period while continuing, maintained the capacity to innovate in pottery production.

**6-Base form:**

Among the types of base forms that were prevalent in the Sassanid period, in the study of these ceramics, the vessels bases can be divided into three types: disk (Figure9: 8), concave disk (Figure9: 9), and flat (Figure5: 2, 4 and 5).

**7-Decoration types:**

The most common technique for decorating Sassanid pottery in the historical site of Tesmijan is to use a variety of incised decorations (Figure11: 5 to 7). There are decorations on the plate, tray, some bowls, the cups (Figure7: 1), inside the earthenware vessels and the outside of the vat and the jug, and some of them have decorations on the edge of the vessel (Figure3: 9). A bulging horizontal strip (bulging neck band) is made between the neck and the shoulder of the vat (Figure7: 6) and below the edge of the bowl and bins (Figure5: 6 and 7).

**7-1- Simple decorations (single):** Among the single motifs used in the ceramic vessels of the historical site of Tesmijan, there are seven groups. Additional decoration (Figure3: 1 and Figure9: 7), excised (Figure11: 1), engraved decoration (Figure3: 9, Figure6: 7, Figure9: 8, Figure10: 4 and 9, Figure11: 5 to 7), scratched (fingernail impression) decoration (Figure8: 4), the comb decoration, the mentioned motifs are created by means with two needles to nine needles (Figure11: 8 to 10), stamped decoration with circular, triangular and cross diagonal lines (Figure11: 2 to 4), impressed decoration (using finger or tool) (Figure10: 1, Figure8: 5, Figure7: 5 and Figure6: 9).

**7-2- Combined decorations:** These motifs include two to four different techniques used to imprinting the vessel. Among the combined decorations used in the ceramics of the historical site of Tesmijan, ten groups can be mentioned. Excised and incised (Figure9: 1), excised and impressed in different types of Rope Shapes (Figure12: 2, Figure5: 1), incised and impressed (Figure5: 8 and Figure10: 5 and 10), incised and additional (Figure12: 9), incised and stamped (Figure12: 4 and 8), stamped and comb decoration (Figure12: 5 and

7), impressed additional (rope), incised (Figure12: 1 and 6), excised impressed (rope) and additional (Figure12: 3 and Figure7: 3), excised impressed (rope) and incised (Figure3: 1 and Figure8: 2).

## 8-Discussion:

Everything that remained from a historical era in the central part of the Iranian plateau like chār Taqi (fire temples) of Niāsar, khorramdasht, recent sites like vigol and its fire temple, and also historical site of Tesmijan show that Kashan was an important location in the historical era in the region. Tesmijan is one of these sites which by studying its ceramics we can open a way for further studies. So by studying the forms and typology of ceramics of Tesmijan, the following results achieved:

According to classification, typology, and comparative comparing of Sassanid potteries of Temijan site, some pottery examples are comparable to Sassanid recognized sites, for example: the open-mouth bowls (table 1) with sites like Sirom Shah castle, Seymareh, Gorgān wall, Yazdgerd castle, Ras al Khaimah, Ardeshir Khwrrah, Mianāb of Shushtar, Fārsān plain, Sonqor and Koliai and Oltan Ghalasi.

The closed mouth bowls (table10: 2) can be compared with Yazdgerd castle. The bowls with a vertical month (table 9:2) also compared with Seymare and Abu Nasr castle. The open mouth bin (table 2:4 to 7) has conformity with Kashan plain, Yazdgerd castle, Mianāb of Shushtar, Mahneshan of Zanjan, Ras al Khaimah, and Haji Abād. The closed-mouth bin (table 2:1) has conformity with Seymareh and Haji Abad, and also the vertical mouth bin (table2:2) has conformity with sites like Mianāb of Shushtar, Mahneshan of Zanjan, Kashan plain, Yazdgerd castle, Vigol and Atashkuh. The open mouth cup (table 2:8) can be seen in Tal-I Malyan. The jug with a short neck (table 3:1, 4, 5) is available in studies of Farsan plain, Bishapour, Haji Abad, Kharabe shattani. The jug with a long neck (table 3:2, 3) is available in Mahneshan of Zanjan. The open mouth vat without a neck (tables3:6, 4:2) has similarities with the Gorgan wall, Seymareh and Sonqor and Koliai. The vat without neck with closed mouth (tables3:7-9, 4:4-7, 5:2,4-7) has similarities with the Gorgan wall, Yazdgerd castle, Seymare, Mianab of Shushtar, Mahneshan of Zanjan, Bishapour, and Koliai. The vertical mouth vat without a neck (Table 3:8, 5:3, 7) has similarities with Mahneshan of Zanjan, Mianab of Shushtar. The short neck vat with an open mouth (Table 4:1) was seen in Yazdgerd castle, Farsan plain. The closed mouth vat with a short neck (table4:6) was seen in Kashan plain, Ardeshir Khwrrah and Haji Abad. The vertical mouth vat with a short neck (tables 4:2, 6:1 to 4) was seen in Mahneshan of Zanjan and Haji Abad, Gorgan wall, Yazdgerd castle, Vigol, Sirom Shah, Seymare, Qasr-e Abu Nasr, and Bishapour. The open mouth vat with a long neck (Table 6:6) is comparable with Ras al Khaimah and Yazdgerd castle sites. The vertical mouth vat with a long neck (table 4:1, 5:1, 6:5) is comparable with Farsan plain, Bishapour, Gorgan wall, Yazdgerd castle and Qasr-e Abu Nasr.

It's not possible to compare Sassanid ceramics of the Tesmijan site with samples of the central plateau and Kashan plain. Because of the lack of enough sources and finds from stratigraphy for a historical era in central plateau, but based on studies, it seems this site has more similarities with the western part of Iran and some parts of Fars plain. Of course, one of the reasons is that more studies have been done in these areas. It seems that some types that are different from known and characterized Sassanian types (table 10) show the local type at that site.

## 9-**Conclusion**:

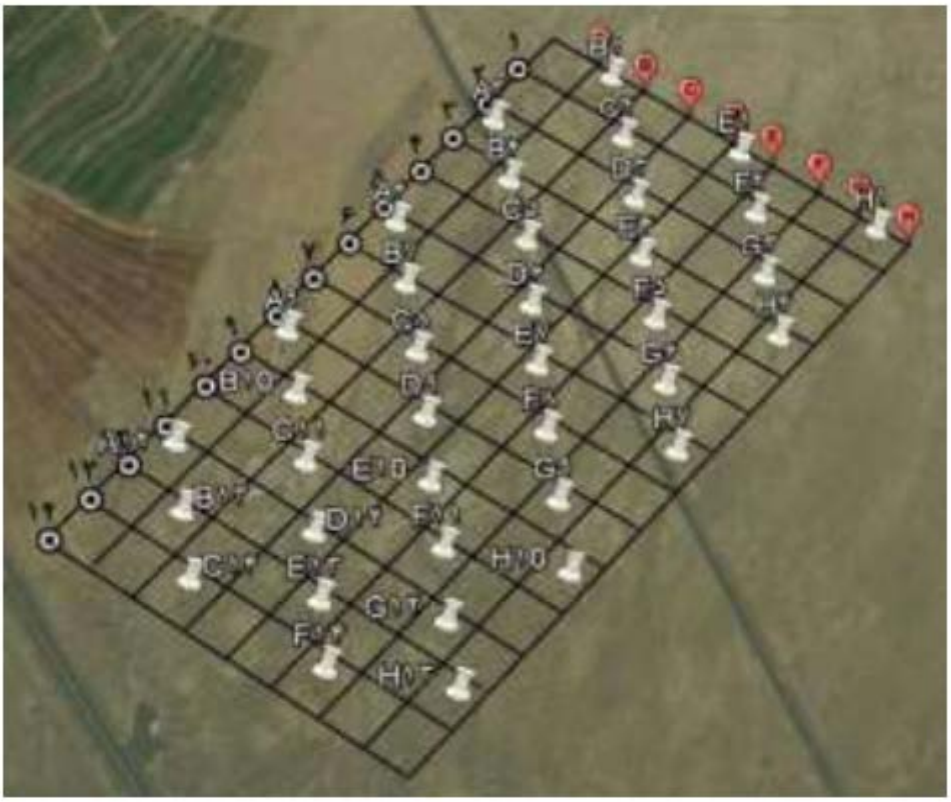
According to studies on the typology and forms of Sassanid ceramics of Tesmijan site, the following results have been obtained that the mentioned forms include 8 groups and each of them is divided into smaller forms and some of the various designs used (single or compound) are on the body of the vessels and some are on the edge of the vessels. By comparative study, mentioned types with sites of west, south, north-west and north-east are comparable together and showing closer relation and more influences of Tesmijan on western Sasanian sites and Fars plain. To answer the third question, although there is a similarity between ceramics of other areas and Tesmijan, it can be seen that there is a similarity that there are innovations and evolution in ceramics of this site and perhaps the local style of pottery production in Tesmijan was expanded. The typology and comparative studies of ceramics and the dispersion of relics of Sassanid era in 120 hectares (which is classified for systematically studying) show that the peak of settlement in the mentioned site is related to the Sassanid era, and we're facing a vast city in Sassanid era. In this region and because of the location, the quality of the findings of one of important sites in Sassanid period in the central plateau of Iran that has been ignored. It is hoped that publishing the site information causes this important site to be considered in future research.

**Figure 1: Aerial photograph of the historical site of Tesmijan and Aminabad plain in 1970**


*Map 1: Central part of Kashan (Archives of Cultural Heritage Organization, 2012)*

**Figure 2: Ghale Sefid**

**Figure 3 :Aminabad Castle**



**Map 2: Selected squares of grids, Asgarnejad,2015**

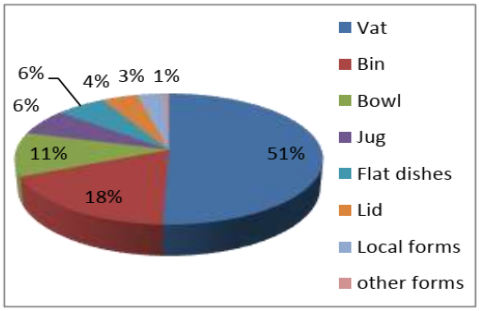



*Chart 1: Frequency of vessels form*

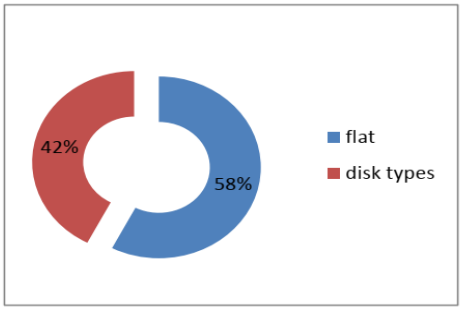



*Chart 2: Frequency of base shape*

**Chart 2: Frequency of base shape**

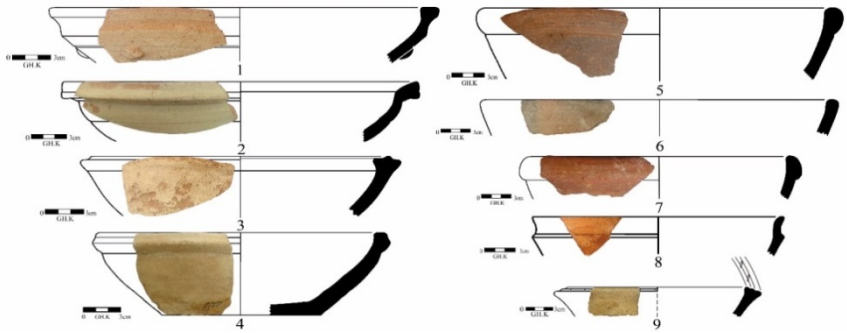


**Figure 4. open mouth bowls**

**Table 1. open mouth bowls**

| Reference | -1-shape 2- wheel made 3- temper 4- slip color 5- baking | number |
|---|---|---|
| Keall and Keall. 1981: fig.17.3 | 1-bowl 2- wheel made 3- mineral 4-pink 7/4. 5YR5. 5- sufficient | 1 |
| Keall and Keal.1981: fig.20.15<br>Kennet. D. 2004: fig.10. Type 101<br>Karimian et all:2015. Type4-1.Shape L9-1 | 1-bowl 2- wheel made 3- mineral 4-white 8/1. 2.5YR. 5- sufficient | 2 |
| Mohamadifar.2014:fig. 7. S.S.98s & Zivdar et all.2015: fig.2. shape40<br>Heydari & Sarookhani.2015:fig.296. Shape17 | 1-bowl 2- wheel made 3- mineral 4-very pale brown 8/2. 10R. 5- sufficient | 3 |
| Keall and Keall.1981: fig.20.25 | 1-bowl 2- wheel made 3- mineral 4-pale yellow 8/2. 5Y. 5- sufficient | 4 |
| Aali &Khosrozadeh.2005: shape6. Row1<br>Habibi & Heydari.2013:shape10.fig.7 | 1-bowl 2- wheel made 3- mineral 4-reddish brown 8/4. 5YR. 5- sufficient | 5 |
| Alizade K. 2007b: fig.12. no. T1.L21.1<br>Zivdar et all. 2015: fig.2. No24 | 1-bowl 2- wheel made 3- mineral 4-reddish rownb 4/4. 5YR. 5- sufficient | 5 |
| Aali &Khosrozadeh.2005: shape.58.Row15<br>Sarikhani et all.2015. shape.2. Row27<br>Zivdar et all.2015: fig.2. No30<br>Habibi & Heydari.2013:shape.11.fig.3 | 1-bowl 2- wheel made 3- mineral 4-red 4/6. 10R. 5- ١ sufficient | 7 |
| Mohamadifar.2014:fig.7. S.S.92<br>Sarikhani et all.2015. shape.2. Row7<br>Zivdar et all.2015: fig.6. shape.1 | 1-bowl 2- wheel made 3- mineral 4-light yellowish brown 6/4. 10YR. 5- sufficient | 8 |
| Priestman. 2013: fig.18:10.g<br>Heydari & Sarookhani.2015:fig.316. Shape3 | 1-bowl 2- wheel made 3- mineral 4-red 4/6. 10R. 5- sufficient | 9 |

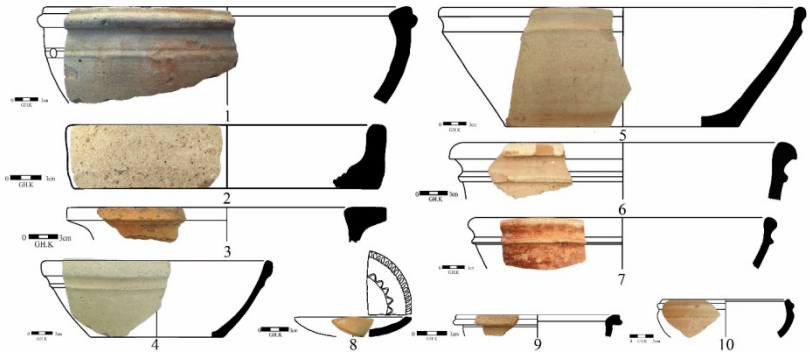


**Figure 5. bowls and bins**

**Table 2 . bowls and bins**

| Reference | 1-shape 2- wheel made 3- temper 4- slip color 5- baking | number |
|---|---|---|
| Azarnoush. 1994: fig.184.e<br>Zivdar et all.2015: fig2. shape10 | 1-bin 2- wheel made 3- mineral 4-reddish brown 5/4. 5Y. 5- sufficient | 1 |
| Aali &Khosrozadeh.2005: shape59.Row2<br>Khosrozadeh & Aali 2005: sktch13.No5 | 1-bowl 2- wheel made 3- mineral 4- pinkish white 8/2. 5YR. 5- sufficient | 2 |
| Karimian & Javeri:2009. on right. Shape1<br>Rahbar.2000: Shape1. sketch1<br>Heydari & Sarookhani.2015: fig.296.Shape1<br>Keall and Keall. 1981: fig.19.22 | 1-bin 2- wheel made 3- mineral 4- pale red 6/4 10R. 5- sufficient | 3 |
| Aali &Khosrozadeh.2005: Shape68.Row7 | 1-bin 2- wheel made 3- mineral 4- pale yellow 8/2.5Y. 5- sufficient | 4 |
| Kennet. D. 2004: fig.10. Type 112 | 1-bin 2- wheel made 3- mineral 4- pink 7/4. 5YR. 5- sufficient | 5 |
| Heydari & Sarookhani.2015:fig.296.Shape1<br>Karimian et all.2014: Sketch4-1. Shape S:I10-26<br>Keall and Keall. 1981: fig.17.15 | 1-bin 2- wheel made 3- mineral 4- pinkish white 8/2. 10R. 5- sufficient | 6 |
| Khosrozadeh & Aali. 2005: Sketch13. No9<br>Heydari & Sarookhani. 2015:fig.300.Shape2 | 1-bin 2- wheel made 3- mineral 4- pale yellow 8/2. 5Y. 5- sufficient | 7 |
| Alden and Balser. 1978: fig.5.4 | 1-bowl 2- wheel made 3- mineral 4- pale red 6/4. 10R. 5- sufficient | 8 |
| Whitcomb.Fig.53. no.r<br>Zivdar et all.2015: fig.2. shape2 | 1-bowl 2- wheel made 3- mineral 4- reddish yellow 6/6. 5YR. 5- sufficient | 9 |
| Keall and Keall. 1981: fig.19.20<br>Heydari & Sarookhani.2015:fig.297.Shape11 | 1-bin 2- wheel made 3- mineral 4- pink 7/4. 5YR. 5- sufficient | 10 |

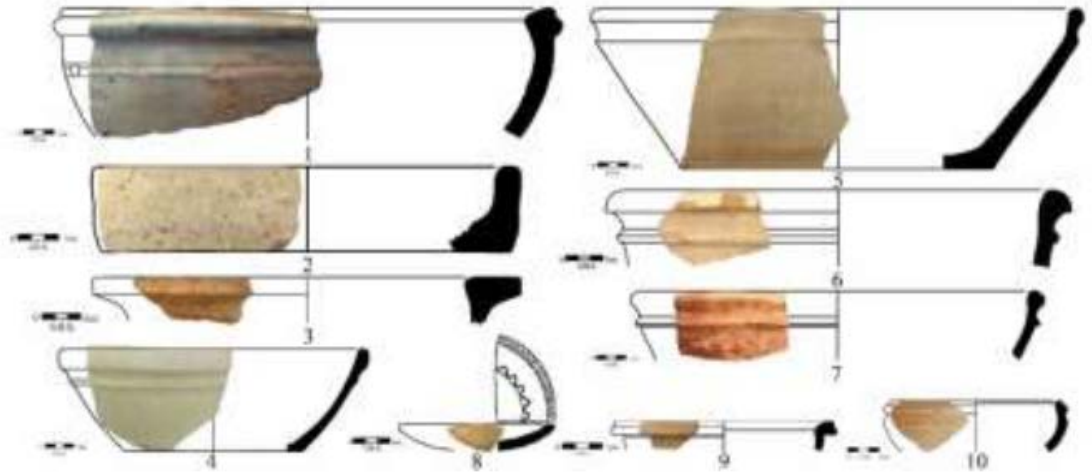


*Figure 5. bowls and bins*

**Figure 6. jugs and vats**

**Table 3. jugs and vats**

| Reference | 1-shape 2- wheel made 3- temper 4- slip color 5- baking | number |
|---|---|---|
| Amiri et all.2012:fig 5 & Habibi & Heydari.2013:shape1.fig2 | 1-jug 2- wheel made 3- mineral 4- pale yellow 5/2. 5YR. 5- sufficient | 1 |
| Aali &Khosrozadeh.2005: Sketch14. No6 | 1-jug 2- wheel made 3- mineral 4- pale yellow 7/4. 7.5YR. 5- sufficient | 2 |
| Khosrozadeh & Aali.2005: Sketch14. No13 | 1-jug 2- wheel made 3- mineral 4- pale yellow 8/3. 5Y. 5- sufficient | 3 |
| Azarnoush, 1994: fig.174.d,fig.185.n | 1-jug 2- wheel made 3- mineral 4- pale yellow 7/3. 5Y. 5- sufficient | 4 |
| Simpson and Watkins. fig.62.2 | 1-jug 2- wheel made 3- mineral 4- pinkish white 8/2. 10R. 5- sufficient | 5 |
| Zivdar et all.2015: fig2. No 3 Priestman. 2013: fig.18:11.f | 1-vat 2- wheel made 3- mineral 4- light red 6/6. 10R. 5- sufficient | 6 |
| Kennet. 2002: fig.3. type.81 Amiri et all.2012:fig 14. Shape 1 Zivdar et all.2015: fig2.Shape 1 | 1-vat 2- wheel made 3- mineral 4- very pale 7/3. 10YR. 5- sufficient | 7 |
| | 1-vat 2- wheel made 3- mineral 4light red 6/6. 10YR. 5- sufficient | 8 |
| Aali &Khosrozadeh.2005: Shape 65. Row5 Keall and Keall. 1981: fig.9.30 Zivdar et all.2015: fig8.Shape 1 | 1-vat 2- wheel made 3- mineral 4- light reddish brown 6/4. 5YR. 5- sufficient | 9 |

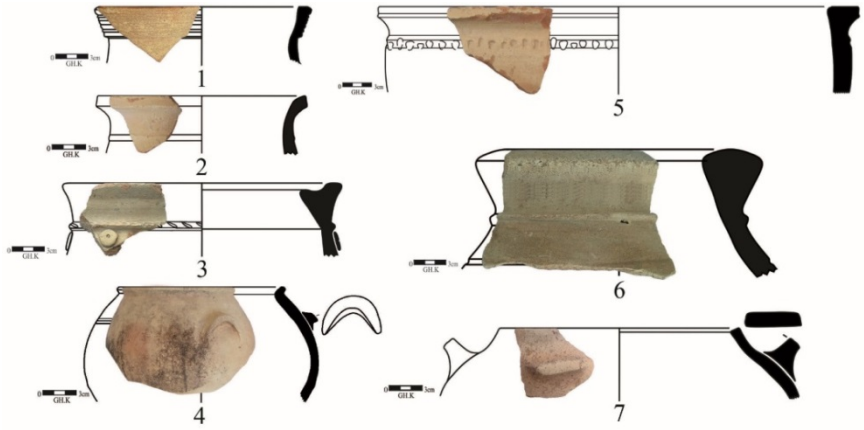



**Figure7. vats with and without neck**

**Table 4. vats with and without neck**

| Reference | 1-shape 2- wheel made 3- temper 4- slip color 5- baking 6- type/motif place | number |
|---|---|---|
| Khosrowzadeh. 2010: Fig.8. no.13<br>Keall and Keall. 1981: fig.9.38 | 1-vat 2- wheel made 3- mineral 4- pale yellow 8/2. 5Y. 5- sufficient | 1 |
| Sarikhani et all.2015. shape2. Row7<br>Khosrozadeh & Aali.2005: Sketch15. No 9 | 1-vat 2- wheel made 3- mineral 4- pale yellow 7/4. 5Y. 5- sufficient | 2 |
| | 1-vat 2- wheel made 3- mineral 4- pale yellow 7/3. 5Y.2.5. 5- sufficient | 3 |
| Keall and Keall. 1981: fig.16.26<br>Priestman. 2013: fig.18:17.k | 1-vat 2- wheel made 3- mineral 4- pale yellow 8/24. 5Y.2.5. 5- sufficient | 4 |
| Amiri et all.2012:fig 14. Shape 18<br>Karimian et all.2014: Sketch4-1. Shape S:$I_{11}$-17 | 1-vat 2- wheel made 3- mineral 4- very pale 8/4. 10YR.2.5. 5- sufficient | 5 |
| Azarnoush. 1994: fig.190.e<br>Heydari & Sarookhani.2015:fig288.Shape17<br>Karimian et all.2014: Sketch4-1. Shape S:$I_{10}$-44 | 1-vat 2- wheel made 3- mineral 4- pale yellow 7/3. 5Y. 5- sufficient | 6 |
| Priestman. 2013: fig.18:7.f | 1-vat 2- wheel made 3- mineral 4- pale yellow 8/4. 10YR. 5- sufficient | 7 |

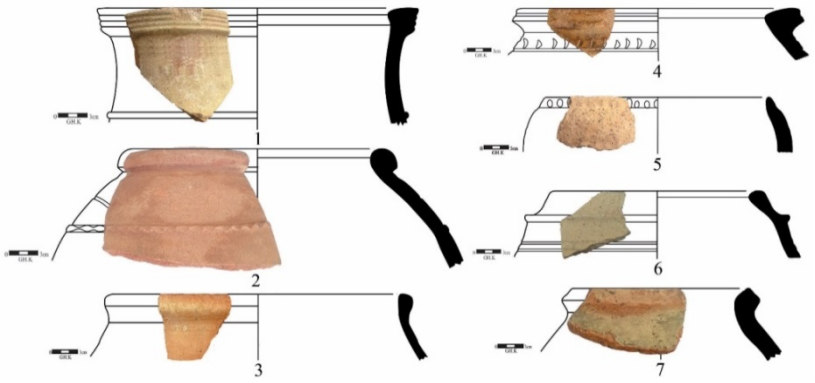
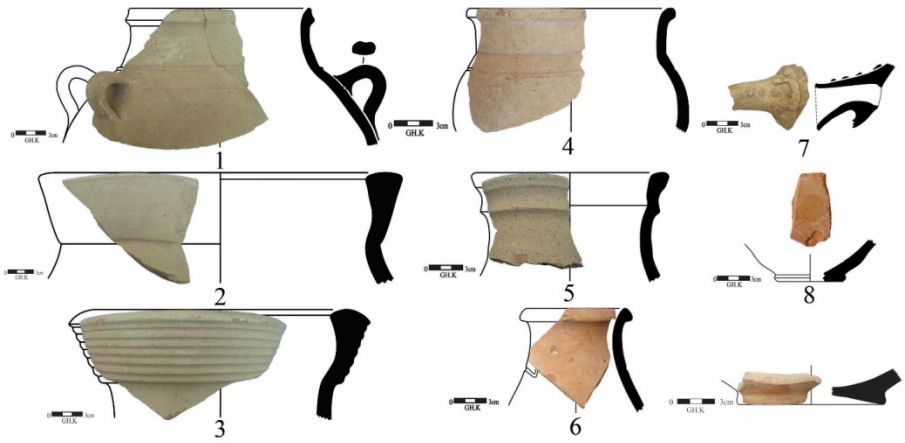


**Figure 8. Vats with short and long neck**

**Table 5. Vats with short and long neck**

| Reference | 1-shape 2- wheel made 3- temper 4- slip color 5- ١ baking 6- type/motif place | number |
|---|---|---|
| Whitcomb. Fig.23, no.f | 1-vat 2- wheel made 3- mineral 4- pale yellow 7/4. 5Y.2.5. 5- sufficient | 1 |
| Aali &Khosrozadeh.2005: Shape63, Row17<br>Aali &Khosrozadeh.2005: Sketch18. No 2<br>Keall and Keall. 1981: fig.10.25 | 1-vat 2- wheel made 3- mineral 4- red 5/6. 10R. 5- sufficient | 2 |
| | 1-vat 2- wheel made 3- mineral 4- light red 6/62. 10R. 5- sufficient | 3 |
| Keall and Keall. 1981: fig.9.24<br>Hozhabri.2001. Shape 45. Sketches 1&2 | 1-vat 2- wheel made 3- mineral 4- light brown 6/4. 7.5YR. 5- sufficient | 4 |
| Kennet. D. 2004: fig.21. CP1.1 | 1-vat 2- wheel made 3- mineral 4- very pale brown 7/4. 10YR. 5- sufficient | 5 |
| Khosrowzadeh. 2010: Fig.8. no.18<br>Zivdar et all.2015: fig9<br>Sarikhani et all.2015. shape2. Row5 | 1-vat 2- wheel made 3- mineral 4- pale yellow 8/3. 2.5Y. 5- sufficient | 6 |
| Aali & Khosrozade.2005. Shape 65. Row8<br>Khosorzade & Aali. 2005: Sketch15.No8 | 1-vat 2- wheel made 3- mineral 4- reddish yellow 6/6. 5YR. 5- sufficient | 7 |



**Figurer 9. long neck vat with a vertical mouth and disk and concave bases**

**Table 6. long neck vat with a vertical mouth and disk and concave bases**

| Reference | 1-shape 2- wheel made 3- temper 4- slip color 5- baking 6- type/motif place | number |
|---|---|---|
| Azarnoush, 1994: fig.184.b<br>Keall and Keall. 1981: fig.12.10<br>Priestman. 2013: fig.18:5.a | 1-vat 2- wheel made 3- mineral 4- light gray 7/2. 5Y. 5- sufficient | 1 |
| Keall and Keall. 1981: fig.9.17<br>Heydari & Sarookhani.2015:fig284.Shape19 | 1-vat 2- wheel made 3- mineral 4- pale yellow 7/3. 5Y. 5- sufficient | 2 |
| Amiri et all.2012:fig.14. Shape 6<br>Zivdar et al.,2015: fig2,Shape.16<br>Heydari & Sarookhani.2015:fig.300.Shape.1 | 1-vat 2-wheel made 3- mineral 4-light gray 7/2 5Y. 5- sufficient | 3 |
| Whitcomb. Fig.19, no.d<br>Karimian & Javeri.2009. Sketch1.on right. shape15<br>Mohamadifar.2014. fig.5. S.S.55<br>Keall and Keall.1981: fig.13-21 | 1-vat 2-wheel made 3- mineral 4- pinkish white 8/2. 10YR. 5- sufficient | 4 |
| Keall and Keall. 1981: fig.13.4 | 1-vat 2-wheel made 3- mineral 4- very pale brown 8/4. 10YR. 5- sufficient | 5 |
| Kennet. 2002: fig.4. 81<br>Keall and Keall. 1981: fig.10.33 | 1-vat 2-wheel made 3- mineral 4- pink 7/3 5Y. 5- sufficient | 6 |
| | 1-tubular 2-wheel made 3- mineral 4- very pale brwon 8/4. 10YR. 5- sufficient | 7 |
| Priestman. 2013: fig.18:11.q | 1-base 2-wheel made 3- mineral 4- redish 5/4 5YR. 5- sufficient | 8 |
| | 1-base 2-wheel made 3- mineral 4- light red 6/6. ١ 10R. 5- sufficient | 9 |

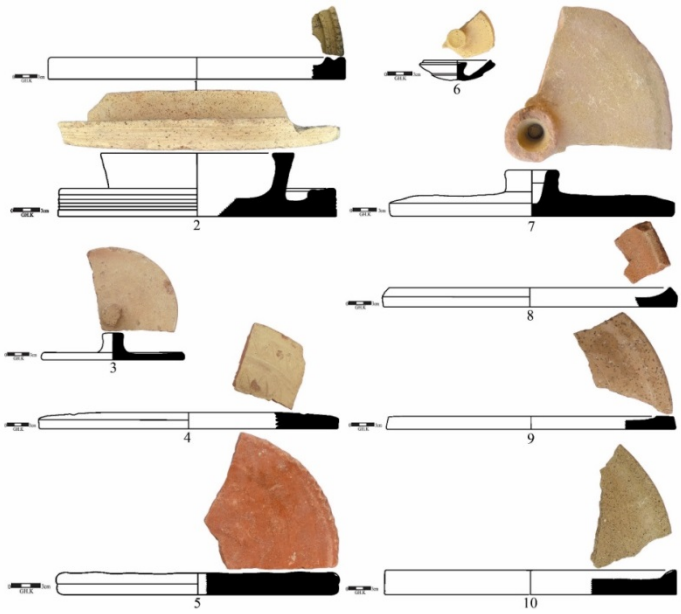


**Figure 10. lids and flat dishes**

**Table 7. lids and flat dishes**

| Reference | 1-shape 2- wheel made 3- temper 4- slip color 5- baking | number |
|---|---|---|
| | 1-dish 2-wheel made 3- mineral 4- pale olive 5/6 5Y. 5- sufficient | 1 |
| | 1-lid 2-wheel made 3- mineral 4- pale yellow 8/3. 5Y. 5- sufficient | 2 |
| | 1-lid 2-wheel made 3- mineral 4- pink 8/3 5YR. 5- sufficient | 3 |
| | 1-tray 2-wheel made 3- mineral 4- pale yellow 8/3. 5Y. 5- sufficient | 4 |
| | 1-tray 2- wheel made 3- mineral 4- red 4/6. 10R 5- sufficient | 5 |
| | 1- lid 2- wheel made 3- mineral 4- pale yellow 7/3. Y2.5. 5- sufficient | 6 |
| | 1-lid 2- wheel made 3- mineral 4- pale yellow 7/4. 10R. 5- sufficient | 7 |
| | 1-dish 2- wheel made 3- mineral 4- red 4/6. 10R. 5- sufficient | 8 |
| | 1-tray 2- wheel made 3-mineral 4- reddish brown 5/3. 5YR 5- sufficient | 9 |
| | 1-dish 2- wheel made 3- mineral 4- pale olive 6/3. 5Y. 5- sufficient | 10 |

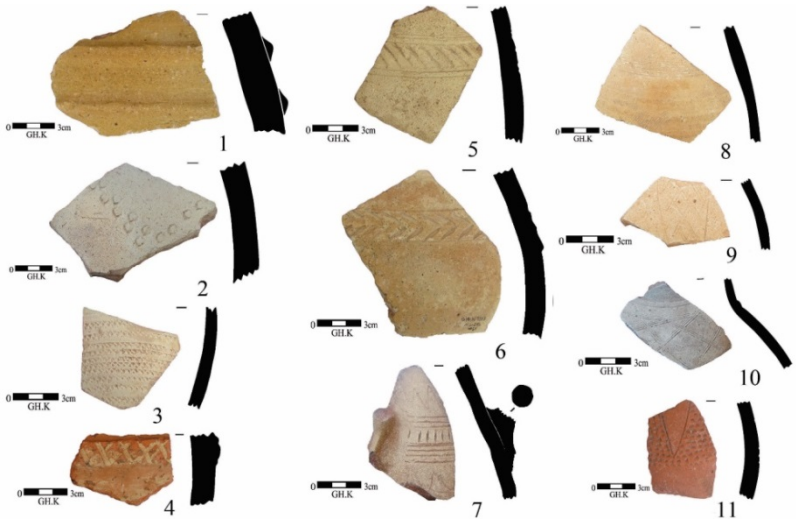


**Figure 11. simple decorations: excised, engraved and needles**

**Table 8. simple decorations: excised, engraved and needles**

| reference | 1-shape 2- wheel made 3- temper 4- slip color 5- baking 6- type/motif place | number |
|---|---|---|
| Heydari & Sarookhani,2015:fig291.Shape5 | 1-shred 2-wheel made 3- mineral 4- olive 5YR 5/6. 5- sufficient 6- excised/outside | 1 |
| | 1-shred 2-wheel made 3- mineral 4- very pale brown 10YR. 8/3. 5- sufficient 6- stamped/outside | 2 |
| Simpson and Watkins, fig.14 | 1-shred 2-wheel made 3- mineral 4- white 2.5YR. 8/1. 5- sufficient 6- stamped/outside | 3 |
| | 1-shred 2-wheel made 3- mineral 4- reddish yellow 5YR. 6/8. 5- sufficient 6- stamped/outside | 4 |
| | 1-shred 2-wheel made 3- mineral 4- pale yellow 5Y. 7/4. 5- sufficient 6- incised/outside | 5 |
| Keall and Keall. 1981: fig.25.19 Heydari & Sarookhani.2015:fig284.Shape18 Karimian et all.2014: Sketch4-1. Shape $K_{13}$-44 | 1-shred 2-wheel made 3- mineral 4- yellow 5Y. 7/6. 5- sufficient 6- incised/outside | 6 |
| | 1-shred 2-wheel made 3- mineral 4- pink 5YR 7/4 5. 5- sufficient 6- incised/outside | 7 |
| Simpson and Watkins. fig.11 | 1-shred 2-wheel made 3- mineral 4- pale yellow 2.5Y. 8/4. 5- sufficient 6- comb decoration /outside | 8 |
| | 1-shred 2-wheel made 3- mineral 4- pale yellow 2.5Y. 8/3. 5- sufficient 6- comb decoration /outside | 9 |
| Keall and Keall. 1981: fig.21.11 | 1-shred 2-wheel made 3- mineral 4- pale yellow 5Y. 8/2. 5- sufficient 6- comb decoration /outside | 10 |
| | 1-shred 2-wheel made 3- mineral 4- red 10R. 4/6. 5- sufficient 6- incised and impressed/outside | 11 |

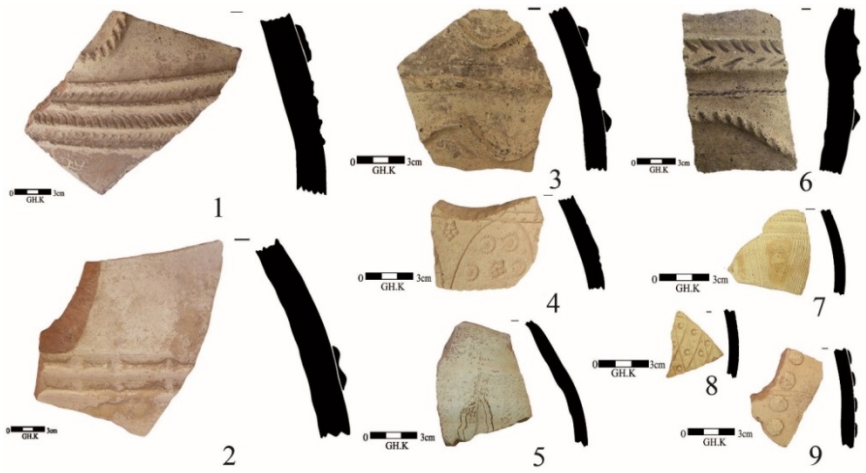



**Figure 12. Combined decorations**

**Table 9. Combined decorations**

| reference | 1-shape 2- wheel made 3- temper 4- slip color 5- baking 6- type/motif place | number |
|---|---|---|
| | 1-shred 2-wheel made 3- mineral 4- pink 5YR 7/3 5- sufficient 6- excised | 1 |
| Keall and Keall. 1981: fig.27.12 | 1-shred 2-wheel made 3- mineral 4- pink 5YR 7/4 5- sufficient 6- impressed and excised/outside | 2 |
| | Shred 2-wheel made 3- mineral 4- light gray 2.5Y 7/2 5- sufficient 6- impressed and additional/outside | 3 |
| Keall and Keall, 1981: fig.22.9 | 1-shred 2-wheel made 3- mineral 4- very pale brwon 10YR 8/4 5- sufficient 6- stamped and incised/outside | 4 |
| Keall and Keall, 1981: fig.22.6 | 1-shred 2-wheel made 3- mineral 4- white 2.5YR 8/1 5- sufficient 6- impressed and incised/outside | 5 |
| | 1-shred 2-wheel made 3- mineral 4- light brownish gray 2.5YR 8/2 5- sufficient 6- addistional and impressed/outside | 6 |
| | 1- shred 2-wheel made 3- mineral 4- white 2.5YR 8/2 5- sufficient 6- stamped and comb decoration/outside | 7 |
| | 1- shred 2-wheel made 3- mineral 4- white 2.5YR 8/2 5- sufficient 6- stamped and incised/outside | 8 |
| | 1- shred 2-wheel made 3- mineral 4- pink 5YR 8/3 5- sufficient 6- additional and incised/outside | 9 |

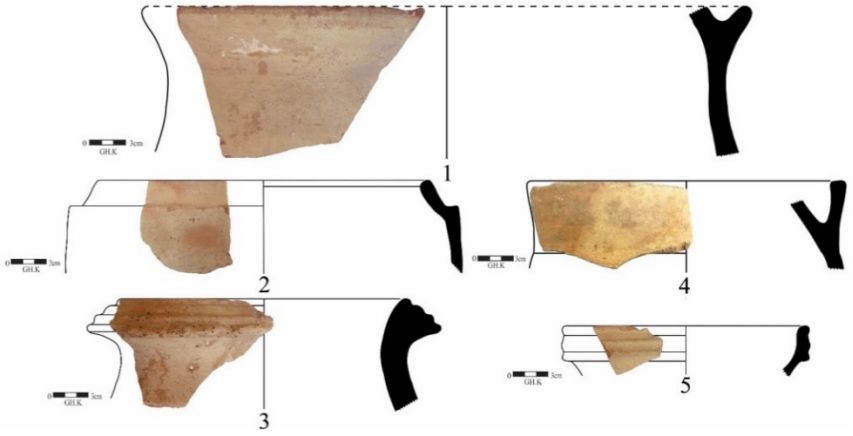



**Figure 13. local forms**

**Table 10. local forms**

| reference | 1-shape 2- technique3- temper 4- slip color 5- baking | number |
|---|---|---|
| | 1-vat 2-wheel made 3- mineral 4- pinkish white 7.5 YR 8/2 5- sufficient | 1 |
| | Bin1-vat 2-wheel made 3- mineral 4- pink 2.5 YR 8/3 5- sufficient | 2 |
| | Bin1-vat 2-wheel made 3- mineral 4- pink 5 YR 7/4 5- vat - sufficient | 3 |
| | 1-vat 2-wheel made 3- mineral 4- yellow 10YR8/6 5- sufficient | 4 |
| | 1-bowl 2-wheel made 3- mineral 4- very pale brown 10 YR 8/3- sufficinet | 5 |

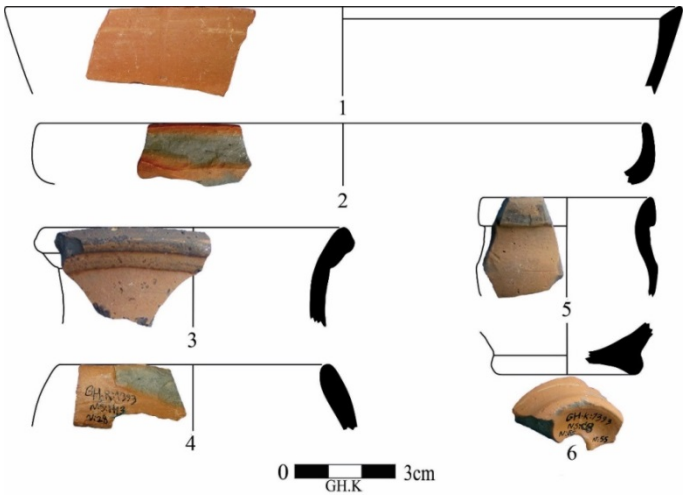



**Figure 14. Parthian Clinky pottery of the historical site of Tesmijan**

## References


Aali.A. and Khosrowzadeh.A. 2005. Pottery of the Sassanid period to early Islam. *Archaeological surveys in Mianab Plain*. Shushtar.edited by Moghaddam.A. Iranian center for archaeological research publication.2006. Pages: 249-297.

Amiri.M. Mousavi Kouhpar.M and Khademi Nadooshan.F. 2012. Classification and Typology of the Sassanid-Islamic Pottery of Bishapur Case Study: the Pottery of the ninth season of excavations. *Archaeological Studies*. Volume 4. Number 1. pp: 1-31.

Alizadeh.K. 2007. Ultan Qalasi: A fortified site in the Sasanian borderlands Mughan steppe. Iranian Azerbaijan. *Iran*.Vol XLIX. pp: 55-57.

Alden.J.R and Balser.J.M. 1978. Excavations at Tal-I Malyan. *Iran*. vol XVI. pp: 94-79.

Asgarnejad.S. Mehrafarin.R. and Mousavi Haji. S.R. 2015. *A Systematic Survey of Qale Sefid Site in Tesmijan. Kashan*. M.Sc. thesis in Archaeology.University of Mazandaran, Faculty of Art and Architecture. Mazandaran: Unpublished.

Azarnoush.M. 1994. The Sassanian Manour House at Hajiabad. Iran. Firnze. Casa editorice le lettere.

Habibi.H. and Heydari Babakmal.Y. 2014. Sassanid pottery of west of Chaharmahal va Bakhtiari. Based on samples obtained from archaeological survey of Farsan County. *Archaeological Message Magazine*. Year 11. No 22 Fall and Winter. Pages: 79-101.

Heydari.A and Sarookhani.Z. 2015. *Pottery and Archaeology of Kashan* (Volume I: From Paleolithic period to Islam). Pazineh Publication.

Hojabri.A. 2001. *The study of the cultural evolution of Sassanid period based on pottery (Ancient site of Mahoor Siah).* M.Sc. Archeology department .University of Tehran.

Iran Statistics Center. 2012. *Management and Planning Organization of Iran. System of rural district map*.

Karimian.H. and Javeri.M. 2009. Cities of Vigol and Harasgan, in the transition from the Sasanian era to the Islamic era relying on archaeological data. *Journal of Archaeological Studies*. Pages: 83-63.

Karimian.H. Vosoughi.M.B. Javeri.M and Montazer Zohouri.M. 2016. *Ardashir-Khwrrah during the transition from Sassanid to Islamic Era*. Ph.D. thesis in Archaeology department. University of Tehran. Tehran.

Keall.E.J and Keall.M.J. 1981. The Qaleh-I Yazdigird Pottery: A Statistical Approach. *Iran*. vol 19. pp: 33-80.

Kennet.D. 2002. Sasanian Pottery in Southern Iran and Eastern Arabia. *Iran*. vol 40. pp: 153-162.

Kennet.D. 2004. *Sasanian and Islamic pottery from Ras al-Khaimah (eBook version): classification, chronology and analysis of trade in the Western Indian Ocean*. Oxford. Archaeopress. Society for Arabian Studies Monographs.

Khosrowzadeh.A. 2010. Preliminary results of the 1st season of archaeological survey of Farsan, Bakhtiari region. Iran. *Proceedings of the 6th International Congress on the Archaeology of the Ancient Near East* May. 5th-10th 2008. “Sapienza” - Università di Roma. Excavations, Surveys and Restorations: Reports on Recent Field Archaeology in the Near East. pp: 317-337.

Khosrowzadeh.A. and Aali.A. 2005. Description. Classification and Typological Analysis of the Parthian and Sasanian Potteries in the Mahneshan Region. Zanjan. *Proceedings of the International Congress of Archaeology*.

Rahbar.M. 2000. *Report Archaeological Excavation of Atashkuh. First Season*. Unpublished.

Mohammadifar.Y. 2005. *The Survey and Analysis of Parthian relic and settlement in Central Zagros*. Ph.D thesis. Archeology department. Tarbiat Modarres University. Tehran.

Priestman.M.N. 2013. *Sasanian ceramics from the Gorgān Wall and other sites on the Gorgān Plain*. British Institute of Persian Studies Archaeological Monograph Series II. Oxbow: Oxford. pp: 447-534.

Sarookhani.M. Heydarian.M and Parseh.S. 2016. Surveying and Analyzing the Settlement Pattern of Sassanid Sites in the Mid-mountain Plain of Sonqor and Koliai. *Archaeological Researches of Iran*. Pp. 101 – 120.

Soleimanian.F. 2019. *Report of the Sounding for Delimitation of Tesmijan Site*. Archive of Cultural Heritage Organization Tourism and Handcraft of Kashan County.

Simpson.St.John and Watkins.T. *Excavations at Kharabeh Shattani*. volume2. Occasional paper No.18.

Whitcomb.D.S. 1985 *before the roses and naghtingales Excavations at Qasr-I Abu Nasr, Old Shiraz, The Metropolitan Museum of Art*. New York.

Zivdar.M. Taghavi.A. Ghasemi.M. Dolatyari.A. 2016. The study of pottery of the Sassanid period in the historical city of Seymareh. *Proceedings of the National Congress of Archaeology and Pottery Art*. Ordibehesht. Pages: 999-1021.

# مطالعه و بررسی سفال‌های ساسانی محوطهٔ طسمی‌جان-کاشان

**سمانه عسگر نژاد**

دانش آموخته کارشناسی ارشد باستان‌شناسی، دانشگاه بابلسر، بابلسر، ایران.

**محسن جاوری***

استادیار باستان‌شناسی، دانشگاه کاشان، کاشان، ایران.

تاریخ دریافت: ۱۳۹۹/۰۶/۲۰؛ تاریخ پذیرش: ۱۳۹۹/۱۲/۲۰

## چکیده

محوطه‌ی تاریخی طسمی‌جان با وسعت ۳۰۰ هکتار در شمال‌شرق شهرستان کاشان قرار دارد. محوطه‌ی مذکور بر اساس داده‌های باستان‌شناسی آن، در دوره‌های عصر آهن، اشکانی، ساسانی و اوایل اسلامی مورد استفاده بوده است. بنابر آثار و بقایای سطحی، اوج استقرار در طسمی‌جان در دوره ساسانی بوده که محوطه‌ای با این ابعاد احتمالاً بیانگر یک شهر بزرگ ساسانی است. این محدوده یکی از معدود محوطه‌های دوره ساسانی در شهرستان کاشان است که در ادامه‌ی دوره اشکانی خود گسترش یافته و با توجه به وسعت و کیفیت داده‌ها می‌تواند در شناخت هرچه بهتر دوره ساسانی در بخش مرکزی ایران کمک شایانی نماید. در پژوهش حاضر سفال‌ها از طریق بررسی سیستماتیک و شبکه‌بندی محوطه‌ی طسمی‌جان مورد نمونه‌برداری قرارگرفته؛ تا مشخص گردد گونه‌شناسی و فرم‌های سفال ساسانی محوطه‌ی مذکور در چه وضعیتی قرار دارد و مقایسه تطبیقی فرم‌های مزبور با سایر محوطه‌های ساسانی چگونه است؟ و آیا فرم‌های بومی و محلی سفال نیز در این محوطه رواج داشته است؟ با توجه به مطالعات صورت گرفته، طبقه‌بندی، گونه‌شناسی و مقایسه تطبیقی مشخص شد سفال‌های ساسانی محوطه طسمی‌جان شامل انواع خمره، تغار، کاسه، سبو، ظروف مسطح، درپوش، پیاله و ظروف لوله‌دار؛ با محوطه‌های مختلف ساسانی به‌ویژه محوطه‌های غرب ایران قابل مقایسه است و برخی فرم‌های محلی نیز قابل شناسایی و معرفی است. روش مطالعه در پژوهش حاضر از نوع مطالعات توصیفی-تحلیلی است.

**واژه‌های کلیدی**: کاشان، باستان‌شناسی، بررسی سیستماتیک، ساسانی، سفال، گونه‌شناسی

* رایانامه‌ی نویسنده مسئول: mohsen.javeri@gmail.com

Journal of Archaeological Studies
Vol 12, Is 4 - Serial Number 24, Winter 2021

Formerly "the Journal of the Faculty of Literature and Humanities"... University of Tehran

# Hierarchical or Transegalitarian? Societies of the Transitional Chalcolithic Period on the North-Central Plateau of Iran

**Hassan Fazeli Nashli**[1] & **Rogers Matthews** [2]

**(165-192)**

## Abstract

Tracking the emergence of political authority and social hierarchy in the archaeological record has been one of the major challenges addressed by archaeologists in the past fifty years or more, with considerable attention given to potential material correlates of early stages in developments leading ultimately toward statehood (Chapman 2003; Smith 2012). Much of this research has explored the evidence from past societies of the ancient Near East, including Mesopotamia and Iran (Wright 1998; Flannery 1999; Smith 2003), but there has been less investigation of the communities of the Iranian plateau in this light (Matthews and Fazeli 2004). What was their role(s) in the complex series of socio-political developments leading to the appearance of hierarchical societies in the centuries between 5500 and 4000 BC, and how might the archaeological evidence inform us on those roles? Recent and ongoing research into societies of the Iranian plateau in the so-called Transitional Chalcolithic period (5200-4200 BC) is continuing to enhance our understanding of this question. In this article we summarise and analyse the evidence from archaeological investigations of sites and regions on the Tehran, Kashan, and Qazvin plains, addressing in turn settlement patterns, subsistence strategies, craft production, and mortuary practices (Fig. 1).

**Keywords:** Hierarchical ،Transitional Chalcolithic ،North-Central ،Plateau ،Iran.

Received: 03 March, 2021; Accepted: 10 March, 2021

10.22059/jarcs.2021.320058.142994
Print ISSN: 2676-4288- Online ISSN: 2251-9297
https://jarcs.ut.ac.ir

1. Corresponding Author Email: Hfazelin@ut.ac.ir Professor, Department of Archeology, University of Tehran, Tehran. Iran..

2. Professor, Department of Archeology, University of Reading, UK.

## 1. Introduction: Iran in the Transitional Chalcolithic period

Tracking the emergence of political authority and social hierarchy in the archaeological record has been one of the major challenges addressed by archaeologists in the past fifty years or more, with considerable attention given to potential material correlates of early stages in developments leading ultimately toward statehood (Chapman 2003; Smith 2012). Much of this research has explored the evidence from past societies of the ancient Near East, including Mesopotamia and Iran (Wright 1998; Flannery 1999; Smith 2003), but there has been less investigation of the communities of the Iranian plateau in this light (Matthews and Fazeli 2004). What was their role(s) in the complex series of socio-political developments leading to the appearance of hierarchical societies in the centuries between 5500 and 4000 BC, and how might the archaeological evidence inform us on those roles? Recent and ongoing research into societies of the Iranian plateau in the so-called Transitional Chalcolithic period (5200-4200 BC) is continuing to enhance our understanding of this question. In this article we summarise and analyse the evidence from archaeological investigations of sites and regions on the Tehran, Kashan, and Qazvin plains, addressing in turn settlement patterns, subsistence strategies, craft production, and mortuary practices (Fig. 1).

Our argument is that the Transitional Chalcolithic societies of the north-central plateau of Iran underwent agricultural intensification and a growth in complexity in terms of social ranking, as revealed in mortuary practices and ritual activities, long distance trade, and growing craft specialization. The evidence indicates that from the end of the sixth millennium BC, the social organization of previously self-sufficient and independent communities in this region changed to the more complex social systems of the Chalcolithic period. The markers of rising complexity in the Neolithic to Chalcolithic transition include intensified herding of cattle, sheep, and goat (Mashkour *et al*. 1999; Fazeli *et al*. 2009), the cultivation of barley and bread wheat using irrigation systems (Gillmore *et al*. 2009), the development of long-distance trade (Fazeli and Abbasnegad 2005), complex ritual activities, social differentiation in mortuary practices, specialized craft areas for increasingly standardized craft production and new production techniques such as wheel-thrown ceramics (Fazeli *et al*. 2007; Fazeli *et al*. 2010). All these developments support the idea of complex societies evolving on the Iranian central plateau from *ca*. 5200 BC onward.

While an increased degree of complexity appears beyond doubt, what remains open to debate is the extent to which Iranian Transitional Chalcolithic societies were constructed along hierarchical lines of differential access to and control of power. Archaeological evidence that initially appears to support interpretations of social hierarchy can, on further investigation, rather be seen as connected to issues of gender, cultic practice, or craft specialization, for example. Strata of power and hierarchy may be cross-cut by transegalitarian socio-economic identities that need to be discerned and articulated in the specifics of the archaeological record as characteristics of individual societies. As Peregrine (2012, 183) has recently stated, “the past is always more complex than the archaeological record makes it appear”.

## 2. The evidence of settlement patterns

Table 1 indicates the chronology of the most important Late Neolithic and Transitional Chalcolithic settlements within the Iranian central plateau (Fazeli *et al*. 2005; 2009). The dramatic increase in settlement densities on the Tehran and Qazvin plains during the Transitional Chalcolithic period reflects social, economic, and population

developments (Fig. 2). In the 2003 survey of the Qazvin plain a number of Transitional Chalcolithic sites were distinguished, including Ebrahim Abad, Kamal Abad, Qara Qobad, Mahmodian, Zagheh 2 and Zahir Tape, most of them below 5 ha in area. The site of Zagheh covers 3.5 ha (Malek Shahmirzadi 1986, 11), while Akbarabad on the Qazvin plain covers more than 3 ha and is 17-20 m high. These sites compare well with the size of the Transitional and Early Chalcolithic site of Sialk, which Ghirshman (1938, 166) reported as approximately 3.5 ha. The Transitional Chalcolithic settlements of the Tehran plain consist of Cheshmeh Ali, Mehdikani, Kara Tepe Sharyar, Mafinabad, Poeinak, Mortezagerd, and Sadeghabadi. Some of these sites have been disturbed and although the present size of Cheshmeh Ali covers 400-500 m, workers from Ray Council making a water channel identified Transitional Chalcolithic material up to 300 m from the mound. Transitional Chalcolithic settlements are located close to the river banks or springs giving villagers direct access to water resources. Some of the sites have only one phase of occupation but most of them show multiple periods of settlement (Fazeli 2001).

**3. Subsistence strategies**

Transitional Chalcolithic settlements on the plains across the south of the Alburz Mountains exhibit evidence for agricultural activities such as food procurement and processing, cloth processing, high quality pottery making and stone tool manufacture. The evidence includes a large number of ceramic vessels, for both cooking and storage, flint sickle blades (Fazeli *et al*. 2002) for harvesting grain, grinding and pounding stones for preparation of food and perhaps for other materials, and hearths for cooking, baking, and heating (Fazeli 2001).

Societies in the Transitional Chalcolithic period in Iran employed mixed subsistence strategies of farming, animal husbandry, and exploitation of wild resources (Mashkour *et al*. 1999). The animal bones from Cheshmeh Ali and Zagheh indicate that animals such as cattle, sheep, and goat were fully domesticated by the Transitional Chalcolithic period (Young and Fazeli 2008). Domesticated ovicaprids (*Ovis aries* and *Capra hircus*) are the dominant species at the site of Zagheh in the Transitional Chalcolithic period. Wild ovicaprids and then cattle are the next most significant types. Botanical studies show that bread wheat and other domesticated species were cultivated in many settlements of the central Iranian plateau using irrigation systems (Coningham *et al*. 2004; Gillmore *et al*. 2009). In general, the villagers of the plains in the sixth millennium BC settled in the areas close to water sources and it is possible that they utilised simple irrigation systems for agriculture. This economic strategy enabled and underpinned an increase in population during the Transitional Chalcolithic period.

In summary, the evidence for subsistence activities at Transitional Chalcolithic sites on the north-central plateau of Iran attests the first full agricultural exploitation of the arable soils which occur in highly restricted portions of the Iranian landscape. The intensified cultivation of cereal crops clearly develops hand-in-hand with exploitation of the potential for pastoral grazing afforded by the grassy slopes and hills adjacent to the plains in most directions. Both these factors increased the possibility of accumulation of subsistence surpluses by certain components of society, based on systems of irrigation, storage, and redistribution. In the classic model, the accumulation of surpluses of agricultural products facilitated both the development of craft specialization carried out by artisans largely freed from the need to engage in subsistence production, and an increased potential for social stratification through controlled management of those

surpluses. As yet, there is insufficient evidence from Iranian Transitional Chalcolithic sites for storage facilities for agricultural surplus in the form of grain silos or granaries, for example, but more open-area excavation is required in order to address this issue. On the other hand, the extensive evidence for large vat-like storage vessels from the Late Neolithic and Transitional Chalcolithic onwards, as at Zagheh and Pardis, does indicate a capability for significant long-term storage of a range of liquid and solid commodities.

**4. Craft specialization and cultural complexity during the fifth millennium BC**

Since the 1980s a number of theoretical approaches have been proposed in approaching the role of craft specialization and technological development in the formation of complex societies (e.g. Tosi 1984; Costin 2007). The organization of production is one of the more significant elements in the study of the development of complex societies and several models have been developed to describe it (Clark 2007). Four modes of production have been defined (Rice 1987; Tosi 1984): household, household industry, individual workshop industry, and nucleated workshop industry. In 'household' production, pottery manufacture is occasional, preparatory to household consumption, and characterized by a simple technology for production. In this model, ceramics are fired in the open kiln with little or no standardization in the selection of raw materials. There is also a lack of efficiency and skill in manufacturing. It is often stressed that this type of production system is orientated towards self-sufficiency, with little opportunity for intensification (Rice 1987, 184). 'Household industry' is also characterized by a simple technology and operates on a part-time level, but production occurs more frequently and is directed towards a larger consumer market (Arnold 1991, 92). In 'individual workshop industry', production is full-time and involves significant capital investment (in kilns, wheels), but the unit maintains a level of stylistic and economic autonomy. These three modes of production are generally attributed to prehistoric societies. In 'nucleated workshop industry', a 'clustered industrial complex' which occurs in urban settings results in pottery manufacture as a major economic activity with extensive technological investment. This type of production emphasizes high volumes of output with the finished products destined for a supra-regional market (Arnold 1991, 94).

In a recent study Petrie (2011) has delineated the technological innovations that mark the Early Chalcolithic of southern Iran, including a shift to calcareous clays from vegetal-tempered clays, the use of basic turning devices, the use of black rather than bi-chrome painted decoration, and an increase in firing temperatures to between 850 and 1000˚C. Taken together these attributes are understood as characterizing an increasing specialization and centralization of ceramic production. If we examine the evidence for ceramic production from the plains of north-central Iran during the period 5200-4200 BC, can we observe similar developments in the technology of ceramic production? Fortunately, there is considerable evidence to bring to bear on this question.

In order to study the degree of ceramic specialization through the time period in question we focus on two assemblages of archaeological evidence for ceramic production during the Transitional Chalcolithic period. Direct evidence includes the remains of workshops, craft quarters, kilns, tools related to ceramic productions such as molds, ceramic polishers or scrapers, wheel-throwing and other materials such as slag and waste materials (Costin 2001; 2005), which were found at the archaeological sites on the two plains of Tehran and Qazvin. Indirect evidence refers to the product, which

is the ceramics themselves. By these means we can evaluate the evolution of manufacturing technology and the organization of production, including issues such as standardization, skill and efficiency, labor investment, and scale and mode of specialization, from the Late Neolithic to the Chalcolithic period.

At both Zagheh and Pardis, excavations indicate that certain types of craft activity, such as the production of ceramics, were located away from the residential areas, which may relate to concerns over fire hazards from kilns. Recent excavations at Zagheh and Tepe Pardis have provided some direct evidence of ceramic production including workshops and tools related to production. In Zagheh, the findings in Trench K at the south of the settlement are remarkably different from those in trenches in the other sections of the site (Fazeli 2006). These distinguishing features include 5.05 m of ashy layers, kiln remains, many finished and unfinished ceramic products including clay figurines, ceramic slag, and raw materials in the form of prepared clay balls, lumps of red ochre and crushed stones

In order more fully to understand the site function of Zagheh a 10 x 10 m trench was recently opened in the south of the site, close to Trench K (Fig. 3). The excavated contexts of the 2011 season comprise 1 m depth of uniform ash layers, probably expended kiln fuel, and it is clear that this part of the site was not used for domestic or residential activities (Fig. 4). Fig. 5 shows the distribution of small finds in Trench N30, largely comprising clay objects, many of which are broken or incomplete. We suggest that these materials are surplus clay pieces broken and discarded during the manufacturing process. 158 clay tokens (Figs 5-6; Table 2) were found in the 2011 season of excavation in Trench N30 and when we review the history of tokens found at archaeological sites of the Near East (Schmandt-Besserat 1992) Zagheh is a unique site in respect of the quantity of such finds. This density of tokens may relate to the distribution and receipt of batches of raw materials or processed commodities connected to the production activities taking place in this part of the site. Also found in the trench were sherds with traces of wear on the fractured surface, identified as possible pottery making tools (Fig. 7), large numbers of which were broken during the manufacturing process. 18,583 sherds were found during the current excavations in Trench N30, consisting of Cheshmeh Ali Painted Ware, Zagheh Painted Ware, Simple Zagheh Ware, and Standard Ware (Fig. 8).

At Zagheh the occurrence of large numbers of clay tokens in ash deposits, interpreted as originating from kiln rake-out, suggests a form of monitoring of movement of materials and/or products to and from the production area. Combined with the other features outlined above, the tokens suggest a level of craft production which can be characterized as ‘individual workshop industry’, with full-time specialist engagement, capital investment in production technology, and a trans-regional sharing of knowledge and skills within an environment of site by site autonomy. The development of craft specialization in the Transitional Chalcolithic period and the reorganization of the ceramic industry attest increasing cultural complexity and socio-economic development in the late prehistory of the Iranian Central Plateau.

Tepe Pardis in the Tehran plain contained a ceramic workshop, and burnt rooms, over an area of 1600 sq m. We have recorded a number of kilns of different sizes (Figs 9-11). A terracotta slow wheel was found near a kiln. A unique discovery in Iran, it has a diameter of 0.36 m and a thickness of 0.12 m and still contains a pivot of animal bone (Fig. 12). Among the thousands of ceramics are two simple flat bottomed bowls with

straight walls which seem to have been used for mixing and applying slips for the ceramics (Fig. 13). Ceramic polishers or scrapers made from pot sherds match well with those from Zagheh (Fig. 14).

The ceramics themselves provide clarification of the degree of ceramic standardization, labor investment, and skill during the Transitional Chalcolithic period. Decorative motifs, color, homogeneity of the surface with the core, and design elements demonstrate a gradual development of specialist craft producers during the Transitional Chalcolithic period. In the Qazvin and the Tehran plains a variety of ceramics were produced that are technologically and stylistically different from those of the Late Neolithic period. The finished products also attest a change in the scale and mode of production during the Transitional Chalcolithic period. Ceramics show a remarkable increase in uniformity between the core and surface color. Such uniformity, brought on by greater control of the firing process, reflects technological improvement, greater skill among potters, and standardization. A variety of archaeological evidence reveals two of the most obvious characteristics of the Transitional Chalcolithic ceramics, namely the unprecedented degree of decoration and high technical quality. Distinct major categories of ceramics were produced across the three plains of Tehran, Qazvin, and Kashan, including 1) Zagheh Standard Ware; 2) Zagheh Painted Ware (Fig. 15); 3) Zagheh Simple Ware; 4) Cheshmeh Ali (Sialk II) Ware (Fig. 16), and; 5) Buff and Red Crusted Ware which is found only at Zagheh.

Petrographic, chemical, mineralogical, and X-radiographic analyses of the four main types of ceramics from 14 sites on the Tehran and the Qazvin plains have advanced understanding of the modes of ceramic production and technological development during the Transitional Chalcolithic period. The analyses suggest that sites on the Qazvin and Tehran plains were producing their own ceramics, including the fine Cheshmeh Ali Ware. Thus, specialized production of technologically and stylistically similar ceramics took place separately on each of these plains (Wong 2008).

Most of the Pardis ceramics were hand-built but radiographic studies indicate some had been fashioned using a form of fast wheel-throwing. Two of the Pardis sherds with these features were recovered from deposits dated to the beginning of the Transitional Chalcolithic period (Fazeli *et al*. 2010). In sum, the organization of production between 5200 and 4300 BC at settlements of the Tehran and the Qazvin plains underwent substantial changes. From the petrography and ICP results it appears that each settlement produced its own ceramics, while sharing knowledge and expertise on methods of production and schemes of decoration, for example. Standardization is suggested in the selection of raw materials, kilns were employed to achieve higher temperatures, and wheels and other techniques were used for mass production of pottery (Wong *et al*. 2010).

We conclude that, based on the evolutionary model, ceramic production during the Transitional Chalcolithic was that of ‘individual workshop’, in which ceramic production was a full-time activity requiring significant capital investment in kilns and wheels. An increase in the production output was likely to be associated with a desire to improve the operational efficiency of manufacturing activity, and task specialization and improved activity scheduling could thus contribute to more efficient production. The Transitional Chalcolithic potters could increase the amount of output by using the wheel and mold. As workshop industries are designed to supply goods to a larger number of consumers, we can surmise from the scale of production that is evident in

Tepe Pardis and Zagheh that sufficient demand was present to support the industry and that distribution would be more advanced than a primary marketing system, as suggested by Rice (1987, 184). The development of craft specialization in the Transitional Chalcolithic period and the associated reorganization in the ceramic industry reflect increasing cultural complexity and socio-economic development in this crucial period in the late prehistory of the Iranian Central Plateau.

**5. Use of tokens at Zagheh in the Transitional Chalcolithic period**

As mentioned above, during the 2011 excavations at Zagheh 158 clay tokens were recorded. Furthermore, 24 tokens were recorded from the residential quarter of Zagheh in the earlier excavations and are now located in the Museum of the Institute of Archaeology, University of Tehran. These 24 examples have no contextual information but the 158 recorded from the 2011 season consist of flat, pyramidal, circle, cylindrical, cube and diamond shapes (Table 2 and Fig. 6). What might have been the function of the Zagheh tokens? At Zagheh we see good evidence for long distance trade, differentiation in mortuary practices and craft specialization beyond agricultural products during the Transitional Chalcolithic period, all of which suggests that tokens here were probably used for counting in a system of administration. Schmandt-Besserat (1992, 6) suggested that such tokens reflected an archaic mode of 'concrete' counting prior to the invention of abstract numbers. She suggested particular tokens were needed to account for specific type of goods, such as oil/ovoid, measures of grain/cone, and so on, and she correlated this development with socio-economic changes during the Transitional Chalcolithic period. The tokens of Zagheh can be divided into the two types of plain and complex tokens, and the latter group includes a repertory of forms and markings which Schmandt-Besserat (1989, 39) suggested stood for goods manufactured in workshops. This scenario provides a rich contextualisation for the Zagheh tokens.

**6. Mortuary practices during the Transitional Chalcolithic period**

On the basis of ethnographic parallels and cross-cultural generalisations it is widely accepted that social complexity is interlinked with mortuary practices. The mortuary practices of the Iranian north-central plateau can be studied regarding the spatial patterning of burials, differences in burial goods, differences in body treatment and differences between adults, genders, and children. In order to understand the nature of archaeological data regarding mortuary practices during the Transitional Chalcolithic period we analyze here the archaeological data from the sites of Zagheh, Cheshmeh Ali, Pardis, and Sialk in the three regions of Qazvin, Tehran, and Kashan.

**7. Mortuary practices at Zagheh**

During the 1970s' excavations at Zagheh, Malek Shahmirzadi (1977) reported 23 individual burials, of which 11 skeletons were clearly associated with five structural units, the others being poorly recorded. These burials within the village houses include adults, male and female, and children, many painted with red ochre and some with modest numbers of ceramic vessels, stone cosmetic palettes, and stone beads. Infants were buried in the unit areas without burial goods but some of them were covered with red ochre, while only some adults were buried with elaborate goods. The spatial organisation of the burials may be divided into four groups; 1) infants tend to be buried in roofed areas and adults in open areas; 2) adults buried in the architectural units near the Painted Building were buried in roofed areas; 3) some adults were buried in public spaces, such as in the square and lanes or corridors; and 4) most of the individuals in the

structural units (open or roofed areas) did not receive burial goods.

Tala'i briefly published an extraordinary assemblage of eight adult female burials in the open area to the south of the Painted Building (Tala'i 1999). These burials are distinguished by their location, the attitude of the skeletons in facing and reaching towards the Painted Building, the extensive use of red ochre on their faces, even inside the mouth, and the high numbers of beads of a range of stones. These include necklaces, armlets, bracelets, belts, diadems and objects placed near the skulls. The placement of the arms of the buried females is especially notable, with arms and hands outstretched in front of the face of the body, reaching towards the nearby Painted Building in a classic pose of humility and divine accolade. Combined with the nearby, but discrete, location of female figurines to the west and north of the Painted Building (Negahban 1979; 1984), these burials further underline the building's special nature. In sum, Zagheh mortuary practices in the Transitional Chalcolithic have distinctive characteristics, with differentiation potentially related to a range of factors including proximity to the Painted Building.

**8. Mortuary practices at Sialk**

Thirty-nine human skeletons, dating from the late fifth to the early first millennia BC were excavated by Ghirshman and studied by Vallois (1939). This sample included six individuals from the late fifth and five individuals from the early fourth millennia BC. Vallois' investigation included basic information about sex, age, and the prevalence of carious lesions, as well as a comparison of cranial indices with skulls from Mohenjo Daro. The early burials were coated with red ochre as at Zagheh, and shell ornaments from the Persian Gulf also occur in the burials.

During the 2009 spring excavation season at Tepe Sialk North, a cluster of six burials was excavated within the Late Neolithic-Transitional Chalcolithic stratum, *ca*. 5400 BC (Sołtysiak and Fazeli 2010). Of the six burials, one was a double burial with both cremated and uncremated human bone, four were cremations, and one included the articulated skeleton of an infant placed in a pit grave filled with numerous sherds (Fig. 17).

Although cremation is rare in all periods in Iran, as many as five examples were discovered at Tepe Sialk. The bodies of adults were burned, whereas the bodies of infants were both cremated and buried without burning. In addition, the use of red ochre, although frequent, did not appear to follow a recognizable pattern. In two cases, fragments from various body units were completely mixed. In two other cases, however, the rough sequence of collection of bone fragments from the funeral pyre may be reconstructed; in both burials skull fragments were located on top.

**9. Mortuary practices at Cheshmeh Ali**

At Cheshmeh Ali, Schmidt's team recovered the remains of 174 burials, of which 34 belong to the prehistoric period (Gustavel and Fazeli in press). All 34 burials appear to have been primary inhumations, with the bodies interred below the ground surface. There is no evidence of compound or secondary inhumations, as the bodies appear to be neither rearticulated nor disarticulated. Most of the graves are reported to have come from beneath the floors of buildings or from "garden plots" between the buildings. The general pattern at Cheshmeh Ali is for graves to be associated with houses and private spaces spread throughout the community, rather than for use of formal cemeteries. This appears to be a widespread cultural preference for the Late Neolithic and Transitional Chalcolithic communities of north-central Iran at sites such as Tepe Pardis, Zagheh, and

Tepe Sialk.

The dead at Cheshmeh Ali appear to have been buried wrapped in cloth shrouds or mats. This is evidenced by the excavator's notes for "white substances" covering some of the bodies. In some cases, Schmidt noted that the bones within the graves were stained red from a clay or pigment, while in others the description suggests a "covering" of red-brown clay. The two proposed elements of body preparation – covering in clothes or a shroud, and the painting of the body in red brown pigments – are paralleled at Zagheh, Pardis, and Sialk, as discussed above.

At Cheshmeh Ali, there are two modes of body disposal, used with approximately equal frequency. The more common of the methods is a simple pit excavated into the ground. There are 19 simple pit inhumations at Cheshmeh Ali, representing 56% of cases. Some of these pit burials are located within a specific room, or are clearly designated as being found under a constructed floor. Fifteen of the burials (44%) were marked with the annotation "c.t.," which is probably "cist tomb". A cist tomb is a construction that involves the building of tomb walls with unbaked mud-brick, creating a clear burial chamber. Of the burials, 22 skeletons were assigned a sex. Overall, 41.2% of the burials were male (n=14), 23.5% were female (n=8), while the remainder were unsexed. Given the small sample size, it is not possible to determine statistically whether or not there is a cultural significance to this distribution pattern. The male:female burial ratio is clearly atypical of living populations and it may be that males were more likely to be afforded intramural burial at prehistoric Cheshmeh Ali. The majority of burials at Cheshmeh Ali contained grave goods, although none of the burials was particularly well appointed. Most graves contained one to three artefacts, with only four graves containing more than three artefacts. The most common artefacts were ceramic vessels (n=23) and beads (n=18), including necklaces, pendants, and bracelets. Other categories of material were less common, such as chipped stone flakes (n=6) and rings (n=3), while a number of graves contained unique artefacts including a fragment of a shroud, a pair of bone needles, a bone seal, a pottery whorl and a copper pin. Twelve burials contained no grave goods. There does not appear to be any strong correlation between the presence/absence of grave goods and either age or sex. Of the graves without grave goods, five are male, five are female, and two were unsexed. Similarly, seven of these graves were of adults; one was a juvenile, one an adolescent, and one senile. It is interesting that all three of the youngest burials (Infant I category) had grave goods, while the oldest burials had none. This suggests that the grave goods reflect some ascribed, as opposed to achieved, social status at Cheshmeh Ali.

It is telling that there is not a great range in the quantity or quality of grave goods, arguing that there is little class differentiation between the inhabitants buried at the site. Leaving aside the pottery vessels, most of the artefacts put into the graves at Cheshmeh Ali were purely decorative in nature: beads, pendants, and rings. Presumably these were adornments placed on the body during the burial ceremony.

The two skeletons excavated at Cheshmeh Ali in 1997 were both recorded in Transitional Chalcolithic levels. The two skeletons were situated within a circular structure in Trench H7 at a depth of some 4 m below the surface. Skeleton 1 was located in the exterior section of the trench and only the skull could be distinguished. The skull was located 20 cm from skeleton 2 which also yielded traces of matting. Both showed traces of having been sprinkled with red ochre but a small bowl and large whole trapezoid cross-section blade were excavated at the feet of skeleton 2. It is interesting to

note that during the excavation only two large trapezoid blades were recorded, one of them in the above burial and another in the upper layer of the Early Chalcolithic period. It appears that this high quality product was an exotic material, manufactured elsewhere and imported to Cheshmeh Ali. This type of blade can be considered a traded good, which has a regular distribution in the Transitional, Early, and Middle Chalcolithic settlements of the Tehran plain on a small–scale. The deceased were interred in an architectural unit with two hearths or ovens (Fazeli 2001).

**10. Mortuary practices at Tepe Pardis**

In the 2007 excavation of Tepe Pardis in Trench IV we found a partial burial which had been badly damaged by quarry machinery. The burial, though crushed and cut, was associated with beads of turquoise, agate, shell, and lapis lazuli (Fig. 18). This find suggests that the burial practices at Pardis align with those discussed above from other Transitional Chalcolithic sites of the north-central plateau of Iran (Fazeli *et al*. 2007).

**11. Grave goods in Transitional Chalcolithic burials**

From the above survey we see that many Transitional Chalcolithic human burials in Iran include deliberate deposits of specific items. Turquoise, lapis lazuli, white and black beads, as recovered from Zagheh, Cheshmeh-Ali, Tepe Pardis, Sialk and Ismailabad, for example, are remarkable in quantity and style. The beads vary in size and shape from tiny, circular, and thin in cross-section to large, massive, and almost rectangular in shape. The artefacts of many burials consist of local, regional, and exotic materials. Local and regional burial goods include ceramics, copper tools, and stone palettes. The exotic and imported materials comprise ornaments of materials such as lapis lazuli, turquoise, and marine shells. During the fourth millennium BC lapis lazuli began to spread, though in limited quantities, through the Indo-Iranian borderlands and Central Asia.

Casanova (1992) has studied two kinds of lapis lazuli samples – those from mines and those from archaeological contexts. Twenty-one mine samples have been collected in Russia and Afghanistan and 29 archaeological samples from Shahr-i-Sokhta and Tepe Sialk. The Sialk samples display only a weak resemblance to mined samples from Badakshan and the Chagai Hills. Casanova's study did not reveal the origin of lapis lazuli in the central plateau of Iran, but it could be suggested that the lapis lazuli used in the region may have been imported from eastern Iran. Hole and Flannery (1968, 179) assumed that prehistoric turquoise came from the well-known sources near Nishapur, but Kerman province has also long been a source of turquoise. The source of shell beads is not clear and they were probably imported from the Caspian Sea and Persian Gulf or elsewhere. During the Transitional Chalcolithic period, we suggest that ideology played an active role in the formation and transformation of social identities through differential burial practices. The evidence from Zagheh suggests burial location and grave goods as indicators of social identities. Thus the burials near the Painted Building are wealthier and more highly structured than other burials at the settlement. In examining Bronze Age societies of Europe and the Near East several studies have argued that the Bronze Age is characterized by ideologies related to the acquisition and consumption of cherished materials such as metals and semi-precious stones, including lapis lazuli (Kristiansen and Larsson 2005). The appearance of traded and cherished materials in human burials of the Transitional Chalcolithic in Iran, suggests that the origins of social ideologies attached to cherished commodities can be sought in periods long before the Bronze Age.

## 12. Conclusion: hierarchical or transegalitarian?

The material evidence presented above from a range of sites on the plains of Tehran, Qazvin and Kashan argues for the development of nascent societal differentials on the north-central plateau of Iran from about 5000 BC onwards, as expressed in differential access to and consumption of a range of commodities and facilities, including arable land, water resources, imported stones and shells, alongside the evidence for increasing specialization and standardization in craft activities. Associating this evidence with early steps towards power differentials and social hierarchies, however, is problematic and we should proceed with caution. The picture we can draw from all the evidence is of small-scale farming communities, numbering not more than a few hundred villagers per settlement, steadily spreading out across the fertile soils of the plateau, and participating still in some degree of hunting and gathering of wild resources. Some elements of society will have been engaged in pastoral nomadism, moving according to season. The villagers employed sophisticated technologies for ceramic production and were in the process of developing their metallurgical skills. They doubtless were highly skilled in textile and basketry making but the evidence for these skills is rather sparse. Some villagers were almost certainly full-time specialists, in tasks such as ceramic production and perhaps architecture and building. Clearly certain areas of the settlements were dedicated to craft production, but there is also evidence for craft activity within residential houses and compounds. There is good evidence for inter-site and cross-plateau interaction, both in the form of shared mental templates for the production and decoration of pottery, for example, and in the movement of regional and exotic materials across often large distances. This was a well-connected and well-developed world. But it was also a world where individual villages and communities pursued their own trajectories through space and time.Tracking the pathways to power and the emergence of political hierarchy is not a straightforward task. Evidence for difference is not evidence for hierarchy. The detection of hierarchy requires us to present evidence for individuals or groups of individuals with, in Bogucki's words (1999, 257), the "sustained ability to claim control over a specific, bounded population, its internal social affairs, and its external economic relations". As it currently stands the available evidence does not support such an interpretation. We propose that the communities of the Iranian plateau can be meaningfully situated within the context of what researchers such as Crumley (1995) and Bogucki (1999) have called heterarchical and transegalitatian societies. Crumley (1995, 3) defines heterarchy as "the relations of elements to one another when they are unranked or when they possess the potential for being ranked in a number of different ways." This concept provides a flexible framework, not pyramidal in structure, which allows differentiated material evidence to be viewed in a variety of shifting lights according to context. Bogucki (1999, 257) has elaborated on the idea of heterarchy as "an alternative configuration of social relations", valuable in the analysis of "situations of increasing complexity without apparent centralized control." Thus, in examining the differentiated burial evidence from Zagheh, for example, instead of assuming nascent claims to power and political hierarchy, we might more profitably consider them from a point of view that starts from their context. In this light, we note firstly that the elaborate burials are all in proximity to a special building, itself distinguished by its elaborate internal fittings and decoration. Secondly, the burials here are all of adult females, a fact we can associate further with the presence of large numbers of specifically female figurines, some clearly meant to be pregnant,

distributed along the west and north sides of the Painted Building. The internal decoration of the building, by contrast, with at least 18 skulls of wild male goats, has a masculine flavour. In looking at the differences between the Painted Building burials and those in the nearby residences, the issues here seem more related to gender, fertility, cult and devotion than to claims to political authority and hierarchy. This is not to deny that struggles for political authority may have been implicated, however indirectly, in these social developments, but the point here is that they are not necessarily involved in shaping the archaeological evidence with which we are confronted. Bogucki (1999, 258) has argued that the transformative element in the development of societies from transegalitarian to hierarchical is when the domestic sphere is dominated by "some formalized and structured public life", which might be manifest in a range of ways including large non-residential buildings or centralized control over craft production. In this regard it is notable that Wong *et al.*'s study (2010) of Cheshmeh Ali type ceramics from a range of sites on the Tehran and Qazvin plains concluded that, despite striking similarities in vessel forms and decorative schemes, pottery production was organised at very local levels with no evidence for centralized control or of integration of ceramic production into a broader regional economy of redistribution.Following the arguments of Drennan and Peterson (2012, 73) we might profitably view the Transitional Chalcolithic societies of Iran as "supra-local communities" with regionally specific characteristics that transcended and connected individual settlements, as richly attested in ceramic styles and burial practices, for example, coupled with the development of central places which served as a focus for a range of social, economic, and ritual activities. The highly significant sites of Zagheh on the Qazvin plain and Sialk on the Kashan plain are probably best interpreted in this way. We argue here that the societies of the Iranian plateau in the Transitional Chalcolithic can be viewed as being on the cusp of a dramatic episode of change, but not yet quite over it. In sum, the Transitional Chalcolithic communities of Iran were certainly complex and multi-stranded but the jury must still be out on the question of whether they had become truly hierarchical by the end of the Transitional Chalcolithic period in the late fifth millennium BC.

**Attachments**

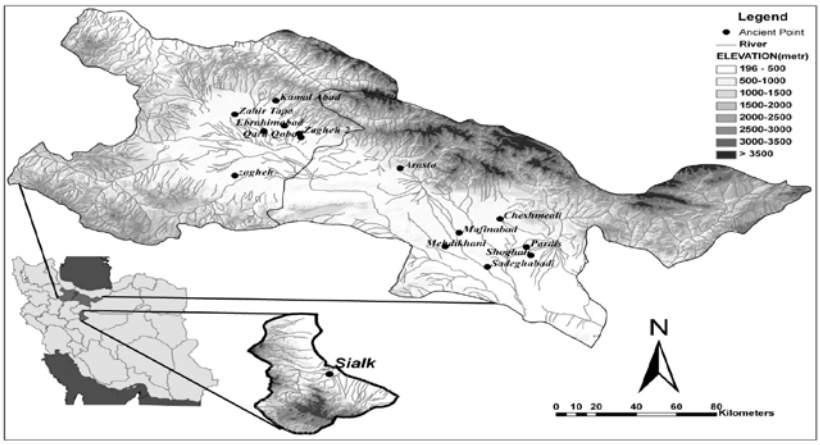



**Figure 1: Map to show location of the Tehran, Kashan and Qazvin plains, with key sites.**

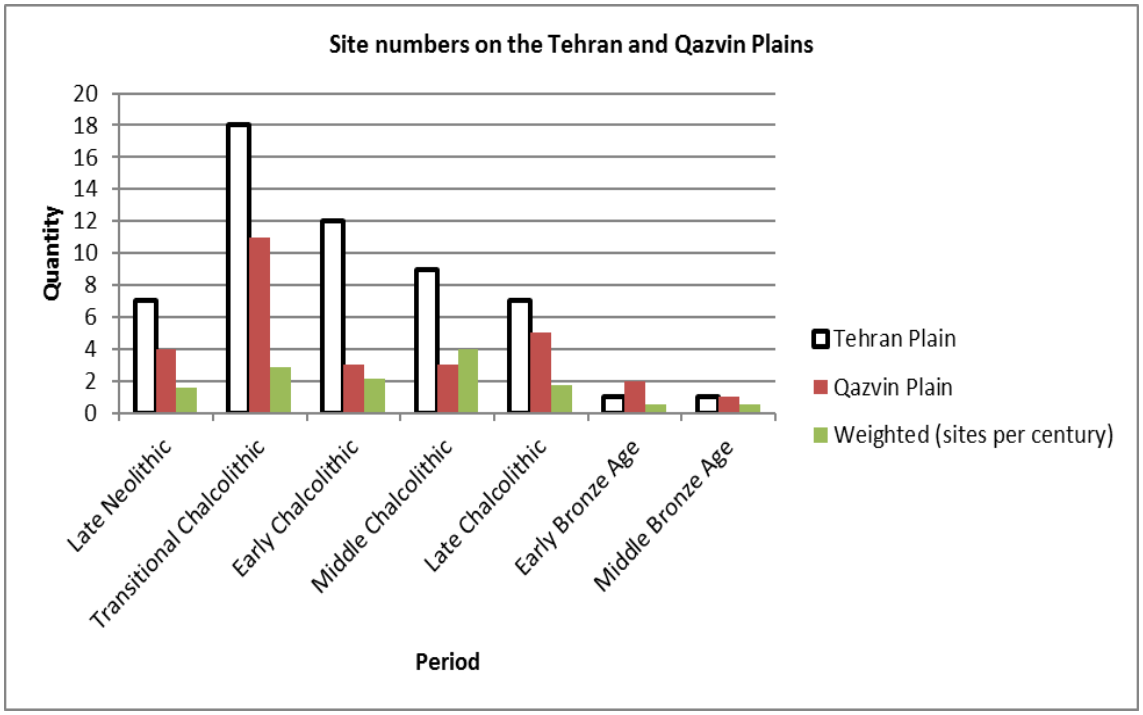



**Figure 2: Settlement through time on the Tehran and Qazvin plains.**

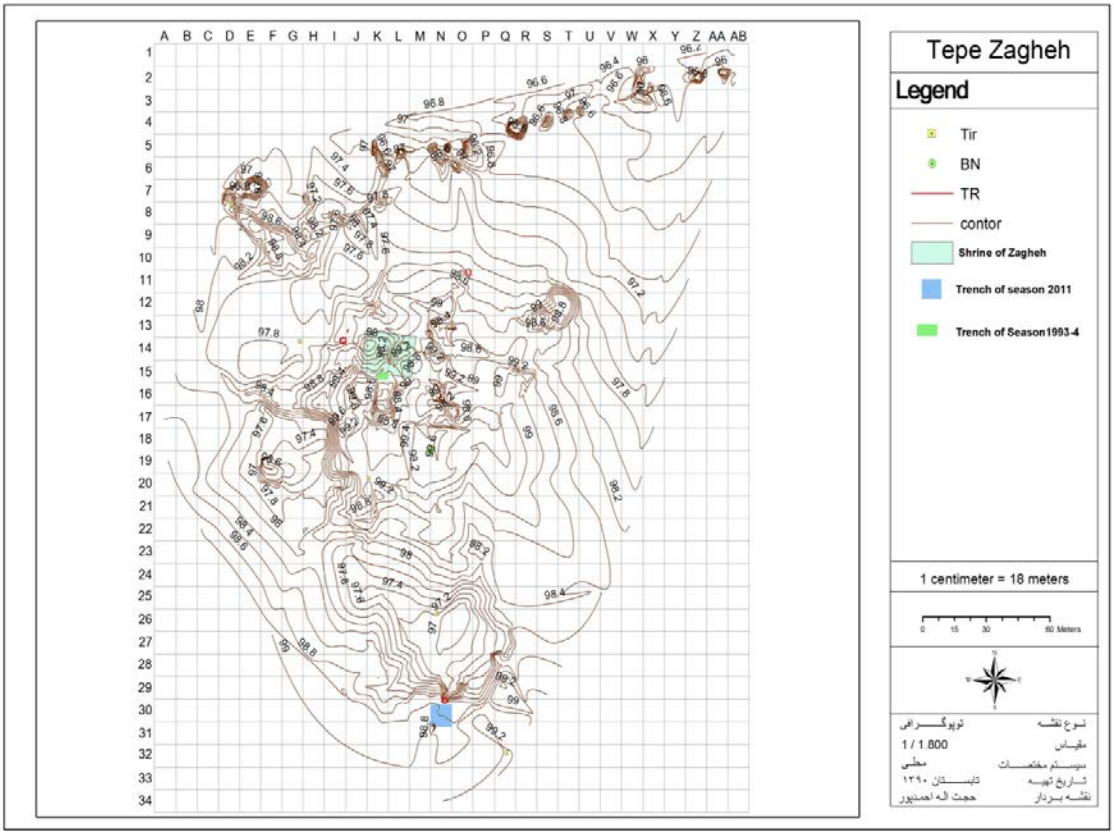



**Figure 3: Topographic map of Zagheh and location of workshop area (Trench N30).**

**Figure 4: View of Zagheh, Trench N30, 2011 excavations.**

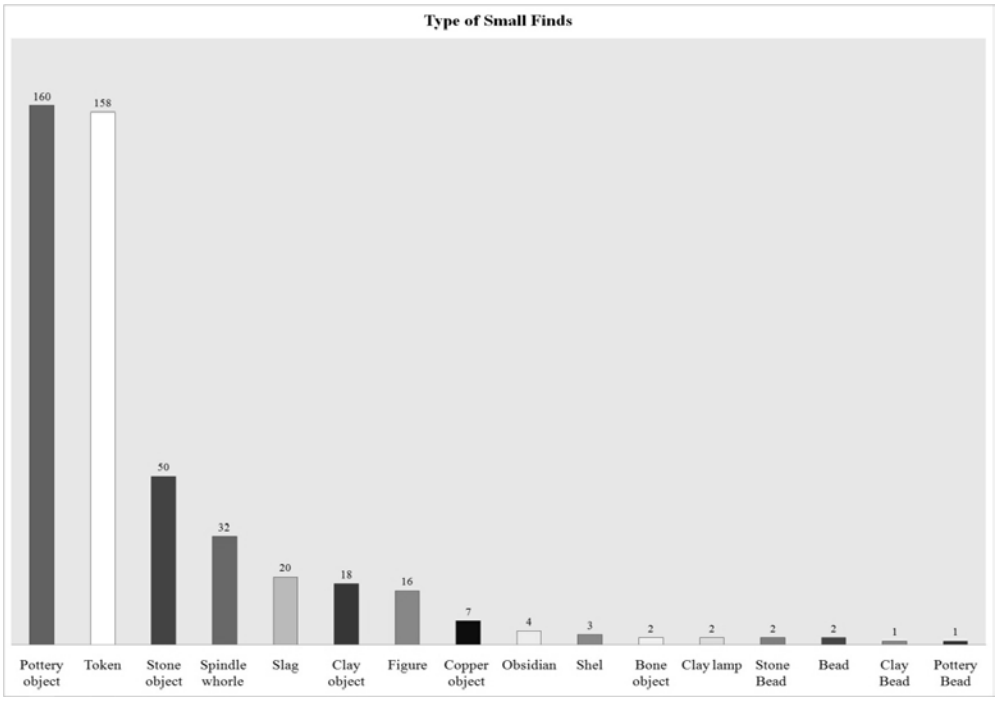



**Figure 5: Small finds from Zagheh, Trench N30, 2011 excavations.**

**Figure 6: Tokens recovered from Zagheh, Trench N30, 2011 excavations.**

**Figure 7: Recycled pot-sherds with wear on the fractured surface, possible pottery making tools, from Zagheh, Trench N30, 2011 excavations**

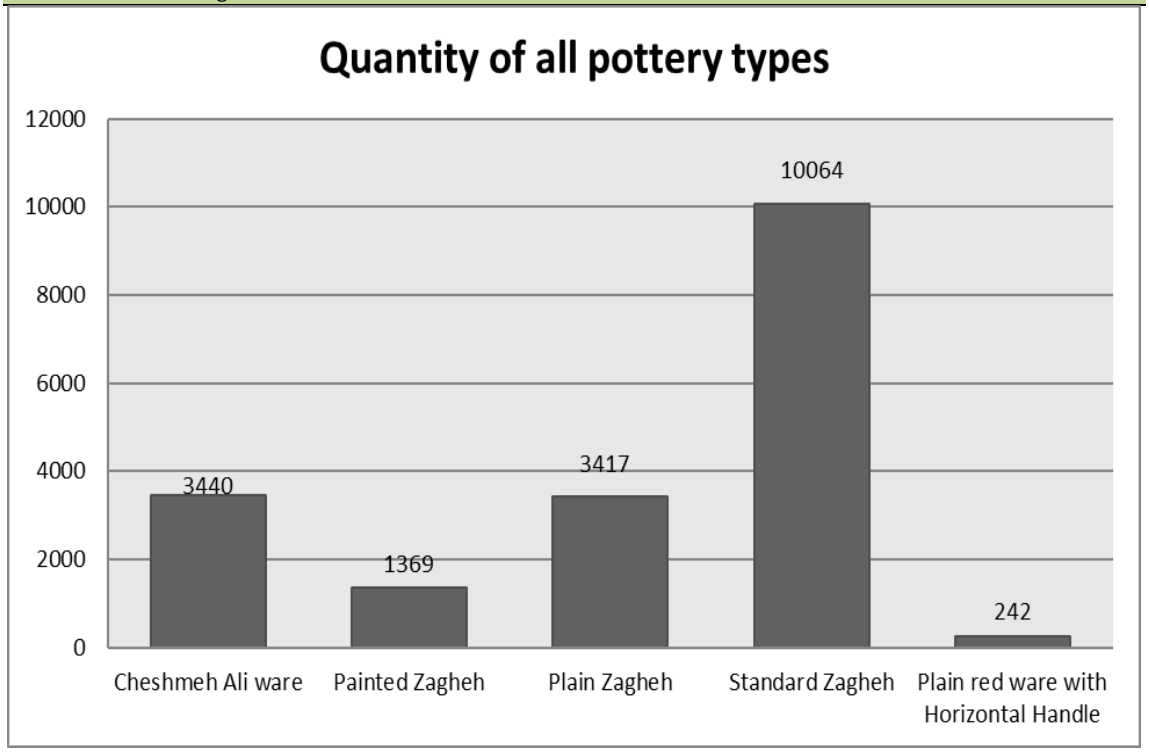



**Figure 8: Quantities of ware types found at Zagheh, Trench N30, 2011 excavations.**

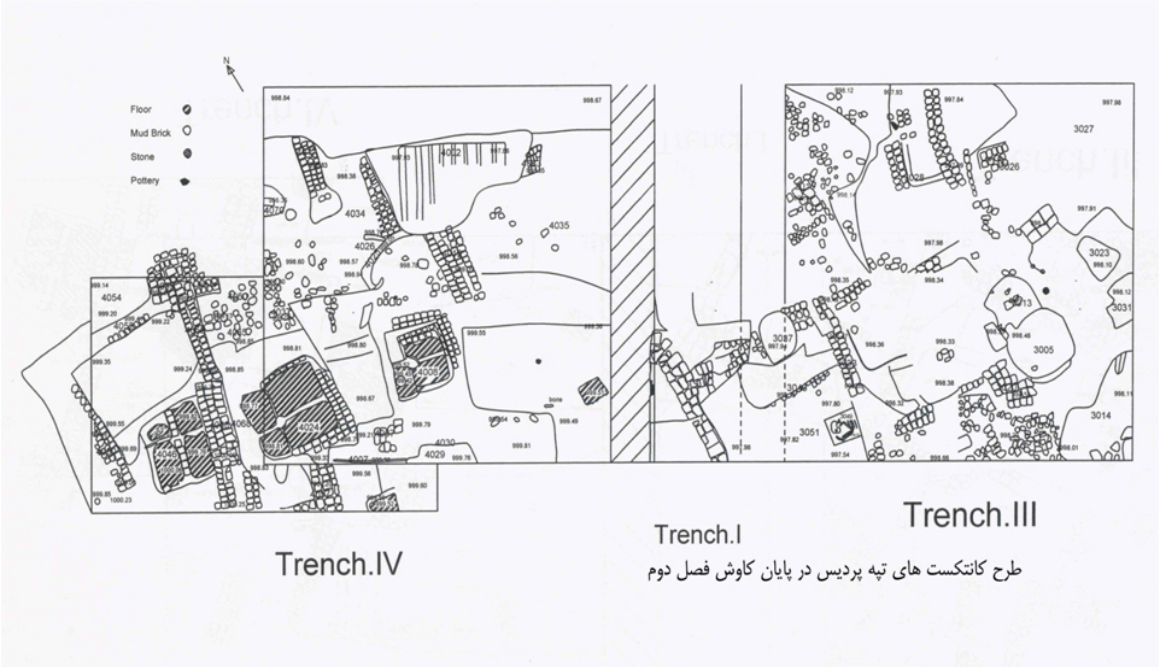



**Figure 9: Plan of kilns and features at Tepe Pardis, Transitional Chalcolithic period.**


**Figure 10: Plan and section of kiln and features at Tepe Pardis, Trench III.**

**Figure 11: Kiln and features at Tepe Pardis, Trench III.**

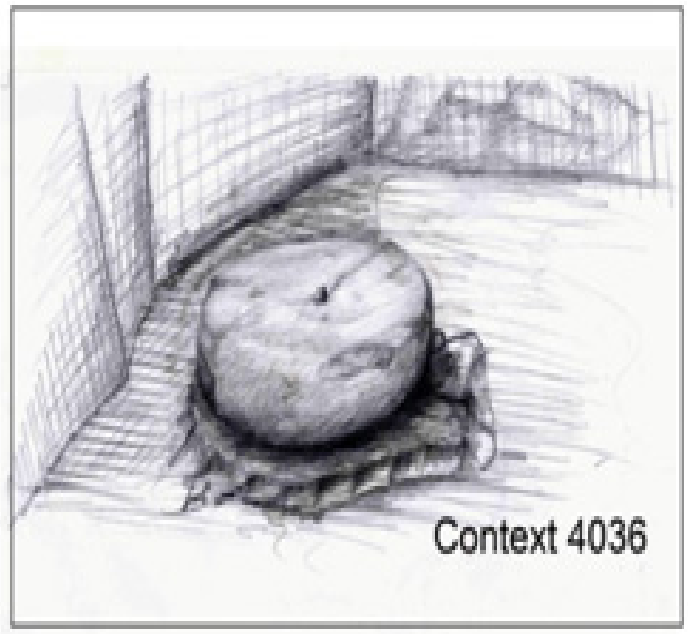



**Figure 12: A terracotta slow wheel, Tepe Pardis, Trench III.**



**Figure 13: Vessels from Tepe Pardis, Transitional Chalcolithic period. The bottom two bowls were used for mixing and applying slip.**

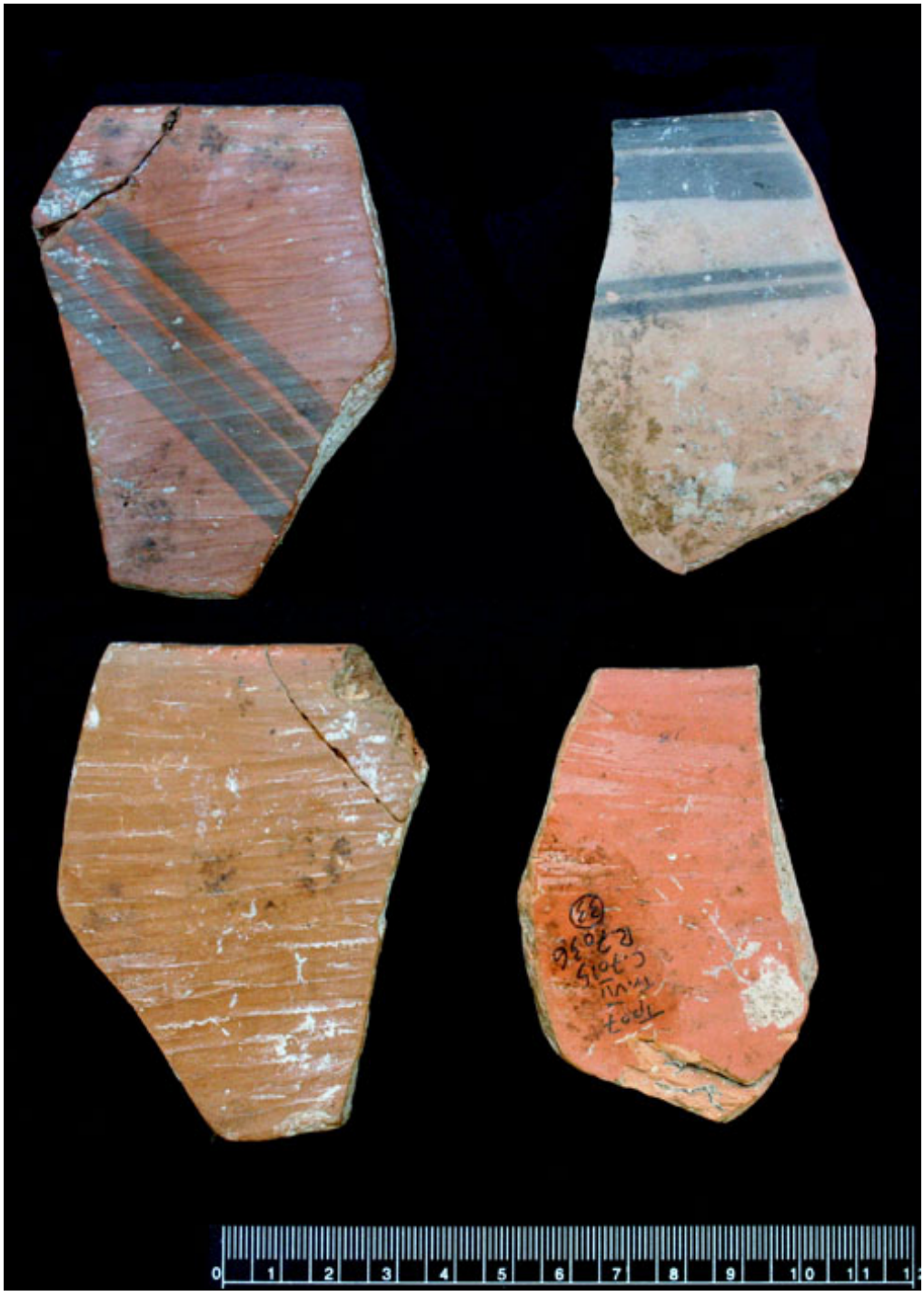
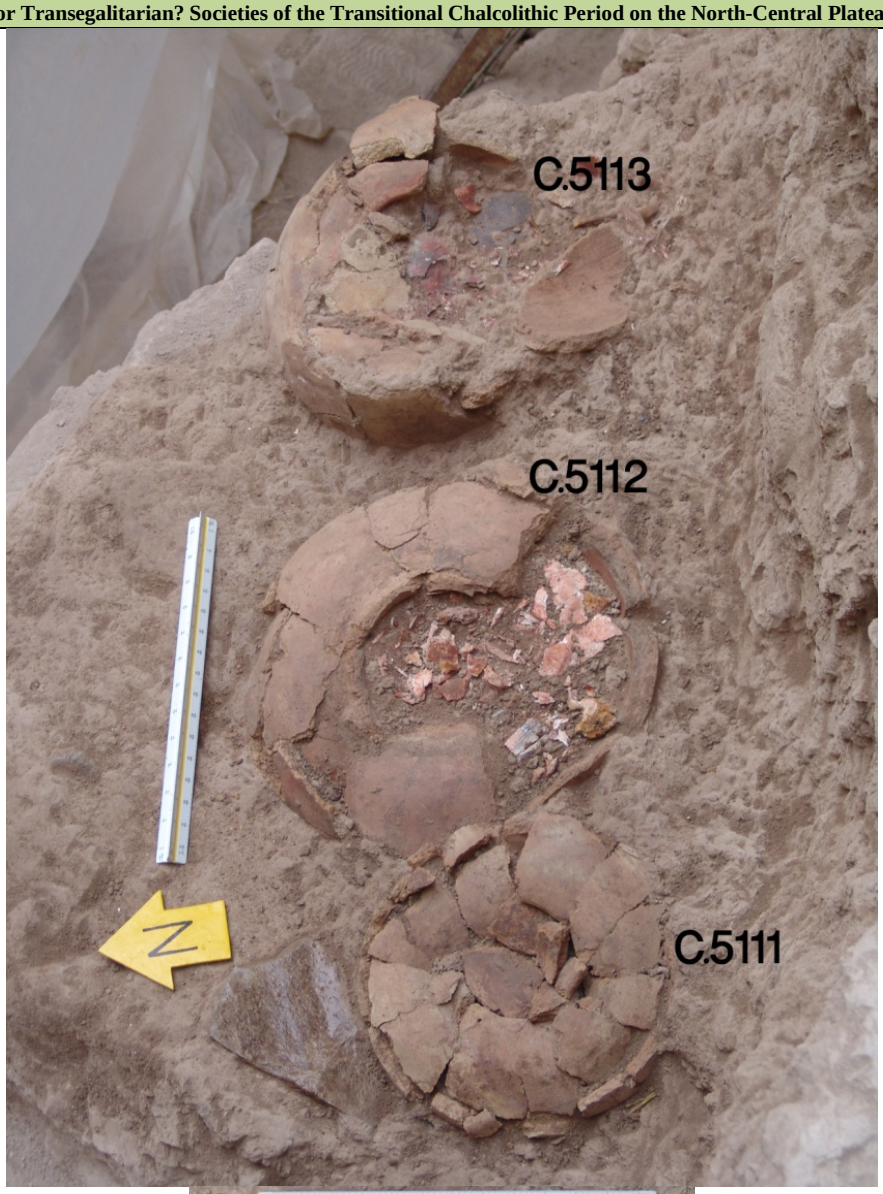
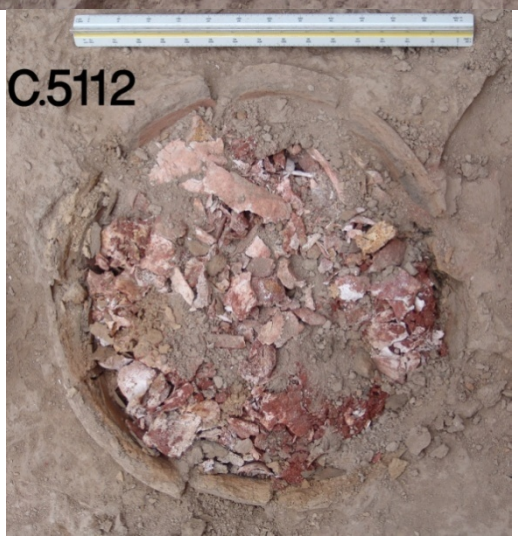


**Figure 14: Recycled pot-sherds with wear on the fractured surface, possible pottery making tools, from Tepe Pardis, Transitional Chalcolithic period.**

**Figure 15: Zagheh Painted Ware from Zagheh, Transitional Chalcolithic period.**

**Figure 16: Cheshmeh Ali Ware (Black on Red), from Zagheh, Transitional Chalcolithic period.**


C.5113
C.5112
N
C.5111


C.5112

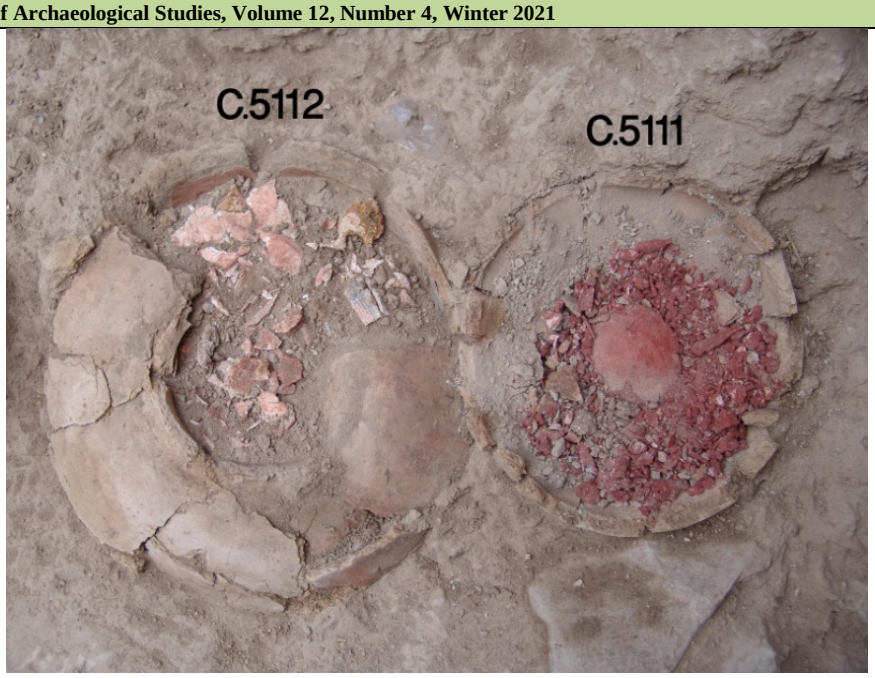



**Figure 17: Cremation burial, Sialk, Transitional Chalcolithic period.**

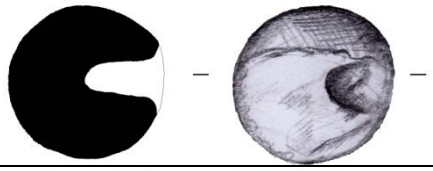
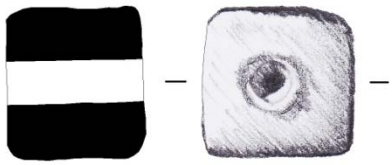
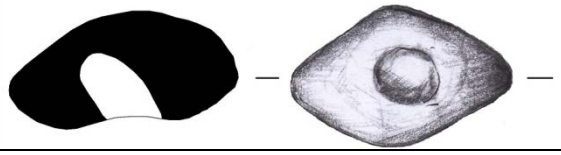

**Figure 18: Beads from Tepe Pardis, Trench IV burial, Transitional Chalcolithic period.**

**Table 1: Chronology of settlement on the Iranian plateau.**

| Period BCE | | The Qazvin plain | The Tehran Plain | The Kashan Plain | Damghan/Shahrud |
|---|---|---|---|---|---|
| Transitional Chalcolithic | Late 4600-4300 | ? | Cheshmeh Ali<br>Ismailabad<br>Kara Tepe<br>Shogali | 600 to 500 years gap between Sialk North and Sialk South | Shir Azhian<br>Aq Tappeh |
| | Early 5200-4600 | Ebrahim Abad<br>Zagheh | Cheshmeh-Ali<br>Tepe Pardis<br>Ismail Abad | Sialk $II_{1-3}$ | Sang-i Chakhmaq East (2-1) |
| Late Neolithic | Late 5600-5200 | Chahar Boneh<br>Ebrahim Abad | Cheshmeh-Ali<br>Tepe Pardis | Sialk $I_{3-5}$ | Sang-i Chakhmaq East (top levels)<br>(4-3) |
| | Early 6000- 5600 | Chahar Boneh | ? | Sialk $I_{1-2}$ | "Djeitun"<br>Phase<br>(6-5) |

**Table 2: Types and quantities of tokens found at Zagheh, Trench N30, 2011 excavations.**

| Type of Token | Number | Sample |
|---|---|---|
| Flat | 10 |  |
| Circle | 59 |  |
| Pyramidal | 67 |  |

| | | | |
|---|---|---|---|
| Cylindrical | | 12 |  |
| Token that are perforated in the center | Circle | 7 |  |
| | Square cube | 2 |  |
| | Diamond | 1 |  |

## Refrences


Arnold. P. J. 1991. *Domestic Ceramic Production and Social Organization: A Mexican Case Study in Ethnoarchaeology*. Cambridge: Cambridge University Press.

Bogucki. P. 1999. *The Origins of Human Society*. Oxford: Blackwell.

Casanova. M. 1992. "The Sources of Lapis Lazuli Found in Iran." In *South Asian Archaeology 1989*, edited by Catherine Jarrige, 49-56. Madison: Prehistory Press.

Chapman. R. 2003. *Archaeologies of Complexity*. London: Routledge.

Clark. J. E. 2007. "In Craft Specialization's Penumbra: Things, Persons, Action, Value, and Surplus." In *Rethinking Craft Specialization in Complex Societies: Archaeological Analyses of the Social Meaning of Production*, edited by Zachary X. Hruby and Rowan K. Flad, 20-36. Arlington: American Anthropological Association.

Coningham. R. A. E., Hassan Fazeli, Ruth L. Young, and Randolph E. Donahue. 2004. "Location, Location, Location: a Pilot Survey of the Tehran Plain in 2003." *Iran* 42: 13–23.

Costin. C. L. 2001. "Craft Production Systems." In *Archaeology at the Millennium: a Sourcebook*, edited by Gary M. Feinman and T. Douglas Price, 273-328. New York: Kluwer Academic/Plenum.

Costin. C. L. 2005. "Craft Production." In *Handbook of Archaeological Methods*, edited by Herbert D. G. Maschner, 1034-107. Walnut Creek: AltaMira.

Costin. C. L. 2007. "Thinking about Production: Phenomenological Classification and Lexical Semantics." In *Rethinking Craft Specialization in Complex Societies: Archaeological Analyses of the Social Meaning of Production*, edited by Zachary X. Hruby and Rowan K. Flad, 143-62. Arlington: American Anthropological Association.

Crumley. C. L. 1995. "Heterarchy and the Analysis of Complex Societies." In *Heterarchy and the Analysis of Complex Societies*, edited by Robert M. Ehrenreich, Carole L. Crumley, and

Janet E. Levy, 1-5. Washington: American Anthropological Association.

Drennan. R. D., and Christian. E. Peterson. 2012. "Challenges for Comparative Study of Early Complex Societies." In *The Comparative Archaeology of Complex Societies*, edited by Michael E. Smith, 62-87. Cambridge: Cambridge University Press.

Fazeli. H. 2001. *Social Complexity and Craft Specialization in the Late Neolithic and Early Chalcolithic Period in the Central Plateau of Iran.* Bradford: University of Bradford PhD Thesis.

Fazeli. H. (ed.) 2006. *Archaeology of the Qazvin Plain from the Sixth to the First Millennium BC*. Tehran: University of Tehran.

Fazeli Nashli. H. and Rahmat. S. Abbasnegad. 2005. "Social Transformation and International Interaction in the Qazvin Plain during the 5th, 4th and 3th Millennia B.C." *Archäologische Mitteilungen aus Iran und Turan* 37: 7–26.

Fazeli Nashli. H, Amir. Beshkani, Armineh. Markosian, Hengameh .Ilkani, Rahmat Abbasnegad Seresty. and Ruth Young. 2009. "The Neolithic to Chalcolithic Transition in the Qazvin Plain, Iran: Chronology and Subsistence Strategies." *Archäologische Mitteilungen aus Iran und Turan* 41: 1-21.

Fazeli. H. Robin A. E. Coningham, Ruth L. Young, Gavin K. Gillmore, Mehran Maghsoudi, and Hamid Raza. 2007. "Socio-Economic Transformations in the Tehran Plain: Final Season of Settlement Survey and Excavations at Tepe Pardis." *Iran* 45: 267–86.

Fazeli. H. Randolph E. Donahue, and Robin A. E. Coningham. 2002. "Stone Tool Production, Distribution and Use during the Late Neolithic and Chalcolithic Periods on the Tehran Plain, Iran." *Iran* 40: 1-14.

Fazeli Nashali. H. Massimo Vidale, Pierluigi Bianchetti, Guiseppe Guida, and Robin Coningham. 2010. "The Evolution of Ceramic Manufacturing Technology during the Late Neolithic and Transitional Chalcolithic Periods at Tepe Pardis, Iran." *Archäologische Mitteilungen aus Iran und Turan* 42: 87-127.

Fazeli. H. Edna H. Wong, and Daniel T. Potts. 2005. "The Qazvin Plain Revisited: a Reappraisal of the Chronology of Northwestern Central Plateau, Iran, in the 6th to the 4th Millennium BC." *Ancient Near Eastern Studies* 42: 3-82.

Flannery. K. V. 1999. "Chiefdoms in the Early Near East: Why it's So Hard to Identify Them." In *The Iranian World, Essay on Iranian Art and Archaeology Presented to Ezzat O. Negahban*, edited by Abbas Alizadeh, Yousef Majidzadeh, and Sadegh Malek Shahmirzadi, 44-63. Tehran: Iran University Press.

Ghirshman. R. 1938. *Fouilles de Sialk: près de Kashan, 1933, 1934, 1937. Volume 1*. Paris: Paul Geuthner.

Gillmore. G K., Robin A. E. Coningham, Hassan Fazeli, Ruth L. Young, Mehran Magshoudi, Cathy M. Batt, and G. Rushworth. 2009. "Irrigation on the Tehran Plain, Iran: Tepe Pardis, the site of a Possible Neolithic Irrigation Feature." *Catena* 78: 285–300.

Gustavel. L. and Fazeli Nashli, H. (In press). "Prehistoric Burials at Cheshmeh Ali." In *The Schmidt Expedition to Cheshmeh Ali, Iran, 1934-1936*, edited by Timothy Matney, Christopher Thornton, Hassan Fazeli, and Holly Pittman, H. Philadelphia: University of Pennsylvania.

Hole. F. and Kent V. Flannery. 1968. "The Prehistory of South-Western Iran: a Preliminary Report." *Proceedings of the Prehistoric Society* 33: 147-206.

Kristiansen. K and Thomas B. Larsson. 2005. *The Rise of Bronze Age Society. Travels, Transmissions and Transformations*. Cambridge: Cambridge University Press.

Malek Shahmirzadi. S. 1977. *Tepe Zagheh: A Sixth Millennium B.C. Village in the Qazvin Plain of the Central Iranian Plateau*. Philadelphia: University of Pennsylvania PhD Thesis.

Malek Shahmirzadi. S. 1986. "Urbanization and Urban Planning during the Fifth Millennium B.C. In *A General Study on Urbanization and Urban Planning in Iran*, edited by M. Y. Kiani, 1-21. Tehran.

Mashkour. M. M. Fontugne, and Christine Hatte. 1999. “Investigations on the Evolution of Subsistence Economy in the Qazvin Plain (Iran) from the Neolithic to the Bronze Age, *Antiquity* 73: 65-76.

Matthews. R. and Hassan Fazeli. 2004. “Copper and Complexity: Iran and Mesopotamia in the Fourth Millennium B.C.” *Iran* 42: 61-75.

Negahban. E. O. 1979. “A Brief Report on the Painted Building of Zaghe (late 7th – Early 6th Millennium BC).” *Paléorient* 5: 239-50.

Negahban. E. O. 1984. “Clay Human Figurines of Zaghe.” *Iranica Antiqua* 19: 1-19.

Peregrine. P. 2012. “Power and Legitimation: Political Strategies, Typology, and Cultural Evolution.” In *The Comparative Archaeology of Complex Societies*, edited by Michael E. Smith, 165-91. Cambridge: Cambridge University Press.

Petrie. C. A. 2011. “Culture”, Innovation and Interaction across Southern Iran from the Neolithic to the Bronze Age (c. 6500-3000 BC).” In *Investigating Archaeological Cultures, Material Culture, Variability, and Transmission*, edited by Benjamin W. Roberts and Marc Vander Linden, 151-81. New York: Springer.

Rice. P. M. 1987. *Pottery Analysis, a Source Book*. Chicago: University of Chicago Press.

Schmandt-Besserat. D. 1989. “The Precursors of Writing: Plain and Complex Tokens.” In *The Origins of Writing*, edited by Wayne M. Senner, 27-41. Lincoln: University of Nebraska Press.

Schmandt-Besserat, Denise. 1992. *Before Writing, Volume I, From Counting to Cuneiform*. Austin: University of Texas Press.

Smith. A. T. 2003. *The Political Landscape: Constellations of Authority in Early Complex Polities*. Berkeley: University of California Press.

Smith. M. E. (ed.) 2012. *The Comparative Archaeology of Complex Societies*. Cambridge: Cambridge University Press.

Sołtysiak. A. and Hassan Fazeli. 2010. “Short Fieldwork Report: Tepe Sialk (Iran), Seasons 2008-2009.” *Bioarchaeology of the Near East* 4: 69-73.

Tala’i. H. 1999. “Funeral rites at Zagheh: a Neolithic site in the Qazvin plain, Iran.” *Documenta Praehistorica* 26: 15-20.

Tosi. Maurizio. 1984. “The Notion of Craft Specialization and its Representation in the Archaeological Record of Early States in the Turanian Basin.” In *Marxist Perspectives in Archaeology*, edited by Matthew Spriggs, 22-52. Cambridge: Cambridge University Press.

Vallois. Henri-Victor. 1939. “Les ossements humains de Sialk.” In *Fouilles de Sialk: près de Kaskan 1933, 1934, 1937, Volume 1*, by Roman Ghirshman, 113-92. Paris: Paul Geuthner.

van der Leeuw, Sander. E. Dick A. Papousek, and Anick Coudart. 1991. “Technical Traditions and Unquestioned Assumptions: the Case of Pottery in Michoacan.” *Techniques et Culture* 17-18: 145-73.

Wong. E. H. 2008. *Ceramic Characterization and Inter-site Relationships in the Northwestern Central Plateau, Iran, in the Late Neolithic to the Bronze Age*. Sydney: University of Sydney PhD Thesis.

Wong. E. H. Cameron A. Petrie. and Hassan Fazeli. 2010. “Cheshmeh Ali Ware: a Petrographic and Geochemical Study of a Transitional Chalcolithic Period Ceramic Industry on the Northern Central Plateau of Iran.” *Iran* 48: 11-26.

Young. R. and Hassan. Fazeli. 2008. “Interpreting Animal Bones in Iran: Considering New Animal Bone Assemblages from Three Sites in the Qazvin Plain within a Broader Geographical and Chronological Perspective.” *Paléorient* 34.2: 153-72.

Wright. H. T. 1998. “Uruk States in Southwestern Iran.” In *Archaic States*, edited by Gary M. Feinman and Joyce Marcus, 173-97. Santa Fe: School of American Research Press.

# سلسلهٔ مراتبی و یا گذار از جوامع برابر؟ جوامع انسانی دوره انتقالی مس- سنگی در شمال مرکز فلات ایران

**حسن فاضلی نشلی***
استاد گروه باستان‌شناسی، دانشگاه تهران، تهران، ایران.
**راجر متیوز**
استاد گروه باستان‌شناسی، دانشگاه ردینگ، انگلستان.
تاریخ دریافت: ۱۳۹۹/۱۲/۱۳؛ تاریخ پذیرش: ۱۳۹۹/۱۲/۲۰

## چکیده

پیگیری ظهور اقتدار سیاسی و سلسله مراتب اجتماعی در مدارک باستان شناسی با توجه به ارتباطات مادی بالقوه ای که در مراحل اولیه شکل گیری دولت ها وجود داشته است، یکی از مهمترین چالش های باستان شناسان در پنجاه سال گذشته یا بیشتر بوده است (Chapman 2003; Smith, 2012). بیشتر این تحقیقات شواهد مربوط به جوامع گذشته خاور نزدیک باستان ، از جمله بین النهرین و ایران را بررسی کرده اند (Wright 1998; Flannery 1999; Smith 2012) ، اما بررسی کمتری در مورد جوامع ساکن در فلات ایران انجام شده است (Matthews and Fazeli Nashli 2004). اینکه نقش این جوامع در مجموعه تحولات پیچیده سیاسی-اجتماعی منجر به ظهور جوامع سلسله مراتبی در ۵۵۰۰ تا ۴۰۰۰ قبل از میلاد چه بوده و چگونه ممکن است شواهد باستان شناسی ما را در مورد این نقش ها آگاه کنند، کنند یکی از مسائل مهم و به روز باستان شناسی می باشد؟ بررسی های مداومی اخیرا در مورد جوامع فلات ایران در دوره به اصطلاح مس و سنگ انتقالی (۵۲۰۰-۴۲۰۰ قبل از میلاد) در جریان است که به تقویت درک ما از این سوال کمک میکند. در این مقاله ، ما شواهد حاصل از تحقیقات باستان شناسی محوطه های واقع در دشت های تهران ، کاشان و قزوین را خلاصه و تجزیه و تحلیل کرده و به الگوهای استقراری ، استراتژی های معیشتی ، تولید صنایع دستی و شیوه های تدفین پرداخته ایم (شکل ۱).بحث ما این است که جوامع مس و سنگ انتقالی شمال فلات مرکزی ایران تحت تأثیر تشدید کشاورزی و رشد پیچیدگی از نظر رتبه بندی اجتماعی قرار گرفتند ، همانطور که در شیوه های تدفین و فعالیت های آیینی ، تجارت از راه دور و تخصصی شدن صنایع نشان داده شده است. شواهد نشان می دهد که از اواخر هزاره ششم قبل از میلاد ، جوامع قبلی خودکفا و مستقل این منطقه به سیستم های اجتماعی پیچیده تری در دوره مس و سنگ تبدیل شدند. نشانگرهای افزایش پیچیدگی در دوره انتقال نوسنگی به مس و سنگی شامل گله داری گاو ، گوسفند و بز ( Mashkour et al. 1999; Fazeli et al, 2009) ، کشت جو و گندم نان با استفاده از سیستم های آبیاری(Gillmore et al, 2009) ، توسعه تجارت از راه دور ( Fazeli and Abbasnegad 2005) ، فعالیت های پیچیده آیینی ، تمایز اجتماعی در شیوه های تدفین وایجاد مناطق تخصصی برای تولیدات صنعتی با استاندارد سازی بیشتر و روش های جدید تولید مانند سفال های چرخ ساز (Fazeli et al. 2007; Fazeli et al 2010) می باشند. همه این تحولات از ایده جوامع پیچیده ای که در مرکز فلات ایران از ۵۲۰۰ سال قبل از میلاد به بعد در حال تکامل هستند ، پشتیبانی می کنند. در حالی که افزایش درجه پیچیدگی بدون هرگونه تردیدی به نظر می رسد ، اما همچنان این مورد که جوامع در دوره مس و سنگ انتقالی در یک روند سلسله مراتبی از دسترسی متفاوت و کنترل قدرت ساخته شده اند، قابل بحث می باشد. به نظر میرسد داده های باستان شناسی در ابتدا تفسیرهای سلسله مراتب اجتماعی را پشتیبانی می کردند ، با بررسی ها و تحقیقات بیشترمیتوانند به عنوان مثال با موضوعات مربوط به جنسیت ، مراسم آیینی یا تخصصی شدن حرفه ها مرتبط باشند. طبقه های قدرت و سلسله مراتب ممکن است توسط هویت های اقتصادی-اجتماعی برابری طلبانه ای که باید در مشخصات سوابق باستان شناسی به عنوان ویژگی های جوامع جداگانه تشخیص داده شود ، همزمان باشد. همانطور که پرگرین(Peregrine 2012) اخیرا بیان کرده است ،" گذشته همیشه پیچیده تر از آن است که در یافته های باستان شناسی به نظر می رسد ".

**واژه‌های کلیدی:** دوره انتقالی نوسنگی، زاغه، چشمه علی، تپه پردیس، جوامع طبقاتی، جوامع خان سالار، جوامع رتبه ای.

* رایانامه‌ی نویسنده مسئول: Hfazelin@ut.ac.ir

Journal of Archaeological Studies

Vol 12, Is 4 - Serial Number 24, Winter 2021

Formerly "the Journal of the Faculty of Literature and Humanities"... University of Tehran

# Cultural Dynamics of the Second Half of the Fourth Millennium BC and the Roots of Early Urbanization in Southeastern Iran (3500-3000 BC)

**Hossin Moradi**[1]

**(193-210)**

## Abstract

During the late fourth millennium B.C some changes took place in many archaeological sites of south eastern Iran that affected the different aspects of life in the region. By expanding of local cultures in the late 4th millennium B.C, at the same time we are witnessing the presence of proto Elamite cultural materials near some key sites and consequently remarkable increasing in trade exchanges with distant areas. In fact, some evidence of foreign merchants with Banesh/proto Elamite elements that has specialization on storing goods, commodity management and trade in long distances. These evidence have been documented by archaeological excavations near Shahdad, Konar Sandal and Shahr i Sokhta. All these sites are the big cities in the first centuries of third millennium B.C. It seems that in spite of expansion of Aliabad culture in Kerman, Baluchestan, Makran and near Sistan since 3700 B.C to 3300 B.C that consequently followed by local cultures in each area from 3300 to 3000 B.C, the main factor for starting and developing of urbanization in south east of Iran is connected to presence of proto Elamite culture and building the exchange centers or Bazar in the areas with good potential for the natural resource. These areas became the urban centers in the beginning of third millennium B.C. In fact, the art of those merchants was learning to local people that how to control their valuable resource and crafts for exchange and interaction with the other people.

**Keywords**: South east of Iran, Urbanization, Trade, Proto Elamite elements, Parviz Piran.

Received: 13 November, 2020; Accepted: 10 March, 2021

10.22059/jarcs.2021.313602.142951
Online ISSN: 2251-9297 Print ISSN: 2676-4288-
https://jarcs.ut.ac.ir

1. Corresponding Author Email: H_moradi57@yahoo.com. PhD Student in Archeology, University of Tehran, Tehran .Iran.

## 1- Introduction

Although affected by common climatic currents, the southeastern of Iran is geographically a heterogeneous area where various geographical landscapes have been formed. The provinces of Kerman, Sistan and Baluchestan, Hormozgan and some parts of Yazd and Southern Khorasan form the southeastern Iran generally. If we divide this part of the Iranian plateau into smaller basins in which both cultural-historical homogeneity and geographical landscapes are taken into account, we can generally divide it into three basins: Kerman, Baluchistan and Sistan (Moradi 2018: 65). Prior to the 1980s, most archaeologists believed that southeastern Iran was used as a corridor, linking Indus valley to the western Iran and to Mesopotamia based on the excavations carried out in Mohenjo-Daro, in the Indus valley and the Punjab Delta (Caldwell 1967: 24). Some scholars suggest that, during the late of the fourth millennium BC, these geographic areas can be called 'trans-Elamite regions' (Amiet 1985: 19-26): today, thanks to the recent archaeological researches it seems that such comment needs to be revised fundamentally.

In the late fourth and early third millennium B.C of southeastern Iranian plateau, the presence of Proto-Elamite materials in some key sites, distribution of black on gray ceramics called 'Emir gray ware' (Wright 1984), the emergence of common decorations in pottery, use of shared methods in industrial technologies (Jarrige *et.al* 2011: 29) and similar burial traditions (Sarhaddi-Dadian *et.al* 2019: 123) indicate a cultural homogeneity throughout the south east of the Iranian plateau. In that time, we have also some evidence of specialization in the preparation, production and distribution of various goods such as pottery, stoneware, semi-precious stones and metal objects, as well as settlements with an average area about 15 to 20 hectares in many regions of south eastern Iran appear; during the half of the third millennium BC, indeed, the extent of some sites, were more than tripled (Tosi 1979: 159).

Shortly after, in the first quarter of the third millennium BC, specialization in crafts activities and settlement areas became more widespread and covers many parts of life. A new specialization in the architectural and topographical plans is now reflected both in residential houses and architectural complexes (Sajjadi and Moradi 2014: 89), as well as been seen, for example, in Shahr i Sokhta that shows different urban quarter (Mariani, 1992: 183) and in Shahdad where different areas of occupation have been found (Hakemi, 1997: 63-67). We also witness the emergence of social hierarchy that reflected in burial traditions (Sajjadi, 2021: in press).

In the southeast of Iran, areas reflecting urban developments in the third millennium BC are rare, however if we consider the expansion of settlement area and its spatial development (Liverani 1998: 25), along with mechanisms related to trading (Algaze1989: 590), as the most basic components for an urban organization, we can state that Shahdad with about 150 hectares (Tosi and Salvatori 1990: 126), Shahr i Sokhta with about 200 hectares (Seyed Sajjadi 2019: 17) and also Konar Sandal, used to be urban population centers during the first half of the third millennium BC. At the beginning of the third millennium BC, these urban centers underwent changes which were signs of economic progress along with an increase in the number of functional and luxurious objects (Tosi 1979: 153), including stone vessels, Lapis beads and turquoise as well as bronze objects. According to researches, three kinds of valuable natural materials, namely, chlorite and copper ore from Kerman region (Beale, 1973: 133; Hakemi 1997: 116) and Lapis from Shahr i Sokhta (Tosi, 1974: 7-155) were exported to Elam and Mesopotamia.

## 2-Cultural dynamics in the second half of the fourth millennium BC in southeastern Iran and the presence of Proto-Elamite materials on the context of Aliabad culture (3300-3000 BC)

The developments of urbanization in the first half of the third millennium BC in southeastern Iran was mostly influenced by internal factors and possibly due to population growth in the areas with good environment. The dynamic role of cultural interactions in the second half of the fourth millennium BC should be also considered as the roots of next developments of the early Bronze Age or in the beginning of urbanization in southeastern Iran.

In Kerman, the culture of Aliabad refers to a period from 3700 to 3300 BC (Eskandari. 2018: 32). This period is also known as Iblis IV (Caldwell 1967). In the second half of the fourth millennium BC (late chalcolithic period) Aliabad cultural materials (3700-3300 BC) were found in a vast range including Kerman, Baluchistan (Mutin *et.al* 2017: fig.7) and Makran IIIa (Mutin 2013a: 260-3) situated 500 km east of Kerman. The roots of this culture can be traced in the early Aliabad culture and Iblis III in the province of Kerman (Shafiee *et.al*. 2019).

Since the first prehistoric settlements in Sistan basin appear around 3200 BC in the southern Helmand delta, we do not have any evidence recording to settlements prior to this era in this area. The closest Aliabad site to Sistan is situated near the Zahedan and 150 km away from Shahr i Sokhta (Moradi *et.al* forthcoming; Heydari 2016: Fig.3).

After the late Aliabad period in the late fourth millennium BC, Proto-Elamite materials such as cylindrical seals, beveled rim pottery and economic writing tablets were found in different parts of Iran including southeast of Iran and western side of Makrani Pakistan. These marker materials were discovered in Tepe Yayha (Potts 2001:232), Mahtoutabad on the banks of Halilrud (Desset *et.al* 2013: fig.10-11), Shahr i Sokhta period I.9-10 (Amiet and Tosi1978) and Miri Qalat IIIa between 3200-2900 BC (Besenval 2000: 5) (fig.1). The Kech-Makran Basin, which was previously considered the easternmost area of the spread of Aliabad culture, is also known as the easternmost area of the distribution of Proto-Elamite materials, from which 3 pieces of beveled-rim bowls were found. In fact, Miri Qalat IIIa coincides with Yahya IVC and Shahr i Sokhta I.10 (*Ibid*). This coincidence probably includes the late period of Chah Hosseini in the Bampur plain, in which local materials of Mahtoutabad III as well as some Varamin cultural materials have been found (but with no evidence of Proto-Elamite period) (fig.2).

## 3-Chronological complexities of the Proto-Elamite period in southeastern Iran

### 3-1- Kerman basin

The late Aliabad culture probably lasted until 3300 BC in the Kerman basin and other parts of the southeast of Iran. The archaeological evidence has also been obtained from Baluchestan and Makrani Pakistan. Although a clear chronological perspective of the Halilrud Basin is not yet available, some information on post-Aliabad cultures known as the Mahtoutabad III (Desset *et.al* 2013) and Varamin culture (Eskandari *et.al* 2020. in press) recently have been collected by excavations and it needs further evaluations: first, according to the findings from Tepe Varamin and Mahtoutabad, the presence of beveled-rim bowls in Mahtoutabad III and their absence in Varamin (*Ibid*) seems to indicate that the Proto-Elamite period was present only in Mahtoutabad III. The culture of Varamin is probably a local culture *(Ibid*), originated from Aliabad culture and known in proximity of Shahdad on the banks of Halilrud basin (Eskandari,2018: 32), while

Mahtoutabad III and Yahya IVC should be considered as the results of the interactions with the western regions of Iran, mainly in Fars and Khuzistan

The excavators of Mahtoutabad III introduced this culture as an unknown and foreign culture (Desset *et.al* 2013: 48). However, presenting or interpreting it as a foreign culture is a way to ignore the importance of this culture, a culture which had even reached Shahr i Sokhta (Moradi 2021 in press: fig.27) (fig.2). The Proto-Elamite culture in southeastern Iran is known in Yahya IVC, where a building with a large number of Proto Elamite tablets, seals and beveled rim pottery have been discovered in an well-defined architectural unit (Mutin 2013b: 30). Such complete collection has not yet been discovered from any other area in the east and southeast of Iran and it is comparable only to the Tal-e-Malyan. In this perspective, it is possible to note an overlap between Iblis VI (in the north of Kerman), Yahya IVC (in the center) and Mahtoutabad III (in the south of Kerman); all sites from where beveled-rim potteries come from, well-inserted in different local cultural productions.

On the other hand, the number of beveled rim pottery discovered from Mahtoutabad III is not comparable to either Yahya or Malyan and in terms of number, it can only be compared to the sites of Khuzestan (Desset *et.al* 2013: 27). The site of Mahtoutabad is located in the bed of Halilrud and it has been exposed to erosions over time with a lot of river sediments cover it (*Ibid*: 17): it is possible that materials such as tablets or the seal impressions are lost due to this phenomenon and only pottery, that has a high resistance to natural erosion, has remained. The ecological system in Halil valley, in a historical perspective, carried out a meaningful role in relationships dynamics among inner Kerman regions, Baluchestan, Makran and Sistan.

It seems that in the proto-Elamite economic interactions, Mahtoutabad and Yahya which are closer to each other and are situated in a smaller geographical area, played a dynamic and active role in interaction with other areas in the east. If we consider the so-called 'central place exchange model' (Lamberg-Karlovsky 1972: 222) to understand the exchange mechanism of the Proto Elamite period, we can suggest that, on the basis of the findings of Tepe Yahya, such a central position could be proposed for Yahya IVC and Mahtoutabad III, with Yahya that had to have had a significant role in the documenting of economic exchanges based on the mass tablets production.

Another remarkable phenomenon in Kerman, in the Proto-Elamite period, is the emergence of the local culture of Varamin, contemporary with Mahtoutabad III and Yahya IVC (Eskandari *et.al* 2020 in press), where no signs of the proto Elamite culture have been found. Therefore, it may be possible to date the period of Mahtoutabad III from 3300 to 3100 BC right after the Aliabad culture, which also includes part of the phase of Varamin (fig.3).

To ensure this dating and to place Mahtoutabad III in the chronological table, the cultural materials of the first period of Shahr i Sokhta in Sistan can help us to solve the problem. However, in the phases related to the proto-Elamite horizon in Shahr i Sokhta, no bevelled-rim potteries have been found yet; on the contrary, proto Elamite seal impressions and a written proto Elamite tablet were found, both dating back to 3200 to 3100 BC* (Amiet and Tosi 1978: 139-140). In a preliminary way, we can only suggest that, from the upper layers of Period I of Shahr-i Sokhta, a number of sherds was comparable to the buff painted wares of Mahtoutabad III (fig.4), meanwhile some other samples seem to be comparable with Yahya IVC (fig.5).

### 3-2- Baluchestan and Makran

Generally, in Baluchestan, the contemporary culture to Aliabad or Iblis IV is called 'Chah Hosseini Horizon', known in the Kech-Makran in Pakistan (as the early Miri IIIa) from where the diagnostic potteries of Aliabad, with local materials of Miri/Makran II, come from (Mutin 2013a: 260-262). However, due to the lack of archaeological excavations in chalcolithic sites of Iranian Baluchestan such as Chah Hosseini, our knowledge of this period is limited. The proto-Elamite period of these two areas differs from which one in Sistan and Kerman in terms of the type of materials because the proto-Elamite signs are rare in these regions does not allowing to consider as dynamic urban or exchange centers. Although in some sites of the Bampur valley, Yahya VA pottery, Aliabad wares and the local pottery of Mahtoutabad III and Varamin have been found (Moradi 2016: 452-455), so far no evidence of Proto-Elamite materials is known (fig.2). In Bampur plain recent archaeological survey (Moradi *et al* 2014) shows that, due to its proximity to the Kerman basin, the presence of Kerman related materials during the early fourth millennium BC is significant. In the second half of the fourth millennium BC, the expansion of Aliabad cultural materials can be seen in many sites of Bampur plain and to a lesser extent in other parts of Baluchistan (Moradi *et.al* 2022, *forthcoming*). The data obtained from surface surveys of more than 48 sites of the fourth millennium BC collected in the Bampur plain reveals that Kermani cultural materials (such as Aliabad wares, Mahtoutabad III /Yahya IVC pottery as well as Varamin potteries) were diffused along with local samples. In Makran, the Aliabad cultural materials were found from the early IIIa Miri Qalat layers, while a few Baneshi/ Proto-Elamite beveled rim potteries were discovered from the late phase of IIIa (Mutin 2013a: 260-62).

### 3-3- Sistan plain

Throughout the Sistan plain, no signs of the presence of Aliabad culture have been documented so far, and the closest place from which such materials are found is around Zahedan (Heydari 2015: Fig.3). It seems that climatic conditions before 3500 BC prevented the formation of settlements in the Sistan plain. The first evidence in this region is in Shahr i Sokhta dating back to 3200 BC (simultaneously with Yahya IVC dating to the Proto-Elamite period) (Salvatori and Tosi 2005: 284). The excavations in Proto-Elamite layers of Shahr i Sokhta include fieldworks in an area of 25 square meters carried out by the Italian team and by the Iranian archaeologists since 2017 (Sajjadi and Moradi 2018: 717-721). In Shahr i Sokhta two interaction spheres; Proto-Elamite and southern Turkmenistan one have been existed at the end of the fourth millennium BC (Lamberg-Karlovsky and Tosi, 1973: 52). The first one was the part of a trans-regional trade system in western Asia, although Nal pottery, Emir gray and Quetta/southern Turkmenia wares were presented in the same layers (Amiet and Tosi 1978: 22-23; Moradi 2021 *in press*). The southern Turkmenia is famous for the Namazga III painted buff pottery (Biscione 1974: 69). This type of wares has already been found in abundance from the Mundigak III, north of the Helmand delta in Afghanistan and in the Quetta Valley in Pakistan (*Ibid*). A number of these potteries was found in the layers associated with the phase 9-10 of Shahr-i Sokhta, around 3200 to 3100 BC. Although the impact of these two areas of interaction is more significant in phase 9-10 in Shahr-i Sokhta, it seems that impact and the presence of cultural materials continued until the end of the period I (up to 2800 BC).

Mutin and Mink categorize the pottery collected for chemical experiments from the excavations related to the period I of Shahr i Sokhta conducted by the Italian team based on their paste and motifs into three general categories. The first one includes buff

wares, local samples, southern Turkemenistan and Quetta wares, the second includes the Makran and Baluchistan related wares and the third group is unknown potteries (Mutin and Mink 2019: 884). In reviewing the cultural materials obtained from the recent excavations at eastern residential area, the author has identified and classified six categories of cultural materials with different origins and styles during phases 9 and 10 of period I (3200-2800 BC). They include local materials, southern Turkmenistan and Quetta wares, Emir Gray wares, Proto Elamite Cultural materials and the Jemdet Nasr jars, Nal pottery from central Baluchistan of Pakistan, Kerman, Bampur and Makran types (Moradi 2021 *in press*)(fig.6). Anyway our focus is on the Proto Elamite cultural materials and Kermani related pottery (figs.5 and 7) that are closely related to each other.
The presence of Mahtoutabad III / Yahya IVC pottery along with Emir gray wares in Shahr i Sokhta I (fig.5) indicates the dynamic role of Kerman and Baluchistan basins in the formation of Shahr i Sokhta (fig.7). The proto-Elamite elements of the first period of Shahr i Sokhta are: 1.One proto-Elamite tablet discovered from the excavations of the Italian missions in the eastern residential area, in the square XDV. This is the only tablet obtained from Shahr i Sokhta. 2. The cylindrical seals impressions with animal, plant and human motifs found from both Iranian and Italian excavations (fig.7) 3. Jemdet-Nasr-like potteries such as nose lugs jars 4. Clay human figures that are generally comparable to some Jemdet-Nasr samples (Matthews 1989: fig.11.3). The pseudo Jemdet-Nasr jars with two or more nose lugs on the upper part have been found in many areas in the south of Mesopotamia, southwest of Iran include Fars and Kerman in 3000 BC. The profile of Shahr i Sokhta samples, unlike the Jemdet Nasr/ Yahya IVC samples (Potts 2001: fig.1.40), is completely round shape and the motifs are mostly similar to Quetta wares (Moradi 2021 in press: fig.24) and they cannot be completely compared to the original Jemdet Nasr types. A similar type is also found from Yahya IVC covered and designed by local motifs (Potts 2001: fig.1.40).

The cylindrical seal impressions with animal motifs or four leaf clover flowers are similar to the proto-Elamite samples dating back to the 3100-3000 BC found from Susa (Amiet 1972: Pl.26), Yahya (Potts 2001: fig.10.29), Malyan (Pittman1997: fig.4a) and Oman peninsula (Amiet 1975:426). No beveled-rim bowls have been found so far from the layers relating to the period I of Shahr i Sokhta. The reason may be traced to the fact that many of the sites with beveled rim pottery date back to 3300 and 3200 BC or maybe the lack of beveled-rim bowls usage at Shahr i Sokhta. Probably when the effects of Proto-Elamite culture reached Sistan, the function of such pottery in the context of daily life was lost and such an archaeological phenomenon had no longer a role in people's lives in 3200 BC. Instead, other elements of this culture, such as cylindrical seals impressions and writing tablets related to commodity management and storing, had been more widely used. On the other hand, the presence of pottery similar to Yahya IVC/Mahtoutabad III and the Proto-Elamite elements among Shahr i Sokhta period I materials is significant (fig.4-6). It seems that because of similarity between Mahtoutabad III pottery and some samples in Shahr i Sokhta I, more attention should be paid to the key role of this site in the expansion of the Proto-Elamite culture in Shahr i Sokhta. The explanation for the presence and expansion of Mahtoutabad III along with the Proto-Elamite culture of Yahya IVC can be related to the long-standing links between the Halilrud basin and eastern regions, especially Bampur plain; in Chah Husseini and other simultaneous sites in the Bampur valley, indeed, we can observe the presence of Varamin related and Mahtoutabad III pottery along with local materials (fig.2).

## 4- Conclusion

In southeastern Iran, three major urban centers during the early third millennium BC were formed; Shahdad in the north of Kerman, Konar Sandal the south in the southern part of Kerman and Shahr i Sokhta in Sistan basin. Shahdad and Shahr i Sokhta followed almost the same path in urban development. Here are a few debated points about the internal and external contexts of the conversion of these population centers in the late fourth millennium BC to the relatively large cities in the middle of the third millennium BC.

First, the theoretical basis of the discussion is based on Parviz Piran's sociological theory of "Geo-strategic and Geopolitical Theory of Iranian Society" (Piran 2004 cited by Gudarzi 2009: 27). After researches conducted by Western and Iranian scholars on the formation of various aspects of Eastern life, such as the theory of Asian production by Karl Marx and Engels or the theory of water Despotism by Karl Wittfogel (Wittfogel, 1981, cited by Rothman 2004: 79), Piran, is the first sociologist who realizes the importance of trade in the formation of Iranian identity, especially in relation to cities and kingdoms and the Eastern despotism. In fact, the theory of Geo-strategic and Geopolitical problems of Iranian Society has a special emphasis on trade throughout the history of Iran, which has been obtained from the analysis of more than three hundred books on historical research and urban planning in Iran (Gudarzi 2009: 49). This theory is based on three principles. First, the nature and necessity of migration in many parts of Iran due to climate instability. The second is the discovery of agriculture that requires settlement in areas with limited water resources and limited environmental capacities (*Ibid*: 47). These two principals have always created an inherent and inevitable conflict between agriculture and nomadism. Such a conflict has been seen and recorded in the prehistoric period of Iran, especially between nomadic mountaineers and urban dwellers in the lowlands of Khuzestan (Alizade2010).

The third principle is Iran's geopolitical challenge, namely the insecurity resulting from the struggle between local and regional powers for physical control. Piran interprets that Iran's limited attacks on its neighbors have historically been more to reopen and to control trade routes as a source of income for kingdoms, governments, local economies, and suburban artisans, and that the geopolitical challenge is tied to trade (Gudarzi 2009: 50). In fact, the strength of Parviz Piran's theory compared to other Iranian and European sociology theories has been in this understanding of the role of trade in Iranian life. Accordingly, the author has used the third principal to interpret the formation of prehistoric cities in southeastern Iran. Likewise, by modifying the global system model of Wallerstein, Guillermo Algaze emphasizes on the role of trade in urban development and government formation during the Uruk period in Mesopotamia (Algaze 1989: 588-589).

In the urban centers of Kerman basin, namely Shahdad and Konar Sandal, we have witnessed cultural changes since the early fourth millennium BC, which eventually led to the spread of Aliabad culture at 3300 BC, from north of Kerman to the Bampur plain and to some parts of Baluchistan and Makran in Pakistan (500 km to the east of Kerman and near Shahr i Sokhta). In Jiroft plain in south of Kerman, the Varamin culture, with local features, has been also identified in Tepe Dehno, near Shahdad. The cultural sequence after Aliabad has been called 'Varamin culture' with the evidence of local factors, and no witnessing about the formation of primary urban core. Neither in Tepe Varamin, nor in Tepe Dehno there are no evidence for cultural continuity in the urbanization process,

as, on the contrary, known in Shahdad and Konar Sandal, two active Proto Elamite centers. Along with this local culture, in the two mentioned regions, we have attested the emergence of settlements with proto-Elamite and local cultural materials. Iblis VI (Chase et al. 1967: 188-97), in the north of Kerman, and Yahya IVC and Mahtoutabad III in the south, indicate the formation of Proto-Elamite colonies near the local settlements. The absolute and relative dating show that these cultures coexisted at the same time.
We face also to the same situation in Shahr i Sokhta. Here is the only settlement where the local and regional materials along with the Proto-Elamite elements were present during 3200 to 3000 BC. This condition is probably related to the limited living space in the Sistan plain as a flat and catchment area with scattered natural Kaluts that make Shahr i Sokhta as the largest habitable flat Kalut. Therefore, the Proto-Elamite cultural materials are in the same place as local ones. The presence of cow bone masses in the lower levels of period I in the eastern residential area indicates the possible extent of agricultural activities in an area where the use of large animals such as cattle for agriculture in muddy and wet lands was necessary (Sajjadi and Moradi 2018 : 718).
Now the question is how to interpret the presence of Aliabad culture and then the Proto-Elamite in the expansion of southeastern urbanization?

In Kerman, it seems that the spread of Aliabad wares alone could not provide a powerful force in forming the foundation of ancient cities. The population concentration happened only in places that had witnessed the presence of Proto-Elamite colonies in 3300 to 3200 BC. The scattered communities that used to be the large villages with an extent of 15 hectares before 3200 BC became larger and formed the urban centers during this period.

Although archaeological excavations have not been carried out in many areas outside of Kerman, where evidence of Aliabad culture has been discovered and all our information is from surface surveys, it can still be assumed that, due to the widespread distribution of Aliabad cultural materials in many areas of the southeast, probably during the Aliabad period, people tried to discover new lands in the east. In fact, the initial acquaintance with the eastern regions by the nomadic groups first began in the second half of the fourth millennium, and then in the last two centuries of this millennium, some groups with Proto-Elamite culture who excelled in commodity management, settled in Kerman, Tepe Yahya and Mahtoutabad. They formed colonies such as Mahtoutabad III and then some of them moved to other areas such as Sistan and Makran plains. By studying the climate of the fourth and third millennia BC, Raike suggests probable ways in eastern Iran that were used as the seasonal or annual routes (Raike, 1979: 555-559).

If we accept that the Proto-Elamite features, especially tablets and seals impressions, were related to trade and storing systems, then we can find a clear reason for the widespread presence of these materials in areas such as Kerman and Sistan that were prone to trade. The archaeological evidence reveals that local communities living in these areas before the Proto-Elamite period were not familiar with complex commodity managements, long distance trade and keeping the records of goods. Excavations at Tepe Varamin, tepe Dehno in Kerman, Mundigak in the north of the Helmand Delta, and the Kech-Makran Plain in Pakistan indicate that there is no significant evidence of commodity management practices. Trade and commerce also took place locally and within a relatively short distance between these communities, which naturally did not require complex storing and accounting procedures. Thus, as these merchant groups

gradually entered to these areas, it became possible for small centers to become places to exchange goods and to trade, what we call it today bazaar. This became a reason to attract the population from the surrounding areas, which is the basis for the formation of the first stage of urbanization in southeastern Iran. Such areas reach between 15 and 20 hectares at 3000 BC and about 80 hectares or more at 2800 to 2500 BC. The buildings that can play the role as markets have been discovered only in Shahr i Sokhta in southeastern Iran dating back to 2300 BC. In this historical perspective, the building number 26 known in Shahr-i Sokhta, which is a corridor-like building with retaining walls, appears an important evidence about trade and relationships; the excavators of this building presented it as a probably open Bazar based on its structure and architectural development (Sajjadi and Moradi 2017).

**Acknowledgement**

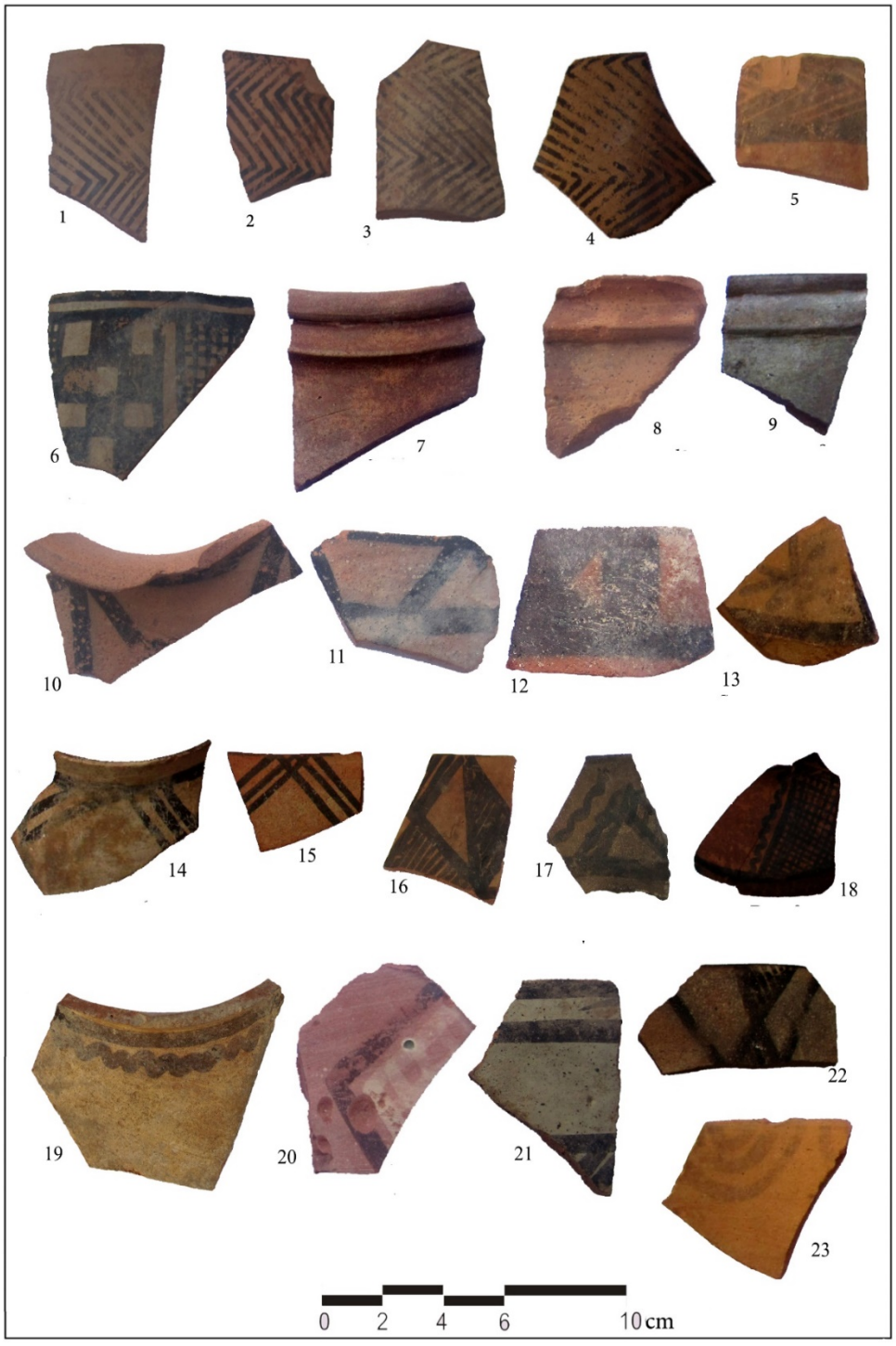
I would like to appreciate of Dr. Mojgan Shafee for translating and Prof. Enrico Ascalone for editing the text. And thanks to Dr. S.M.S Sajjadi for getting permission to use the unpublished documents from recent Shahr i Sokhta excavations and Dr.Nasir Eskanadari and Dr. Francois Desset for sending unpublished article for me.

**Footnote**

1. Recent radio carbon dating may back to 3500-3300 B.C (Personal conversations with Dr.S.M.S Sajjadi)

## Attachments

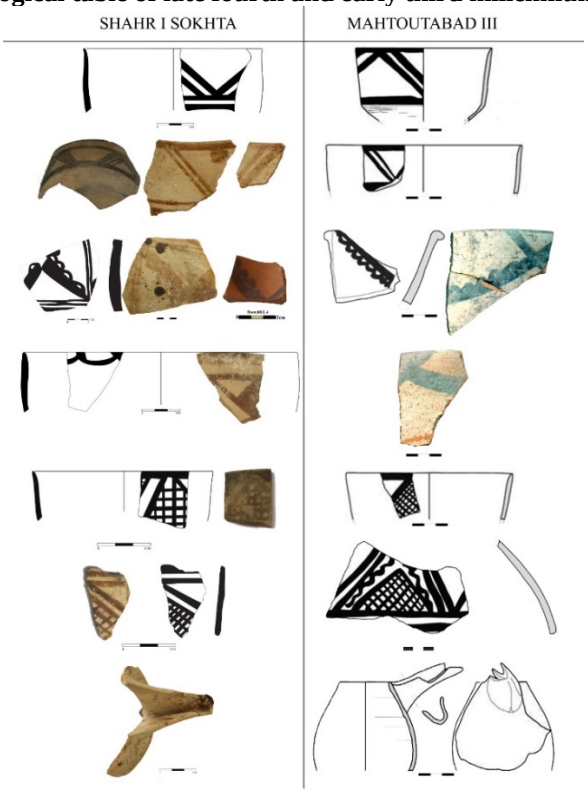

**Figur.1. Distribution of key sites with proto Elamite elements (focus on Iranian plateau)**



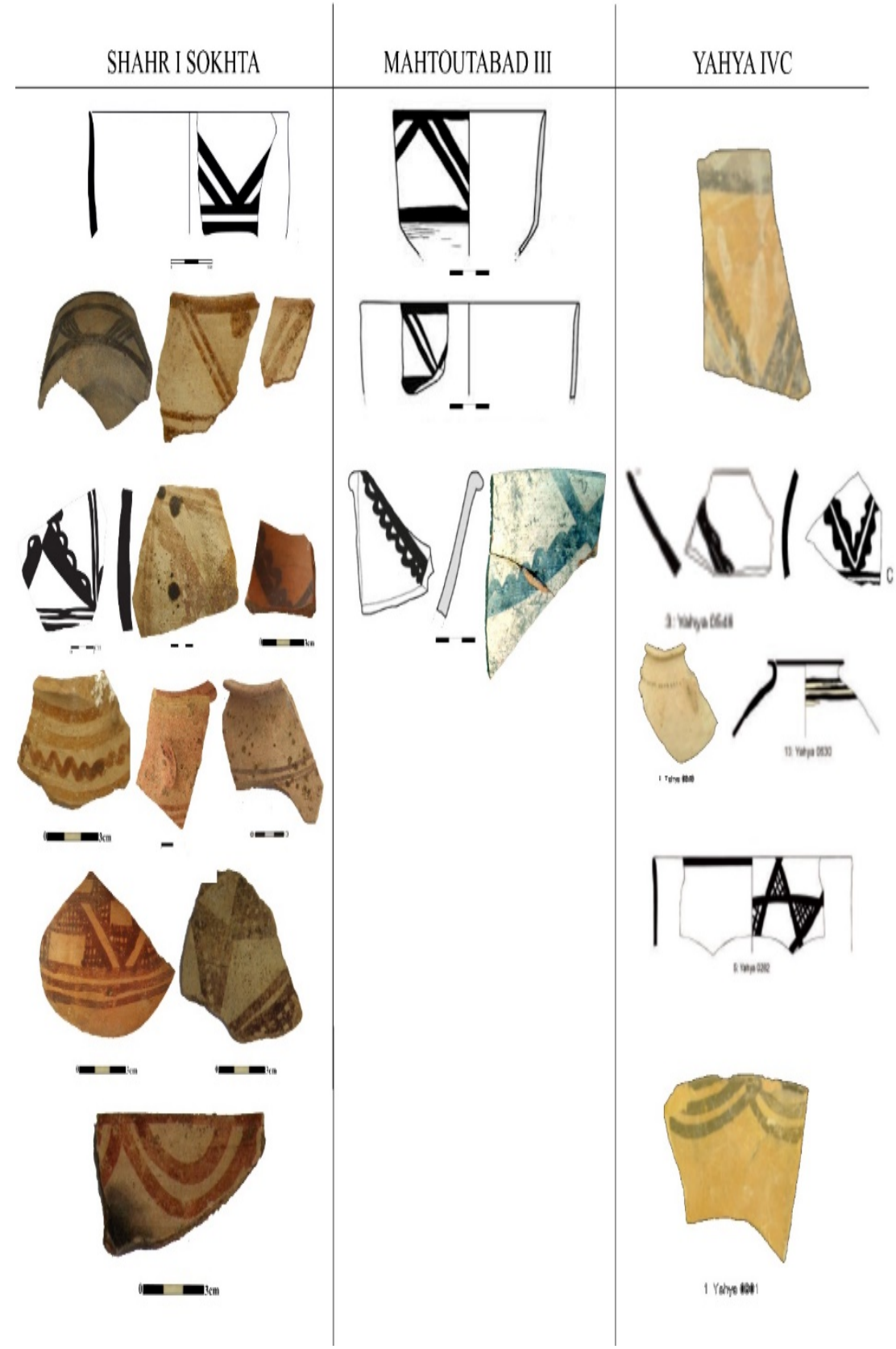

**Figur. 2. Kerman related pottery from Bampur valley (nos 1-6: Yahya VA related wares, 7-9: Aliabad wares, 10-18: Yahya IVC and Mahtoutabad III, 19-23: Varamin wares), (*After* Moradi 2016)**

| Date (B.C) | Susa | Kerman | | Baluchestan | Sistan |
|---|---|---|---|---|---|
| | | Yahya | Halil Rud | | |
| 2500 | Old Elam | IVB | Konar Sandal ↑ (Mature Urbanization) | ↑ | Shahr i Sokhta II (Mature urbanization) |
| 2600 | | | | | |
| 2700 | | | | Bampur I-IV | |
| 2800 | Susa III | IVC (Proto Elamite) | Varamin/ Mahtoutabad III | | Phase 8 |
| 2900 | | | | | Phase 9 |
| 3000 | | | | Unknown Some pottery linked to Proto Elamite culture of Kerman?! | phase 10 |
| 3100 | | | Mahtoutabad III (Proto Elamite) | | Shahr i Sokhta I (Proto Elamite) |
| 3200 | Susa II | | | | |
| 3300 | | Gap? | Aliabad | Chah Hosseini Horizon with Aliabad Wares | Recently discovered |
| 3400 | | | | | |
| 3500 | Susa I | | | | |
| 3600 | | | | | |
| 3700 | | | | | |
| 3800 | | | Yahya VA-C | Chah Hosseini Horizon | |
| 3900 | | | | | |
| 4000 | Terminal Susa | | | | |
| 4100 | Late Susiana 2 | VA | | | |
| 4200 | | | | | |
| 4300 | | | | | |
| 4400 | | | | | |
| 4500 | | | | | |
| 4600 | Late Susiana 1 | | | | |
| 4700 | | | | | |
| 4800 | | VC-B | | Unknown | |
| 4900 | Late Middle Susiana | | | | |
| 5000 | | | | | |

**Figur.3. Chronological table of late fourth and early third millennium B.C in SE Iran.**




**Figur.4. Parallel pottery between Mahtoutabad III and Shahr i Sokhta period I phases 9-10**




**Figur.5. Shahr i Sokhta, Yahya IVC and Mahtoutabad III pottery.**


**Figur.6. typology of pottery from period I of Shahr i Sokhta (3200-3000 B.C).**
**Nos.1-2: Namazga III type. Nos.3-4: Emir gray wares; 5-6: Nal pottery, Nos. 7-8: pseudo Jemdet Nasr type (No.7: A pseudo Jemdet Nasr jar decorated with Namzga III motif and no.8 has seen in Yahya IVC period), Nos.9-14: Kerman related pottery (No. 12 is also common in Bampur valley and no.14 is common in Yahya IVC and documented in Bampur valley (see fig.2), Nos. 15-17: Bampur/ Baluchestan type (No. 15 also has seen in Yahya IVC, no. 16 in Yahya IVC, Varamin culture, Bampur valley and Spidej).**


**Figur.7. Proto Elamite seals impression and tablet from Shahr i Sokhta Period I, phases 10-9, 3200 B. (*nos.1-3 After* Moradi 2021; nos. 4-6 *After* Amiet and Tosi 1978)**

## Refrences


Algaze. G. 1989. The Uruk Expansion: Cross-cultural Exchange in Early Mesopotamian Civilization. *Current Anthropology* 30(5): 571-608

Alizadeh. A. 2010. The Rise of the Highland Elamite State in Southwestern Iran, *Current Anthropology* 51: 353-383

Amiet, P. 1972. *Glyptique susienne des origines à l'époque des perses achéménides. Cachets, sceaux-cylindres et empreintes antiques découverts à Suse de 1913-1967. 2 vols.* (= MDAFI 43), Paris

Amiet. P. 1975. A Cylinder Seal Impression found at Umm an-Nar. *East and West* 25: 425-426.

Amiet, P. 1985. Elam et Bactriane. *Heme colloque Franco-Sovietique sur I'archeologie de I'Asie Centrale*: 19-26

Amiet. P and M. Tosi. 1978. Phase 10 at Shahr- i Sokhta: Excavation in Square XDV and the Late 4 th Millennium B.C Assemblage of Sistan. *East and West* 28: 9-41.

Beale. T. 1973. Early Trade in Highland Iran: A View from a Source Area, *World Archaeology* 5(2): 133-148.

Besenval. R. 2000. New Data for the Chronology of the Protohistory of Kech- Makran (Pakistan) from Miri Qalat 1996 and Shahi-Tump 1997 Field-Seasons. TADDEI M. and DE MARCO G. (eds), *South Asian Archaeology 1997*: 161-188.

Biscione, R. 1974. Relative Chronology and Pottery Connections between Shahr-i Sokhta and Mundigak, Eastern Iran, *Memorie dell'Istituto Italiano di Paleontologia Umana* 2: 131-145.

Caldwell. J. 1967. *Investigation at Tall i Iblis*. Illinois Museum. Preliminary reports. Vol. 9. Illinois State Museum Society. Springfield.

Chase. D. W, J.R. Caldwell and I. Fehervari, I. 1967. The Iblis sequence and the exploration of excavation areas A, C, and E. in Caldwell. J. R. (ed.), *Investigations at Tal-I Iblis*, Illinois State Museum Preliminary Reports, Vol. 9, Illinois State Museum Society, Springfield: 111–201

Desset, F., M. Vidale and N. Alidadi Soleimani. 2013. Mahtoutabad III (Province of Kerman, Iran): An "Uruk-Related" Material Assemblage in Eastern Iran. *Iran* 51(1): 17-54.

Eskandari. N. 2018. A Reappraisal of the Chronology of the Chalcolithic Period in SE Iran, Absolute and Relative Chronology of Tepe Dehno and Tepe east Dehno, Shahdad. *Journal of Research on Archaeometry* 4 (1):23–35. *(in Persian)*,

Eskandari. N., P. Pfälzner and N. Alidadi Soleimani. 2020. The Formation of the Early Bronze Age Jiroft Culture, Halil Rud Basin, SE Iran, Excavations at Varamin/Jiroft 2017. *IRAN*,( *Forthcoming)*

Gudarzi. G. 2005. *Introduction in Sociology of the Iranian Despotism*. Maziar pub. Tehran. Iran. *(in Persian)*

Hakemi .A. 1997. *Shahdad, Archaeological excavations of a bronze age center in Iran: translated and edited by S.M.S. Sajjadi*. IsMEO, XXVII, Rome

Heydari. N. 2015. Excavation and Test Trenches around Tepe Sang Sar, A Chalcolithic Site in Mirjave, Sistan and Baluchistan Province. *14 International Congress on Archaeology of Iran*. H. Choubak(ed). ICAR. Tehran: 138-144. *(in Persian)*

Jarrige. J.-F. A. Didier and G. Quivron. 2011. Shahr -i Sokhta and the Chronology of the Indo-Iranian Regions, *Paléorient*. 37(2): 7-34

Lamberg Karlovsky. C.C. 1972. Trade Mechanisms in Indus –Mesopotamian Interactions, *Journal of the American Oriental Society* 92(2): 222-229

Lamberg-Karlovsky. C.C. and M. Tosi. 1973. Shahr-i Sokhta and Tepe Yahya: Tracks on the Earliest History of the Iranian Plateau. *East and West* 23: 21-53.

Liverani. M. 2006. *Uruk the first city*, Edited and translated by Zainab Bahrani and Marc Van De Mieroop. Equinox Publishing Ltd. London.

Mariani. L. 1992. The eastern residential area at Shahr-i Sokhta. *South Asian Archaeology 1989*. Catherine Jarrige (ed): 181-193

Matthews. R. 1989. Excavations at Jemdet Nasr, 1988. *Iraq* 51: 225-248.

Moradi. H., H. Sarhaddi Dadian, and N. H. Abdul Rahman. 2014. Development and Fall of the Bampur Valley, Based on the New Archaeological Evidences in Prehistoric Period. *Iranian Studies, Journal of the International Society for Iranian Studies*.(47)2: 263-287

Moradi. H. 2016. Interaction Spheres of Bampur Valley in Prehistoric Period (4th and 3rd Millennium B.C), PhD thesis. University of Tehran. Iran *(in Persian)*

Moradi. H. 2018. The Archaeology and Relative Chronology of Chalcolithic and Bronze Age Settlements in the East and North east of Lut Dessert (Sistan and Baluchestan Province). *Articles and Catalogue of the exhibition on the prehistoric cultures of Lut Dessert narrated by Iranian national museum*. M.A. Azizi Kharanaghi (ed). RICHT, Iran National Museum 2018: 65-82 *(in Persian)*.

Moradi. H. 2021. Excavation in Square X: ERA of Shahr-i Sokhta: Pottery Traditions and Cultural Interactions During Period I (3200-3000 BC). E. Ascalone and S.M.S. Sajjadi (eds). *The East. Aratta. Excavations and Researches at Shahr-i Sokhta I*, Brepols Publishers. Brussels. *Forthcoming*

Mutin. B. 2013a. Ceramic Traditions and Interactions on the South-Eastern Iranian Plateau during the Fourth Millennium BC. *Ancient Iran and Its Neighbours, Local Development and Long- Range: Interactions in the Fourth Millennium B.C*. Cameron A. Petrie(ed). British Institute of Persian Studies. Archaeological Monographs Series III. Oxbow Books: 253-275

Mutin. B. 2013b. *The Proto-Elamite Settlement and Its Neighbors. Tepe Yahya Period IVC*. American School of Prehistoric Research Publications. Peabody Museum. Harvard Universit. Cambridge. Oxbow books.

Mutin. B.H, H. Moradi, H. Sarhaddi-Dadian ,H. Fazeli Nashli and M. Soltani. 2017. New Discoveries in the Bampur Valley (South-Eastern Iran) and Their Implications for the Understanding of Settlement Pattern in the Indo-Iranian Borderlands During the Chalcolithic Period, *IRAN* (55)2: 99-119

Mutin. B. and L. Minc. 2019. The formative phase of the Helmand Civilization, Iran and Afghanistan: New data from compositional analysis of ceramics from Shahr-i Sokhta, Iran. *Journal of Archaeological Science* 23: 881-899.

Piran. P. 2005. Geo-strategic and Geopolitical Theory of Iranian Society, *Andishe -ye Iranshahr* VI(2). *(in Persian)*

Pittman. H. 1997. The Administrative Function of Glyptic Art in Proto Elamite Iran: A Survey of the Evidence. *Sceaux d'Orient et leur employ, res orientales*, Vol. X : 133-161.

Potts. D.T. 2001. *Excavations at Tepe Yahya, Iran: 1967-1975*. The Third Millennium, C.C Lamberg Karlovsky and D.T Potts (eds). Peabody Museum of Archaeology and Ethnology. Harvard University. Cambridge. Massachusetts**.**

Raike. R. 1979. Prehistoric Iran & Baluchistan: The Environmental Constraint: *South Asian Archaeology 1977*, Maurizio Taddei (ed). Vol.1. Naples 1979: 553-560

Rothman M. S. 2004. Studying the Development of Complex Society: Mesopotamia in the Late Fifth and Fourth Millennia BC. *Journal of Archaeological Research*. Vol. 12(1): 75-119

Sajjadi. S.M.S. 2019. Introduction. *Articles on Shahr i Sokhta excavations 2*. S.M.S Sajjadi and E. Ascalone (eds). Pishin Pajouh. Tehran. Iran: 15-119. *(in Persian)*

Sajjadi. S.M.S. 2021. Catacomb Graves of Shahr-i Sokhta. E. Ascalone and S.M.S. Sajjadi (eds.). *The East. Aratta. Excavations and Researches at Shahr-i Sokhta I*, Brepols Publishers. Brussels. *Forthcoming*

Sajjadi. S.M.S. and H. Moradi. 2014. Excavation at Buildings Nos.1 and 20 at Shahr-i-Sokhta. *International Journal of the Society of Iranian Archaeologists*. Vol. 1(1): 77-90

Sajjadi, S.M.S. and H. Moradi. 2017. Shahr-i Sokhta 2014-2015 Excavations. The new Results in Area 1, 20, 26, 28. *Archeologia Area*. *Studi di Areotopografia Archeologica*. 9/15:149-167.

Sajjadi. S.M.S and H. Moradi. 2018. Short Report of 17 th Season of Excavation at Shahr i Sokhta. R.Shirazi and S. Hourshid(eds). *Short Articles of 17th Congress on Archaeology of Iran* :716-721*(in Persian)*

Salvatori.S and M.Tosi. 1997. Some Reflections on Shahdad and its Place in the Bronze Age Middle Asia. Ali Hakemi (ed). *Shahdad : Archaeological excavations of a bronze age center in Iran: translated and edited by S.M.S. Sajjadi*. IsMEO, XXVII, Rome: 121-138

Salvatori. S. and M. Tosi. 2005. Shahr- i Sokhta Revised Sequence. F. Jarrige (ed.), *South Asian Archaeology 2001*: 281-292.

Sarhaddi-Dadian. H., H. Moradi., R. Shirazi and Zuliskandar Ramli. 2019. Structure and Architecture of Graves in South East Iran: Ethnic Diversity and Migration in the 3rd Millennium BCE. *Central Asiatic Journal 62(2). Glimpses of Historical Central Asia Part II (2019):* 175-192

Shafee. M. H. Molla Salehi., N. Eskandari and A. Daneshi. 2019. The Absolute and Relative Chronology of Tepe Vakilabad: A Reappraisal of the Chronology of the Chalcolithic Period of Tepe Yahya in SE Iran. *Journal of Research on Archaeometry*. 5 (1):81–94. *(in Persian)*

Tosi. M. 1974. The Lapis lazuli Trade across the Iranian Plateau in the 3rd Millennium B.C. *Gururajamaiijarika: Miscellanea in onore di Giuseppe Tucci*: 3-28

Tosi. M. 1979. The Proto Urban Culture of Eastern Iran and the Indus Civilization. Notes and suggestions for a Spatio- Temporal Frame to Study the Early Relations between India and Iran. *South Asian Archaeology1977. Vol.1*. Maurizio Teddei(ed): 149-171

Wittfogel. K. 1981. *Oriental Despotism*. Vintage. New York.

Wright. R. P. 1984. Technology, Style and Craft Specialization: Spheres of Interaction and Exchange in the Indo-Iranian Borderlands, Third Millennium B.C. Ph.D thesis. Harvard University.

# پویایی فرهنگی نیمه دوم هزارۀ چهارم پ.م و زمینه‌های شهرنشینی آغازین در جنوب شرق ایران (۳۵۰۰-۳۰۰۰ پ.م)

**حسین مرادی***

**دانش آموخته دکتری باستان شناسی، دانشگاه تهران، تهران ایران.**

**تاریخ دریافت: ۱۳۹۹/۰۸/۲۳؛ تاریخ پذیرش: ۱۳۹۹/۱۲/۲۰**

**چکیده**

در اواخر هزاره چهارم پیش از میلاد برخی رخدادها و تغییرات در محوطه های باستانی جنوب شرق فلات ایران به وقوع پیوست که باعث ایجاد تغییرات عمده ای در مناسبات فردی و اجتماعی ساکنان این بخش از فلات ایران شد. همزمان با رشد و توسعه فرهنگ های بومی در اواخر هزاره چهارم پیش از میلاد، شاهد حضور عناصر بازرگانی آغاز ایلامی و رشد چشمگیر مبادلات بازرگانی با مناطق دوردست و در پی آن رشد شهرنشینی در بسیاری از محوطه های فلات ایران به ویژه در جنوب شرق ایران هستیم. در این دوران همزمان با شکل گیری هسته های اولیه شهرهای نخستین، شواهدی از بازرگاانان بیگانه با مواد فرهنگی بانشی/ آغاز ایلامی که در امر مدیریت کالا و انبارداری و احتمالا بازرگانی دارای تخصص هستند در نزدیکی شهداد و کنارصندل در کرمان و همچنین در شهر سوخته سیستان که هر سه از شهرهای باستانی و کانونهای تمرکز جمعیت در نیمه هزاره سوم پ.م در جنوب شرق ایران هستند گزارش شده است. به نظر میرسد که اگر چه در جنوب شرق ایران فرهنگ علی آباد از اوائل هزاره چهارم پیش از میلاد تا اواخر آن گسترش یافته و شواهد آن در بسیاری از مناطق دیده می شود اما بر اساس رهیافت " راهبرد و سیاست سرزمینی " از پرویز پیران آنچه که باعث رشد شهرنشینی در اوائل هزاره سوم پ.م شد مرتبط با حضور عناصر بیگانه آغاز ایلامی و تشکیل کانونهای داد و ستد اولیه یا بازار در مناطق مستعد توسعه بوده که بعدا و در طی یکی دو سده تبدیل به محوطه های کلیدی شهرنشینی در جنوب شرق شدند.

**واژه‌های کلیدی:** جنوب شرق ایران، شهرنشینی، بازرگانی، عناصر آغاز ایلامی، پرویز پیران

* رایانامه‌ی نویسنده مسئول: h_moradi57@yahoo.com

Journal of Archaeological Studies

Vol 12, Is 4 - Serial Number 24, Winter 2021

Formerly "the Journal of the Faculty of Literature and Humanities"... University of Tehran

# Investigating of the Function of the Architectural Square Space of Tang-i-Chakchak Complex, Fars Province: A New Look Toward Sanctuaries of Arədvī Sūrā Anāhitā during Sassanid Period[1]

**Seyed Mehdi Mousavi Kouhpar[1] & Alireza Zabanavar[2] & Solmaz Ahmadzadeh Khosrowshahi[3]**

**(211-231)**

## Abstract

Tang-i-Chakchak complex is located at eastern Fars Province. As one of the biggest religious Sassanid architectural complex, it consists of two main architectural spaces including a Chahartaq or a domical squared space. One of the two main spaces, with a square plan, considered the place of maintenance of the holy fire. Present paper attempts to suggest a plan of the structure of the religious architecture, during Sassanid period, following investigating architectural square space of Tang-i-Chakchak in comparison to similar structural spaces, in order to understand historical and realistic function of the building. Purposefully, it is a fundamental research, with a historical and descriptive-analytical methodology and nature, while data collected bibliographically and following fieldwork. The conclusions present a modern classification of the sanctuaries attributed to Anāhitā during Sassanid period, consisted of two different religious architectural spaces, furthermore, there is an introduction of the square architectural space of Chakchak as a sanctuary that attributed to Anāhitā. Some of the religious spaces relate to Arədvī Sūrā Anāhitā the ancient Zoroastrian goddess, and some other structures connect to Anāhitā, with Mesopotamian origin. The architectural spaces indicate various religious attitude for different reason, not a development during Sassanid period. It appears that there was an attempt to diminish the latter, for their non-Zoroastrian origin during late Sassanid phase. Present paper potentially is Important for suggesting a new structure of the sanctuaries of Anāhitā, in addition to revising earlier theories and assigned structure to Anāhitā, which explain various religious attitude within Zoroastrian framework during Late Antiquity of Iranian history.

**Keywords:** Sassanid period, Tang-i-Chakchak, religious architecture, Temple of Anāhitā, Zoroastrianism, Arədvī Sūrā Anāhitā.

Received: 24 January, 2021; Accepted: 10 March, 2021

10.22059/jarcs.2021.317834.142977

Print ISSN: 2676-4288- Online ISSN: 2251-9297

https://jarcs.ut.ac.ir

1. Corresponding Author Email: smkooh@yahoo.com. Associate Professor of Archaeology, Tarbiat Modares University. Tehran. Iran.

2. PhD Candidate in Archaeology, Islamic Azad University of Science and Research Branch. Tehran. Iran.

3. PhD Candidate in Archaeology, Tarbiat Modares University. Tehran. Iran

## 1. Introduction

One can consider the Sassanid religious structures for unique architectural complexities that leads to different categorization, despite of general similarities in the constructions. The so-called fire temples, as religious structure are symbolic signs of the Zoroastrianism. By now, Fars is known as the origination of Sassanids and Zoroastrianism center during Sassanid and early Islamic periods, where has most of the religious structures from the period. The tang-i-Chakchak complex is located at Darab suburban areas far from population and other destructive factors consists of two main religious structure and other secondary spaces that respectively remained intact until now. The authors of present paper attempt to understand probable function of one of the main structures, known as "the square space", following survey and fieldwork at Tang-i-Chakchak and comparison to other similar spaces, in order to suggest a function of the structure, and present a new pattern of religious structures of Sassanid period.

## 2. Research questions

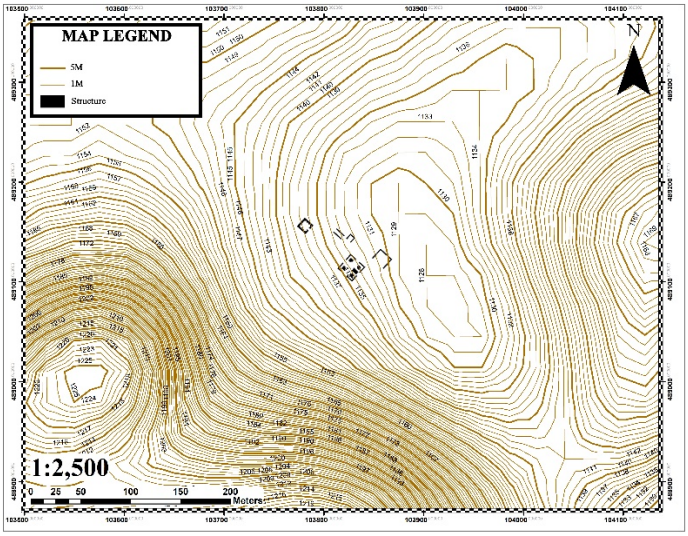
Here, there have been an attempt to answer to questions including which one of buildings of Fars or other Sassanids' are comparable to the square structure of Tang-i-Chakchak, and, what is the suggestable function of the structure? Second, is the hypothetical function of the square structure following a pattern, considering the Sassanid history?

## 3. Methodology

Purposefully, the research is a fundamental research, however, naturally it follows historical descriptive analytical methodology, while data collected bibliographically and by fieldwork. First, the authors archaeologically surveyed Tang-i-Chakchak region; second, there was a comparison to other similar structures to suggest the function of the main building. Finally, following functional analysis of the structure, there is an attempt to suggest a pattern of similar structures, considering bibliographical and comparison of archaeological findings to historical sources.

## 4. Geographical position

Tang-i-Chakchak is located at 40R309640E3141366N and 1135 m longitude, at southwestern heights of Rastagh District, 65 Km away from Darab, Fars Province. To reach to Chakchak complex, one should go 60 km toward Bandar Abbas, halfway turning to right into a stony path, known as the Sand Factory road, after turning to a mountainous range and a 5 Km path and a temporal village, there will be Chakchak complex. In a strait, it is positioned on a 6 m high terrace, next to a seasonal river, which is dried now. Considering temporal flow in the flood season, the terrace is partially eroded and washed away, leading to a transformation at western front of the site (fig. 1).




**figur.1 Topographical map of Tang-i-Chakchak (Authors)**

## 5. Research history

Tang-i-Chakchak complex locally known as Qasr-e-Ayeneh [the mirror castle] or Qasr-i-Dokhtar [the girl castle], registered as 16122 no. as a national monument at 1385. Only Vandenberg studied the site respectively following fieldworks (Vanden Berghe, 1959: 487). Then, Schippmann (1971: 82-83) and Ghirshman (2011: 150) explained architectural characteristics of the site according to earlier Vanden Berghe's report. While explaining the site, Vanden Berghe defined the domical square structure as a closed dark building that kept fire, what only priests accessed to (Vanden Berghe, 2008: 20). Following Vanden Berghe, Girshman repeated the same function for the square structure and dated it to 6$^{th}$ and 7$^{th}$ BC centuries (Ghirshman, 2011: 28), what Azarnoush confirms as well (Azarnoush, 1994: 28). Hossein Azma (1991: 116-117) knew the complex as Qasr-e-Ayeneh and Qasr-e-Dokhtar and explained narrations to define the square structure as Chahartaq or fire temple. The appellation is locally for a girl of Sassanid elites who resided in the complex; another narration is for dripping water on a slab in the middle of a pond near the site. Finally, Hassani surveyed the cut platform of the site (Hassani, 2014: 181-182).

## 6. General architecture of Tang-i-Chakchak complex

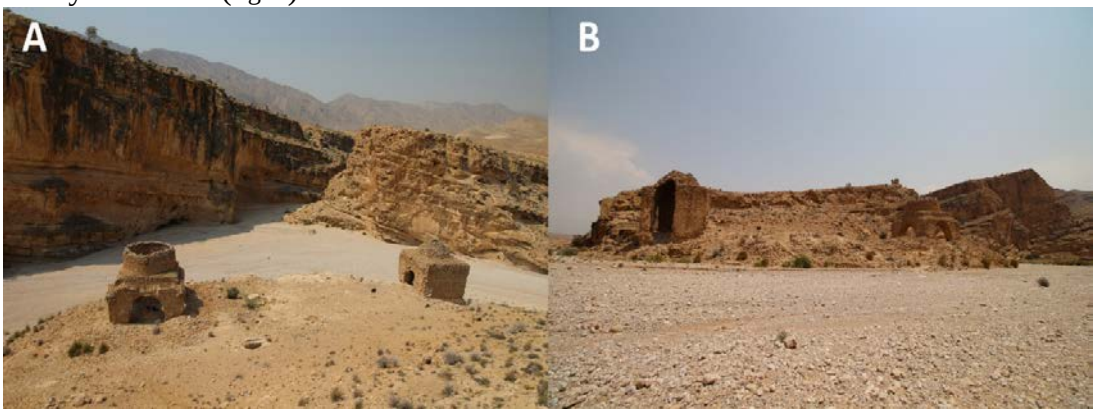
The site consists of a religious complex, defensive structure and a rocky architecture. The religious complex oriented at northwestern-southeastern axis, with 95×50 m dimension. Considering erosion and destruction of western front, it appears that it was greater than now. Present religious architectural remains of Chakchak include a domical square space at northwestern, the main Chahartaqi at southeastern, and few architectural space and series of walls between both structures toward east of the complex (fig. 2). The only material of the structure is cobble and mortar of half kilned gypsum. Comparing to other Iranian Chahartaqis, the Chahartaqi of the complex is of the great type of Chahartaqi, with surrounding corridor, while there are only scars of it. One can distinguish architectural findings including scars of the wall from south of the square space into the middle of the site. Considering the wall, it is more probable that that southwest of the site was an enclosure, while the wall probably paved perimeter of the Chahartaqi. There are at least three structures at northwestern Part of the site. Also, there is a round architectural space 100 m away, east of Chahartaqi, with about 80 m

height from a neighboring river. Technically, it followed the same method of the complex and can be functionally a watchtower. 50 m away at west part of the square space, there is a cut rectangular plate, 10 m above the neighboring river, which appears contemporaneous of the religious complex (Hassani, 2014: 182).


**figur.2 Satellite image of architectural remains in the Tang-i-Chakchak (Authors)**

## 7. The Square space

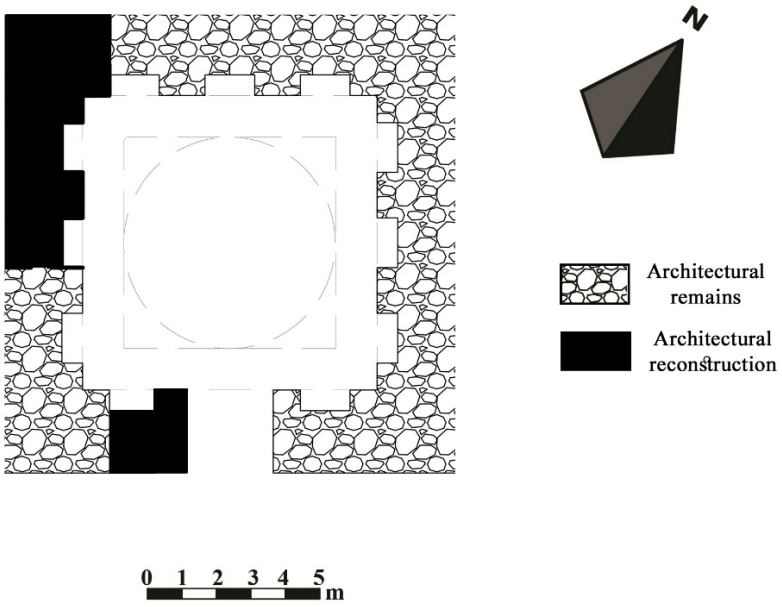
It is one of the main structures of Chakchak religious complex, which located directly in front of the Chahartaqi, 47 m northwest of the complex. The building subsided and slipped at western front, where considerably suffered of destruction and is not in a solidary condition (fig. 3).




**figur.3 A) Eastern view of the complex from the watchtower, B) Southwestern view of Tang-e-Chakchak area (Authors)**

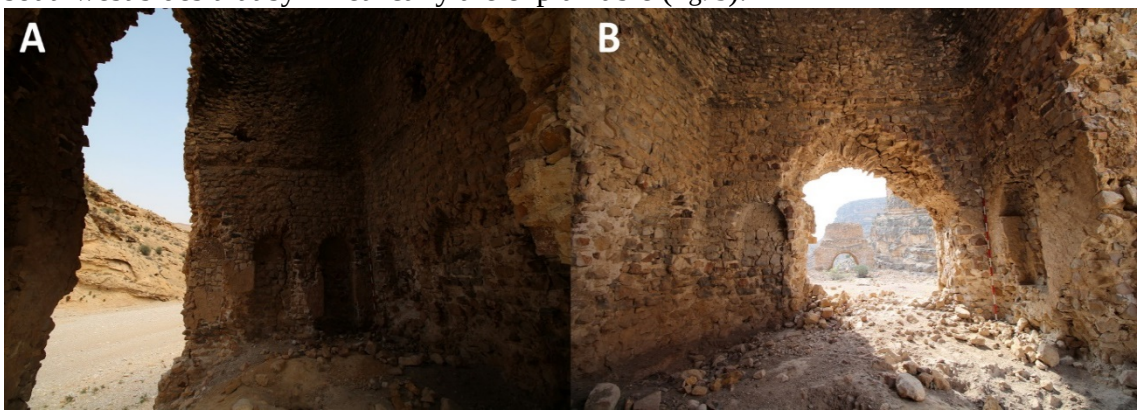
Every single side of the square space exteriorly is 11.1 m and interiorly 7.1 m (fig. 4). The wall of the structure is near 2 m thick. The building followed the same constructive method of Chahartaqis, where cut side of stone blocks lays outwardly, and a rich mortar of gypsum and fine pebbles filled a 2 m distance of the walls, however, there is a respectively different technique of dome construction. In the structure, the walls thickened at 5.5 m height, where internally turned using low squinches of stone and gypsum that leads to an internally arched wall. Then, the arch reach to a vault springer [*chapireh*], at the height of 9 m, to keep the structure of the dome. Methodologically,

the arch is not visible from the exterior façade, at the height of 9 meter the wall retreated inwardly and transformed to a low dome, because of lack of a basic arch of the dome at the exterior façade. Considering the evidences, gypsum is used as exterior threading and there is a thick slip on the internal surface.



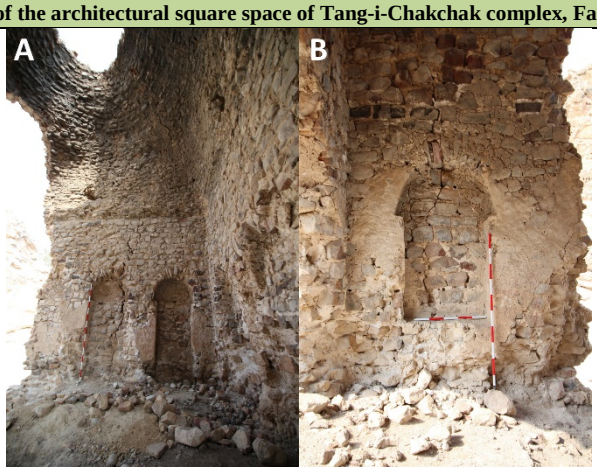

**figur.4 The Square space Plan (Authors)**

Notably, there are holes in the arched section of the structure to provide light. Evidently, there were some eleven niches in the structure, where two niches at southeastern side and next to the threshold; other niches located at the other three sides at a distance of 1.1 m from each other. The niches partially collapsed at northwest and southwest sides that symmetrically are explainable (fig. 5).




**figur.5 A) North view inside the square space, B) South view inside the square space (Authors)**

Notably, niches at northwestern wall began from lowest parts of the walls and continued to 3.1 m height, with 0.5 m depth and 1.2 m height. The niches began, at the other three sides, from near 1 m height, which continued to around 2.1 m, with depth and width similarity to northwestern niches. The niches enjoyed semicircular arches with outline walls in comparison to the arches (fig. 6).




**figur.6 A) The niches of the northwest side, B) Niche of the southwest corner (Authors)**

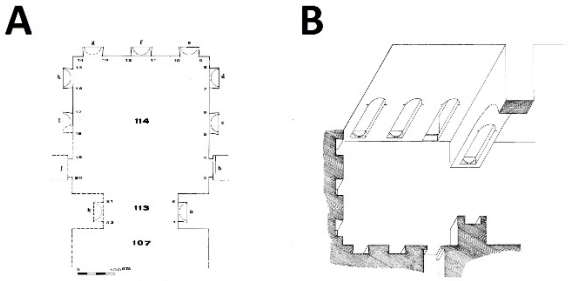
## 7. Comparison and determination

Firstly, it appears that the small square space of Konarsiah is the most similar one to the architectural square space (Azarnoush, 1994: 28). However, investigation of the structure reveals it was originally a Chahartaqi with open thresholds that transformed after a period of religious function, never comparable to the architectural space (fig. 7).


**figur.7 A) Eastern view from inside of the small Chahartaqi at Konarsiah, B) South view from inside of the small Chahartaqi, C) North view of The Konarsiah Complex (Authors)**

Studies on more than 32 religious structures at southern Iran (Vanden Berghe, 1961: 163-200; 1965: 128-147; Huff, 1975: 243-254), and other regions including Chahartaqis at Kirmanshah and Ilam (Rezvani, 2005; Moradi, 2009: 155-185; Khosravi and Rashno, 2014: 178 ; Khosravi, 2017: 119-146; Vanden Berghe, 1977: 175-190; Khosravi, Alibeigi & Rahbar, 2018: 267-298), Takht-i-Soleiman Complex (Naumann, 1964, 1977; Naumann et al., 1975: 109-204; Huff, 2002), and even Bandian Complex (Rahbar, 2004: 7-30 ; 1999: 315-341), and Mele Hairam, Turkmenistan (Kaim, 2002: 215-230 ; 2004: 223-237), however, the only respectively similar architectural space to the square space of Tang-i-Chakchak, considering plan, internal decorative details, and period is the 113 and 114 architectural spaces at Tall-i-Sefidak at HajiAbad, Fars, with smaller size, which Late Azarnoush identified and excavated.[2] When excavating, the site divided into four sections, where religious ruins located at the section C and western side of the site. Regarding appellation of the architectural spaces, the most important architectural spaces of section C, Tall-i-Sefidak, included the no. 104 cruciform space, nos. 107 and 147 courtyards, and no. 114 the square space with no. 113 architectural space; accordingly, the excavator most probably believes nos. 104 and 114 architectural spaces worked as religious spaces (Azarnoush, 1983: 170-171; 1994: 81-88). There is a threshold at the western side of no. 107 courtyard that the excavator called it as no. 113 architectural space, as wide as 1.45 m, with a niche at northern part that is probably similar to the finding of niches at the no. 114 architectural space, where the threshold connected to (Azarnoush, 1994: 82). The no. 114 architectural

space that located at the western front of the former architectural space, is a 3.7×3.7 m square. Lower parts of the architectural space at northern and western sides preserved during excavations, while southern side partially leveled, with the southern part of the no. 113 space (Ibid: 82). The most important characteristics of no. 114 architectural space is few concavities in the structure, which described as a corridor and two niches at northern side, and three niches at western side, however, considering available evidence at the southern side of the space and the condition of norther front, Azarnoush suggested the southern side a symmetrical replica of the northern side, with two niches and a corridor as well. The niches were as wide as 0.5 m, 0.24 m deep, where it reached 0.54 m width. The thickness of the southern and northern walls of the architectural space was near 1.1 m (Ibid: 139-140) (fig. 8).




**figur.8 Plan of architectural spaces no. 114 and 113 in Tall-i-Sefidak (Azarnoush, 1994: 140, 147)**

The floor of the architectural space plastered by gypsum, just similar to the open parts of the lord's house of Tall-i-Sefidak, meanwhile, there was not threading in the floor of the building, where the floor was 3 cm lower than the floor of the no. 113 space. Considering plastering of the floor, Azarnoush suggested it same as the ones at the open spaces, while he believed the position of the gypsum blocks at the points with a roofed space such as corridor or threshold that opened toward an open space. Therefore, he suggested the space probably was an open space or partially roofed (Ibid: 82). There were fragments of figures on the six niches of no. 114 space. The figures stood on semicircle columns in the niches. They included female dressed figures, which some were eroded (Ibid: 140). There have been recovered fragments of female naked figures, sons with clusters of grapes in hand, lion heads, open-winged eagles, and humped cows in different parts of the no. 114 architectural space that made Azarnoush acclaim the no. 114 architectural space of Tall-i-Sefidak as a temple of Anāhitā (Ibid: 81) (fig. 9).

Comparing no. 114 architectural space and the square building of Chakchak, one can notify few common features. First, both constructed on an analogic square plan, and located in a context, which appears a religious one. However, the no. 114 space of the lord's house of HajiAbad, the space is located at a place that consisted of several religious structure, according the excavator. For three thresholds of the no. 114 architectural space, the no. 113 space can be regarded as the main threshold that connected to the no. 107 courtyard, considering the width of the threshold. According to position of the architectural spaces of Chakchak complex, one can imagine that the square space connected to the central courtyard. The most important reason of similarity related to the niches of the two structure. Considering two probable niches of no. 113 architectural niches and a connection to no. 114 space, niches of the structure summed up to nine, which is different to the 11 niches of the structure of Tang-i-Chakchak,

however, multiplicity of the niches in both spaces can be a reason of similarity of both structures.

**figur.9 Architectural Space no. 114 (Azarnoush, 1994: Pl.XXVII)**

Regarding dimensions of the niches at the square structure, especially, three niches of northwestern side, one can suggest a real size, even bigger, human figures and busts in the niches, when the spaces were used. Therefore, according the similarities and close distance of both sites, and locating in the same geographical area (fig. 10) one can interpret the architectural similarities as affirmation of one religious' function, while another third structure can be reconstructed according every one of these structures. For example, considering type of roofing of the square space that is an arched wall to create a base for dome (vault springer) [chapireh in Persian], one can suggest that the building of the no. 114 space was roofed, with a probable doubt in semi roofed building. If one can determine function of the square space of Chakchak complex as a temple, therefore, the local narrations about the girl palace (qaleh dokhtar in Persian), and location of the complex, over dominated by a water source, can confirm the function of the structure. However, one can doubt the square space of Chakchak as a hypothetical place of maintenance of fire.

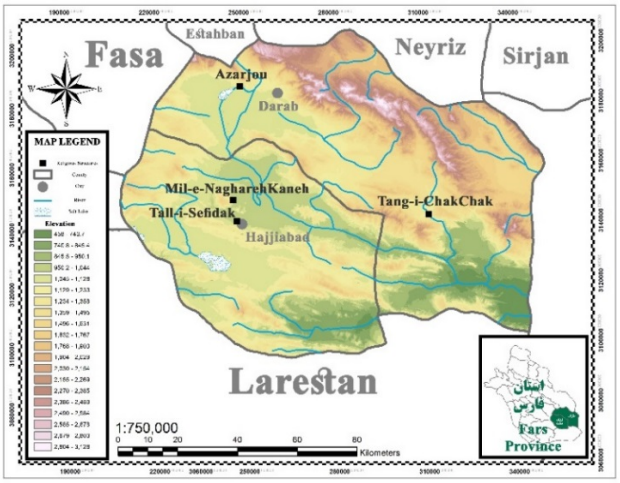



**fig.10 Tang-i-Chakchak and Tall-i-Sefidak in Fars Province (Authors)**

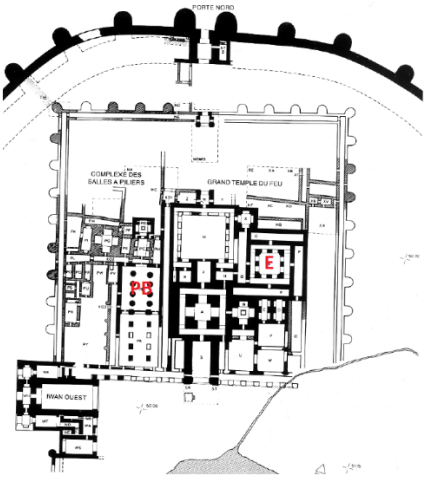
## 8. The structure of the temples of Anāhitā, during Sassanid period

The most important question about the architectural pattern of these type of temples is, if the architectural structure of the temple, assigned to Anāhitā, followed an invariant uniform pattern?

**A: Archaeological Evidence:** If one can divide the architectural evidence of the temple of Anāhitā into two groups of written sources and archaeological evidence, it appears

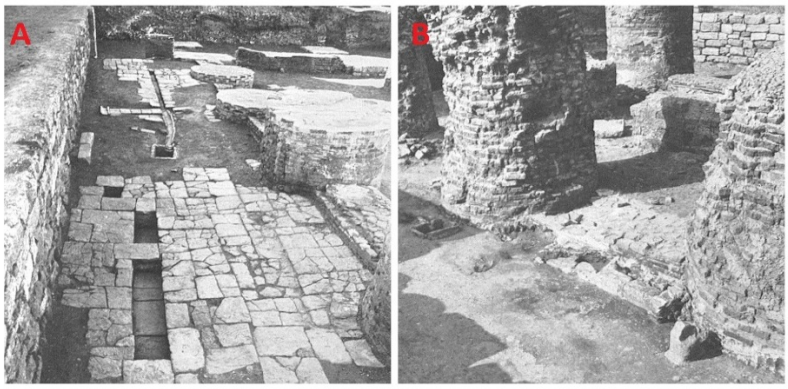
that the archaeological evidence are iconographic designs on vessels, rock arts, and some coins, however, such attributions have remained ambiguous. regarding to utensils, however some of the female motifs potentially relates to the goddess Anāhitā, it seems that it can be only subject of attribution, and that these women are not exactly the manifestation of Anāhitā herself (Mousavi Kouhpar, 2006: 86-91). Regarding the rock arts, the common opinion has been only about Tagh-i-bostan's, where the goddess that accompanies "Khosrow II /Pirooz" has been considered Anāhitā (Moradi, 2003: 30; Compareti, 2012: 75-85), while the figure of woman who depicted in the relief of Nerseh at Naqsh-i-Rostam can be attributed to a member of Sassanid dynasty (Mousavi Hajji & Mehrafarin, 2009: 75-85; Shenkar, 2013: 614-634). The female figure of Bahram II's coins generally assigns to his wife, while few scholars believe it as the goddess Anāhitā (Shahbazi, 1983: 255-265; Choksy, 1989: 126-133).

Few excavated structures, in Iran, have been assigned to Anāhitā; the most important is the Anāhitā Temple of Kangavar, where Kambakhshfard, the excavator, attributed the structure to Anāhitā and dated it to pre-Sassanid era, whereas early Sassanid rulers destroyed it (Kambakhshfard, 2007: 133). Later revisions of the site by Azarnoush (Azarnoush, 1981: 69-94; 2009: 393-402) and Alibeigi (2016: 200-201) criticized function and chronology of the site and denied any relation of the site to Anāhitā. Trever for the first time used references of "Aban Yasht" and the "Fourth Dēnkard", comparing to few metal vessels from Sassanid cultural territories and several Near Eastern temples at pre-Christianity, suggested that the Anāhitā temples probably were hypostyle structures with niches in which figures of the goddess placed (Trever, 1967: 111-132). However, the first structure that properly and regarding discovering a water system assigned to Anāhitā was the cube structure of Bishapur, where excavated by Sarfaraz (Sarfaraz, 1975: 99); a conclusion that was relatively different to the Trever's description from the temple. Before the Sarfaraz's excavations at this part of Bishapur, Ghirshman wrongly suggested the site as "fire temple", because of unearthing part of base of a fireplace from sedimentations, however, he knew of the water system (Ghirshman, 1999: map 2). Several religious architectural spaces discovered during excavations of 1960s and 1970s at Takht-i-Soleiman, where "E" and "PB" architectural spaces assigned to Anāhitā (fig. 11).




**figur.11 Plan of Takht-i-Soleiman (Huff, 1989)**

The excavators believe that space “E” is comparable to space “A”, which is the main Chahartaqi of the complex, and because of the former’s connection to other neighboring architectural spaces, would be a temple (Nauman and Huff, 1972: 29-30), while Nauman unconvincingly suggested the space as an Anāhitā Temple, where related to water, or a storage of wood and firewood to maintain the holy fire (Naumann, 1977: 50-51). Report of 1973 excavation season reveals the vertical prose sedimentation on the pillars of the space “E” resulted of uncontrolled penetration of the water from the lake, a hypothetical flood, into the site, not a sign of a pond in the space (Huff, 1975: 131); meanwhile there have not recovered any water circulation system into the architectural space (Ibid: 132). The second space was the “hypostyle PB Hall” with a cylindrical mudbrick pillars, and a water passage that derived of a main runnel and led to a square pond. Furthermore, there are three other ponds in this part of the hall, while there is another pond at the western side of the “PB” hall. However, there were recovered fragments of base of a fireplace in the hall (Ibid: 151-152) (fig. 12).




**figur.12 Architectural Space “PB Hall” (Naumann et.al. 1975: 151, 153)**

According to the findings from the hall, the excavators of Takht-i-soleiman suggested the water passage and ponds for sacrificial purposes, and said few common recent rites of modern temples, probably were the same rites of eastern side of the “PB” hall (Numann and Huff, 1972: 39). Considering underlying floors of the “PB” hall floor, Numann and Huff believed that the chamber had various responsibility during Sassanid period that caused changes in the floor during the period (Numann and Huff, 1972: 49). The hall dated contemporary to the space A (premier Chahartaqi of Ādur Gušnasp) when Mazdakis suppressed at the transition of Kavad I to Khosrow I (Huff, 1975: 167). On the contrary, Azarnoush suggested the hypostyle BP hall related to Anāhitā worshiping, because of presence of water circulation system (Azarnoush, 1987: 397). Considering published reports of Numann and Huff, one can present that they had little knowledge of Sassanid Zoroastrian religious issues, and compared their findings to modern Zoroastrianism or European Pre-Christianity religions. For example, Naumann (1977: 46) presented very different explanation of “yazišngāh” from the original and historical existence (Boyce, 1971: 223; Boyd & Kotwal, 1983: 304). Therefore, one can deny the reasonless assignation of the space “E” to Anāhitā, whereas suggest the water passageway and ponds at the “PB” space to water circulation, not sacrificing and altar.

Except what mentioned earlier, the most important study of the structure of Sassanid Anāhitā temples was by Azarnoush. He compared no. 104 and no. 114 structures of HajiAbad to the cruciform space and the so called Anāhitā structure of Bishapur,

Noushijan, and the hypostyle structure of Takht-i-Soleiman (PB), and analogy of the results to Aban Yasht; he hypothesized two types of worshiping structures of Anāhitā during Sassanid era, the first is available at Bishapur and HajiAbad, which was probably part of a residence or more private area, while the second type was hypostyle halls that are available at sites including Takht-i-Suleyman, Noushijan, and charsotoon-i-chah-i-Sabz, as more public temples that are comparable to prerequisites of Anāhitā Temple, according Avestan sources. However, the first type did not follow the prerequisites for some smaller scales (Azarnoush, 1987: 391-401).

However, Azarnoush identified two types of Anāhitā temple, but his theory, as the most important one about the architectural structures of Anāhitā temples in the Sassanid period, has some ambiguities: first, one can hesitate if smaller scale of the temples do not follow Avestan prerequisites. The scale of the cruciform space of Bishapur, as the biggest domical Sassanid architectural space, respectively indicates unlimitedness of restriction of the religious structure of Bishapur, accordingly, architects had open hands in construction of a temple that boasts royal majestic features, at the same time, following religious canons. Furthermore, it seems difficult to compare no. 114 architectural space of HajiAbad to Anāhitā temple of Bishapur (Sarfaraz et al., 2014: 246; Azarnoush, 1994: 82-85). Water is the most significant religious element in the temple of Bishapur, however, the same factor is completely absent in the space of HajiAbad. Comparing Noushijan complex to the architectural spaces of Takht-i-Suleyman raise questions including if one accepts the Azarnoush's suggestive function, how the structural similarity could be defined, considering all ambiguities about pre Achamenidaeae religious culture across Iranian Plateau, more than a millennium interval between construction of Noushijan and Takht-i-Soleiman, and changes in Zoroastrian religious attitude? Finally, considering all ambiguities and problems, one cannot deny Azarnoush's theory about function of the "PB" spaces of Takht-i-Soleiman and no. 114 of Tall-i-Sefidak. Therefore, if one hypothesizes a similar religious nature for the square architectural space of Tang-i-Chakchak to the architectural space of Tall-i-Sefidak, there will be three types of architectural spaces assigning to Anāhitā during Sassanid era. First type, characteristically is Anāhitā temple of Bishapur; second type include "BP" architectural space of Takht-i-Suleyman; and the third type is architectural spaces of HajiAbad and Tang-i-Chakchak. The most important question is, whether this observing difference in the architectural structure of the shrines attributed to Anāhitā is only due to the time process or not? Understanding the issue demands investigation of written sources that relate to the structure of the Anāhitā shrines during Sassanid period.

**B) Written Sources:** Kartir refers to fire of Ardashir-Anahid in the inscription of Ka'abeh Zartosht (Sprengling, 1953: 51), while Tabari points to 'Beit-i-Naar" (house of fire) of Anahid at Istakhr (Nöldeke, 1881-1882: 814). Despite of various interpretations of scholars about Anāhitā (Chaumont, 1958: 163-164), using terms of "fire" (ĀTAŠ in Persian) and "house of fire" (Beit-i-Naar in Arabic) as the fire temple. Considering Shapur I's inscription at Ka'abeh Zartosht about raising a fire temple in the name of his girl "Azar Anahid" (Maricq, 1958: 316), one can imagine that the structures that Kartir and Tabari mentioned to, were only the nomenclature of the fire temples, whereas there is no evidence of any connection to the worship of Arədvī Sūrā Anāhitā for the buildings. The 4th Book of Dēnkard refers to construction of a structure known as "Apan Khanak" by Shapur II, where probably was a nomenclature for the temples that assigned to Anāhitā and water[3] (Madan, 1911: 413; Nyberg, 1938: 419), where comparison to the water

system of the cube building of Bishapur, it appears that the title of "Apan Khanak" is comparable to the temples that relied on sanctification of water (Azarnoush, 1987: 393). The second source is the written one that points to pre-Sassanid period and present considerable information of architectural structures and the applied elements in the Anāhitā temples within Iranian historical periods. The source divides into two groups of "Oriental/Zoroastrianist" and "non-Iranian". The most significant source that scholars referred to is the 5th Yasht known as "Aban Yasht" that assigned to the goddess Anāhitā and consisted of two various parts to present a pattern of the structure of the temples of Anāhitā. The first part includes 101-102 paragraphs of Aban Yasht, whereas call "Arədvī Sūrā Anāhitā" as the owner of a thousand lakes and a thousand rivers, with a hypostyle house that has one hundred windows and one thousand pillars, next to every given lake (Purdavood, 1998: 280); some scholars including Trever (1967: 122-123) and Azarnoush (1987: 397) exploited the paragraphs to interpret the characteristics of temples of Anāhitā. The second part includes paragraphs 126-129 that described the goddess Anāhitā where point to her appearance (Purdavood, 1999: 294-296). For the first time, according to Halevy, Darmesteter considered the Yasht's paragraphs and suggested that the author of the texts probably stood against a statue of Anāhitā and observed what he wrote (Darmesteter, 1883: 53). Benveniste (2014: 39-40), Boyce (1982: 60-61), Panaino (2000: 37), and Mazdapour (2015: 125) repeated the same theory.

For the first time Herodotus, one of non-Zoroastrian sources, introduced a god whom newly was worshiped in the Persian temples. He compared the goddess to Arabic "Alilat" and Assyrian "Milita". However, he addressed it as "Mithra", comparing the characteristics of the goddess to his Arabic and Assyrian confers, one can conclude it as Anāhitā, not Mithra (De Jong, 1997: 269). The most important report that reveals valuable information of the structure of the temples of Anāhitā, during Achamenidae empire, is "the Report of Berossus". According to Berossus, Clement of Alexandria, the Babylonian historian from 3rd century BC, narrated that Artaxerxes II ordered to raise statues of Anāhitā "the woman goddess" in metropolises such as Babylon and Susa, in honor of Anāhitā (Protrepticus, 5.63.5). Artaxerxes II's inscriptions from Susa and Hamadan about worshiping Anāhitā, calling her after Ahuramazda and before Mithra (Campos Méndez, 2013: 42), and Plutarch's report about the Artaxerxes investiture ceremony, at a shrine that belonged to Atena, at Pasargad, which Chaumont attributed it to the temple of Anāhitā, and considering common features of Anāhitā and Atena (Chaumont, 1989: 1006) can confirm correctness of the report of Berossus and the value of Anāhitā to Artaxerxes II.

## 9. Theories and discussion

The name of Arədvī Sūrā Anāhitā consists of three terms of "Ardavi" meaning humidity and name of a sacred river, "sur" means powerful and "Anāhitā" meaning cleanliness and purity (Amouzegar, 2009: 23).

Scholars variously have discussed Anāhitā or, according Aban Yasht, Arədvī Sūrā Anāhitā. Benveniste (2014: 37) introduced her by a Babylonian origination and believed her features in the depictions including carrying Anāhitā on chariots characteristically is non-Zoroastrian. Furthermore, he believed the real name of the ancient goddess was "Arədvī" and the suffix of Anāhitā is a later addition. Benveniste suggests chronology of Aban Yasht around 4th century BC, and knows unlikely an older date (Benveniste, 2014: 40). Lommel believes that the gods such as Mithra, Huma, and Apamnapat that introduced from pre-Zoroastrian religions and have equals in the Vedic religion, belong

to the most primary Iranian belief context, on the contrary to Arədvī Sūrā Anāhitā (Lommel, 1927: 27). He expresses however, Anāhitā is known as a goddess relates to the Iranian religion, she overlaps and reveals common features to gods from other cultures, especially Ishtar (Ibid: 28). However, Lommel does not confirm that Zoroastrianism owes Anāhitā to other religions, he knows it acceptable that various historical reports from Artaxerxes II's reign can be a reference to date rhyming Aban Yasht (Ibid: 31). Boyce believes That Anāhitā adapted from "Anaïtis", the fertility goddess, with non-Iranian origination and added to "Arədvī Sūrā" during Achamenidae period (Boyce, 1982: 202-203). Boyce believes that Anaïtis rooted in Mesopotamia whom was under Ishtar influence (Boyce, 1989: 1005-1006). Furthermore, she knows it possible if some paragraphs of Aban Yasht are survivors of rhymes that worshiped other gods including Ishtar or Apam-napat, regarding presence of some male pronouns in the Yasht (Boyce, 1996: 73). Boyce suggests one can divide the paragraphs of Aban Yasht into four groups: the paragraphs indicating pre-Zoroastrian religions; the paragraphs dated to pre Achamenidae period and originated from Zoroastrian principles from Early Zoroastrianism; the paragraphs that rhymed following combination of Arədvī Sūrā to the Semitic Anaïtis; and finally, the paragraphs dated to Late Zoroastrianism (Boyce, 1982: 60). De Jong respectively accepts Boyce's theory about Semitic and Mesopotamian roots of Anāhitā, however, refers to insignificance of Anāhitā through Avestan and Pahlavi texts, and explain how Anāhitā limited only Aban Yasht (De Jong, 1997: 105-106), while he doubts the authenticity of Aban Yasht and suggests it as a derivative of the 17$^{th}$ Yasht of Avesta that belongs to "Ashi" the god (Ibid: 104). Malandra knows Arədvī Sūrā Anāhitā, in Aban Yasht, a dual personality, and says while she is generally the goddess of waters, she has human aspects that probably has non-Iranian origination, in comparison to non Avestan sources (Malandra, 1983: 117). He suggested Indo-Iranian origination for the first manifestation of the goddess, whereas the second manifestation indirectly owes to the Babylonian Ishtar or Sumerian Inanna. Considering linguistic evidences, he continues that both gods synthesized into one during later period of Zoroastrianism (Ibid: 118). Stausberg believes that Anāhitā indicates symbiosis of at least three goddesses including Arədvī Sūrā Anāhitā, the goddess of water, fertility, and wisdom from eastern Iran; Ishtar the goddess of warship who connects to Venus planet; and Nanna, a Mesopotamian goddess (Stausberg, 2002: 175-176). Gnoli believes that Mesopotamia was behind the expansion of Anāhitā during Achamenidae period (Gnoli, 2012: 82), similarly Panaino supported a Mesopotamian influence of Anāhitā in Zoroastrianism, although he confirms on the Indo-Iranian origination of the goddess and believed the goddess has an Iranian nature while she absorbed few Mesopotamian goddess characteristics (Panaino, 2000:37-39). Among scholars of Anāhitā, Kellens presents a somewhat different view; While he finds Halevy's theory unprovable that the description of the goddess Anāhitā in Aban Yasht was inspired, and knows it just based on types of speech. Then he signifies unimportant the Gathas' failure to mention Anāhitā, while knows the reason that the Gatha does not have a room for the mythology of water, on the contrary to "the Sevens" (Kellens, 2002-2003: 320). Kellens differed Anāhitā and Anaïtis, while believing the former is completely from Iran who never owes to Mesopotamian and Anatolian gods (Ibid: 325-326).

Considering majority of scholars, one can understand a dichotomy in "Arədvī Sūrā Anāhitā", a western/Mesopotamian non-Zoroastrian origin, on the other hand, a Zoroastrian or probably Indo-Iranian nature. Aban Yasht describes Anāhitā half river

and half a dressed and covered woman (Skjærvø, 2005: 22-23) what probably roots in the same dichotomy. According to Azarnoush's findings at no. 114 space of Tall-i-Sefidak where the goddess, iconographically, manifested and there are figures with no traces of water, one can imply the priority of western/Mesopotamian manifestation of in the Lord House and Tang-i-Chakchak. These type of the temples root in Darius II reign, when the king and his queen "Parysatis" probably owned private temples with female figures that assigned to Anāhitā (Boyce, 1982: 217) what later publicized and expanded during Artaxerxes II's reign. Furthermore, one can refer to the "pedestal" temple at the north of Persepolis a continuation of the same tradition at the reign of "Faratrakeh"s, considering presence of a figure on the 5$^{th}$ pedestal (Razmjou & Roaf, 2013: 414). Therefore, one can imagine the tradition, at least, regionally continued until Sassanid era. Regarding the inscription of "Ka'abeh Zartosht", Boyce believes that fire replaced Anāhitā figure at the temples attributed to her (Boyce, 1989: 1005). Also, Chaumont believes that following coming to power, Kartir attempted to eliminate the pagan manifestation of Anāhitā, and close it to an orthodox Zoroastrianism (Chaumont, 1958: 172); probably one can date the issue to late Sassanid period when fire temples replaced the temples of Anāhitā, however, one can doubt in Boyce's theory of replacement icon or figure of Anāhitā by fire. By the late Sassanid period, Zoroastrian priests, the probable orthodoxy symbol, attempted to separate Arədvī Sūrā from Anāhitā. There is a paragraph in "Madigan-i-Hazar Dadistan" referring to a point that archaeologically and comparatively express the Zoroastrian priests' attitude against Anāhitā. It says:

> "…It is also said, (that) under (our) late sovereign Xusrav son on Kavat, one man named Dandan (or: "Kaka.") and another named Aturtoxm held equal (lots) of land under an idol-shrine, when the temple of the idols was dug up from that place ("from there") by the order and with the sanction of the magupats, and a Fire-altar was set up there instead. When it was desired to transfer this Fire-altar to the supervision of the department of pious foundations, it was ordered that this land (together) with this altar should be conveyed to the trusteeship of (this Dandan) and this Aturtoxm and their sons and grandsons - so that Dandan and Aturtoxm should not suffer any loss because of this. Dandan and Aturtoxm set up this altar in the temple of the Varahran Fire. And as long as Dandan and Aturtoxm were alive, Dandan and Aturtoxm kept this Fire under their trusteeship. But after the death of Dandan and Aturtoxm, Burzak, the magupat of Artaxsahr-Xvarreh (rendered) a decision regarding (the fact that) through the title (given by) this order, (their) sons, grand-sons, and (their) successors, born from an epikleros-daughter, should hold this Fire as trustees in the same manner…" (Perikhanian, 1997: 314).

One can conclude several points, first, there were structures in Fars Province where Zoroastrian priests interpreted them as idol house. According Berossus and other historians, and Azarnoush findings from HajiAbad, one can insist on probable presence of Anāhitā more than other gods and goddesses as figures and icons. Therefore, considering the explanation of an idol house, one can suggest reference to idol house is the temple that keeps Anāhitā figures. Secondly, although the structure were idol houses but the landowners or owner of the building never regarded apostate of infidel. They could keep their properties if replaced the idol house by a fire temple, therefore, from the priests view the owners considered Zoroastrian. Several Pahlavi sources, indicating lost Zoroastrian texts, define Arədvī Sūrā and Anāhitā two different gods, where Arədvī Sūrā, the older, relates to waters and mythical river, while Anāhitā is a rare figure mainly as a reference to Venus Planet (Lommel, 1927: 28; Boyce, 1989: 1004). Meanwhile,

only Anāhitā can be seen in non-Zoroastrian sources, whereas Ardavi is completely unknown (Lommel, 1927: 29). Zener explained how MHD differs to reports of Tabari about “Mehrnarseh” and acknowledged the MHD mainly indicates Zoroastrian Priests attitude, while Tabari, who enjoyed late Sassanid Khodainamaks [letter of Lords], indicates what Sassanid nobles and aristocracy thought (Zener, 2008: 84). Zoroastrianism knows figures of gods as idolatry and a big sin (Mazdapuor, 2015: 125). There are evidences indicating orthodox Zoroastrians kept distance to iconography and making statues of gods. The first evidence is what Bahram II approached to reliefs that despite the variety and large number, none of them depicted Ahuramazda or the other gods; considering what religiously the Sassanid rulers thought before and after Bahram II, the most important reason of the behavior is raising Kartir to power as an orthodox Zoroastrian cleric and his influence on the Sassanid emperor. Even if we consider the designs of women on metal vessels as Anāhitā, it is possible that the items is religiously for a different class, which is different expression and iconography of gods, not exactly an orthodox Zoroastrianism. The first vision, probably, sought to purify non-Zoroastrian elements from religious rituals, at least succeeded to change religious places at the late Sassanid phase.

The second group of shrines, which enjoyed of water as the main religious element, probably reflect orthodoxy of Zoroastrianism, and the architectural evidence in Bishapur and Takht-i-Soleiman is equivalent to "Apan Khanak" mentioned in the 4th Book of Dēnkard. In order to interpret any detailed difference between the two buildings, the authors use Azarnoush's theory about the function of Noushijan complex. Accordingly, one can notify that Noushijan constructed on the basis of verses from Aban Yasht that rhymed during pre-Achaemenid period and before the so-called combination of the Arədvī Sūrā to Anāhitā. Relying on Aban Yasht, if we consider Takht-i-Soleiman PB Hall as a temple, then one can analyze differences in the architectural structure of PB Hall to Anāhitā Temple of Bishapur following two points. First, at the end of the Sassanid period, there was an attempt to adapt the shrines attributed to Arədvī Sūrā to Avestan texts, especially texts related to the original Zoroastrian religion, and the second point, which is the founder of the first reason, is to write Avestan texts in the middle of the Sassanid period. First, during late Sassanid period, there was an attempt to adapt the shrines of Arədvī Sūrā to Avestan texts, especially to the authentic ones, and second reason, as the foundation of the first one, was writing Middle Sassanid Avestan narrations. References to the 4th Book of Dēnkard indicate forces for writing Avesta since Ardashir I to Shapur II (Madan, 1911: 412-413). It is more probable that the final text of Avesta compiled in 21 Nask [chapter] by “Ādurbād-ī Mahraspand” at the reign of Shapur II (Christensen, 1944: 142 ; Duchesne-Guillemin, 1983: 886-887). Except reasons such as confrontation to Christianity, one should consider the compilation of Avestan texts in this period as a basis for the efforts of Zoroastrian priests during later period to eliminate non-Zoroastrian derivations from the orthodox (Behdinan) religion. Maybe it is the reason that worshiping Anāhitā and Mithra faded away during late Sassanid period, then later concluded to no sign of the two figures, as a reflection of "true Zoroastrian religion" (Shaked, 1994: 97), therefore, one can doubt the theory of expansion of worshiping Anāhitā during Late Sassanid period (Harper, 1983: 1120-1121). Therefore, it is suggested that to seek the structural differences in both shrines at early and late Sassanid periods, relying on the knowledge of the constructors of Avestan texts as well as their insistence on Zoroastrian orthodoxy.

Furthermore, one should notify that on the contrary to the magnification of Arədvī Sūrā Anāhitā during Achamenidae until the middle Sassanid periods, they had not highly regarded, while there is no trace of chanting Aban Yasht in fire temples.

## 10. Conclusion

Present research attempted to analyze function of the architectural space of tang-i-Chakchak. Considering comparison of architectural plan and characteristics of the structure, the only comparable architectural space is the no. 114 chamber of Tall-i-Sefidak that the excavator introduced it as the temple of Anāhitā. According several scholars one can understand Arədvī Sūrā was a compilation of few gods from different origins, each of which endowed some characteristics to the god. Comparing the architectural structures attributed to Anāhitā in the Sassanid period, one can suggest that the attribution of all structures to one deity may not be correct. Comparing Sassanid archaeological evidence to written sources such as Avestan texts and reports of non-Iranian historians of the Achaemenid period, one can imagine that the discussing structures can be divided into two groups. The first group includes the square structures of Chakchak and no. 114 of Hajjiabad, which specially related to "Anāhitā" with sculptural and iconographic Mesopotamian roots, and the second group consists of Bishapur cube space and the Takht-i-Soleiman PB hall with emphasis on Zoroastrian/ Indo-Iranian element of water. Although throughout the historical period of Iran, there had been references to the opposition of orthodox Zoroastrians to iconography and sculpture of the gods, but according to late Pahlavi sources, it seems that during the period there was an attempt to return to orthodoxy by removing buildings of the first group. Also, according to Avestan narrations of Arədvī Sūrā religious structures built, therefore the discussing buildings are comparable to the architectural structure of pre-Achaemenid religious buildings that attributed to Arədvī Sūrā, such as Noushijan complex. Finally, the authors suggest a revision in the nature and relationship of fire / fire temples that attributed to Anāhitā in Sassanid and early Islamic written sources, and compare them to the worship of Arədvī Sūrā the god.

## Footnote

1.The authors obligatorily acknowledge that considerable part of the conclusions owes to late Dr. Azarnuosh's reports of archaeological excavations and surveys from Haji Abad, Fars, during 1970s and 1980s, which published as papers and volumes. Present paper never has been completed without these published contributions.

2.What has remained of Tall-i-sefidak is a 88×84 m mound, with only excavated architectural ruins, pile of dirt, and leveled parts of the site. Therefore, all architectural descriptions rely on what Azarnoush published.

3.Considering the text that Madan expressed, Nyberg explained the statement, however, according to other copy of the 4th Dēnkard that Sanjana published (Sanjana, 1900: 579), there is no trace of any statement about the construction of Apan Khanak by Shapur II.

## References

Alibaigi. S. 2016. Anahita Temple, an unfinished palace or political / administrative structure. *Mafakher-e Miras e Farhangi*: 193-207.

Amouzegar. Zh. 2009. *The Mythical history of Iran*. Samt Pub.

———————. 1981. Excavations at Kangavar. *Archäologische Mitteilungen aus Iran* 14: 69-94.

Azarnoush. M. 1983. Excavations at Hajiabad, 1977. First Preliminary Report. *Iranica antiqua* 18: 159-179.

———————. 1987. Fire Temple and Anahita Temple: A Discussion on Some Iranian Places of Worship. *Mesopotamia* 22: 391-401.
Azarnoush. M. 1994. *The Sasanian Manor House at Hajiabad, Iran*. Le lettere.
———————. 2009. New Evidence on the chronology of the Anahita Temple. *Iranica Antiqua* 44: 393-402.
Azma. H. 1991. *Shahr-e Man Darab*. Kaveh Azma Pub.
Benveniste. E. 2014. *Iranian religion*. tr by B. Sarkarati. Qatreh Pub.
Boyce. M. 1971. Zoroastrianism. In: Bleeker. C.J. and Widengren. G. (Eds.), *Historia Religionum: handbook for the history of religious*. Vol. 2: 211-236.
———————. 1982. Aban Yasht. *Encyclopædia Iranica*. Vol. 1 (1): 60-61.
———————. 1982a. *A History of Zoroastrianism. Volume II: Under the Achaemenians*. Brill.
———————. 1989. Anahid i. Ardwīsūr Anāhīd. *Encyclopædia Iranica*. Vol 1. (9): 1003-1005.
———————. 1989a. Anahid ii. Anaïtis. *Encyclopædia Iranica*. Vol. 1 (9): 1005-1006.
———————. 1996. *A History of Zoroastrianism*. The Early Period. Brill.
Boyd. J.W. Kotwal. F.M. 1983. Worship in a Zoroastrian fire temple. *Indo-Iranian Journal* 26 (4): 293-318.
Campos Méndez. I. 2013. Anahita and Mithra in the Achaemenid Royal Inscriptions. Anahita: Ancient Persian Goddess & Zoroastrian Yazata. *Anahita. Ancient Persian Goddess and Zoroastrian Yazata*. (Eds) Nabarz, P. London: 41-47.
Chaumont. M.L. 1958. Le culte d'Anāhitā à Staxr et les premiers Sassanides. *Revue de l'histoire des religions* 153 (2): 154-175.
———————. 1989. Anahid iii. The cult and its diffusion. *Encyclopædia Iranica*. Vol. 1 (9): 1006-1009.
———————. 1989. A Sāsānian monarch, his queen, crown prince, and deities: The coinage of Wahrām ii. *American Journal of Numismatics* 1: 117-135.
Christensen. A. 1944. *L'Iran sous les Sassanides*. Otto Zeller.
Compareti. M. 2012. The Representation of Anāhitā in Sasanian Art: The Case of Taq-I Bustan Rock Reliefs and Figurative Capitals. *Anahita Ancient Persian Goddess and Zoroastrian Yazata*. (Eds) Nabarz P. London: 72-85.
Darmesteter. J. 1883. *The Zend-Avesta: The Sirôzahs, Yasts, and Nyâyis*. Clarendon Press.
de Jong. A.F. 1997. *Traditions of the Magi: Zoroastrianism in Greek and Latin literature*. Brill.
Duchesne-Guillemin. J. 1983. Zoroastrian religion. *The Cambridge History of Iran*. Vol 3 (2): 866-908.
Ghirshman. R. 1999. *Bishapur*. tr by A. Karimi. Vol II. Tehran.
———————. 2011. *L'Art de I'Iran, Parthes et Sassanides*. tr by B. Farahvashi. Elmi Farhangi Pub.
Harper. P.O. 1983. Sasanian silver. *The Cambridge History of Iran III: The Seleucid, Parthian and Sasanian Periods*. 2: 1113-1129.
Hassani. M.M. 2014. *The Newly discovered Sassanid reliefs*. Qoqnos Pub.
Herrero de Jáuregui. M. 2008. *The Protrepticus of Clement of Alexandria: a commentary*. Doctoral dissertation. alma.
Huff. D. 1975. Grabung Westlich des Grossen Feuertempels. In Takht-i Suleiman 1965-1973: Bericht über die Ausgrabungen 1965-1973. Naumann. R. D. Huff. & R. Schnyder. *Archaologischer Anzeiger* 90: 137-180.
————————. 1989. Architecture iii. Sasanian Period. *Encyclopædia Iranica*. Vol II (3): 329-334.
Huff. D. 2002. Takt-e Solaymān. *Encyclopædia Iranica*. http://www.iranicaonline.org/articles/takt-e-solayman.
Kaim. B. 2002. Un Temple du feu Sassanide decouvert a Mele Hairam Turkmenistan Meridional. *Studia Iranica* 32: 215-230.
————————. 2004. Ancient Fire temples in the light of the discovery at Mele Hairam. *Iranica Antiqua* 39: 223-237.

Kambaksh Fard. S. 2007. *Archaeological excavations and restoration of the architecture of Anahita Temple and Taq-e Gara*. Vol I. Miras Pub.

Kellens. J. 2002-2003. Le problem avec Anāhitā. *Orientalia Suecana* 51: 317-326.

Khosravi. S. Alibaigi. S. & Rahbar. M. 2018. The Functions of Gypsum Bases in Sasanid Fire Temples: A Different Proposal. *Iranica Antiqua* 53: 267-298.

Khosrawi. S. 2017. New evidences of the Sassanid Burial in Palangerd's firetemple. *Bastanpazhouh*. Tehran.

Khosrawi. S. Rashno. A. 2014. Emergency excavation of Palangerd area of Eslamabad-e gharb. Kermanshah. Tehran: 177-179.

Lommel. H. 1927. *Die Yäšt's des Awesta*. Quellen der Religionsgeschichte.

Madan. D.M. 1911. *The complete text of Pahlavi Dinkard*. Bombai.

Malandra. W.W. 1983. *An introduction to ancient Iranian religion: Readings from the Avesta and Achaemenid inscriptions*. U of Minnesota Press.

Maricq. A. 1958. Classica et Orientalia: 5. Res Gestae Divi Saporis. *Syria* 35: 295-360.

Mazdapour. K. 2015. Anahita. *Religions and religions in ancient Iran*. Tehran. Samt: 125-130.

Moradi. Y. 2009. Chahār Tāqi of Mileh Milegeh. A Fire-temple from the Sassanian Era. *Journal of Archaeological Studies* 1 (1): 155-183.

Mousavi Haji S.R. Mehafarin. R. 2009. The Lady represented in Narseh's relief: Shapurdokhtak or Anahita. *The International Journal of Humanities* 16 (2): 75-85.

Mousavi Kouhpar. S.M. 2006. An overview of the Depiction of Female Figures on Sasanian Silverwork. *The International Journal of Humanities* 13 (3): 83-94.

Naumann. R. 1964. Takht-i Suleiman und. Zendan-i Suleiman: Vorläufiger Bericht then die Grabungen 1962. *Archäologischer Anzeiger* 79: 1-77.

**————————**. 1977. *Die Ruinen von Tacht-e Suleiman und Zendan-e Suleiman und Umgebung*. Berlin.

Naumann. R. D. Huff. & R. Schnyder. 1975. Takht-i Suleiman 1965-1973: Bericht über die Ausgrabungen 1965-1973. *Archaologischer Anzeiger* 90: 109-204.

Naumann. R. Huff. D. 1972. Excavations of the Takht-i-Soleiman. *Archaeology and Art of Iran* 9 & 10: 24-61.

Nöldeke. T. 1881-2. *Abu Djafar Mohammed Ibn Djarir At-Tabari*. M. J. De Goeje (Ed). E. J. Brill.

Nyberg. H.S. 1938. *Die Religionen des alten Iran*. Leipzig. Otto Zeller.

Oryan. S. 2014. *Madayan e Hezar Dadestan*. Tehran. Elmi.

Panaino. A. 2000. The Mesopotamian heritage of Achaemenian kingship. *The heirs of Assyria*: 35-50.

Perikhanian. A. 1997. *The Book of a Thousand Judgements (A Sasanian Law-book)*. New York. Mazda Publishers.

Purdavood. E. 1998. *Yasht's*. Vol I. Asatir Pub.

Rahbar. M. 1999. Introducing the Adrian (Worship) of the Sassanid Artifact in Bandiyan-e Dargaz, and examining the architectural problems of this building. *Second Congress of Iranian Architecture and Urban History*. 2: 315-341.

Rahbar. M. 2004. Le monument sassanide de Bandiān Dargaz. *Studia Iranica* 33: 7-30.

Razmjou. S. and Roaf. M. 2013. Temples and sacred places in Persepolis. *Tempel im Alten Orient* 7: 407-425.

Rezvani. H. 2005. *Record File of Shian Firetemple*. Cultural Heritage, Handicrafts and Tourism Organization of Iran. Kermanshah.

Sanjana. P.D.B. 1900. *The Dinkard: the original Péhlwi text; the same transliterated in Zend characters; translations of the text in the Gujrati and English languages; a commentary and a glossary*. Vol. 9. Duftur Ashkara Press.

Sarfaraz. A. Chaichi. A. Saeedi. M. 2014. *The ancient city of Bishapur*. Samt Pub.

Schippmann. K. 1971. *Die iranischen Feuerheiligtümer*. Berlin. Walter de Gruyter.

Shaked. S. 1994. *Dualism in transformation*. Routledge.
Shapur Shahbazi. A. 1983. Studies in Sasanian Prosopography I, Narse Relief at Naqshe Rustam. *AMI* 16: 255-268.
Shenkar. M. 2013. A Goddess or a Queen? On the Interpretation of the Female Figure on the Relief of Narseh at Naqš-e Rostam. *Scripta Antiqua* 2: 612-633.
Skjærvø. P.O. 2005. *Introduction to Zoroastrianism*. Harvard University. Cambridge.
Sprengling. M. 1953. *Third Century Iran: Sapor and Kartir*. Chicago. The Institute.
Stausberg. M. 2002. *Die Religion Zarathushtras*. Vol. 1. Kohlhammer.
Trever. C. 1967. a Propos des temples de la déesse Anahita en Iran Sassanide. *Iranica Antiqua* 7: 121-132.
Vanden Berghe. L. 1965. Nouvelles découvertes de monuments du feu d'époque sassanide. *Iranica Antiqua* 5: 128-147.
**———————**. 1959. Reconnaissance archeologique dans le Fars meridional et au Laristan. *Internationalen Orientalistenkongresses*, Munchen & Wiesbaden: 487.
**———————**. 1961. Récentes découvertes de monuments sassanides dans le Fars. *Iranica Antiqua* 1: 163-200.
**———————**. 1977. Les Chahar Taqs du Pusht-i Kuh Luristan. *Iranica Antiqua* 12: 175-196.
**———————**. 2008. *Archeology of Ancient Iran*. tr by I. Behnam. UT Pub.
Zaehner. R.C. 2008. *Zurvan: a Zoroastrian dilemma*. tr by T. Ghaderi. Tehran. Amirkabir.

# مطالعهٔ کارکرد فضای معماری مربع‌شکل مجموعهٔ تنگ چک‌چک فارس: رویکردی نوین به نیایشگاه‌های «اردوی‌سور-آناهیتا» در دورهٔ ساسانی

**سیدمهدی موسوی کوهپر***

دانشیار گروه باستان‌شناسی، دانشگاه تربیت مدرس، تهران، ایران.

**علیرضا زبان آور**

دانشجوی دکتری باستان‌شناسی، دانشگاه آزاد اسلامی واحد علوم و تحقیقات، تهران، ایران.

**سولماز احمدزاده خسروشاهی**

دانشجوی دکترای باستان‌شناسی دوران تاریخی، دانشگاه تربیت مدرس، تهران، ایران.

تاریخ دریافت: ۱۳۹۹/۱۱/۰۵؛ تاریخ پذیرش: ۱۳۹۹/۱۲/۲۰

## چکیده

محوطه‌ی تنگ چک‌چک با مختصات جغرافیایی «40R309640E3141366N» و ارتفاع ۱۱۳۵متری از سطح دریا، در ارتفاعات جنوب غربی بخش رستاق شهرستان داراب استان فارس و در فاصله‌ی تقریبی ۶۵کیلومتری خط مستقیم از این شهرستان قرار دارد. این مجموعه به سبب دور بودن از مناطق پرجمعیت و عوامل مخرب انسانی، دربرگیرنده‌ی دو بنای اصلی مذهبی و تعدادی فضای معماری فرعی بوده که امروزه تا حدودی حفظ شده‌اند. درحال‌حاضر یک فضای مربع گنبددار در قسمت شمال غربی، چهارطاقی اصلی در قسمت جنوب شرقی و تعدادی فضای معماری و رشته دیوار در فواصل بین این دو سازه و متمایل به سمت شرقی مجموعه، آثار معماری مجموعه‌ی مذهبی تنگ چک‌چک را تشکیل می‌دهند و تنها مصالح به‌کاررفته در این مجموعه شامل لاشه‌سنگ، قلوه‌سنگ و ملاط گچ نیم‌پز می‌باشد. ضمن آنکه در پیرامون این مجموعه یک سازه‌ی دفاعی و یک نقش برجسته‌ی ناتمام نیز به چشم می‌خورد. این محوطه تا به امروز تنها توسط لویی واندنبرگ و به‌صورت مختصر مورد مطالعه‌ی میدانی و معرفی قرارگرفته، ضمن آنکه شیپمان و گیرشمن نیز بر اساس گزارش واندنبرگ اقدام به بیان مشخصات معماری این مجموعه کرده‌اند. واندنبرگ در هنگام معرفی این مجموعه، از فضای معماری مربع‌شکل گنبددار با عنوان ساختمان تاریک و بسته‌ای یاد می‌کند که در آنجا آتش را حفظ و نگهداری کرده و تنها موبدان به آن دسترسی داشته‌اند. گیرشمن با پیروی از واندنبرگ همین کاربری را در مورد این فضای مربع‌شکل تکرار کرده و این محوطه را مربوط به سده‌های ششم و هفتم میلادی دانسته و آذرنوش هم نظریه‌ی واندنبرگ در مورد فضای مربع‌شکل را مورد تائید می‌داند. این پژوهش بر اساس هدف از نوع تحقیقات بنیادی و از منظر ماهیت و روش تحقیق به‌صورت تاریخی و توصیفی-تحلیلی بوده، همچنین روش گردآوری داده‌ها به شیوه‌ی میدانی-کتابخانه‌ای است، بدین ترتیب که نخست به‌صورت میدانی محوطه‌ی تنگ چک‌چک و به‌طور خاص فضای معماری مربع‌شکل این محوطه موردمطالعه و بررسی باستان‌شناختی قرارگرفته، سپس از طریق مطالعات میدانی و کتابخانه‌ای با سایر سازه‌های مشابه در نواحی هم‌جوار و دوردست سنجش و مقایسه شده تا ضمن شناخت دقیق معماری بنا، بتوان به نوع کاربرد آن پی برد. درنهایت با تحلیل کاربری مورد تشخیص، سعی شده بر اساس مطالعات کتابخانه‌ای و تطبیق یافته‌های باستان‌شناختی با منابع مکتوب تاریخی، الگویی از وضعیت معماری سازه‌هایی با کاربری مشابه فضای معماری مربع‌شکل تنگ چک‌چک در دوران ساسانی ارائه شود. در این تحقیق سعی گردیده تا به چند پرسش پاسخ داده شود که مهم‌ترین آن‌ها شامل دو مورد می‌شود. نخست آنکه سازه‌ی معماری مربع‌شکل موجود در محوطه‌ی تنگ چک‌چک با کدام‌یک از بناهای مشابه در ناحیه‌ی فارس یا جغرافیای ایران ساسانی قابل قیاس می‌باشد و چه نوع کاربری را می‌توان برای سازه‌ی معماری موردنظر پیشنهاد نمود؟ و پرسش دوم آنکه در صورت دستیابی به کاربری مشخص برای فضای معماری مربع‌شکل تنگ چک‌چک، آیا این نوع کاربری از الگوی مشخصی پیروی نموده و وضعیت این الگوی مشخص از منظر تاریخی در دوره‌ی ساسانی چگونه بوده است؟ براساس مقایسه‌ی پلان و ویژگی‌های معماری سازه‌ی مربع شمل تنگ چک‌چک تنها فضای معماری قابل‌مقایسه با آن، فضای معماری ۱۱۴ خانه‌ی اربابی حاجی‌آباد بوده که توسط مسعود آذرنوش کاوشگر محوطه‌ی تل سفیدک، از آن به‌عنوان نیایشگاه آناهیتا یاد شده است. با توجه به نظریات غالب پژوهشگران می‌توان دریافت عملاً یک دوگانگی در "اردوی‌سور آناهیتا" نهفته که بخشی از آن ریشه‌ی غربی/بین‌النهرینی یا به عبارت بهتر غیر زرتشتی داشته

*رایانامه‌ی نویسنده مسئول: smkooh@yahoo.com

و بخش دیگر آن ماهیت زرتشتی و احتمالاً هندو ایرانی را دارا است. در آبان‌یشت نیز بخشی از آناهیتا به صورت رودخانه و قسمتی دیگر به صورت زنی با لباس پوشیده توصیف شده است که احتمالاً از همین دوگانگی سرچشمه دارد. با توجه به یافته‌های آذرنوش در فضای معماری ۱۱۴ تل سفیدک که در آن جلوه‌ی ایزدبانوی موردبحث به‌صورت شمایل‌نگاری و پیکره‌سازی نماد پیداکرده و عملاً هیچ اثری از آب به چشم نمی‌خورد، می‌توان این‌گونه استناد کرد که در بناهایی مانند خانه‌ی اربابی و فضای مربع شکل تنگ چک‌چک تأکید بر جلوه‌ی غربی/بین‌النهرینی اردوی‌سور آناهیتا است و جلوه‌ی شرقی/زرتشتی او باوجود آنکه عناصر مرتبط با آب در محوطه‌ای مانند تنگ چک‌چک قابل‌مشاهده هستند، در اولویت نیستند. ریشه‌ی معابد این گروه را باید از دوره‌ی داریوش دوم هخامنشی جستجو نمود که در این دوره احتمالاً شاهنشاه هخامنشی به همراه ملکه‌ی خود "پری‌ساتیس" دارای معابدی خصوصی با پیکره‌هایی مرتبط با آناهیتا بوده‌اند و این موضوع در زمان اردشیر دوم به‌صورت علنی و عمومی گسترش می‌یابد و می‌توان این‌گونه متصور شد که در فارس این سنت حداقل تا دوره‌ی ساسانی ادامه یافته است. همچنین با مقایسه‌ی سازه‌های معماری منتسب به آناهیتا در دوره‌ی ساسانی می‌توان دریافت که احتمالاً انتساب همه‌ی این سازه‌ها به ایزدی با نام "آناهیتا" نمی‌تواند درست باشد. از تطبیق شواهد باستان‌شناختی دوره‌ی ساسانی با منابع مکتوب تاریخی مانند متون اوستایی و گزارشات مورخین غیر ایرانی دوران هخامنشی، می‌توان دریافت که سازه‌های مورد بحث قابل تقسیم در دو گروه هستند. گروه نخست شامل بناهای مربع‌شکل تنگ چک‌چک و ۱۱۴ حاجی‌آباد بوده که مشخصاً با پیکره سازی و شمایل‌نگاری به "آناهیتا" با ریشه‌های بین‌النهرینی مربوط بوده و گروه دوم شامل فضای مکعبی بیشاپور و تالار PB تخت سلیمان با تأکید بر عنصر آب به "اردوی‌سور"ایزد زرتشتی/هندوایرانی ارتباط دارد. با وجود آنکه در تمام دوران تاریخی ایران اشاراتی به مخالفت زرتشتیان راست کیش با شمایل‌نگاری و پیکرسازی ایزدان به چشم می‌خورد، اما با توجه به منابع پهلوی اواخر ساسانی به نظر می‌رسد که در این دوره تلاش شده تا با حذف بناهای گروه نخست، به‌نوعی بازگشت به آیین زرتشتی راست‌کیشانه صورت گیرد. همچنین در این دوره سعی گردیده تا بر طبق روایات اوستایی سازه‌های مذهبی مرتبط با اردوی‌سور ساخته شود و از این‌رو بناهای مورد نظر قابل مقایسه با ساختار معماری بناهای مذهبی پیش از هخامنشی مرتبط با ایزد اردوی‌سور مانند مجموعه‌ی نوشیجان می‌باشد. نگارندگان پیشنهاد می‌نمایند براساس نتایج حاصل از این پژوهش ضمن بازنگری در سایر آثار منتسب به آناهیتا در دوره‌ی ساسانی، ماهیت و ارتباط آتش/آتشکده‌هایی که در منابع مکتوب رسمی عهد ساسانی و سده‌های نخستین اسلامی در بخشی از نام خود دارای واژه‌ی آناهیتا هستند، با نیایش ایزد اردوی‌سور آناهیتا مورد تجدیدنظر قرار گیرد.

**واژه‌های کلیدی:** دوره‌ی ساسانی، تنگ چک‌چک، معماری مذهبی، نیایشگاه آناهیتا، آیین زرتشتی، اردوی‌سور-آناهیتا.

Journal of Archaeological Studies

Vol 12, Is 4 - Serial Number 24, Winter 2021

Formerly "the Journal of the Faculty of Literature and Humanities"... University of Tehran

# Hunting in the Forest Steppe: An Examination of the Painted Panel at Takke Rock-Shelter, Bojnord, Northeastern Iran

**Ali Akbar Vadati**[1]

(233-250)

## Abstract

The mountainous region of Northern Khorasan, north-eastern Iran is rich in rock art complexes including several petroglyphic and rock-painting sites. The rock paintings at Takke rock-shelter near Bojnord is one of the four recorded pictographs in the Atrak River Basin depicting a hunting scene. The panel shows a human with a spear accompanied by several dogs pursuing various species of wild animals in a hilly and wooded landscape. Most of the animals are depicted between the trees on steep footpaths. The Takke pictograms are the only identified rock paintings in Iran and the neighboring regions depicting a dog-assisted hunting scene in a forest zone characterized by several species of plants and animals. The plant and animal diversity in the panel as well as certain landmarks such as animal tracks could perhaps be interpreted as an attempt to illustrate features of the natural local landscape which is a rare phenomenon in the corpus of Iranian rock art. On stylistic grounds, the Takke pictograms appear to date between the Late Chalcolithic to Early Bronze Age. Located in the foothills and upland zone suitable for nomadic hunting groups, mobile pastoralists, and herding population, the pictograms of Takke, like other rock art complexes of Northern Khorasan, appear to linked to pastoral models of subsistence during prehistoric period.

**Keywords:** Khorasan, rock-paintings, Chalcolithic era, Bronze Age, hunting scene, plant diversity, nomads.

Received: 20 October, 2020; Accepted: 10 March, 2021

10.22059/jarcs.2021.312244.142941

Online ISSN: 2251-9297 Print ISSN: 2676-4288-

https://jarcs.ut.ac.ir

1. Corresponding Author Email: vahdatiali@yahoo.co.uk.
PhD student in Archeology, University of Paris Van Sorbonne, France.

## 1.Introduction

In the past few decades, a great number of petroglyph sites have been documented in eastern Iran mainly in the mountainous regions of Northern Khorasan (Vahdati, 1389/2010; 2012), in the historical district of Kuhistan in southern Khorasan (Labbaf Khaniki, 1376/1998; Sadeghi et al., 1394/2016; Ghorbai and Heydariyan, 2018), and in the province of Sistan-Baluchistan in southeastern Iran (Sarhaddi, 2013; Shirazi, 2016). Despite the rising number of studied petroglyphic complexes in the Iranian plateau in general and in eastern Iran in particular, only a small number of rock painting sites have so far been identified throughout the country. This is perhaps mainly due to the vulnerable nature of rock paintings which are susceptible to a wide range of climatic conditions and human actions resulting to deterioration and complete obliteration of open air rock paintings. However, a small number of rock paintings are discovered in Iran mostly occur in caves or in sheltered overhangs which provide protection from various atmospheric effects such as direct sunlight or moisture. The majority of Iranian rock paintings sites have been found in a series of caves and shelters in Zagros Mountains. These are including pictograms discovered in Mir Malas, Dosheh, and Houmian valleys in Kuh Dash region, Luristan (Izadpanah, 1969; Goff, 1970; Adeli et al., 1380/2001; Otte et al., 2003; Remacle et al., 2006), rock paintings at Cheshme Shorab cave in Dinvar, Kermanshah (Biglari et el., 1386/2007), pictograms of Agh Dash rock-shelter in Zanjan (Aali, 2017), rock paintings at Shamsali and Gorgali rock-shelters at Kohgiluye Bouier Ahmad province (Hemati Azandaryani et al., 2015), pictograms of Abdozou (Ghasimi et al., 2010), Tang-e Tayhouei cave, Tang-e Tadavan (Fazel and Alibaigi, 2012), Pir-Barreh (Ghasimi et al., 2016), and Halek 4 rock-shelter (Vahdati Nasab et al., 2008) all in southern Zagros mountains in Fars, and the rock paintings at Eshkaft-e Ahou rock-shelter in Hormozgan (Sadeghi, 1381/2002). There are also a number of rock paintings at Kuh-e Donbeh Mountain near Isfahan (Karimi, 2014), but occurrence of unusual elements such as Old Persian cuneiform signs and other unprecedented compositions suggest that they are all actually of doubtful authenticity.

Compared to western Iran, the number of rock paintings sites in eastern Iran is still smaller. Altogether, four rock painting sites have so far been discovered in the region including the pictograms of Pir-e Goorān near Nāhook village, Sarāvān in Iranian Baluchistan (Sarhaddi, 2013) and four small corpora of rock paintings in the mountains of Aladagh in the Artak River Basin, northeastern Iran (Vahdati, 2010; 2021/in print). The rock paintings of Atrak river basin include pictograms of Zeynekānlu, Mardkānlu, and Bāsh Mahalle all located on the northern slopes of Shah-e Jahan Mountain, some 30 km to the southwest of Fārouj, and a corpus of paintings of Takke rock-shelter near village of Nargeslou in the vicinity of Bojnord of which the latter case is subject of present study.

## 2.Takke Rock-shelter

The rock-shelter of Takke is located approximately 200 m to the south of mountain village of Nargeslou-ye 'Olya on the northern face of Ala-Dagh Mountain range, an eastern continuation of the Alborz Mountain system. The village is located some 20 km to the west of Bojnord, the capital city of Northern Khorasan Province at 37°29'57.56"N, 57° 4'46.45"E, at an altitude of 1115 m above sea level. (Fig. 1). The prevailing climate of the region is known as a local steppe climate with an average annual precipitation of 275 millimeters. The mountain area around Bojnord, as many

remnants prove, until the recent past was covered with juniper-forest accompanied by other shrubs and trees such as wild pistachio, almond, berberis, hawthorn, etc. and still affording important pastures flushing in spring (Bobek, 1968: 287). The main source of livelihood in this upland zone is breeding of sheep and goats, growing of walnuts and fruit-trees in the ravines, and scattered farming with pulses and legumes on the hilltops. The rock-shelter of Takke is one of several grottos and cavities formed by water erosion on the steep rocky walls of the gorge of Cheylagh stream, a tributary of Atrak, that carve a deep ravine in a wide band of limestone outcrop to the south of the village. Takke rock-shelter is located on the right bank of the gorge, opening to the west and overlooking the river valley (Fig.2). It is situated some 40 meters above the riverbed, but easily accessible by the lateral inclined layers of rocks that compose the massif, providing ascent in steps. The shelter is about 13 m long, 3.5 m deep, and more than 3 m height at the entrance (Fig.3). Concave wall of the shelter abuts an inclined floor in a way that the internal living floor is very restricted, but a small flat area is available in front of the shelter. There is no evidence for the use of rock-shelter as a permanent habitation place either in the form of depositional layers or other archaeological remains, suggesting a temporary use such as a lurking place for hunting possibly by mobile groups. The only archaeological signature in the entire surroundings has been found in a site named *Ojaghlar* some 2 km to the south of the shelter. Clandestine digs at the site brought to light remains of stone architecture, sherds of grey and orange coarse ware, and few stone tools (Fig. 4) probably dating back to the Bronze Age and later periods.

The images are painted on the oval cavity under the overhang depicting a hunting scene showing a male hunter with a spear accompanied by dogs chasing wild animals in a forest steppe landscape. Since the majority of depicted animals (63%) are mountain goats with long horns, the rock-shelter is named *Takke* after the animal. (1)

Although the local people of Nargeslou and the nearby villages knew the rock paintings of Takke from long times before, it first came to the attention of archaeological community after a recent preliminary publication appeared in the Persian literature (Vahdati, 2010). This is a revised and extended version of the chapter on the paintings of Takke rock-shelter published in Persian aiming at bringing international attention to this important rock art complex in northeastern Iran.

## 3.Description of the Painted Panel

The images of Takke rock-shelter are all silhouette drawings painted by brush using red mineral pigments, probably made of iron oxide or hydroxide. Due to a combination of natural factors and vandalism, various degrees of damages affected pictograms of Takke making part of it nearly vanished. However, a close examination of the paintings *in situ* and enhancement of the digital photos applying a decorrelationstretch (DStretch) plugin with the imaging program ImageJ allowed us to bring out more of the details of the depictions.

The paintings predominantly fill the concave roof and wall of the shelter depicting what appears to be a hunting scene: groups of animals are shown grazing in a wooded landscape and a male human figure holding a spear in the center assisted by dogs pursuing wild games (Fig.5). The general panel orientation is following the natural micro-topography of the rock face with most of the animals are depicted diagonally along the natural tiny fissures and cracks on the rock face.

All the images are shown moving to right in "twisted perspective" with the animals have their bodies in profile while four legs and both horns are depicted. Most of the animal are shown on walking trails represented by straight horizontal or oblique lines, usually traced on the natural fissures of the rock face, replicating the actual hilly and mountainous landscape of the region. The figures, particularly the mountain goats, are painted in a naturalistic way and the whole composition shows a good degree of artistic maturity.

Altogether, some 37 images are portrayed in the panel which could be classified into four distinct groups: a) Animal figures, b) human image, c) Trees or bushes; and d) undiscernible images (Figs. 5-6). Among the animals, mountain goats (*Capra aegagrus*), a deer (*Cervus elaphus*), dogs (*Canis familiaris*), unidentified bovine or equine species, and a short, bulky animal possibly a wild boar (*Sus scrofa*) were identified. Among the animal images, the mountain goat is clearly outnumbered consisting 14 out of 22 animal depictions. The important role of mountain goat in Takke rock-shelter is also indicated by its central place and large size in the panel, distinguishing the animal from the others. The animal is characterized by large, reclined backwards horns, bearded throat, and in some cases with signs of male genital organ.
Human image is identified only in one case showing a man with a spear accompanied by two dogs followed by a smaller canine, presumably a juvenile dog.

Below is provided detailed information about the images presented in the panel:
From the left, on the foreground, a canine is shown, about 30 cm long and 17 cm height, moving right towards three mountain goats (Fig.6: C1). The canine is shown in profile with rounded ears, short snout, big head, sturdy body, having tail curled towards back, making its identification easy as a domesticated dog (*Canis familiaris*). Short snout, and up-turned curly tail are traits which are not present in wolves, providing clear evidence for identification of the canine as a dog. While we admit that identification of the dog breed is by no mean secure in rock art depictions, but the dog under discussion resemble to some extent the modern-day Central Asian shepherd dog breed (*Alabai*) normally bred for the purpose of protecting livestock from predators all over Khorasan.

Above the dog are shown three mountain goats, one above the other moving towards a large tree (Fig.6: B1). The smallest of the three animals is shown at the bottom, featuring a mountain-goat about 16 cm long and 18 cm height, with long horns, almost perpendicular to head and hooked at the end, bearded throat, and short upward tail standing on a track, a feature also represented on some of the Central Asian Bronze Age petroglyphs (Jacobson *et al.*, 2011: 117, 310: no.693). Above the animal are two larger mountain goats both moving right towards a large shrub or a tree, 77 cm long and 33 cm wide (Fig.6: B1). The plant is shown with a developed root system, spreading out wide around the main trunk that has long lateral branches and short twigs, beginning close to the ground level and continue to the top, forming a rather conical shape crown. This is most probably a representation of Persian Juniper (*J. excelsa polycarpes*) widely distributed in the mountains of northeastern Iran and Central Asia (Bobek, 1968, fig. 88). Another tree with a different shape, possibly from another species is depicted above the former in a distance. The plants along with further six trees and bushes distributed in various parts of the panel possibly feature a sparse woodland.

To the right, towards the center of the panel, groups of mountain goats and other animals are shown around other trees and bushes, some approaching to or eating from leaves of the plants. At the back of the animals is depicted a standing man, 19 cm tall,

holding a spear 13 cm long at the shoulder level (Fig.6: B1-2). The hunter appears to have something at the back similar to a backpack and shoes with turned-up toes resembling the traditional leather footwear (*Charogh*) still worn by some of the inhabitants of highlands in the Middle East, particularly in Iran and Turkey (Lioyd, 1967: 66-67). Next to the hunter, two hunting dogs are running towards large mountain goats feeding on a shrub or a small tree in the center of the scene (Fig.6: B2). These are followed by a smaller canine, presumably a young dog, with curled up tail, upward ears, raised neck, and small head looking far towards the mountain goats. The hunting-dogs, about 20 cm long and 8 cm height, are much smaller than the one shown on the far left (see above) and anatomically different, perhaps suggesting a different breed, very similar to Saluki or the Persian hound. These are depicted with long and narrow head, long upright ears, long and slender legs, narrow body, thin waist, and long tail slightly curling at the tip.

In front of the saluki-like dogs are two large mountain goats approaching a plant, clearly different from the presumed Persian juniper mentioned above. The plant has a straight trunk, looking like a dense, broadly pyramidal tree or shrub with numerous, thin and curved-up branches springing from near the ground and forming a fishbone structure (Fig.6: B2, top). The plant has a large crown and a low compact root system generally resembling a cypress tree, possibly a *Thuja orientalis L.* (locally called *Sarv-e Tabari*) that grows on gypsiferous formations on the steep dry slopes or even on the cliff-faces of Khorasan Mountains.

Above the cypress-like tree, a bulky, massively built animal with short legs, and narrow elongated head is moving towards a plant with sparse, short branches. The animal, possibly a wild boar (*Sus scrofa*) has a pointed head, short and robust trunk with comparatively narrower hindquarter marked by a small bulge at the back (Fig.6: A2).
Below the suid and the tree, a mountain-goat and a deer (*Cervus elaphus*) moving uphill on a steep footpath (Fig. 7). A small horizontal line, slightly longer than the mountain-goat's body abuts base of the horns, probably featuring a trail at the background. In front of the mountain-goat, the deer is represented in running position.

Below these paintings, a double curling motive resembling a pair of large mouflon horns is depicted in the center of the panel (Fig.6: B2, bottom). Exaggerated mouflon or ibex horns was a popular motif in the art of ancient Iran, frequently found in the form of ornamental objects, beads, pendants (Tosi and Karlovsy, 2003: 351-52; Schmidt, 1937: 189, fig.111), and occasionally painted on the Late Chalcolithic and Early Bronze Age pottery in such sites as Tall-i-Bakun A (Alizadeh, 2006: 183, figs. 25, 47.A-E, 48.E), and Jaffarabad IIId (Dolffus, 1978: 167, fig. 19, n˚9). The fact that in the Takke rock-shelter, mouflon horns are depicted in the center of the panel probably has a special meaning, now forgotten.(2)

Below the horn motif, a pack of animals and plants occupy lower part of the panel. Groups of mountain-goats and unidentified bovids or equids are depicted moving right towards plants of various shape and size. On the left, there are six mountain-goats of large size, all depicted with long, curving horns, bearded throat, and marked male genital organ (Fig.6: C2). These are obviously larger in size than the other animals represented in the panel, but the largest mountain goats are largely obscured by smoke from fire made by vandals inside a narrow cleft in the rock. The largest discernable mountain goat is about 35 cm height and more than 30cm in length. To the right of the large mountain goats, an animal with long, hanging tail and large upward ears or horns

is feeding on a tree (Fig.6: C2). Farther to the right, a group of four mountain-goats (Figs. 8-9) and another animal with long, hanging tail and large protruding horns or ears similar to the one just mentioned are shown approaching three plants of different species.

The paintings on the rock-shelter of Takke are stylistically similar, featuring a single thematic subject matter with a series of completely connected images clearly indicating their simultaneity. This panel is perhaps painted by a single artist, who had a distinctive painting style, using single set of tools and materials to convey to the audiences a specific theme or message about the hunting practice of his or her society.

**4.Discussion**

It is true that rock arts have always been among the most difficult archaeological evidence to date, but at the same time determination of date of rock arts is a critical and basic building block of the study of such complexes. As R. G. Bednarik has correctly pointed out "without at least some idea of the age of rock art, this class of evidence is of no help to the archaeologist", because rock art can be linked to archaeological constructs only by its age (Bednarik, 2002: 1213).

Like many of the rock art sites, it is difficult to establishing a date for the rock pictograms of Takke. Unfortunately, we had no possibility to apply any of the chronometric methods such as AMS, C14, and XRF for a direct dating, instead manage to use the traditional stylistic-iconographic analysis to establish an approximate chronology for the panel.

In many rock art sites of the ancient Near East some images illustrate "datable" subject matter, providing a criterion for a relative dating. For instance, images of bow, horse, harness, and horsemen or guns in rock art complexes provides a *Terminus post quem* for the panel. However, in many cases, occurrence of later additions complicates the situation making any dating suggestion very difficult.

The fact that Takke rock paintings doesn’t show any trace of later additions makes its relative dating slightly easier in the one hand, but absence of "datable" subject matter constitute a main impediment for such a dating on the other hand: the only weapon depicted in Takke is spear and the only domesticated animal is dog.

Spear is the oldest projectile weapon developed by early human for hunting during the Middle Stone Age/Middle Paleolithic period (Wilkins *et al.*, 2012: 942-943). Since early spears either as a thrusting or throwing hunting tools have to be used in a close distance it was dangerous for hunting large or ferocious mammals. The invention of more complex, elastic weapons such as bow which has a longer effective range and greater hitting accuracy was a significant point in human evolution, probably occurred in the later part of the Neolithic period. It is true that after the introduction of bow human continue to use spear both in hunting and combat, but since bow was much more effective than other early weapons and revolutionary to hunting subsistence economies, one may assume that it soon become the dominant hunting tool both in practice and in the artistic representations of the hunting scenes.

The earliest known depictions of bow in Iran have been recorded on two Chalcolithic pottery sherds from Susa and Djowi (Zutterman, 2003: 122-123). During the succeeding Bronze Age, bow becomes very popular, being abundantly depicted on various types of material including potter, seals, metal vessels as well as rock arts. All of the Iranian rock painting sites featuring hunting scenes including Kuh Dasht complexes, Cheshme Shorab cave, Tang-e Tadavan, and Eshkaft-e Ahou show archers, implying the

importance of bow in hunting practices. To my knowledge, pictograms of Takke is the only prehistoric rock painting of Iran featuring a hunting scene without the use of bow. Is this a negative evidence for the depiction of the painted panel prior to the invention of bow or its introduction to the region? What about the absence of images of mounted hunters in Takke? Horses were assisting humans in the hunt from the Late Bronze Age, and images of mounted hunters on the horseback are frequently depicted on the Iranian Bronze and Iron Age rock art complexes.

The only domesticated animal depicted in Takke is dog. Bioarchaeological evidence show that dog was domesticated long before it appeared in the figurative art (Dayan, 1994), but the earliest dog depictions have been found on the Late Neolithic pottery vessels from Tepe Sabz in Deh Luran and Chogha Mish in Khuzistan, two small-scale agricultural villages in southwestern Iran (Hole and Wyllie, 2007: 175-176). The use of dogs in hunting is also evidenced on the prehistoric painted potteries from Tall-e Bakun A (Alizadeh, 2006: 75, figs. 26, 39 f, 44, 45, 49), Suasa (Hole and Wyllie, 2007: 178, fig. 2), and Tepe Qabrestan (Majidzadeh, 1999: fig. 1). While several painted pottery vessels from Susa show dogs attacking wild games, one painted sherd from Susa settlement depicts an individual holding a leash attached to a dog (Hole and Wyllie, 2007: 179, fig.5) indicating that dogs were used as hunting aids from the Neolithic period. Another early example of dog depiction is recorded on a Late Chalcolithic or Early Bronze Age small pottery jar from Tepe Qabrestan in Qazvin plain showing three male hunters each flanked by two dogs, wearing bells, with the leashes fastened to their waist (Majidzadeh, 1999: 81, fig. 1). Such a composition could also be seen in the glyptic art of the late 4th-early 3rd millennium BC of western Iran and Mesopotamia such as a seal impression from Jemdet Nasr period, ca. 3100–2900 BC, now in the Metropolitan Museum of Art showing a male figure guiding two dogs on a leash and hunting boars in a reed marsh (Benzel *et al.,* 2010: 58, fig. 24).

Moreover, pictorial evidence for dog-assisted hunting strategies have frequently been found in the rock art complexes of Iran and the neighboring regions, some of which are assumed to be the earliest evidence of domesticated dogs. The most famous site for rock paintings in Central Asia is the Zaraut-Kamar rock-shelter located in southern Uzbakistan depicting dogs in a bull and goat hunting scene claimed to be first painted during the "Stone Age", in particular in Mesolithic times, with further additions in later phases (Formozov, 1965).(3) Another early example of hunting scenes that show dogs partaking in hunting has been found in the petroglyphic complexes of Shuwaymis and Jubbah, in northwestern Saudi Arabia, where bowmen are accompanied by pack of dogs sometimes on leash (Khan, 2013: 451, 453). One panel in Shuwaymis shows a hunter drawing his bow to kill an equid while accompanied by 13 dogs with two of them have their leashes fastened to the hunter's waist, recalling very similar scenes depicted on the late Bronze Age petroglyphs of Central Asia (4) (Jacobson, 2011: 104: 173: no. 173), as well as the dogs on leash painted on the pottery jar of Tepe Qabrestan. These engravings are assumed to be the earliest depiction of the domesticated dogs attributed to the $8^{th}$-$7^{th}$ millennium BC, predating the spread of pastoralism in the region (Guagnin *et al.,* 2017). However, none of these presumed earliest pictorial evidence of dogs assisting human in hunting have yet been dated with scientific, chronometric techniques and still remain subject to controversies.

Depictions of dog in hunting scenes also abundantly reported in many petroglyphic sites of the Iranian plateau including petroglyphs of Saravan and Makran districts of

Sistan and Baluchistan (Shirazi, 2016: 26; Sarhaddi, 2013), Jajarm (Vahdati, 2011: 181), Qom (Mohammadi Ghasrian, 2007/1386: 89, fig.7), Qazvin (Mollasalehi et al., 1386/2007: 45, fig. 1:2 13-15), Arak (Pourbakhshandeh, 2007: 47, figs. 7, 8, 10), Isfahan (Khosrowzadeh *et al.,* 2017: 220, fig. 7), Yazd (Shahrzadi, 1376/1998: 13-136), Hamedan (Beigmohammadi *et al.,* 1391/2013: 128, 131, fig. 5), Kermanshah (Shidrang, 1386/2007: 55), Azerbaijan (Mohammadi Qasrian & Naderi, 1386/2007: 62, fig. 2, 4), and other regions variously dated from the Bronze and Iron Ages to the historic periods and the Middle Ages. Contrary to the petroglyphs that represent an enormous amount of dog depictions in the hunting scenes, dog representations in the Iranian rock paintings is very rare, with few examples being recorded only(5) in the rock paintings of Kuh Dash area, Luristan, where the animal is shown helping human in hunting mountain goats and cervids, on foot or by horse, using bow and arrows, swords and lances, elements used to date the painted panels from the Early Iron Age to the Sassanian period (Remacle, 2007: 13, fig. 5) with some later additions in Islamic era. The hunter in Takke rock-shelter is portrayed with no specific hairstyle or garment that could be used for dating, but his footwear tipped up at the toes is distinctive and could be compared to several examples in the art of ancient Near East. This type of footwear with turned-up toes, still well in use until 20th century in highlands of Khorasan (Beyhaqi, 1992) and normally made from single piece of leather, frequently depicted in the art of Ancient Near East. This type of footwear is depicted on the Iranian and Mesopotamian glyptic art (e.g. Ward, 1910: 70, fig. 186), as well as on various types of art works of the Hittite Kingdom (Gurney, 1969). Shoes with turned-up toes occur in the Mesopotamian and the Iranian art of the 4th millennium BC. The hunter depicted on the aforementioned small pottery jar of the Late Chalcolithic/Early Bronze Age from Tepe Qabrestan is shown with shoes upturned at the toes (Majidzadeh, 1999: 81, fig. 1). A pair of copper statuettes of a striding horned figure from Iran (or Mesopotamia), one hosed at the Brooklyn Museum and the other at the Metropolitan Museum of Art showing a male figure, the so-called "mouflon-genie", wearing similar upturned shoes attributed to ca. 3100-2900 B.C (Amiet, 1980, pl. 26; Benzel *et al.,* 2010: 54-55) indicating such shoes have long been existed in the Iranian plateau and the neighboring regions.

Images of mountain-goats in association with or feeding on trees is a favorite theme in the art of ancient Near East, frequently shown on the painted pottery, metal vessels and other media from the Chalcolithic period to the Middle Ages. In particular, the mountain-goat feeding on a tree depicted at Takke (shown in Fig. 8) is resembling the mountain goat painted on a pottery beaker from Shahr-e Sukhte late II-early III (c. 2500 BC), famous for being the world's earliest animation shown on a pottery vessel.

Another interesting aspect of the painted panel in Takke is the unique representation of trees and bushes painted with various shapes and sizes so far never documented in the rock art of Iran and Central Asia, clearly indicating diversity of plant species in the region. Representation of animals on steep footpaths and the plant diversity in the panel could also be interpreted as an attempt to illustrate features of the natural landscape which is a rare phenomenon in the Iranian rock art. The hilly and spare woodland shown on the Takke rock-shelter recalls natural landscape of the region of Bojnord which is part of the Alborz steppe forest ecoregion stretching across northern Iran from Azerbaijan to Northern Khorasan on the border of Turkmenistan (Bobek, 1968: 287).
Such an environment with steep lands and long winters unsuits large scale cultivation but, fosters a wide range of human response including hunting-gathering, semi-nomadic

or transhumant pastoralism, small-scale cultivation of cereals, and growing fruit-trees on the slopes and in the ravines. This mode of subsistence heaves thinner archeological signature compared to permanent sedentary life that possibly explains the sparse ancient settlement pattern across the highland zone surrounding Nargeslou.

It could be assumed that depiction of a hunting scene in Takke rock-shelter demonstrates the continued importance of hunting, possibly along with herding and agriculture in local subsistence of the upland zone of Atrak during the Chalcolithic and Bronze Age.

To sum it up, the rock paintings at Takke rock-shelter seemingly illustrates the primitive man's everyday life, hunting mountain goats, deer, wild boar, and other games in their natural habitats, probably reflecting the actual physical environment and dominant subsistence mode. The absence in the panel of any domesticated animal, except for dogs, and of developed hunting tools such as bow, as well as the lack of any elements indicating a herding or farming economy gives at a first look the impression of a pre and/or early-Neolithic society, but the quality of paintings, its artistic maturity and the lack of actual archaeological evidence indicating pre-Neolithic human presence in the region incline us to suggest a later date for the rock-paintings. Moreover, it is now increasingly evident that over emphasis on the traditional methods such as iconographic, stylistic, and thematic analysis could easily lead to sensational, unsubstantiated claims regarding the age and the concept of rock art (Bednarik, 2002).

Stylistic analysis combined with sparse archaeological data from the region suggest a Late Chalcolithic to Early Bronze Age date range for pictograms of Takke. Obviously, this chronology is provisional and could be revised in future with the application of scientific methods. However, considering the general rarity of pictograms in the corpora of Iranian rock art, whatever date we presume for the rock paintings at Takke, is it undoubtedly an exceptional rock art site, deserving detailed study and urgent physical protection and preservation plans.

**Acknowledgements**

The author would like to thank Prof. Andrzej Rozwadowski from Adam Mickiewicz University in Poznań, Poland, and Dr Marjan Mashkour from French National Centre for Scientific Research (CNRS) for critically reading the manuscript of this paper and providing invaluable comments. All errors and misinterpretations are the author's responsibility.

**Footnote**

1. The "ibex" or mountain-goat is also named *Tau-tokke* by the Tatars of Central Asia seemingly of the same root with *Takke* in Khorasani dilect.

2. In this connection, it is interesting to note that until the beginning of 20$^{th}$ century the horned skull of animals, particularly mouflon, applied on the entrance of traditional houses in certain rural districts of Iran as emblematic of protection against the evil's eyes, indicating the powerful symbolic meaning of the mouflon horns.

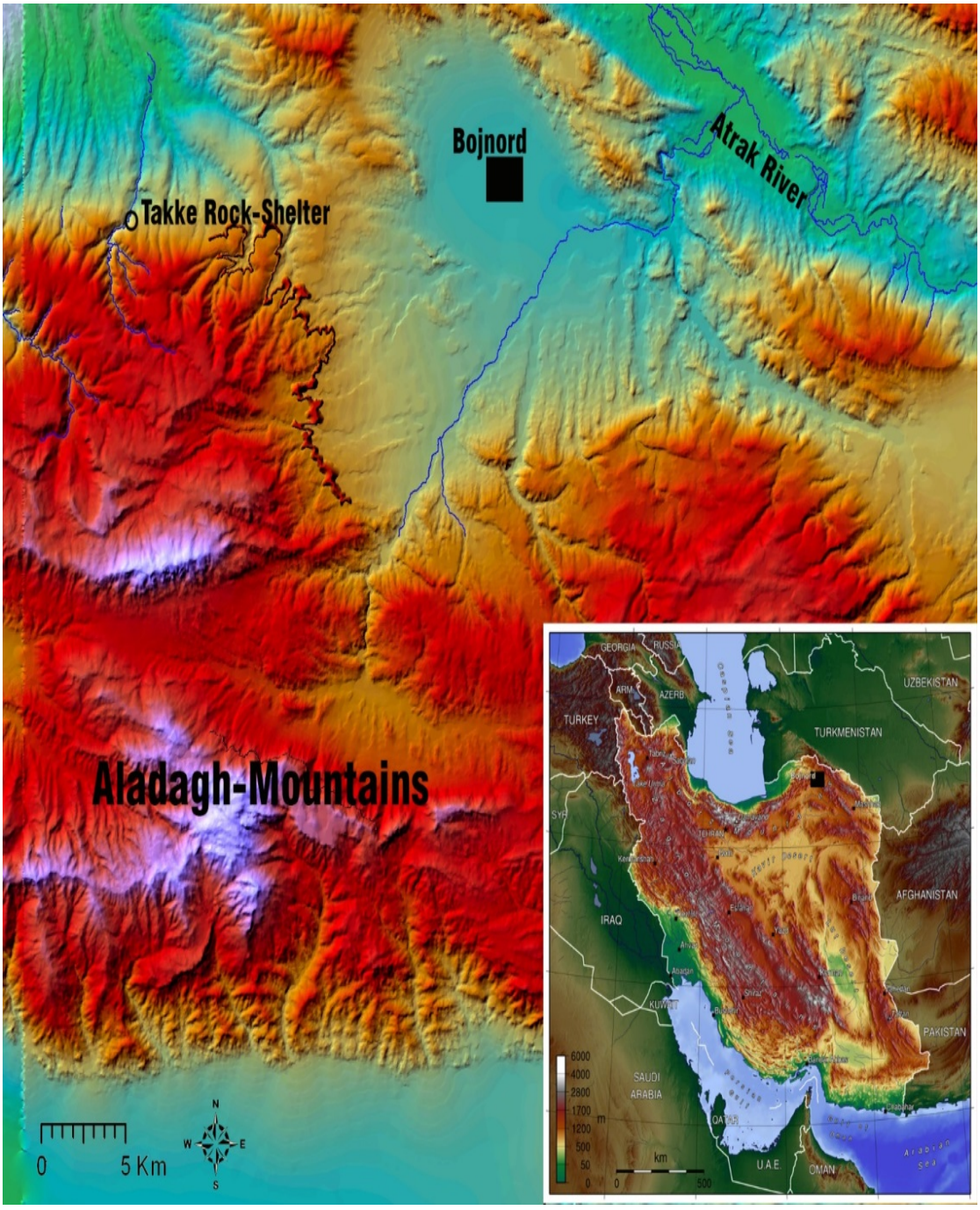
3. Based on ethnographic evidence, Rozwadowski believes that some of the geometric images painted at Zaraut-Kamar may be related to recent ethno-historic times (i.e late 19$^{th}$-early 20$^{th}$ century) rather than the deep past (Rozwadowski and Lymer, 2012: 152; Jasiewicz and Rozwadowski, 2001: 11).

4. Hunting scene is a common theme in Central Asian petroglyphs, sometimes showing dogs assisting human in hunting. For instance, in Tsagaan Salaa II petroglyphic site, NW Mongolia, several dog assisted hunting scene are documented in one case showing a hunter accompanied by 26 dogs attaching a moose, while two of dogs are hold by the hunter with their leashes

fastened to is waist (Jacobson, 2011: 104, 173: no 130) resembling the hunting scene mentioned from Shuwaymis.

5. The nannies suspicious to dog in Tang-e Tadvan and Eshkaft Ahou doesn't show physical characteristics that could be identified as such

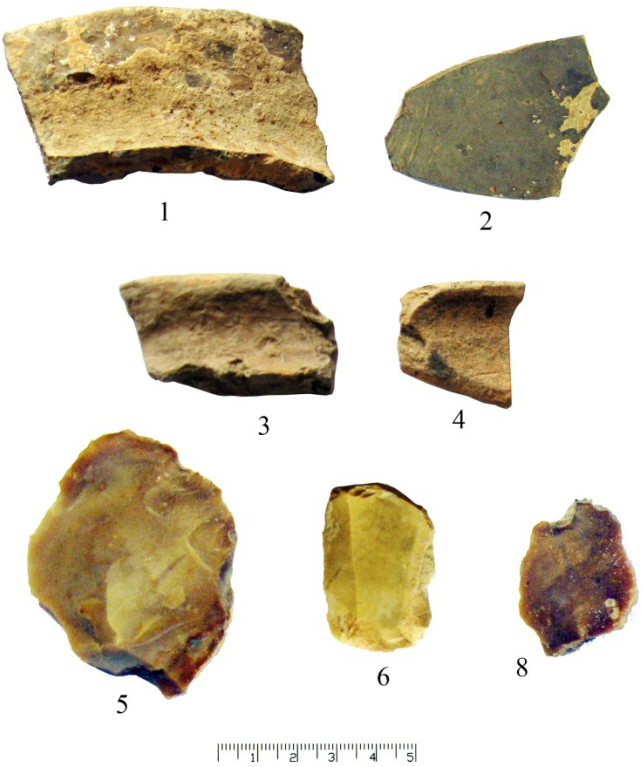
## Attachments



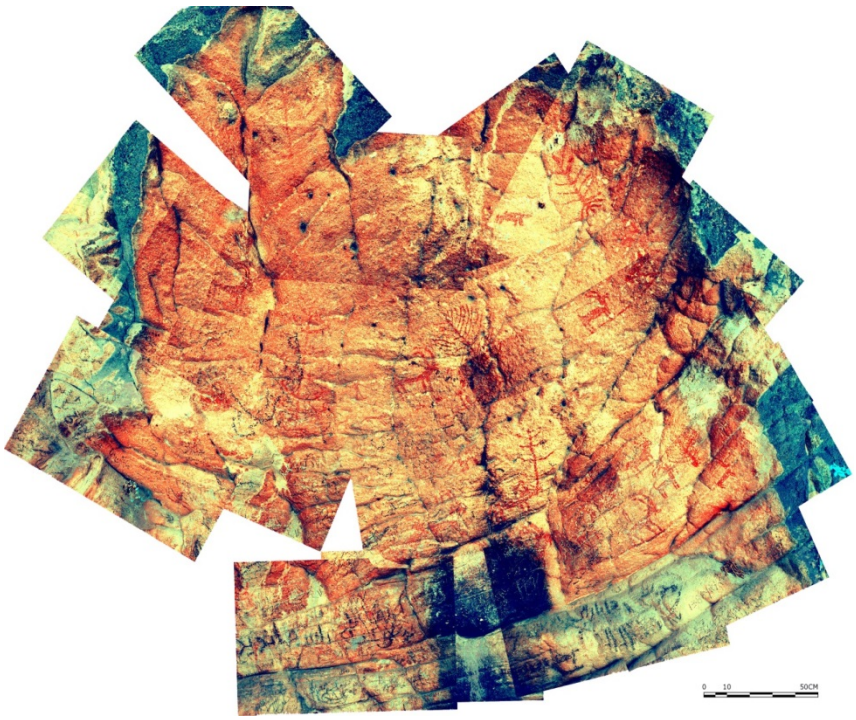

**Figur 1. Location of Takke rock-shelter in northeastern Iran**

**Figur 2. General view of Takke rock-shelter as seen from a grotto on the river gorge**

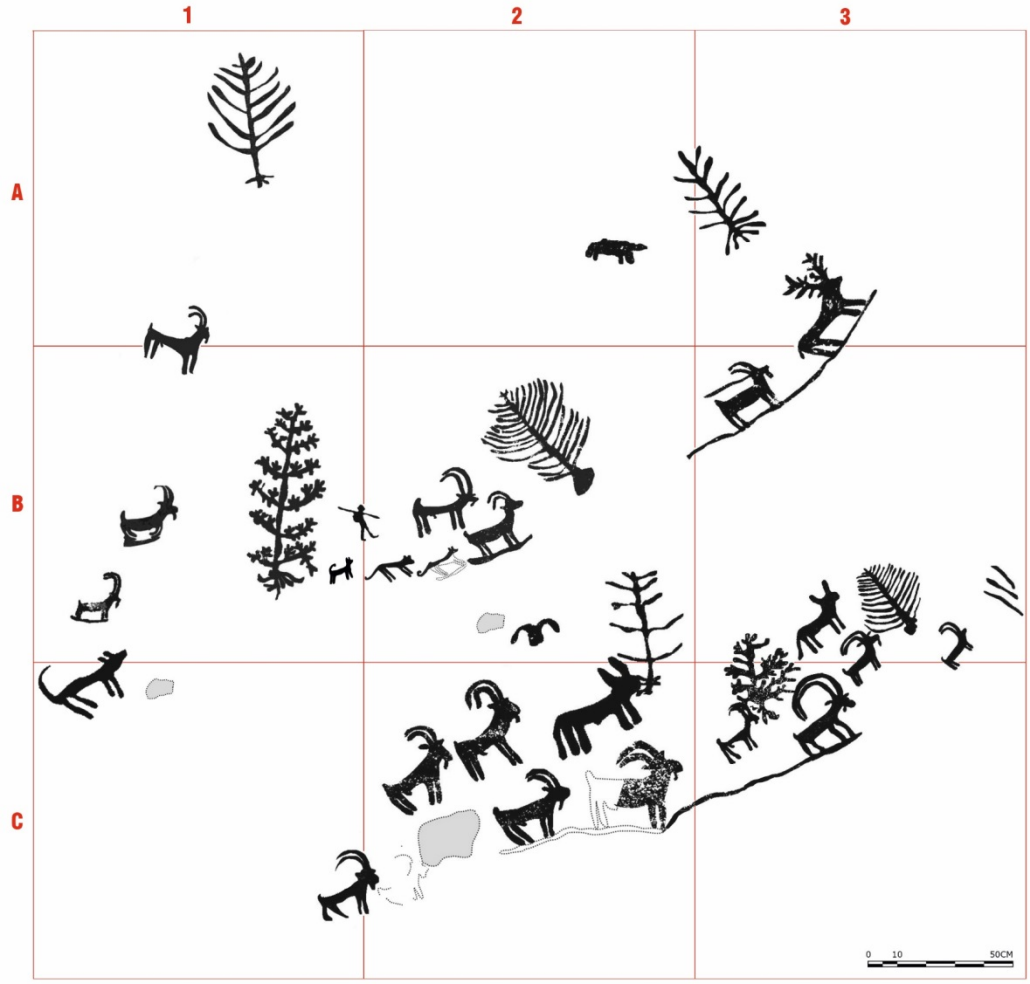
**Figur 3. Rock-shelter of Takke as seen from south west**



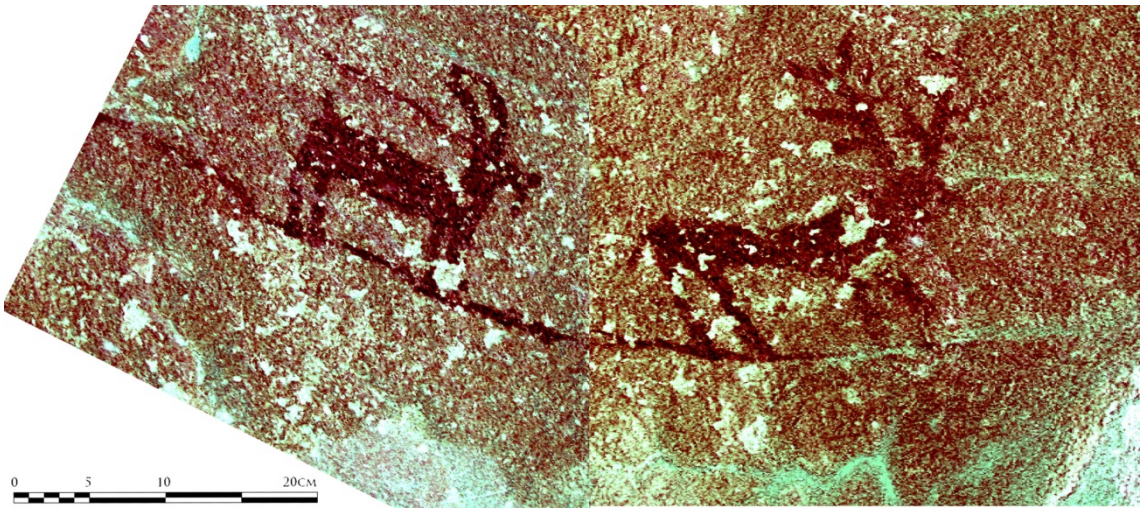

**Figur 4. Pottery sherds and stone tools found in the surroundings of Tekke rock-shelter**



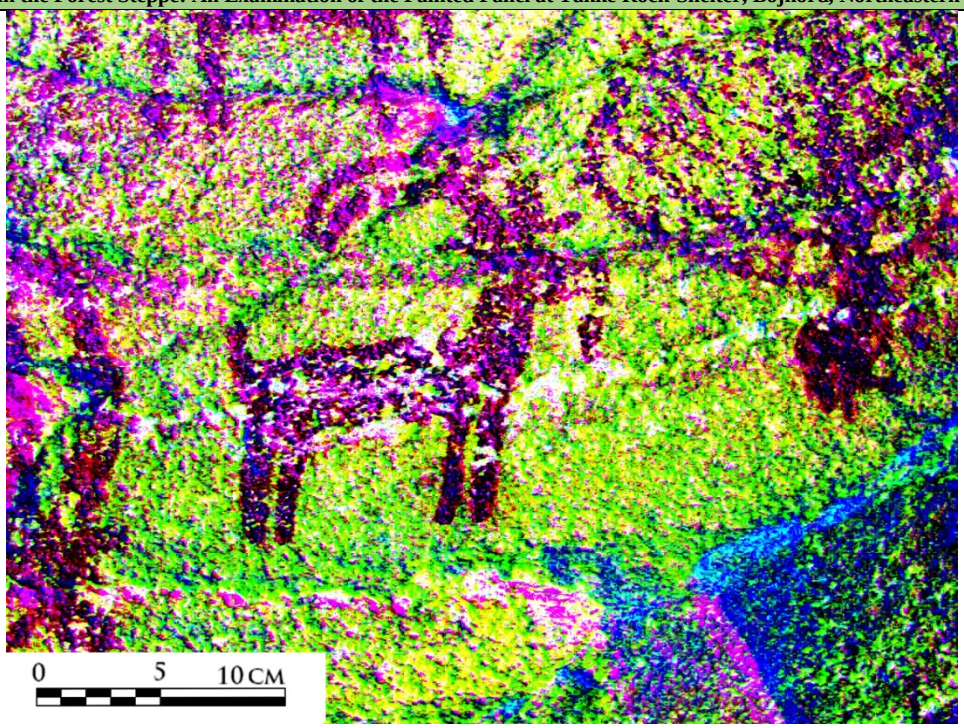
**Figur 5. Composite photo showing rock paintings in Takke rock-shelter (photo enhanced with D-Stretch, Photo by. Ali Razi)**



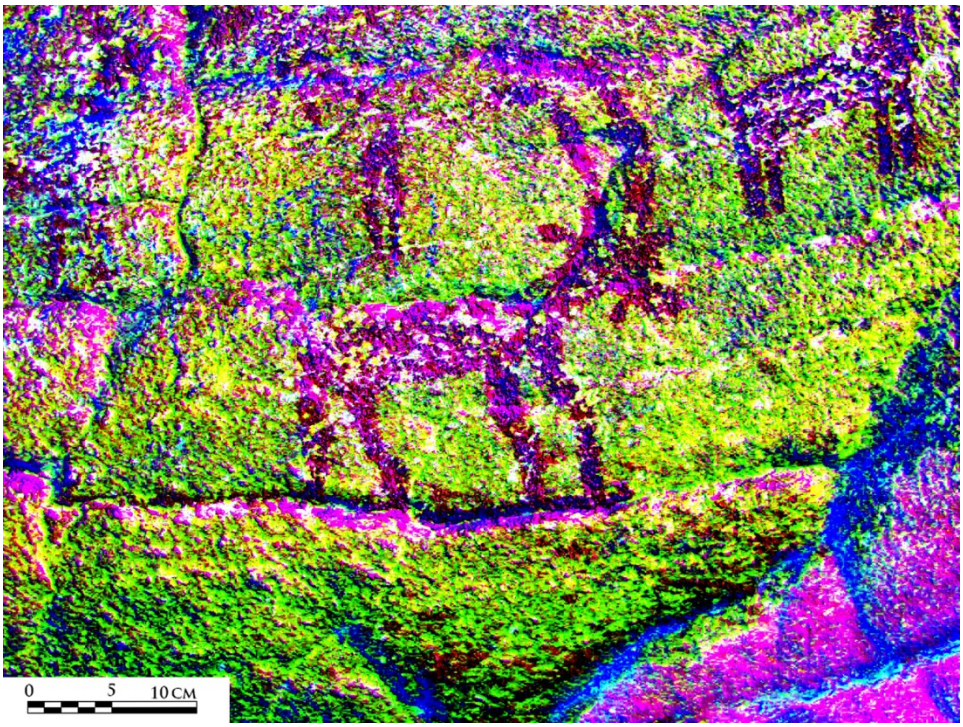

**Figur 6. Drawing of the painted panel in Takke rock-shelter (drawing by Author)**




**Figur 7. A mountain goat and deer walking on track, Takke rock-shelter (photo enhanced with D-Stretch)**




**Figur 8. Mountain goats approaching a bush in Takke rock-shelter (photo enhanced with D-Stretch)**




**Figur9.A mountain goat shown on track moving towards a plant (photo enhanced with D-Stretch)**

## References


Aali. A. 2017. The Pictograms of Agh Dash, Zanjan, North-Westran Iran, Rock Art Research: *The Journal of the Australian Rock Art Research Association* 34 (1): 100-105.

Adeli. J. O. Garazhian, and L. Papoli Yazdi. 1380/2001. Recent pictograms of Homian. *Journal of Anthropology* 2: 84–101 (in Persian).

Alizadeh. A. 2006. *The Origins of State Organizations in Prehistoric Highland Fars, Southern Iran: Excavations at Tall-e Bakun*, Oriental Institute Publications, Book 128: Oriental Institute of the University of Chicago, Chicago, Illions.

Amiet. P. 1980. *Art of Ancient Near East*, New York, Harry N. Abrams Inc.

Bayhaqi. H. A. 1992. Clothing of Khorasan, In: E. Yarshater (eds.), *Encylopaedia Iranica* V (8): 833-836.

Beigmohammadi. Kh. Janjan, M. and Beigmohammadi, N. 1391/2013. Introduction and Analysis of New Found Petrography Motif of B Set of Sofla Arges (Malayer-Hamedan), *Namaye-Bastanshenasi* 2 (2): 121-140 (in Persian with English Abstract).

Bednarik. R. G. 2002. The dating of rock art: A critique. *Journal of Archaeological Science* 29: 1213–1233.

Benzel. K. Graff, S. B. Rakic, Y. and Watts. E. W. 2010. *Art of the Ancient Near East: A Resource for Educators*, New York: Metropolitan Museum of Art.

Biglari. F. A. Moradi Bisotuni and F. Jamshidi. 2007. The pictograms of Cheshme Sohrab Caves, Kermanshah. *Bastanpazhohi* 3: 50–54 (in Persian).

Bobek. H. 1968. Vegetation. In: W. B. Fisher (ed.), *The Land of Iran: Cambridge History of Iran* 1: 280-293. Cambridge: Cambridge University.

Dayan. T. 1994. Early domesticated dogs of the Near East. *Journal of Archaeological Science* 21: 619-632. DOI:10.1006/jasc.1994.1062

Dolffus. G. 1978. Djaffarabad, Djowi, Bendebal: contribution à l'étude de la Susiane au 5e millénaire et au début du 4e millénaire. *Paléorient* 4: 141-167.

Fazel. L. and S. Alibaigi. 2012. Discovery of cave art in the province of Fars, southern Iran. *Rock Art Research* 29(2): 187–190.

Formozov, A. A. 1965. The rock paintings of Zaraut-Kamar, Uzbekistan. *Rivista di Scienze Preistoriche* 20: 63-83.

Ghasimi. T. S. Barfi and R. Noruzi. 2010. Aab Douzo rockshelter, FiruzAbad Fars. *Bastanshenasi-e Iran* 1: 17–26 (in Persian).

Ghasimi. T. Ghasemi, P., Vafaei, A., Ghezelbash, E. 2016. Recent Rock Art Finds from North of Kavar in Fars, Iran. *International Journal of Archaeology* 4(6-1): 8-21.

Ghirshman. R. 1938. *Fouilles de Sialk*. Paris: Paul Geuthner.

Ghorbai. H. Heydariyan, M., 2018. Rock art site of Nakhlestān in Nehbandān, eastern central Iran. *Rock Art Research* 35 (2): 251-253.

Guagnin. M. Perri. A. R. and Petraglia, M. D. 2017. Pre-Neolithic evidence for dog-assisted hunting strategies in Arabia. *Journal of Anthropological Archaeology* 49: 225-236.

Gurney. O. R. 1969. *The Hittites*. Pelican books: London.

Goff, C. 1970. Neglected aspects of Luristan art. *Jaarboek van het Genootschap Nederland-Iran Stichting voor Culturele Betrekkingen* 5: 27–37.

Hemati Azandaryani. E. Qolami, H. Mohammadifar, Y. and Razmposh, A. 2015. Discovering New Rock Paintings at Shmsali and Gorgali Rock-shelters in Kohgiluye and Bouier Ahmad Province, Southern Iran. *Arts* 4: 61-67. doi:10.3390/arts4020061

Izadpanah. H. 1969. Prehistoric paintings in Lorestan Caves. *Bastan Shenasiva Honar-e Iran* 3: 6–13 (in Persian).

Jacobson. E. Kubaev, V. Tseveendorj, D. 2001. *Répertoire des pétroglyphes d'Asie centrale, Fasc. 6: Mongolie du Nord-Ouest Tsagaan Salaa /Baga Oigor*. Paris: Diffusion de Boccard (Mémoire de la Mission archéologique française en Asie centrale 6).

Jasiewicz. Z. and A. Rozwadowski. 2001. Rock paintings — wall paintings: new light on art tradition in central Asia. *Rock Art Research* 18: 3–14.

Karimi. E. 2014. The rock paintings of Kuh-e-Donbeh in Esfahan, central Iran. *Arts* 3: 118–134.

Khan. M. 2013. Rock Art of Saudi Arabia, *Arts* 2: 447-475. doi:10.3390/arts2040447

Khosrowzadeh. A. Aarab, A, and Bahraminia, M. 2017. New Petroglyphs in Zia Abad Hassan Robat Plains (Isfahan Province, Iran). *Mediterranean Archaeology and Archaeometry* 17 (3): 215-224.

Labbaf-Kaniki. R. A. 1376/1998. In Interlocution to the Lakh-Mazar Petroglyphs of Birjand. In. S. M. Mousavi (ed.). *Proceeding of the Archaeology Symposium-Susa*, April 14-17th, 1997: 319-338.

Lioyd. S.1967. *Early Highland peoples of Anatolia*. New York: McGraw-Hill Co.

Majidzadeh. Y. 1999. The oldest narrative pictorial phrase on a pottery vessel from tepe Qabrestan, in the Iranian World, In: A. Alizadeh, Y. Majidzadeh, S. M. Shahmirzadi (eds.). *Essays on Iranian art and archaeology presented to E. O. Negahban*, Iranian University Press, Tehran: 80-84.

Mohammadi Ghasrian, S. Naderi, R. 2007. A survey and study of rock engravings of Khra Hanjiran. Hahabad *Bastanpazhuhi* 2 (3): 61-65 (in Persian).

Mollasalehi. H. Saidpou, M. Atusa, and Bahramzadeh, M. 2007. Archaeology of the rock engravings in mountainous region south of Qazvin. *Bastanpazhuhi* 2 (3): 35-45.

Otte. M. J. Adeli and L. Remacle 2003. Art rupestre de l'ouestiranien. *International Newsletter on Rock Art* 37: 8–12.

Pourbakhshandeh. Kh. 2007. A look at Farahan rock engravings. *Bastanpazhuhi* 2 (3): 46-49.

Remacle. L. M. Lejeune, M., J. Adeli, S. Mohamadi and M. Otte 2006. Art rupestre de Houmian, province de Luristan, Iran. *Anthropozoologica* 41(2): 13–27.

Remacle. L. Adeli, J., Lejeune, M. Mohammadi, S., and Otte, M. 2007. New field research on Houmian rock-art, Lorestan Province, Iran. *Bastanpazhuhi* 2 (3): 9-17.

Rozwadowski. A. and Lymer, K. 2012. Rock art in Central Asia: history, recent developments and new directions, In: P. Bahn, N. Franklin, and M. strecker (eds.). *Rock Art Studies*, News of the World IV, Oxbow Books: 149-163.

Sarhaddi. F. 2013. Pictograph and Petroglyphs of Saravan (Sistan - Baluchistan, Iran). *Ancient Asia* 4 (3): 1-8, DOI: http://dx.doi.org/10.5334/aa.12312.

Sadeghi. K. 1381/2002. A survey of Eshkaft-e Ahouei (Bastak) pictograms, present condition and threats, and a proposal for its conservation. Unpubl. B.A. thesis, College of Relic Conservation, Isfahan University of Art (in Persian).

Schmidt. E. 1937. *Excavations at Tepe Hissar*. Philadelphia: University of Pennsylvania Press.

Shidrang. S. 2007. Maiwaleh: new discovered rock art from Kermanshah. *Bastanpazhuhi* 2 (3): 55-60 (in Persian).

Shahrzadi. D. 1998. Petroglyphs of Arnan Mountain, Yazd, *Archaeological Reports* 1: 133-143 (in Persian).

Shirazi. R. 2016. The petroglyphs of the Kajou Valley, Makran, Iran: Tang Sar, Dehirak and Deskigan assemblages. *Paléorient* 42 (1): 185-198.

Vahdati. A. A. 2010. *Stone Canvases: A preliminary Report on the Study of two Rock Art Complexes in North Khorassan Province, Northeastern Iran.* Tehran-Bojnord, I.C.H.T.O (in Persian with English summary).

Vahdati. A. A. 2011. A preliminary report on a newly discovered petroglyphic complex near Jorbat, the plain of Jajarm, north-eastern Iran. *Paléorient* 37 (2): 177-187.

Vahdati. A. A. 2021 (in print). Newly Found Rock Painting Complexes in the Upper Atrak Valley, Northern Khorasan, Northeastern Iran, to be appear in *Archaeological Research in Asia*.

Vahdati Nasab. H. Rezaei, M. H, Naderi, R & Smith, L. C. 2008. Helak, a Paleolithic Cave Complex Featuring Rock Art along the Northern Shore of Parishan Lake, Fars province,

Iran. *Name-ye Pazuhesgah*: Journal of Research Institute of I.C.H.T.O, Special International Issue: 22 & 23: 91-96.

Tosi. M. and Lamberg-Karlovsky, C. C., 2003. Pathways across Eurasia, In: Aruz J. and Wallenfels, R. (eds.). *Art of the First Cities: the third millennium B.C from the Mediterranean to the Indus*. the metropolitan Museum of Art: New York.

Wilkins. J. Schoville, B. J. Brown, K. S. Chazan, M. 2012. Evidence for early hafted hunting technology. *Science* 338: 942-946. doi:10.1126/science.1227608.

Ward, W. H. 1910. *The seal Cylinders from Western Asia*. Washington, DC.

Zutterman. C. 2003. The bow in the ancient Near East, a re-evaluation of archery from the late 2nd millennium to the end of the Achaemenid Empire. *Iranica Antiqua* XXXVIII: 119-165.

# شکار در استپ جنگلی: بررسی رنگین نگاره‌های پناهگاه صخره‌ای تکه در نزدیکی بجنورد، شمال شرق ایران

***علی اکبر وحدتی**
**دانشجوی دکترای باستان‌شناسی، دانشگاه پاریس ون سوربن، فرانسه.**
**تاریخ دریافت: ۱۳۹۹/۰۷/۲۹؛ تاریخ پذیرش: ۱۳۹۹/۱۲/۲۰**

## چکیده

در مناطق کوهستانی شمال خراسان، چندین مجموعهٔ هنر صخره‌ای شامل چند مجموعه سنگ‌نگاره و رنگین‌نگاره وجود دارد. رنگین-نگاره‌های پناهگاه صخره‌ای تَکه در روستای نرگسلوی عُلیا از توابع شهرستان بجنورد، خراسان شمالی، یکی از چهار مجموعه رنگین‌نگارهٔ شناسایی شده در درهٔ رود اترک است که یک صحنهٔ شکار را به تصویر کشیده است. در این تابلوی نقاشی، مردی به همراه چندسگ شکاری در یک محیط ناهموار و جنگلی بدنبال شکار گونه‌های مختلف حیوانات وحشی است. حیوانات اغلب در بین درختان و روی مسیرهای شیبدارِ مالرو در حرکتند. رنگین‌نگارهٔ تَکه تنها نمونهٔ هنر صخره‌ای در ایران و مناطق همسایه است که در آن صحنهٔ شکار به کمک سگان شکاری در یک چشم‌انداز جنگلی که مشخصهٔ آن وجود گونه‌های مختلف گیاهی و جانوری است، ترسیم شده است. تنوع گیاهی و جانوری و نیز عوارض زمینی خاصی همچون مسیرهای شیبدارِ مالرو را می‌توان تلاشی برای نمایش چشم انداز طبیعی منطقه با تمام خصیصه‌های محلی آن تلقی کرد که در هنر صخره‌ای ایران پدیدهٔ نادری است. براساس ویژگی‌های سبک‌شناختی، این تابلوی نقاشی را می‌توان به اواخر دورهٔ مس و سنگ یا اوایل عصر مفرغ تاریخ‌گذاری کرد. نقوش صخره‌ای تَکه، همچون بیشتر مجموعه‌های هنر صخره‌ایِ شمال خراسان، در مناطق مرتفع کوهپایه‌ای و اقلیمی مناسب زندگی مردمان کوچندهٔ شکارگر، دامپروران و رمه‌داران قرار گرفته و به نظر می‌رسد مربوط به شیوه‌های معیشت نیمه‌کوچ‌نشینیِ دورهٔ پیش از تاریخ باشد.

**واژه‌های کلیدی:** خراسان، رنگین‌نگاره‌ها، دورهٔ مس و سنگ، عصر مفرغ، صحنهٔ شکار، تنوع گیاهی، کوچروها.

*رایانامهٔ نویسنده مسئول: vahdatiali@yahoo.co.uk

Journal of Archaeological Studies
Vol 12, Is 4 - Serial Number 24, Winter 2021

Formerly "the Journal of the Faculty of Literature and Humanities"...
University of Tehran

# The Jalalabad Seal, A Reappraisal

**Massimo Vidale**[1] & **Francois Desset** [2] & **Dennys Frenez**[3]

**(251-263)**

## Abstract

We re-discuss the so-called Jalalabad seal, a well-known cylinder seal dating of the late 3rd millennium BC, reportedly found in Fars. It displays a scene related to a south-eastern Iranian religious or mythological iconography, showing a male supernatural character with snakes spreading out of his body, probably a divinity, and three women bowed for worship or submission in front of him. This scene is combined with an Indus Script signs sequence which connects this seal to a 'family' of short, equally well-known inscriptions in Indus signs recorded on 'Persian Gulf' round stamp seals, notably coming from Bahrain, ancient Dilmun, and southern Mesopotamia. The present discussion is based on a new, more detailed recording of the seal's intriguing iconography, and it brings another brick in the already imposing wall of the of acculturation and cosmopolitism phenomena attested in the Persian Gulf during the second half of the 3rd millennium BC. At that time, Mesopotamian, Dilmunite, Maganite (Oman), Meluhhan (Indus) and Marhashean (Halil Rud) traders were interacting along the then main Near Eastern commercial highway, and a pervasive process of cultural hybridization was in full development. A review of the various Indus iconographic elements currently known in Iranian glyptic is finally proposed, trying to restitute for each of them their respective historical implications.

**Keywords** :Jalalabad cylinder seal, Jiroft, Halil Rud pantheon, Indus inscriptions, 'Persian Gulf' stamp seals**.**

Received: 20 February, 2021; Accepted: 10 March, 2021

10.22059/jarcs.2021.323646.143020
Print ISSN: 2676-4288- Online ISSN: 2251-9297
https://jarcs.ut.ac.ir

1. Corresponding Author Email: mass.vidale@gmail.com.
Dept of Cultural Heritage, University of Padova and ISMEO, Rome
2. CNRS team Archéorient (Lyon, France ; UMR 5133) and University of Tehran.
3. Dept of History and Culture, University of Bologna and ISMEO, Rome.

## 1. Introduction

Previously defined as "a complex case of artistic syncretism" and "expression of the cultural interactions between the regions of eastern Iran and the easternmost provinces, rather than an evidence of trade contacts among Bactria, the Indus Valley, Sistan, Baluchistan and Trans-Elam/Marhashi" (Ascalone 2003), the Jalalabad seal still provides one of the most important evidences of cultural and commercial interactions between south-eastern Iran and the western Indus frontiers (Figs. 1 and 2: NMI 2698, Ascalone 2003: fig. 5; 2008; 2010: figs. 24-25; 2011: n. 6B, 388-390, Tav. LXV; on the context of provenience, see Chakrabarti & Moghadam 1977). However, its complex and unusual iconography is not completely understood yet based on the images of the artefact made available so far, in spite of their good quality.[1] Moreover, the published sketchy drawings of the modern impression combined with the apparently bad conservation state of the cylinder's surfaces, further blur its interpretation. Thus, we decided to digitally re-draw the impression in Fig. 1 at the maximum possible magnification, obtaining the drawing in Fig. 2.

## 2. Base material, description and typological notes

Ascalone (2008: 255) wrote that the seal was made from a green stone, possibly serpentinite, but looking at the way the surface is damaged, the impression is that it bears remnants of the glazed layer distinguishing – like in the Indus and Dilmunite seals – steatite objects fired at high temperatures, presumably after a chemical interaction with applied alkaline substances. At any rate, in absence of analytical data, if a talcose rock remains quite probable, the question remains open. The same author (2008: 255) compares the peculiar form of the cylinder seal with others found in southern Central Asia (Akra, Taip-depe, and probably Sistan). As other examples were discovered at Sibri, not far from Mehrgarh, Pakistan (Shah and Parpola 1991: 412, cat. no. Sb-2 and 413, cat. no. Sb-3), it seems mandatory to ascribe this type of cylinder to a wide sphere of interaction embracing the mid Oxus valley, the northern stretches of Baluchistan, and the central-eastern hinterland of the Iranian Plateau (on the existence of such phenomenon, see also Vidale 2018; Frenez 2018: 16-17). As we shall show below, the Indus characters further expand this network of links to the shores of the Persian Gulf.

## 3. Iconography

The round base of the cylinder opposed to the handle is relatively well preserved and shows the head in profile of a bearded male individual (Fig. 1,1). The carving is of outstanding quality and gives the impression that it was meant to identify a precise imaginary or real character. Hair and beard seem to be carved with continuous traits that follow the contour of the face. The profile, particularly for the rendering of the beard, may be perhaps compared with those of human headed bulls fighting a hero in a cylinder seal found by S. Salvatori on the surface of site 1220 in the Murghab delta,Turkmenistan.[2] The hair dress is completed on the front by what could be a crown, a fillet, or a horizontal braid.

While the eye, nose and chin are worn and scarcely legible, the ear, lips and orbital arcs, deeply carved with simple lines, are perfectly recognizable and assist the eye to immediately perceive the image. Left of the profile, one sees a less preserved, more problematic element consisting of an elongated, perhaps winding feature, which might have been entirely covered with oblique segments. It is not to be excluded (but far from certain) that it represented a snake, a hypothesis that, at least, would match with the characterization of the main figure carved on the cylinder. On the other hand, this

feature might also recall a kind of braid visible on rear of the head, also shown in profile, of a hybrid creature carved on a white stone stamp seal from Tepe Yahya IVB (Pittman 2001: Fig. 10.57). The question remains an open one.

As remarked by previous scholars, the main personage on the Jalalabad seal (Fig. 2,2) is an imposing supernatural anthropomorphic entity, shown frontally, who wears a long gown covered with sequences of vertical traits, changing into or emitting a terrifying group of snakes or dragons. There are no obvious indications of gender, but the gown and bared chest, as opposed to the entire dress of the other personages, hint to a male entity. Moreover, in the art of 3rd millennium BC south-eastern Iran, the supernatural personage who grabbles snakes, or generates them from the back, sometimes bearing a bull head cap, is consistently male.[3]

Two of the reptiles, the most prominent, are symmetric transformations of his arms, and turn back to open their fangs towards the head of the figure. Below, one sees what is left of four superimposed snakes on the left, and as many on the right – probably imagined as springing from the back, which bring the number of the creatures thus generated at least to ten (further below, to the right, there are other poorly preserved carvings or cracks of more difficult interpretation). The head of this entity, seen in profile, is badly damaged and little can be said about it. Its setting on the torso, however, seems eccentric, possibly due to the original existence a poorly preserved feature immediately to the left, which might have been a bird (but this remains highly speculative).

A row of three other personages (Fig. 2,3), bowing in respect or worship of this monster epiphany, in contrast, are most likely females. Although the surviving details are not fully clear, the dress of these three personages was probably rendered with the fine lozenges that often qualify the robe as made with the *kaunakes* so frequent in the art of the Oxus or BMAC civilization (Vidale 2017: 98-166). The first one from right lets loose her long hair down to the ground, in a very explicit gesture of submission that, as far as we know, has no comparisons in the iconographic repertories of the ancient Near East and Middle Asia. In front of the second and behind the third feature, two stylized ‘tulip’-like objects with three upper projections, or perhaps pomegranates, are possibly represented as offerings. Above the back of the central bending figure there is a well preserved eight-rays star.

Problems, however, affect the interpretation of the last and third (from the right) personage of the row (Fig. 2,5). Previous interpreters seem to have considered the last image at left as a single standing personage in frontal view with open arms. In contrast, we propose that the torso with open arms belonged to an unfinished carving which pre-existed that of the three bowing women. This would also explain why this anthropomorphic standing element has no head (its place seems to be covered by the right leg of the last Indus ‘man’ sign of the inscription above). Unfortunately, details are not clear, and at present it is not possible to substantiate our hypothesis, from which the graphic reconstruction in Fig. 2 is inspired.

The divine character represented in the Jalalabad seal is to be related to the male divinity sitting on a chair/throne with snakes emanating from shoulders preserved on two other seals (in the Foroughi collection and in the Louvre/formerly in the Bailey collection) and the kneeling masculine character with snakes emanating from his arms and a bull head from his head (and ‘tulips’) in the Rosen seal[4]. The three bending women in the Jalalabad seal could be compared to the three standing ones in front of the

god in the Bailey collection seal, while a bird (maybe on the shoulder of the god in the Jalalabad seal), a lute (played or not) and tulips seem to be regularly associated to this divinity.

**3. The Indus Inscription**

The inscription (Fig. 3) includes a number of Indus Script signs that may range from three to five. Unfortunately, cracks and flaking do not allow to properly discriminate individual signs from composite signs or ligatures, which are typical of the still undeciphered Indus Script (for an overview of the Indus Script, see Parpola 1994a; Wells 2015). A precise interpretation of the Indus signs engraved on the Jalalabad seal is further complicated by the high occurrence of singletons as initial signs of Indus inscriptions (Wells 2015: 33).

Reading from right to left, which was be the largely prevalent direction (more than 80% of the total cases) in the Indus corpus (Parpola 1994a; Ashraf & Sinha 2018), the initial sign is largely effaced and hardly recognizable. It somehow resembles the so-called ‘fringed V’ sign (Parpola's 1994: 76, fig. 5.1, signs group #311; or Wells 2015: 21, fig. 2.6, sign #740), which usually ends the Indus inscriptions in the left terminal position. If so, the direction of the inscription would be from left to right, therefore resulting relatively anomalous. However, as B.K. Wells (2015: 124-125, tab. AII.3) clearly demonstrated, even minor graphic variants of this sign (#312 / #741 rather than #311 / #740) resulted in different preferred positions within the signs string.

The second sign from the right, featuring two long vertical strokes, could likely be Parpola’s #148 / Wells’ #32. This sign in quite frequent in the Indus corpus and on seals it usually occurs in middle positions.

The third sign from the right seems a variant of Parpola’s #13 / Wells #90, the so-called ‘man’ sign. This sign presents a great number of variants and ligatures with other Indus signs. Thus, if combined with the preceding long vertical strokes, they may form a single sign similar to Parpola’s #33 / Wells’ #142 but with two strokes, or even to Parpola’s #41 / Wells’ #111. Unfortunately, cracks and flaking do not allow to reliably interpret some short strokes in the lower part of the sign as active components of the inscription or surface damages.

The last section of the inscription is badly eroded but the remaining parts of one or two Indus signs, respectively three short vertical strokes and a man, suggest the possible occurrence of the low frequency composed sign Parpola’s #42 / Wells’ 112, or a variant of Parpola’s #31 / Wells’ 145 with three short vertical strokes only. Alternatively, the ‘man’ sign Parpola’s #13 / Wells #90 may be a separated sign from the three short vertical strokes of Parpola’s #130 / Wells’ #3.

Despite some uncertainty in the reading of a few signs, the most evident and undeniable feature of the inscription is the co-occurrence of different variants of the ‘man’ signs. In this light, according to S.T. Laursen (2010: 117-118, cf. Parpola 1994b and Vidale 2004: 265; 2005: 156–157):

Asko Parpola made a small, but important comment on the significant fact that whereas ‘twins’ signs...begin inscriptions in a mere three texts in the Indus Valley, they do this in as many as four inscriptions in the Near East... Parpola’s observations were later elaborated upon by Vidale who argued that the general abundance of variants of the ‘twins’ and ‘man’ related signs in the western seals may well testify to the presence of patronymic components in these inscriptions. Vidale has demonstrated the relative

high frequency of these signs in the inscriptions previously found to be non-Harappan by Parpola.

The fact is that, from a strict epigraphic viewpoint, the sequence of Indus Script signs on the Jalalabad seal NMI 2698 could well belong to the Bahrain group of Persian Gulf round seals inscriptions, as compiled in Laursen 2010 and 2020 (Fig. 4). The inscription, for the same characters, also recalls that of the so-called McMahon fragment of a steatite cylinder seal, BM 1960,0718.1.1 belonging to a group of "Nine seals and four beads collected in Seistan and Swat by General Sir Henry McMahon and presented by his grand-daughter Mrs Evans-Gordon".[5] A provenience from Sistan, of course, is more probable than that from Swat.[6]

## 4. Conclusions

Studies by Holly Pittman, the authors and other scholars, at present, attempt at analytically defining the iconographic identities of the presumed deities which appear on the Jiroft (Marhašean?) corpus of carved chlorite artefacts, as well as on the glyptic records of the Kermani and Halil Rud areas. Another important source of information lies in a group of copper and even silver statuettes, presumably coming from illegal excavations, whose stylistic features recall more or less closely the Halil Rud or Jiroft collections. These artworks, in general, unfortunately have no context and are not accessible to scientific exams, so that their value, at present, is limited. In a broad sense, the statuette of a woman character carrying a jar found at Shahr-i Sokhta (Tosi 1983) might belong to the same production; as well as another statuette (a female personage strangling a snake rolled around her waist) recently confiscated in the Jiroft area and studied together with Nasir Eskandari and other colleagues (Eskandari *et al.* 2021).

Undeniably, the various iconographic spheres, at least at present, do not overlap or match easily. The main areas of uncertainty are the various hybrid figures which appear on the chlorite objects (the bovine/human/lion/raptor bird hybrids), their relationships with less preserved and much smaller images on seals and seal impressions, where the animal reference may be rather expressed by objects/icons appearing on the heads (scorpion, bull's horns, bird) and, above all, the changing relationships between male identities and snakes. How far, in fact, the reptiles emerging from shoulders and those grabbed in heralding postures belong to similar or related ideological projections? All this requires further published information and a much wider discussion. The focus of this paper is on the seal itself and its meaning in the framework of the relationships between the early urban worlds of the Iranian Plateau, the Indus valley and possibly, as we have seen, with the Persian Gulf.

Figure 5 summarizes the information about nine seals and one seal impression found in the Iranian Plateau or along its edge which show epigraphic or iconographic elements of Indus origin. This short list starts from the discovery of three Harappan seals in southern Turkmenistan in Oxus/BMAC contexts (1.-3.) to hybrid products or personal documents that attest quite different forms of socio-economic interactions between individuals linked to the Indus world and local communities of the Iranian Plateau and the Persian Gulf. The choices made by these persons while applying for accreditation in foreign lands range from the formal translation of crucial icons through local materials and manufacturing techniques (4.-9.) - with various degrees of contamination - to the adoption of the Indus writing signs to express names, qualification or roles and beliefs of other communities and cultures.

While the apparent religious meaning of the le Clerq cylinder summarizes in a local style multiple references to a wider and apparently original Indus ideological scenario, the Jalalabad seal shows the impressive cult scene of a local deity, adding written information that linked the owner to the Indus craft interests of the Persian Gulf. The possible historical implications are quite variable and stress the highly dynamical and opportunistic nature of the individual 'careers' and the relative commercial networks extending westwards of the Indus valley communities of interest.

## Footnote

1.We are very grateful to Enrico Ascalone for providing the images we re-arranged in Fig. 1 and made possible the drawing in Fig. 2.

2. Salvatori 2008; Pittman 2014, 2020. For the former, the engravings are a Margianan stylistic translation of an Akkadian seal, while for Pittman, in contrast, the style links the seal to craft workshops of the Halil Rud valley.

3. Contra Winkelmann 2000, who rather sees this supernatural character as an enthroned goddess.

4. For the Foroughi, Louvre(/Bailey) and Rosen seals, see respectively Amiet 1986, fig. 132 no. 10 and 12 and Porada 1988, pl. 1.

5.From the site https://www.britishmuseum.org/collection/object/A_1960-0718-1-1. The seal (Knox 1984) is currently on exhibit at the British Museum.

6.The question also involves a third, well known cylinder belonging to the le Clerq collection (le Clerq and Menant 2018: cat. n. 26), without inscription but carved with coherent Indus images and style, while the two registers and some details (in first place the horned snakes aside the main personage) indicate a south-eastern Iranian milieu.

## Attachments

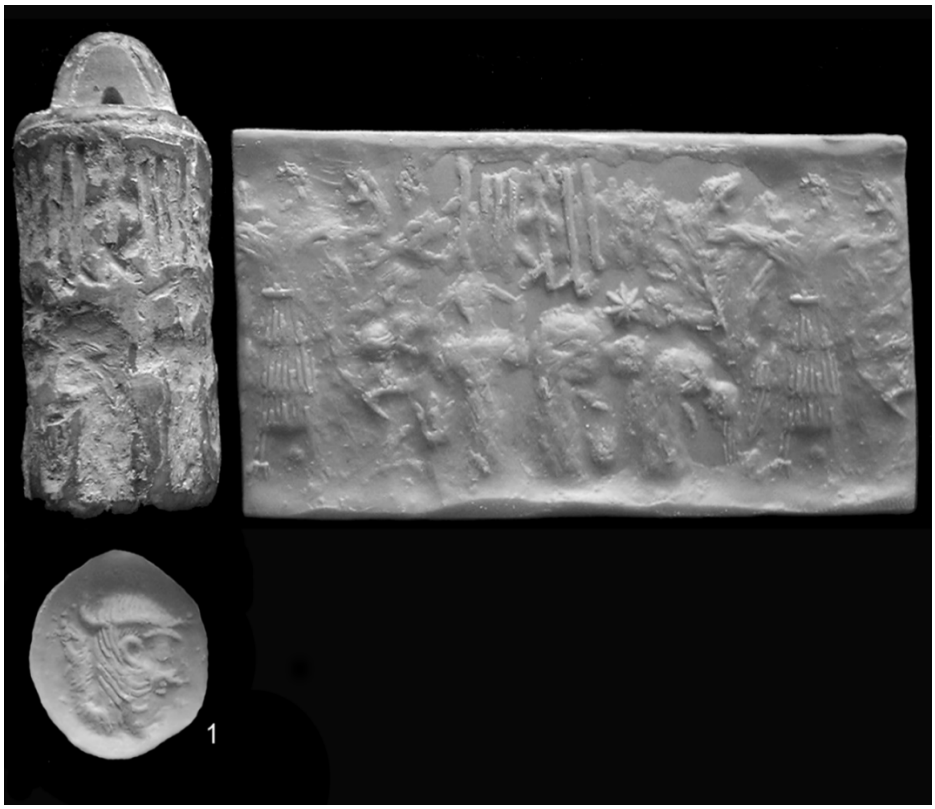



**Figure 1. The Jalalabad seal and its modern impressions (originals kindly provided by E. Ascalone).**


**Figure 2. Graphic interpretation of the iconography of the Jalalabad seal, digitally retraced after the modern imprint of Figure 1. The various elements (1 to 6) are separately discussed in the text.**

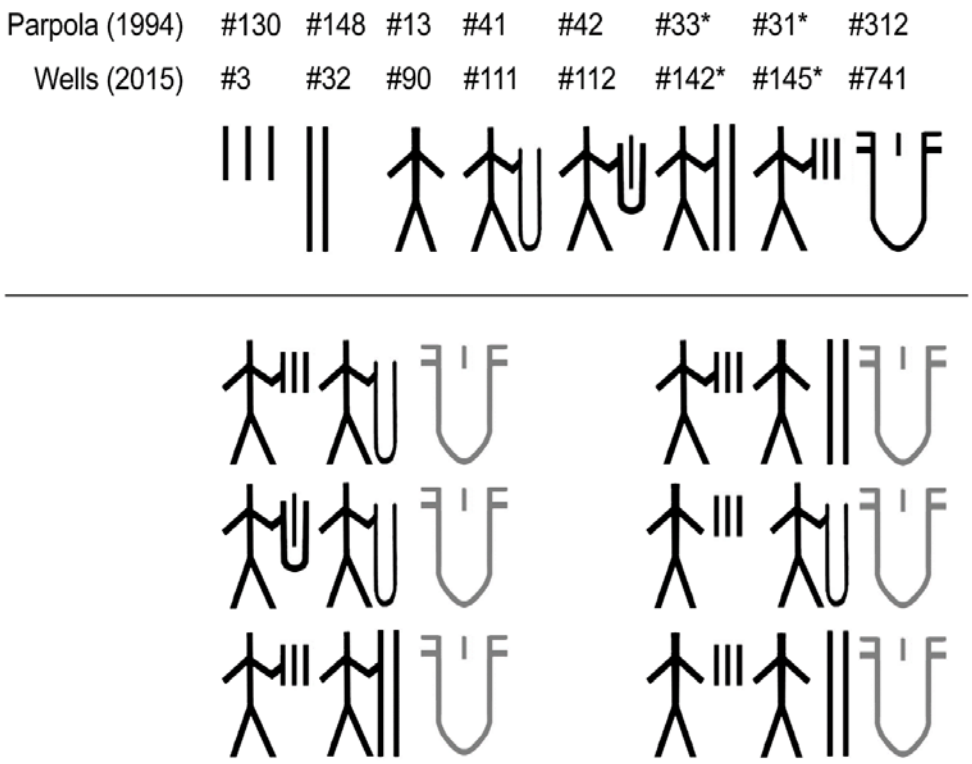



**Figure 3. List of Indus Script signs mentioned in the text (*variant) and possible alternative readings of the inscription on the Jalalabad seal including respectively three, four and five different signs. The sign in grey is uncertain.**

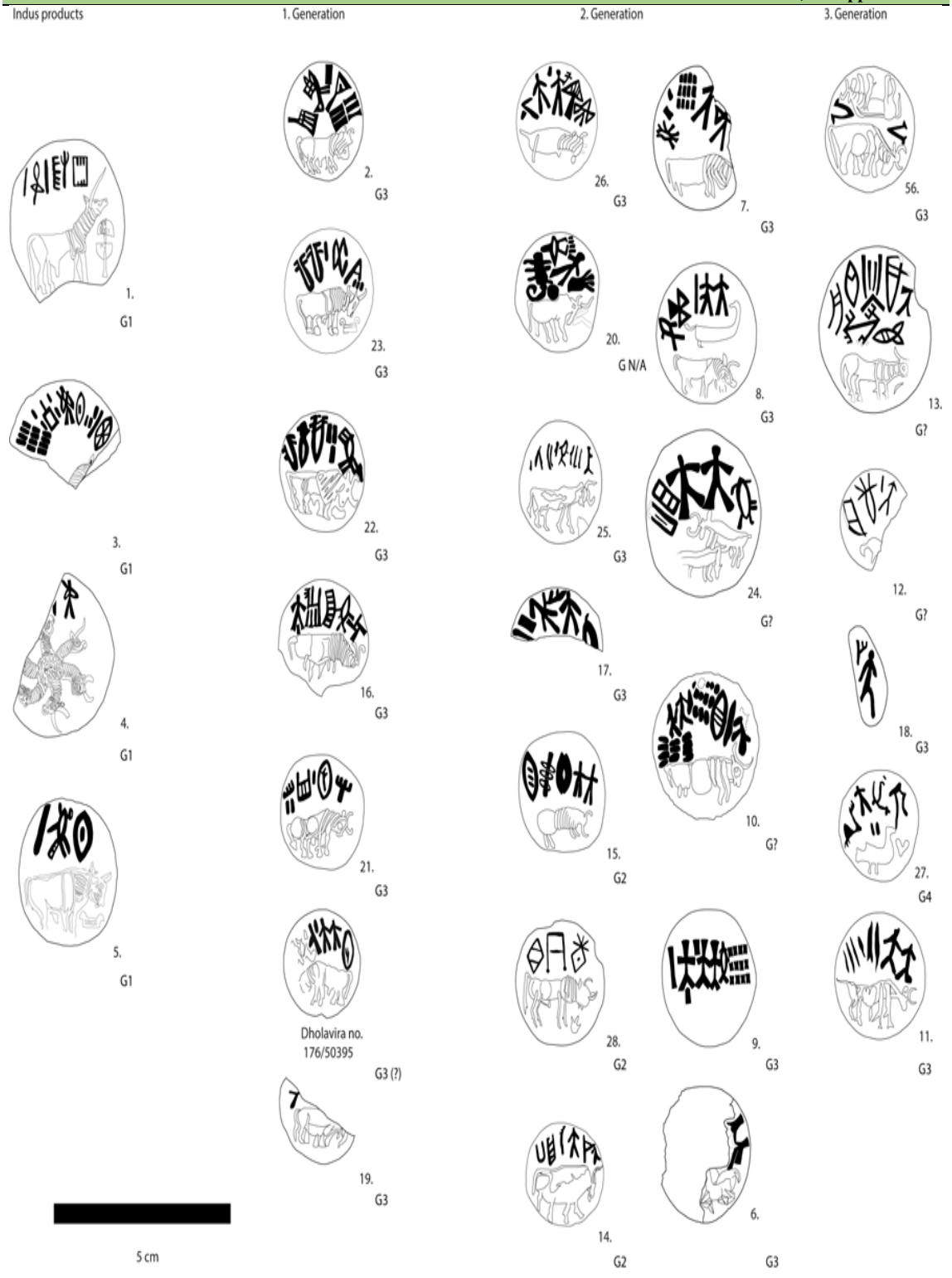



**Figure 4. Note the apparent similarity of some inscriptions of the 2. and 3. generations' Persian Gulf seals, mostly from Bahrain, with the 'man' and 'twins' transformations, accompanied with vertical strokes, to that of the Jalalabad seal (from Laursen 2020). Nr. 28, of course, bears the Linear Elamite inscription V.**

**Table 1. Information and comments on seals and one sealing (4., from Tepe Yahya) with Indus-related features found in the eastern Iranian Plateau. The Omani Indus-related settlements are not included. *: as hypothesized long ago in Ashtana 1979, 1993.**

| Material | Provenience and description | Reference | Interactive aspects and historical implications |
|---|---|---|---|
| 1. Fired steatite | Gonur: square stamp seal with Harappan inscription and elephant | Bakry 2016, Fig. 10 | Seal imported from the Indus, local activity of Indus merchants |
| 2. Fired steatite | Altyn Depe: square stamp seal with two Indus signs | Bakry 2016, Fig. 8 | Seal imported from the Indus, local activity of Indus merchants |
| 3. Fired steatite | Altyn Depe: square stamp seal with swastika | Bakry 2016, Fig. 8 | Seal imported from the Indus, local activity of Indus merchants |
| 4. Pottery | Tepe Yahya: imprint of an Indus seal on a sherd, with a transformed 'man' sign | Pittman 2001, Fig. 10.63 | Import of the pot? Local activity of Indus craftsmen or merchants? |
| 5. White marble | Konar Sandal South: hybrid cylinder seal made with local techniques, with transformed Harappan animal icons (zebu, buffalo, unicorn and others) | Vidale and Frenez 2015 | Activity of an Indus-related family in Kermani copper trade?* |
| 6. Copper | Konar Sandal South: hybrid (?) stamp seal with antelope, crocodile and dots (these latter unusual in Indus specimens) | Madjidzadeh and Pittman 2008, Fig. 28, and b | Similar seals circulated in the Persian Gulf. Activity of an Indus-related craft family? |
| 7. White stone (marble?) | Provenience unknown, Ligabue collection. An Indus-like bovid stands above an object with three projections, perhaps a pomegranate (?). This object substitutes a manger. The animal is surmounted by a Linear Elamite inscription of three signs (V) | Caubet 2018, 50 | Made with local techniques, with a transformed Harappan animal icon (gaur) and a name perhaps written in a local language |
| 8. Stone (steatite?) | Unknown provenience. Hybrid cylinder seal, with two-registers: one with an enthroned Harappan deity among horned snakes and a hero fighting tigers; the other with bulls, rhino, markhor and eagle. Style and structure are south-eastern Iranian, the icons largely Harappan | Winkelmann 2020: Fig. 13 (from the le Clerque collection, Paris) | Perhaps made in south-eastern Iran for Indus residents by an immigrant craftsman, or by a local craftsman accustomed to Indus models |
| 9. Fired steatite | Perhaps found in Sistan. The iconography is lost. The Indus inscription contains 'man' signs and vertical strokes. The removal of the upper part of the seal, perhaps with icons, might have been intentional | Knox 1984 | The signs of the inscription point to Bahrain and the Persian Gulf |
| 10. Fired steatite? | Fars, Jalalabad? The type of seal is common in the Oxus/BMAC areas. Scene of worship of a southern-Iranian deity by three women. Iconography and style are local, the inscription is in Indus signs but possibly expresses a language spoken in the Persian Gulf | Chakrabarti and Moghadam 1977, Ascalone 2008, this article | Made and used in the context of the trade interaction between Persian Gulf traders in Bahrain and inland settlements, by Indus-related traders or acting with Indus investments |

## Refrences


Amiet. P. 1986. *L'âge des échanges inter-iraniens, 3500-1700 avant J-C*, notes et documents des Musées de France 11, Editions de la réunion des musées nationaux, Paris.

Ascalone. E. 2003. L'indigeno ed il forestiero: elaborazione di nuovi percorsi culturali integrativi tra seconda metà del III e inizio del II millennio a.C. in Susiana e sul plateau iraniano, *Scienze dell'Antichità* 11, 9-50.

Ascalone. E. 2008. Cultural Interactions among Mesopotamia, Elam, Transelam and Indus Civilization. The Evidence of a Cylinder-Stamp Seal from Jalalabad (Fars) and its Significance in the Historical Dynamics of South-Eastern Iran, in H. Kühne et al. (eds.), *Proceedings of the 4th International Congress on the Archaeology of the Ancient Near East*, Berlin 28.03-04.04 2004. Wiesbaden, 255-276.

Ascalone. E. 2011. *Glittica Elamita dalla metà del III alla metà del II millennio a.C. Sigilli a stampo, sigilli a cilindro e impronte rinvenute in Iran e provenienti da collezioni private e museali*, Roma.

Ashraf. M.I. and S. Sinha.2018. The "handedness" of language: Directional symmetry breaking of sign usage in words. *PLoS ONE* 13(1): e0190735. https://doi.org/10.1371/journal.pone.0190735

Ashtana. S. 1979. Harappans Interest in Kirman, *Man and Environment* 3, 55-60.

Ashtana. S. 1993. Harappan Trade in Metals and Minerals: A Regional Approach, in G. Possehl (ed.) *Harappan Civilization: A Recent Perspective*. 2nd edn., Oxford & IBH, New Delhi, 271-286.

Bakry. A. 2016. Prehistoric Contacts between Central Asia and India, in A. Dubova, E.V. Antonova, P.M. Kozhin, M.F. Kosarev, R.G. Muradov, R.M. Sataev, A.A. Tishkin (eds.) *Transactions of Margiana Arcaheological Expedition. Volume 6. To the Memory of Professor Victor Sarianidi*, Moscow, 422-435.

Caubet. A.F. 2018. *Idols*: *The Power of Images*, Skira, Milan.

Chakrabarti. D.K. & Moghadam. P. 1977. Some Unpublished Indus Beads from Iran. *Iran* 15, 166-168.

Clercq. de L. and J. Menant. 2018. [1888] Vol. 1: *Catalogue Méthodique et Raisonné; Antiquités Assyriennes, Cylindres Orientaux, Cachets, Briques, Bronzes, Bas-Reliefs, Etc.; Cylindres Orientaux. Antiquités Assyriennes* I. Forgotten Books, London.

Eskandari. N. F. Desset. I. Caldana. M. Shafiee, F. Zorzi. M. Vidale 2021. La Déesse entourée par le serpent. A copper statuette from south-eastern Iran (3rd millennium BC), *Iran and the Caucasus*, forthcoming publication.

Frenez. D. 2018. Manufacturing and trade of Asian elephant ivory in Bronze Age Middle Asia. Evidence from Gonur Depe (Margiana, Turkmenistan). *Archaeological Research in Asia* 15, 13-33.

Knox. A. 1994. A New Indus Valley Cylinder Seal, in A. Parpola and D. Koskikallio (eds.), *South Asian Archaeology 1993*, Annales Academiae Scientiarum Fennicae, series A, 271, Helsinki, 375-378.

Laursen. S. T. 2010. The westward Transmission of Indus Valley Sealing Technology. Origin and Development of the Gulf Type Seal and other Administrative Technologies in Early Dilmun 2100-2000 BC, *Arabian Archaeology and Epigraphy* 21, 2, 96-134.

Laursen. S.T. 2020. The Indus Script - through the lens of Dilmun Archaeology, *Studies on Indus Script. Conference on Indus Script Mohenjodaro 2020*, Culture, Tourism, Antiquities and Archives Department, Government of Sindh, 229-245.

Meier. D.M.P. M. Vidale. 2013. The "Man with Serpents" Revisited. On a Pin from the Bronze Age Site of Shahdad (Kerman, Iran), *Iranian journal of archaeological studies* 3, 1-9.

Parpola. A. 1994a. *Deciphering the Indus Script*. Cambridge University Press, Cambridge.

Parpola. A. 1994b. Harappan inscriptions: An analytical catalogue of the Indus inscriptions from the Near East, in F. Højlund & H.H. Andersen ( eds.), Qala'at al-Bahrain, Volume 1 : The Northern City, Jutland Archaeological Society, Aarhus, 304-315.

Pittman. H. 2001. Glyptic art of Period IV, in D. Potts, *Excavations at Tepe Yahya, Iran, 1967-1975: The Third Millennium*, American School of Prehistoric Research Bulletin 45, Peabody Museum Press, Cambridge, 231-268.

Pittman. H. 2013. New Evidence for Interaction between the Iranian Plateau and the Indus Valley: Seals and Sealings from Konar Sandal South, in S. A. Abraham, P. Gullapalli, T. P. Raczek and U. Z. Rizvi (eds.) *Connections and Complexity. New Approaches to the Archaeology of South Asia*, Routledge, Walnut Creek, C.A., 63-89.

Pittman .H. 2014. Hybrid Imagery and Cultural Identity in the Bronze Age of Exchange: Halil River Basin and Sumer meet in Margiana, in C.C. Lamberg-Karlovsky, B. Genito and B. Cerasetti (ed.), *My Life is like the Summer Rose. Maurizio Tosi e l'Archeologia come modo di vivere*, Papers in honour of Maurizio Tosi for his 70th Birthday, BAR International Series 2690, Oxford, 625‑636.

Pittman. H. 2019. Bronze Age interaction on the Iranian Plateau: From Kerman to the Oxus through seals, in J.-W. Meyer, E. Vila, M. Mashkour, M. Casanova and R. Vallet (eds.) *The Iranian Plateau during the Bronze Age: Development of urbanisation, production and trade*, Lyon, MOM Éditions, 267-288.

Porada. E. 1988. Discussion of a cylinder seal, probably from southeast Iran, *Iranica Antiqua* 23, 139-143.

Salvatori. S. 2008. A New Cylinder Seal from Ancient Margiana: cultural Exchange and Syncretism, in S. Salvatori, M. Tosi and B. Cerasetti ( ed.), *The Bronze Age and Early Iron Age in the Margiana Lowlands: Facts and Methodological proposals for a Redefinition of the Research Strategies*, BAR International Series 1806, Oxford, 111‑118.

Shah. S. G. M. and A. Parpola. 1991. *Corpus of Indus seals and inscriptions. 2: Collections in Pakistan*. Annales Academiae Scientarum Fennicae, Ser. B, Tom. 240,Memoirs of the Department of Archaeology and Museums, Government of Pakistan, Vol. 5. Suomalainen Tiedeakatemia, Helsinki.

Tosi. M. 1983. A Bronze Female Statuette from Shahr-i Sokhta: Chronological Problems and Stylistical Connections, in M. Tosi (ed.) *Prehistoric Sistan 1*. Istituto Italiano per il Medio ed Estremo Oriente, Rome, 303-318.

Vidale. M. 2004. Growing in a Foreign World. For a History of the 'Meluhha Villages' in Mesopotamia in the 3rd Millennium BC, in A. Panaino and A. Piras (eds.), *Melammu Symposia 4: Proceedings of the Fourth Annual Symposium of the Assyrian and Babylonian Intellectual Heritage*.

Vidale. M. 2005. The Short-Horned Bull on the Indus Seals: A Symbol of the Families in the Western Trade?, in U. Franke-Vogt and H. Weisshaar (eds.), *Proceedings of the Seventeenth International Conference of European Association of South Asian Archaeologists (7-11 July 2003, Bonn)*, Aachen, Linden Soft, 147-158..

Vidale. M. 2017. *Treasures from the Oxus: The Art and Civilization of Central Asia*, I.B. Tauris, London.

Vidale. M. 2018. A "Priest King" at Shahr-i Sokhta?. *Archaeological Research in Asia* 15, 110-115.

Vidale. M. 2020. An Informal Comment on The Decipherment of the Indus Script, *Studies on Indus Script. Conference on Indus Script Mohenjodaro 2020*, Culture, Tourism, Antiquities and Archives Department, Government of Sindh, 229-245.

Vidale .M. and D. Frenez. 2015. Indus Components in the Iconography of a White Marble Cylinder Seal from Konar Sandal South (Kerman, Iran). *South Asian Studies* 31, 1, 144-154.

Vidale. M. and N. Eskandari. (ND) The Jiroft Civilization vs. the Indus Cultural Tradition: Materials for a Preliminary Assessment, Forthcoming publication.

Wells. B. K. 2015. *The Archaeology and Epigraphy of Indus Writing*. Archaeopress, Oxford.

Winkelmann. S. 2000. Intercultural Relations between Iran, the Murghabo-Bactrian Archaeological Complex(BMAC), Northwest India and Failaka in the Field of Seals, *East and West* 50, 1/4, 43-95.

Wright. R. 2016. Konar Sandal South, Nindowari and Lakhan Jo Daro - Beyond the Limits of a Known World, in V. Widorn, U. Franke and P. Latschenberger (eds.) *Contextualizing Material Culture in South and Central Asia in Pre- Modern Times. Papers from the 20th conference of the European Association for South Asian Archaeology and Art, held in Vienna from 4th to 9th of July 2010*, Brepols Publishers, Turnhout, 25-36.

# ارزیابی مجدد مهر جلال‌آباد

**ماسیمو وی داله***

**گروه میراث فرهنگی ، دانشگاه پادووا و ISMEO ، رم. ایتالیا.**

**فرانسوا دسه**

**استاد گروه باستان‌شناسی، لیون، فرانسه.**

**دنیس فرنز**

**گروه تاریخ و فرهنگ ، دانشگاه بولونیا و ISMEO ، رم. ایتالیا.**

**تاریخ دریافت: ۱۳۹۹/۱۲/۰۱؛ تاریخ پذیرش: ۱۳۹۹/۱۲/۲۰**

## چکیده

در این مقاله، مهر شناخته شده "جلال آباد" که از منطقه فارس پیدا شده است مورد بررسی قرار گرفته است. این مهر استوانه‌ای مربوط به اواخر هزاره سوم پ.م است و تصویری مذهبی یا اسطوره‌شناختی از جنوب شرق ایران را به نمایش می‌گذارد. شمایل نگاری آن، مردی با قدرتی فراطبیعی، احتمالا خدا، را نشان می‌دهد که مارهایی از بدن آن بیرون زده و سه زن به حالت پرستش در مقابل آن تعظیم کرده‌اند. این مهر همچنین ترتیبی از علائم نوشتاری تمدن سند را به نمایش می‌گذارد که آن را به گروهی از علائم نوشتاری تمدن سند مرتبط می‌کند که بر روی مهرهای مسطح "خلیج فارس" که از بحرین، دیلمون باستان و جنوب بین النهرین بدست آمده اند دیده می‌شوند. بحث این مقاله بر اساس یک شمایل نگاری جدید و دقیق از این مهر است که آجری بر روی دیوار پدیده فرهنگ‌پذیری و جهانشمولی است که در نیمه دوم هزاره سوم پ.م در خلیج فارس وجود داشته است. یعنی زمانی که تجار بین النهرینی، دیلمونی، مگنی (عمانی) و ملوحه‌ایی (سندی) و اهل مارهاشی (هلیل رود) از طریق شاهراه اصلی تجاری خاور نزدیک در ارتباط بودند و یک فرایند فراگیر پیوندزنی فرهنگی در اوج توسعه خود بوده است. در نهایت مروری از علائم متنوع شمایل نگارانه سندی که اکنون بر روی اثر مهرهای ایرانی شناخته شده است ارائه گردیده و سعی شده است تا دلالت تاریخی هر یک از آنها بررسی شود.

**واژگان کلیدی**: مهر استوانه‌ای جلال آباد، جیرفت، معبد هلیل رود، خط سند، مهرهای مسطح "خلیج فارس"

*رایانامه‌ی نویسنده مسئول: mass.vidale@gmail.com

## فهرست مطالب

**۴-۲-۵- ارجاع به وبگاه های اینترنتی**

ـ نام خانوادگی مؤلّف، نام مؤلّف، تاریخ درج مطلب در ویگاه (درون پرانتز)، عنوان مقاله یا اثر (داخل گیومه)، نشانی الکترونیکی وبگاه.

**۵- مثال برای تهیهٔ فهرست منابع**

**ارجاع به کتاب**

White, T.D. 1991. *Human osteology*. New York, Academic Press.

**ارجاع به مقالات مجله‌ها**

Trinkaus, E. 1982. Artificial cranial deformation in the Shanidar 1 and 5 Neanderthals. *Current Anthropology* 23 (2): 198-199.

**ارجاع به مجموعه مقالات**

Gillings, M. 2000**.** Plan elevation and virtual worlds: The development of techniques for the routine construction of hyper real simulations. In: J.A. Barcelo, M. Forte and D. Sander, (eds.), Virtual Reality in Archaeology, BAR int. Series 843: 47-51

**ارجاع به مجموعه مقالات کنفرانس‌ها**

Jones, P., 2004. Identity and preoccupation: skulls cults and the emanation of ideals in the aceramic Neolithic of Cyprus. In: Carter, F.D. and White, R.B. (eds.), *Proceedings of the 2004 BANEA Conference*, 25-27 March 2004, Reading University, England, 148-153.

**ارجاع به پایان‌نامه**

Blom, D.E. 1999. *Tiwanaku regional interaction and social identity, a bioarchaeological approach*, Ph. D thesis, Department of Anthropology, University of Chicago.

**۶- نکات دیگر در باب ارجاع به منابع**

ـ تلفظ اسامی لاتین و نام های دشوار، در متن مقاله با حروف لاتین در مقابل آن ها و داخل پرانتز ذکر شود.

ـ هر توضیح اضافی دیگری غیر از ارجاع به منابع، در پی‌نوشت ذکر شود.

ـ در صورتی‌که مؤلّف منبع اثر، معلوم نباشد، نام اثر جایگزین نام مؤلّف می‌شود.

ـ از شماره‌گذاری یا قرار دادن خط تیره در آغاز مدخل‌های فهرست منابع پرهیز شود.

ـ منابع مقاله به صورت الفبایی و براساسِ نام خانوادگی مؤلّف تنظیم می‌شود؛ منابعی که در پایان مقاله ذکر می‌شود، همان منابعی است که در داخل متن استفاده شده است؛ از این رو اگر منبعی تنها در پایان مقاله ذکر شود، امّا در داخل متن بدان ارجاع داده نشده باشد، از منابع پایانی حذف خواهد شد.

ـ عنوان کتاب‌ها و مقاله‌ها در منابع پایان مقاله به طور کامل ذکر خواهد شد.

ـ منابع غیرفارسی، پس از منابع فارسی و به ترتیب: عربی، انگلیسی، فرانسوی و... آورده شود.

**ـ علائم اختصاری**

| | | |
|---|---|---|
| ج: جلد | ص: صفحه | هـ .ش: هجری شمسی |
| صص: صفحات | د: دوره | هـ .ق: هجری قمری |
| ش: شماره | فو: متوفی | ق. م: قبل از میلاد |
| همان: منبع پیشین | همانجا: منبع پیشین؛ همان جلد و همان صفحه | م: میلادی |

- ابتدای هر بند، با نیم سانتی‌متر تورفتگی شروع شود؛ البته سطر نخستِ زیر هر عنوان نباید تورفتگی داشته باشد.
- نقل‌قول‌های مستقیم بیش از سه سطر، جدا از متن اصلی و با یک سانتی‌متر تورفتگی از هر طرف و با همان قلم ولی با اندازهٔ ۱۱ نوشته شود.
- بخش‌های مقاله با بخش ۱ که به مقدمه اختصاص دارد، شروع می‌شود. عنوان هر بخش اصلی و زیربخش‌ها باید با یک سطر سفید از متن جدا و سیاه (بولد) نوشته شوند.
- شمارهٔ پی‌نوشت‌ها از آغاز تا پایان مقاله باید دنباله‌دار باشد و از افراط در دادن پی‌نوشت اجتناب شود.
- چنانچه نویسنده یا نویسندگان در تهیّهٔ مقاله از منابع مالی سازمان یا نهادهای خاصی استفاده کرده‌اند، در پی‌نوشت به این مطلب اشاره شود.

## ۴- شیوهٔ ارجاع به منابع

- ارجاعات مندرج در مقاله، مستند و مبتنی بر منابع خواهد بود و کوشش می‌شود از معتبرترین منابع استفاده شود.
- هرگاه از مراجعی، چند چاپ موجود باشد، استفاده از چاپ انتقادی اولی و مرجح است.
- در مورد آثار مفقود و نیز منسوب، به منابعی که از آنها یاد کرده و یا توضیحی داده‌اند، ارجاع داده می‌شود.

### ۴-۱- ارجاع داخل متن مقاله

نام‌خانوادگی نویسنده، سال چاپ اثر: شمارهٔ صفحه یا صفحات؛

مثال فارسی: (ملک شهمیرزادی، ۵۴:۱۳۸۸)

لاتین: (Smith 1999: 33)

### ۴-۲- ارجاع پایانی (منابع)

### ۴-۲-۱- ارجاع به کتاب

ـ نام خانوادگی مؤلّف یا نام اشهر، نام مؤلّف، تاریخ نشر (درون پرانتز)، نام کتاب، نام و نام خانوادگی مترجم یا مصحّح، جلد، نوبت چاپ، محل نشر، نام نشر (بدون ذکر واژه «انتشارات»).

-نام کتاب کج (ایرانیک) نوشته می‌شود؛ بنابراین از سیاه کردن (بولد) یا قرار دادن آن در گیومه پرهیز کنید.

### ۴-۲-۲-ارجاع به مقاله

ـ نام خانوادگی مؤلّف، نام مؤلّف، تاریخ نشر اثر (داخل پرانتز)، عنوان مقالهٔ مورد استفاده (داخل گیومه)، نام و نام خانوادگی مصحّح یا مترجم، عنوان اصلی دانشنامه یا فصلنامه و مجله (ایرانیک و بدون ذکر واژهٔ مجلّه)، دوره یا سال انتشار، شماره، شمارهٔ صفحات مقاله.

- عنوان مقاله تنها در گیومه قرار می‌گیرد و کج و سیاه نمی شود.

### ۴-۲-۳- ارجاع به پایان‌نامه

ـ نام خانوادگی مؤلّف، نام مؤلّف، سال دفاع (داخل پرانتز)، عنوان رساله، مقطع دفاع شده، نام و نام خانوادگی استاد راهنما، نام دانشگاه و دانشکدهٔ محلّ تحصیل دانشجو.

- نام رسالهٔ دکتری کج (ایرانیک) نوشته می‌شود و عنوان پایان‌نامهٔ کارشناسی ارشد در گیومه قرار می‌گیرد.

### ۴-۲-۴- ارجاع به نسخهٔ خطّی و اسناد

ـ نام مشهور مؤلّف، نام مؤلّف، نام کتاب یا رسالهٔ خطّی یا نسخهٔ عکسی، شمارهٔ نسخه، محلّ نگهداری.

- در ارجاع به اسناد تاریخی، عنوان سند، شمارهٔ طبقه‌بندی و دسترسی، نام آرشیو و برای میکروفیلم‌ها افزون بر مشخصات کتاب، ذکر شمارهٔ میکروفیلم و محلّ نگهداری ضروری است.

# نشریهٔ مطالعات باستان‌شناسی

نشریهٔ مطالعات باستان‌شناسی دانشکدهٔ ادبیّات و علوم انسانی دانشگاه تهران، نشریه‌ای علمی است که در سال در چهار شماره منتشر می‌شود.

## ۱- ویژگی‌های کلّی مقاله

- مقاله باید نتیجهٔ تحقیقات نویسنده (یا نویسندگان) باشد.
- مقاله نباید در نشریه دیگری منتشر شده باشد و تا اتمام داوری نیز نباید به مجلّهٔ دیگری فرستاده شود.
- چاپ مقاله، منوط به تأیید نهایی هیئت تحریریّهٔ مجله است.
-پذیرش مقاله برای چاپ، پس از تأیید هیئت داوران، به آگاهی نویسنده خواهد رسید.
- مسئولیت مطالب و محتوای مقاله بر عهدهٔ نویسنده (یا نویسندگان) است.
- مجله در ویرایش ادبی و فنی مقاله بدون تغییر محتوای آن آزاد است.
- مقاله نباید از ۲۰ صفحهٔ استاندارد نشریّه بیشتر باشد.
- نام کامل نویسنده، مرتبهٔ علمی، دانشگاه محل تدریس یا تحصیل، رشته تحصیلی، رایانامه و شمارهٔ تلفن نویسنده در صفحهٔ جداگانه‌ای ضمیمه شود.
- ارسال مقاله تنها از طریق سامانهٔ مجلهٔ مطالعات باستان‌شناسی دانشگاه تهران به نشانی https://jarcs.ut.ac.ir امکان‌پذیر است (برای این کار ابتدا باید از طریق گزینهٔ «ورود به سامانه» در سامانه ثبت نام کنید).
- عناوین جدول‌ها با ذکر شماره در بالا و تصاویر، نقشه‌ها، طرح‌ها و نمودارها با ذکر شماره (توضیحات و ذکر منبع) در زیر آورده شود.

## ۲- اجزای مقاله

ـ **عنوان:** نام کلّی مقاله که گویا و بیانگر محتوای مقاله باشد.

ـ **مشخصات نویسنده:** شاملِ نام و نام‌خانوادگی نویسنده، مرتبهٔ علمی، رشتهٔ تحصیلی، دانشگاه محل تدریس و تحصیل.

ـ **چکیده:** شرح جامعی از مقاله با واژه‌های محدود شامل بیان مسئله، هدف، روش تحقیق و یافته های پژوهش. لازم به ذکر است چکیدهٔ مقاله باید ۱۵۰-۲۰۰ واژه (در حدود ۱۲سطر) باشد.

ـ **واژه‌های کلیدی:** شامل سه تا پنج واژهٔ تخصصی است که بسامد و اهمیّت آن در متن مقاله بیش از سایر واژه‌هاست.

ـ **مقدمه:** شامل طرح مسئلهٔ اصلی و هدف پژوهش است؛ در این بخش باید به اجمال، سوابق پژوهشی در حیطهٔ مسئلهٔ موردنظر مطرح شود.

ـ **روش بررسی:** شامل ذکر بسیار مختصر روش نویسنده در پژوهش و ذکر ابداعات وی در این زمینه است.

ـ **بحث و نتیجه‌گیری و تشکّر:** شامل متن اصلی مقاله و بحث و نتیجه‌گیری با روش منطقی، مفید و روشنگر مسئلهٔ مورد پژوهش است و می‌تواند با جدول، تصویر و نمودار و... همراه باشد. در پایان این بخش، نویسنده می‌تواند راهنمایی دیگران را ـ که در نوشتن مقاله مؤثر بوده‌اند ـ یادآوری و از ایشان مختصراً سپاسگزاری کند.

ـ **پی‌نوشت:** در صورت وجود توضیحات ضروری پس از نتیجه می‌آید.

ـ **منابع:** فهرست‌نویسی ارجاعات مقاله بر مبنای شیوه‌نامهٔ مجلّه.

ـ **چکیدهٔ انگلیسی:** چکیدهٔ انگلیسی باید عیناً ترجمهٔ چکیدهٔ فارسی باشد.

## ۳- شیوهٔ تنظیم متن

- مقاله باید بر صفحهٔ کاغذ A4، با قلم (فونت) ب- نازنین و اندازهٔ ۱۳، فاصله بین خطوط ۱٫۱ (single) و در فرمت word نوشته شده باشد. همچنین فاصله از بالا و پایین صفحه ۳/۳۵ سانتی‌متر و از راست و چپ، هر کدام ۳ سانتی‌متر باشد.
- چکیده، واژه‌های کلیدی، منابع، ارجاعات داخل پرانتز، شعرها و هر مطلبی که درون پرانتز بیاید، باید با اندازهٔ ۱۱ نوشته شود.

شمارهٔ استاندارد بین‌المللی: ۹۲۹۷ـ ۲۲۵۱

# مطالعات باستان‌شناسی

**(مجلهٔ سابق دانشکده ادبیات و علوم انسانی)**

**دورهٔ ۱۲، شمارهٔ ۳، پاییز ۱۳۹۹**

**ناشر:** دانشگاه تهران

**صاحب امتیاز:** دانشکدهٔ ادبیات و علوم انسانی دانشگاه تهران

**مدیرمسئول:** غلامحسین کریمی‌دوستان

**سردبیر:** حسن فاضلی نشلی



**مدیر داخلی:** محرّم باستانی

**کارشناس اجرایی:** جواد بذرافشان مقدم

**نشانی:** تهران، خیابان انقلاب، دانشگاه تهران، دانشکده ادبیات و علوم انسانی، دفتر نشریه مطالعات باستان شناسی

**نشانی رایانامهٔ مجلّه:** Jarcs@ut.ac.ir **تلفن و فکس:** ۶۶۹۷۸۸۸۳-۰۲۱ **قیمت:** ۱۰۰۰۰۰ ریال

نشریهٔ **مطالعات باستان‌شناسی** براساس ابلاغیه شماره ۱۸۰۷۳/ ۹۰/۳/۱۱ مورخ ۱۳۹۰/۲/۱۲ کمیسیون بررسی نشریات علمی کشور، وزارت علوم تحقیقات و فناوری دارای درجه **علمی** می‌باشد.

این مجله در پایگاه‌های اطلاعاتی زیر نمایه می‌شود:
پایگاه اطلاعات علمی جهاد دانشگاهی به نشانی اینترنتی: www.sid.ir
پایگاه استنادی علوم جهان اسلام (ISC) به نشانی اینترنتی: www.isc.gov.ir
پایگاه استنادی الریخ (Ulrich) به نشانی اینترنتی:
www.Ulrich's international periodicals directory. (Journal, magazine)


بسم الله الرحمن الرحیم

# Journal of Archaeological Studies

24

ISSN: 2251-9297

Winter 2021 ■ No.4 ■ Vol.12

Table of Contents