



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

Nasir Eskandari¹
(25-55)

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seals from Shahdad excavations at area D (known as industrial area) discovered by A. Hakemi which have been remained unpublished.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



1. Corresponding Author Email Nasir.eskandari@ut.ac.ir. 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.

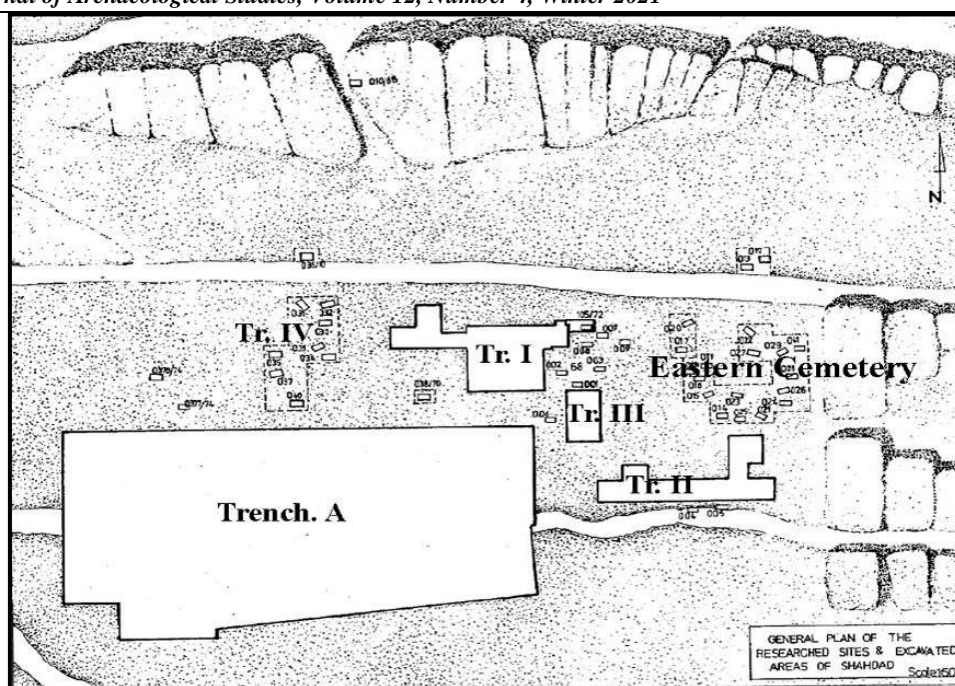


Fig 1: Excavated Areas of Cemetery A of Shahdad (After Hakemi 1997: 45, modified by author)

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 ^v	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 ^v
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

² 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.

³ Each of Graves 187 and 188 includes two graves that were distinguished by letters a & b by its excavator.

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) No.0094. g 013 (Eastern Cemetery) No.0173. g 027 (Eastern Cemetery) No.0112. g 017 (Eastern Cemetery) 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) Miri Qalat III (Besenval 1994: Fig.6.3) Khurab (Stein 1937: Pl.XIII.Kh.B.ii.199) Konar Sandal South (Madjidzadeh 2008:Fig. 24)
No.3505. g 291 (Tr. A) No.2996. g 241 (Tr. A)	Truncated Conical Bowls	Yahya IVB4-1 (Potts 2001: Fig.5.3) Khurab (Stein 1937: Pl.VI.Khur.L.i.276) Mehrgarh VIII (Jarrige et al. 1995: Fig. 5.19.b; 7.25.d-e), Nausharo IV and Dauda Damb (Jarrige 1994: 297) Togolok 1 and 21 (Sarianidi 1986: Fig.12.6; Hiebert 1994a: Fig.4.10)
No.0854. g 091 (Tr. II) 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) Konar Sandal South (Madjidzadeh 2008:Fig. 24) Mundigak III.6 (Casal 1961: Fig.61.141)
No.0218. g 032 (Tr. IV) No.3972. g 327 (Tr. A) No.4395. g 375 (Tr. A)	Hatched Wavy Bands	Yahya IVB (Potts 2001: 8, Fig.1.17) Tell Abraq (Potts 2001: 8, 114, with refs)

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No.3082. g 254 (Tr. A) No.4218. g 354 (Tr. A) No.0219. g 032 (Tr. IV) No.0187. g 029 (Tr. A)	Hatched semicircles	Shahr-i Sokhta III (Lamberg-Karlovsky & Tosi 1973: Fig.56) Mundigak III, IV (Casal 1961: Fig.57.104; Fig.87.359; 97.464.a) Konar Sandal South (Madjidzadeh 2008:Fig. 24)
No.0109. g 016 (Tr. E.A) No.0175. g 027 (Eastern Cemetery) No.1164. g 120 (Tr. A)	Hatched Chain Design	Bampur V (de Cardi 1970: Fig.38.377) 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) No.0110. g 016 (Eastern Cemetery) 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) No.4466. Room10 (D) No.0247. g 034 (Tr. IV) No.1383. g 134 (Tr. A)	Painted Spouted Vessels	Yahya IVA (Lamberg-Karlovsky 1970: Fig.16.p) Shahr-i Sokhta II (Lamberg-Karlovsky & Tosi 1973: Fig.24) Jiroft (Majidzadeh 2003: 159)
No.1056. g 115 (Tr. A) No.0982. g 107 (Tr. III) No.0832. g 088 (Tr. II)	Trough-spouted Vessels	Hissar IIIC (Schmidt 1937: Pl.XLI. H3315); Togolok 21 (Sarianidi 1986: fig.47) Yahya IVC2-IVB5 (Potts 2001: Fig.1.10) Altyn "Burial 281" (Masson 1988: Pl.XL.7) Konar Sandal North (Madjidzadeh 2008:Fig. 27)
No.3104. g 275 (Tr. A) No.3454. g 288 (Tr. A) No.0508. g 058 (Tr. I) No.0117. g 018 (Eastern Cemetery) No.4489. Room 18 (D)	Tubular-spouted Vessels	Yahya IVC2-IVB5 (Potts 2001: Fig.1.10; 4.16.c) Konar Sandal North (Madjidzadeh 2008:Fig. 27) 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) Konar Sandal South (Madjidzadeh 2008:Fig. 23) Khurab burials (Stein 1937: Pl.XIII. Khur. B.ii.198 & 199)

		Miri Qalat (Besenval 1997: Fig.21) Umm al-Nar (Frifelt 1991: Fig.82).
No.0172. g 027 (Eastern Cemetery)	Globular jars decorated with one or more rows of crosshatched triangles	Yahya IVC1 (Potts 2001: Fig.2.12.a; 2.23.c) Mundigak IV (Casal 1961: Fig. 74.243)
No.4442. Room 2 (D)	Relief snake-cordons	Konar Sandal South (Madjidzadeh 2008: Fig. 23) Yahya IVC1-IVB4-2 (Potts 2001: Fig. 2.18); Damin (Tosi 1974: Fig.35) Kulli (Possehl 1986: Fig.XV.Kulli.I.viii.8) Mundigak IV.1-2 (Casal 1961: Fig.79) Umm al-Nar (Potts 2001: 59, with refs)
No.0101. g 014 (Eastern Cemetery) No.0366. g 041 (Eastern Cemetery) No.0683. g 074 (Tr. I) No.4482. Room 13 (D) 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) Takhirbai 3 (Gotzelt 1996, no.872) Mundigak IV (Casal 1961: Fig.87.365) & 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) No.0399. g 047 (B) No.0386. g 045 (B) No.0443. g 052 (C)	Incised/undecorated Narrow-Necked Globular Bottles	Gonur 1 graveyard (Salvatori 1995: G432/2, G.C.7/5) Mehrgarh VIII (Jarrige et al. 1995: Fig.6.22)
No.0068. g 010 (B) No.0066. g 010 (B) No.0375. g 043 (B)	Buff-Ware Globular-Oval Flasks	Gonur South (Sarianidi 1993: Fig.5) Mehrgarh VIII (Santoni 1988: Fig.1)
No.0405. g 048 (C) No.0440. g 052 (C)	Narrow-necked Bottle	Chanhu-Daro (Mackay 1943: Pl.XLI.46-47); Anau (Khlopin 1981: Fig.5.X) Mundigak IV.3 (Casal 1961: Fig.96.456)

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No.0413. g 049 (C)		
No.4438, Room3 (D) No.4456, Room29 (D) No.4465, Room10 (D) No.4497, Room27 (D) 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) Yahya IVB (Potts 2001: 7, Fig.1.6.j) 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 regions⁴ 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

⁴ To compare the ceramics of Shahdad with Central Asia, Paklayan's BA dissertation (2004) was helpful.

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 2nd 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 Shahdad⁵ 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

⁵ Here, the word NO corresponds to the number of object given by Hakemi (1997) and the letter g relates to the word "grave"

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 3rd 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) No.0816, g084 (Tr. II)	Spouted Vessels	Varamin-e Jiroft (Eskandari <i>et al.</i> in press)
No.0071, g010 (B) No.0312, g037 (Tr. IV)	Hemispherical Bowls with trough spout	Hissar IIIC (Schmidt 1937: Pl.LVII.H4883 & 3270) Khinaman (Curtis 1988: Fig.19-20)
No.1011, g111 (Tr. A) No.3934, g325 (Tr. A) No.2576, g212 (Tr. A)	Carinated bowls	Bani Surmah (Bellelli 2002: Tav.16.67); Bani Surmah and D'um Avize (Schmidt <i>et al.</i> 1989: Pl.119.r; Bellelli 2002: Tav.20.113)
No.1044, g114 (Tr. A) No.1759, g161 (Tr. A)	Round-bottomed carinated jars with a raised centre seam	Harappa (Vats 1940: Pl. CXXI.277) Mohenjo-Daro (Mackay 1938: Pl.CXVI.5 & 7)
No.2890, g232 (Tr. A) No.1070, g115 (Tr. A) No.1219, g122 (Tr. A)	Dishes with relief zoomorphic decoration	Hissar III (Schmidt 1937: Fig.112) (Majidzadeh 2003: 156)
No.2420, g203 (Tr. A) No.1701, g158 (Tr. A)	Undecorated dishes with wide lip	Khurab (Stein 1937: Pl.XVIII.Khur.B.i.130, B.i.298) Hissar and Kamtarlan II (Bellelli 2002: Tav.4.7 & 4.8, with refs)
No.0898, g096 (Tr. A) No.0084, g011 (B) No.1441, g139 (Tr. A)	Goblets	Khurab (Stein 1937: Pl.XVIII.Khur.E.i.251). Mohenjo-Daro (Marshall 1931: Pl.CXL.8) Ur (Muller-Karpe 1993: no.1131-1133)
No.1168, g120 (Tr. A) No.1068, g115 (Tr. A)	Pear-shaped vessels with hanging cords	No found somewhere else

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No.0402, g047 (B)	Ornamental axe-heads	Khinaman (Curtis 1988: Fig.1 & 2)
No.0393, g045 (B)		Khurab (Stein 1937: Pl. XVIII.Khur.E.i.258)
No.0302, g036 (Tr. IV)		
No.4302, g363 (Tr. A)		
No.2259, g193 (Tr. A)	Undecorated shaft-hole axes	Yahya IVB5 (Potts 2001: Fig.4.44, p115)
No.2421, g203 (Tr. A)		Damin (Tosi 1970: Fig.17a & 54)
No.2444, g204 (Tr. A)		Susa (Collon1987: vol. I, 96, no.73).
No.1117, g117 (Tr. A)	Pins	Jiroft (Majidzadeh 2003: p155)
No.0573, g063 (Tr. I)		
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 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.

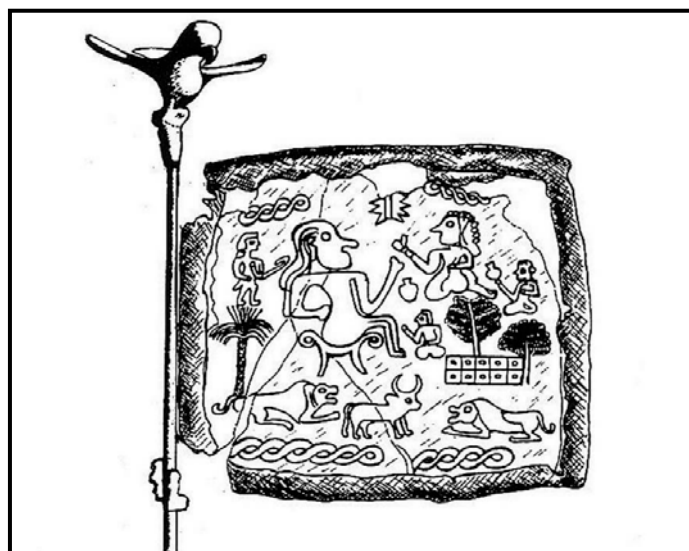
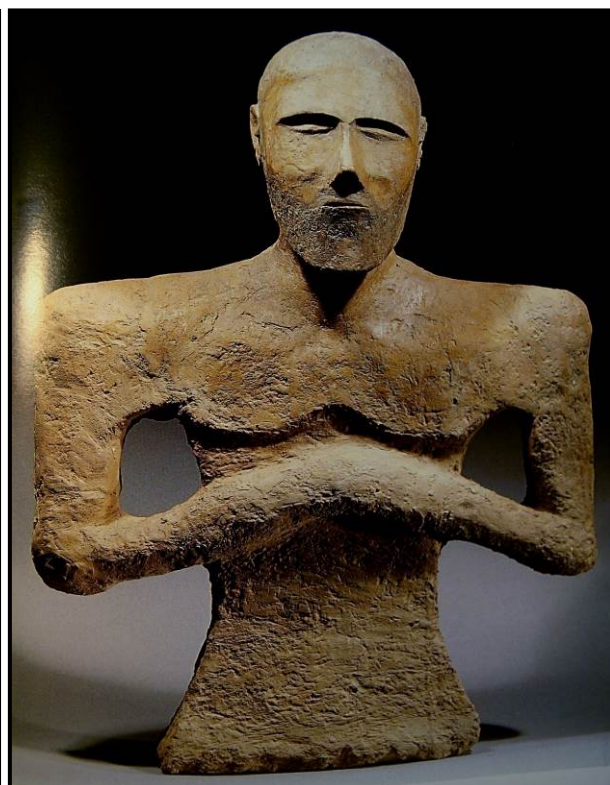


Fig 2: Drawing of the sense of the Standard of Shahdad (After; Hakemi 1997:649)

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	

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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) Shahr-e Sokhta II-III (Lamberg- Karlovsky & Tosi 1973: Fig.49) 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 were 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)

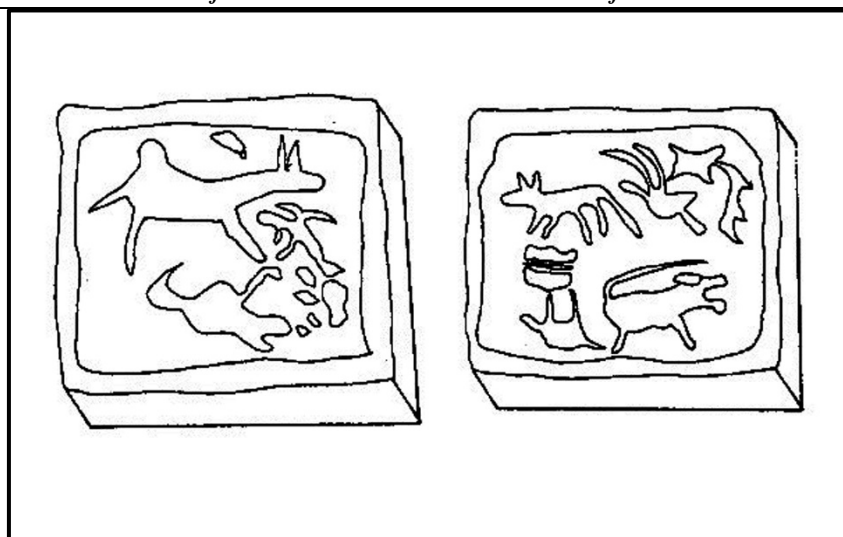


Fig 7: Seal impression of a clay stamp seal from architectural complex excavated by M. Kaboli
(After Kaboli 1997)

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 IV₂ (Identified from surface survey of Shahdad) dates back to 3100-2750 BC. Takab IV₁ (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; III₂ (2400-2200 BC) and III₁ (2200-1900). Takab III relates to the cemetery A, for the graves with the depth of 60 to 240 cm the period III₂ is suggested and for the rest the period III₁. Hakemi suggested the period

Takab II₂ (1900-1700BC) for the graves discovered from the cemetery B and Takab II₁ (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) Graves with the depth of 60-240 cm	2500-2000 BC
	Takab III ₁ (2200-1900 BC) 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.

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نصیر اسکندری*

استادیار گروه باستان‌شناسی، دانشگاه تهران، تهران، ایران.

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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 باستان‌شناختی 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 باستان‌شناسی 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 بخش‌های 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.

واژگان کلیدی: شهداد، شهرنشینی اولیه، عصر مفرغ، گاهنگاری، اشیای تدفینی