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Late Bronze Age Shields from the Bazgir Metal Hoard, Gorgan Plain, Iran

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Abstract

Tappeh Bazgir is one of the most important archaeological sites of the Late Bronze Age in northeastern Iran. At this site, a hoard of 759 Bronze Age copper-alloy objects with an approximate weight of more than two tons was excavated. This find is unique in terms of volume and the extraordinary finds it contained. This archaeological hoard was discovered by chance in 2001, and in 2010 a rescue excavation was carried out at the findspot. This hoard had been buried in the virgin soil and deliberately concealed under a residential floor in the Late Bronze Age. The objects recovered served different purposes; they include agricultural and household implements, tools, ceremonial objects and a variety of weapons. The artifacts were all located next to each other in a pit and had been arranged in a regular manner. There were also three shields among these objects. They had been placed next to each other under basins with gutter-shaped pipes and on top of daggers, hatchets, axes, two-pronged forks, and stone rods. These weapons had evidently been positioned at close to the domestic objects. The shields are of strikingly similar shapes, but they differ slightly in the number of openings and bars. Up to now, no similar shields have been found at any other archaeological site. These shields seem to be the oldest shields excavated in Iran. XRD and XRF analyses revealed that one of the shields and other objects of the hoard were made of cast copper-alloy, and they were subjected to cold forging/hammering later.

Keywords: Shield, Copper-alloy, Late Bronze Period, Tappeh Bazgir, Gorgan Plain.

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Introduction

Tappeh Bazgir is located on the western bank of the river in a village with the same name, which is one kilometer north-east far of the city of Minoodasht (Figs. 1& 2). This site is in the eastern part of Gorgan Plain, 76 kilometers north-east of Turang Tappeh and 16.5 kilometers ESE of the World Heritage site of Gonbad-e Qabus (Figs. 2 & 3). The site is of an oval shape and covers more than two hectares (Figs. 3 & 4). In the winter of 2001, one of the local villagers accidentally found a number of metal objects during the construction of a sewer for a house, and the report on this discovery was sent to the Cultural Heritage Department of Gorgan/Golestan Province. Subsequently, during an archaeological salvage program, a team of archaeologists from the General Directorate of Cultural Heritage excavated 271 other metal objects from the bottom of the well (sewage) and sealed the opening of the well with cement (Nokandeh et al., 2005: 113). Ten years later, by the order of the then city prosecutor of Minoodasht province and with the permission of the Archaeological Research Institute, Ghorban Ali Abbasi started to conduct and supervise the salvage excavation in September 2010. The excavations finished nearly six months later, at the end of February 2011[1] (Abbasi et al., 2011a and 2011b).

Among the finds from Bazgir, a collection of Late Bronze Age metal artifacts is particularly interesting, and they include different objects, such as axes, maceheads, spearheads, cleavers, metal containers, etc. The artifacts had different functions such as agricultural, domestic, martial and ceremonial. Each group of objects, separated based on shape and function, had been placed in a distinct area of the well (Nokandeh et al., 2005: 115).

198 of the 759 metal objects of the hoard can be classified as weapons. These weapons belong to the following types:

1- Spearheads (30)
2- Shields (3)
3- Axes / hatchets (40)
4- Maceheads (23)
5- Cleavers/knives (20)
6- Daggers (82)

The research background

After the accidental discovery of the Bazgir hoard, Nokandeh introduced these objects at the International Congress of Near Eastern Archeology in Berlin for the first time in 2004 (Nokandeh, 2004: 109), and later he published an article in Archaeological Reports in 2004 (Nokandeh et al., 2004). For the first time in 2012, laboratory studies (chemistry, XRD analysis of corrosion products and SEM) were conducted on five samples of the artifacts from the Bazgir hoard. In an SEM examination of one sample, %95 copper, and %5 oxygen and sulfur were detected (Ghaziyan, 1384: 116 & 119 Table 1). Ernst

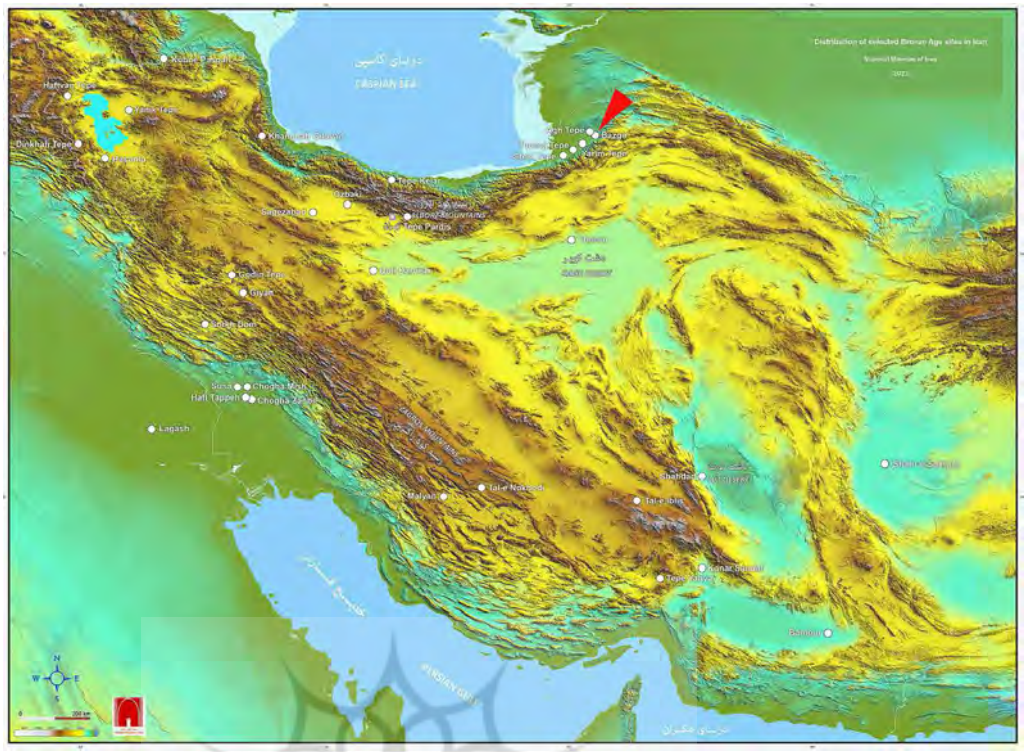

Fig. 1: Location of Bazgir and other key sites in Iran

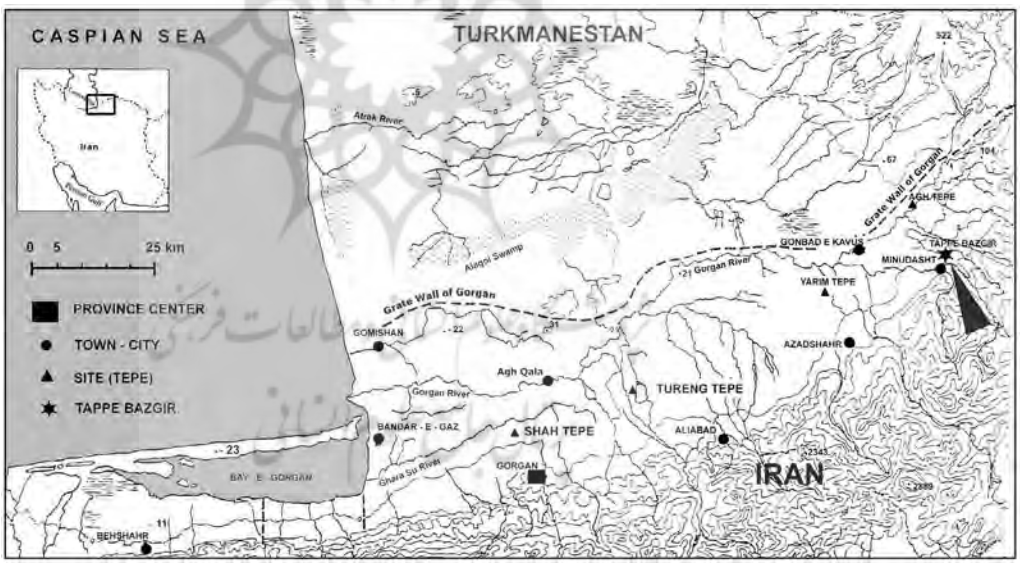

Fig. 2: Location of Tappeh Bazgir and other Bronze Age site on the Gorgan Plain

Pernicka from the University of Freiburg tested two broken samples of corroded parts of the basins via EDXRF and XRD analyses and found %99 copper and %0.7 arsenic in the green sample and %92 copper and %6.9 of arsenic in the blue sample. Based on the XRD test, there was green malachite, iron-grey tenorite, blue azurite, and dark red cuprite in the sample (Nokandeh et al., 1384: 116). During his master's thesis, Lorenz analyzed 171 samples from the objects from Bazgir at the Institute of Archeology of the University of Freiburg, Germany, but he has not published the results yet (Lorenz, 2008). ND: YAG and CO2 lasers were used to remove corrosion traces on a small piece of a

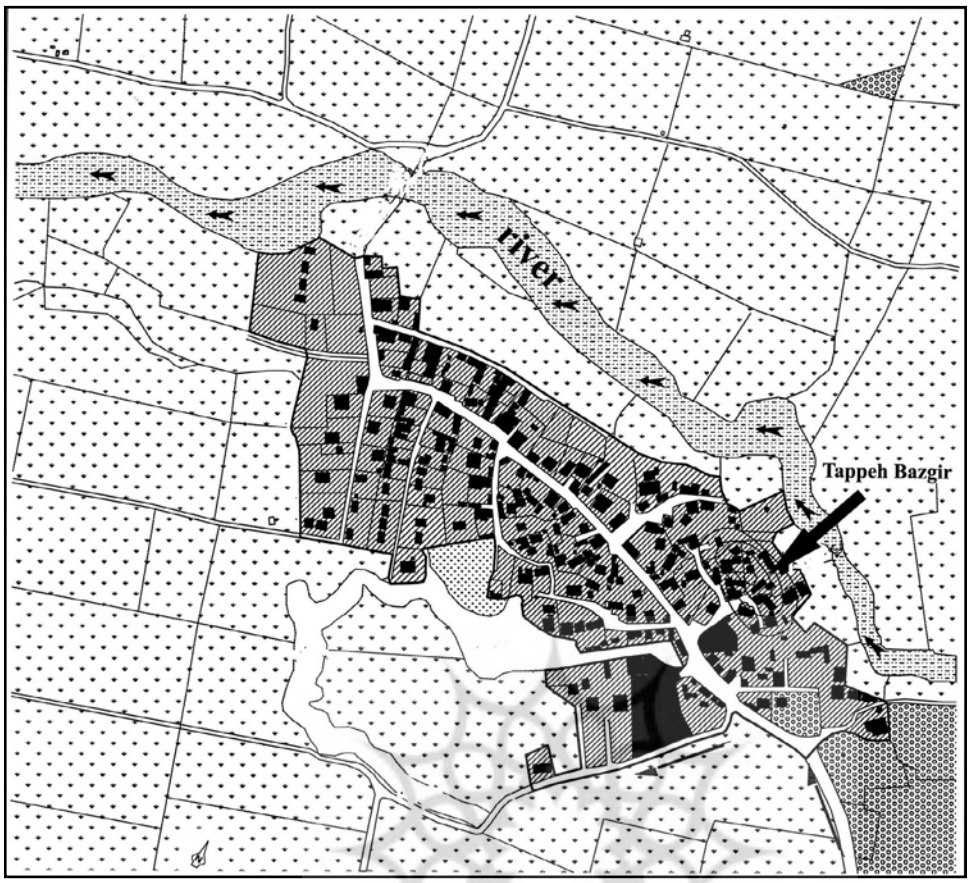

Fig. 3: Location of Tappeh Bazgir in the Village

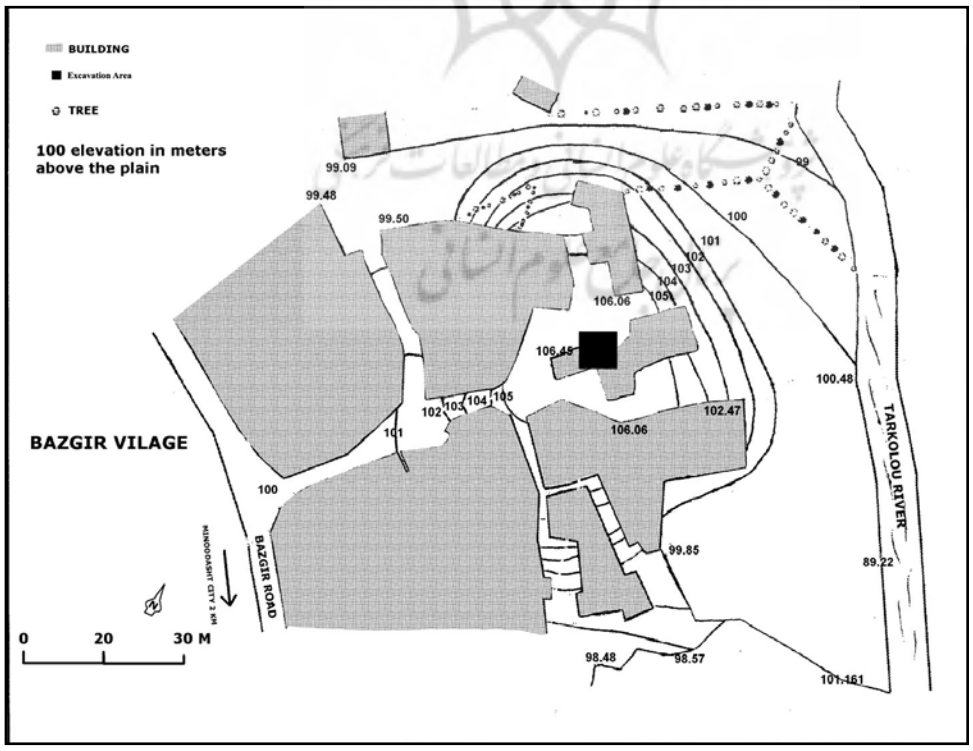

Fig. 4: Topographical map of Tappeh Bazgir

metal object and the results were also studied. In addition, XRD tests were conducted on a copper container revealing the type of corrosion traces that contained malachite, azurite, brochantite, cuprite, and quartz but it was devoid of antient patina. Metallographic tests revealed the presence of surfaces with different corrosion intensities, which represent different energy levels and, due to a lack of dendritic structures, it was assumed that the cold hammering method was used to make the objects (Shadkam, 2005). In 2019, the author of the present article supervised the project of documenting the artifacts that had been excavated at Bazgir. In this project, all objects were photographed, described, and classified (descriptive categorization) (Nokandeh, 2012). In 2013, Masoumeh Shokrian Zaini defended her Master's thesis with the title "Examination of the Bazgir Hoard (Golestan) from the Perspective of Style, Chronology and Culture". Her research mostly focused on the hoard discovered in 2001 (Shokriyan, 1390).

In 2013, the following three Master's theses were written, focused on the restoration of artifacts from this hoard:

1. "A Study of a Selection of Copper-Alloy Objects from the Hoard of Metalworks of Tappeh Bazgir (Minodasht- Golestan province) and "Presenting the Protective Measures for this Hoard" by Ms. Marzieh Moslehi (Moslehi, 2013; Moslehi et al., 2014),

2. "Investigating the Interrelationship between the Environment and the Construction Technology on the Process of Erosion of Artifacts: A Case Study (Six Copper Objects from the Archaeological Site of Bazgir Minoodasht" by Ms. Atiye Ismaili (Ismaili, 2012),

3. "Methods of Protection and Restoration of Copper-Alloy Objects Obtained from a Wet Environment with Emphasis on the Protection and Treatment Plan for Four Objects Uncovered from the Excavations of Tappeh Bazgir Minoodasht (Golestan province)" by Mr. Reza Amin Sadri (2013).

Subsequently, in 2016, Alireza Salari Berkoi presented his thesis entitled "A Study and Analysis of the Manufacturing Method (Metallurgy) of Tappeh Bazgir Metal Objects in the Late Bronze Age" (Salari 1395) that was presented with the title of "The Archaeological Finds from the Excavations at Bazgir" at the 11th Annual Archaeology Meeting. Unfortunately, the article has not been published yet (Abbasi et al., 2011a). Also in 2016, Ghorban Ali Abbasi, the head of the excavations in Bazgir, introduced the findings of these excavation in the book "Archaeological Finds of the Great Gorgan Plain". Most recently a new joint project between Gorgan ICHTO and Teikyo University was started which focuses on protective measures[2].

The Archaeological context of the Bazgir Metal Hoard

In 2010, the opportunity for exploration arose with the purchase of a residential unit measuring approximately 70 square meters in the vicinity of the well. The well had been sealed in 2001 following the archaeological salvage program. After the demolition of the residential unit on top of the hill in the area of the previous sewer, a trench (called

F. 6) measuring 9 × 9 meters was excavated. During the excavations, cultural layers from the late 6th and early 5th millennium BCE (Cheshmeh Ali/Old Plateau period), the Bronze Age, the Iron Age, the Parthian Age, the Islamic era and the contemporary era were found (Fig. 5). However, at a depth between 7.50 and 9 meters from the top of the hill, a metal hoard (more than 750 items) was discovered in a Late Bronze Age pit in the virgin soil, which represents an exceptional discovery. In this layer, architectural remains were found (Fig. 6) and the walls of the west and south sides of two rooms were also excavated.[3] The western wall is at least 595 cm long, and it is 120 cm wide. It runs in a northwest-southeast direction, and continues beyond the northern and southern edges of the trench. It is a mud-brick wall (and the dimensions of the mud-bricks are 10 × 45 × 45 cm) covered with a layer of straw and plaster. On the southern side of the room, there was an entrance of 95 cm width, and on its east side, we discovered an adobe wall of 107 cm thickness and a length of at least 137 cm; it is visible in the sections of the trench and continues beyond.

The floor of the room was covered with earth and plaster. Right in the center of the eastern side of the trench, under the floor of this room, the remains of a well were discovered, which had been dug during the Bronze Age and subsequently deliberately filled with virgin soil. The rectangular well measured at least 1.36 cm by 88 cm. In the east, it extended beyond the edge of the trench and was visible in section. The Late Bronze Age occupants dug this well from the residential floor of their room to a depth of about three meters, and at the bottom of the well, they dug a tunnel in an east-west direction with a length of 4.33 meters, a width of 2.97 meters and a height of 1.15 meters (Figs. 7 & 8). The objects were arranged neatly and sorted by their shape. Afterwards, the entrance of the chamber (and the large pits arranged in four rows) was covered with a layer of copper sheets, and then the entrance to the well was blocked with 12 rows of adobe wall. The mud brick wall was 180 cm long and 95 cm wide (Fig. 9).

The dimensions of the mud-bricks were 38 by 48 cm, and they were 7 to 10 cm thick (Fig. 10). Behind the mud-brick wall, the vertical wall of the well to a height of one meter was covered with layers of copper sheets in 14 stages.[4] Between these layers of copper sheets, there were deposits of compacted soil of 5 to 10 cm thickness. The top of the copper sheets was covered with one and a half meters of virgin soil. In the entrance area, the floor of the living space was covered with soil and then covered with Plaster. Due to the concealment of the precious objects under a substantial layer of sterile material and the uniformity of the floor above, nobody would have noticed the burial of objects underneath. It should be noted that a part of the top of the well was found in this excavation, which was on the eastern side of the trench. Due to the limitation of the trench's width, access was possible. It is likely that there are other hoards in the eastern part of the same place. Future exploration of the Late Bronze Age buildings at Bazgir may lead to the discovery of other rooms and access routes. This may shed important new lights on the function of these building and the associated finds assemblages.

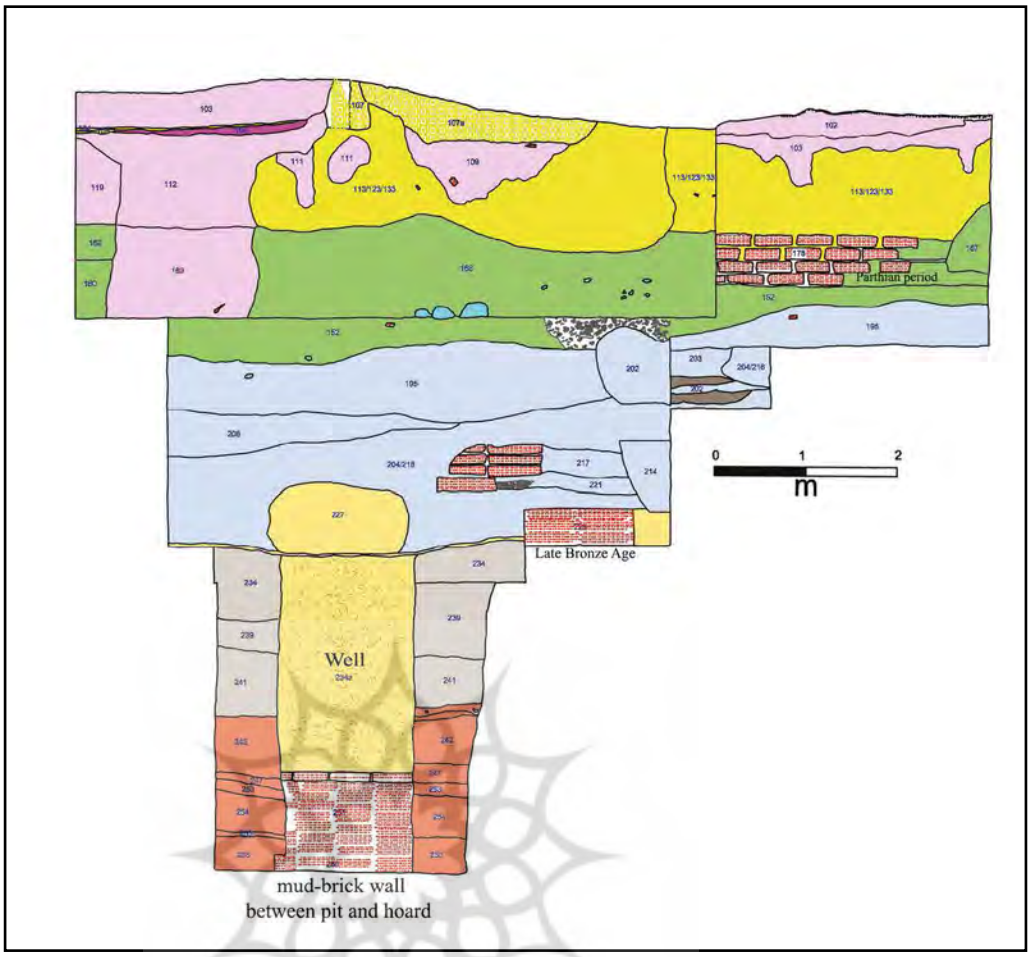

Fig 5; profile view of the eastern part of Trench.

Fig 6; Architectural Remains and Bazgir Hoard in situ.

Fig. 7: The Bazgir Hoard in situ.

Fig. 8: The Bazgir Hoard at right and the entrance of the chamber at the left.

The context of the shields in the Bazgir hoard

The Bazgir hoard, found in feature 248 (Fig. 9 & 10), contained 198 weapons of different types, including three shields. These shields were located next to each other,

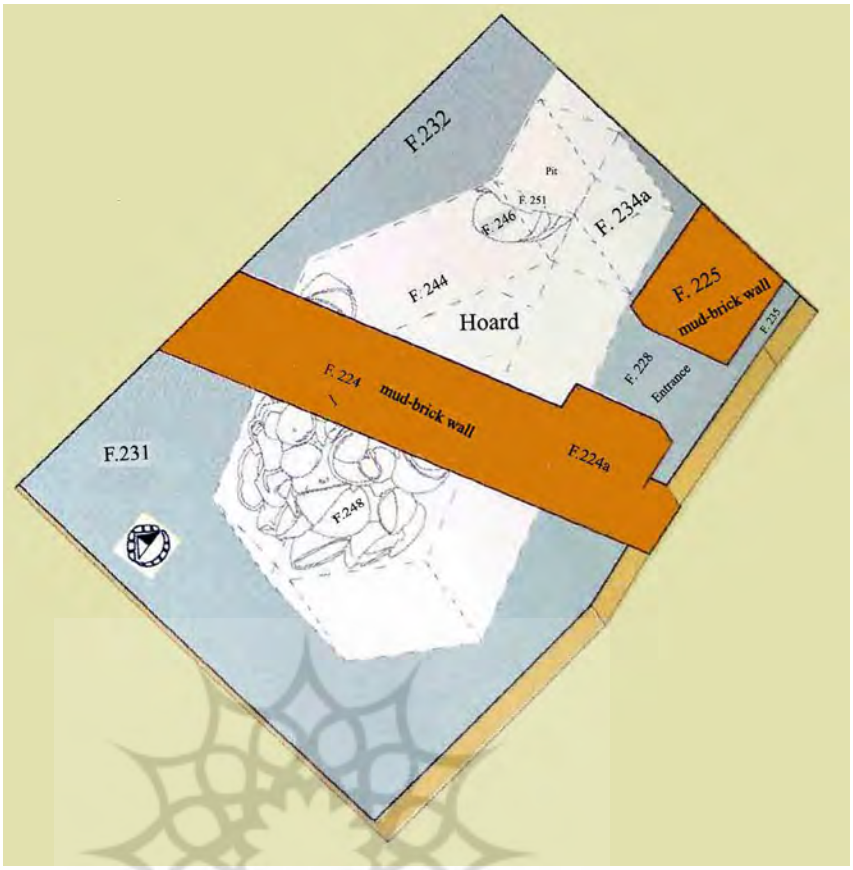

Fig. 9: Reconstruction of the location of the well and hoard in relation to the walls of the building.

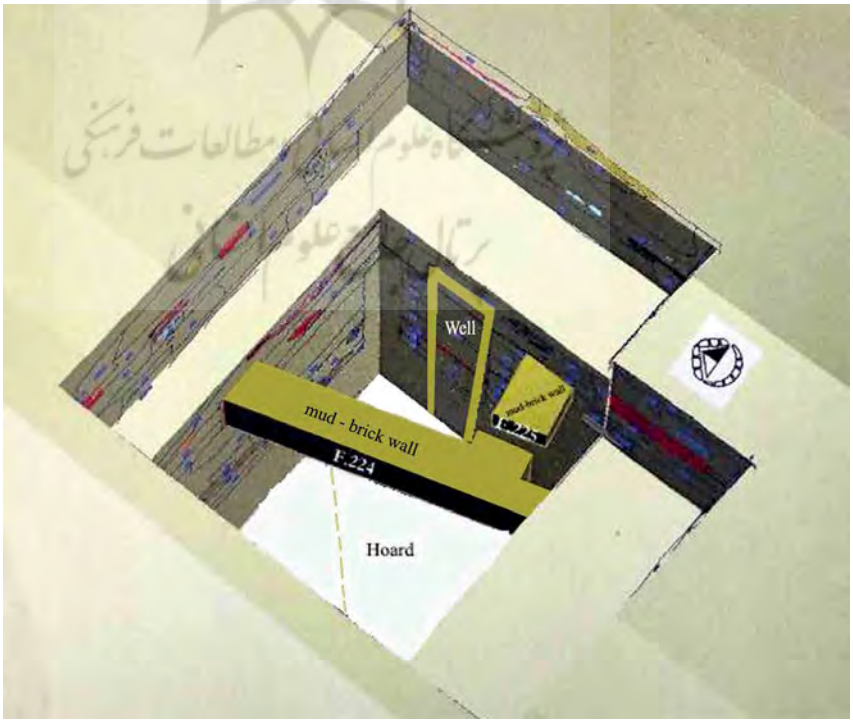

Fig. 10: Reconstruction of the location of the well and hoard in relation to the walls of the building.

and they were placed between the other objects of the hoard (Figs. 11 & 12). The shields were placed under the basins with gutter-shaped pipes and on top of daggers, axes, two-pronged forks and stone rods. All three shields were positioned between household objects above and weapons below. They were deliberately placed on the back in an almost perfect east-west alignment. The bars of the shields were damaged due to the weight of the objects placed on top, and the bodies of shields themselves were also bent. In the table below, they are listed from the west to the east according to their location within the archaeological feature (Table 1).

Table 1: Typology of shields from Tappeh Bazgir (Fig. 012-013-014).

Type	Location	Dimension	Weight (kg)	Openings	Bar/Shaft	Hole
1	Feature 248, Excavation No.11076	L:93.8 cm W:47cm H:25.3cm Thickness of bodies :4.7 mil	4.103	7 with Four rectangular forms	3 horizontals with round form	Two holes in the lower shield body (the narrowest part) and two holes in the upper part are probably the location for Strap.
2	Feature 248, Excavation No.11075	L:93.5 cm W:43.7 cm H:20 cm Thickness of bodies :3 mil	3.609	7 (6 with four rectangular forms and one round form	6 Horizontals (Five found in situ, one is lost. NO.1 and 5 and 6 with round form and No.2,3 and 4with rectangular form	Two holes in the lower shield body (the narrowest part) and two holes in the upper part are probably location for Strap. Moreover ,21 hole for fastening strap.
3	Feature 248, Excavation No.11074	L:102 cm W:30 cm H:22.5 cm Thickness of bodies :3 to 4.5 mil	4.163	10 with Four rectangular forms	3 horizontals with round form	Two holes in the lower shield body (the narrowest part) and two holes in the upper part are probably location for strap/cords

Fig. 11: The mud-brick wall between the well and the hoard.

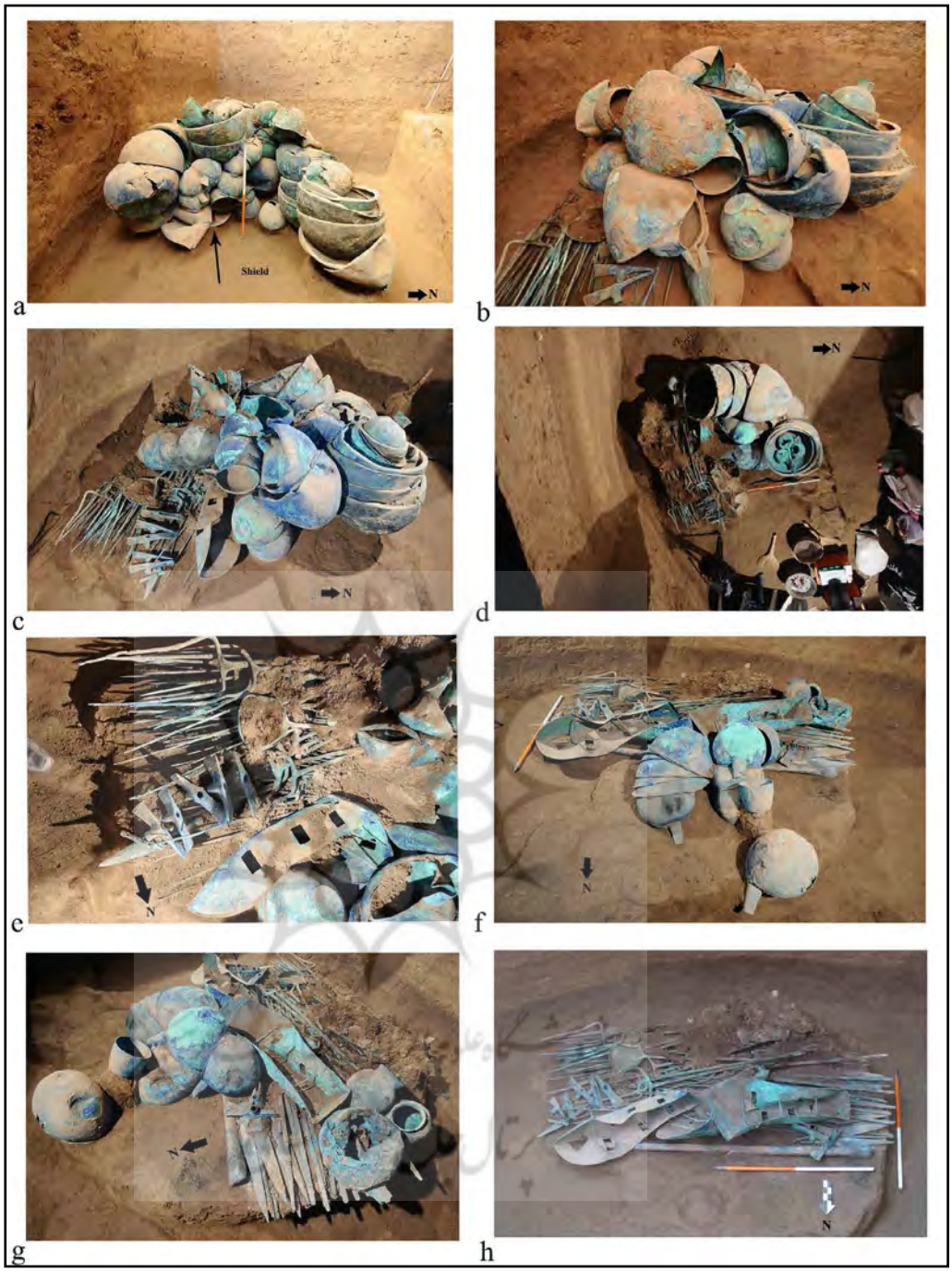

Fig. 12: location of Feature 248 showing the hoard and the shields in situ.

As the table shows, the shields are broadly similar, but far from identical. The 1st and 3rd shields are to some extent, similar, but differ in the number and location of openings, and the first shield has no openings in the upper part.

Among the shields, the second is slightly different from the other two shields as it has a circular hole in the upper part to facilitate observing the enemy during combat.

The horizontal bars inside the shield act as poles for the shield's stability. There are six bars in this shield, twice as many as in the other two shields, three of which are circular in section and the other three are rectangular.

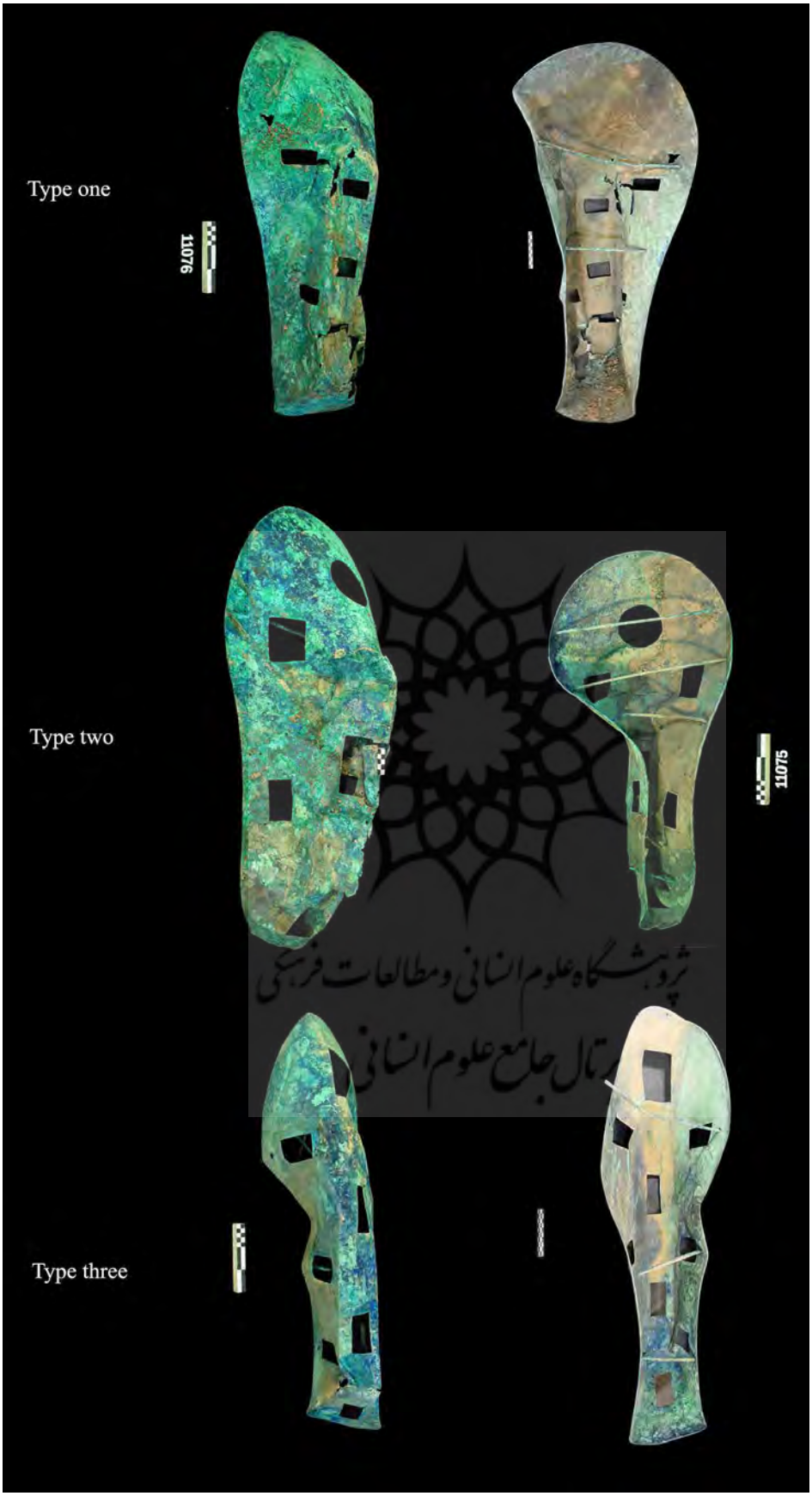

Fig. 13: Typology of Shield (inside and outside).

In addition, on the lateral edges of the shield, there are two thin copper alloy sheets, which were placed on top of each other and fastened in two pairs to the main body in an inverse U-shape. Along these strips, there are holes that were possibly intended to fasten them to the body of the shield with metal wires (Fig. 14).

Two strips were attached to the right side of the shield: the outer one is 1 mm thick, 600 mm long, and 20 mm wide, and its counterpart on the inside is also 1 mm thick, but only 450 mm long, and c. 15 to 18 mm wide.

The two strips on the left side of the shield more or less mirror this arrangement: they are of identical dimensions to those on the rights side, except that the strip on the inside is only 300 mm long. In this shield, like the other two shields, there are two holes each at the top and bottom of the shield, probably for fasting (leather?) straps. These hypothetical straps would have facilitated carrying the shield or fastening it to the soldier's body.

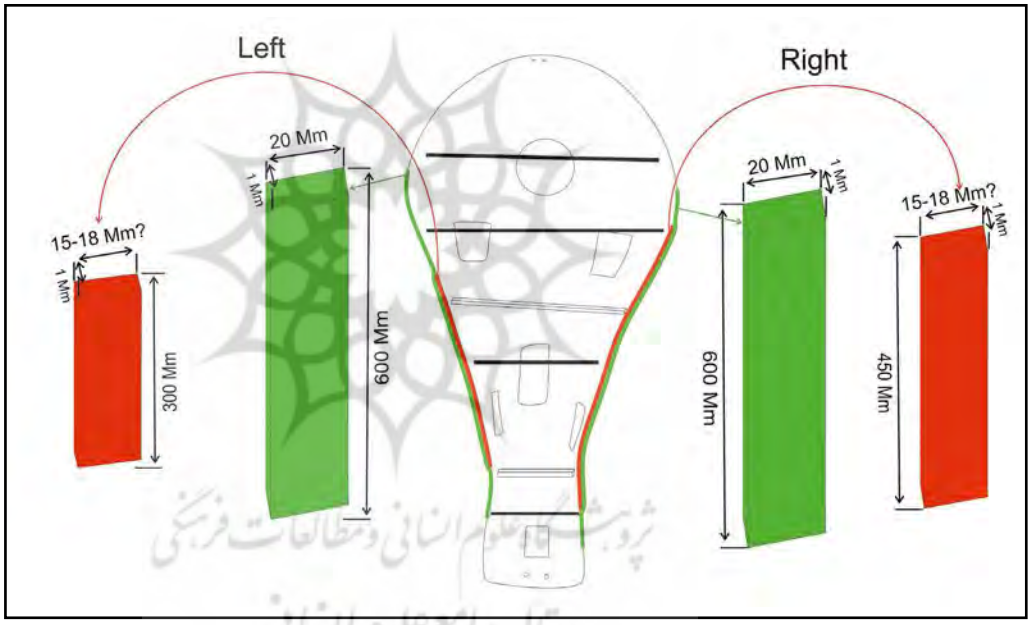

Fig. 14: Reconstruction of two separate sheets on the shield(by: Alireza Salari Barcowi).

Construction materials of shields

Based on the XRF analysis, the first shield (excavation no. 11076; Table 1) is made of copper (copper with arsenic) (Table 2).[5] Adding arsenic to copper in the percentage detected prevents porosity and increases its tensile strength (Junk, 2003: 22-24). However, this amount of arsenic was not added to the metal; instead, the a copper deposit was chosen that already contained arsenic, and it seems that the makers were aware of this fact.

Construction method

The shields were cut from a larger single copper sheet. The effects of the cutting procedure are visible at the edges. First, the initial shape was formed. Then, the openings

Table 2: XRF Analysis of the chemical composition of the first shield with excavation No. 11076 Inv. No: 6304 at Gorgan Museum (Teikyo University, March 2023).

Portable X-ray Fluorescent (XRF)	Part for analysis	Cu	Sn	Pb	Zn	As
Core	Top	98.8	ND	0.1	0.2	0.9
	Side	98.7	ND	0.1	0.4	0.8
	Inside	98.9	ND	0.1	0.3	0.7
	Longest bar	98.2	ND	0.3	0.2	1.3
	Shortest bar	98.9	ND	0.2	0.2	0.7

with square, rectangular, or sometimes roundish shapes (type 2) were cut using a sharp pointed tool to create windows in the main shape of the shield. In the end, the metalworkers cold hammered the shield to produce the final shape.

They also punched smaller holes in the shield body to attach horizontal bars which served to maintain the final shape and to strengthen the shield. These bars were sometimes round in section and sometimes rectangulare. These bars had a diameter of 5 mm in the main section, but were narrower towards their terminals. The terminals of the bars were attached to the holes by hammering and then the whole surface of the shield was polished.

There are also two holes at the top and the bottom of the shield, which are most likely for holding a leather strap so that the soldier could carry the shield on his shoulders (Figs 15-19).[6]

Chronology

The hoard of artifacts from Bazgir is similar, in terms of material, shape, and function, to some of the Late Bronze Age objects from the Tepe Hissar IIC. As examples, we can refer to basins (Schmidt, 1937: Pl. CXXLX, H57), ladles (Schmidt, 1933: Pl. CXX, H452), handles (Schmidt, 1933: Pl. CXX, H775, 166), cleavers (Schmidt, 1933: Pl. CXVIII, 457, Pl. CXLX, 4117, 4788.457), axe-heads, picks (Schmidt, 1933: plate, CXVLL, H168- Schmidt, 1937: fig, 120, H3247, p. 205) and spearheads (Schmidt, 1933: plate CXLX, H770). Some similar specimens, such as spears and daggers were also found at other sites on the Gorgan Plain such as Shah Tepe (Arne, 1945: 303-304 and Pl.LXXX), the Treasury of Estarabad (de Bode, 1844), and Turang (Tureng) Tepe (Wulsin, 1932: pl.xx). No shields, however, were found in these archaeological excavations. The absolute dating of Tepe Hesar IIIIC is 1800-1900 BCE and Turang (Tureng) Tepe is thought to be 1700-1800 BCE (Musarella, 1980: 105). Some researchers have also dated the Hesar IIIC period between 2100 and 1600 BCE (e.g. Yule, 1982: 10 fig. 3, 26; Dyson & Lawn, 1989: 142).

Discussion

As mentioned earlier, these shields were placed next to each other and between other artifacts from the hoard. All of them were undecorated and resembled a boat in their cross-section, but overall, they are pear-shaped and have openings in the front and sides

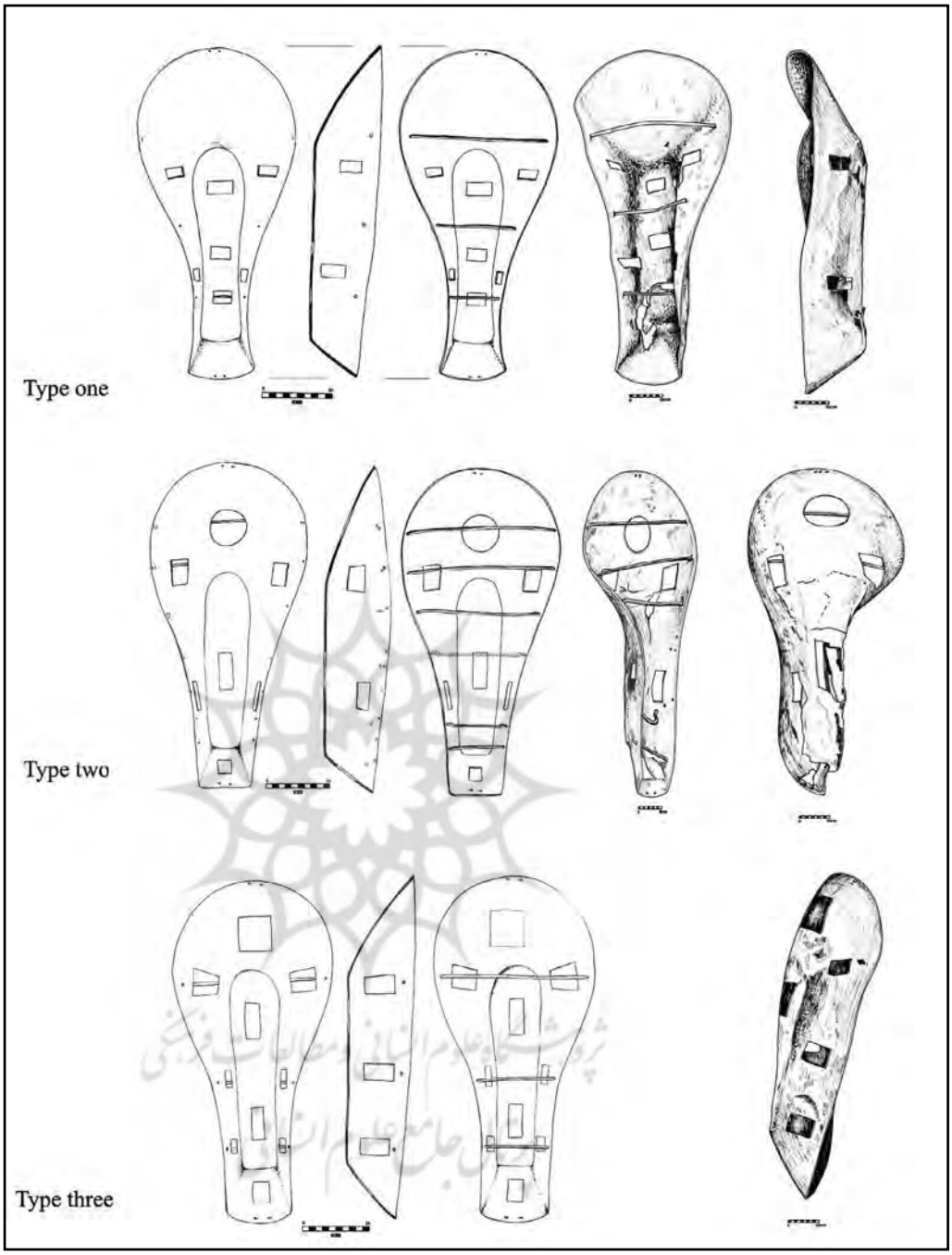

Fig. 15: right; typology of shield (inside and outside). Left; reconstruction of every type of shield (Drawing by: Mansuri Razi).

(opposite each other). The long sides are joined via horizontal bars. These bars may have served two purposes: to provide further strength and stability and to act as shield handles. In terms of shape, these shields are similar, and they only differ in the number and shape of openings and the bars. Their shape is unique, and I am not aware of any parallels from Iran or elsewhere. What makes these items very special is that they have no parallels, and there are some arguments that support the idea of them being used as shields, and others that cast doubt on this hypothesis.

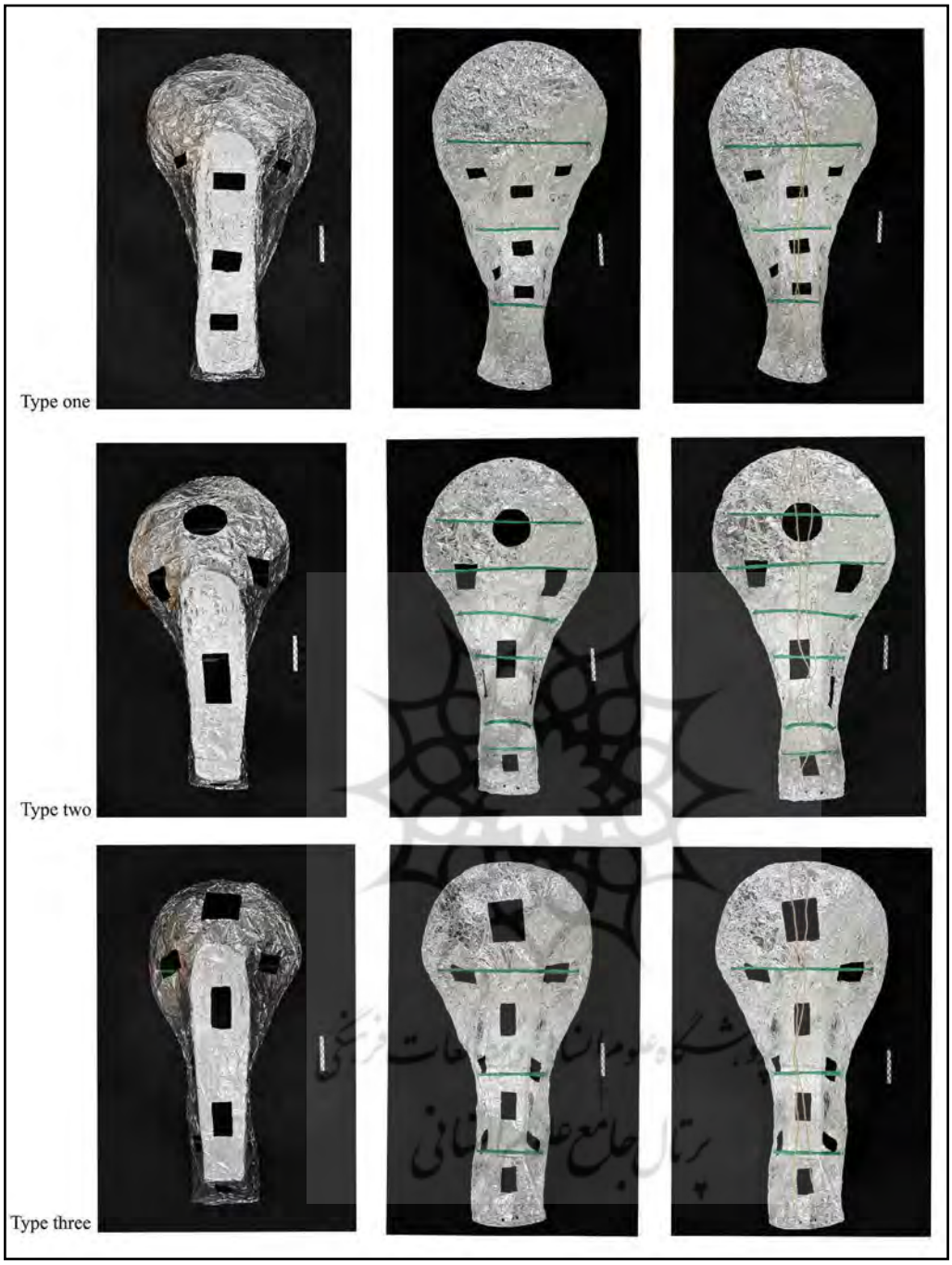

Fig. 16: Shields and their reconstructions.

The weight: Although some might argue that shield 1 from Bazgir weighs 3609 grams and is too heavy for carrying in battle, there are heavier shields for fighting from the Islamic period Iran such as a Safavid-period hide shield weighing 4500 grams (Moshtagh Khorasani, 2006: 668, Cat. 358). But most Islamic-era shields weighed between 1550 and 3000 grams (Moshtagh Khorasani, 2006: Cat. 670-683). Shield 1 weighs 3609 grams, bronze shield 2 weighs 4103 grams, and bronze shield 3 weighs 4163 grams. Observing other cultures, we realize that Ancient Greek hoplites used even heavier shields. The shield used by hoplites was called aspis or porpax shield. Aspis was

Fig. 17: Shield and reconstruction, type one.

Fig. 18: Shield and reconstruction, type two.

Fig. 19: Shield and reconstruction, type three.

mainly a deeply-dished wooden shield, and some had an additional thin bronze sheet on the outer surface around the rim.

Due to its size, weight, and construction, it was only used by the Greek infantry. The aspis was a round shield of circa 7.3 kilograms with a diameter of 0.9 meters (see: Zimmer & Girard, 2014). To compensate for the weight, the Hoplites passed their arm through cords that fastened their arm to the center of the shield (porpax), and then they held the shield handle (an argive grip). They used to fight in Phalanx formations (see: Goldworth, 1997; Sage, 1996). Later the Romans changed the military formation of the hoplite phalanx to the formation of maniples using a rectangular shield called scutum. The scutum used to be oblong and convex, but later by the first century CE it changed into the rectangular, semi-cylindrical shield. The scutum was made from three sheets of wood glued together and covered with canvas and leather with a central umbo or shield boss. It generally weighed c. 10 kilograms (Sabin et al., 2007: 196). Taking all these factors into account, the weight of these shields is within a plausible range of usage even if they had had a been lined with hide or wood which would have increased their weight.

Shape: These shields have a very peculiar shape. Shields were used in Bronze-Age Iran, but they were mostly round. Later, during the Achaemenid, Parthian, and Sasanian periods, oval and rectangular shields were also used. In the Islamic period,

round shields were used by warriors. In the following, I will provide some information on the types of shields used in Iran. In Marlik, two cast bronze shields were excavated by Negahban (1995: 91) with diameters of 22.5 cm and 37 cm. Although Negahban believes that these were large central shield bosses serving as a reinforced center of a larger leather shield, we should note that small shields of 35 cm were also used as bucklers in Islamic-period Iran and even smaller sizes as bucklers by Khesvar warriors in post-medieval Georgia. One of these bronze shield bosses from Luristan was in the collection of Axel Gutmann (Collection Inventory Number AG86/R17, Germany) (see: Christie's London Auktion, 2002). This piece has been dated to 1000 BEC. Another round bronze shield from Luristan was found from Iron Age III graveyards together with a sword and a spearhead in a tomb at Djub-i Gauhar in Luristan (Moorey, 1974: 19; Haerinck and Overlaet, 1999: 30). This roundish bronze shield has a diameter of 31.6 cm. The bronze shield is made of a thin sheet of bronze with two double perforations on the rim that are placed opposite each other. This was possibly used to attach a handle for the shield. As the bronze sheet is thin, it had possibly a wooden or hide backing. A bronze shield with a diameter of 26 cm and a central bulge with stepped, concentric circles was found at Gul Khanan Murdah in Luristan (Haerinck and Overlaet, 1999: 168). This shield was found in tomb 80, together with an iron sword, a bronze axe/adze, and eight iron arrowheads.

There were four types of Achaemenian shields

a) Rectangular shields: The rectangular shields were made of cane that protected the whole body. The soldiers at the Darius Palace carried rectangular cane shields, and similar shields were also found in the graves of Pazyryk. The canes are mounted on hide (leather) so that the shield provides extra protection to the bearer (Koch, 2000: 255–256),

b) Oval shields: The oval shields were made of hide or wood covered with hide or metal. They protected only the upper bodies of soldiers. There was an umbo/boss containing four smaller ornamental circles in the centre of these shields (Moshtagh Khorasani, 2006; Zoka, 1971: 52; Koch, 2000: 255). The shield boss was made of metal and provided extra reinforcement and protection. On the sides are two cut-out areas, and the edges of the shield were reinforced with a binding. These openings in the shield were used by the Achaemenid soldiers to protect themselves while simultaneously observing the movements of their enemies to find an appropriate moment to attack with their spears or swords. The palace guards of Xerxes on the Apadana stairs carried oval shields (Koch, 2000: 255).

c) Rounded, basket-like shields were made of hide and osiers (twigs from a type of willow tree) (Moshtagh Khorasani, 2006; Zoka, 1971: 48). The backs of these shields were covered with hide.

d) Crescent-shaped taka shields: Greek vases from 460 BCE onwards show this type

of shield carried by the Achaemenids. These shields were made of wood or leather, reinforced with a metal binding, and they were crescent shaped. Additionally, a segment was cut out of the top of the shield in order to provide the archer with better vision (Sekunda, 1992: 18).

The Parthians employed small round hide shields, resembling their successors in Islamic-era Iran, such as a male figure who is armed with a spear and a small, round shield on a relief made of limestone from Dura Europos, the Temple of Zeus Megistos (see: Mathiesen, 1992: 198–9; Zoka, 1971: 115).

Sasanian shields can be divided into

a) Large rectangular shields made of osiers and hide. These shields had an almost rectangular shape. The bottom side of these shields is triangular and the top is slightly rounded. These shields had W-shaped or V-shaped notches cut into their surface. Sasanian archers used these shields to hide behind and shoot at their enemies. Smaller shields of this type were used by Sasanian cavalry, such as one example found at Dura-Europos (Zoka, 1971: 139; Sekunda, 1992: 16, 21; Farrokh, 2005: 15).

b) Khilikia shield: They were long and thick shields made of goat's wool and were used by Sasanian paighan infantry (Farrokh, 2005: 16).

c) Small round shields were used to protect the soldiers' faces and necks (Farrokh, 2005: 16). For Sasanian round shields, see Robinson (1995: 25), Nicolle (1996: 59) and Ghirshman (1962: 192–3).

Most shields of the Islamic period in Iran were round and made of hide or iron/steel (Moshtagh Khorasani, 2006). Although in the early Islamic period, some wooden shields were also used, such as a leather-covered, circular, wooden shield found in the castle of Mug (Nicolle, 2002: 14; Robinson, 1995: 252).

Function[7]: As far the functionality of these shields is concerned, we need to take the following points into consideration:

- The arm should have been inserted in the narrow part of the shield similar to the concept of a later bāzuband (vambrace). On the example on the left, the arm passes through two bronze cords/ loops and then holds the bronze cords/loops placed in the roundish part. The bronze cords on the widened part of the shield in the middle example seem to be detached. However, the same concept should apply here. It means that the arm passes through the cords in the narrow part and then holds the cords in the widened part. It is also true with the example on the right. In this position, the shield arm can be kept in a horizontal position. When an attack targets the head, one can raise the shield arm in a vertical position to fend off the attack. In case of an attack against the groin, one lower the shield.

- The cut-out areas in the widened part should be there to provide the wearer with vision during combat. At the same time, they could be used to trap an incoming thrust by the opponent's sword thrusts. We see a similar concept on the sides of the Achaemenid

oval shield that have two cut-out area. What is surprising and does not make sense is why there are cut-out areas in the place where the arm was inserted into.

- The openings rule out the possibility of these artifacts to have any function as a vessel.

- An additional argument in favour of an interpretation as shields is that these items were found next to functional metal weapons which were undoubtedly meant for combat.

Conclusion

As Moshtagh Khorasani has rightly observed, the oldest rectangular shield can be seen in the Stele of Vultures from Eannatum[8] , king of Lagash (about 2450 BCE) (Moshtagh Khorasani, Manouchehr, 2006: 267). In this stele, a row of eleven soldiers (eleven heads and eleven pairs of feet under the shields) is shown. From behind the shields that cover the entire bodies of the soldiers, six pairs of hands come out holding long spears. This scene is repeated four times. The bodies of the soldiers are completely hidden behind the shields (Nadali, 1393: 142). The form of the shields on this stele has been assigned to the Middle Bronze Age, and the shields are related to the Late Bronze Age around 2100 to 1600 BCE. It possibly shows that long rectangular shields were used in the Bronze Age, whereas Iron Age shields tended to be circular or oval.

The Bazgir shields have seven to ten rectangular holes. At least two pairs or two holes each are arranged horizontally in the Centre. However, there are also three-square holes each on the left side and right side of the shield. Three horizontal wire bars connect the left and right sides of the shield like a pole. Two holes on the edge were probably meant to hold leather straps. As Zoka points out, the small slits in the shields would have enabled soldiers to observe the enemy's movement from behind this safe protection (Zoka, 1971: 53). This particular form of shield is so far unparalleled, and it may be one of the oldest forms type of shield. For the moment, I here present these unique objects as such, offering the possible explanation as shields. Undoubtedly, future research and excavations will shed more light on this topic.

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Endnote

1. Ghorban Ali Abbasi published material of Bazgir excavation in the first chapter and in appendices 1 to 6 in "Archaeological Finds of the Great Gorgan Plain" (Abbasi, 1394). Unfortunately, on July 28, 2017, he passed away, and the final report of his investigations at Bazgir has therefore not been published. In the aforementioned book, the late Abbasi tried to include descriptive reports and parts of the fieldwork documents along with the report of the organizational plan (design, professional photography and description of the metal hoard) which was compiled under my auspices in Gorgan Museum in 2012 (Nokandeh et al., 2012). I hope that the report will be published in future.

2. Joint project with Fujisawa Akira (Conservation Scientist, Japanese representative side), Oikawa Takashi (Conservator), Yamada Hiroki (Heritage Management), Marziyeh Moslehi (Conservator) and Gholam Reza Hamidi.

3. The remnants of another room were found on the western side.

4. There were 31 copper sheets. These sheets were up to c. 470 cm long and 193 cm wide and 1 to 6 cm thick. They weighed more than 700 kg. The sheets had been used before and were reemployed here. Most of the sheets had joints and sometimes they were sewn together with copper wire fasteners.

5. To identify and analyze the elements and chemical composition, the first type of shield was subjected to a quantitative XRF analysis. The analysis was carried out with a portable XRF device according to the specifications of × OLYMPUS DELTA, JX010000-0446, rated output: 40kv, 4w in the archaeological laboratory of the Protection and Restoration Department of Gorgan by Japanese researchers from Teikyo University. For the XRD analysis of the above-mentioned shield, see Amin Sadri (2013: Table 3-3).

6. We would like to thank Alireza Salari, an experienced archaeologist at the Center of the Gorgan Great Wall, who helped in the reconstruction of these shields, and we would also like to thank Moshtagh Khorasani who with his detailed hypotheses about the shape of the shields helped us to create replicas of the shields using other materials, such as aluminum sheet (Figs. 16-17).

7. The suggested function is proposed by M. Moshagh Khorasani

8. Eannatum was a Sumerian king of Lagash around 2500-2400 BCE. After establishing one of the first verifiable empires in history, he subdued Elam and destroyed Susa and many other Iranian cities. He extended his rule to Sumer and Akkad later.

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چکیده

تپه بازگیر یکی از محوطه‌های باستانی مهم در شناخت دورهٔ مفرغ پایانی در حوزهٔ شمال‌شرق ایران به‌حساب می‌آید. از این مکان باستانی، مجموعه‌ای فلزی به تعداد ۷۵۹ قلم با وزن تقریبی بیش از دو تُن از جنس مس پایه از دورهٔ مفرغ و در بستر باستان‌شناختی شناسایی شد که از نظر شکل و حجم در نوع خود ویژه است. این مجموعه در سال ۱۳۷۹هـ.ش. به‌صورت اتفاقی کشف شد و در سال ۱۳۸۹ با مجوز پژوهشکدهٔ باستان‌شناسی پژوهشگاه میراث‌فرهنگی و گردشگری مورد کاوش نجات‌بخشی قرار گرفت. این مجموعه در زمان خود به صورت هدفمند در زیر یک کف مسکونی دورهٔ مفرغ پایانی و در بستر خاک بکر جاسازی شده بود. آثار به‌دست آمده در شکل و کارکرد دارای تنوع بوده و شامل ابزار: کشاورزی، خانگی، رزمی و تشریفاتی و یا اشیای شان‌زا هستند. هر یک از گونه‌ها در بستر برجا در کنار یک‌دیگر قرار داشته و دارای چیدمان منظم بودند. در این‌میان، سه عدد سپر شناسایی شد که کنار یک‌دیگر و زیر تغارهایی با لولهٔ ناودانی‌شکل، در حدفاصل اشیای دیگر با کارکرد خانگی، رزمی و تشریفاتی و روی خنجرها، تبرتیشه‌ها، دوشاخ‌ها و میلهٔ سنگی جای‌داشتند. سپرها از نظر شکل تا حدودی مشابه یک‌دیگرند و تفاوت اندکی در تعداد مزغل و تسمه دارند. تاکنون این نوع سپرها از دیگر محوطه‌های باستانی هم‌زمان و پس از آن گزارش نشده است. براساس مطالعات انجام شده، این سپرها تاکنون کهن‌ترین سپرهای مکشوف از ایران به‌حساب می‌آیند. با کمک آزمایش‌های XRD و XRF و به‌منظور شناسایی، تجزیه و تحلیل عناصر و آنالیز شیمیایی برروی یکی از سپرها و سایر اشیای مجموعه مشخص شد که جنس آلیاژ آن مس پایه بوده و به‌روش ریخته‌گری و سپس چکش‌کاری سرد ساخته شده است.

کلیدواژگان: سپر، مس پایه، دورهٔ مفرغ پایانی، تپه بازگیر، جلگهٔ گرگان.

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ناشر: پژوهشگاه میراث‌فرهنگی و گردشگری

مقدمه

تپهٔ بازگیر در دو کیلومتری شهر مینودشت، در روستایی به‌همین نام قرار دارد. تپه در ۷۶ کیلومتری شمال‌شرق تورنگ‌تپه، ۱۶/۵ کیلومتری شرق و جنوب‌شرقی محوطهٔ میراث جهانی گنبد قابوس و در قسمت شرقی جلگهٔ گرگان جای دارد. تپه بیضی‌شکل و مساحت آن بیش از دو هکتار است. در زمستان ۱۳۷۹، طی یک برنامهٔ نجات بخشی و در سال ۱۳۸۹ کاوش اضطراری در آن صورت گرفت.

در بین یافته‌های بازگیر، مجموعه‌ای از آثار فلزی در یک بستر باستان‌شناختی از دورهٔ مفرغ پایانی بسیار حائز اهمیت است. این مجموعهٔ فلزی به‌دست آمده دارای فرم‌های مختلف ازجمله: تبر، سرگرز، سرنیزه، ساطور، ظروف فلزی و... است. آثار دارای کارکردهای کشاورزی، خانگی، رزمی و تشریفاتی و شأن‌زا هستند. از برخی گونه‌ها چندین نمونه مشابه وجود دارد و چیدمان آن‌ها به‌گونه‌ای است که هریک از گروه‌های اشیاء، براساس شکل و نوع کاربری تفکیک شده است. از ۷۵۹ شئ فلزی مجموعهٔ بازگیر ۱۹۸ قلم آن را می‌توان در زیر شاخهٔ ابزار رزمی یا جنگ‌افزارها طبقه‌بندی کرد. این ابزارها دارای گونه‌های مختلفی به شرح زیر هستند:

۱- سر نیزه (۳۰ قلم)
۲- سپر (۳ قلم)
۳- تبر/ تبرزین (۴۰ قلم)
۴- سرگرز (۲۳ قلم)
۵- ساتور / کارد (۲۰ قلم)
۶- خنجر (۸۲ قلم)

پرسش‌های پژوهش: پرسش‌های اصلی پژوهش حاضر را می‌توان چنین بیان کرد: شکل و کارکرد سپرها و جایگاه این سپر در بستر باستان‌شناسی مجموعهٔ بازگیر و در تاریخ رزم‌افزار در ایران.

روش پژوهش: بررسی سپرهای بازگیر در بستر باستان‌شناسی و نسبت آن با سایر مجموعه، مقایسه و مطالعهٔ تطبیقی با آثار مشابه، برگرفته از مطالعات کتابخانه‌ای و میدانی، بررسی آزمایشگاهی به‌منظور فن‌شناسی و بررسی شیوهٔ ساخت، و درنهایت بازسازیی پیشنهادی، روش پژوهش این جستار خواهد بود.

پیشینهٔ پژوهش مجموعهٔ بازگیر

پس از کشف اتفاقی مجموعهٔ بازگیر، نخستین‌بار نگارنده در سال ۱۳۸۳ در کنگرهٔ بین‌المللی باستان‌شناسی خاور نزدیک در برلین به معرفی این آثار پرداخت و سپس در سال ۱۳۸۴ مقاله‌ای در گزارش‌های باستان‌شناسی منتشر کرد.

در زمینهٔ فن‌شناسی اشیای مجموعهٔ بازگیر نخستین‌بار در سال ۱۳۸۱، مطالعات آزمایشگاهی (شیمی، آنالیز XRD از محصولات خوردگی، بررسی SEM) برروی پنج نمونه از اشیاء انجام شد و در بررسی SEM یک نمونهٔ مورد مطالعه، ۹۵٪ مس و ۵٪ اکسیژن و گوگرد شناسایی شد. دو نمونه قطعات خرد شدهٔ تغار در دانشگاه فرایبرگ توسط «پرنیشکا» مورد آزمایش EDXRF و XRD قرار گرفت که در نمونهٔ سبزرنگ، ۹۹٪ مس و ۰/۷٪ آرسنیک و در نمونهٔ آبی‌رنگ، ۹۲٪ مس و ۶/۹٪ آرسنیک شناسایی شد. در آزمایش XRD در نمونهٔ سبز رنگ مالاکیت و تنوریت و در نمونهٔ آبی رنگ آزوریت و کوپریت نشان داده شد.

چندین پایان‌نامه دربارهٔ بازگیر در مقطع کارشناسی‌ارشد باستان‌شناسی و حفاظت و مرمت

صورت گرفته است. در سال ۱۳۹۱ طرح ساماندهی و مستندنگاری اشیاء بازگیر به‌سرپرستی نگارنده انجام شد. در این طرح کلیهٔ اشیاء عکاسی حرفه‌ای، طراحی (گونه‌های شاخص)، توصیف و گونه‌شناسی شدند.

در سال ۱۳۹۵ نیز «قربانعلی عباسی» سرپرست کاوش، در کتاب دستاوردهای باستان‌شناسی دشت گرگان بزرگ در کنار گزارش کاوش چندین محوطه، به معرفی یافته‌های کاوش بازگیر پرداخت. در اسفندماه ۱۴۰۱ پژوهشگرانی از دانشگاه «تیکیو» ژاپن با همکاری کارشناسان اداره کل استان گلستان برخی از اشیای بازگیر را از جنبهٔ حفاظتی و مرمتی بررسی کردند.

بستر باستان‌شناختی مجموعهٔ بازگیر

در کاوش سال ۱۳۸۹، نهشته‌های فرهنگی از اواخر هزارهٔ ششم و اوایل هزارهٔ پنجم پیش‌ازمیلاد (دورهٔ چشمه‌علی/فلات قدیم)، دورهٔ مفرغ، دورهٔ آهن، دورهٔ اشکانی، دوران اسلامی و دورهٔ معاصر به‌دست آمد؛ اما در حدود عمق بین۷٫۵۰ تا ۹ متری از سطح بالای تپه، مجموعهٔ فلزی (بیش از ۷۵۰ قلم) در بستر خاک بکر زیر لایهٔ مفرغ جدید کشف شد که در نوع خود کم‌نظیر بود. این آثار در زیر لایهٔ معماری دورهٔ مفرغ پایانی به صورت هدفمند در چاهی در خاک بکر پنهان شده بودند؛ یعنی ساکنان بازگیر در زیر کف مسکونی اتاق مسکونی چاهی به عمق حدود سه متر حفر کردند و در کف چاه فضایی تونلی‌شکل در جهت شرقی-غربی به درازای ۴٫۳۳ متر، پهنای ۲٫۹۷ متر و به ارتفاع ۱۱۵ حفر کردند. اشیاء با توجه به شکل، به‌صورت منظم چیدمان شده بود. پس از اتمام چیدمان، سمت ورودی دفینه را نیز با دیوار خشتی و... مسدود کرده بودند.

موقعیت سپرها در مجموعهٔ بازگیر

در مجموعهٔ بازگیر ۱۹۸ قلم ابزار رزمی در گونه‌های متفاوت از فیچر ۲۴۸ از ترانشهٔ کاوش به‌دست آمدند که سه عدد آن به‌شکل سپر هستند. این سپرها در کنار یک‌دیگر و بین اشیاء مجموعه قرار داشتند. سپرها در زیر تغارهایی با لولهٔ ناودانی‌شکل، روی خنجرها، تبرتیشه‌ها، دوشاخ‌ها و میلهٔ سنگی جای داشتند و هر سه سپر بین اشیای خانگی و اشیای رزمی قرار داشتند. اشیاء به پشت و تقریباً در جهت شرقی-غربی چیدمان شده بودند. تسمهٔ سپرها بر اثر فشار اشیاء بالایی آسیب‌دیده و خود بدنه‌ها نیز مچاله شده‌اند.

گاهنگاری

مجموعهٔ اشیای بازگیر ازنظر جنس و شکل و کارکرد مشابه برخی از اشیای تپه حصار IIIC در دورهٔ مفرغ جدید هستند. برخی گونه‌ها مانند نیزه و خنجر در دیگر محوطه‌های جلگهٔ گرگان مثل: شاه‌تپه، گنجینهٔ استرآباد، تورنگ‌تپه شناسایی شدند؛ اما در هیچ‌یک از این مکان‌ها سپر گزارش نشد. گاهنگاری مطلق در تپه حصار IIIIC، ۱۸۰۰-۱۹۰۰ پ.م. بوده و تورنگ‌تپه را مربوط به ۱۷۰۰-۱۸۰۰پ.م. می‌دانند.

نتیجه‌گیری

همان‌طوری‌که پیش‌تر اشاره شد این سپرها در کنار یک‌دیگر و بین اشیاء مجموعهٔ فلزی قرار داشتند؛ هرچند شباهت‌هایی باهم دارند، اما در برخی جزئیات با هم‌دیگر متفاوت‌اند که این

تفاوت‌ها بیشتر بین گونهٔ دوم با سایر گونه‌ها است. شکل آثار سپرهای بازگیر بسیار منحصربه‌فرد است و نمونه‌های مشابهی از سایر محوطه‌های باستان‌شناسی ایران یا فرهنگ‌های همجوار یا هر فرهنگ دیگری تاکنون شناخته نشده است. چیزی‌که سپر بازگیر را از سپرهای دیگر تاریخی متمایز می‌کند، موارد ذیل است که عبارتنداز:

- **وزن:** اگرچه شاید وزن نسبتاً زیاد سپرها که نزدیک به ۴ کیلوگرم است، این تصور را ایجاد کند که برای استفاده بسیار سنگین‌اند، اما سپرهای سنگین‌تری از دوران اسلامی ایران وجود دارد؛ مانند سپر پوست دورهٔ صفویه به وزن ۴/۵ کیلوگرم. اما بیشتر سپرها بین ۱۵۵۰ تا ۳۰۰۰ گرم وزن داشتند.

- **شکل:** این سپرها شکل بسیار عجیبی دارند. سپرهای شناخته شده عصر آهن عمدتاً به شکل گرد بودند. بعدها در دوره‌های هخامنشی، اشکانی و ساسانی از سپرهای بیضی‌شکل و مستطیلی نیز استفاده شده است. در دوران اسلامی از سپرهای گرد استفاده می‌شد. با توجه به شکل و وزن و بستر باستان‌شناسی آثار مذکور (حدود ۲۰۰ ابزار جنگی در مجموعه) جای تردیدی در کاربری آن‌ها به‌عنوان سپر باقی نمی‌گذارد.

همان‌طوری‌که مشتاق‌خراسانی به‌درستی اشاره کرد، تاکنون قدیمی‌ترین سپر مستطیل‌شکل را می‌توان در استل «کرکس‌ها زاناتوم»، شاه لاگاش (حدود ۲۴۵۰ پ.م.) مشاهده کرد. فرم سپرهای این استل مربوط به دورهٔ مفرغ میانه و سپرهای بازگیر مربوط به مفرغ جدید، یعنی حدود ۲۱۰۰ تا ۱۶۰۰ پ.م. است. این مسأله نشان می‌دهد که سپرهای راست‌گوشه و بلند در دورهٔ مفرغ در غرب آسیا کاربرد نسبتاً وسیعی داشته‌اند و از عصر آهن به‌بعد به‌شکل مدور یا بیضی تبدیل شدند. سپرهای بازگیر را می‌توان به‌عنوان کهن‌ترین سپرهای فلزی تاریخ ابزار رزمی ایران محسوب کرد. بی‌شک پژوهش‌ها و کاوش‌های آینده شناخت ما را از این نوع جنگ‌افزارها بیشتر خواهد نمود.

سپرهای بازگیر سوراخ دیدبانی/ مزغل چهارگوش دارند و مفتولی افقی همانند یک تیرک دیواره‌های سمت چپ و راست را به‌هم متصل می‌کند. دو سوراخ در لبهٔ بالا و پایین جای تسمهٔ چرمی یا ریسمان است؛ همان‌طوری‌که «ذکا» اشاره می‌کند در سپرها، مزغل‌ها / بریدگی کوچک پدید می‌آوردند تا سربازی که خود را در پناه سپر می‌گرفت بتواند از آن روزنه‌ها، حرکات دشمن را پایش و به‌موقع از اسلحهٔ خود استفاده کند.

سپاسگزاری

از جناب دکتر منوچهر مشتاق‌خراسانی به خاطر راهنمایی‌های سودمندانه، ارسال منابع و برگردان مقاله به انگلیسی، دکتر مرتضی حصاری به‌خاطر دعوت و تشویق به نگارش مقاله، دکتر ابرهارد سوِر و دکتر نیکلاس بروفکا برای پیشنهادها و نکته‌نظرهای آن‌ها، دکتر فریدون بیگلری و دکتر ام‌البنین غفوری برای ویرایش مقاله، آقای علیرضا سالاری برای بازسازی سپر، خانم مرضیه مصلحی برای بررسی و شناخت فن‌شناسی، خانم محدثه منصوری‌رضی برای طراحی سپرها، آقای شاهی پودینه برای عکاسی و آقای حمید عمرانی‌رکاوندی و غلامرضا حمیدی از همکاران اداره کل میراث فرهنگی،گردشگری و صنایع‌دستی استان گلستان برای فراهم آوردن امکان بازبینی آثار بی‌نهایت قدردانی می‌گردد.