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## Arrowheads in the cultural-historical property repository of the Administration of Cultural Heritage of Kerman. An Introduction

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**Abstract:** *In this paper, the authors have examined 94 unprovenanced arrowheads (tanged and socketed) that are stored in the cultural-historical property repository of the Administration of Cultural Heritage of Kerman Province (Southeastern Iran). The illegal possessors claimed to have discovered the arrowheads via illegal diggings in the Kerman Province. Most of the examined arrowheads were probably designed for warfare and are comparable to findings within current borders of Iran or its vicinity. Most of the tanged arrowheads probably date to the Iron Age of Iran (1450-550 B.C.). Most of the trilobate arrowheads can be compared to the findings of Achaemenid sites or resemble items that have been excavated from layers associated with the Achaemenids. Some of the Bronze Age arrowheads, however, could not be compared with any items that have been recovered from Iran or its neighboring regions.*

**Key words:** Archeology, History, Iran, Arrowhead, Bronze Age, Iron Age, Achaemenid Period

### Introduction

Archery was always held in the highest cultural and military esteem by the inhabitants of the ancient Iranian world.<sup>1</sup> The bow was a primary weapon of the ancient armies of Iran. The Neo-Elamites were known for their prowess in archery and vast use of bowmen.<sup>2</sup> Although the Achaemenid armies were much more diverse

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<sup>1</sup> Farrokh, 2007: 73; Skupniewicz, 2021.

<sup>2</sup> Potts, 2004: 263, 267-8, 277, 290-1, 345.

than the Elamites, a great part of their early battle doctrine was centered on massed archery.<sup>3</sup> The Parthian (who had Scythian origins) army, was almost an all cavalry force that relied much on horse archers.<sup>4</sup> The Sasanians inherited the Parthian all-cavalry concept, but their battle doctrine evolved throughout their rule. Archers (of various types), however, played an important part in their tactical developments.<sup>5</sup>

In a region where archery was so prominent, there can be no doubt that arrow manufacturing was omnipresent. While archaeological activities in various parts of the ancient Iranian realm have contributed to the discovery and identification of many ancient arrowheads, there are numerous findings that do not have a certain provenance. These items are acquired through clandestine activities, and they can be found in private collections, museums, and government repositories throughout the world. 94 of such arrowheads are stored in the cultural-historical property repository of the Administration of Cultural Heritage of Kerman. According to the object documents, the arrowheads were confiscated by the authorities of the Kerman Province, Southeastern Iran. Collected from various illegal possessors on several occasions (prior to July 2009), the items do not belong to a single archaeological site. The possessors claimed to have discovered the arrowheads (along with numerous other artifacts, including other pieces of weaponry) via illegal diggings in the Kerman Province, but the authorities of the Administration of Cultural Heritage of Kerman believe that they may have been acquired from anywhere in Southeastern Iran or even beyond (within the current borders of Iran, of course). In this paper, the authors will introduce the confiscated arrowheads for the first time.

In any typology of blade-type weapons, differentiating large arrowheads from small spearheads or javelin heads is rather complicated and requires choosing a certain number of arbitrary definitions.<sup>6</sup> As a result, maximum overall length of 11.5 cm and 8.0 cm for blade length was selected for differentiating large arrowheads from other pieces of weaponry in the repository, following measurements used by Malloy. Another issue is the absence of a universal terminology for naming parts of an arrowhead. As can be seen on numerous publications, researchers use different terms for the same part of an arrowhead, or refer to different parts with the same term.<sup>7</sup> In this paper, the terminology has been derived from Cross & Milik, and Malloy.<sup>8</sup> In order to conduct this research, the authors have used a descriptive-comparative approach.

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<sup>3</sup> Farrokh, 2007: 40, 84; Head, 2012: 44-59.

<sup>4</sup> Head, 1982: 31; Wilcox, 2001: 3-5, 8-9; Karasulas, 2004: 50-1; McDonough, 2013: 681.

<sup>5</sup> Nicolle, 1996: 10-24; Farrokh, 2012: 25-31.

<sup>6</sup> Thornton & Pigott, 2011: 135.

<sup>7</sup> Szudy, 2015: 122.

<sup>8</sup> Cross & Milik, 1956; Malloy, 1993.

## **An overview of the collection**

The arrowheads are generally in good condition, but most bear signs of corrosion and patina and some are partially damaged. 6 arrowheads (Nos. 76, 84, 88, 90, 92 and 94), however, are heavily damaged and corroded. The patina of some arrowheads (for instance, Nos. 37, 43-45, 52, 54-55 and 57) have been removed by the illegal possessors. Almost the entire collection is made out of bronze, and only 2 items (Nos. 41-42) are copper and 1 (No. 46) is a schist arrowhead. All items are made by casting, except No. 46 which is handmade. Only 2 arrowheads have decorations (Nos. 3-4). The arrowheads can be divided into two major categories, tanged (59 items) and socketed (35 items). All socketed examples are trilobate, 2 of which (Nos. 91-92) have spurs<sup>9</sup>. The tanged examples can be categorized into six groups, deltoid (29 items), oblanceolate (18 items) lanceolate (6 items), lozenge-shaped (3 items), ovate (3 items), and oblong (1 item). Only 2 deltoid arrowheads are non-barbed (Nos. 2-3). Most tanged arrowheads have tapering tangs.

### **Deltoid arrowheads**

No. 1 is the thickest arrowhead (0.4 cm) of the collection. It also has the longest (8 cm) and widest (3.6 cm) blade and has wide mid-ribs. A similar bronze arrowhead, dated to the 1200-800 B.C. has been reported from Assyria. At 6.0 cm length, it is much shorter than the 11.0 cm No. 1, but it has a wider tang. According to Malloy, these type of usually barbed “rhombic” arrowheads were widely used by the Egyptians during the same period, but they are scarce in other regions.<sup>10</sup> The 9.0 cm (6.2 cm blade length)

No. 2 does not have barbs and mid-ribs, but the mid-section of its blade has been raised. It has a rectangular cross-section tang. An iron arrowhead recovered from Ayanis (dated to mid-7th century B.C.) can be compared to No. 2. It also has similar lenticular blade (4.0 cm) and shoulders, but has a round cross-section tang.<sup>11</sup>

No. 3 (9.6 x 2.1 cm), has mid-ribs and a slightly longer blade (6.4 cm). It is a decorated item, in shape of two parallel grooves across the stem. A comparable bronze arrowhead,<sup>12</sup> dating to c. 1450-1350 B.C.,<sup>13</sup> has been discovered during archaeological excavations at Agha-Evlar.<sup>14</sup> This type of arrowhead has been categorized as “Type III” and dated to c. 1250 B.C. Iran by Medvedskaya.<sup>15</sup> Another item

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<sup>9</sup> No. 84 may originally have had a spur.

<sup>10</sup> Malloy, 1993: 13, No. 97, Pl. XIII.

<sup>11</sup> Szudy, 2015: 285, Fig. 9.41, Ayanis 11.

<sup>12</sup> Classified as “ribbed bladed” by Petrie (1917: 33, Pl. XLI, No. 26).

<sup>13</sup> Maxwell-Hyslop & Hodges, 1962: 128-9.

<sup>14</sup> 35 km west of Talesh County, northwestern Iran. de Morgan, 1905: 313, No. 610.

<sup>15</sup> Medvedskaya, 1980: 24, Fig. 1; 2005: 135, 226, Fig. 14.

that has a counterpart in the Agha-Evlar findings<sup>16</sup> is the barbed No. 5 (9.1 x 3.3 cm). It has narrow mid-ribs, a square cross-section stem and a broken two-sided tang.

No. 4 (11.0 x 1.6 cm) has two long sharp barbs and no mid-ribs. The base of its semi-round stem is widened and it has been decorated by a chevron groove on either side. The base of the two-sided tang has been hammered flat. A bronze arrowhead recovered from Ayanis<sup>17</sup> resembles No. 4. It is a large item measuring about 15 cm.<sup>18</sup> Another comparable bronze/copper item (about 8.0 cm) has been recovered from Hasanlu Period IVB, dated to the end of the 9th or the early 8th century B.C.<sup>19</sup> No. 6 (10.2 x 2.0 cm) also does not have mid-ribs and generally resembles No. 4, but has some different characteristics. This arrowhead has curved barbs that turn inwards, a square cross-section tang (its base is not hammered flat like No. 4), and a round undecorated stem. A curved-barbed bronze arrowhead resembling No. 6 has been excavated at the Iron Age cemetery of Sarm,<sup>20</sup> dated to the Iron Age II (1200-800 B.C.) to Iron Age III (800-550 B.C.). A rare item in the Central Iranian Plateau, the Sarm arrowhead (about 10 cm), also has a square cross-section tang.<sup>21</sup> Another item that bear a resembling to No. 6 and the Sarm arrowhead is No. 9 (9.2 x 2.0 cm). This arrowhead has a slight raise across the base of the stem to the tip of the blade, long sharp barbs (not curved), and a sharp two-sided tang.

No. 7 (9.0 x 2.1 cm) has long sharp barbs that point away from the arrowhead, a long stem, and a two-sided sharp tang. It does not have mid-ribs, but has been raised across the base of the stem to the tip of the blade. A comparable iron arrowhead has been excavated at Ayanis that has a long round stem, lenticular blade and long sharp barbs that point away that from the arrowhead.<sup>22</sup> No. 8 (9.8 x 2.4 cm) also has long sharp barbs, but they continue in the form of grooves on either side of the blade. It has similar raise and a sharp tang, but the cross-section of the tang of this item is square. Like No. 4, the base of its stem is widened.

No. 10 (11.3 x 2.5 cm with a blade length of 4.5 cm) is another item that shows raise across the base of the stem to the blunt tip of the blade. It has long sharp barbs and a round cross-section tang with a hammered flat base. No. 17 (5.2 x 1.6 cm with a blade length of 2.8 cm) also has a blunt tip, long sharp barbs (their tips has slightly turned inwards), mid-ribs that extends into a square cross-section stem, and a round cross-section tang. A bronze arrowhead recovered from Karchaghbyur<sup>23</sup> resembles

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<sup>16</sup> Unfortunately, de Morgan (1905: 313, No. 606) has not provided any details regarding the Agha-Evlar arrowheads.

<sup>17</sup> 35 km east of the city of Van, eastern Turkey.

<sup>18</sup> Muscarella, 2006: 155, Fig. 3, Nos. 140.

<sup>19</sup> Thornton & Pigott, 2011: 145, Fig. 6.6, HAS 62-882.

<sup>20</sup> 20 km south of the city of Qom, Central Iran.

<sup>21</sup> Pourbakshandeh, 2002: 76.

<sup>22</sup> Szudy, 2015: 295-6, Fig. 9.49, Ayanis 70.

<sup>23</sup> An Urartian cemetery in the vicinity of Lake Sevan, Armenia.

Nos. 10 and 17. Dating to the 8th-7th century B.C., this item has a similar rhomboid blade (3.5 cm), pronounced barbs and round cross-section tang. Unlike No. 10, the Karchaghbyur arrowhead has a pointed tip and a sharp tang.<sup>24</sup> Another related item is No. 11 (11.2 x 2.1 cm), with a blade length of 4.1 cm. This arrowhead has a blunt tip, long sharp barbs, and similar raised rib. Like the Karchaghbyur example, it has a sharp tang and its raised rib line is clearly visible. Unlike those 3 arrowheads, however, No. 11 has rectangular cross-section tang.

Nos. 12-16 are closely related items, manifested by mid-ribs that extends into a stem that has a stop and slightly arched blades that form short barbs. No. 12 (5.1 x 2.2 cm) has square cross-section stem and rectangular cross-section tang. The base of its tang is two-sided that ends in a sharp point. No. 13 (7.5 x 1.6 cm) has lenticular (ribbed) cross-section stem and tang that ends in a sharp point. No. 14 (6.5 x 2.0 cm) has a square cross-section stem and a two-sided sharp tang. No. 15 (6.0 x 2.1 cm) has lenticular cross-section stem and two-sided sharp tang. No. 16 (4.5 x 1.6 cm) has square cross-section stem and tang with a flat end. According to Medvedskaya, this type of “Triangular Type IIb” arrowheads belong to c. 1200 B.C. Iran.<sup>25</sup> A similar bronze arrowhead is kept in the Metropolitan Museum, dated to Iron Age Iran. Measuring 8.71 x 2.31 cm, this item has prominent mid-ribs. Muscarella, while discussing 23 arrow and lance heads, believes “that all of them are apparently related types of a polythetic group and maybe chronologically temporary”.<sup>26</sup> If that is the case, Nos. 10-17 (along with Karchaghbyur 4) may also be associated with the same “polythetic group”.

Nos. 18-28 are also closely related items, as can be seen in their triangular blades, mid-ribs that extends into a bulky stem that has a stop, long sharp barbs that point away from the arrowhead, and short wide tangs. Nos. 18 (4.0 x 1.2 cm) and 20 (4.2 x 1.3 cm) have lenticular cross-section stem and conical tang. Nos. 19 (4.6 x 1.2 cm), 23 (3.8 x 1.3 cm) and 24 (3.8 x 1.5 cm) have square cross-section stem, long uneven barbs and conical tang. No. 21 (3.7 x 1.3 cm) has square cross-section stem and rectangular cross-section tang. Nos. 22 (3.8 x 1.3 cm) and 26 (3.8 x 1.4 cm) have square cross-section stem and conical tang. Nos. 25 (4.2 x 1.3 cm), 27 (3.3 x 1.2 cm) and 28 (4.2 x 1.3 cm) have square cross-section stem and tang. Nos. 25 and 28’s tangs have a sharp point and flat ending, respectively. An iron arrowhead (about 7 cm) in the Hasanlu Period IVB collection resembles Nos. 18-28. One of its barbs is shorter than the other barb, as in Nos. 19, 23 and 24.<sup>27</sup>

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<sup>24</sup> Szudy, 2015: 314-5, Fig. 9.62, Karchaghbyur 4.

<sup>25</sup> Medvedskaya, 1980: 24, Fig. 1; 2005: 134-5, 226, Fig. 14.

<sup>26</sup> Muscarella, 1988: 289-92, No. 416.

<sup>27</sup> Thornton & Pigott, 2011: 144, Fig. 6.5, HAS 74-437.

## Oblanceolate arrowheads

Nos. 29-37 have a peculiar tapering shape. Their widest parts are the triangular blades that tapers into their stems and finally the tangs. No. 29 (6.2 x 1.1 cm) has slightly raised narrow mid-ribs that extends into its stem and a square cross-section tang. No. 30 (5.8 x 1.4 cm) has slightly raised wide mid-ribs that extends into a rhomboid cross-section stem, and a rhomboid cross-section tang. No. 31 (4.8 x 1.1 cm) has rectangular cross-section stem and tang that ends in a sharp point. No. 32 (5.0 x 1.6 cm) and 36 (4.5 x 1.1 cm) have slightly raised wide mid-ribs that extends into a rectangular cross-section stem, and a rectangular cross-section tang (No. 36 has a sharp pointed tang). No. 33 (6.0 x 1.4 cm) has slightly raised narrow mid-ribs that extends into a rectangular cross-section stem and a conical tang. Nos. 34 (5.5 x 1.5 cm) and 35 (5.0 x 1.5 cm) have slightly raised wide mid-ribs that extends into a rectangular cross-section stems, and conical tangs. Comparable bronze arrowheads have been excavated at Tell el-Ajjul, dated to Dynasty XVIII of Egypt (1549–1298 B.C.)<sup>28</sup> and Megiddo stratum IX (1550-1479 B.C.) and VIII (1479-1350 B.C.).<sup>29</sup> The flat bladed No. 37 (5.5 x 1.2 cm) has a parallel in the Tell el-Ajjul findings.<sup>30</sup> No. 38 (4.8 x 1.4 cm) is also a related item, although it has an overall rhombic shape. This arrowhead has rhomboid blade and a sharp pointed tang. A similar bronze arrowhead has been obtained from Megiddo stratum V (ca. 1050-1000 B.C.).<sup>31</sup>

Nos. 39-41 are stem-less arrowheads that have lozenge-shaped blades, showing long tapering forms. No. 39 (7.0 x 1.5 cm) has wide mid-ribs. No. 40 (6.5 x 1.1 cm) has narrow mid-ribs and a sharp pointed tang. No. 41 (6.4 x 1.3 cm) is a flat bladed one made out of copper. Similar bronze arrowheads are reported from Tell Defenneh<sup>32</sup> and the palace of Apries at Memphis, dating to the Dynasty XXVI (664-525 B.C.) and the Persian Age of Egypt, respectively. According to Petrie, both locations were “overrun by Persians”.<sup>33</sup> Interestingly, 192 and 22 similar arrowheads (iron and bronze, respectively) can be seen among the items of the treasury of Persepolis. Judging by their large size, Schmidt has concluded that this type of arrowhead “may have been employed for specific targets”.<sup>34</sup> Categorized as “rhombic” by Petrie, he believes that this form of arrowhead “would be for cutting through leather

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<sup>28</sup> Petrie, 1934: 10, Pl. XXX, No. 358.

<sup>29</sup> Loud, 1948: 163, 167, 182; Pl. 174-175, Nos. 12, 16, 24.

<sup>30</sup> Petrie, 1934: 10, Pl. XXX, No. 351.

<sup>31</sup> Lamon & Shipton, 1939: 151, 396, M 208, Pl. 80, No. 54.

<sup>32</sup> Petrie, Murray & Griffith: 1888: 77-8, Pl. XXXIX, No. 11; Petrie, 1917: 34-5, Pl. XLI, No. 122.

<sup>33</sup> Petrie, 1917: 35, Pl. XLII, No. 236.

<sup>34</sup> Schmidt, 1957: 97, 143, 146, Pl. 76, Nos. 5-6.

garments, where the whole blow was wanted at once to make a single cut. A long, tapering form would lose its force by wedging in the leather”.<sup>35</sup>

Nos. 42-44 have oval blades and tapering forms. The copper No. 42 (4.0 x 1.2 cm) is flat bladed and has a flat tang with a sharp point. No. 43 (3.6 x 1.2 cm) has slightly raised narrow mid-ribs that extends into the stem, and a conical tang. The flat bladed No. 44 (4.0 x 1.2 cm) has a curved flat tang with a sharp point. A comparable bronze arrowhead has been recovered from the Late Bronze Age temple at Kamid el-Loz. Measuring 4.2 cm, the item has an oval rounded blade, no mid-ribs, and a round cross-section tang.<sup>36</sup> Nos. 45 and 46 are also related items, although they have somewhat different shapes. No. 45 (3.0 x 1.2 cm) has a pyramidal blade with wavy edges, resembling a cauliflower or broccoli floret. There is a triangle-shaped carving on one side of its flat blade. Its flat tang ends in a sharp point. No. 46 (3.3 x 0.8 cm) is made out of black schist stone. It is a flat bladed item that has an overall oblanceolate shape. Three copper arrowheads discovered at Tell el-Ajjul resemble No. 46. As Petrie has noted, they were probably used for hunting and often associated with fowling-bolts. According to Petrie, “such arrows began under Dyn. XII [1974-1781 B.C.], but are commonest in Dyn. XVIII.”<sup>37</sup> Nos. 42-46 probably belong to a group of small bronze blunt-headed objects obtained from various sites of Late Bronze Age Egypt and the Near East. Genz has also pointed out that they most likely functioned as stunning bolts for fowling. Since many of these arrowheads were found in elite tombs, Genz has concluded that “they certainly were part of the equipment of high-ranking warriors”.<sup>38</sup>

### **Lanceolate arrowheads**

The stem-less No. 47 (10.0 x 1.5 cm) has a lenticular blade (4.0 cm) and a long round cross-section tang that ends in a sharp point. A comparable bronze arrowhead (about 11 cm, with a blade length of about 5 cm) has been recovered from a Late Bronze Age temple at Amman, dated to c. 1400- c.1200 B.C.<sup>39</sup>

No. 48 (9.5 x 1.4 cm) has a lenticular blade with a blunt tip, short round cross-section stem and a long square cross-section tang. A bronze arrowhead (about 10 cm) resembling No. 48 has been found during the archaeological excavations at necropolis of Namin,<sup>40</sup> dated to the Late Bronze Age to the Early Iron Age. The Namin arrowhead’s mid-ribs have extended into the stem and it has a round cross-section tang.<sup>41</sup>

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<sup>35</sup> Petrie, 1917: 32, 35.

<sup>36</sup> Metzger & Barthel, 1993: 305, Taf. 33. Nr. 3.

<sup>37</sup> Petrie, 1933: 9, Pl. XXI, Nos. 62-64.

<sup>38</sup> Genz, 2007: 47, 53.

<sup>39</sup> Hennessy, 1966: 157, Pl. XXXV, B.

<sup>40</sup> 25 km northeast of Ardabil City, Northwestern Iran.

<sup>41</sup> de Morgan, 1905: 266, Fig. 355, No. 610; 1925: 206-7, Fig. 203, No. 2.

Nos. 49-51 are stem-less, generally look-alike items. No. 49 (8.5 x 2.1 cm) has wide and pronounced mid-ribs that begin from the square cross-section tang and taper towards the tip of the blade. No. 50 (7.9 x 1.8 cm) has slightly raised narrow mid-ribs and a sharp pointed tang. No. 51 (3.8 x 1.0 cm) is flat bladed and has a slightly curved flat tang. Similar arrowheads have been categorized as “Type I” and dated to c. 1000 B.C. Iran by Medvedskaya.<sup>42</sup>

No. 52 (4.5 x 0.8 cm) has a narrow elongated blade and slightly raised wide mid-ribs that extends into a two-sided slightly curved tang. Comparable bronze/copper and iron arrowheads have been reported from Hasanlu Period IVB<sup>43</sup> and IV,<sup>44</sup> and Ayanis.<sup>45</sup>

### **Lozenge-shaped arrowheads**

The flat bladed, sharp tipped No. 53 (4.5 x 1.2 cm) has an irregular quadrilateral shape. It has a long stem and its square cross section tang is short and pointed. A bronze/copper arrowhead from the Hasanlu Period IVB collection can be compared to No. 53. The arrowhead (about 7 cm) has narrow lenticular blade and square cross section tang.<sup>46</sup>

Nos. 54 and 55 share many characteristics. Both items are flat bladed and stem-less, measuring 4.0 x 1.2 cm. They have flat tangs and their patina has been removed by the illegal possessors. No. 55's tang ends in a sharp point. A similar diamond-shaped iron arrowhead (about 7 cm) has been recovered from Hasanlu Period IVB. This arrowhead has a round cross-section tang.<sup>47</sup>

### **Ovate arrowheads**

Nos. 56 (4.7 x 1.4 cm) and 57 (4.8 x 1.5 cm) are stem-less items that have slightly raised wide mid-ribs that extend into a two-sided tang. No. 56 has a blunt tipped blade. A bronze arrowhead from the Late Bronze Age temple at Kamid el-Loz can be compared to No. 56. Measuring 5.6 cm, the item has narrow mid-ribs and a rectangular cross-section tang.<sup>48</sup> No. 57 has a sharp tipped blade and a slightly curved tang. Similar copper arrowheads have been obtained from Tell el-Ajjul<sup>49</sup> and Yorgan

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<sup>42</sup> Medvedskaya, 1980: 24, Fig. 1; 2005: 134, 226, Fig. 14.

<sup>43</sup> Thornton & Pigott, 2011: 145, Fig. 6.6, HAS 60-909.

<sup>44</sup> Muscarella, 1988: 61-2, Nos. 84, 86-87.

<sup>45</sup> Muscarella, 2006: 155-6, Fig. 2, No. 113.

<sup>46</sup> Thornton & Pigott, 2011: 145, Fig. 6.6, HAS 60-871 b.

<sup>47</sup> Thornton & Pigott, 2011: 141, Fig. 6.2, HAS 74-N683 w.

<sup>48</sup> Metzger & Barthel, 1993: 268, Taf. 34. Nr. 4.

<sup>49</sup> Petrie, 1933: 9, Pl. XXI, No. 55.



Tepe stratum II (1475 B.C.).<sup>50</sup> According to Petrie, such arrowheads were probably used for hunting.<sup>51</sup>

No. 58 (5.0 x 1.8 cm) has a blade in shape of spade suit, pronounced mid-ribs, round cross-section stem and a two-sided tang. A similar bronze arrowhead (5.6 cm) has been discovered at the Late Bronze Age temple of Kamid el-Loz. The arrowhead has quadrangular cross-section tang.<sup>52</sup> Since they have comparable bronze arrowheads in the Metropolitan collection,<sup>53</sup> these two items may also belong to the same “polythetic group” of Nos. 10-17.

### **Oblong arrowhead**

No. 59 (6.4 x 1.1 cm) has slightly raised narrow mid-ribs that extend into a short sharp pointed tang. There are numerous arrowheads (found at various Bronze Age sites) that generally resemble No. 59. One of these arrowheads has been found at the Late Bronze Age temple of Kamid el-Loz. Measuring 9.0 cm, this bronze item has a square cross-section tang.<sup>54</sup> According to Petrie, this type of arrowhead was probably used “for hunting rather than for war”.<sup>55</sup>

### **Trilobate arrowheads**

Most of the repository’s trilobate items resemble bronze arrowheads dated to the Achaemenid period. Nos. 60-76 have counterparts among the arrowheads obtained from Tall-i Takht, Pasargadae.<sup>56</sup> Nos. 77-81 can be compared to some of the arrowheads unearthed from Levels I and II of the Achaemenid Village at Susa.<sup>57</sup> Nos. 82-84 bear a resemblance to a number of leaded bronze arrowheads excavated from Tumulus T6 at Daskyleion, dated to the 5th and 4th centuries B.C.<sup>58</sup> Similar items to Nos. 85-86 can be seen in the hoard recovered from the treasury of Persepolis.<sup>59</sup> No. 87

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<sup>50</sup> Starr, 1937: 34, Pl. 125, W.

<sup>51</sup> Petrie, 1933: 9.

<sup>52</sup> Metzger & Barthel, 1993: 356, Taf. 35. Nr. 6.

<sup>53</sup> Muscarella, 1988: 289-92, Nos. 409-410.

<sup>54</sup> Metzger & Barthel, 1993: 171, Taf. 32. Nr. 12.

<sup>55</sup> Petrie, 1932: 8, Pl. XVI, No. 114.

<sup>56</sup> Stronach, 1978: 218-9, Fig. 94, Nos. 2-4, 6-8, 10-14, 16-17.

<sup>57</sup> Ghirshman, 1954: 31-2, 99-100, Pls. XLIII-LXIV, G.S. 117n, 211g, 964, 1015a, 1108, 1030e, 2045-2046. While Ghirshman (1954: 20, 72) had assigned Level I from the end of the 8th to the beginning of the 6th century B.C. and Level II to the 6th and the 5th centuries B.C., Stronach (1974: 240-6) has vigorously argued that Level I date to c. 600-400 B.C. and Levels II and III may be regarded as late Achaemenid and post-Achaemenid with a probable lower limit near 250 B.C.

<sup>58</sup> Kasar & Kaan, 2020: 175-9, 183, 190, 202, Figs. 8-9, IA2b, IB2e.

<sup>59</sup> Schmidt, 1957: 97-9, 142, 144, 155, Pl. 76, Nos. 8, 10-11.

can be compared to a similar item excavated from Sorkh-Dagh Tepe at Nad-i-Ali<sup>60</sup> period I (Achaemenid era).<sup>61</sup> Although heavily damaged, No. 88 is comparable to the arrowheads of Kyuzeli-gyr<sup>62</sup>, dated to the 6th-3rd centuries B.C.<sup>63</sup>

Other item that may have been related to the Achaemenid arrowheads are Nos. 89-92. Nos. 89-90 can be compared to some of the arrowheads discovered during the archaeological surveys of Suçikan Rock at Celaenae-Apameia (modern Dinar Town in Turkey), dated to the 7th-2nd centuries B.C.<sup>64</sup> Nos. 91-92 resemble bronze arrowheads obtained from Kalabaktepe at Miletus<sup>65</sup> and Didyma<sup>66</sup>, dated to c. 600 B.C. and mid-7th-mid-6th centuries B.C., respectively.<sup>67</sup> A bronze arrowhead excavated from Site V of the Shahr-i-Qumis (dated to c. 1st century B.C.-1st century A.D., Parthian period)<sup>68</sup> also bears a resemblance to Nos. 91-92.

No. 93 is comparable to another bronze arrowhead (a surface finding) from the Shahr-i-Qumis (perhaps Parthian, dated to c. 1st century B.C.-3rd century A.D.),<sup>69</sup> a Parthian arrowhead dated to the 3rd century B.C.-2nd century A.D.,<sup>70</sup> and 12 bronze arrowheads from the arsenal of Ai-Khanoum dated to c. 260-145 B.C.<sup>71</sup> No. 94 is also similar to a Parthian arrowhead dated to the 3rd century B.C.-2nd century A.D.<sup>72</sup> and 5 bronze arrowheads from the arsenal and palace of Ai-Khanoum.<sup>73</sup>

## Discussion and conclusion

Clandestine digging has always been a serious issue for the archaeology of Iran as attested by the sheer number of findings that lack provenance. Combined with other problems such rapid and irregular urbanization and ineffectual laws, the number of vanquished, pillaged and damaged archaeological sites are on the rise. During recent years, illegal excavators have become so bold that they merrily film and share their vandalistic exploits on the internet. It is no surprise, however, as most Iranians firmly believe that their country is laden with ancient treasures. As a result, many Iranians

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<sup>60</sup> About 12 km south of Qala-i-Kang, Afghanistan.

<sup>61</sup> Ghirshman, 1939: 16-7, Pl. 3, No. 12.

<sup>62</sup> 28 km south of Konye-Urgench, Turkmenistan.

<sup>63</sup> Tolstov, 1947: 3-4, Fig. 1.

<sup>64</sup> Ivantchik, 2016: 478-80, 484-7, Nos. 12, 15, 25, 27.

<sup>65</sup> Herzhoff, 2022: 102-3, Abb. 17-18, K.91 374.13.

<sup>66</sup> Trilobate arrowheads with rhomboid blade and spurs, commonly referred to as "Persian", found at Didyma are possibly related to the destruction of the sanctuary by the Achaemenids in the beginning or during the first quarter of the 5th century B.C. (Lubos, 2009: 405-6, n. 12).

<sup>67</sup> Lubos, 2009: 406, 414, Taf. 1, 11b.

<sup>68</sup> Muscarella, 1988: 110, No. 181.

<sup>69</sup> Muscarella, 1988: 110, No. 180.

<sup>70</sup> Malloy, 1993: 14, Pl. XIV, No. 116.

<sup>71</sup> Grenet, Liger & de Valence, 1980: 51, 54, 96, Pl. XXI, Type 1.

<sup>72</sup> Malloy, 1993: 14, Pl. XIV, No. 118.

<sup>73</sup> Grenet, Liger & de Valence, 1980: 51, 54-5, 96, Pl. XXI, Type 1 var.

(even some academics, unfortunately) assume that archaeologists are “treasure hunters”. Items acquired through clandestine activities usually create serious challenges for archaeologists and researchers as their provenance may never be known. Some of the main challenges includes proposing a reasonable dating and geographical location for the findings. While the illegal possessors have stated to have discovered the arrowheads in the Kerman Province, the authors doubt their claims to be entirely true. For instance, the patina of some arrowheads have been carefully removed by the illegal possessors. This may indicate that some of the arrowheads were confiscated from antique dealers and not the original excavators.

Most of the examined items are indeed arrowheads, due to their short overall and specially blade lengths. Some of the large items (Nos. 88, 91-93, 97-98, 138, 290-297), however, may have been small javelinheads or spearheads. According to Malloy, the weight of an arrowhead must not exceed 10 gm, regardless of the total arrow length and the size of the bow.<sup>74</sup> Unfortunately, only Nos. 28 (4.2 x 1.3 cm, 0.2 cm thickness, 5.1 gm) and 41 (6.4 x 1.3 cm, 7.4 gm) are weighted. Judging by their overall thickness (0.1-0.3 cm), total length (3.0-7.5 cm), blade length (1.4-3.0 cm), and width (0.8-2.2 cm), other short items’ weight probably would not exceed 10 gm. Some of the arrowheads (Nos. 42-46, 56-57 and 59) were probably used for hunting rather than warfare.

Most of the repository’s arrowheads are comparable to findings within current borders of Iran or its neighboring regions. A considerable portion of the items have counterparts in northwestern Iran and its vicinity: Nos. 4, 18-28 and 52-54, Nos. 2, 4, 7-8 and 52, Nos. 10-11 and 17, Nos. 3 and 5, No. 48, and No. 1 bear a resemblance to the arrowheads of Hasanlu Period IVB, Ayanis, Karchaghbyur, Agha-Evlar, Namin and Assyria, respectively. Nos. 3, 12-16 and 49-51 could fit into Medvedskaya’s Types III, IIb, and I, respectively. Medvedskaya’s typology is based on the study of arrowheads discovered in west, northwest and south west of Iran.<sup>75</sup> Similar items to No. 58 have been reported from Iran, but their exact provenance is not known. Nos. 6, 9 and 39-41 bear a resembles to arrowheads unearthed from the Sarm cemetery and Persepolis (respectively) which are closer to southeastern parts of Iran. Almost all of these arrowheads date to the Iron Age of Iran (1450-550 B.C.) and only the Persepolis samples belong to the Achaemenid Period.

Some of the examined arrowheads, however, cannot be compared with any items that have been recovered from Iran or the vicinity of it. Interestingly, almost all of these items (Nos. 29-37, 42-47, 56-57 and 59) have bronze age counterparts. This issue may partly be related to our very limited data regarding arrowhead

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<sup>74</sup> Malloy, 1993: 14, Pl. XIV, No. 118.

<sup>75</sup> Medvedskaya, 2005: 134-7.

production in the Bronze Age of Iran.<sup>76</sup> No. 38 is the only arrowhead that has an Iron Age counterpart in Megiddo stratum V, ca. 1050-1000 B.C.

The trilobate arrowheads can be dated more reliably. Most of the repository's trilobate arrowheads (Nos. 60-88) have counterparts in Achaemenid sites or resemble items that have been excavated from layers associated with the Achaemenids. Trilobate arrowheads can be found throughout the Achaemenid period and the vast number of such arrowheads found from Tall-i Takht at Pasargadae and Persepolis indicates that they were standard issue for the Persian archers.<sup>77</sup> It must be noted, however, that certain types of trilobate arrowheads continued to be used beyond the Achaemenid era.<sup>78</sup> This may be the case for some of the arrowheads obtained from the Achaemenid Village at Susa, Kyuzeli-gyr, Celaenae-Apameia, and Nos. 91-92. We also cannot be certain as where these arrowheads were manufactured, since their equivalents are found throughout the Achaemenid Empire as they were widely used by various peoples.<sup>79</sup> On the whole, since some of the trilobate arrowheads have equivalents in Tall-i Takht, Persepolis, Sorkh-Dagh Tepe, Shahr-i-Qumis and Ai-Khanoum, we may consider the possibility that they may have been manufactured in Southeastern Iran.

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<sup>76</sup> Medvedskaya, 1980: 26; 2005: 136.

<sup>77</sup> Delrue, 2007: 244.

<sup>78</sup> Ivantchik, 2016: 476.

<sup>79</sup> Kasar & Kaan, 2020: 185.

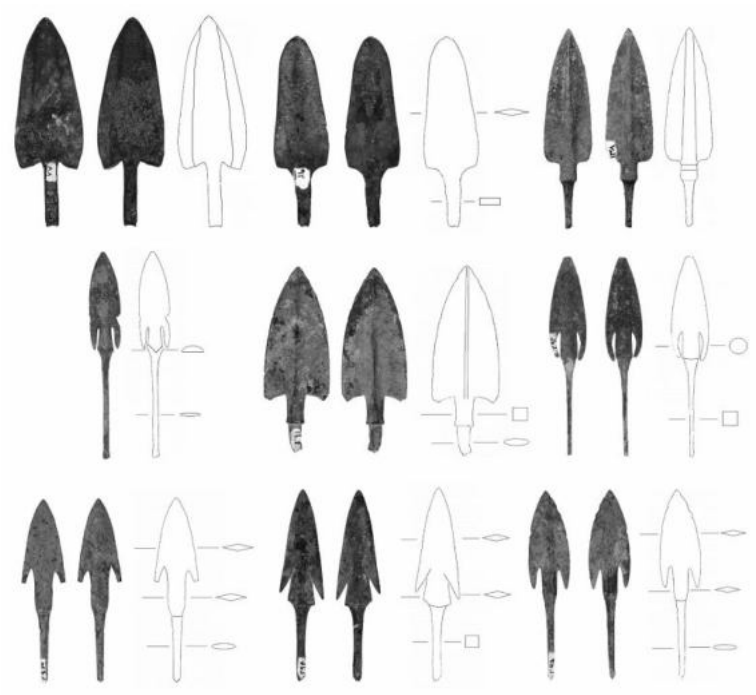


Fig. 1. Nos. 1-9.

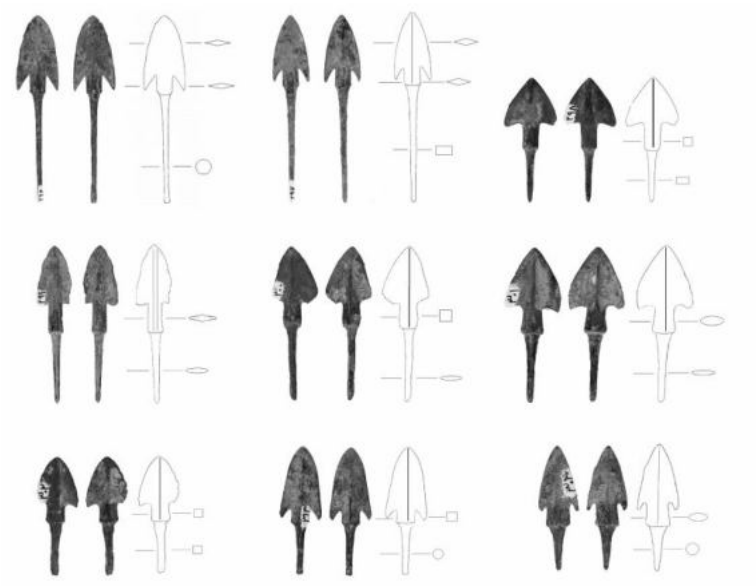


Fig. 2. Nos. 10-18.

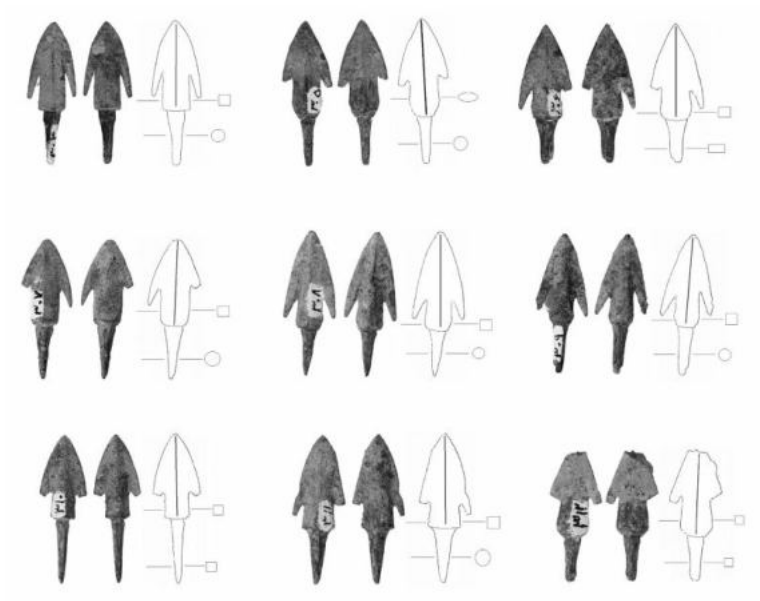


Fig. 3. Nos. 19-27.

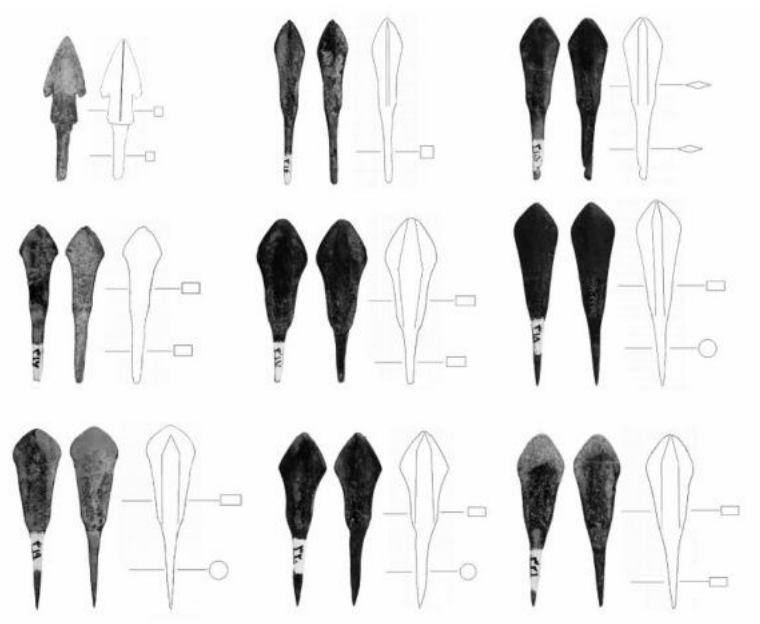


Fig. 4. Nos. 28-36.



Fig. 5. Nos. 37-45.

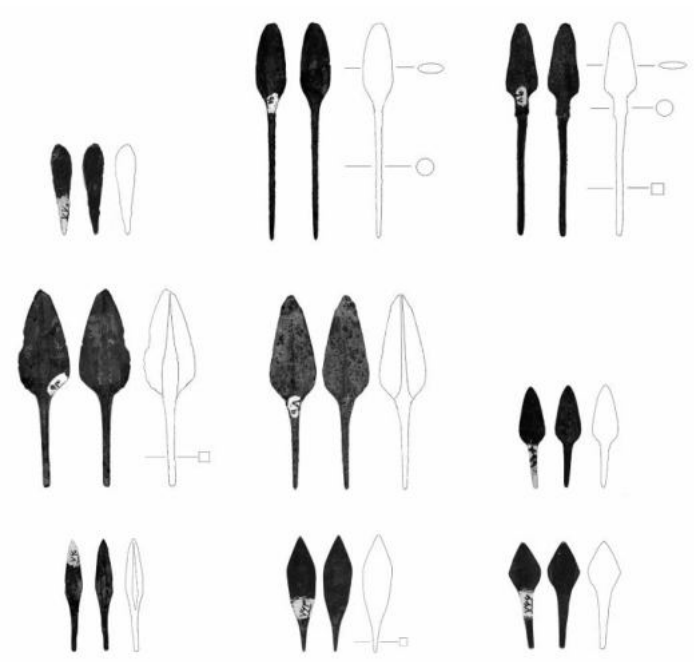


Fig. 6. Nos. 46-54.

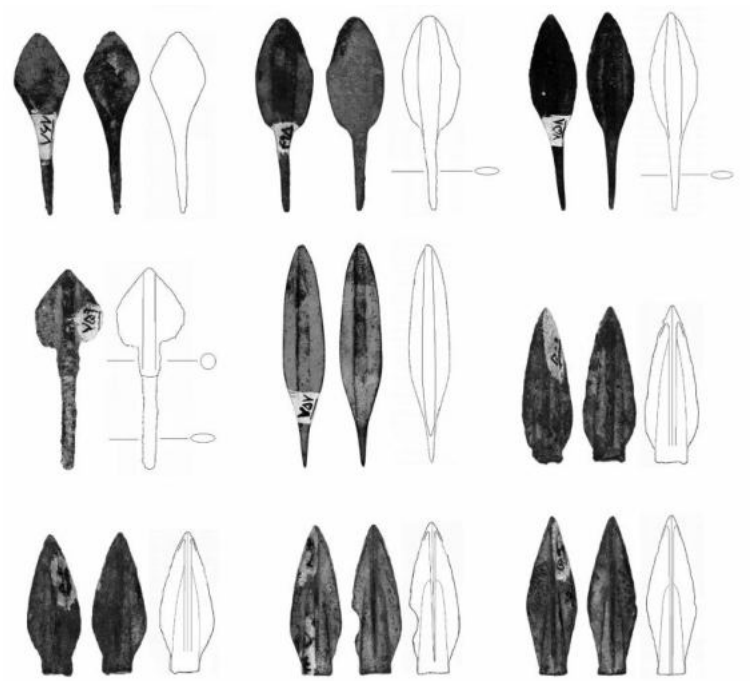


Fig. 7. Nos. 55-63.

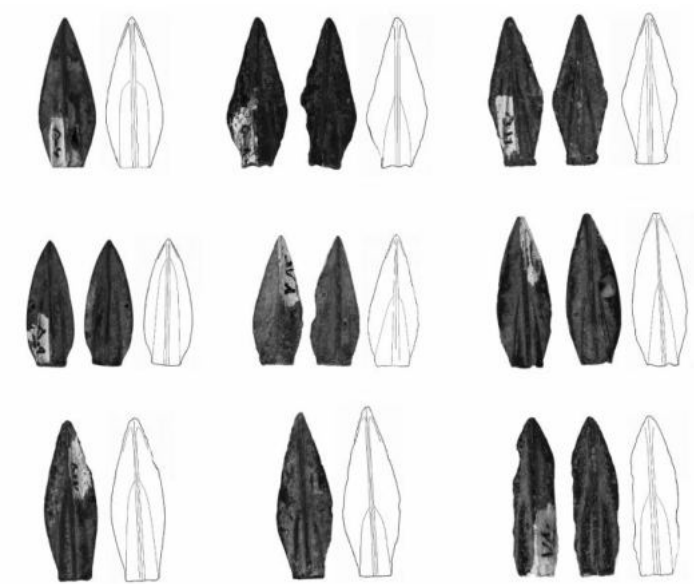


Fig. 8. Nos. 64-72.



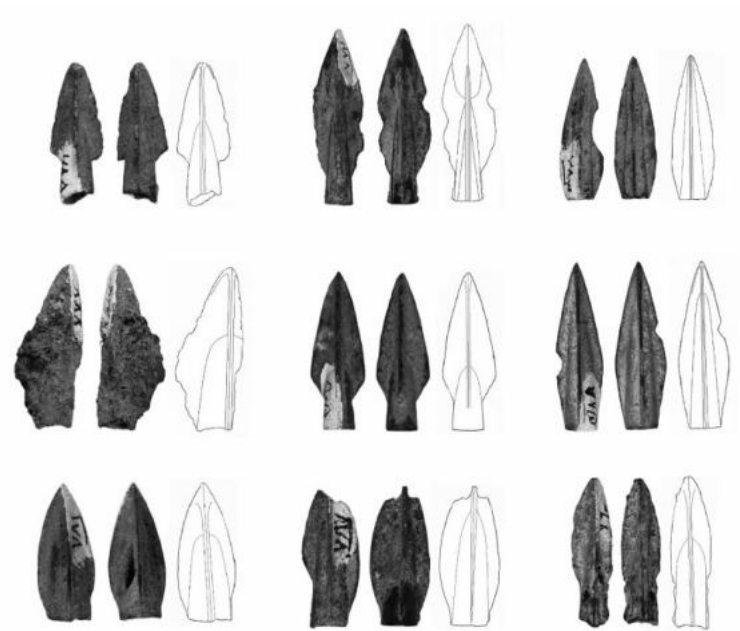


Fig. 9. Nos. 73-81.

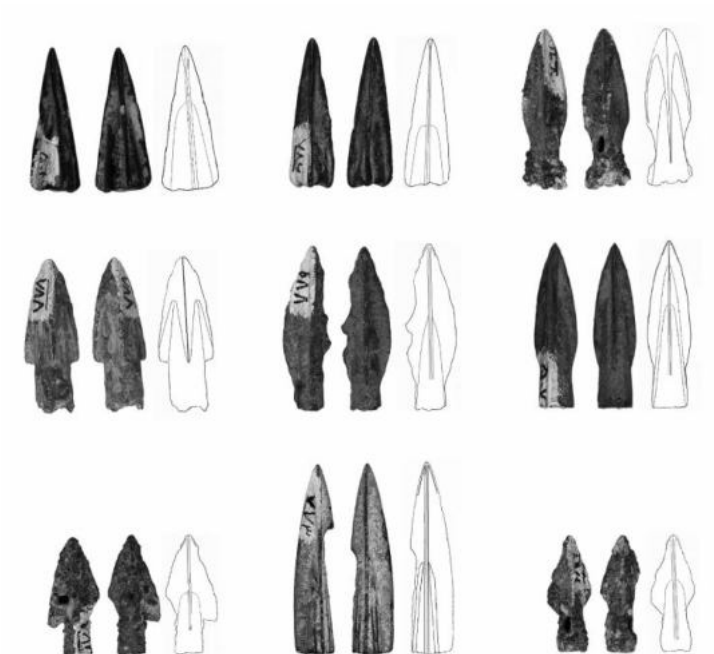


Fig. 10. Nos. 82-90.

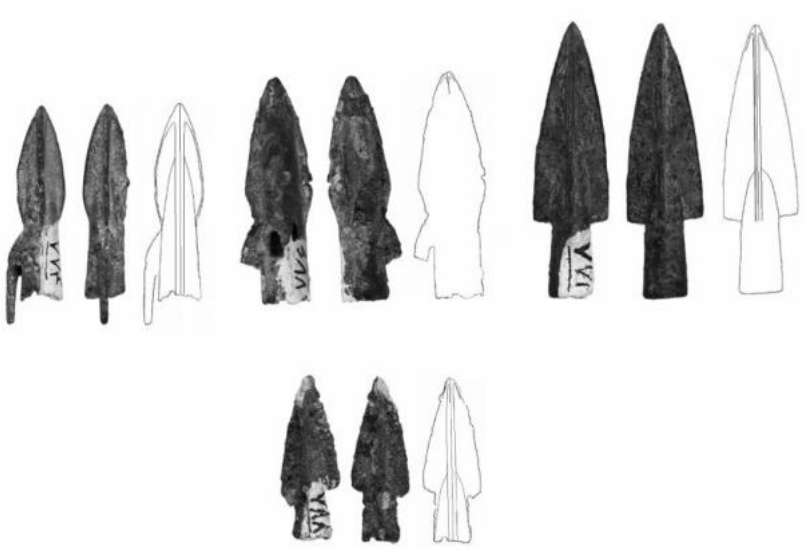


Fig. 11. Nos. 91-94.

Tab. 1. Deltoid arrowheads

No.	Accession No.	Dimension	Thickness	Blade Length	Notes
1	88	11.0 x 3.6	0.4	8.0	Without stem
2	92	9.0 x 2.6	0.3	6.2	Without stem
3	138	9.6 x 2.1	0.2	6.4	Two parallel grooves across the stem
4	290	11.0 x 1.6	0.2	5.1	A chevron groove on either side of the stem
5	291	9.1 x 3.3	0.1	6.4	The tang is broken at the base
6	292	10.2 x 2.0	0.2	5.3	Long sharp concave barbs, the arrowhead tip is broken
7	293	9.0 x 2.1	0.2	4.0	Both barb tips are broken
8	294	9.8 x 2.4	0.2	5.8	-
9	295	9.2 x 2.0	0.2	5.0	Long stem
10	296	11.3 x 2.5	0.1	4.5	-
11	297	11.2 x 2.1	0.2	4.1	-
12	298	5.1 x 2.2	0.1	2.0	The tip of a barb is broken
13	299	7.5 x 1.6	0.2	3.0	Long stem, base of a blade is broken
14	300	6.5 x 2.0	0.2	2.5	Both barbs are broken
15	301	6.0 x 2.1	0.1	2.5	-
16	302	4.5 x 1.6	0.1	1.9	A blade is broken at the base
17	313	5.2 x 1.6	0.1	2.8	-
18	303	4.0 x 1.2	0.2	2.1	-
19	304	4.6 x 1.2	0.3	2.5	One barb is slightly shorter, long stem
20	305	4.2 x 1.3	0.2	2.0	Long stem, a barb is broken at the tip
21	306	3.7 x 1.3	0.2	2.3	One barb is broken
22	307	3.8 x 1.3	0.2	2.0	One barb is broken and the other is slightly curved inwards, long stem
23	308	4.0 x 1.3	0.1	2.6	Long stem
24	309	3.8 x 1.5	-	2.4	Long stem
25	310	4.2 x 1.3	0.1	1.8	Both barbs are broken
26	311	3.8 x 1.4	0.1	2.2	One barb is broken
27	312	3.3 x 1.2	0.1	1.4	One barb and the arrowhead tip are broken
28	7999	4.2 x 1.3	-	1.8	Both barbs are broken, 5.1 gm

Tab. 2. Oblanceolate arrowheads

No.	Accession No.	Dimension	Thickness	Notes
29	314	6.2 x 1.1	0.1	-
30	315	5.8 x 1.4	0.3	-
31	316	4.8 x 1.1	0.2	-
32	317	5.0 x 1.6	0.2	-
33	318	6.0 x 1.4	0.2	-
34	319	5.5 x 1.5	0.1	-
35	320	5.0 x 1.5	0.2	-
36	321	4.5 x 1.1	0.1	-
37	761	5.5 x 1.2	0.1	Flat bladed, patina has been removed by illegal possessors
38	762	4.8 x 1.4	0.2	Without stem
39	755	7.0 x 1.5	0.3	Without stem
40	756	6.5 x 1.1	0.2	Without stem
41	7987	6.4 x 1.3	0.2	Copper, flat bladed, without stem, 7.4 gm
42	764	4.0 x 1.2	0.1	Copper, flat bladed
43	765	3.6 x 1.2	-	Patina has been removed by illegal possessors
44	768	4.0 x 1.2	0.1	Curved tang, flat bladed, patina has been removed by illegal possessors
45	769	3.0 x 1.2	0.1	Flat bladed, patina removed has been by illegal possessors, triangle-shaped carving on one side
46	770	3.3 x 0.8	0.2	Schist, flat bladed, elongated, 7.4 gm

Tab. 3. Lanceolate, lozenge-shaped, ovate, and oblong arrowheads

No.	Accession No.	Type	Dimensions	Thickness	Notes
47	91	Lanceolate	10.0 x 1.5	0.3	Without stem, 4.0 blade length
48	97	Lanceolate	9.5 x 1.4	0.3	3.3 blade length
49	93	Lanceolate	8.5 x 2.1	0.3	Without stem, 4.0 blade length, one blade is slightly corroded
50	98	Lanceolate	7.9 x 1.8	0.2	Without stem, 4.3 blade length
51	499	Lanceolate	3.8 x 1.0	0.2	Flat bladed
52	760	Lanceolate	4.5 x 0.8	0.1	Patina has been removed by illegal possessors
53	763	Lozenge-shaped	4.5 x 1.2	0.1	Flat bladed
54	766	Lozenge-shaped	4.0 x 1.2	0.1	Flat bladed, patina has been removed by illegal possessors
55	767	Lozenge-shaped	4.0 x 1.2	-	Flat bladed, patina has been removed by illegal possessors
56	498	Ovate	4.7 x 1.4	0.2	One blade is slightly corroded
57	758	Ovate	4.8 x 1.5	-	Slightly curved tang, patina has been removed by illegal possessors
58	759	Ovate	5.0 x 1.8	0.2	The base of both sides of the blade are broken
59	757	Oblong	6.4 x 1.1	0.2	-

Tab. 4. Trilobate arrowheads

No.	Accession No.	Dimension	Thickness	Socket Diameter	Notes
60	500	3.0 x 1.0	-	-	Short socket
61	502	2.6 x 1.0	0.2	0.6	Short socket with traces of bronze inside, small hole on one of the blades, the base of the socket is broken
62	503	3.0 x 1.0	0.1	0.6	Short socket, base of a blade is broken at one side
63	504	3.3 x 1.1	-	0.6	Traces of bronze inside
64	506	2.8 x 1.1	0.1	0.6	Small hole on one side
65	508	2.8 x 1.1	-	0.5	Short socket, base of a blade is broken at one side
66	511	2.8 x 1.0	0.1	0.6	Short socket with a small hole on one side
67	509	2.3 x 0.9	0.1	0.6	Small hole on either side
68	784	2.2 x 0.9	-	0.5	Small hole on one side, a corroded blade on the same side
69	510	2.8 x 1.0	0.1	-	Large hole on one side
70	512	2.9 x 1.1	-	0.6	-
71	514	3.2 x 1.9	-	0.6	Short socket
72	780	2.5 x 0.8	0.1	0.5	All blades are broken and corroded
73	785	2.4 x 0.8	0.2	0.5	Long socket with traces of wood inside, the socket is broken at the base, one blade is corroded
74	772	3.7 x 1.9	0.1	-	Short socket, huge pyramid tip, all blades are corroded
75	783	2.5 x 0.8	0.1	0.5	Two small holes on one side, a broken blade on the same side
76	777	3.0 x 1.0	0.2	-	Heavily corroded, two blades are broken from the mid-section to the base, signs of iron oxide on two sides
77	505	2.8 x 1.0	0.1	0.5	Short socket
78	775	3.0 x 0.9	0.1	-	Two blades are partially broken at mid-section
79	781	2.0 x 0.9	0.1	0.5	Short socket with traces of wood inside, large oval hole on one side
80	787	2.2 x 1.0	-	0.5	Short socket, the tip is broken, the base of a blade is broken
81	790	2.5 x 0.8	0.2	0.5	Long socket broken at the base, three holes at one side and one on the other
82	501	2.5 x 0.9	-	0.7	Pyramidal, internal socket
83	786	2.5 x 0.8	0.1	0.4	Pyramidal, internal socket, one blade is corroded, oval corrosion damage on the same side
84	791	3.0 x 0.8	0.1	0.5	Heavily corroded, long socket broken at the base, hole on one side, may originally had a spur
85	778	2.5 x 1.0	0.2	0.6	Long socket, hollow to the tip
86	779	3.0 x 1.0	0.1	-	Long socket with traces of wood inside, two blades are broken and corroded
87	507	2.9 x 0.7	-	0.6	Long socket with traces of patina inside

88	782	2.2 x 1.1	0.2	0.5	Barbed (?), long socket, heavily corroded, hole on one side
89	773	4.0 x 1.8	0.1	-	Two blades are broken from the mid-section to the base
90	789	2.2 x 0.9	0.2	0.5	Heavily corroded, long socket, hole on one side, two blades are broken from the mid-section to the base
91	774	3.0 x 0.8	0.1	-	Long socket with a long spur, traces of wood inside the socket
92	776	3.6 x 1.1	-	-	Heavily corroded, long socket with a broken spur, two holes on one side
93	771	4.2 x 0.7	0.1	-	Long socket
94	788	2.5 x 0.8	-	0.5	Heavily corroded, long socket slightly broken at the base

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