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Araştırma Makalesi/Research Article

Metal Military Equipment from Tepecik Settlement at Patara

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Abstract

The subject matter of this work is the metal military equipment that was found in the military settlement of Tepecik, situated on a natural rock north of the Patara city center and east of the inner harbor. Construction activities for defense purposes can be traced back to the 6th century B.C. in the settlement. During the excavations conducted in recent years, a garrison was unearthed, that had been built in the middle of the 4th century B.C. and remained in use until the end of the 3rd century B.C. with some architectural transformation.

The metal military equipment comprises a pilum, arrowheads, bolt-heads / spear butts, javelin heads, a catapult trigger mechanism part, sling bullets and a dagger. A limited number of metal military tools are dated to the 6th/5th century B.C. Apart from these, the great majority of the weapons pertain to the period to the middle of the 4th century B.C. and the 3rd century B.C. with a few other examples dating to the 2nd century B.C. All the metal equipment accords well with the history of Patara and strengthens the data on various architectural phases detected in the Tepecik settlement. Furthermore, we can say that certain weapons found among the military equipment stand out as rarely seen specimens: A pilum and a curved dagger which are known to have very few examples in Anatolia. A lead sling bullet inscribed with the names of

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Philip II of Macedon and Alexander the Great is the one and only example of this specimen in Anatolia. The trigger claw of a catapult is also of capital importance since it provides evidence for a much-debated mechanism.

Keywords: Patara, metal, military equipment, war, weapon, Lycia.

Patara Tepecik Yerleşimi'nde Ele Geçen Metal Savaş Teçhizatı

Öz

Çalışmanın temel konusunu, Patara kent merkezinin kuzeyinde ve iç limanın doğusunda doğal bir tepe üzerinde konumlanan Tepecik askerî yerleşiminde ele geçmiş metal savaş teçhizatı oluşturmaktadır. Yerleşimde savunmaya yönelik inşa faaliyetlerinin izleri MÖ 6. yüzyıla kadar uzanır. Son yıllarda gerçekleştirilen kazı çalışmalarında, bir garnizon yerleşimine ait savunma yapıları ve çok sayıda konut temelleri ortaya çıkarılmıştır. Garnizonun, MÖ 4. yüzyılın ortalarında inşa edildiği ve geçirdiği mimari dönüşümlerle MÖ 3. yüzyıl sonlarına kadar kullanıldığı tespit edilmiştir.

Tepecik askerî yerleşiminde ele geçen metal savaş teçhizatı, bir pilum, ok uçları, katapult ok uçları, kargı ok uçları, bir katapultun tetik mekanizması parçası, sapan mermileri ve bir kıvrık hançerden oluşmaktadır. Bu savaş araç-gereçleri içinde az sayıda MÖ 6/5. yüzyıla ait örnekler tespit edilmiştir. Buluntuların büyük çoğunluğu, MÖ 4. yüzyıl ortası ile MÖ 3. yüzyıl arasına tarihlendirilmektedir. Az sayıda örnek ise MÖ erken 2. yüzyıla aittir. Zamansal açıdan bakıldığında, tüm bu metal savaş teçhizatı Patara'nın tarihsel ortamıyla uyum göstermekte ve ayrıca, uzun süre askerî amaçlı kullanılan Tepecik yerleşimindeki çeşitli mimari evrelerle ilgili bilgilerimizi de güçlendirmektedir. Yerleşimle ilgili verilerin yanı sıra metal savaş teçhizatı içinde yer alan bazı silahlar, nadir görülen örneklerden olmalarıyla ön plana çıkmaktadır. Anadolu'da az sayıda örneği bilinen bir demir pilum ve bir demir kıvrık hançer bunlar arasındadır. Ayrıca bir yüzünde Makedon Kral II. Philippos'un diğer yüzünde Büyük İskender'in isminin yazıldığı kurşun bir sapan mermisi, Anadolu'da bilinen tek örnek olma özelliğini taşımaktadır. Bir gastraphetes ya da katapulta ait olması gereken tetik mekanizması parçası ise üzerine çok tartışılan bir mekanizmanın kanıtı olması açısından son derece önemlidir.

Anahtar Kelimeler: Patara, metal, askerî teçhizat, savaş, silah, Likya.

Introduction

Today, the ancient harbor city of Patara is within the borders of Ovagelemiş village, in the Kaş district of Antalya province. In antiquity, the city was located at the point where the Xanthos Valley reaches the sea in Western Lycia, located in southwest Asia Minor. The metal military equipment that is the subject of this study was found on Tepecik settlement, a natural rock elevation measuring 30 meter-high and with a base width of approximately 280 x 300 m, located to the north of the Patara city center and the inner harbor. (fig. 1, 2). The primary reason why this natural hill was particularly chosen as a settlement of defense is its location overlooking both the eastern "inner harbor" which bears the characteristics of a military port and the passageway that constitutes the only northerly land route reaching out to the city. In other words, one can say that a military settlement situated on this hill features the best location for defending Patara from potential attacks coming from the sea and the natural passageway in the north[1].

The ceramic fragments, stone axes and terracotta figurines that were recovered in Tepecik and are dated back to the Early Bronze Age bear the traces of Patara's oldest settlement. The continuity of these small finds can also be traced back to the Early Iron Age[2]. On the site, the earliest architectural data are dated to the 6th century B.C. These architectural remains generally belong to the towers or walls associated with the defense system. The defense system of Tepecik settlement was used from the second half of the 6th century B.C. to the 4th/3rd centuries B.C. with various alterations[3]. It is perceived that no reconstruction activity was carried out

1 For an evaluation of the current state concerning the results of the studies about the Tepecik settlement, see Erkan Dündar, "Die "Akropolis" auf dem Tepecik-Hugel: ein Fenster in die frühe Siedlungsgeschichte", *Patara. Lykiens Tor zur römischen Welt*, ed. Havva İşkan-Christof Schuler-Şevket Aktaş-Denise Reitzenstein-Andrea Schmölder-Veit-Mustafa Koçak, Philipp von Zabern, Darmstadt 2016, pp. 39-44; Erkan Dündar, "An Early Witness of the Urban Settlement: Tepecik", *Patara. City, Harbor, Cult*, ed. Havva İşkan, Türkiye İş Bankası Kültür Yayınları, İstanbul 2019, pp. 138-152.

2 Erkan Dündar, "The Ceramics from Patara: Investigations, Productions and Trade: Past Studies-Future Projections," *From Sand into a City: 25 Years of Patara Excavations*, *Proceedings of the International Symposium of 11-13 November 2013, Akdeniz University, Antalya-Turkey*, ed. Havva İşkan-Fahri Işık, Ege Yayınları, İstanbul 2015, p. 200; Dündar, "Die "Akropolis" auf dem Tepecik-Hugel", p. 138; Fahri Işık, "On Lycia and Patara, "Disconnected from its Past" from the Perspectives of the Western Scientists", *Patara. City, Harbor, Cult*, ed. Havva İşkan, Türkiye İş Bankası Kültür Yayınları, İstanbul 2019, pp. 127-131.

3 Dündar, "An Early Witness of the Urban Settlement", pp. 138-152; Erkan Dündar-Mustafa Koçak, "Patara Defensive Structures", *Patara. City, Harbor, Cult,* ed. Havva İşkan, Türkiye İş

from the 2nd century B.C. to the end of the Roman Imperial Period. As for the tower built in the 4th/5th centuries, it must have functioned as an "outpost" for defending Patara city of the Late Antiquity, the defense frontiers of which had been narrowed down[4].

In the Tepecik settlement[5] that constituted one of the significant defense points from the Archaic Period onwards, a Tower House that is also named as the Building Complex[6] (Fig. 3 Quad: N13–N15, M13–M15), a terrace wall with cyclopean masonry situated west of Tepecik from the Archaic Period and a Northern Bastion - Defense Wall dating back to the Late Classical-Early Hellenistic Periods[7]

Bankası Kültür Yayınları, İstanbul 2019, pp. 178-183.

4 Dündar, "An Early Witness of the Urban Settlement", p. 152; Dündar, "Patara Defensive Structures", pp. 184-186.

5 The studies carried out in Tepecik have been maintained on the basis of a 10x10 quadrant system coded with alphanumerical values since 2013. In accordance with the purposes of this work, the H, I, J, K, L – 15th, 17th, 18th, 19th trenches are the spots where the metal military equipment included in the scope of our subject were obtained. These sections include the North Fortification Wall, bastion, and the dwellings situated on the upper plane of Tepecik. The finds unearthed before 2013 are referred directly to as their findspots, while the subsequent finds are mentioned along with the name of their findspots and the relevant trench code whenever the function of the place is defined.

6 The early phase of the Tower House, which comprises two rooms and a cellar, is dated to the 6th century B.C. The tower house was used until the beginning of the 4th century by aid of several restorations. see Gül Işın, "The Building Complex on the Tepecik Acropolis at Patara", *Anatolian Studies,* Vol. 60, 2010, pp. 93-104; Dündar, "An Early Witness of the Urban Settlement", pp. 138-140, fig. 5. For the ceramics found in the cellar, see Erkan Dündar-Gül Işın, "The Hellenistic Ceramics from the Cellar of the Building Complex on the Tepecik Acropolis at Patara in 2003-2004: Preliminary Report", *Recent Studies on the Archaeology of Anatolia*, ed. Ergün Laflı-Sami Patacı, Archaeopress, Oxford 2015, pp. 203-215.

7 The studies conducted in the site show that the northern wall and the bastion might be built during the rule of Hecatomnids in the region in the middle of the 4th Century B.C. The studies beginning in 2013 clearly demonstrate that the north fortification wall and the bastion were considerably destructed due to a fire. This destruction layer is associated with Alexander the Great's "Eastern Campaign the North Bastion was scaled down and reutilized during the rebuilding process carried out in the beginning of the 3rd century B.C. For the North Fortification Wall and the bastion, see Erkan Dündar-Nicholas K. Rauh, "The North Bastion on the Tepecik Acropolis at Patara. New Evidence for the Dating of "Early Hellenistic" Fortification Walls in Southwestern Anatolia", *Hesperia*, Vol. 86/No. 3, 2017, pp. 532-560, cat. 1-65; Dündar, "An Early Witness of the Urban Settlement", pp. 148.149. For the literary and epigraphic data concerning the Hecatomnid Era in Patara, see Christof Schuler, "Bryaxis in Patara", *Lykiarkhissa. Havva İşkan'a Armağan,* ed. Erkan Dündar-Şevket Aktaş-Mustafa Koçak-Serap Erkoç, Ege Yayınları, İstanbul 2016; Klaus Zimmermann, "Pastorenstücke und Besucherordnung - eine lex sacra aus dem Heiligtum des Zeus Labraundos von Patara", *Philippika*, 116, pp. 299-309; Christof Schuler - Klaus Zimmermann, "History of Patara", *Patara. City, Harbor, Cult,* ed. Havva İşkan, Türkiye

(Fig 3 Quad: Bastion, L19, L20, K19, K20; Wall, J19, K19, L19), and foundation remains of multiple dwellings located inside the said defense wall were unearthed[8] (Fig. 3 Quad: H17, H18, I17-I19, İ17-İ19, J17-J19, K17-K19, L18, L19). There is also a structure with a depth of about 21 m, which may be a shaft tomb(?) (Fig. 3 K-18-2)[9]. The remains of a tower dating to the Late Antique Period were located at the northwestern part of Tepecik's upper plane (Fig. 3 Quad: H-18)[10]. In all these contexts, we found some military equipment made of bronze, iron and lead. The contexts where the metal military equipment, the essential subject of this study, was acquired in the Tepecik settlement that had been used for defensive purposes continuously from the 6th century B.C. to the 3rd century B.C. provide reliable data in terms of both defining the places and chronology.

2. Typology of the Metal Military Equipment

Uncovered in the Tepecik settlement, which contained structures of defense from the Archaic Period to the Late Roman Imperial Period, as shown by the architectural remains, the metal military equipment is of vital importance in

İş Bankası Kültür Yayınları, İstanbul 2019, pp. 70-72. For archaeological and architectural data involving the Hecatomnid Era, see Dündar-Rauh, *ibid*., pp. 562-572; Dündar, "An Early Witness of the Urban Settlement", pp. 145-146; Feyzullah Şahin, "Patara'dan Geç Klasik Dönem'e Ait Bir Anta Başlığı", *İzmir Demokrasi Üniversitesi Uluslararası Beşerî Bilimler Kongresi, 7-9 Aralık 2020, Tam Metin Bildiri Kitabı*, İzmir Demokrasi Üniversitesi Yayınları, İzmir 2020, pp. 29-31.

8 It is determined that the dwellings, which were mostly preserved on a foundational level, have two different and consecutive architectural phases. The first phase of the dwellings is dated between the middle and the end of the 4th century B.C. in sense of the broadest time limits. After the destruction of the said dwellings situated at the inner part (south) of the north fortification wall, reconstruction works were carried out in the site. This second construction process is dated to the beginning of the 3rd Century B.C. see Dündar, "An Early Witness of the Urban Settlement", pp. 146-152; Dündar, "Die "Akropolis" auf dem Tepecik-Hugel", pp. 43-44. For the ceramic finds recovered in these dwellings see, Erkan Dündar, "Late 4th century B.C. Pottery Assemblages from Patara. First Considerations on the Ceramic Classes of the Xanthos Valley in Lycia", *Istanbuler Mitteilungen*, 70, 2020, pp. 47-71. For the numismatic data see, Dündar, "Late 4th century B.C. Pottery Assemblages from Patara", pp. 63-65, Table 1; Dinçer. S. Lenger-Erkan Dündar, "Attestation of a Ptolemaic Garrison in the Light of Coins: Tepecik Settlement at Patara, Lycia", *Annali dell'istituto Italiano di numismatica*, Vol. 66, 2020, pp. 37-70; Erkan Dündar-Dinçer S. Lenger, "A Ptolemaic Hoard from Patara", *American Journal of Archaeology*, Vol. 126. 2, 2022, pp. 201-217.

9 A good number of ceramic fragments were found in the fill of this shaft, which had been closed by being filled in the Antiquity. These finds recovered from the rubble fill demonstrate that the filling operation was realized in one single action in 145-140 B.C. at the latest. See Erkan Dündar, "Tepecik Akropolis", *40. Kazı Sonuçları Toplantısı*, 2. Cilt, 2019, pp. 368-369 fig. 8-9.

10 Erkan Dündar-Mustafa Koçak, "Patara's Harbour: New Evidence and an Overview of the Sequence of Harbour-Related Defence Systems", *Under the Mediterranean I, Studies in Maritime Archaeology*, ed. Stella Demesticha-Lucy Blue, Sidestone Press, Leiden 2021, pp. 137-138, fig. 24.

terms of both quantity and typological diversity. The said metal military artifacts comprise numerous categories, such as an iron pilum, bronze and iron arrowheads, iron bolt-heads / spear butts, iron javelin heads, a trigger claw of a catapult, lead sling bullets, and an iron curved dagger. Each of these metal weapons is examined below under sub-headings and sub-types by taking the alterations observed in their usage or form -if any- into consideration. The material from which the equipment was made is also considered and stated in the titles.

Pilum (cat. 1; fig. 4, 7)

Pilum is a kind of close-range javelin ranking among the equipment used by the Roman legionaries in not only the Imperial Period but also the Republican Period[11]. It is typically composed of an iron shank with a bilobate or pyramidal head and a wooden shaft connected to it[12]. Preserving its basic morphological details but also undergoing changes in terms of design and dimensions[13], this multifunctional javelin family was used as military equipment on battlefields from the end of the 3rd century B.C. to the end of the Roman Imperial Period[14].

11 Peter Connolly, "Pilum, Gladius and Pugio in the Late Republic", *The Journal of Roman Military Equipment Studies*, Vol. 8, 1997, pp. 41-49; Ramón Álvarez Arza-Manuel Cubero Argente, "Los Pila del Poblado Ibérico de Castellruf", *Gladius*, Vol. 19/1, 1999, pp. 121-142; Jana Horvat, "The Hoard of Roman Republican Weapons from Grad near Šmihel", *Arheološki vestnik*, 53, 2002, pp. 117-192, 129-133, 138-140, 173-178; Michael C. Bishop-Jonathan C. Coulston, *Roman Military Equipment from the Punic Wars to the Fall of Rome,* Oxbow Books, Oxford 2006; Astrid Bongartz, "Pilum", *The Encyclopedia of the Roman Army II*, ed. Yann Le Bohec, Wiley Blackwell, Hoboken 2015, pp. 746-750; Michael C. Bishop, *The Pilum. The Roman Heavy Javelin*, Osprey Publishing, Oxford 2017.

12 The pilum was designed to penetrate enemy shield, and at the same time, to wound or kill the warrior behind the shield. For the effectiveness of this military equipment see Bishop et al., *ibid*., pp. 50-51; Bongartz, *ibid*., p. 747; Bishop, *ibid*., pp. 4-6; Caesar, *De bello Gallico, The Gallic War*, translated by Henry John Edwards, Harvard University Press, Cambridge 2015, XXV, 3-5.

13 Plutarch states that General Gaius Marius (157-86 B.C.) made significant alterations in the structure of pilum (approximately 101 B.C.). Until then, the wooden and iron components of pila were conjoined by two iron rivets. Marius replaced the upper iron rivet with a wooden one in order to let it break upon impact, thus rendering the pilum useless; see Plutarkhos, *Bioi Paralelloi (=Plutarch's Lives) Vol. IX*, The Life of Marius, translated by Bernadotte Perrin, The Loeb Classical Library, Cambridge, Mass- London 1967, XXV. However, no such pilum specimen has been discovered to be interpreted as containing both an iron and a wooden rivet during any excavations until today; see Christopher Matthew, "The Battle of Vercellae and the alteration of the heavy javelin (pilum) by Gaius Marius – 101 BC", *Antichthon*, Vol. 44, pp. 50–67.; Bishop, *ibid.,* p. 15.

14 Although it is known that a kind of weapon similar to pilum was widely used by the communities encountered with the Romans in the 4th Century B.C., the question of the equipment's origin has yet to find an answer. However, it can be said that the Roman army adopted the equipment in

Modern typological analyses primarily pay attention to the connection system of the pilum iron with the wooden shaft, and secondarily consider the shape of the tip of the iron. In a general overview, two different types of pila can be identified regarding the joint of the iron and wooden components; tanged and socketed pila[15]. Both tanged and socketed specimens have heads with bilobate or pyramidal forms to damage enemy equipment. Reconstruction proposals show that pila have a length varying between 1,5 and 2 meters and an approximate weight of 2 kg[16]. In describing the Roman army assembled in the second half of the 2nd century B.C., Polybius states that each legionary soldier had two pila, one light and one heavy[17]. Researchers tend to think that the heavy pilum defines the tanged type and the light pilum defines the socketed type[18].

The pilum iron uncovered in Patara (cat. 1) is an example of the tanged pila. The total length of this pilum iron (including the tip, shaft and tang) is 41 cm. The tang plate is 11 cm long and 4,6 cm wide, while the head is 5,2 cm long and 2,5 cm wide. It features a two-winged flat head. The pilum iron's body has a round section. There are two rivets on the flat tang which has a quadrangular form with rounded edges. Remnants of the wooden shaft used for conjoining the pilum iron can be seen on the tang. Because of these characteristics, cat. 1 can be regarded as falling within the tanged type class, or the "heavy pila" class which is another widely-accepted title.

The oldest examples of heavy/tanged pila are known from Italy - Talamonaccio (Telamon)[19], Spain - Castellruf[20], Numantia[21] and Slovenia - Šmihel[22]. All of those

the end of the 3rd century B.C.; see Bishop, *ibid*., pp. 7-10.

15 In addition to these two forms, there are also pila with pointed tips which are rarely seen; see Bongartz *ibid*., p. 747.

16 Bongartz, *ibid*., p. 747. Furthermore, for a general list of the length and weight values obtained from ancient texts and archaeological finds, see Bishop, *ibid*., p. 23.

17 Polybios, *Historiai (=The Histories)*, translated by William R. Paton I-VI, The Loeb Classical Library, Cambridge, Mass.- London 1922, VI, 23, 9-11.

18 P. Connolly remarks that there is definitely no weight difference between tanged and socketed pila in his work concerning this subject; see Peter Connolly, "The Pilum from Marius to Nero: A reconsideration of its development and function", *The Journal of Roman Military Equipment Studies,* Vol. 12/13, 2001/2002, pp. 1-8; Bishop et al., *ibid.,* p. 52; Bishop, *ibid*., pp. 11-12.

19 Connolly, *ibid*., p. 41, fig. A-B; Martin Luik, "Militaria in städtischen Siedlungen der Iberischen Halbinsel", *Jahresbericht / Gesellschaft Pro Vindonissa*, 2001, pp. 269-271, fig. 1.

20 Álvarez Arza et al., *ibid*., pp. 121-142, fig. 4-5; Bishop, *ibid*., p. 12.

21 Bishop et al., *ibid*., p. 53, fig. 1.

22 Connolly, *ibid*., pp. 41-44, fig. C-F; Horvat, *ibid*., pp. 129, 138, pl. 2; 3: 1-4; fig. 6: 4-5; 11; 12;

examples are dated to the late 3rd century B.C. and the early 2nd century B.C.[23] The pila with tangs contracting inwards on both sides (hourglass shaped) is known from Greece - Ephyra[24], probably dating back to the mid-2nd century B.C.[25] A pilum from Anatolia, which is similar to our specimen, was found in Kurul Fortress in Ordu and dated to the Hellenistic Era[26]. Cat. 1 was recovered from the fill of the Shaft Tomb (?) in the Tepecik settlement. The ceramics and sealed amphora handles from that fill are dated to the middle of the 2nd century B.C. at the latest, thus constituting a TAQ for cat. 1. When we evaluate the pilum along with both the contextual data and the similar examples, it is possible for us to date it between the end of the 3rd century B.C. and the middle of the 2nd century B.C.

Arrowheads

In the assessment of the arrowheads found in the Tepecik settlement, the material of which they are made is primarily taken as a criterion: Bronze and iron. On the other hand, morphological characteristics are taken into consideration when designating the typology of the arrowheads. The number of wings on the arrowhead, the structural property of the section attaching the arrowhead to the shaft (tanged or socketed), and the shape of the body compose the three fundamental criteria used for discerning their typology.

Bronze Arrowheads

Type A: Socketed Trilobate Arrowheads (cat. 2-7; fig. 4, 7)

A trilobate arrowhead[27] consists of three sharp and protruding wings/blades that are generally placed around an imaginary line drawn from the center to the tip of

Bishop, *ibid*., pp. 12-14.

23 Pilum irons with similar dimensional characteristics with Cat. 1 were unearthed in Castellruf amongst these centers. The length of pilum irons found in Castellruf vary between 378 mm and 417 mm, while the length of their tips vary between 32 mm and 65 mm. The tang plates are 88 mm to 109 mm long and 42 mm to 52 mm wide; see Bishop, *ibid*., p. 12.

24 Connolly, *ibid*., p. 44, fig. F-J; Bishop, *ibid*., pp. 11-12.

25 For a table showing the general change in pila forms, see Connolly, *ibid*., pp. 46.

26 Süleyman Yücel Şenyurt-Umut Zoroğlu, "Kurul Kalesi Hellenistik Dönem Metal Silahları Üzerine Bir Ön Değerlendirme" *CEDRUS*, Vol. 6, 2018, pp. 188-189, fig. 11; Umut Zoroğlu, *Kurul Kalesi Hellenistik Dönem Savaş Araç Gereçleri*, Hacı Bayram Veli University, Unpublished PhD Thesis, Ankara 2021, pp. 65-66, cat. C6-C7.

27 The arrowhead discussed in this section goes by many names in the literature: Trilobate, trilobal, three-lobed, three-bladed or three-sided, and triple-pointed are examples to its widely-used denominations. In this study, the term "trilobate" is preferred since it is more frequently used in the literature concerning the military equipment of the Antiquity.

the socket or the tang with a distance of 120⁰ between them at in equal angles. In tanged trilobate arrowheads, the section between the wings is usually concave. But the same section has a convex structure in socketed trilobate arrowheads, which is a characteristic brought along by the socket[28]. It is recognized that the socketed trilobate type is more resistant against sudden distortions (deformations) that might reduce its penetration ability after being thrown and striking the target, and has the capacity to penetrate reinforced armor. It is observed that trilobate arrowheads were mostly used on the battlefield due to these properties[29].

It is seen that trilobate arrowheads have many variations differing by small alterations beginning from their earliest phase of emergence[30]. In the Tepecik settlement, a total of 6 bronze socketed trilobate arrowheads (cat. 2-7) were found in different findspots and stratigraphic units, and two main types can be discerned primarily according to their body forms.

Type A1: This type is characterized by a trilobate body that broadens upwards from the socket, then contracts and ends with a pointed tip. Two subtypes were identified within the Type A1 group, which differ by small details in their socket-shaft connection and/or body shape (Type A1a – Type A1b).

Patara contains a single specimen of type **A1a** (cat. 2). The body of this socketed trilobate arrowhead is lozenge-shaped, forming a projection point in its approximate center. A large part of the circular socket is within the body. The body is 3.9 cm high and 1.1 cm wide.

The earliest similar examples of this type are preserved in the private collection of Ahmet Köroğlu. The find group indicates that this type of arrowhead was produced in the second quarter of the 7th century B.C.[31] Thousands of bronze socketed

28 For the term "trilobate arrowhead", see David M. Robinson, *Metal and Minor Miscellaneous Finds. An Original Contribution to Greek Life*, Olynthus 10, The John Hopkins Press, Baltimore 1941, p. 397; Parsival Delrue, "Trilobate arrowheads at ed-Dur (U.A.E, Emirate of Umm al-Qaiwain)", *Arabian archaeology and epigraphy, 2007*, pp. 239.

29 Özgün Kasar-Kaan İren, "Leaded Bronze Arrowheads at Daskyleion", *Adalya*, No. 23, 2020, pp. 184.

30 For instance, 377 socketed trilobate arrowheads of 8 different form variations were found in a single tomb in Maritzyn, near Odessa. Moreover, 19 variations were defined out of 266 socketed trilobate arrowheads in Blumenfeld, Volga. Therefore, it seems hard to generate a general scheme of development in various periods and centers; see Tadeusz Sulimirski "Scythian Antiquities in Western Asia." *Artibus Asiae*, Vol. 17/No.3-4, pp. 312.

31 Kasar-İren, *ibid*., p. 185. For detailed information, see Suat Ayakan-Mesut Ekinci, "Ok Uçları", *Zaiahina'nın Bronzları. Doğubayazıt Urartu Metal Eserleri, Ahmet Köroğlu Koleksiyonu*, ed. Erkan Konyar-

trilobate arrowheads in the form of Patara Type A1a and its several variations were found in Persepolis along with numerous piece of military equipment (6th-5th century B.C.)[32]. They are quite prevalent in Greece, especially in the context of the Greco-Persian Wars[33]. This type of arrowhead was also uncovered in the Persian destruction layers of 480/479 B.C. on the North slope of the Acropolis of Athens[34]. Examples dated to the 6th-4th century B.C. from Sardis, one of the important satrapy centers of Anatolia[35], and a good number of specimens dated to 470-300 B.C. from Daskyleion[36] are known[37].

Kenan Işık-Rıfat Kuvanç-Bülent Genç-Bilcan Gökce, Doğubayazıt Belediyesi Kültür Yayınları, İstanbul 2018, p. 180.

32 Erich Friedrich Schmidt, *Persepolis II. Contents of the Treasury and Other Discoveries*, The University of Chicago Press, Chicago 1957, pl. 76; David Stronach, *Pasargadae: A Report on the Excavations Conducted by the British Institute of Persian Studies from 1961 to 1963*, Clarendon Press, Oxford 1978, pp. 180-181, fig. 94, 1-17; James White, *Bows and Spears in Achaemenid Persia*, University of California, Unpublished PhD Thesis, Califonia 2020 pp. 43-44.

33 Jane C. Waldbaum, *Metalwork from Sardis: The Finds Through 1974, Archaeological Exploration of Sardis*, Monograph 8, Harvard University Press, Cambridge 1983, p. 35.

34 Oscar Broneer, "Excavations on the North Slope of the Acropolis in Athens, 1933-1934", *Hesperia*, Vol. 4/No. 2, 1935, pp. 114-115, fig. 4.

35 Waldbaum, *ibid*., p. 35 cat. 41-42 pl. 3, 41; Derya Yalçıklı, *Eisenzeitliche Pfeilspitzen aus Anatolien*. Universitätsforschungen zur prähistorischen Archäologie, 128, Verlag Dr. Rudolf Habelt GMBH, Bonn 2006, p. 228; Kasar-İren, *ibid*., p. 185 fn. 87; https://s3.amazonaws.com/sardis-images/pdf/Newsletter_2018.pdf, fig. 11 (accessed 21.10.2022).

36 Kasar-İren, *ibid*., pp. 184-186, fig. 8-9, Type IB1a.

37 The following sites can be counted amongst the sites demonstrating that this type of arrowheads was widely used in the Mediterranean geography in the 6th century B.C. and onwards: Daphnae (the 6th century B.C.): William Flinders Petrie, *Tanis 2, Nebesheh (Am) and Defenneh (Tahpanhes)*, Memoir of the Egypt Exploration Fund 4, Trubner and Company, London 1888, p. 77, pl. 39. 9; Robinson 1941, *ibid*., pp. 397-398; Migdol Fortress-Egypt (the 6th century B.C.): Eliezer D. Oren, "Migdol: A New Fortress on the Edge of the Eastern Nile Delta", *Bulletin of the American Schools of Oriental Research,* 256, 1984, p. 25, fig. 26.7; Claros (the 6th-5th centuries B.C.): Duygu S. Akar-Tanrıver, *Apollon Klaros Kültü, Kehanet, Pratikler ve Adaklar*, Ege University, Unpublished PhD Thesis, İzmir 2009, p. 859, cat. BG 12; Onur Zunal, "Klaros'ta Bulunan Ok Uçları", *MASROP*, Vol. 9/ No. 12-13, 2017, pp. 43-44, fig. 2, 6-7; Smyrna-Bayraklı (the 6th-4th centuries B.C.): Yalçıklı, *ibid*., p. 228, pl. 7,1, 5-19; Metropolis (the 6th-4th centuries B.C.): Burak Arslan-Serdar Aybek-Ebru Durak, "Metropolis'de Bulunan Ok Uçları", *MASROP*, Vol. 9/No.12-13, 2017, pp. 58-59, fig. 2-4; Deve Höyük (500-475 B.C.): Peter Roger Stuart Moorey, "Iranian Troops at Deve Hüyük in Syria in the Earlier Fifth Century B.C.", *Levant 7*, 1975, pp. 110 fig. 1, 5. 6; Olympia (the 5th century B.C.): Holger Baitinger, *Die Angriffswaffen aus Olympia*, De Gruyter, Berlin 2001, fig. 309-311 type IIB; Olynthus (the 5th-4th centuries B.C.): Robinson, *ibid*., 397-398 type F; Klazomenai (the 4th century B.C.): Yalçıklı, *ibid*., 228 pl. 7, 30; Korinthos (the 5th-4th centuries B.C.): Gladys R. Davidson, *The Minor Objects*, Corinth XII, American school of classical studies at Athens, Princeton 1952, p. 200, pl. 91, cat. 1517; Athena Alea Sanctuary in Tegea (prior to the 4th

The ceramics and coins recovered from the relevant stratum of trench I-18, where cat. 2 was found, are dated between the last quarter of the 4th century B.C. and the early 3rd century B.C. Both the contextual data and the similar examples make it possible for us to date this arrowhead between the last quarter of the 4th century B.C. and the early 3rd century B.C.

The bodies of the three specimens (cat. 3-5) evaluated within the scope of **Type A1b** first expand downwards from the tip, then contract with a convex inclination in the center and connect to the socket. In other words, it has approximately an oval form. When it comes to the socket section, it has a long structure. In this context, it differs from the lozenge-shaped TypeA1a example. Another significant difference is that its socket is slightly longer and more distinctive.

As noted above, the arrowheads falling within Type A1a and its variant Type A1b groups (or vice versa) were widely used in Mesopotamia as of the 7th century B.C. and in Anatolia, Greece and Egypt after this date. A high number of around 3,600 examples of Type A1b trilobate arrowhead and their variations were found in the Treasury Hall at Persepolis[38]. Examples dated to the Middle Achaemenid Period are known from Daskyleion (477-389 B.C.). "Type A1b" and "Type A1a" arrowheads were also found together in the city[39].

century B.C.): Charles Dugas, "Le sanctuaire d'Aléa Athena a Tégée avant le IVe siécle", *Bulletin de Correspondance Hellénique*, 45, 1921, pp. 378-389, fig. 40, 179; Samaria (the 4th century B.C.): John Winter Crowfoot-Grace Mary Crowfoot-Kathleen Mary Kenyon, *The Objects from Samaria, Samaria Sebaste 3*, Palestine Exploration Fund, London 1957, p. 452, fig. 3-5; Kelainai-Apameia (the 4th-3rd centuries B.C.): Askold Ivantchik, "Arrowheads from a Survey in Celaenae-Apameia" *Kelainai II. Kelainai-Apameia Kibotos: Eine achämenidische, hellenistische und römische Metropole*, ed. Askold Ivantchik-Latife Summerer-Alexander von Kienlin, Ausonius éditions, Bordeaux 2016, p. 476 cat. 19-23.

38 Schmidt, *ibid*., pl. 76; Stronach, *ibid*., pp. 180-181, fig. 94, 1-17; White, *ibid*., pp. 43-44.

39 Kasar-İren, *ibid*., pp. 186-187, fig. 8-9 Type IB1b. Similar arrowheads were also unearthed in various Mediterranean centers. Olympia (Baitinger, *ibid*., fig. 225 tip IIB1); Migdol Castle-Egypt (Oren, *ibid*., p. 25, fig. 26, 5); Limyra (Martin Seyer-Alexandra Dolea-Philip Misha Bes-David Zs. Schwarcz-Selda Baybo-A. K. L. Leung-Ursula Quatember-Michael Wörrle-Helmut Brückner-Friederike Stock-Anna Symanczyk-Günther Stanzl-Kathrin Kugler-Banu Yener-Marksteiner, "The Excavation at Limyra/Lycia 2018: Preliminary Report", *Anatolia Antiqua*, 27, 2019, p, 239, fig. 5); Nemea (Stephen G. Miller, "Excavations at Nemea, 1973-1974", *Hesperia*, Vol. 44/No. 2, 1975, p. 154, pl. 37 b); Samaria (Crowfoot et al., *ibid*., p. 452, fig. 110, 3. 5); Dura-Europos (Simon James, *The Arms and Armour, and other Military Equipment. Excavations at Dura-Europos 1928-1937*, Oxbow Books, London 2004 fig. 668-670); Kelainai-Apameia (Ivantchik, *ibid*., p. 476 cat. 10-18); Soli-Cyprus (Olof Vessberg, Alfred Westholm, *Hellenistic and Roman Periods in Cyprus*, The Swedish Cyprus Expedition, 4. 3, HakanOhlssons Boktryckeri Lund, Stockholm 1956, p.112, fig. 33, 6).

Amongst the A1b examples found in Patara, the ceramics and numismatic data within the context that includes cat. 3 and 4 are dated between the second half of the 4th century B.C. and the end of the 3rd century B.C. Found on the surface, cat. 5 should pertain to the 6th to 3rd centuries B.C. in the broadest sense of time.

Type A2: These arrowheads are characterized by three short wings and a small triangular body. The two examples can be found in the Tepecik settlement (cat. 6-7). Having the same form in general terms, these two specimens diverge by slight differences. cat. 6's body has more straight-angled edges and there is a small hole on its socket-shaft junction. The hole indicates that a small rivet was used to fix the arrowhead on the shaft more securely[40]. A small projection that is preserved on the side of the socket demonstrates that it had a spur on this part. cat.7's socket is inserted almost directly into the body.

The earliest examples of this type of arrowheads that are dated to the 7th/6th century B.C. are known from kurgans and Eastern European tombs[41]. Numerous examples of this type showing considerable parallelism are known from Anatolia, Hellas, and Egypt beginning in the 6th century B.C. It is understood that these small-sized arrowheads were not substantially preferred after the 4th century B.C[42].

One of the examples of Patara Type A2, cat. 6 was recovered from a stratum where ceramics dated between the second half of the 4th century B.C. and the end of the 3rd century B.C. were found. As for the other arrowhead (cat. 7), it was

40 Robinson, *ibid*., p. 408; Davidson, *ibid*., p. 200; Daniş Baykan, "Nif Dağı Kazısı Karamattepe ve Ballıcaoluk'ta Bulunan Ok Uçları", *MASROP*, Vol. 9/No. 12-13, 2017, p. 31.

41 Denys Grechko, "About the Dating of the Scythian Type Arrowheads of the Late Hallstatt Period From Central Europe", *Arkheologia*, 2020. 4, fig. 3, 20; Marek Novák, Moravský „Molpír"? Halštatské nálezy z opevněného výšinného sídliště Provodov-Ludkovice Rysov, (okr. Zlín). *Pravěk Nová řada,* 25, tab. 2, 15-18; Baykan, *ibid*., p. 31.

42 Smyrna-Bayraklı (the 7th-4th centuries): Duygu S. Akar-Tanrıver-Serhat Foça, "Yeni Veriler Işığında Eski Smyrna Ok Uçları Tipolojisi", *TÜBA-AR*, 30, 2022, pp. 15-16, 23 fig. 6, 94-96); Olympia (the 6th-4th centuries B.C.): For cat. no. 6: Baitinger, *ibid*., type IIB5; for cat. no. 7: Baitinger, *ibid*., type IID3; Migdol Castle-Egypt (the 6th Century B.C.): Oren, *ibid*., 25, fig. 26.6; battlefield of Marathon (490 B.C.): Elisabeth Erdmann, "Die sogenannten Marathonpfeilspitzen in Karlsruhe", *Archäologischer Anzeiger*, 88, 1973, p, 47, fig. 2; Acropolis of Athens (480/479 B.C.): Broneer, *ibid*., pp. 113-117, fig. 4; Ballıcaoluk-Mount Nif (the 6th-4th centuries B.C.): Daniş Baykan, "Metal Finds from Nif-Olympos", *Recent Studies on the Archaeology of Anatolia*, BARIntSer 2750, ed. Ergün Laflı-Sami Patacı, Archaeopress, Oxford 2015, p. 43, fig. 1, type 8; Baykan, Nif Dağı Kazısı, p. 31, fig. 14, type 8; Olynthus (destruction layers of 348 B.C.): Robinson, *ibid*., p. 405, type GIII. GV; Daskyleion (the 4th century B.C.): This type of arrowheads found in Daskyleion were assessed in association with hunting. For cat. no. 6: Kasar-İren, *ibid*., p. 183, type IA2a; for cat. no.7: Kasar-İren, *ibid*., pp. 183-184, type IA2b.

not found within any contextual data since it was uncovered in the eastern section of the trench. It is estimated that it pertains to the 6th-3rd centuries by means of similar examples.

Type B: Socketed Bilobate Arrowhead with Spur (cat. 8; fig. 4, 7)

In the Tepecik settlement, a single socketed bilobate (two-winged) arrowhead was uncovered (cat. 8). The body of this arrowhead has a bilobate, with a pronounced midrib in its center. The socket extends towards the body following an excurving line, and from this point to its tip, the body of the arrowhead rises on a straight line, taking a triangular form (approximately a rhombus). A single spur on the socket section is preserved in broken condition. Owing to these properties and its original background, cat. 8 falls within the group widely referred to as "Scythian arrowheads" in the current literature.

It is observed that socketed bilobate arrowheads have many variations, particularly in terms of their body forms. While the majority of the examples have spurs, there are also arrowheads bearing all of the other characteristics with the exception of spurs[43]. It is noted that the earliest examples of this type of arrowheads emerged in the Pontic Steppe Area before the rarely-seen trilobate arrowheads in Northern Caucasia, and subsequently dispersed westwards through Anatolia[44]. Drawing close parallel with the body form of cat. 8, socketed two-winged (bilobate) arrowheads with or without spurs are known from the foothills of the northern

43 Oscar White Muscarella, *Bronze and Iron. Ancient Near Eastern Artifacts in the Metropolitan Museum of Art*, Metropolitan Museum of Art, New York 1988, pp. 392-393.

44 Serge Cleuziou, "Les pointes de flèches en métal au Proche et Moyen-Orient", *Le plateau iranien et l'Asie centrale des origines à la conquête Islamique. Leurs relations à la lumière des documents archéologiques*, Paris 22-24 mars 1976, ed. Jean Deshaves,Centre National de la Recherché Scientifique, Paris 1976, p. 189, fig. 1; Muscarella, *ibid*., p. 393. Van – Ayanis: Altan Çilingiroğlu, "Bronze Arrowheads of Ayanis (Rushinili Eiduru-kai): Indicate Ethnic Identity?", *Anatolian Metal III, Der*Anschnitt Zeitschrift für Kunst und Kultur im Bergbau, Beiheft 18, Deutsches Bergbau-Museum, Bochum 2005, pp. 63-66, fig. 1; Ephesos Artemision: Gudrun Klebinder-Gauss, *Bronzefunde aus dem Artemision von Ephesos*, Ephesos 12.3, Verlag der Österreichischen Akademie der Wissenschaften, Vienna 2007, p. 271, cat. 892-894, pl. 86, 892-894; 119, 893; Klaros: Zunal, *ibid*., pp. 46-47, cat. 9-16; Didyma: Maximilian Lubos, "Weihungen griechischer Söldner in Didyma", *Zurück zum Gegenstand, Festschrift für Andreas E. Furtwängler 2*, ed. Ralph Einicke-Stephan Lehmann-Henryk Löhr-Gundula Mehnert-Andreas Mehnert-Anja Slawisch, Beier & Beran, Langenweißbach 2009, pl. 1, 3a-6); Mount Nif – Karamattepe: (Baykan, "Nif Dağı Kazısı", p. 30, type 6; for examples from Troia, Larissa, Didyma, Kaman, and Boğazköy, see Yalçıklı, *ibid*., p. 220 pl. 5, 164-43; Delphi and Sparta: Anja Hellmuth, "Horse, Bow and Arrow - A Comparison between the Scythian Impact on the Mediterranean and on Eastern Middle Europe", *Mediterranean Review*, 7. 1, 2014, pp. 19-20, fig. 17, 18 c-d.

Caucasus and in the central Dnepr region (the 8th century B.C.)[45], Çavuştepe (end of the 7th century B.C.)[46], Gözlükule-Tarsus[47], Smyrna-Bayraklı (610-545 B.C.)[48], Didyma (the 7th-6th centuries B.C.)[49], Phokaia (Persian destruction layer – 546 B.C.)[50] and Olympia (the 6th-5th centuries B.C.)[51].

Cat. 8 was recovered from the first stratum on the surface of trench J-17. It was found together with artifacts pertaining to several periods from the 6th-5th centuries B.C. to the Late Roman Imperial Period in this sloping stratum. Therefore, cat. 8 must pertain to the 6th-5th centuries, as indicated by similar examples.

Type C: Tanged Bilobate Arrowheads with Leaf-shaped Bodies (cat. 9-14; fig. 4, 7)

The lower part of the arrowhead has a thickened bilateral form. There is a clearly visible concave inclination on the middle axis of the body. From this point, it widens once again, takes a convex form, and ends with a pointy tip on the top. The body has a lozenge-shaped cross-section. This type of arrowheads is defined as having a "leaf-shaped" form in the literature. The tang is solid and has a round cross-section. In the Tepecik settlement, Type C is represented by 6 examples (cat. 9-14)[52]. These examples slightly differ, particularly in the varying concave angles on the side of their bodies.

Olynthus comes to the forefront among the centers where this type was unearthed[53]. It is remarked that a good number of arrowheads found on the "South Hill" might have been used during the Persian attack against Olynthus in 479 B.C. or the occupation of Philip II of Macedon in 348 B.C. However, the

45 Hellmuth, *ibid*., p. 6, fig. 3 a.

46 Afif Erzen, *Çavuştepe I. Urartian Architectural Monuments of the 7th and 6th centuries B.C. and a Necropolis of the Middle Age*, Türk Tarih Kurumu, Ankara 1988, pp. 48-50, pl. 15, a20. a23.

47 Hetty Goldman, *Excavations at Gözlü Kule, Tarsus. The Iron Age*, Tarsus 3, Princeton University Press, Princeton 1963, p. 374, fig. 174, 31.

48 Ekrem Akurgal, *Eski İzmir I. Yerleşme Katları ve Athena Tapınağı*, Türk Tarih Kurumu Yayınları, Ankara 1997, pl. N, 3. Also see Akar-Tanrıver, Foça *ibid*., pp. 9-10, fig. 3, 5-11.

49 Lubos, *ibid*., pl. 1, 3a.

50 Ömer Özyiğit, "The City Walls of Phokaia", *Revue des Études Anciennes*, Tome 96/No. 1-2, 1994, p. 91, fig. 32, 3.

51 Baitinger, *ibid*., fig. 98-111; 150-4 type IIA2; type IIA3.

52 Two out of these six examples (Cat. 9-10) are published; see Feyzullah Şahin, *Patara Metal Buluntuları*, Patara V.2, Ege Yayınları, İstanbul 2018, p. 53, cat. D2-D3.

53 Robinson, *ibid*., 383–387 Type D cat. nos. 1913–1939 pl. 120–122.

current data are not sufficient for deciding which of these two military campaigns corresponds to the arrowheads[54]. Examples from the 6th Century B.C. are known from Daphnae[55]. Examples found on the battlefield of Marathon (479 B.C.)[56] and similar specimens uncovered in Cyprus[57] show that this arrowhead form was widely used in the Classical Period. Examples from Olympia are dated within the 5th-4th centuries B.C.[58] Examples unearthed in Soli-Cyprus are dated prior to the Hellenistic Period[59]. This type of arrowheads, of which Hellenistic examples[60] of which are also known, did not find their way into the military equipment[61] of the Roman Imperial Period.[62]

Arrowheads belonging to the Type C group were found in different contexts in Tepecik. cat. 9 was found in a stratum dated to the third quarter of the 5th century B.C. during the excavations conducted in 2007, and is evaluated accordingly[63]. cat. 10 was found during the North Bastion excavations. Uncovered in a burnt layer upon the packed-earth floor in situ, these ceramics are assessed within the second half of the 4th century B.C.[64] Recovered as part of this find group, a lead sling bullet (cat. 52) also pertains to 334/333 B.C. This arrowhead is dated to 334/333 B.C. in favor of the aforementioned finds found in the building's destruction layer[65]. The ceramics found within the context where cat. 11 and 12 were also recovered are dated to the second half of the 4th century B.C. As for the two arrowheads found in the aslope field (cat. 13-14) in Tepecik, it is not possible to date them through the contextual data since

54 Robinson, *ibid*., pp. 383-384.

55 Robinson, *ibid*., p. 384, fn. 29.

56 Gisela M. A. Richter, *Greek, Roman and Etruscan Bronzes*, The Metropolitan Museum of Art, New York 1915, p. 406 cat. 1502.

57 Einar Gjerstad, *The Cypro-Geometric, Cypro-Archaic and Cypro-Classical Periods*, The Swedish Cyprus Expedition, Vol. 4/Part 2, Stockholm 1948, p. 214 fig. 23, 21.

58 Baitinger, *ibid*., Type IA3-2, pl. 1, 18-21; Holger Baitinger, "Punisch oder griechisch? Bemerkungen zu einem Pfeilspitzentypus aus Olympia" *Archäologisches AKorrBl*, 39, 2009, pp. 213-214, fig. 2.

59 Vessberg, Westholm, *ibid*., p. 112, fig. 33, 5.

60 Adolf Furtwängler, *Die Bronzen und die übrigen kleineren Funde von Olympia,* Olympia IV, Asher, Berlin 1890, p. 178 pl. 64, 1095; Robinson, *ibid*., 383.

61 Şahin, *Patara Metal Buluntuları*, p. 53.

62 Robinson, *ibid*., p. 384, fn. 31

63 Gül Işın-Fahri Işık, "Tepecik Bey Konağı", *30. Kazı Sonuçları Toplantısı*, 4. Cilt, 2009, p, 338.

64 Dündar-Rauh, *ibid*., pp. 532–557, cat. 1–63.

65 The destruction phase of the Bastion is associated with the campaign in which Alexander III's army captured Lycia; see Dündar Rauh, *ibid*., pp. 560–561, 573–577.

they were found on the surface during the relevant fieldwork. Therefore, it would be suitable to broadly evaluate them as pertaining to the 5th-2nd centuries B.C.

Type D: Tanged Bilobate Arrowheads with Triangular Bodies (Boss-and-barb) (cat. 15-25; fig. 5, 8)

The edges of the triangular body can be slightly convex or straight. The bilobate body ends with pointy barb on both sides. The length of the barbs can vary. A distinct characteristic of this arrowhead type is the triangular boss or swelling at the junction of body and tang. These arrowheads feature a rhomboid cross-section in general. A total of 11 bronze arrowheads (cat. 15-25) that bear Type D properties were found during the excavations conducted in Tepecik. In this group, 5 arrowheads (cat. 15, 19, 21, 22, 25) have straight edges, while the edges of the remaining examples (cat. 16, 18, 20, 23, 24) have a slightly convex structure.

The form features of this type of arrowheads are thought to have a long history[66]. Nevertheless, we can say that they were encountered in many Eastern Mediterranean centers beginning in the 6th century B.C. It was noted that arrowheads of a similar typology, which had been unearthed during Nif Mountain (Olympus) excavations, could be dated to the 8th-6th centuries B.C. with the addition of the information that similar specimens had been used for a long time[67]. The examples found in Olynthus are associated with the Persian invasion of 479 B.C. or the 348 B.C. battle when Philip II laid waste to the city[68]. Examples from Samaria Sebaste[69] assessed within the same dates as Olynthus, from Corinth[70] that are dated to the 4th century B.C., and from Salamis[71] and Delos[72] which rank among the finds pertaining to the Hellenistic Period demonstrate that these arrowheads were widely used in the

66 The examples found in Mycenae and the Troia VI settlement do not have tangs. However, examples of a similar form recovered from the Mycenae tombs in Ialysos have tangs; Robinson, *ibid*., pp. 387-388, fn. 41). J. C. Waldbaum states that this form may have derived from the examples from the Hittite Imperial Period; Waldbaum, *ibid*., p. 36. Moreover, arrowheads of a similar typology were also found in Ayanis, which is an Urartian settlement; Çilingiroğlu, *ibid*., pp. 63–66, fig. 2.

67 Baykan, "Metal Finds from Nif-Olympos", p. 42, Tip 7, fig. 1; Baykan, "Nif Dağı Kazısı", p. 31, fig. 14.

68 Robinson, *ibid*., pp. 387–391, Type D1, cat. 1940–1971, pl. 121, 122.

69 Crowfoot et al., *ibid*., p. 453, fig. 110, 15–20.

70 Davidson, *ibid*., p. 199, pl. 91, 1512. 1514.

71 Marie-José Chavane, *Les Petits Objets*, Salamine de Chypre 4, de Boccard, Paris 1975, p. 108, pl. 31, 329. 330.

72 Waldemar Deonna, *Le mobilier délien*, Délos 18, Éditions de Boccard, Paris 1938, pp. 208-209, pl. 556.

5th-4th centuries B.C. This type of arrowheads were also found in Hellenistic and Roman Imperial Period layers in many centers[73]. All of these arrowheads show that a similar type had been used for a very long time, starting from the Archaic Period at the very least, until well into the Roman Imperial Period without any significant alterations. This is why contextual data is quite important when assessing this type of arrowheads.

Type D specimens are recovered from different areas and various historical contexts in Tepecik. cat. 15 was found in the destruction layer of the North Bastion, along with numerous in-situ finds. This destruction is associated with the military campaign of Alexander the Great and his army in Lycia and Patara in 334/333 B.C.[74] cat. 16 was found in a stratum dated to the second half of the 4th century B.C. The finds found in the same stratum as cat. 17-19 are dated between the end of the 4th century B.C. and the middle of the 3rd century B.C. cat. 20-22 were uncovered in a stratum where ceramics dated to the first half of the 3rd century B.C. were found intensively. And 3 arrowheads (cat. 23-25) were found on the surface of the excavation area.

Iron Arrowheads

Type E: Tanged Arrowheads with Pyramidal Bodies (cat. 26-43; fig. 5, 9)

This arrowhead type has an oblong pyramidal body with a square cross-section and a long, solid tang. Out of the most quantitatively extensive group of arrowheads unearthed in Tepecik, 18 Type E examples (cat. 26-43) were found in total (Many fragments that may belong to this type of arrowheads were also found). All of these examples are made of iron, and the majority of them have lost their original form due to the quickly corroding nature of the material.

73 Heraion Teichos (Neşe Atik, "Heraion Teikhos Kazılarında Bulunan Ok Uçları", *MASROP,* Vol. 11/No. 16, 2017, pp. 61-65, 75-76, cat. 1-7.); Sardis (Waldbaum, *ibid.*, p. 36, pl. 4, 47.); Gözlükule-Tarsus (Hetty Goldman, *Excavations at Gözlü Kule, Tarsus. The Hellenistic and Roman Periods*, Tarsus 1, Princeton University Press Princeton 1950, p. 389, fig. 264, 3.); Metropolis near Torbalı, İzmir (Arslan et al., *ibid.*, pp. 259-260, cat. 5-9.); Arycanda (Bekir Sıtkı Alptekin Oransay, *Arykanda Antik Kentinde 1971-2002 Kazı Sezonlarında Ele Geçen Madeni Buluntular ve Madencilik Faaliyetleri*, Ankara Üniversitesi Sosyal Bilimler Enstitüsü, Unpublished PhD Thesis, Ankara Üniversitesi, Ankara 2006 p., 94, pl. 16, D21–D23.); Kalymnos (Henry Beauchamp Walters, *Catalogue of the Bronzes, Greek, Roman, and Etruscan in the Department of Greek and RomanAntiquities, British Museum*, Trustees, London 1899, p. 347, Type D, cat. 2803.); Hierapolis (Walters, *ibid*., p. 347, Type D, cat. 2813.); Pergamon (Wolfgang Gaitzsch, *Eisenfunde aus Pergamon. Geräte, Werkzeuge und Waffen*, Pergamenische Forschungen 14, De Gruyter, Berlin 2005, p. 196, pl. 39, P19.); Xanthos (Jacques des Courtils, "Xanthos. Rapport sur la campagne de 2000", *Anatolia Antiqua* 9, 2001, p. 236, fig. 2.).

74 Dündar-Rauh, *ibid*., pp. 560-578.

Dated to the middle of the 6th century B.C., examples of this arrowhead type[75] are known from various centers, particularly from Gordion[76], Sardis[77], Palea Paphos-Cyprus[78], Kartaltepe/Bakacaktepe in Thracia[79] and Mount Nif (Karamattepe)[80]. Similar arrowheads were also found on Kolonos Hill which is located at the narrow coastal pass where the Battle of Thermopylae was fought[81]. The specimens recovered at Olympia are dated between the first quarter of the 5th century B.C. and the 4th century B.C.[82] The examples from Olynthus are associated with the Macedonian attacks that occurred in 348 B.C.[83]. The examples identified in Dasykleion[84] are dated to the 4th century B.C. at the earliest[85]. Examples from Arsemeia ad Nymphaios[86] and Pergamon[87] are assessed within the Hellenistic Period. Similar examples from Heraion Teichos are dated between the 2nd century B.C. and the 1st century A.D.[88]

75 It is noted that the formal origin this arrowhead type goes back to the Bronze Age; see Anthony M. Snodgrass, *Early Greek Armour and Weapons from the End of the Bronze Age to 600 B.C.*, Edinburgh University Press, Edinburg 1964, pp. 150, 154, type 4. Similar examples found in the Persian destruction layer of Palea Paphos in Cyprus, which are dated to around 545 B.C. were referred to as the "Cyprus Type". While this term is still used occasionally, widespread examples found in the Mediterranean periphery indicate that such an assignment of origin is incorrect; see Baykan, "Nif Dağı Kazısı", pp. 24. 33-34.

76 Rodney S. Young, "Making History at Gordion", *Archaeology*, Vol. 6/No. 3, 1953, p. 166, fig. 10.

77 Crawford H. Greenewalt-Marcus L. Rautman, "The Sardis Campaigns of 1994 and 1995", *American Journal of Archaeology* Vol. 102, 1998, pp. 491-492, fig. 16.

78 Walters, *ibid*., p. 346; Robinson, *ibid*., p. 392.

79 Ergün Karaca, "Doğu Trakya Buluntusu Savunma ve Saldırı Gereçleri", *Trakya University Journal of Faculty of Letters* Vol. 12/No. 23, 2022, pp. 324-325, fig. 7, 1-9.

80 Baykan, "Nif Dağı Kazısı", p. 24, fig. 5 type 1.

81 Baykan, "Nif Dağı Kazısı", p. 24; George Kakavas (ed.), *Leaving a Mark on History, Treasures from Grek Museums*, National Archaeological Museum & Numismatic Museum, Athens 2013, pp. 118-119, cat. 97-100.

82 Baitinger, "*Die Angriffswaffen aus Olympia*", p. 11, pl. 3, 51-55 type IB.

83 Robinson, *ibid*., pp. 392-397, cat. 1972-2026, pl. 123-124.

84 Kasar-İren, *ibid*., p. 191, fig. 11 d; Özgün Kasar, *Daskyleion Metal Silah ve Teçhizatlar: İşlev, Üretim ve Süreçsel Farklılaşma*, Muğla Sıtkı Koçman Üniversitesi Sosyal Bilimler Enstitüsü, Unpublished PhD Thesis, Muğla 2021, pp. 101-103 cat. 2-3. 13 -14. 18. 24, pl. 12.

85 Kasar, *ibid*., p. 103, 149-150.

86 David Stronach, "Metallfunde in Arsameia am Nymphaios", *Arsemeia am Nymphaios. Die Ausgrabungen im Hierothesion des Mithradates Kallinikos von 1953-1956*, ed. Friedrich Karl Dörner-Theresa Goell, Verlag Gebr. Mann, Berlin 1963, pp. 275-276, 279, cat. 1, pl. 72, 1.

87 Gaitzsch, *ibid*., p. 143, pl. 39, P36-P40. P54. P58-P61.

88 Atik, *ibid*., pp. 73-74, fig. 7, cat. 15, 17-18.

Similar arrowheads uncovered in Dura Europos[89] and Allianoi[90] are dated to the Roman Imperial Period. The dates of the specimens found in Smyrna-Bayraklı are unknown since the contextual data were not sufficient for specific dating[91]. Numerous examples unearthed in the medieval centers of the Mediterranean world demonstrate that this iron arrowhead design, in company with its armor penetration ability, had been used for a long time[92].

This arrowhead type was used intensively, especially during the Persian advance towards the west and Alexander the Great's eastern campaign[93]. However, contextual data once again comes into prominence in dating this type of arrowhead, as well as all the other finds. cat. 26 uncovered in Tepecik was found in the destruction layer of the North Bastion (334/333 B.C.). 7 pieces of Type D arrowheads (cat. 27-33) are dated to the second half of the 4th century B.C. by means of the ceramics found in their strata. 7 other arrowheads (cat. 34-40) were unearthed in the same strata with various finds that are dated between the end of the 4th century B.C. and the middle of the 3rd century B.C. and 3 arrowheads (cat. 41-43) were found within the surface soil in the relevant excavation areas.

Type F: Bolt-heads / Spear Butts (cat. 44-46; fig. 6, 9)

In Tepecik, 3 iron bolt-heads with solid round-sectioned bodies, hollow circular sockets, and pointy conic tips (cat. 44-46) were found. The length of these catapult-bolts varies between 7,4 and 9,5 cm, while their socket diameter ranges from 1,6 to 2,1 cm. Differing from the other arrowheads both dimensionally and gravimetrically, these metal objects are thought to have been used with long-range war machines named ballistas or catapults[94], which were effective for throwing

89 James, *ibid*., p. 219, cat. 784-793.

90 Daniş Baykan, "Allianoi'da Bulunan Ok Uçları", *MASROP*, Vol. 9/No. 14-15, 2017, pp. 12-13, fig. 5.

91 Akar-Tanrıver, Foça, *ibid*., 17, 23, fig. 7, 97-100.

92 Samsat Höyük: Alptekin Yavaş, "Samsat Höyük Ortaçağ Temrenleri Konusunda İlk Tespitler", *MASROP*, Vol. 10/No. 14-15, 2017, pp. 38-39, fig. 7; Amorium: Alptekin Yavaş-Zeliha Demirel-Gökalp-Ümit Güder-Mehmet Kurt, "Amorium Kazılarında Bulunan Bir *Grup Okucu", TÜBA-AR* 23, 2018, p. 183, cat. 2. For a comprehensive study of this type of arrowhead, see Alptekin Yavaş, *Ortaçağ Temrenleri. Anadolu Ortaçağı'nın 9-13.Yüzyıl Temren Teknolojisi Üzerine Kronolojik, Morfolojik, Terminolojik, Tipolojik ve Metalürjik Bir Değerlendirme,* Turkish Academy of Sciences, Ankara 2020, pp. 129-134.

93 Baykan, "Nif Dağı Kazısı", p. 34.

94 Derived from old Hellenic word "βαλλίστρα" - "ballistra", balista is a long-range bow-machine. The term "ballista" was used for the artillery throwing stone cannonballs throughout the Roman

arrows. The catapult-bolt heads that are used with these mechanical war machine have an approximate length of 10 cm. They can be either socketed or tanged. Their bodies have pyramidal, flat, conic, etc. forms. The socketed conic catapult-bolt heads particularly bears a striking similarity with the spear butts[95]. The solid bodies and relatively short socket sections of the Patara examples indicate that they could be used as catapult-bolts. However, it is also possible that they functioned as spear butts. The simplicity of these objects' dimensions and form makes it hard for us to determine their function indisputably. In fact, their dimensions, weights, and form are rather convenient for being used as both spear butts and artillery bolts without necessarily making any alterations[96].

Bearing resemblance to the Tepecik specimens in terms of form, an example from Sardis was evaluated as a spear butt and dated to the 6th century B.C.[97] In Kurul Fortress in Ordu, 5 examples from the Hellenistic Period, that do not have rivet holes, were assessed as catapult-bolts[98]. Some of the conic spear butts found in the same fortress settlement have a single rivet hole in the sockets[99]. It appears that the conic shape was preferred in spear butts from the Roman Republic Period because of its ease of production. Examples from the Spanish settlements of Cáceres, Numantia, and Caminreal[100] and from Alesia[101] are evaluated within this framework. An example recovered from Cıngırt Kayası in Fatsa-Ordu pertains to the 1st century B.C.[102] 3 examples from Dura Europos show a similar form and

Republic Period and in the first years of the Roman Imperial Period. During the same era, arrow-throwing artillery were named as "catapulta". It is observed that all arrow-throwing systems were named as "ballista" as from the 4th century A.D.; see Eric William Marsden, *Greek and Roman Artillery. Historical Development*, Clarendon Press, Oxford 1969, p. 1.

95 Spear butts are multifunctional equipment. Their primary function is to fix the spear into the ground and protect the end of the wooden spear that touches the ground. In addition, it must have been used as an auxiliary weapon in case the body of the spear was broken; see Bishop et al., *ibid*., pp. 53-54.

96 Walter H. Manning, *Catalogue of the Romano-British Iron Tools, Fittings and Weapons in the British Museum*, British Museum Publications, London 1985, p. 141, pl. 66.

97 Waldbaum, *ibid*., p. 32, pl. 2, 16.

98 Zoroğlu, *ibid*., p. 46, cat. A91-94.

99 Rivet holes are not preserved in the majority of these objects due to corrosion and abrasion; see Zoroğlu, *ibid*., pp. 75-76, cat. D5-D16; Şenyurt, Zoroğlu, *ibid*., p. 190, fig. 15.

100 Bishop et al., *ibid*., pp. 53-54, fig. 24, 8-14.

101 Michel Feugère, "L'equipement militaire d'époque républicaine en Gaule", *The Journal of Roman Military Equipment Studies,* Vol. 5, 1994, figs. 3, 8-9 above.

102 Ertaç Yıldırım, *Ordu/Fatsa Cıngırt Kayası Kazısı 2012-2014 Sezonu Metal Buluntuları*, Gazi Üniversitesi

are dated to the Roman Imperial Period. It is remarked that the specimens found in this castle settlement are most probably arrowheads since the majority of them are small-sized and no javelin shafts are present within the find context despite the existence of numerous bolt shafts[103].

The present finds make it difficult to determine the function of these socketed iron pieces with pointed tips and conic bodies discovered at Tepecik among military equipment. Furthermore, we must also note that, even if we could define these objects either as spear butts or catapult-bolt heads, there are hardly any criteria present for dating them. However, the other finds falling within the same context as these three examples unearthed in Tepecik considerably helps in terms of dating. Cat. 44 was found during the Western Terrace excavations along with various ceramics from the 4th-3rd centuries B.C. cat. 45 and 46 were uncovered in a stratum that is linked to the destruction of the North Bastion as a consequence of battle. As we mentioned above, these ceramics were evaluated in the second half of the 4th century B.C.[104] Moreover, the destruction phase of the bastion is associated with the military campaign during which Alexander's legions captured Lycia through a lead sling bullet (cat. 52) found within this find group[105].

Javelin Heads (cat. 47-50; fig. 6, 9)

The javelin and thrusting spear are two different weapon types that are often confused with each other. Their most noticeable distinction is that the thrusting spear is a close-range weapon while the javelin is a long-range military tool. Both made of a metal head attached to a long wooden rod, these two weapons also differ in the length of their metal sections, with the javelin having a 12 to 25 cm long head and the thrusting spear having a 30 to 45 cm long one[106]. Whether it is a javelin or thrusting spear, the metal head can be socketed or tanged. Considering the lengths of the 4 iron specimens recovered during Tepecik excavations (cat. 47-50), it can be discerned that they are javelin heads, all of which are tanged. Two javelin head types can be defined according to their form:

Sosyal Bilimler Enstitüsü, Unpublished MA Thesis, Ankara 2017, pp. 87-88 cat. 58.

103 James, *ibid*., p. 210, cat. 779-781

104 Dündar-Rauh, *ibid*., pp. 532–557, cat. 1–63.

105 Dündar-Rauh, *ibid*., pp. 560–561, 573–577.

106 Totko Stoyanov, "Warfare", *A Companion to Ancient Thrace*, ed. Julia Valeva-Denver Graninger-Emil Nankov, Wiley-Blackwell, Chicester 2015, p. 428.

Type A: The body broadens at a sharp angle on the joint section connecting it to the long tang, extends upwards following a triangular shape, and ends with a pointy tip. The long tang is thick and solid. There are 2 examples (cat. 47-48) bearing these characteristics. It is considered that the broad, tanged and leaf-shaped spearheads evolved out of the flat leaf-shaped spears of the Bronze Age. In addition, the use of a solid tang to fix the spearhead onto the wooden shaft instead of a socket is another early characteristic[107]. Similar examples from Olynthus were unearthed on the Southern Hill which bears the traces of an Archaic settlement[108]. In Olympia, specimens that have similar blades but sockets instead of tangs are dated to the 5th-4th centuries B.C.[109] The ceramics found in the same strata with Tepecik javelin heads (cat. 47-48) are dated to the end of the 4th century B.C., and cat. 47-48 pertains to the same era.

Type B: The spearheads referred to as Type B have flat cross-sections. Diagonally widening from the tang, the spearheads contract with a slight inclination at an approximate extent of 1/3, and then take a leaf-shaped form. There are 2 Type B examples, and they differ in small details. Cat. 49 has a narrower tang compared to the width of its body; it has a broader body form. However, cat. 50 has a thick tang section, and a narrower body. Cat. no. 50 has a bulge at the junction of body and tang. This bulge is not the result of corrosion and is not seen on spearheads of this type. Therefore, it is possible that this spearhead may be a production waster or an incomplete spearhead.

Examples featuring similar body forms but sockets instead of tangs are known from Olynthus[110]. The form of a specimen that is found in Kurul Fortress-Ordu, and dated to the Hellenistic Period bears particular resemblance to cat. 50[111]. However, the spearhead unearthed in Kurul Fortress has a socket in contrast to the Patara examples. The cat. 49 javelin head was found together with various ceramics dated to the end of the 4th century B.C. The other javelin head (cat. 50) was uncovered within the 2nd century B.C. context.

107 Robinson, *ibid*., p. 411.

108 Robinson, *ibid*., pp. 411-412, cat. 2140-2141, pl. 127.

109 Furtwängler, *ibid*., p. 173, cat. 1033-1035, pl. 64.

110 D. M. Robinson notes that this type possibly derived from the bronze examples of the Mycenaean Period. Moreover, he underlines its long-term use by stating that it was also used in Macedonian sarissae; see Robinson, *ibid*., p. 414, cat. 1258-2159, pl. 128.

111 Zoroğlu, *ibid*., p. 70 cat. D1.

Gastraphetes / Catapult Trigger Mechanism Part (cat. 51; fig. 6, 10)

A bronze piece was found in the fill of the cellar of Tepecik settlement's Tower House. (cat. 51). The middle section of this approximately 9-cm-long component is made of a thick plate. There are two semicircular reciprocal bulges on the upper part of this plate. An iron axle is placed within the holes bored in the center of these bulges. On the lower back of the plate, there is a hook that consist of two prongs. The space between the prongs is wide and a semicircular in form. The upper bulges and the axle must be indicate that the metal part was attached to another mechanism. The deep and semi-circular form between the hooked prongs has an exceptionally convenient structure for placing arrows. These features signify that the metal part may have belonged to a gastraphetes or catapult.[112].

The current information about ancient artillery is based on a limited number of technical literary works[113]. Flourished in the 1st century B.C., Heron of Alexandria remarks that the first catapults were developed by taking the handheld gastraphetes as a source of inspiration and provides a detailed description of this weapon in his work concerning war machines[114]. In this description, he also mentioned the parts of the trigger mechanism of the catapults and summarized its functioning as follows: Heron summarizes the functioning of this trigger mechanism as follows: There are two vertically-riveted iron pillars on the back of the *diostra*. There is a claw bent downward on the back of the *diostra*, and the end of the claw is pronged like an abutment. (These pronged indentations are named ~~as~~ *skendylion*.) The space between the prongs is the section where the arrow shaft is placed. The bowstring is attached to the prongs of the claw, and then the diostra is pulled back. When the tension was sufficient, the

112 Şahin, *Patara Metal Buluntuları*, p. 56 cat. D10, pl. 13. 31.

113 The depictions of Philon, Heron and Vitruvius are the most significant sources regarding this subject. When taken as a whole, these texts are so detailed that they render the reconstruction of arrow-throwing mechanical weapons like gastraphetes and catapult possible. For the historical development of ancient artillery, see Marsden, *ibid*., Eric William Marsden, *Greek and Roman Artillery. Technical Treatises*, Clarendon Press, Oxford 1971; Duncan B. Campbell, *Greek and Roman Artillery 399 BC– AD 363*, Osprey, Oxford 2003.

114 Heron, *Belopoeika*, *(=Heron Belopoiika – Schrift wom Geschützbau)*, translated by H. Diels, E. Schramm, Abhandlungen der Königlich Preussischen Akademie der Wissenschaften, Philosophisch-Historische Klasse 2, Verlag der Königlichen Preussischen Akademie der Wissenschaften, Berlin 1918, IV. see also Marsden, *Historical Development*, pp. 5-13; John G. Landels, *Eski Yunan ve Roma'da Mühendislik*, TÜBİTAK, Ankara 1998, p. 111; Aitor İriarte, "Pseudo-Heron's cheiroballistra a(nother) reconstruction: I. Theoretics", *The Journal of Roman Military Equipment Studies*, Vol. 11, 2000, pp. 48-60; Campbell, *ibid*., p. 3-5.

arrow was placed in the groove. When the claw is released, the bowstring abruptly disengages from the hooked prongs of the claw, thus throwing the arrow[115].

Heron's definition of the trigger mechanism component above has a striking resemblance to the metal component discovered in Tepecik (cat. 51). However, it is hard to discern whether this component belongs to a gastraphetes or a non-torsion/torsion catapult as the latter equipment was devised right after the gastraphetes and has similar trigger mechanisms[116]. Archaeological evidence regarding catapults is rarely found. And these rare finds mostly include metal components since the main parts of the said bow-machine were made of wood[117]. No examples of trigger claws with prong-ended have been found amongst the catapult components recovered during the excavations yet (we have not encountered any during our research, at least). In this sense, we can say that the aforementioned component uncovered in Patara is a rare tangible find associated with the trigger mechanism on which we barely hold information except for Heron's descriptions[118].The trigger claw with the "skendylion" end is one of the finds unearthed in the cellar of Tepecik Acropolis. The finds recovered from this cellar point to a closed context encompassing the second half of the 4th century B.C. and the first half of the 3rd century B.C., and cat. 51 is evaluated accordingly[119].

115 Heron, *ibid*., 5-7; Landels, *ibid*., pp. 111–113, fig. 34; Şahin, *Patara Metal Buluntuları*, fn. 472.

116 The claw uncovered in the Tepecik settlement is 9,3 cm long and 4,5 cm wide. Dimensions of handheld arrow-shooters do not vary greatly, while stationary torsion catapults of quite different dimensions were constructed according to the arrow type to be thrown. This is why making a deduction based only on dimensions does not yield reliable results. For the dimensions of catapults and symmetrical proportions of catapult components, see Tracey Elizabeth Rihll, "On Artillery Towers and Catapult Sizes", *The Annual of the British School at Athens*, 101, 2006, pp. 379-383; Marsden, *Historical Development*, pp. 45-47.

117 Campbell, *ibid*., pp. 13, 15, 23, 40, 44; Dietwulf Baatz, "Recent Finds of Ancient Artillery", *Britannia*, Vol. 9, 1978, pl. 46. For the trigger mechanism, see also Iriarte, *ibid*., pp. 52-54, fig. 3. For the metal parts of a catapult found at Zeugma see, M. Hartmann and Michael Alexander Speidel, "Military Installations at Zeugma: An Overview of the Swiss Archaeological Investigations, 2001-2003" *Excavations at Zeugma*: *conducted by Oxford Archaeology*, ed. William Aylward, The Packard Humanities Institute, California 2013, p. 385, fig. 16.

118 Among the finds unearthed in Hatra, there is a hook-shaped iron object that was defined as a probable component of a trigger mechanism, but it is so corroded that it does not bear any significant value, see Baatz, *ibid*., p. 6.

119 According to the overall literature, it can be noted that mechanical arrow-shooters of the gastraphetes type were in use in the end of the 5th century B.C. at the very least. As for torsion catapults, they were devised in the middle of the 4th century B.C. during the reign of Philip II of Macedon at the latest. Diodorus Siculus stated that the catapult had been invented during the reign of Dionysius I, the tyrant of Syracuse (Diodorus Siculus, *Bibliotheke Historike (=Library of History),*

Sling Bullets (cat. 52-57; fig. 6, 10)

A total of 6 lead sling bullets (cat. 52-57) were unearthed in the Tepecik settlement. All of these specimens have bi-conic forms but differ in certain details, such as size, weight, cross-section shape, and mold joint traces. Another fundamental difference in their structure is that two of these lead sling bullets have small, perforated holes on them (cat. 52-53)[120]. The remaining five do not bear any symbols or inscriptions, while one bullet has the inscription "ΑΛΕΞΑΝΔΡΟΥ" on one side and "ΦΙΛΙΠΠΟΥ" on the other.

The lead sling bullets[121] produced in molds[122] had various symbols and inscriptions

translated by Russel M. Geer, The Loeb Classical Library, Cambridge, Mass. - London 1947, XIV, 42, 1) (399 B.C.) and the new device had caused quite a confusion in the Siege of Motya (397 B.C.) (Diodorus, *ibid.*, XIV, 50, 4). Heron of Alexandria (Heron, *ibid.*, 4) notes that the catapult was devised by taking inspiration from the handheld gastraphetes which was an older weapon, thus indicating that this military tool was in use before 399 B.C. at least. Biton of Pergamon who wrote about war machines in the middle of the 2nd century B.C. remarks that Zopyrus of Tarentum was the person who had devised catapults (end of the 5th century B.C.). For the origin of catapults and their first usage, see Campbell, *ibid.*, p. 3; Duncan B. Campbell, "Ancient Catapults: Some Hypotheses Reexamined", *Hesperia*, Vol. 80/No. 4, 2011, pp. 678-681. Xenophon remarked in his "Cyropaedia" which was about Persian King Cyrus that Persians had used mechanical devices during the Siege of Sardis and their expedition to Caria (Xenophon, *Cyropaedia*, translated by Walter Miller, The Loeb Classical Library, Cambridge, Mass. - London 1989, VII. 2. 2, VII. 4. 1, VII. 4. 7). In view of this information, D. Baykan states that arrow-throwing catapults were possibly used in the 6th century B.C.; see Baykan, "Metal Finds from Nif -Olympos", pp. 42-43.

120 One can easily perceive with a close examination that the small holes were deliberately made after the casting process. There exist various suggestions on the function of these holes. For the hypothesis that they were possibly injected with a kind of poison, see Tracey Elizabeth Rihll, "Lead 'slingshot' (glandes)", *Journal of Roman Archaeology*, Vol. 22/No. 1, 2009, 159-160. It is also realized that the perforated sling bullets made an ear-piercing whistling sound when thrown. It is suggested that this sound put the enemy under psychological pressure when hundreds of these bullets were thrown, and that was the primary function of the holes; see Boyd Seevers, Victoria Dennis, "Slinging in the Biblical World: And What We Can Learn about David Defeating Goliath", *Near East Archaeological Society Bulletin*, Vol. 63, 2018, p. 6.

121 The use of lead sling bullets first began in the early 5th century BC and became widespread in the 4th century B.C. *A Guide to the Exhibition Illustrating Greek and Roman Life*, William Clowes and Sons, London1908, pp. 99-100, fig. 86; Stephen J. Greep, "Lead Sling-Shot from Windridge Farm, St Albans and the Use of the Sling by the Roman Army in Britain",*Britannia*, 18, 1987, p. 189. For the history and use of slings, see Manfred Korfmann, "The Sling as a Weapon, *Scientific American*, 229, 1973, pp. 34–42; Robert E. Dohrenwend, "The Sling. Forgotten Firepower of Antiquity", *Journal of Asian Martial Arts*, Vol. 11/ No. 2, 2002, pp. 29–49; Xenophon, *Anabasis*, translated by Carleton L. Brownson, The Loeb Classical Library, Cambridge, Mass.- London 1968, III, 3, 16–18.

122 Lead sling bullets were generally cast in a bi-conic form. However, there are also spherical (Davidson, *ibid.*, p. 203, cat. 1579, pl. 94), octahedral (Zoroğlu, *ibid.*, p. 59 cat. B49-B50), triangular examples and other forms; see Rihll, "Lead 'slingshot' (glandes)", pp. 154-155, figs. 1 a-e. The molds were made of terracotta, stone, or bronze. For a terracotta mold from Olynthus, see Robinson, *ibid.*, p.

on them from time to time. The inscriptions can be separated into three main groups: The first group comprises demoralizing messages; the second group includes names of the cities or the peoples of the cities; and the third is made up of proper names that were either nominative or genitive, i.e. about ownership. The nominative names include the names of bullet casters or distinguished slingers. When genitive, the inscription on the bullet is interpreted as the name of the ruler/commander who command the attack or the commander of the unit casting the sling bullets[123].

In their study concerning the North Bastion of Tepecik and the relevant finds, E. Dündar and N. K. Rauh emphasize that the aforementioned names inscribed on the sling bullet (cat. 52) might point to Philip II and Alexander III of Macedon[124]. Numerous examples bearing the genitive name of Philip II of Macedon on them are known from the city of Olynthus[125]. Not long ago, a limited number of lead sling bullets came to be known, featuring the name of Alexander the Great in contrast to his father. The "ΑΛΕ" abbreviation on a sling bullet that had most probably been found in Smyrna was interpreted by C. Foss as "Αλε (ξάνδρου)", who stated that it might be the name of Alexander the Great[126]. An example from Paul Canellopoulos' collection bears the complete version of this ruler's name. Attributed to Alexander the Great, this sling bullet has the inscription "Αλεξάνδρου" on one face and the symbol of an eagle with open wings on the other[127]. Another

419, fig. 23. For an example from Delos, see Philippe Bruneau, "Contribution à l'histoire urbaine de Délos", *Bulletin de Correspondance Hellénique*, Vol. 92/2, 1968, p. 650, fn. 1, fig. 14. There is a bronze mold piece in Paul Canellopoulos Collection. The six oval cavities inside this mold are inscribed with the word "Τίμωνος"; see Jean-Yves Empereur, "Colléction Paul Canellopoulos (XVII): Petits objets inscrits", *Bulletin de Correspondance Hellénique*, Vol. 105/1, 1981, p. 555, fig. 29. It is known that sling bullets were also cast by pouring molten lead into small holes dug into the soil in the battlefield. For Making Lead Slingshot under Battle Conditions, see Annelies Bosman, "Pouring Lead in the Pouring Rain: Making Lead Slingshot under Battle Conditions". *The Journal of Roman Military Equipment Studies*, Vol. 6, 1995, pp. 99-103. This type of sling bullets that had been made in the battlefield were found in the archaeological strata dated to the 5th-3rd Centuries B.C. in Oluz Höyük; see Şevket Dönmez-Aslıhan Yurtsever-Beyazıt, "Oluz Höyük Kazısı Altıncı Dönem (2012) Çalışmaları: Değerlendirmeler ve Sonuçlar", *Colloquium Anatolicum*, No. 12, 2013, pp. 177-178.

123 Clive Foss, "A Bullet of Tissaphernes", *The Journal of Hellenic Studies*, Vol. 95, 1975, p. 28; Walter B. Griffiths, "The Sling and its Place in the Roman Imperial Army", *Roman Military Equipment: the Sources of Evidence*, ed. Carol van Driel- Murray, BAR International Series 476, Oxford 1989, p. 259.

124 Dündar-Rauh, *ibid*., pp. 557-558, 560-578.

125 In Olynthus, a good number of sling bullets inscribed with the names of King Philip and his generals who destroyed the city were found; see Robinson, *ibid*., pp. 418-438, cat. 2176-2264.

126 Clive Foss, "Greek Sling Bullets in Oxford", *Archaeological Reports*, 21, 1974/1975, p. 42, cat. 15.

127 Empereur, *ibid*., p. 556, fig. 30, cat. 2.

complete version of the name Alexander can be seen on a specimen known from Aetolia[128]. In recent researches, the number of lead sling bullets bearing Alexander the Great's name has shown an increase. The inscriptions "ΒΑΣΙΛΕ" and "ΑΛΕΞΑΝ" were identified on some of the sling bullets unearthed in the northern Black Sea city Olbia and certain Thracian regions like Dobrudja. These bilaterally inscribed lead sling bullets are also attributed to Alexander the Great[129]. Moreover, 12 lead sling bullets inscribed with the genitive name "Alexander" on one side and "Philip" on the other, just like our example, were found north of the Balkan Mountains (Stara Planina) in northeastern Bulgaria[130]. These specimens which are said to have been recovered many years ago are associated with Alexander the Great's 335 B.C. campaign in Thrace[131].

The North Bastion, the findspot of this sling bullet, was possibly destroyed during the military campaign commanded by Alexander III in Lycia in 334/333 B.C[132]. In this context, the sling bullet (cat. 52), whose inscriptions can be interpreted as "(of the troops) of Alexander, son of Philip"[133], is dated to 334/333 B.C. when the army of Alexander the Great conquered Lycia. There are no inscriptions on the remaining 5 sling bullets uncovered in Tepecik (cat. 53-57). Two of these sling bullets (cat. 53-54) were recovered from the strata dated to the end of the 4th century B.C. - middle of the 3rd century B.C. The other sling bullets (cat. 55-57) were found on the surface of the relevant findspots, irrespective of each and every context.

128 Empereur, *ibid*., p. 556.

129 Alexandru Avram-Costel Chiriac-Ionel Matei, "Balles de fronde grecques en pays Gète et ailleurs. Sur les traces de Zopyrion dans le bas Danube", *Revue Archéologique*, No. 56, 2013/2, pp. 230-236, cat.1-2; Metodi Manov, Nartsis Torbov, "Inscribed Lead Sling Bullets with the Name of Alexander the Great and with Other Names and Symbols Found in Thrace", Archaeologica Bulgarica, 20. 2, 2016, 31; Metodi Manov, Gabriel Talmatchi, Gabriel Custurea, "New Lead Sling Bullets with Inscriptions ΣΤΡΑΤΗ | ΑΛΕΞΑΝ and ΒΑΣΙΛΕ | ΑΛΕΞΑΝ Found in Dobrudja (in Romania and Bulgaria)", *Numismatics, Sigillography and Epigraphy*, Vol. 15, 2019, pp. 136-138; Emil Nankov, "Inscribed Lead Sling Bullets from the Regional Museum of History in Shumen. New Data on the Macedonian Campaigns in the Lands of the Getae in the Time Of Philip II and Alexander III" *Trakiya I Okolniyat Svyat*, 2016, pp. 282-293.

130 Manov, Torbov, *ibid*., pp. 29-31, cat. 1-12. All of these sling bullets are similar in size and weight. Their weights vary between 35,70 g and 39,69 g, with the Patara example featuring a similar weight of 37,75 g.

131 Manov, Torbov, *ibid*., pp. 30, 33.

132 Dündar-Rauh, *ibid*., pp. 557-558, 560-578.

133 Manov, Torbov, *ibid*., p. 30.

Curved Dagger (cat. 58; fig 6, 10)

An iron curved dagger (cat. 58) is one of the significant finds among the military equipment found in Tepecik. The inner part of the hilt (the tang) and blade of this curved dagger are preserved. Whether the short tang was broken or not cannot be determined. The tang has fixing rivets, one on the top and two on the bottom. It is possible to perceive that the concave section of the dagger's blade was sharpened. However, it cannot be ascertained whether the blade had any decorations on it since it is rather corroded. The residues preserved on the tang of this curved dagger indicate that its handle was made of wood.

Defined as close-range weapons, dagger and sword examples with curved forms have come to be known from rather early periods[134]. Ancient literature, artistic depictions and archaeological evidence demonstrate that many communities utilized daggers and swords with curved blades as military equipment in Antiquity[135]. We did not come across any similar examples of the curved dagger that was found in Tepecik in our literary survey regarding ancient daggers and short swords. In the regions of Thrace and Dacia where curved daggers were most intensely used by warriors as early as the 4th century B.C., daggers of the "sica" type constitute the most widespread dagger group. It can be seen that this dagger type which is named as "sica" gained its general morphological characteristics in the 3rd Century B.C. and had numerous variations with a diversity of details[136].

134 It is known that curved swords were utilized by Mesopotamian armies as from the beginning of the 2nd Millennium B.C. In an Egyptian Wall painting, Pharaoh Ramesses III was depicted as attacking an enemy with the curved dagger in his hand, see Rivka Gonen, *Weapons and Warfare in Ancient Times*, Lerner Publications, Minneapolis 1976, pp. 37-41 fig. 40.

135 For "kopis" and "makharia" see Fernando Quesada Sanz, "En Torno al Origen y Procedencia De La Falcata Ibérica", *La Presencia de Material Etrusco en la Península Ibérica*, ed. José Remesal Rodríguez-Olimpio Musso, Universitat de Barcelona Publicacions, Barcelona 1991, pp. 530-541, fig. 14. 30; Catherine Parnell, "Portrayals and Perceptions: Greek Curved Blades in Black- and Red-Figure Iconography", *Journal of Conflict Archaeology*, Vol. 8/No. 1, 2013, pp. 5-9. It is acknowledged that weapons with curved blades also have quite a long history in the region extending from northern Balkans to Thrace; see Herodotus, translated by Alfred D. Godley, The Loeb Classical Library, London 1975, VII, 75. For the curved daggers from Thrace and Dacia, see Aurel Rustoiu, "Thracian Sica and Dacian Falx. The History of a 'National' Weapon", *Dacia felix. Studia Michaeli Bărbulescu oblata*, ed. Sorin Nemeti-Florin Fodorean-Eduard Nemeth-Sorin Cociş-Irina Nemeti-Mariana Pîslaru, Editura Tribuna, Cluj-Napoca 2007, pp. 67-73. For Chalybian warriors of the Persian army see Xenophon, *Anabasis*, IV, 7, 16. For Spartan warriors see Kathleen M. T. Chrimes, *Ancient Sparta. A Re-examination of the Evidence*, Manchester University Press, Manchester 1949, p. 275.

136 Rustoiu, *ibid*., pp. 67-68, fig. 1.

However, the curved dagger unearthed in Patara differs from this dagger group in not only the form of its tang, but also the thickness of its blade[137]. Hence, we can say that cat. 58 is not a dagger of the "Dacian" sica type. The Patara dagger might be a variation of the curved daggers used by Thracian warriors in the 4th-3rd centuries B.C.[138] It is also known that tribes from the Eastern Balkans had certain links with the western shores of Anatolia and were present in the armies, especially as mercenaries, during the very same period[139]. Therefore, it can be suggested that the curved dagger uncovered in Patara might be a witness to the said links[140]. Nevertheless, this suggestion should be taken as a temporary answer to a hypothetical construct in the absence of similar examples and other archaeological finds that are indisputably established. The data we obtained from the context of the dagger in question gives us the opportunity to provide a more definite answer in terms of chronology. The archaeological context in which the dagger was found points to the second half of the 4th century B.C.

3. General Discussion

Find Groups and Dating

It is deduced that a large part of the military equipment was produced without any significant alterations in their forms for quite a long time, e.g. the aforementioned arrowheads. It is undeniable that the military equipment found in the Tepecik settlement's various strata which could be reliably dated provides important data in terms of both the history of the Patara city and the chronology of the metal weapons. The bronze, iron, and lead military equipment uncovered in the Tepecik settlement was examined under six main categories and a good number of subtypes that manifested morphological differences—if any.

The first category includes an iron pilum. An important weapon for Roman legionary soldiers, the iron pilum (or the iron of a pilum) (cat. 1) found in Tepecik

137 A dagger unearthed in Histria provides the most similar morphological example; see Valeriu Sîrbu, Cătălin Borangic, "Curved Dagger of the Sica Type From The North- Danubian Dacian Graves (2nd c. BC - 2nd c. AD", *Funerary Practices During the Bronze and Iron Ages in Central and Southeast Europe, Proceedings of the 14th International Colloquium of Funerary Archaeology in Čačak, Serbia, 24th - 27th September 2015*, ed. Valeriu Sîrbu-Miloš Jevtić-Katarina Dmitrović-Marija Ljuština, Beograd - Čačak 2016, p. 337, fig. 5, 2.

138 Christopher Webber, *The Thracians 700 BC - AD 46*, Osprey, Oxford 2001, p. 24.

139 Webber, *ibid*., p. 3.

140 Special thanks to Mr. Aurel Rustoiu for his opinion about the curved dagger found in Tepecik and his suggestions of its possible connections.

is remarkable for being a rare military specimen unearthed in Anatolia. Its contextual data indicate that it possibly pertains to the middle of the 2nd century B.C. This dating is also consistent with the pilum types that are known from other settlements of the said period.

Arrowheads constitute the largest group in terms of quantity. It is acknowledged that socketed trilobate arrowheads (cat. 2-7) were used throughout a widespread geography ~~as~~ from the 8th century B.C. almost to the end of the 3rd century B.C. It can be seen that the majority of this arrowhead type which we have examined under subtypes according to their morphological structures in our study was found within contexts dated between the second half of the 4th century B.C. and the end of the 3rd century B.C. The socketed bilobate bronze arrowhead with a spur is dated to the 6th-5th centuries B.C. (cat. 8). This type of arrowhead is traditionally referred to as the "Scythian Type". However, given the widespread distribution of such arrowheads and their long use, it is difficult to attribute them to an ethnic origin or to indicate cultural interaction. Falling within the subgroup of "tanged bilobate arrowheads with leaf-shaped bodies", these specimens are generally dated between the 5th century B.C. and the second half of the 4th century B.C. (cat. 9-12) The remaining examples of this type (cat. 13-14) are surface finds. The majority of "tanged bilobate arrowheads with triangular bodies" (cat. 15-22) which are known to have quite a long history were unearthed in cultural layers dated between the second half of the 4th century B.C. and the middle of the 3rd century B.C.

The most intensive group of iron arrowheads uncovered in the Tepecik settlement are tanged arrowheads with pyramidal bodies (cat. 26-43). This type was referred to as the "Cyprus Type" towards the end of the 19th century because of the numerous examples found in the Persian destruction layer at Palea Paphos in Cyprus. However, this kind of arrowheads is one of the most widespread types in the Mediterranean region. Although this type of arrowhead was used for a very long time, it can be understood that they were intensively used, particularly during the Persian advance towards the west in the 6th-5th centuries B.C. and during the eastern campaign of Alexander the Great in the 4th century B.C. Apart from the 3 surface finds (cat. 41-43) falling within this arrowhead group, all of the arrowheads were found in contexts that are dated between the second half of the 4th century B.C. and the first half of the 3rd century B.C. Another group of iron arrowheads may belong to arrows thrown with catapults (cat. 44-46). However, two separate definitions are deliberated out of an abundance of caution since this type has

formal properties similar to spear butts. These examples are generally found in the strata of the 4th-3rd centuries B.C.

4 examples found in the Tepecik settlement are defined as javelin heads in view of their dimensions. Each specimen is made of iron, and these specimens are inspected under two subtypes according to their body forms. The examples with approximately triangular bodies (cat. 47-48) pertain to the end of the 4th century B.C. As for the flat leaf-shaped javelin heads (cat. 49-50), they were found in the strata of the 4th to 2nd century B.C.

As a unique and interesting find, a trigger mechanism component that must have been part of a gastraphetes or catapult was found in Tepecik. Heron of Alexandria who lived in the 1st century B.C. mentions a trigger mechanism while describing the basic functioning of the gastraphetes. He notes that the bowstring was attached to the hooked prongs of the claw before straining the bow, and then the arrow was placed into the semicircular space between the prongs, ready to be thrown. Therefore, with both its general structure and its pronged section featuring a semicircular channel in its center, cat. 51 of Tepecik constitutes an example of the trigger claw with the "skendylion" end of the catapults, about which we have hardly any information except for Heron's depictions. In this sense, it is a very significant find for providing physical evidence of a much-discussed trigger mechanism component. cat. 51 is dated between the second half of the 4th century B.C. and the first half of the 3rd century B.C.

Encountered on nearly every battlefield since the Classical Period, lead sling bullets were also discovered in the Tepecik settlement. 5 out of the 6 sling bullets (cat. 53-57) do not have any inscriptions, emblems or markings, while one sling bullet features the inscription "ΑΛΕΞΑΝΔΡΟΥ" on one side and "ΦΙΛΙΠΠΟΥ" on the other ("Alexander's" and "Philip's", respectively) (cat. 52). These names must be pointing to Philip II of Macedon and his successor Alexander III. Therefore, the reasoning that the findspot of this sling bullet, i.e. the North Bastion was possibly destroyed during the 334/333 B.C. military campaign of Alexander III to Lycia and Patara[141].

Daggers, a type of close-range weapon, are represented by a single example in the Tepecik settlement (cat. 58). The archaeological context of this iron dagger with a curved blade points to the second half of the 4th century B.C.

141 Dündar-Rauh, *ibid*., pp. 560–578.

Historical Background and Military Activity in the Tepecik Settlement

Situated north of the city center, Tepecik played a key role in the control and defense of the harbor and the city owing to its convenient location overseeing both the harbor and the land route. The earliest architectural elements of the defense system are dated to the 6th century B.C.[142] A 2-to-2,5-m fortification wall built up with cyclopean masonry surrounds Tepecik from the west and south. The apical location of the tower house comprising two rooms and a cellar within the fortification wall indicates that it also served defensive functions, most probably. Another early structure for defending the inner harbor are the remains of a tower situated right next to the harbor in the northwest corner of the settlement[143]. Amongst the military equipment found in Tepecik, 5 bronze arrowheads (cat. 5, 7, 8, 9; and 13) can reveal the early defensive quality of the settlement and the relevant military activities of the 6th-5th centuries B.C. However, the exact date of only one arrowhead (cat. 9) could be determined by means of the contextual data (third quarter of the 5th century B.C.). The remaining three arrowheads were found on the surface, and one was unearthed from at section of a trench with no clear historical context. Moreover, we should not forget that the arrowheads with a very similar forms were in use for very long times although they had been utilized as early as the 6th century B.C.

In any case, it is clear that there is a very limited amount of military equipment related to Tepecik's defense system of the 6th-5th centuries B.C. The questions of why the military equipment was mostly found on the surface and why it is very few in numbers can be explained by the function of Tepecik as an active defense zone for centuries, undergoing many changes throughout this long period. Thus, the north fortification wall and the adjacent bastion that had been built north of the upper plane of Tepecik, show that the defense system underwent a tremendous change in the middle of the 4th century B.C. A good number of dwellings were discovered during the excavations conducted to the south of the north wall. And there is large bedrock in the south of these dwellings. It seems that the majority of the older constructions in the Tepecik settlement were demolished down to the foundation during the extensive architectural alterations beginning in the middle

142 Dündar, "The Ceramics from Patara", p. 200; Dündar, "An Early Witness of the Urban Settlement", 138; Işık, "On Lycia and Patara", pp. 127-131.

143 Dündar, "An Early Witness of the Urban Settlement", pp. 138-152; Dündar-Koçak, "Patara Defensive Structures", pp. 178-183.

of the 4th century B.C. with the exception of the few aforementioned buildings from the 6th-5th centuries B.C., and new buildings were constructed from scratch. In this sense, the rarity of military equipment pertaining to earlier periods than the middle of the 4th century B.C. and the location of the finds must be related to this process of architectural change at the site.

Some of the military equipment found in the Tepecik settlement was unearthed in contexts dated to the second half of the 4th century B.C. In the beginning of this period, i.e. the middle of the 4th century B.C., turbulent times had occurred as a result of a series of intermeshed events that called forth tremendous changes in the political arena of Lycia. After the Persians in the 360s B.C. suppressed the rebellion referred to as "the Great Satraps' Revolt" in the literature, the hegemony of local rulers, came to an end in Lycia. The governance of all Lycian cities was given to Mausolus, the Satrap of Caria[144], thereby starting the rule of the Hecatomnid Dynasty of Caria in Lycia, which continued until the campaign of Alexander the Great[145]. The influence of this process of governmental change in Patara can be seen in a limited number of literary and epigraphic sources, as well as in archaeological data and especially architectural elements of defense[146]. Located on Doğucasarı Hill in the north of the Tepecik settlement and the east of the city, the "independent bastions"[147] seem associated with the military policy of the Hecatomnid Dynasty who ruled Patara for a short period on behalf of the Persians. During excavations conducted in the North Bastion, metal military equipment was found in a burnt layer along with an in-situ ceramic group. One of these military tools is a lead sling bullet (cat. 52) with the inscription "ΑΛΕΞΑΝΔΡΟΥ" on one side and "ΦΙΛΙΠΠΟΥ" on the other. E. Dündar and N. K. Rauh emphasize that these names might be pointing to Philip II of Macedon and his successor Alexander III. Therefore, the destruction and burning of the North Bastion and the surrounding garrison base most probably resulted

144 Diodoros, *ibid*., XVI, 74.

145 Antony G. Keen, *Dynastic Lycia. A Political History of the Lycians and their Relations with Foreign Powers C. 545-362 B.C.* Brill, Leiden 1998, pp. 171–174; Simon Hornblower, *Mausolus*, Oxford University Press, Oxford 1982, pp. 180-182.

146 For the epigraphic data concerning the Hecatomnid Period in Patara, see Schuler, *ibid*.; Zimmermann, *ibid*.; Schuler-Zimmermann, *ibid*. pp. 70-72. For the archeological and architectural data about the Hecatomnid Period, see Dündar-Rauh, *ibid*., pp. 562-572; Dündar, "An Early Witness of the Urban Settlement", pp. 145-146; Şahin, "Patara'dan Geç Klasik Dönem'e Ait Bir Anta Başlığı", pp. 28-31.

147 Dündar-Rauh, *ibid*., pp. 569-572.

from an attack that occurred during the military campaign of Alexander the Great (334/333 B.C.) in Lycia[148]. Arrian of Nicomedia who wrote about the Persian wars and life of Alexander III in his "Anabasis of Alexander"[149] states that Alexander's army did not encounter any resistance when entering Lycia, and took control of 30 minor settlements including Pinara, Xanthos and Patara subsequent to their surrender. In that case, there should not have been any engagement in Patara, just like in all the other cities in Lycia. However, the fire that occurred in Tepecik settlement and the ceramic finds, arrowheads and especially the sling bullet recovered from the burnt layer do not cohere with Arrian's account written at the beginning of the 2nd century A.D. In addition to the sling bullet, the bronze arrowheads (cat. 10, 15), iron arrowheads (cat. 26, 27) and iron bolt-heads / spear butts (cat. 45, 46), which were found in North Bastion, must be directly related to the said battle that was fought in 334/333 B.C.

Patara bore witness to the conflict among the successors of Alexander the Great concerning the rule of the empire. It is known that the southeastern cities of Anatolia repeatedly changed hands between Antigonus Monophthalmus and Ptolemy I Soter between 313 and 309 B.C. Furthermore, Antigonus' son Demetrius Poliorcetes also ruled Patara for a short time (309-304 B.C.)[150]. And the bronze arrowheads (cat. 2, 11, 12, 16), iron arrowheads (cat. 28-33), iron javelin heads (cat. 47-49), and the curved iron dagger (cat. 58) which were found in the strata of the first architectural phase of the North Bastion and the military posts situated south of the north fortification wall, can be dated to the second half of the 4th century B.C. Therefore, we can say that the military equipment must be linked to the eastern campaigns of Alexander the Great, or more probably, to the Wars of the Diadochi.

It was revealed that certain alterations had been made in both the general defense system of the city and the defense system of the Tepecik settlement associated with it since the beginning of the Hellenistic Period. It was detected that various

148 Dündar-Rauh, *ibid*., pp. 560–578; therefore, it is understood that the North Bastion was possibly built during the Hecatomnid rule in the region around 350 B.C. In that case, it seems possible for us to say that one of the Hecatomnid garrisons that are known from various centers, such as Rhodes, Kalymnos, Nisyros, Telos, Kos, Khios and Kaunos was built in the harbor settlement of Patara.

149 Arrianus, *Anabasis of Alexander,* translated by Peter A. Brunt, The Loeb Classical Library, Cambridge, Mass.-London 1976-1983, I, 24, 3-4.

150 Dündar-Rauh, *ibid*., pp. 576-577.

renovations and additions had been made particularly to the fortification walls surrounding Tepecik and the northeastern fortification wall of the city during the reign of Ptolemy II Philadelphus (283-246 B.C.). The fortification wall which completely surrounds the eastern part of the upper plane of Tepecik with its 2-meter width and 40-meter length is also associated with Ptolemys rule in the city. During this period, not only the structures of defense but also numerous dwellings were rebuilt on the upper plane of Tepecik, creating a garrison. A good number of military tools were unearthed in the strata pertaining to the first half of the 3rd century B.C. during the excavations conducted in this new residency area. The bronze arrowheads (cat. 17-22), iron arrowheads (cat. 34-40), and lead sling bullets (cat. 53-54) must be related to the aforementioned wars of the Ptolemaic Garrison period[151]. A trigger claw with the "skendylion" end of a catapult (cat. 51) may have also belonged to this period.

Representing one of the most distinctive characteristics of Roman military equipment, the pilum was almost regarded as synonymous with the Roman army[152]. In this context, the pilum (cat. 1) which is dated between the end of the 3rd century B.C. and the middle of the 2nd century B.C. provides significant evidence of Roman military activity in the Eastern Mediterranean region, particularly Lycia. It is understood that the Seleucid ruler Antiochus III conquered Lycia in its entirety in 197 B.C. during a period when Eastern Mediterranean power politics once again saw a change in equilibrium following the sovereignty of the Ptolemaic Dynasty in Patara/Lycia. It can be seen that, especially from the beginning of the 2nd century B.C., Rome was also part of this power struggle as a prominent player. After many battles, the struggle that had begun between Romans and Seleucids in 194 B.C. came to an end with the crushing victory of the Romans in the battle fought near Magnesia ad Sypylum. And the Seleucids withdrew from the whole Western Anatolian region in accordance with the Treaty of Apamea in 188 B.C. It can be seen that Rome and its allies organized numerous attacks on Patara to seize its harbor which served as an important base for the Seleucid fleet during the battles between Antiochus III and Rome, but none of these attempts succeeded[153]. It is also known that, after the Battle of Magnesia, 50 Seleucid warships anchored

151 For the Ptolemaic Garrison of Tepecik, see Lenger-Dündar, *ibid*., pp. 37-70.

152 Jeremy Armstrong, "The origins of the Roman pilum revisited", *The Journal of Roman Military Equipment Studies*, Vol. 18, 2017, p. 65.

153 Livius, *Ab Urbe Condita*, (=From the founding of the city), translated by Alfred C. Schlesinger. I-XIV, The Loeb Classical Library, London - New York 1967, 37, 15, 1-9.

in the Patara harbor were destroyed, and the city was captured[154]. In this sense, we can say that the pilum unearthed in Tepecik is most probably associated with the military mobilization of the aforementioned period.

Contrary to the examples discussed above, certain layers in which some of the metal military tools were found do not yield specific historical information in Tepecik. A number of bronze arrowheads (cat. 3, 4, 6) and an iron catapult arrowhead/spear butt (cat. 44) were unearthed in the 4th-3rd century B.C. strata in a general sense. They must have been used for military purposes between the mid-4th century B.C. and the end of the 3rd century B.C., as mentioned above. The aforementioned pilum and the javelin head (cat. 50) are the latest military tools that were uncovered in the Tepecik settlement. It is understood that the defensive constructions started in the 6th century B.C. and ended at the end of the 3rd century B.C. in the Tepecik settlement, and these buildings were not in use during the Roman Imperial Period. Some of the military equipment (cat. 23-25, 41, 55-57) were found on the surface. Some of them were recovered around the tower belonging to the Late Antique Period (cat. 42, 43). This tower, which was used as an outpost, bears witness to the last periods of the military use of Tepecik settlement.

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154 Livius, *ibid*., 38-39, 4-7.

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CATALOGUE

1. Inv. Ptr.2019-775. Iron Pilum. Findspot: 2019. K-18.2 / SB: 34-1 / ta: 2.73-1.69. Dim.: L. 41 cm
2. Inv. Ptr.2018-275. Bronze Arrowhead. Findspot: 2018. I-18 / SB: 40-5 / ta: 24.46-24.03. Dim.: H. 3.4 cm W. 1.1 cm
3. Inv. Ptr.2017-080. Bronze Arrowhead. Findspot: 2017. J-19 / SB: 05 / ta: 24.58-24.51.Dim.: H. 3.5 cm W. 0.8 cm
4. Inv. Ptr.2017-118. Bronze Arrowhead. Findspot: 2017. İ-19 / SB: 3 / ta: 24.52. Dim.: H. 3.9 cm W. 0.8 cm
5. Inv. Ptr.2016-045. Bronze Arrowhead. Findspot: 2016. Surface. Dim.: H. 3.5 cm W. 0.8 cm
6. Inv. Ptr.2020-377. Bronze Arrowhead. Findspot: 2020. J-17 / ta: 25.70-25.32. Dim.: H. 1.8 cm W. 0.8 cm
7. Inv. Ptr.2020-738. Bronze Arrowhead. Findspot: 2020. K-18.2 – East cross section. Dim.: H. 1.6 cm W. 0.9 cm
8. Inv. Ptr.2020-326. Bronze Arrowhead. Findspot: 2020. J-17 / SB: 01-39 - Surface. Dim.: H. 3.7 cm W. 0.9 cm
9. Inv. Ptr.2007-086. Bronze Arrowhead. Findspot: 2007. BS / Terrace I / East Wall 2 / ta -70. Dim.: H. 6.1 cm W. 1.1 cm
10. Inv. Ptr.2013-124. Bronze Arrowhead. Findspot: 2013. North Bastion – NW ta: 23.89. Dim.: H. 6.8 cm W. 1.3 cm
11. Inv. Ptr.2020-333. Bronze Arrowhead. Findspot: 2020. K-18.2 / SB: 27-11 / ta: 24.42-23.54. Dim.: H. 6.5 cm W. 1.5 cm
12. Inv. Ptr.2020-406. Bronze Arrowhead. Findspot: 2020. J-17 / SB: 10-15 / ta: 25.32-25.08. Dim.: H. 7.8 cm W. 1.5 cm
13. Inv. Ptr.2020-350. Bronze Arrowhead. Findspot: 2020. J-17 / SB: 01-64 / Surface. Dim.: H. 6.5 cm W. 1.1 cm
14. Inv. Ptr.2020-175. Bronze Arrowhead. Findspot: 2020. K-18.2 / SB: 02-46 / ta: 25.38-25.06. Dim.: H. 5 cm W. 1.1 cm
15. Inv. Ptr.2013-137. Bronze Arrowhead. Findspot: 2013. North Bastion / North wall ta: 23.84. Dim.: H. 7 cm W. 1.8 cm

16. Inv. Ptr.2019-539. Bronze Arrowhead. Findspot: 2019. J-18 / SB: 49 / ta: 24.57. Dim.: H. 8.4 cm W. 1.7 cm
17. Inv. Ptr.2019-233. Bronze Arrowhead. Findspot: 2019. H-17 / SB: 07 / ta: 24.28-24.01. Dim.: H. 7.5 cm W. 1.8 cm
18. Inv. Ptr.2019-271. Bronze Arrowhead. Findspot: 2019. İ-18 / SB: 09-5 / ta: 24.74-24.46. Dim.: H. 4 cm W. 1.6 cm
19. Inv. Ptr.2015-119. Bronze Arrowhead. Findspot: 2015. K-18.2 /ta: 24.70 (floor). Dim.: H. 9,5 cm W. 1.8 cm
20. Inv. Ptr.2012-260. Bronze Arrowhead. Findspot: 2012. BS / West Tertace – box: 48.4. Dim.: H. 6.4 cm W. 1.5 cm
21. Inv. Ptr.2004-040. Bronze Arrowhead. Findspot: 2004. Sondage I / North room-3 – box: 04/10. Dim.: H. 6.5 cm W. 1.4 cm
22. Inv. Ptr.2005-090. Bronze Arrowhead. Findspot: 2005. Sondage I – north / box: 05/31.1. Dim.: H. 4.1 cm W. 1.8 cm
23. Inv. Ptr.2020-129. Bronze Arrowhead. Findspot: 2020 - Surface. Dim.: H. 6.6 cm W. 1.6 cm
24. Inv. Ptr.2020-181. Bronze Arrowhead. Findspot: 2020. K-18.2 / SB: 02-41 / ta: 25.38-25.06. Dim.: H. 4.2 cm W. 1.9 cm
25. Inv. Ptr.2020-351. Bronze Arrowhead. Findspot: 2020. J-17 / SB: 01-43 – Surface. Dim.: H. 9.6 cm W. 2.1 cm
26. Inv. Ptr.2013-055. Iron Arrowhead. Findspot: 2013. North Bastion C2 box: 05.3. Dim.: H. 4.9 cm W. 1.3 cm
27. Inv. Ptr.2013-176. Iron Arrowhead. Findspot: 2013. North Bastion – North wall / box: 86.1. Dim.: H. 4.6 cm W. 1.2 cm
28. Inv. Ptr.2017-390. Iron Arrowhead. Findspot: 2017. İ-19 / SB: 16-11 / ta: 24.33-24.17. Dim.: H. 5.9 cm W. 0.9 cm
29. Inv. Ptr.2017-393. Iron Arrowhead. Findspot: 2017. İ-19 / SB: 20-13 / ta: 24.12-23.93. Dim.: H. 5.5 cm W. 1.1 cm
30. Inv. Ptr.2017-394. Iron Arrowhead. Findspot: 2017. İ-19 / SB: 16 / ta: 24.16-22.63. Dim.: H. 3.5 cm W. 0.6 cm

31. Inv. Ptr.2017-407. Iron Arrowhead. Findspot: 2017. İ-19 / SB: 15-3 / ta: 24.38-24.33. Dim.: H. 5.1 cm W. 1.3 cm
32. Inv. Ptr.2020-367. Iron Arrowhead. Findspot: 2020. J-17 / SB: 05. Dim.: H. 5.5 cm W. 1.5 cm
33. Inv. Ptr.2020-436. Iron Arrowhead. Findspot: 2020. J-17 / SB: 10-7. Dim.: H. 8.1 cm W. 1.6 cm
34. Inv. Ptr.2017-472. Iron Arrowhead. Findspot: 2017. J-19 / SB: 21-31 / ta: 23.93-23.66. Dim.: H. 5.4 cm W. 1.1 cm
35. Inv. Ptr.2017-481. Iron Arrowhead. Findspot: 2017. J-19 / SB: 21-44 / ta: 23.93-23.66. Dim.: H. 6.2 cm W. 1 cm
36. Inv. Ptr.2017-492. Iron Arrowhead. Findspot: 2017. İ-19 / SB: 25. Dim.: H. 4.9 cm W. 0.9 cm
37. Inv. Ptr.2017-500. Iron Arrowhead. Findspot: 2017. J-19 / SB: 21-48 / ta: 23.93-23.66. Dim.: H. 5.7 cm W. 1 cm
38. Inv. Ptr.2017-530. Iron Arrowhead. Findspot: 2017. İ-19 / SB: 24-18 / ta: 24.17-24.07. Dim.: H. 4.9 cm W. 1.3 cm
39. Inv. Ptr.2018-435. Iron Arrowhead. Findspot: 2018. I-18 / SB: 64-44 / ta: 23.86-23.49. Dim.: H. 5.4 cm W. 0.9 cm
40. Inv. Ptr.2020-259. Iron Arrowhead. Findspot: 2020. K-18.2 / SB: 19-1 / ta: 24.57-24.42. Dim.: H. 6.3 cm W. 1.6 cm
41. Inv. Ptr.2020-159. Iron Arrowhead. Findspot: 2020. İ-18 – Surface. Dim.: H. 5.5 cm W. 1.4 cm
42. Inv. Ptr.2020-203. Iron Arrowhead. Findspot: 2020. K-18.2 / SB: 03-45 / ta: 25.06-24.94. Dim.: H. 3.7 cm W. 1 cm
43. Inv. Ptr.2020-340. Iron Arrowhead. Findspot: 2020. J-17 / SB: 01-14. Dim.: H. 4.2 cm W. 1 cm
44. Inv. Ptr.2012-318. Iron Bolt-head. Findspot: 2012. BS / West Terrace – box: 45.1. Dim.: H. 8.2 cm W. 2.1 cm
45. Inv. Ptr.2013. Iron Bolt-head. Findspot: 2013. North Bastion D1 – box: 37.1. Dim.: H. 9.5 cm W. 1.6 cm

46. Inv. Ptr.2013. Iron Bolt-head. Findspot: 2013. North Bastion B1 – box: 28.1. Dim.: H. 7.4 cm W. 1.6 cm
47. Inv. Ptr.2017-368. Iron Javelin Head. Findspot: 2017. İ-19 / SB: 11-187 / ta: 24.22-23.85. Dim.: H. 15.9 cm W. 5.5 cm
48. Inv. Ptr.2017-651. Iron Javelin Head. Findspot: 2017. J-19 / SB: 23-6 / ta: 23.66-23.46. Dim.: H. 15.6 cm W. 4.8 cm
49. Inv. Ptr.2017-549. Iron Javelin Head. Findspot: 2017. İ-19 / SB: 25-11 / ta: 24.07-23.94. Dim.: H. 11.4 cm W. 2.9 cm
50. Inv. Ptr.2020-389. Iron Javelin Head. Findspot: 2020. J-17 / SB: 03-25 / ta: 25.54-25.32. Dim.: H. 10.4 cm W. 2.7 cm
51. Inv. Ptr.2013-16. Bronze-Iron Gastraphetes/Catapult Trigger Mechanism Part. Findspot: 2013. Cellar. Dim.: L. 9.3 cm W. 5.4 cm
52. Inv. Ptr.2013-049. Lead Sling Bullet. Findspot: 2013. North Bastion ta: 23.86. Dim.: L. 3.3 cm W. 1.9 cm
53. Inv. Ptr.2018-455. Lead Sling Bullet. Findspot: 2018. İ-15.1 / SB: 5-9 / ta: 26.60-26.50. Dim.: L. 2.7 cm W. 1.3 cm
54. Inv. Ptr.2020-274. Lead Sling Bullet. Findspot: 2020. K-18.2 / SB: 19-12 / ta: 24.57-24.42. Dim.: L. 3 cm W. 1.5 cm
55. Inv. Ptr.2007-079. Lead Sling Bullet. Findspot: 2007. North Wall / North Structure – Surface / box: M27. Dim.: L. 3.1 cm W. 1.35 cm
56. Inv. Ptr.2020-148. Lead Sling Bullet. Findspot: 2020. J-18. Dim.: L. 3 cm W. 2 cm
57. Inv. Ptr.2018-456. Lead Sling Bullet. Findspot: 2018. İ-15 / SB: 1 / 28.17-27.94 (surface). Dim.: L. 3.5 cm W. 1.8 cm
58. Inv. Ptr.2019-763. Iron Curved Dagger. Findspot: 2019. İ-18 / SB: 14-23 / ta: 24.22. Dim.: L. 26.5 cm W. 3.2 cm

FIGURES

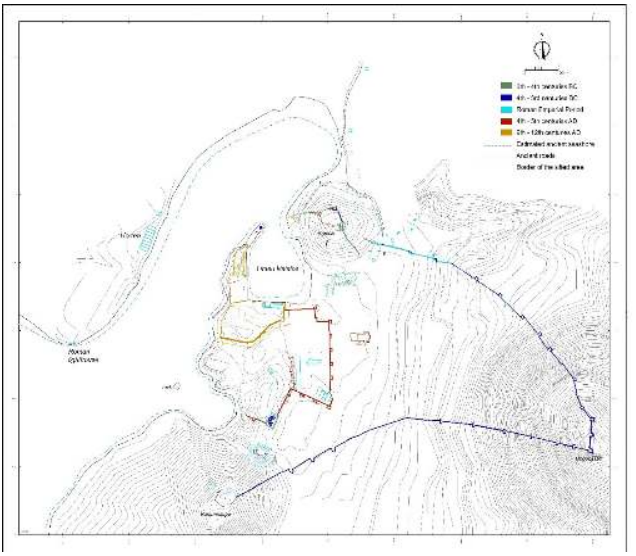

Figure 1: Plan of the city center of Patara

Figure 2: Tepecik Settlement, overview

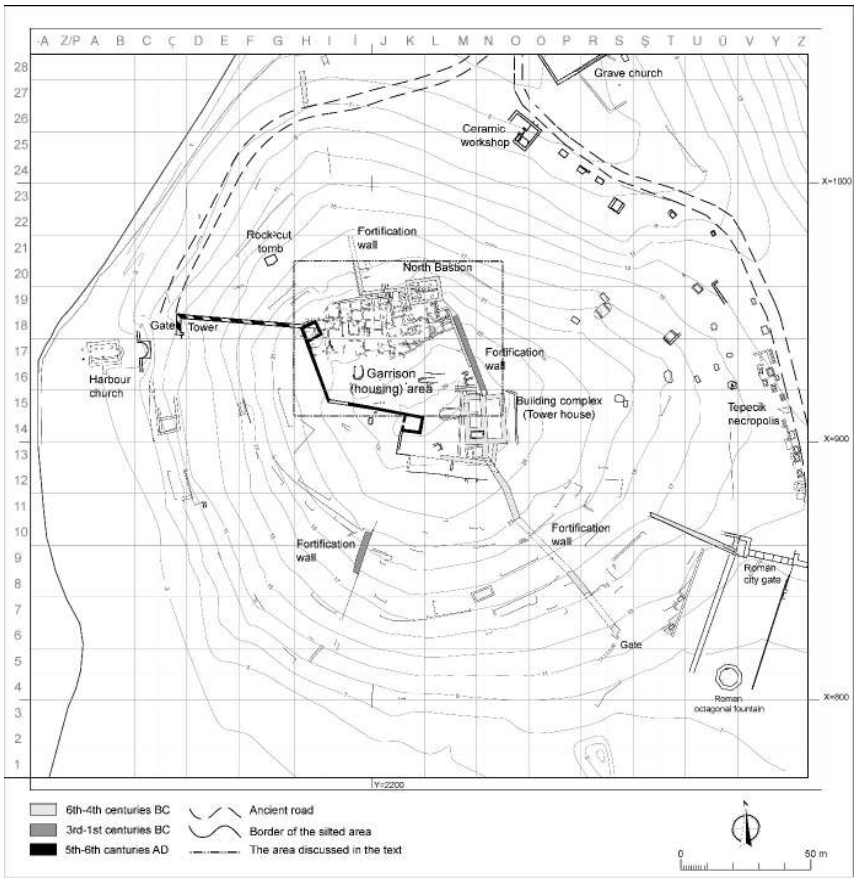

Figure 3: Plan of the Tepecik Settlement

Figure 4: Pilum (cat. 1), arrowheads (cat 2-14)

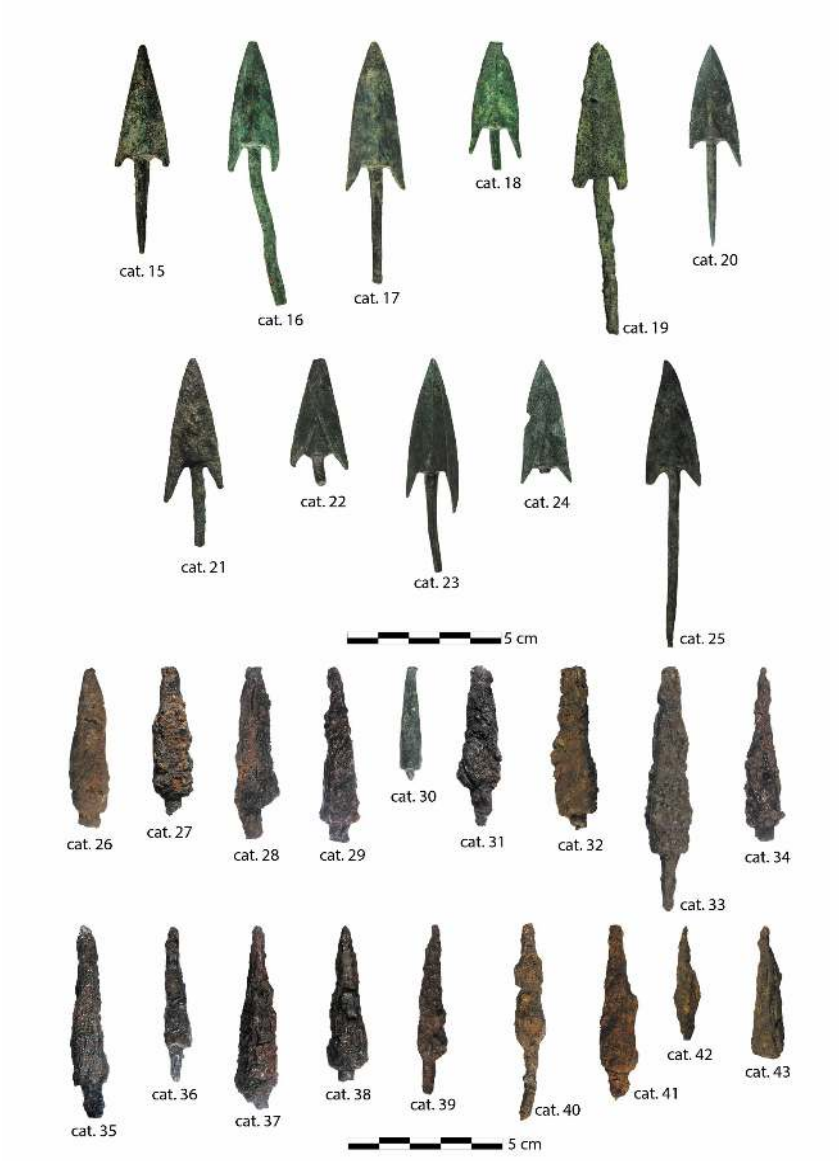

Figure 5: Arrowheads (cat 15-43)

Figure 6: Bolt-heads / spear butts (cat. 44-46), javelin heads (cat. 47-50), gastraphetes / catapult triger mechanism part (cat. 51), sling bullets (cat. 52-57), curved dagger (cat. 58)

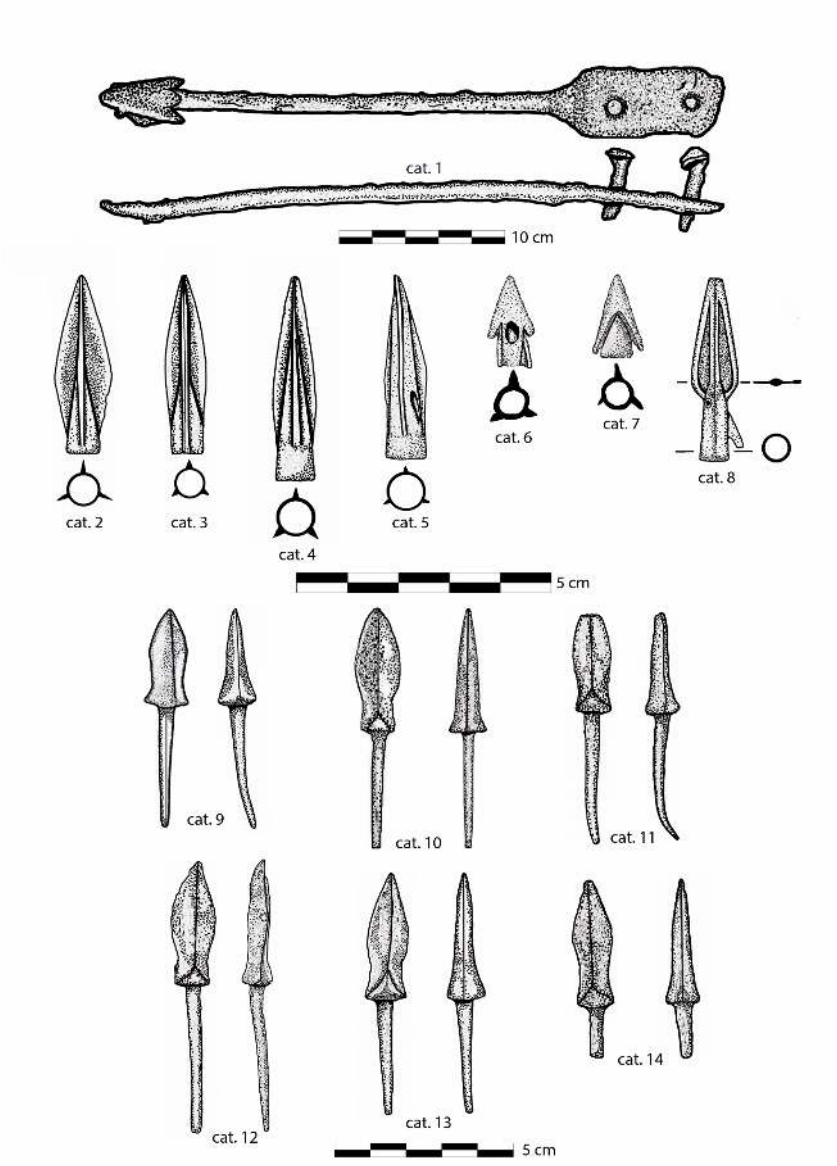

Figure 7: Pilum (cat. 1), arrowheads (cat 2-14)

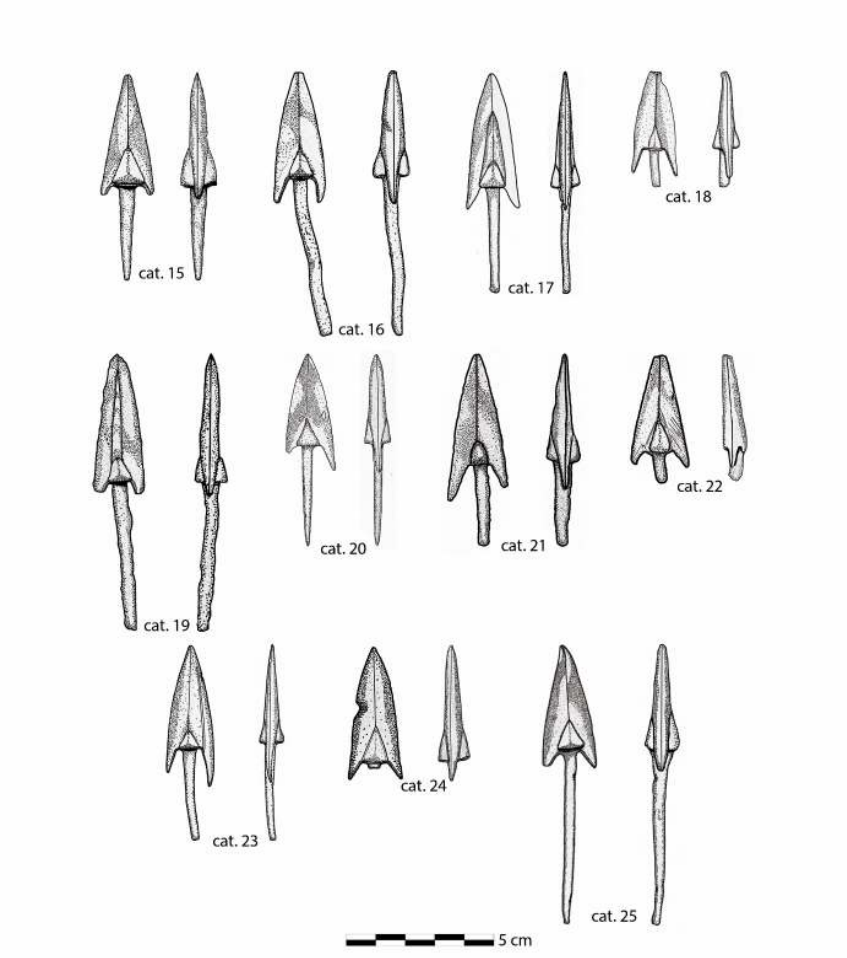

Figure 8: Arrowheads (cat. 15-25)

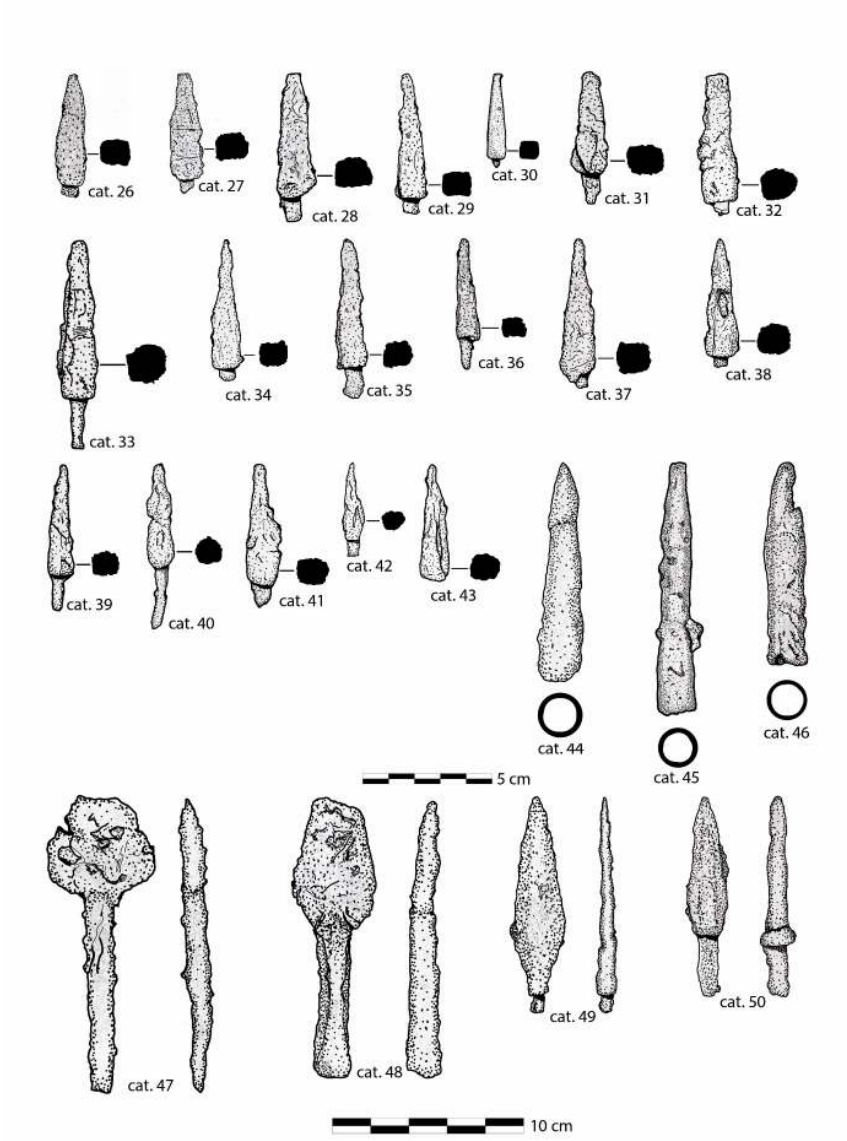

Figure 9: Arrowheads (cat. 33-43), Bolt-heads/spear butts (cat. 44-46), javelin heads (cat. 47-50)

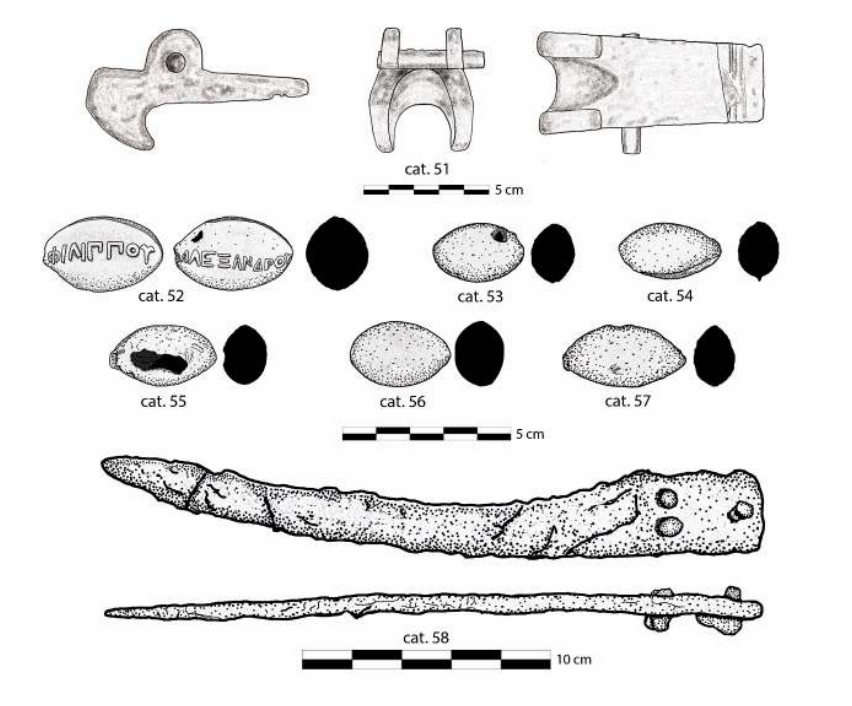

Figure 10: Gastraphetes / catapult triger mechanism part (cat. 51), sling bullets (cat. 52-57), curved dagger (cat. 58)