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Açık Erişim

An Evaluation of Anatolian Seljuk Arrowheads (Temrens)

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Abstract – This paper presents an in-depth analysis of arrowheads (temrens) used by Anatolian Seljuks. It offers a detailed terminological, morphological, typological and metallurgical account of the arrowheads in question.

Keywords *Seljukian arrowheads, terminology, morphology, typology, metallurgy*

Anadolu Selçuklu Ok Uçları (Temrenleri) Üzerine Bir Değerlendirme

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Öz – Bu çalışma Anadolu Selçukluları tarafından kullanılan temrenlerin derinlemesine bir çözümlemesini yapmaktadır. Çalışma, ilgili temrenleri terminoloji, morfoloji, tipoloji ve metalurji açısından detaylı bir şekilde betimlemektedir.

Anahtar Kelimeler *Selçuklu temrenleri, terminoloji, morfoloji, tipoloji, metalurji*

1. Introduction

The Anatolian Seljuk period is the least recognized period of the archery history of about 3000 years in Turkish cultural history. The composite Turkish bow having originated from Asia has such mechanical capabilities as quick drawability and releasability acquired its most effective and efficient form with the Ottoman bow. Because this bow is show, portable and quickly shootable and because of its high shooting power thanks to such peripheral factors as “Thumb Release” done with a thumb ring, it was the most significant military striking power. This is because the shot performed by squeezing the arrow between the thumb and the index finger in contrast to the Western (Mediterranean) release allows a series of shots.

Since no sample of Seljukian thumb ring and bow has survived until now, there is no specific data on the way of use then. However, small artefacts such as coins and ceramic tiles and wares provide some information as to how this technique was practiced and recurve bows were used in the Seljukian period. The depiction of a cavalry holding an arrow along with two spare arrows on a silver coin of Kilij Arslan IV and a ceramic tile unearthed at Kubadabad Palace evidences the thumb shot. This research study is intended to morphologically, typologically, terminologically and metallurgically describe the temrens unearthed in Kubadabad Palace (Beyşehir - Konya), Alanya Keep Seljukian Palace (Alanya - Antalya), Isparta-Eğirdir Sultan Kaykhusraw Caravanserai and the Medieval layer of the Mound Samsat (Adıyaman).

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2. Terminology

The depth of any offshoot of a civilization is revealed with special linguistic items inventoried in the related terminology. The rich jargon of arms in Turkish military culture is indicative of the development and proliferative literature in the area. One of the most illustrative examples of this case is the archery terminology.

Temren (arrowhead) is a terminological item referring to the metal or bone tip of an arrow. The tip typical of distance arrows and made from horn, bone and ivory is called *soya* (Yücel 1999, 422). While soya is placed in the nick in the arrow body, metal heads are heated and then put into the arrow and where the head is connected to the body, the head is secured with sinew wraps or metal/bone rings. This sinew wrap is called *rişâf* of *raşafah*" in the Mameluke arrow treatises (Latham-Paterson 1970, 164).

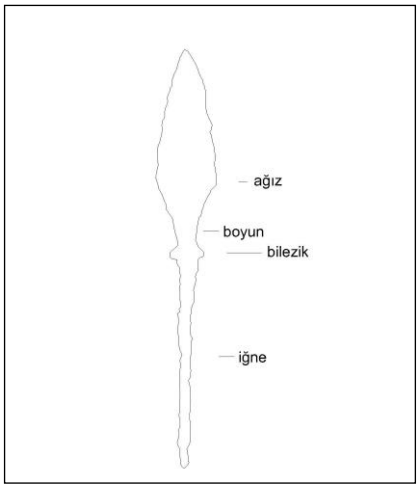
The part which is morphologically called arrowhead because it is where its tip is located and what penetrates is referred to as *Demren/Temren* in the literature of traditional Turkish archery. Doubtlessly, it is quite related to its English equivalent *arrowhead*. However, in traditional Turkish archery, this part denotes the base of the arrow, not the head. Therefore, the English term *arrowhead/arrow tip* would be a wrong translational rendition. This part called *naşl* or *zugg* in Arabic (Boudot-Lamotte 1970, 11/Pl.IV.) is also called *temren, temürgen* and *temürken* in traditional Turkish archery (Kâşgarlı Mahmud 1992, 522 and Clauson 1972, 974.) The part referred to as *peykan* in Persian (Khorasani 2013, 58) is sometimes called "*okbaşağı* (arrow wheatear)" (Kâşgarlı Mahmud, 1992, C.I, 378) and *sinan* (pointy part of weapons such as spear and arrow) (Yücel 1999, 422) in *Divânü-Lûgati't-Türk* (Kaşgarlı Mahmud 1992, 522). In the same work, *başaklamak* (earing) is used for mounting the temren to the arrow. The use of süngü temüri (bayonet head) for spear (bayonet) head in *Mukaddimetü'l Edep* in Khorezm Turkish (Teres 2007, 1187) suggests that temren is considered a generic term for the tip of any war instrument.

3. Morphology

Temren as the penetrating part of the arrow is made from metal or bone. The tip typical of distance arrows and made from horn, bone and ivory is called *soya* in the Ottoman archery. Metal temrens were heated and then nailed into the arrow, whereas soya temrens were adhered to the arrow. The head was secured with sinew wraps or metal/bone rings where the head is connected to the body.

Temren is essentially composed of two parts: *Temren tang* or *nail*, the part where temren is connected to the body and *temren blade*, the sharp and penetrating part. Besides, the part where the tip and needle meet and which is wrapped with sinew is called *bracelet* and the part between the bracelet and tip is called *neck* (Figure 1).

Figure 1
Parts of the Temren



There are specific terms for these sections in Turkish archery treatises. While the part where temren is connected to the body is called *tang* (*needle*, in traditional Turkish archery) in *Telhîs-i Resâilât-ı Rumât*, an archery treatise of the Ottoman Period (Yücel 1999, 284), it is named *sinh* in the treatise by Tarsusî, the oldest author of furussiye (equestrianism) in the 12th century and of archery in Fatimid, Zangi and Ayyubid period. This section is called *tang* in English and *sîlan* or *sayalân* in the archery treatise by Taybuga, a war master in the Mameluke period (Latham-Paterson 1970, 26). The temren tang is adhered to the pointed and short hole carved in the wooden or reed body of the arrow. After it is dried, it is heated in fire and dropped from a height of about 20 cm off the ground to let temren firmly sink in the arrow. This process repeated at least five times was called *nailing* (Yücel 1999, 284). Tarsusî coined the penetrating part of the temren as *girâran* in his treatise (Boudot-Lamotte 1970, 11/Pl.IV), yet there is no specific term for this part in *Telhis* and other treatises.

All of the temrens unearthed in Kubadabad Palace (Beyşehir - Konya), Alanya Keep Seljukian Palace (Alanya - Antalya), Isparta-Eğirdir Sultan Kaykhusraw Caravanserai and the Medieval layer of the Mound Samsat (Adıyaman) were made from iron by hammering. The weights of the temrens range from 4 to 18 gr, but measures that are more homogeneous can be obtained in temren groups. *Telhîs-i Resâilât-ı Rumât*, an acclaimed archery treatise of the Ottoman period suggests that a temren accounts for one-eighth of the weight of an arrow, but earlier treatises express that the ratio can be one-seventh (Mustafa Kâni Bey 2010, 131, 344). An anonymous Mameluke archery treatise dated to 1500 states that this ratio could be one-seventh or eighth (Faris-Elmer 1945, 115-116). According to this work, an arrow of 25.6 gr is expected to have a temren of 3.2 gr. The archery treatise (1368) by Taybuga, a Mameluke master, suggests that the ratio should be one-seventh (Latham-Paterson 1970, 25). Undoubtedly, this ratio depends on various parameters, such as the ratio of bow to arrow and the wood quality of the arrow. Moreover, one should not ignore the discrepancies between the transformations of the Medieval measures into today's measuring systems. Considering that Medieval bows were heavier than Ottoman bows, it is evident that this weight difference should affect arrows and temrens. Ü. Yücel cites from Abdullah Efendi that temrens sometimes weigh 16 gr and may account for one-third of the arrow weight (Yücel 1999, 303). It can be concluded that the Medieval temrens may vary from 4 to 20 gr in weight according to the target and the bow used.

Lengths of the temrens from the four Medieval ruins above range from 3 to 6 cm. Telhîs-i Resâilât-ı Rumât reports that broad olive-like martial arrows are divided into two, namely short and long, and the latter is one-finger long in architectural zira (a measurement unit equivalent to about 75.5 cm) (Mustafa Kâni Bey 2010, 131). Ü. Yücel, who studied Ottoman arrows at the Topkapı Palace, notes that martial temrens vary from 2 to 5.5 cm (Yücel 1999, 300). Thus, it can be inferred from the above figures that Seljukian temrens at stake and Ottoman temrens are similar in length.

4. Typology

Two types of temrens can be found in the related literature. One is function-oriented. In the Ottoman archery treatises, arrows are classified as flight, practice, target, training and war arrows (Yücel 1999, 295-300). The other categorization is morphology-based. This classification based on the blade shape, such as triangular, rectangular, round and broad, is a morphological typology.

The morphological investigation of the temrens unearthed in Kubadabad Palace (Beyşehir - Konya), Alanya Keep Seljukian Palace (Alanya - Antalya), Isparta-Eğirdir Sultan Kaykhusraw Caravanserai and the Medieval layer of the Mound Samsat (Adıyaman) results in the following types:

1. Rectangular (Bodkin/Murabba)) temren (Figures 2 and 3): This temren used till the Roman period and were shot at the armoured enemy.

Figure 2
Rectangular (Murabba) Temrens

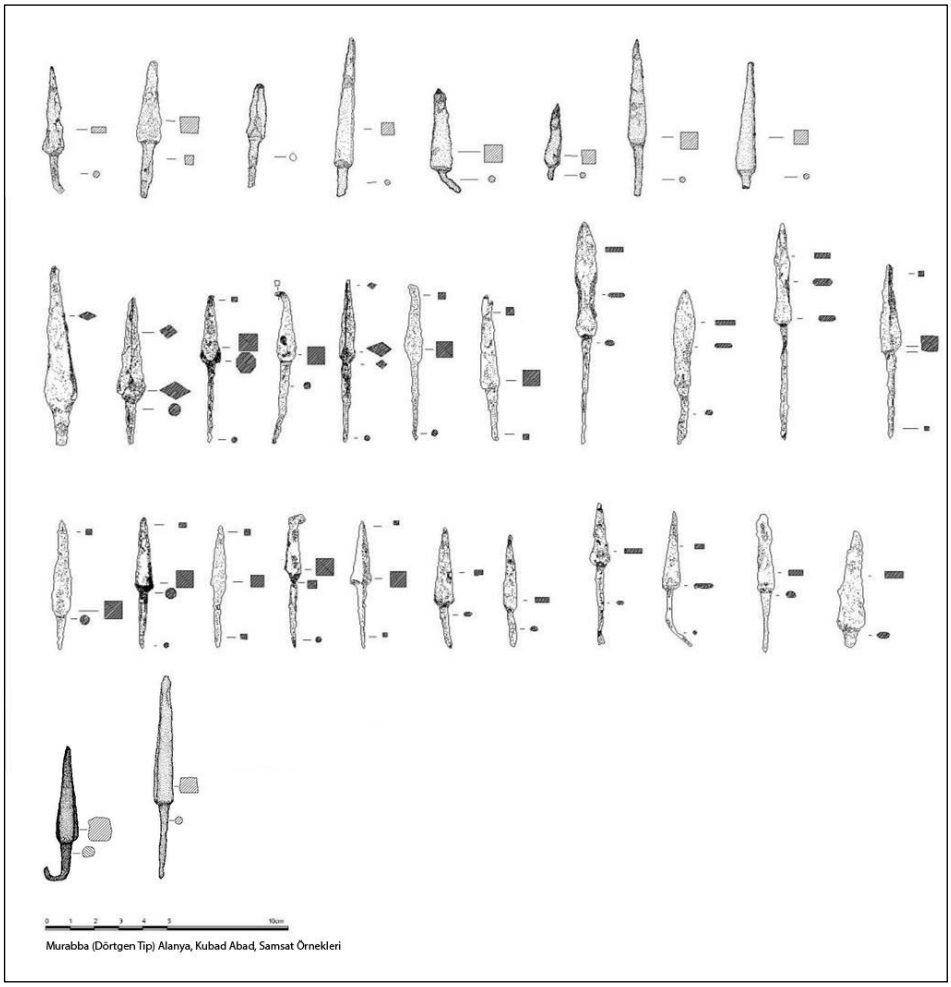
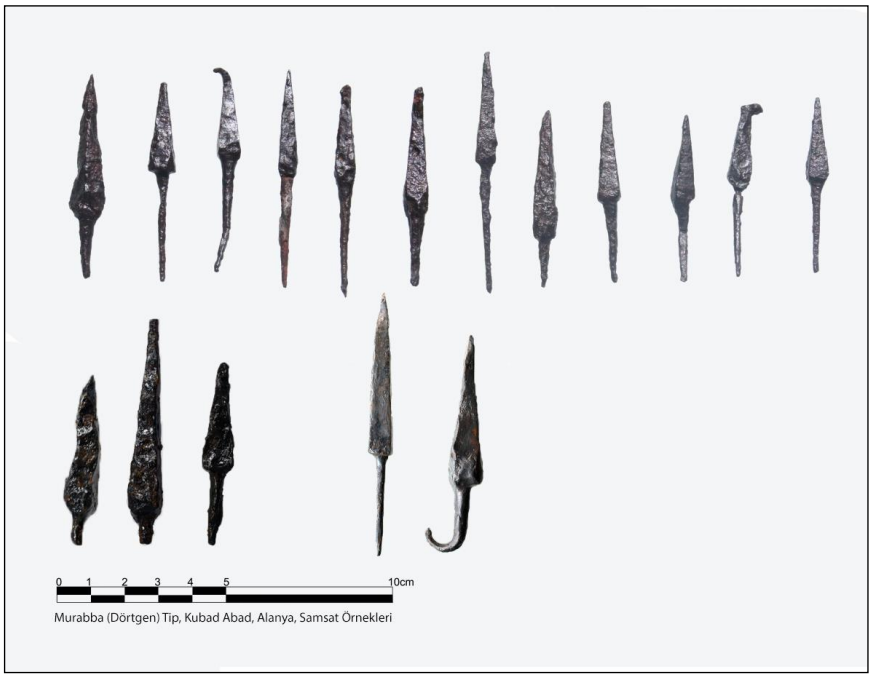


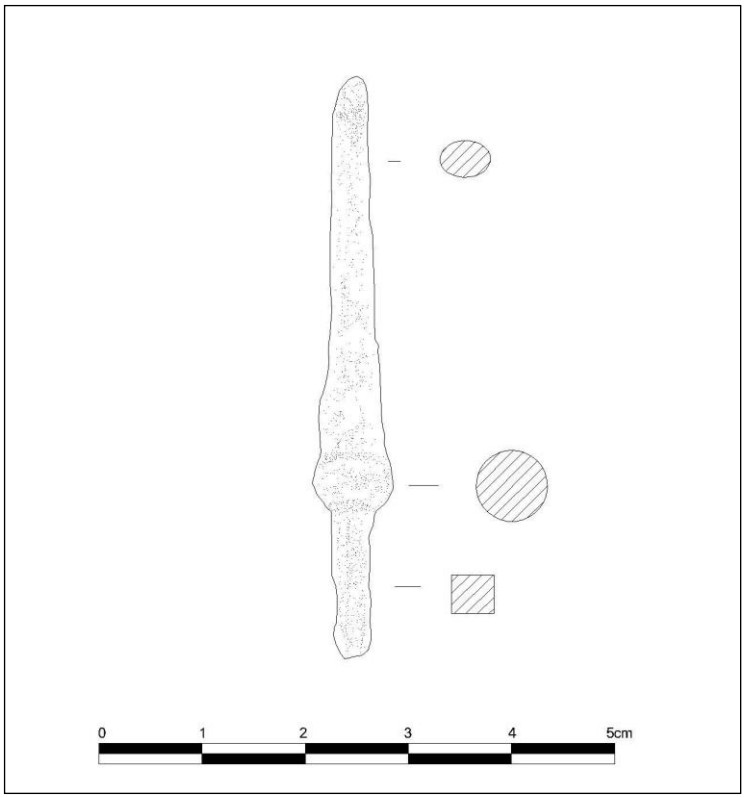
Figure 3
Rectangular (Murabba) Temrens



2. Round temren (Figures 4 and 5): Its tip is blunt, not to wound, but for training.

Figure 4
Round Temrens

Figure 5
Round Temrens



3. Broad (Yasıc/Müselles) temren (Figures 6 and 7): It was generally marked as a Medieval temren and used against unarmoured enemies and medium- or large-sized animals.

Figure 6
Broad (Müselles/Yasıç) Temrens

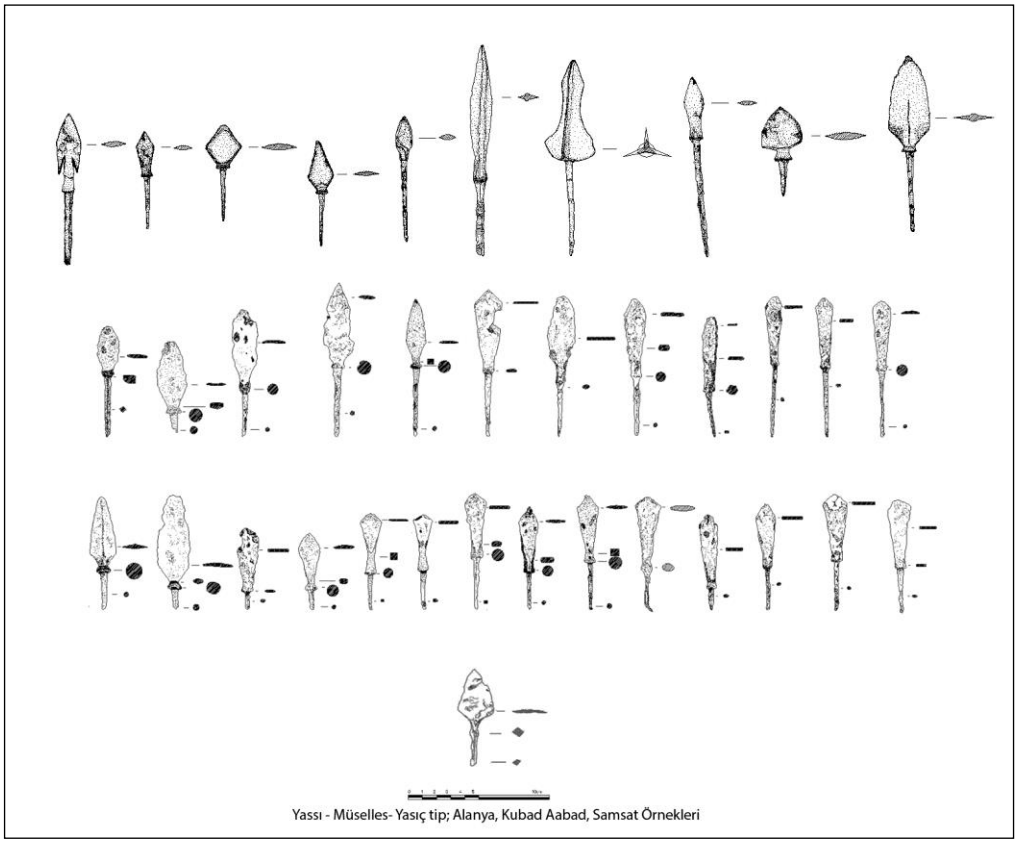


Figure 7
Broad (Müselles/Yasıç) Temrens

4. Crescent temren (Figures 8 and 9): It was used to hunt medium- or small-sized animals, especially birds.

Figure 8

Crescent Temrens

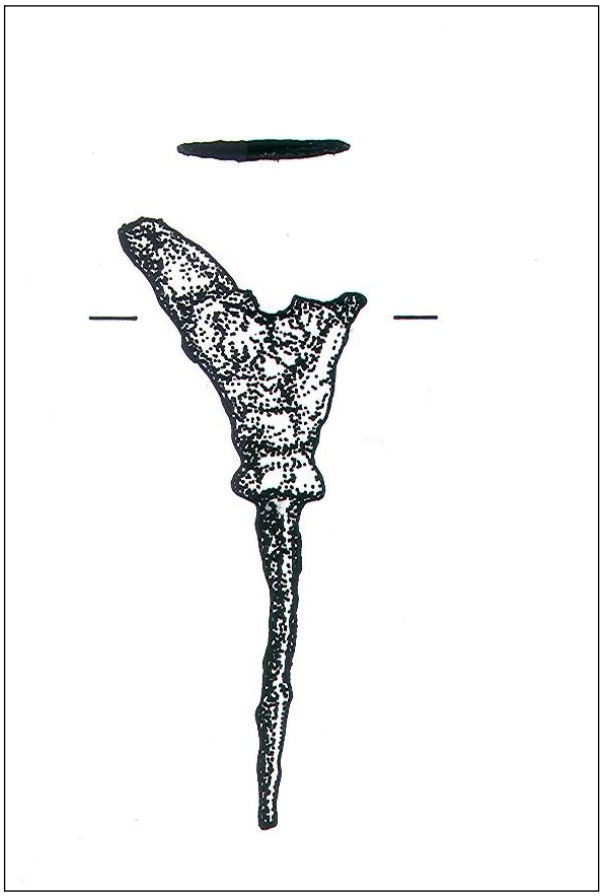


Figure 9

Crescent Temrens

5. Target and training temrens (Figures 10 and 11): they were blunt-tipped or bullet-shaped and used for short and soft training or in archery competitions.

Figure 10
Blunt Temrens

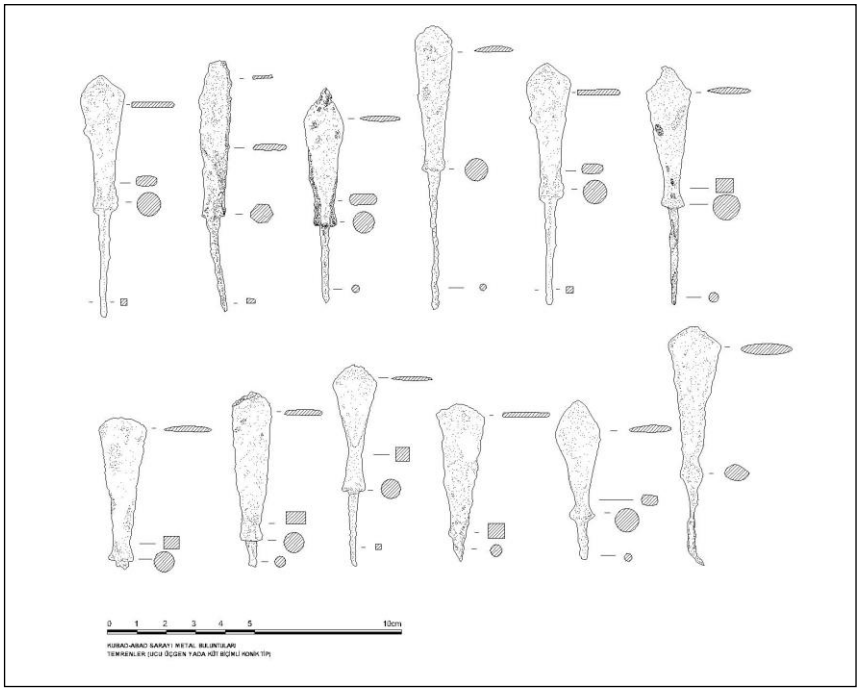


Figure 11
Blunt Temrens

The rectangular type is the most widely used temren and is defined as *murabba* (rectangular) in Telhis (Mustafa Kâni Bey 2010, 131). While rectangular temrens were mostly found in the Roman layer of Olynthus (Robinson 1941, Pl.CXXIII/CXXIV), they were commonly unearthed in the Byzantine layer in Pergamon (Gaitzsch 2005, 143). Broad temrens are commonly found. This type defined as "*yasıç* (flat or broad)" in Divânü-Lûgati't-Türk (Teres 2007, 1187) and *müselles* (triangle) in Telhis (Mustafa Kâni Bey 2010, 131) has many sub-types, ranging from thin, long spear-like types to broad willow leaf ones. The samples from Sardis were dated to the Late Byzantine Period. It is known that the blunt tip or triangular temrens were used in Sardis as of the 6th century BC (Waldbaum 1983:36-37). The finds from Pergamon were dated back to between the 11th and 14th centuries. Temrens of this type are associated with the nomad Turks and the Southern Russian samples of the 8th and 9th centuries (Gaitzsch 2005:141-142).

Target arrows as a sports activity tool are a part of advanced literature and terminology in the Ottoman period. Training arrows in addition to target arrow types such as *pişrev, yeksüvar, zergerdan, heki, karabatak, azmayiş, puta* (Yücel 1999, 295-300), which were specifically forged for competitions, notably show how important archery was as a sports and social activity in the Ottoman period. It is understood from the Seljukian records that besides the fact that hunting is the most important quotidian social activity, it is also deemed as war training. This presumes that training and competition arrows should come in various types. Contrarily, there is only one sample available in the Seljukian temrens examined herein. The temren found in the Kubadabad Palace has a round section. Similar items to this temren, the only sample of Anatolian Seljuk training temrens, can be found in Aşvan Kale (Mitchell 1980, Fig.131), Zeytinlibahçe (Frangipane-Bucak 2001, Fig.13a), Korucutepe (Van Loon 1980, Pl 116G), Olynthus (Robinson 1941, Pl.CXXIII/1998, CXXIV/2016), Djodovo (Borisov 1989, Fig.131).

The crescent or V-shaped temren types are described as *usfuri* (in the shape of a safflower) in the treatise by Taybuga. The only sample of this temren for *hunting, especially bird hunting*, was uncovered in the Eğridir Caravanserai. Such temrens detected in the finds from Gorodishche of Kirpičnikov(Kirpičnikov 1986, 100, Tab XIII/Tip 8) and from Djadovo, a Byzantine settlement, in Bulgaria (Borisov, 1989, 118, Fig 135) were determined to be intended for hunting.

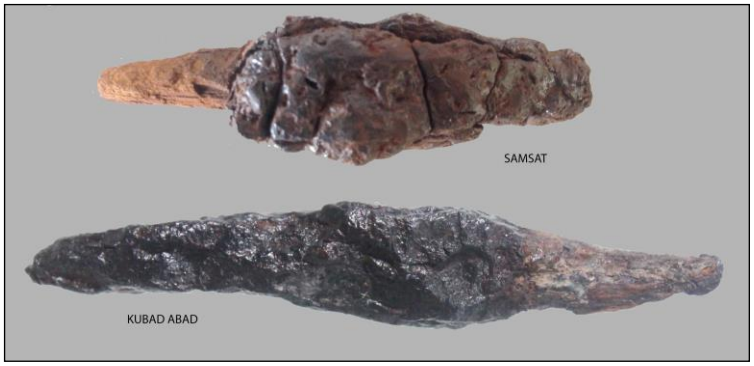
All in all, it should be considered that these groups of temrens cover some major items and various temren types were used for various purposes in the Medieval age.

5. Metallurgy

The preliminary result of the morphological investigation of the temrens unearthed in Kubadabad Palace (Beyşehir - Konya), Alanya Keep Seljukian Palace (Alanya - Antalya), Isparta-Eğirdir Sultan Kaykhusraw Caravanserai and the Medieval layer of the Mound Samsat (Adıyaman) is related to the body of the arrow. It was concluded from the wood splinters on the needle of some of the temrens that the shaft had been made from a tree of *Gymnospermae* family with unenclosed seeds and soft texture conifers (Figure 12).

Figure 12

Traces Wood Pieces on Temrens



Juniper, fir, cypress, pine and spruce can be listed in this family. The available wooden remnant is most likely from a pine tree as evident from its unfragmented fibrous texture with straight lines. As is known, beech or birch was typically used for the production of arrow bodies till the 15th century, producers came to prefer pine as of the 16th century (Yücel 1999, 275). This indicates that pine which is more balanced due to equal weight distribution was preferred over other trees for the production of arrow bodies not only by the Ottomans but also by the Seljukians.

All arrowheads are wrought from iron. It is considered that the objects were produced by hammering iron plates. Optical spectrometry showed that the tang contained more carbon than the blade, and therefore had a more rigid and solid structure (Yavaş 2012, 125-126). Yet it is known that temrens of the same type do not have a standard size. It can be thought that this might be caused by such factors as the use of different iron nuggets, mouldless forging, and stylistic variations between blacksmiths.

Another finding about the metallurgical properties of the Seljukian temrens is that they were carburated. Carburation can be referred to as hardening temrens made from soft iron by post-production re-heating and it was found that this technique was adopted in the production of some samples. It is considerably important because it was performed in the Medieval Age as a different process from regular quenching.

Author Contributions

The author read and approved the final version of the paper.

Conflict of Interest

The author declares no conflict of interest.

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