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Weaving Tools from the Uşak Protohistoric Survey Project (UPDAP)

Uşak Protohistorik Dönem Yüzey Araştırmaları Projesinde (Updap) Bulunan Dokumacılık Aletleri

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Abstract: A part of the archaeological material culture discovered during the Uşak Protohistoric Survey Project (UPDAP) were weaving tools. Although in the UPDAP weaving tools comprise the smallest number of finds, they represent a rich collection from the Bronze Age in Western Anatolia in terms of quantity and varieties of forms. During the surveys, a small number of complete tools were found in addition to mostly broken ones. These tools, archaeologically, demonstrate that textile production was one of the livelihood in prehistoric times. The history of weaving production, which probably began in the Paleolithic period, even predates production activities such as pottery and mining. The weaving tools from the UPDAP, are divided into two groups: loom weights and spindle whorls. While the loom weights are divided into three different categories belonging to crescent, disc-shaped, and pyramidal shapes, the spindle whorls are mainly double-conical and spherical in shape. They are mostly attributed to the Early and Middle Bronze Ages, according to relative dating made of the pottery and other finds, which were documented at the the same sites, as well as from the similarities they show with the weaving tools unearthed in excavated and well-dated Western Anatolian settlements.

Keywords: Textile Production • Loom Weights • Spindle Whorls • Bronze Age • Survey

Öz: Uşak Protohistorik Dönem Yüzey Araştırmaları Projesi'nde (UPDAP) bulunan arkeolojik materyal kültürün bir bölümünü dokumacılık aletleri oluşturmaktadır. UPDAP dokumacılık aletleri, diğer materyallere oranla en az buluntuyu oluşturmasına karşın, Batı Anadolu bölgesi Tunç Çağı için sayısal ve biçimsel açıdan zengin bir koleksiyonu temsil ettiği anlaşılmaktadır. Yüzey araştırmaları sırasında çoğunlukla kırık olarak bulunmuş olmalarının yanı sıra az sayıda da olsa tam aletler de bulunmuştur. Bu aletler tarihöncesi dönemlerde dokuma üretiminin başlıca geçim kaynaklarından olduğunu arkeolojik olarak kanıtlamaktadırlar. Muhtemelen Paleolitik Çağ'da başlayan dokuma üretiminin tarihi, çanak çömlek ve madencilik gibi üretim faaliyetlerinden daha eskiye gitmektedir. UPDAP dokumacılık aletleri tezgâh ağırlıkları ve ağırşaklar olarak iki ayrı grupta toplanmaktadır. Tezgâh ağırlıkları hilal, disk ve piramidal biçimli olarak üç farklı gruba ayrılmıştır. Ağırşaklar çiftkonik ve küresel biçimli olarak başlıca iki biçimdedir. Bulundukları höyüklerdeki çanak çömlekler ve diğer bulgulardan yapılan tarihleme çalışmalarına ve Batı Anadolu bölgesi yerleşimlerinin tarihleme sorunu olmayan *in-situ* tabakalarında ortaya çıkarılan dokuma aletleri ile gösterdikleri benzerliklere göre çoğunlukla Erken ve Orta Tunç Çağı'na tarihlenmektedirler.

Anahtar Kelimeler: Dokumacılık • Tezgâh Ağırlıkları • Ağırşaklar • Tunç Çağı • Yüzey Araştırması

a. Introduction

Weaving is a type of production that predates pottery and mining and presumably began in the Paleolithic period[1]. The tradition of dressing/veiling that people needed to protect themselves from

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1 Andersson-Strand *et al.* 2006, 171; see also Hardy *et al.* 2020, 1, for the most recent results concerning the rope

weather conditions must have taken a deeply rooted place in human life, which then gradually transformed into status symbols, of ethnical significance, and expressions of gender[2]. However, in the preliterate periods, fabric types can be surmised from spindle whorls, loom weights, and other tools found in archaeological excavations[3] (needles and awls that were generally produced from animal bones[4]), and through iconography and models[5], and finally textile pieces[6] which have rarely survived to the present day. Since textile products are of organic origin, they are generally not well preserved; they are often unearthed in charred form or their negative impressions are left on clay objects or on soil[7]. The raw materials of the fabric woven in prehistory include wools of animal origin and flax and hemp of plant origin[8]. Sheep, which were hunted for food during the Paleolithic, were gradually integrated into human life for the same subsistence purpose with the domestication at the beginning of the Neolithic in the 9th mill. B.C. Although it is not known when and where the wool type (the source of wool used in weaving[9]) emerged[10], sheep are directly related to the weaving economy[11].

The first finds encountered that can be associated with weaving activities in Western Anatolia date from the Neolithic period[12]. Spatial analyzes of investigated prehistoric settlements show weaving was a part of daily life, where frequent examples show that parts of the house units were commonly reserved as workshops for textile production[13]. During the Uşak Protohistoric Survey Project (UPDAP), which was conducted between 2017-2019, various types of loom weights and spindle whorls were found. There were a total of 90 weaving tools recorded, of which 80 were in broken pieces (Fig. 1). In this article, the distribution of weaving tools obtained during the survey will be evaluated chronologically, throughout a typological and comparative study of the finds, and in relation to analyses of other finds (mainly pottery sherds) collected in the course of the survey. The introduction and evaluation of this material will contribute to the history of weaving in the inner Western Anatolia centred on Uşak, where no systematic excavations have been carried out to date.

b. Uşak Protohistoric Surveys Project (UPDAP) and the Location of Weaving Tools

The UPDAP research area covers the entire Banaz district located in the east of the Uşak province, as well as the north-central and western parts of the Central district (Fig. 2). Lacking systematic

remains from the Paleolithic.

2 Rahmstorf 2015, 1.

3 Martensson *et al.* 2009, 373.

4 Andersson-Strand 2014, 49.

5 Breniquet 2013, 6.

6 Çilingiroğlu 2009, 17 fig. 7; Frangipane *et al.* 2009, 18; Bilgen & Tütüncüler-Bircan 2017, 24.

7 Skals *et al.* 2015, 61.

8 Fazlıoğlu 2001, 3.

9 C. Breniquet and C. Michel (2014, 2) associated the increasing use of sheep in Southern Mesopotamia at the end of the 5th millennium B.C., during the Ubaid Period, with the weaving economy.

10 Schoop 2014, 423.

11 It is known that the hair of different types of animals such as: goats, camels, horses and dogs are used in weaving practices, as well as sheep Andersson-Strand 2014, 43.

12 The first finds relating to Western Anatolian Neolithic weaving practices were found in Yeşilova and Ulucak Höyük: Çilingiroğlu 2009; Derin 2020, 3.

13 Abay 2014, 176; Ergün 2020, 16.

excavations, Uşak has been investigated through salvage excavations and survey projects. The UPDAP project, which began in 2017, aims to explore the protohistoric periods. Some of the research aims of this project regard social, political, and technological developments at the end of the EBA; the status of Uşak province in the historical geography of the Middle Bronze Age (hereafter MBA); the Western Anatolian expansion routes of the Hittites, whose relations with Western Anatolia are known from written sources; the connection routes with the Aegean coasts and the status of the Hittite relations between Uşak and the neighboring regions and the presence of Iron Age (hereafter IA) cultures (Phrygian, Lydian, Persian) in the region. In subsequent research, the project will also investigate traces of the first settlements in Uşak and the associated material culture.

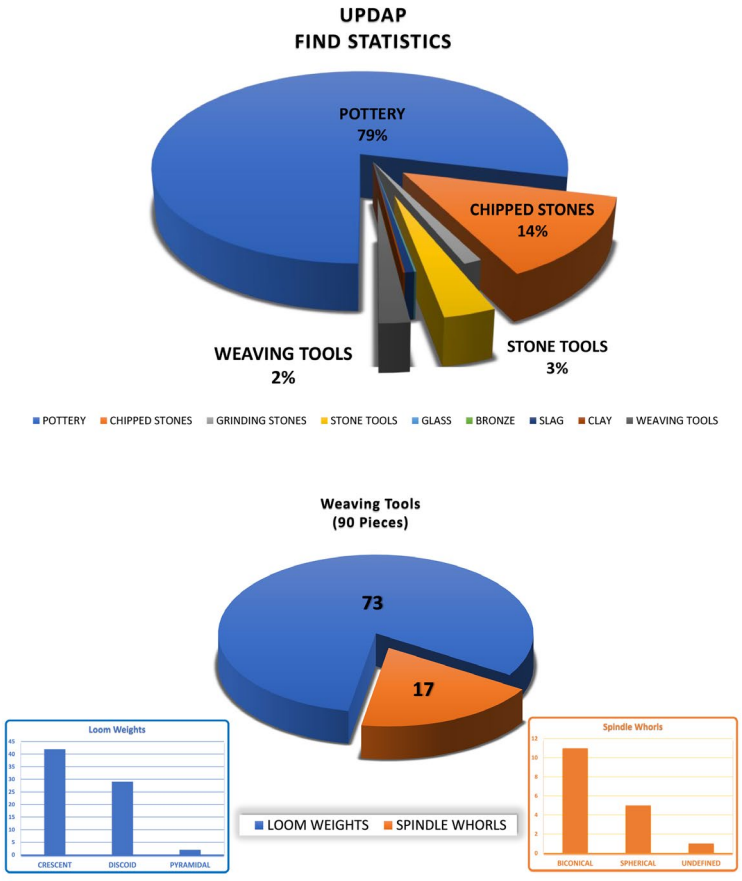
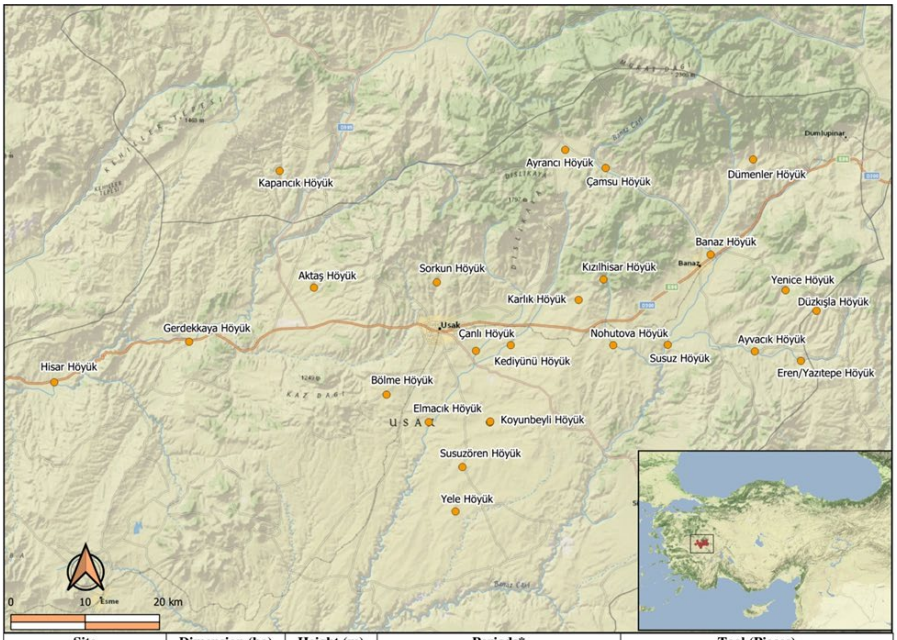


Fig. 1. *Weaving Tools within UPDAP General Find Statistics*

Except for Banaz Höyük, all find sites were explored with the extensive survey method. As is commonly the case, pottery sherds constitute the most numerous find group documented in the UPDAP survey. However, when we consider weaving as an element of tradition that is passed down to the present, in almost every find site we found the pioneering traces of weaving, today more commonly described as the textile industry. The weaving tools obtained from the survey were a qualitatively important source of data, although quantitatively they cannot be directly compared to pottery finds (Fig. 1). Different types of weaving tools were collected from a total of 23 different find sites in the Uşak

Merkez and Banaz districts in the course of research from 2017 to 2019[14] (Fig. 2). The settlement pattern determined by surveys for EBA and MBA, to which the majority of weaving tools are associated, was partially revealed. The only settlements that we could identify in the plains from the beginning of the EBA, which then increased in number during the EBA II, were located 6-7 km away from each other. While the number of settlements decreased in the beginning of the MBA, they appear to have grown in size. In the plains, settlements in the form of an 'inner castle outer city' or an 'upper lower city' are seen. In this section, the location of the find sites and the chronological processes of these settlements will be emphasized, together with other documented finds. The findspots will be evaluated regionally in sequence from east to west.



Site	Dimension (ha)	Height (m)	Periods*	Tool (Pieces)
Ayvacık Höyük	6.6	21	CHAL/EBA/MBA/LBA/IA/LA	Crescent (3) + Spindle Whorl (2) + Discoid (2)
Kızılhisar Höyük	3.8	12	EBA	Pyramidal (1) + Crescent (1) + Discoid (3)
Karlık Höyük	9.2	19	CHAL/EBA/MBA/LBA/IA/LA	Crescent (2) + Discoid (2)
Kapancık Höyük	1.5	50	EBA/IA/LA	Spindle Whorl (2) + Crescent (11) + Discoid (1)
Gerdekkaya Höyük	1.8	8	EBA/MBA/IA/LA	Crescent (2) + Discoid (2)
Düzkışla Höyük	2.9	16	NEO/CHAL	Crescent (1) + Spindle Whorl (1) + Discoid (1)
Nohutova Höyük	6.4	4	EBA/MBA/LBA/IA/LA	Crescent (2)
Susuz Höyük	2.4	6	EBA/MBA/LBA/IA/LA	Crescent (4) + Discoid (1)
Yele Höyük	2	7.5	EBA/MBA/LBA/IA	Spindle Whorl (1) + Crescent (1)
Sorkun Höyük	1.7	6.5	EBA/MBA/LBA	Crescent (2)
Yenice Höyük	2.4	22	MBA/LBA/IA/LA	Spindle Whorl (1) + Crescent (4)
Dümenler Höyük	1.4	5	MBA/LBA/IA/LA	Spindle Whorl (1) + Crescent (1) + Discoid (1)
Aktaş Höyük	6.5	20	MBA	Spindle Whorl (2) + Crescent (1) + Discoid (2)
Elmacık Höyük	6	21	EBA/MBA/LBA/IA	Crescent (2) + Discoid (3)
Koyunbeyli Höyük	11.3	22	EBA/MBA/LBA/IA/LA	Spindle Whorl (1) + Crescent (1) + Discoid (1)
Banaz Höyük	9.5	10	EBA/MBA/LBA/IA/LA	Spindle Whorl (1) + Crescent (3)
Kediyünü Höyük	6.5	24	EBA/MBA/LBA/IA/LA	Crescent (1) + Discoid (2)
Çamsu Höyük	2.5	10	EBA/MBA/LBA/LA	Spindle Whorl (1) + Discoid (1)
Eren/Yazıtepe Höyük	5.2	7	EBA/MBA/LBA/LA	Discoid (1)
Ayrancı Höyük	2.8	5	EBA	Spindle Whorl (1) + Discoid (1)
Susuzören Höyük	3	9	EBA/MBA/LBA	Discoid (1)
Bölme Höyük	1.6	10	EBA/MBA/IA/LBA	Spindle Whorl (1) + Discoid (2)
Çanlı Höyük	2.5	5	CHAL/EBA	Spindle Whorl (1) + Pyramidal (1) + Discoid (2)
Hisar Höyük	2.5	4	EBA/IA/LA	Spindle Whorl (1)

*Periods: Neo: Neolithic; Chal: Chalcolithic; EBA: Early Bronze Age; MBA: Middle Bronze Age; LBA: Late Bronze Age; IA: Iron Age; LA: Late Antiquity

Fig. 2. *UPDAP Sites with Weaving Tools*

[14] Yılmaz 2019; Yılmaz *et al.* 2019.

While the eastern and northern parts of the Banaz district are mountainous terrain (at an altitude of 1250-1350 m), the central part consists of plains (at an altitude of 850-900 m). On the other hand, only the northern part of the Merkez district has a mountainous terrain[15]. The first region with Düzkışla Höyük, Yazıtepe/Eren Höyük, Yenice Höyük, and Ayvacık Höyük, all of which are located in the easternmost part of the research area, has greatly increased our knowledge about the prehistoric periods. This region has a relatively hilly terrain and has more pasture than agricultural lands. Settlements were located in a valley which connects Afyonkarahisar with the Yeşilhisar in the east, the Sümbüllü Tepe in the north, and the Karanlıcak Tepe in the south. Düzkışla Höyük, which is one of these settlements, is dated from the Late Neolithic-Early Chalcolithic based on relative dating of pottery and other small finds[16]. However, the most significant data for recognizing weaving tools within the region comes from Ayvacık Höyük and Yenice Höyük which can be reached by the valley formed from the Şaban stream and Devdoğan stream. Numerous EBA II and MBA pottery groups were collected from those two mounds. In the light of the surface finds, Ayvacık Höyük had a regional importance, especially during the MBA[17]. One of the most remarkable settlements in the Banaz district; is Banaz Höyük. The extensive surveys carried out within the UPDAP confirmed the importance of the site with its dimensions, location, and finds which indicated a multi-layered settlement sequence[18]. Based on the available data, Banaz Höyük which had an uninterrupted occupation from the EBA to the Roman Period, is one of the most prominent settlements for the MBA, due to its settlement type and finds. The location of this mound, which is currently right next to the modern highway, is not incidental. It is situated on the eastern side of an important route which is the connection with Central Anatolia through the Dumlupınar and Köroğlubeli passageways. The Banaz stream and the fertile Banaz plain have been important geographical factors contributing to the settling of the mound throughout the ages. The southern part of the Murat Mountain in the north also presents areas suitable for prehistoric occupation in this region. Çamsu Höyük and Ayrancı Höyük, which can be reached by the valley formed from the Dümenler Höyük and Höyük Deresi, can be counted among the settlements of this region, where weaving tools were found[19]. The earliest settlement traces among all mentioned mounds date from the EBA. The pottery finds and settlement types suggest that Çamsu Höyük and Ayrancı Höyük were the settlements that used the agricultural terrain in the Comburt (Ayrancı) plain and also dominated the high pastures. The weaving tools obtained from both sites, reflect the similarity of weaving activities known from the same period. Another find site within the rough geography of Banaz, is Kızılhisar Höyük. This settlement is located on a hill, which measures 12 m from the base of the valley and extends to the Düden River valley, which is one of the branches that irrigates the Banaz Stream; the finds obtained from this settlement, mainly point to the EBA II-III periods. In addition to recorded pottery sherds, a marble idol and a head piece of a disc-faced terracotta figurine support the aforementioned dating[20]. Susuz Höyük and Nohutova Höyük, which are located in the plains and arable lands in the southwestern part of Banaz; are other find sites. While the surface finds collected from Susuz Höyük, through which the Banaz Stream passes to the

15 Kara 2010, 1.

16 Yılmaz 2020.

17 Yılmaz 2019, 435.

18 Yılmaz 2019, 431-433; Yılmaz *et al.* 2019, 446-448.

19 Yılmaz *et al.* 2019, 441-442.

20 Yılmaz 2019, 438.

west and Çimenli Stream to the south, point to a settlement occupation dating from the EBA up to the Roman Period, the abundance of sherds belonging to the MBA attracts attention. Nohutova Höyük has similar pottery characteristics to that of the MBA. Crescent-shaped weights and other finds from both settlements sit within a common historical framework[21].

In the central, eastern, and southern parts of the Merkez district, all of the settlements where weaving tools were recorded are located in the plains. These are Karlık, Kediyünü, Koyunbeyli, Çanlı, Yele, Susuzören, Elmacık, and Bölme Höyük[22]. Karlık Höyük, at the far east of the Merkez district, is one of the most prominent mounds in terms of its dimensions (9.2 ha) and its uninterrupted settlement sequence. Although it is still unclear, settlements from the Chalcolithic to the Ottoman period have only been defined from their surface finds. Finds that reflect the EBA characteristics of the region were also documented here. In addition, MBA sherds, which coincide with the crescent-shaped weights, characterstic for the same period, were also collected from the surface. Another settlement that draws attention with its size is Kediyünü Höyük, which is located approximately 9 km southwest of Karlık Höyük. A small quantity of the EBA pottery was found at this settlement; it is located in the fertile land irrigated by the Kusura Stream, which is further related to springs located in the Kapı and Elma Mountains to the north. Numerous sherds from the MBA, Late Bronze Age (hereafter LBA) and IA were encountered. Weaving tools obtained from Kediyünü Höyük do not have distinctive features for dating. The largest settlement where weaving tools were present is Koyunbeyli Höyük (11.3 ha), which is located in the plains of the Merkez district. Sherds collected from this mound which is approximately 20 m wider than its top and bottom boundaries indicate an uninterrupted settlement occupation, which spans from the EBA to Late Antiquity. The most remarkable pottery group from Koyunbeyli Höyük is represented with its EBA finds, however, the *bead-rim* bowls and jars that are common for the MBA should not be underestimated. This goes together with the settlement type, which also demonstrates MBA features. Finds related to weaving were also found at Çanlı Höyük, which is 5 m in height and located west of the Dokuzsele stream, covering an area of 2.5 ha. In addition to the finds related to the Late Chalcolithic-EBA I, the absence of later finds (other than those from the EBA II and EBA III) suggest this settlement was abandoned after the EBA. Only traces from the Roman period and Late Antiquity (hereafter LA) were observed around the mound and in its surroundings. Susuzören Höyük and Yele Höyük, at the southernmost tip of the Merkez district, are two other find sites located 5 km from each other, which share similar geographical and chronological characteristics. Pottery sherds and small finds obtained from the surface point to occupation from the EBA up to the LA. Susuzören Höyük is one of the settlements that did not have very large dimensions during the EBA but increased in size during the MBA. However, rectangular-sectioned crescent-shaped loom weights, which are characteristic for the MBA, are not seen at Susuzören Höyük. The surface material collected from the Elmacık and Bölme Höyük, located in the south-central part of the Merkez district, provide information about weaving. Elmacık Höyük is an important settlement of this district in terms of both its size and settlement type. On the western part of the mound, which extends in an east-west direction, is a flat area on a high hill, measuring approximately 5000 m^2. The area to the east of the hill resembles an inner castle, while the area up to the Değirmen stream resembles an outer city. Sherds collected from the mound, exhibit the characteristic features of the EBA, MBA, LBA, and IA. It is also possible to say that this was an important settlement for the

[21] Yılmaz *et al.* 2019, 438.

[22] Yılmaz *et al.* 2019, 444, 446.

Roman period due to the architectural remains discovered. Bölme Höyük is a 10 m high hill covering an area of 1.6 ha and is located about 6 km northwest of Elmacık Höyük. A few MBA and Late Iron Age (hereafter LIA) sherds were encountered on the mound, whereas there are also many indications of the existence of an EBA settlement. The northern part of the Merkez district is rough land compared to the east and south. In this area, surface finds regarding weaving activities were discovered at Sorkun Höyük, a 6.5 m high mound that covers an area of 1.7 ha and has the Uzunoluk stream to the west and Çokkaz stream to the east. Among the surface finds, there were a few MBA and LBA sherds, in addition to the abundance of pottery related to the EBA.

Settlements in the west of the Merkez district, with weaving tools recorded in the assemblage, also made significant contributions. They concern the Aktaş, Kapancık, Gerdekkaya, and Hisar Höyüks. Aktaş Höyük, located on the rough land in the west, is a 20 m high settlement on a hill, in a valley formed by the Kozluca Stream passing to the south. During the surface collection carried out over a very large area (approx. 6.5 ha), no finds belonging to the protohistoric periods, except for the EBA, were recovered. Only pottery and architectural remains associated with a settlement dating to the Roman period (possibly *Lyendos*) were found in the Aktaş village. This aspect facilitated the dating of the weaving tools. Kapancık Höyük, presented the most numerous and varied data among the find sites in the western section. The settlement, which exists on an area of approximately 1.5 ha and the exact dimensions were unable to be determined, is a hilltop settlement with a height of 50 m, built on a spot overlooking the valley. Seasonal streams that are associated with the Gediz River pass through the southeast. Sherds collected from the settlement indicate the EBA, IA (Lydian), and the Roman period. Marble idols represent the other important find group, characteristic of the EBA at the settlement. The typology of weaving tools found during the surveys also supports the idea of the site being an important settlement in the EBA. Another find site is Gerdekkayası Höyük, consisting of low altitude areas in the western part, which is located at the point where the Gediz River ends towards the west. The settlement, which was built on a hill with a height of about 37 m, consists of two parts with an inner castle and a lower city. The Gediz River passes from the north of the settlement. If we look at the distribution of pottery finds collected from the mound, we can say that EBA pottery clearly emerges as the dominant group. In the area considered to be the lower city, MBA and IA pottery sherds (although uncertain), and the pottery and tile fragments dating from the Roman period, rather than the EBA, were found. Due to the settlement style of the inner castle and the lower city, there were high expectations for documenting the MBA finds in Gerdekkayası, which appears to be a standard settlement type similar to the settlements that yielded MBA finds in Uşak. However, expectations were not met, as the pottery from this period was absent. IA pottery came from both the hill area and the fields that extend to the south. The plain and painted sherds found here are of Lydian character. Sherds with black color placed on red (characteristic examples of Lydian pottery), are among the most important finds. Gerdekkayası, which is very close to the Güre Tümülüsü, has the appearance of a strong IA settlement with its fortified structure and the location at an important point for the Lydian period. The westernmost findspot in this area with weaving tools is Hisar Höyük. Pottery sherds from this settlement, located on a very fertile land irrigated by the Gediz River, predominantly point to an EBA dating. The pottery with different ware and form characteristics, when compared to other findspots in the Banaz and Merkez district, can be determined within the Akhisar-Manisa group of the Troy-Yortan Cultural Region. Moreover, we also found one decorated spindle whorl here, which resembles other decorated specimens from the survey area.

c. UPDAP Weaving Tools

c.1. Spindle Whorls

Yarn is derived from fibers by using a spinning method. In order to give the yarn the right twist, spindle whorls, which were mostly produced from clay, as well as from wood, bone, or metal, are attached to the spindles[23]. The spindle whorl is technically an important part of weaving as it ensures the vertical rotation of the yarn; it is inserted through the hole in the middle of the spindle bar. It is known that in Anatolia, spindle whorls were generally placed in the middle of spindles[24]. Spindle whorls, known to have been used in the Levantine since the Pre-Pottery Neolithic (PPN)[25], increased in use in Anatolia at the beginning of the Bronze Age during the 3rd millennium B.C. Spindle whorls, which were widely used in Anatolia during MBA and LBA, were also unearthed in the Gordion Early Phrygian layers[26]. It is also observed that spindle whorls can be made of bone or ivory. Diameter, weight, and rope-hole diameter of the spindle whorls are important criteria in adjusting the thickness of the thread to be used for weaving[27]. For example, it is necessary to use a spindle whorl weighing 10-15 g for wool threads and 60-95 g for flax. Additionally, in spinning, small-diameter spindle whorls were preferred for thin yarns while slow-rotating, while large-diameter spindle whorls were preferred for coarser yarns[28].

The rope hole diameter of the UPDAP spindle whorls have a range of 0.4-0.9 cm, their diameters ranges between 2.2-4.2 cm, and their weights (being their most important feature) have a range of 7-41 g (Fig. 3). After following the references from the experimental studies[29], we can propose that the UPDAP spindle whorls with weights in the range of 7-41 g, could spin yarn to a thickness in the range of 0.3-0.8 mm.

	Findspot	Finding No.	Type	Height (cm)	Width (cm)	Bore Diameter (cm)	Weight (gr)	Material	Status
1	AYRANCI HÖYÜK	2018/2	Biconical	3.2	?	0,7	7.29	Clay	Complete
2	ÇANLI HÖYÜK	2019/4	Biconical	2.2	2.9	0,4	15	Clay	Complete
3	YELE HÖYÜK	MRK.YELEHYK.059	Biconical	2.3	3.5	0,6	18.7	Clay	Broken
4	ÇAMSU HÖYÜK	BNZ.ÇMSUHYK.074	Biconical	-	3.7	0,5	18	Clay	Broken
5	BANAZ HÖYÜK	2018/10	Spherical	2.6	3	0,5	15.4	Clay	Complete
6	HİSAR HÖYÜK	2019/14	Biconical	3.1	3.6	0,6	41.3	Clay	Complete
7	AKTAŞ HÖYÜK	2019/7	Biconical	2.4	3.5	0,7	30.9	Clay	Complete
8	KOYUNBEYLİ HÖYÜK	2018/9	Spherical	2.3	2.4	0,6	-	Clay	Complete
9	BÖLME HÖYÜK	2019/6	Biconical	1.6	2.2	0,7	7.2	Clay	Complete
10	KAPANCIK HÖYÜK	MRK.KPNCK.066	Biconical	-	3.7	0,6	16.7	Clay	Broken
11	KAPANCIK HÖYÜK	2019/12	Biconical	3	3.4	0,7	28.4	Clay	Complete
12	AYVACIK HÖYÜK	BNZ.AYVCKHYK.161	Biconical	-	2.2	0,4	7.2	Stone	Broken
13	AYVACIK HÖYÜK	BNZ.AYVCKHYK.123	Biconical	3.5	3.2	0,4	22.1	Clay	Broken
LA	AKTAŞ HÖYÜK	MRK.AKTS.086	Spherical	2.5	4.2	0,9	38.2	Clay	Broken
15	YENİCE HÖYÜK	BNZ.YNCHKY.074	Spherical	1.5	4.2	0,5	20.2	Clay	Broken
16	DÜZKIŞLA HÖYÜK	BNZ.DZKŞL.117	Spherical	-	-	-	39.7	Stone	Broken
17	DÜMENLER HÖYÜK	BNZ.DMNLR.171	Undefined	2.4	2.8	0,5	8	Clay	Broken

Fig. 3. *Spindle Whorls*

[23] Barber 1991, 43.

[24] Lassen 2013, 79.

[25] Rahmstorf 2015, 3.

[26] Burke 2010, 115.

[27] Keith 1998, 502.

[28] Keith 1998, 503.

[29] Martensson *et al.* 2009, 374.

Out of 17 spindle whorls from the UPDAP, 11 are biconical, 5 are spherical, and the shape cannot be identified because of one of them was found to be broken (Pl. 1). There are only two stone spindle whorls, while the rest are made of clay. One of the stone spindle whorls is made of marble and is dated to the Late Neolithic-Early Chalcolithic Age based on other finds (Pl. 1/16). Biconical examples are distinguished by the sharp spine in the middle of the body. All decorated spindle whorls are biconical in shape with decorations consisting of incised lines. However, the spindle whorl with the unidentified form is the only one which has decoration in relief (Pl. 1/17). The decorations generally represent geometric motifs such as parallel or perpendicular lines and concentric circles. Although a few spherical spindle whorls are undecorated, one of them has a groove that can be seen on the top and is similar to a yarn thread (Pl. 1/8). The other spherical spindle whorls are undecorated. Decorating on spindle whorls can have both aesthetic and technical purposes.

The characteristics of spindle whorls made of clay, including the paste, type and decoration, make the dating of these tools easier to infer. Additionally, other finds collected from the find sites also help in dating. For example, the biconical spindle whorls uncovered from Çanlı Höyük, where the Late Chalcolithic and EBA materials are numerous. It is noteworthy that decoration was also applied to the spindle whorls that have encrusted with white paste, which is a feature known from the Chalcolithic and EBA (Pl. 1/2). In addition, microscopic analyzes of the sections, demonstrate that the paste content of these tools is consistent with the paste structure of pottery (Pl. 5/43-47).

Spindle whorls belonging to the Western Anatolian Bronze Age include: biconical, conical, flat, and spherical shapes. As in the UPDAP, it is seen that the dominant spindle whorl type of the region during the 3rd and the 2nd millennium B.C. belongs to tools with a biconical shape[30]. The reason for this could be that the biconical shaped spindle whorl can rotate faster than other types while drawing small circles. In addition, spherical examples with a groove around the hole, typical of the MBA, were not found in Uşak. In regard to occasional issues with the dating of spindle whorls (especially those coming from surveys) in different regions across Anatolia, those recorded in the main excavated settlements dating to the Bronze Age in Western Anatolia including Çukuriçi Höyük[31], Troy[32], Yassıtepe[33], Aphrodisias (EBA Settlement)[34], Beycesultan[35], Asopos Tepesi[36], Yanarlar[37], Seyitömer Höyük[38], Küllüoba[39], Keçiçayırı[40] and Demircihöyük[41], spindle whorls are found mostly in the EBA and MBA layers.

As mentioned above, spindle whorls are also seen in Central Anatolia and its south in various settlements, periods and contexts. In addition to the similar general characteristics of spindle whorls, it

30 Tütüncüler 2005, 180.

31 Britsch & Horejs 2014, 231, 229, Fig.3.

32 Blegen 1958, 222, 33-126-37-90.

33 Hepiyiler-Mamikoğlu 2019, 47, Fig. 27.

34 Joukowsky 1986, 373, 311.1, 2, 5, 9.

35 Mellaart & Murray 1995, 163, Fig. O.13; Ergün 2020, Fig. 8/A, Fig. 9, Fig. 12.

36 Konakçı 2018, 270, Çizim: 1-2.

37 Emre 2020, 41 Lev.-Pl.XLIV/1 a-d, 2 a-b, 3 a-c.

38 Karaoğlan 2020, 2252, Çizim: 9.

39 Öner 2009, 74 Tablo 9; Sarı 2018, Fig. 19.3/d.

40 Sarı 2017 Levha 1/19-25; Sarı 2018, 218, Fig. 19.5/a.

41 Kull & Korfmann 1988, Tafel 36.8; Obladen-Kauder 1996, Tafel 94.

appears that there are also many regional characteristics, as the finds from Gordion/Yassıhöyük[42], Alacahöyük[43], Boğazköy[44], Alişar[45], Gözlükule[46] and other settlements suggest.

c.2. Loom Weights

Since the earliest known examples were found in Anatolia, loom weights, which were therefore claimed to be of the Anatolian origin[47], were used in various types depending on chronological, cultural, and geographical factors. In addition, it is thought that loom weights were varying in shape in order to produce fabrics of different quality and thickness[48]. Since it is rare to find fully preserved weaving looms or original fabrics, loom weights are frequently the only tools which were documented in archaeological contexts for the reconstruction of the use of looms in textile production[49]. Four types of looms are known to have been used from prehistory to the transition to industrial production: horizontal ground looms, vertical two-beam loom, warp-weighted vertical looms, and hand looms[50]. Looms that require weights are warp-weighted vertical looms and vertical two-beam looms[51]. It is known that disc-shaped, pyramidal, crescent, and conical shaped weights were used in such looms. The weight and thickness of the loom weights are determining features as they ensure warp threads are stretched and fixed[52].

The 73 loom weights collected during the UPDAP studies, all made of clay, are typologically divided into three groups: "crescent-shaped" weights (42 pieces), "disc-shaped" weights (29 pieces), and "pyramidal shaped" weights (2 pieces) (Fig. 1).

c.2.1. Crescent-Shaped Loom Weights

UPDAP crescent-shaped loom weights are the most abundant loom weight type among all found weaving tools (Pl. 2-3). Lengths vary between 3.5-16.5 cm, widths between 2.1-4.5 cm, thickness between 1.9-4.5 cm, hole diameters between 0.3-1.2 cm, and weights between 72.9-183.5 gr (Fig. 4). All loom weights of this type were made of clay, and amongs them only one was found intact (Pl. 2/20). Crescent-shaped loom weights belong to warp-weighted vertical looms, which keep the warp threads stretched during weaving, thus ensuring that nothing becomes tangled.

Crescent-shaped loom weights, known to have been used in Central and Southern Europe since the Neolithic period, have been used in Anatolia since the EBA and MBA[53]. These weights, the use of which decreased at the end of the LBA[54], were encountered in the EBA and MBA layers of the Western Anatolian

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42 Mellink 1956 Plate 24.

43 Koşay & Akok 1973 Lev. LXVIII-Pl. LXVIII (ETÇ), Lev. L-Pl. L, Lev. LI-Pl.LI (Hitit).

44 Fisher 1963 Tafel 125-126/1155-1163, 1169-1172.

45 von der Osten 1937, Fig. 188-189, 198-203; Fig. 273-276.

46 Goldman 1956, 446-450.

47 Skals *et al.* 2015, 66.

48 Maner 2018, 48.

49 Martensson *et al.* 2009, 373.

50 Andersson-Strand 2018.

51 Andersson-Strand 2015, 52.

52 Olofsson *et al.* 2015, 98.

53 Lassen 2015, 127.

54 Crescent-shaped loom weights are found in the Iron Age levels of Aphrodisias and Oluz Höyük (Architectural Layer 2D). The weight of the crescent-shaped loom at Oluz Höyük is the same as the weight of the MBA period

settlements including: Beycesultan[55], Asopos Tepe,[56] Kusura[57], Afyonkarahisar survey[58], Demircihöyük[59], Küllüoba[60], Keçiçayırı[61], Bozüyük[62], Seyitömer Höyük[63], Aphrodisias (EBA settlement)[64] and at Troy[65]. In addition, crescent-shaped loom weights, which are defined as "Hittite type loom weight" in some publications[66], have also been found in large numbers in Assyrian Trade Colonial Age settlements in Central Anatolia and to its south. Crescent-shaped loom weights are seen in Bronze Age layers at Gordion/Yassıhöyük[67], Kültepe[68], Alişar[69], Boğazköy[70], Alacahöyük[71], Boyalı Höyük[72], Oluz Höyük[73] and at Gözlükule[74] in the south. Although the common view regards these objects as loom weights, they have also been interpreted differently[75].

There are two distinct types of crescent-shaped loom weights recorded in the UPDAP: the circular-sectioned (Pl. 2/1-18) and the rectangular-sectioned types (Pl. 2/19-20; 3/21-42). The circular-sectioned crescent-shaped looms weights have a sharper point and the widest part of the crescent is thick and circular. It was observed that the ratio between the ends of the crescent and the wide middle section was greater than in those that were rectangular-sectioned. Since their examination was in line with the investigation of find sites and analyzes of other surface materials, circular-sectioned weights are generally encountered in settlements that are dated to EBA. In addition, microscopic study of the crescent-shaped loom weights with circular sections show the homogeneity in the paste content with EBA pottery. Pastes with dense and coarse quartz, grit, and mica inclusions support this assumption, especially in settlements dominated by EBA finds such as at Gerdekkaya, Kızılhisar, and Kapancık (Pl. 5/1, 3, 7, 9-12, 17). The find sites where clay weaving tools were found have a soil structure

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loom weight found in 2007. See: Joukowsky 1986, 379 Table 132; Yurtsever-Beyazıt 2014, 91 Pic. 17-19; Dönmez 2017, 119-120 Fig. 494.

55 Lloyd & Mellaart 1962 Fig. F.5-6; Mellaart & Murray 1995, 173 Fig.O.22; Ergün 2020, 6 Figure 8, 10, 13.

56 Konakçı 2018, 271-272 Çizim: 4-5.

57 Lamb 1936, 35, Fig.15.1-4.

58 Koçak *et al.* 2019, 105, Resim 95-97.

59 Korfmann 1983, 34 Abb. 45-İ10.

60 Sarı 2018, 216.

61 Sarı 2017 Levha 2/51-52; Sarı 2018, 219, Fig. 19.5/d.

62 Lassen 2015, 128.

63 Karaoğlan 2018, 24 Çizim: 3.

64 Joukowsky 1986, 628 453.1, 5.

65 Guzowska *et al.* 2015, 313, Fig. 6.13.8a.

66 Burke 2010, 111, Fig. 55; Yılmaz 2016a, 102.

67 Gunter 1991, 42 Plate 29.

68 Özgüç 1950, 92 Lev.LXV/413-414.

69 Schmidt 1932, 48, Fig. 57-58 (Alişar I); 125, Fig. 154 (Alişar III); von der Osten 1937, 275, Fig. 300 (Hittite).

70 Fischer 1963, 76, 153 Tafel 126/1203, 1207-1208.

71 Arık 1937 XI/Al. 1-6, XLIX/Al. 106, 109; Koşay & Akok 1966 Lev.21/1-45, 60-62, 64-66; Koşay & Akok 1973 Lev. XLVIII-Pl. XLVII, Lev. XLIX-Pl. XLIX/ Al.s.127, Al. t. 14-16, 156a-b.

72 Sipahi & Ediz 2008, 507, Resim 7.

73 Dönmez & Naza-Dönmez 2010 Res. 17, Çiz. 3; Dönmez 2017, 119-120 Fig. 494.

74 Goldman 1956, 319, 324, 441/11.

75 Alp 1994, 71; Lassen 2013, 87; Konakçı 2018, 263.

consisting of mineral particles of feldspar, mica, and quartz[76]. This situation is manifested in the distribution of mica and quartz in the pottery as well as in the weaving tools.

On some of the crescent-shaped loom weights, incisions, fingernails, and stamped decorations or symbols can be seen (Pl. 3/ 21-22, 24). Different interpretations have been made regarding such symbols, which sometimes appear in the form of a rosette and occasionally consist of a combination of several points. In this context, the seal impressions on the many crescent-shaped loom weights found in the Konya Karahöyük excavations, the symbols of geometric shapes and subsequent dot motifs considered to have been made with combs are remarkable[77]. It has been shown that the symbols on the Karahöyük finds indicate the place of manufacture and sale, or that the debenture, the number of goods purchased, and the sealed ones may be a guarantee of the payment to be made against the seller[78]. Among finds dated to the first quarter of the 2nd millenium B.C. and the last phase of the Assyrian Trade Colonial period (approx. 1750 B.C.)[79], those with sequential dot motifs rather than the sealed ones resemble UPDAP finds[80]. These decorations probably emphasize both the owners of the textile production organization and the local Anatolian identity. In addition, it was asserted that there are signs related to people who were in charge of weaving activities and decorations[81]. Textile production was the key to social and political organization, especially during the MBA in Anatolia. For this reason, they have also been interpreted as bureaucratic marks[82]. However, these marks could simply represent the quality of the product or thread to be weaved.

c.2.2. Disc-Shaped Loom Weights

Disc-shaped loom weights are the second most abundant loom weight type after the crescent-shaped loom weights to have been found in the survey. Their thickness varies between 0.9-2.6 cm, hole diameters between 0.3-0.8 cm, and weight between 12-146.3 gr (Fig. 5). In some examples, the drilling of the yarn hole in the middle of the weight had been started but not completed (Pl 4).

Disc-shaped weights were produced directly from re-used broken pottery body pieces where the edges were smoothed and by drilling a hole in the middle (Pl. 4/8, 11, 19, 21, 23-24, 25, 27, 29). Some publications propose that such weights had been attached to the edges of fishing nets[83]. However, in this case, the edges would need to have a more rounded profile due to the abrasiveness of water. Such a situation is not observed in the assemblage from the UPDAP. The disc-shaped loom weights produced from pottery body sherds can also be dated through their paste and surface treatments. Based upon this evaluation, it is evident that EBA pottery sherds were mostly used.

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76 Atasoy 2017, 81 Harita.32.

77 Alp 1994, 69-72 Levha 143/440-245/749.

78 Alp 1994, 70, 72.

79 Alp 1994, 258.

80 Alp 1994 Lev. 173/530, 212-213/649-655, 241-245/735-748.

81 Karaoğlan 2018, 17; Massa 2015, 210-211.

82 Lassen 2013, 89-90; Koçak *et al.* 2019, 104.

83 Galili *et al.* 2013, 149 Figure. 2/A. There are also examples defined as the weight applied in the fishing net at Gözlükule (Goldman 1956, 420/137) and Oluz Höyük (Dönmez 2017, 19, 27, 29, Fig. 36-37, Fig. 67-72, Fig. 107 ab, -108 ab).

	Findspot	Finding No.	Type	Lenght (cm)	Width (cm)	Thickness (cm)	Bore Diameter (cm)	Weight (gr)	Material	Status
1	GERDEKKAYA HÖYÜK	MRK.GRDKKYA.107	Crescent	12.6	4.1	2.7	0.7	183.5	Clay	Broken
2	YELE HÖYÜK	MRK.YELEHYK.058	Crescent	8.1	2.3	1.9	0.6	47.6	Clay	Broken
3	KIZILHİSAR HÖYÜK	BNZ.KZLHSR.058	Crescent	9.9	4.3	3.9	0.8	176.6	Clay	Broken
4	GERDEKKAYA HÖYÜK	MRK.GRDKKYA.110	Crescent	9.8	3.1	2.8	0.8	87.8	Clay	Broken
5	KEDİYÜNÜ HÖYÜK	MRK.KDYN.085	Crescent	8.6	2.9	1.9	0,4	37	Clay	Broken
6	AKTAŞ HÖYÜK	MRK.AKTS.079	Crescent	8.5	3.4	2.9	1.1	116.2	Clay	Broken
7	KAPANCIK HÖYÜK	MRK.KPNCK.068	Crescent	7.2	3.8	3.5	-	117.8	Clay	Broken
8	KAPANCIK HÖYÜK	MRK.KPNCK.071	Crescent	11.5	4.1	3.1	1	151.1	Clay	Broken
9	KAPANCIK HÖYÜK	MRK.KPNCK.070	Crescent	7.9	4.1	3	0,3	133.2	Clay	Broken
10	KAPANCIK HÖYÜK	MRK.KPNCK.069	Crescent	4.2	2.9	2.5	0.5	38.5	Clay	Broken
11	KAPANCIK HÖYÜK	MRK.KPNCK.072	Crescent	7.3	2.6	2.6	0.7	58.4	Clay	Broken
12	KAPANCIK HÖYÜK	MRK.KPNCK.076	Crescent	7.3	3.6	2.3	0.6	81.1	Clay	Broken
13	KAPANCIK HÖYÜK	MRK.KPNCK.077	Crescent	6.8	4.4	3.9	1.2	95.2	Clay	Broken
14	BANAZ HÖYÜK	BNZ.BNZHYK.327	Crescent	10.2	3	2.9	0.6	94.3	Clay	Broken
15	SUSUZ HÖYÜK	BNZ.SUSZHYK.123	Crescent	6	2.7	2.8	1	50.5	Clay	Broken
16	KAPANCIK HÖYÜK	MRK.KPNCK.074	Crescent	7.8	4.5	4.1	-	156.5	Clay	Broken
17	AYVACIK HÖYÜK	BNZ.AYVCKHYK.120	Crescent	6.8	3.2	2.3	0,6	60.4	Clay	Broken
18	KAPANCIK HÖYÜK	MRK.KPNCK.078	Crescent	4.3	3.9	2.8	0,7	57.9	Clay	Broken
19	SUSUZ HÖYÜK	BNZ.SUSZHYK.125	Crescent	8	2.2	2	0.4	36.4	Clay	Broken
20	AYVACIK HÖYÜK	2017/2	Crescent	16.5	3.2	2.8	0.6	72.9	Clay	Complete
21	ELMACIK HÖYÜK	MRK.ELMCK.134	Crescent	9.3	2.9	2	0.5/?	67.2	Clay	Broken
22	KARLIK HÖYÜK	BNZ.KRLKHYK.123	Crescent	10.6	3.2	3.2	0.7	141	Clay	Broken
23	KAPANCIK HÖYÜK	MRK.KPNCK.073	Crescent	9.3	3.5	2.6	-	91.3	Clay	Broken
24	DÜMENLER HÖYÜK	BNZ.DMNLR.172	Crescent	8.8	3.1	2.8	-	87.7	Clay	Broken
25	YENİCE HÖYÜK	BNZ.YNCHYK.075	Crescent	9.4	3	2.8	0.7	94.3	Clay	Broken
26	KAPANCIK HÖYÜK	MRK.KPNCK.075	Crescent	8.5	4	3.1	-	110.3	Clay	Broken
27	SORKUN HÖYÜK	MRK.SRKN.046	Crescent	6	3.2	3	1	87.2	Clay	Broken
28	BANAZ HÖYÜK	BNZ.BNZHYK.259	Crescent	8.9	3	2.7	0.9	76.1	Clay	Broken
29	ELMACIK HÖYÜK	MRK.ELMCK.135	Crescent	9.6	3.8	2.9	0,6	91.9	Clay	Broken
30	BANAZ HÖYÜK	BNZ.BNZHYK.206	Crescent	7.5	2.9	3	0,5	70.7	Clay	Broken
31	KOYUNBEYLİ HÖYÜK	MRK.KYNBYLİHYK.126	Crescent	3.5	2.3	2	0.7	21.9	Clay	Broken
32	AYVACIK HÖYÜK	BNZ.AYVCKHYK.159	Crescent	9.4	3.8	4.5	0.8	151.3	Clay	Broken
33	NOHUTOVA HÖYÜK	BNZ.NHTOVHYK.075	Crescent	3.5	3.1	2.1	0,7	21.4	Clay	Broken
34	NOHUTOVA HÖYÜK	BNZ.NHTOVHYK.076	Crescent	5.2	2.1	3	0.6	44.1	Clay	Broken
35	YENİCE HÖYÜK	BNZ.YNCHYK.076	Crescent	9	3.5	2.8	0.6	86.2	Clay	Broken
36	YENİCE HÖYÜK	BNZ.YNCHYK.077	Crescent	6.7	2.8	2.5	0.9	50.3	Clay	Broken
37	YENİCE HÖYÜK	BNZ.YNCHYK.078	Crescent	7.5	3.5	3	0.7	72.2	Clay	Broken
38	GERDEKKAYA HÖYÜK	MRK.GRDKKYA.109	Crescent	9.5	4.1	3.1	0.7	154	Clay	Broken
39	SORKUN HÖYÜK	MRK.SRKN.048	Crescent	6.1	2.6	2.4	-	57.4	Clay	Broken
40	SUSUZ HÖYÜK	BNZ.SUSZHYK.126	Crescent	4.6	2.3	4.1	0.9	50.2	Clay	Broken
41	SUSUZ HÖYÜK	BNZ.SUSZHYK.127	Crescent	7	2.4	2.5	0.5	56.1	Clay	Broken
42	KARLIK HÖYÜK	BNZ.KRLKHYK.119	Crescent	7.1	2.8	2.8	0.9	61.1	Clay	Broken

Fig. 4. *Crescent-Shaped Loom Weights*

Known to have been used since the Late Neolithic,[84] disc-shaped loom weights can directly reflect the characteristics of pottery traditions of different periods. Although disc-shaped loom weights are encountered across the Mediterranean[85] and Anatolia in the Bronze Age, they are not mentioned very often in publications[86]. These types of loom weights have been found in the EBA and MBA layers of Beycesultan[87], Asopos Tepesi[88], Çine Tepecik Höyük[89], Aphrodisias (EBA settlement)[90], Demircihöyük[91] and

[84] Yılmaz 2016a, 100.

[85] Martensson *et al.* 2009, 375.

[86] Tütüncüler 2005, 136.

[87] Lloyd & Mellaart 1962, 268, Fig. F.2./8, 15.

[88] Konakçı 2018, 270 Çizim: 3.

[89] Yılmaz 2016a, 100 Resim 5/27-41.

[90] Joukowsky 1986, 373 311.7-8

[91] Obladen-Kauder 1996 Tafel 87.

Seyitömer Höyük[92]. However, similar finds are found in Alacahöyük[93] and Oluz Höyük[94] in Central Anatolia, and Norşuntepe[95] in Eastern Anatolia. In the literature, single or double perforated disc-shaped weights produced directly from clay are referred to as "Aegean Type/Minoan Type". Such weights, which are not seen in Inner Western Anatolia, have been unearthed in settlements related to the Aegean world such as Miletos[96], Limantepe[97], Maydos Kilisetepe[98] and Troy[99]. It is suggested that such weights were transferred from the southwestern Aegean to the east[100].

	Findspot	Finding No.	Type	Thickness (cm)	Bore Diameter (cm)	Weight (gr)	Material	Status
1	AYRANCI HÖYÜK	BNZ.AYRNCIHYK.032	Disc-Shaped	1.9	0.4	35.39	Clay	Broken
2	DÜMENLER HÖYÜK	BNZ.DMNLR.166	Disc-Shaped	2.6	0.3	146.3	Clay	Broken
3	KIZILHİSAR HÖYÜK	BNZ.KZLHSR.050+51	Disc-Shaped	1	0.8	45.98	Clay	Broken
4	KIZILHİSAR HÖYÜK	BNZ.KZLHSR.048	Disc-Shaped	1.3	0.8	54.75	Clay	Broken
5	KIZILHİSAR HÖYÜK	BNZ.KZLHSR.052	Disc-Shaped	1.2	0.7	32	Clay	Broken
6	BÖLME HÖYÜK	MRK.BLMHYK.041	Disc-Shaped	0.9	0.6	25.2	Clay	Broken
7	BÖLME HÖYÜK	MRK.BLMHYK.040	Disc-Shaped	1	0.4	52.5	Clay	Broken
8	ELMACIK HÖYÜK	MRK.ELMCK.138	Disc-Shaped	1.1	0.4	27.8	Clay	Broken
9	ELMACIK HÖYÜK	MRK.ELMCK.139	Disc-Shaped	1.2	0.3	67.9	Clay	Broken
10	ELMACIK HÖYÜK	MRK.ELMCK.140	Disc-Shaped	0.9	0.3	20	Clay	Broken
11	KARLIK HÖYÜK	BNZ.KRLKHYK.121	Disc-Shaped	1.7	0.3	49	Clay	Broken
12	KARLIK HÖYÜK	BNZ.KRLKHYK.120	Disc-Shaped	1.5	0.7	72	Clay	Broken
13	SUSUZ HÖYÜK	BNZ.SUSZHYK.080	Disc-Shaped	1.2	0.7	56.6	Clay	Broken
14	AKTAŞ HÖYÜK	MRK.AKTŞ.084	Disc-Shaped	1.4	0.3	30.8	Clay	Broken
15	AKTAŞ HÖYÜK	MRK.AKTŞ.085	Disc-Shaped	1.1	0.5	35.26	Clay	Broken
16	ÇAMSU HÖYÜK	BNZ.ÇMSUHYK.020	Disc-Shaped	1	0.5	16.3	Clay	Broken
17	ERENLER HÖYÜK	BNZ.ERNLRHYK.021	Disc-Shaped	0.9	0.4	14.14	Clay	Broken
18	KAPANCIK HÖYÜK	MRK.KPNCK.079	Disc-Shaped	1.3	0.8	49.7	Clay	Broken
19	DÜZKIŞKLA HÖYÜK	BNZ.DZKŞL.019	Disc-Shaped	1.2	0.3	42.5	Clay	Broken
20	SORKUN HÖYÜK	MRK.SRKN.049	Disc-Shaped	2	1.2	48.7	Clay	Broken
21	HACIKAVAK HÖYÜK	BNZ.HCKVK.009	Disc-Shaped	1.4	unvented	55	Clay	Broken
22	SUSUZÖREN HÖYÜK	BNZ.SSZORN.054	Disc-Shaped	0.9	0.5	12	Clay	Broken
23	ÇANLI HÖYÜK	MRK.ÇNLI.078	Disc-Shaped	1.8	0.5	66.5	Clay	Broken
24	KEDİYÜNÜ HÖYÜK	MRK.KDYNÜ.086	Disc-Shaped	1.2	0.4	38	Clay	Broken
25	AYVACIK HÖYÜK	BNZ.AYVCK.116	Disc-Shaped	1.1	0.3	55.3	Clay	Broken
26	AYVACIK HÖYÜK	BNZ.AYVCK.117	Disc-Shaped	1.8	0.4	85.4	Clay	Broken
27	KOYUNBEYLİ HÖYÜK	MRK.KYNBYLİHYK.095	Disc-Shaped	2.2	unvented	44.9	Clay	Broken
28	GERDEKKAYA HÖYÜK	MRK.GRDKKYA.113	Disc-Shaped	1.1	0.4	12.6	Clay	Broken
29	GERDEKKAYA HÖYÜK	MRK.GRDKKYA.114	Disc-Shaped	1.3	0.3	25	Clay	Broken

Fig. 5. *Disc-Shaped Loom Weight*

92 Karaoğlan 2018, 23 Çizim: 2.c1-c5.

93 Arık 1937 XLVII/Al.99, LXXXIX/Al.107,113-114, XCII/Al. 206; Koşay & Akok 1966, Lev.55/3.

94 Dönmez 2017, 19, 27, 29 Fig. 36-37, Fig. 67-72, Fig. 107 a-b,-108 a-b.

95 Schmidt 2002 Tafel 33/423-428.

96 Gleba & Cutler 2012 XXXII/b.

97 Erkanal & Keskin 2009, 105, Fig. 15.

98 Yılmaz 2016b, 51 Figure 6/3-5, Figure 7/3-5.

99 Guzowska & Becks 2005 Pl. LXVII/a.

100 Massa 2015, 206.

c.2.3. Pyramidal-Shaped Loom Weights

Only two pyramidal-shaped loom weights were found in the UPDAP. One of them was found complete (Pl. 6/1). They are between 103.4 g and 259.9 g in weight, 5.8-7 cm in width, and 8.4-10.1 cm in length (Fig. 6).

	Findspot	Finding No.	Type	Height (cm)	Width (cm)	Weight (gr)	Material	Status
1	KIZILHİSAR HÖYÜK	2017/3	Pyramidal	10.1	7	103.4	Clay	Complete
2	ÇANLI HÖYÜK	MRK.ÇNLI.079	Pyramidal	8.4	5.8	259.9	Clay	Broken

Fig. 6. *Pyramidal-Shaped Loom Weights*

Pyramidal-shaped loom weights were widely used in Anatolia throughout the Bronze Age. Moreover, it is thought that pyramidal-shaped loom weights were a local form of weight belonging specifically to Anatolia[101]. The two survey examples, both made of clay, have cross-scraped grooves on the surface. These are probably representative of weight units. Similar loom weights are found in the EBA and MBA layers of Western Anatolia settlements including Beycesultan Höyük[102], Seyitömer Höyük[103], Afyonkarahisar survey[104], Demircihöyük[105], Küllüoba[106], and at Troy[107]. Additionally, similar finds are found in the EBA and MBA layers of Alişar[108], Alacahöyük[109], Kültepe[110] in Western Anatolia, and the Norşuntepe[111] in Eastern Anatolia.

d. Conclusion

Weaving, which dates back to the Paleolithic, is a socio-economic activity that facilitates people's daily life in many areas. Weaving, which arose from basic needs and was continuously developed became a commodity that gradually turned into a marker of status, of ethnic significance, and of gender expression.

Only one of the UPDAP weaving tools, a spindle whorl made of stone was recorded from a settlement that was dated to the Late Neolithic-Early Chalcolithic (Pl. 1/16). It is different from the others in terms of both material and typology. According to comparative studies, both plain and decorated spindle whorls from the UPDAP can generally be dated to the EBA. The motifs preferred in decorations, the paste structures of the spindle whorls, and the surface applications are associated with the pottery making traditions of the same period. In addition, the spindle whorls found at sites such as Çamsu, Ayrancı, Kızılhisar, Çanlı, and Hisar, which are almost exclusively represented by the EBA finds, further contributed to the dating process. Although spindle whorls with biconical decoration in this area began to be seen in the EBA I, and begin to decrease at the end of the EBA III, it is

[101] Tütüncüler 2005, 41.

[102] Lloyd & Mellaart 1965, 51; Mellaart & Murray 1995 Plate XIV.

[103] Karaoğlan 2018, 18 Çizim: 1.7.

[104] Koçak *et al.* 2019, 105 Resim 94, 98.

[105] Korfmann 1983, 34 Abb. 45: İ-10.; Obladen-Kauder 1996 Tafel 97.

[106] Sarı 2018, 216-217, Fig. 19.3/e.

[107] Blegen 1958 221.37-88, 37-289.

[108] von der Osten 1937, Fig. 279.

[109] Koşay & Akok 1966 Lev.55/1-2.

[110] Özgüç 1950 levha LXV/415.

[111] Schmidt 2002 Tafel 38/516-517.

observed that their use continued in the layers of the MBA and LBA at some settlements, such as Beycesultan[112]. However, it should be noted that the use of spindle whorls continues to the present day. When all the typological features are considered together, the spindle whorls' regional features emerge. In the light of these evaluations, the UPDAP examples find their place within the Büyük Menderes-Yukarı Porsuk cultural region during the EBA. Close similarities are observed in the EBA II layers with of Beycesultan, the key settlement of the Upper Büyük Menderes basin. In the EBA III, there are similarities with Seyitömer Höyük, one of the key settlements from the Kütahya region. However, spindle whorls with a hole and semispherical in type, which are commonly seen in Western and Central Anatolian cultural regions, have not been found in Uşak. The absence of such a common type in Uşak can be explained either as a regional feature, or as a result deriving from a lack of research. The decorations on the spindle whorls are known from the Chalcolithic period onwards. However, currently we still have insufficient knowledge about these decorations, and if they were made only for ornamental purposes. On the wooden spinners used in the Uşak region known from recent times there are decorations with concentric circles, cross-scraped lines, and different geometric motifs. During the ethnographic research that was in parallel carried out in villages around the survey area, we found that these motifs were made based on the gender of the person using the spindle. In addition, tribal stamps were found on some of the ethnographic items. Although there is not enough data available from archaeological contexts, it is possible that the decorations on the spindle whorls, which are generally thought to be used by women[113], have similar meanings, related to gender or identity. Moreover, the fact that spindle whorls can be used in different settlement sectors makes the spatial analysis challenging. Taken that the spindle whorls were found together with male and female individuals in Demircihöyük, Alacahöyük or Yanarlar[114] graves, different purposes other than their practical function were indicated[115]. Contrary to economic or administrative issues, certain rituals are discussed in the studies about spindle and distaff ("öreke"). Spinning is defined as a metaphor[116].

Crescent-shaped loom weights, the use of which began in Anatolia in the EBA and MBA and decreased after the Bronze Age, are the most common type among finds of weaving tools. Loom weights, which we have encountered with distinctive typological characteristics in almost all Western Anatolia, were used in warp-weighted vertical looms. They were also frequently encountered in the Assyrian Trade Colonial period and in Hittite settlements in Central Anatolia. In Assyrian and Hittite written documents, there are expressions describing some types of fabrics and people who are involved in weaving activities[117]. Some expressions from the Hittite written documents, mainly related to the law texts, emphasize the importance of weavers[118]. Crescent-shaped loom weights are defined

[112] Dedeoğlu & Abay, Fig. 7/4-8, Fig. 32 1-9.

[113] Keith 1998, 513.

[114] Emre 2020, 41 Lev.-Pl.XLIV/1 a-d, 2 a-b, 3 a-c.

[115] Schoop 2014, 438.

[116] Baccelli *et.al* 2014, 133.

[117] Fabric trade (Michel & Veenhof 2010; Michel 2014) and fabric types take a wide place in the Assyrian texts (Çeçen & Erol 2018, 65-68). During the Hittite period, weaving had an even broader use. In addition to fabric types, information was also obtained about weavers and their status in social life (Baccelli *et. al* 2014, 107-114; Tuncer 2020).

[118] In the Hittite texts which are related to Western Anatolia, the treaty texts made in II Murşili's time introduced "illegal weavers". In the treaties made between Targašnalli from Harpalla and Kupanta-Kurunta, the king of

as the "Hittite type" in some publications[119]. This definition was not used since the crescent-shaped loom weights discussed in this article were found at the earliest in the EBA. In addition, there are currently no traces of Hittite culture in Uşak.

Two types of loom weights were identified among the UPDAP finds: short, circular-sectioned, and long, rectangular-sectioned loom weights. Investigations of morphological features and paste characteristics that directly affect the type of the woven fabric also enabled us to make dating suggestions. According to these inferences, which are supported by other finds from the surveyed sites, the short circular-sectioned samples are more specific for the EBA. The long rectangular-sectioned samples generally exhibit MBA features and LBA[120], according to the Beycesultan chronology. The decorations on some of the rectangular-sectioned loom weights, which have similar characteristics with the Afyon region and the Upper Menderes basin, have been associated with the owners of the production organization, employees, workshops, or weaving activities organized by the central system. The coarse paste textures of the short circular-sectioned loom weights are compatible with the understanding of pottery dating from that period. Similar inferences can be made concerning both the paste and the decorations of the long rectangular-sectioned examples. Through an analogical evaluation, the pyramidal-shaped loom weights, which are few in number, are seen in the EBA II and EBA III. Looking at the find sites which contained these two examined examples, we recognised that there are no traces of settlements after the EBA, which significantly helped the dating issue.

One of the find groups studied among the weaving tools refers to disc-shaped loom weights. Loom weights belonging to this group (which typologically do not show standard typologically features) are mostly produced from pottery sherds. Dating can also be made considering the periods related to pottery in this case. At this point, we should keep in mind that later cultures may have used old pottery sherds obtained from the deposits of previous cultural layers.

Archaeological studies in Western Anatolia reveal finds that point to a new organization in cultural and political terms at the beginning of the EBA. Cultural regions controlled by local political forces (Chiefdom) experienced a political period that was integrated with urbanization and local kingdoms during the later stages of the EBA and the MBA[121]. According to entire assemblages coming from the surveyed sites, similar practices can be suggested. We can presume that there was more domestic production in weaving activities and the production of pottery in the EBA. The examples from Demircihöyük suggest that these activities were taking place in the back rooms of the houses in the EBA I and the front rooms and courtyards during the EBA II[122]. In these contexts, looms are positioned at the corners of the rooms. In the MBA and LBA, we cannot say that central workshops existed in settlements, despite their growth in size. Weaving tools found at Beycesultan were found

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Mira-Kuwaliya, requested the return of the craftsmen, including weavers, who escaped to the Hatti country (Beckman 1999, 71, 80; Yiğit 2000, 81).

119 Burke 2010, 111, Fig. 55; Yılmaz 2016a, 102.

120 Crescent-shaped loom weights continued to be used with similar features in Layer 5 in Beycesultan (Dedeoğlu-Abay 2014 Fig. 32/11). The loom weights in layer 4 dated to LBA are slightly different typologically. It is seen that the ends of the crescent are more closed (Dedeoğlu-Abay 2014, Fig. 7/10).

121 Sarı 2012, 113-114.

122 Sarı 2018, 216.

inside and outside the rooms and occasionally in the storage rooms[123]. Spatial analyzes show that domestic production continued in the MBA and LBA[124]. Furthermore, the written documents do not provide information on this subject. For example, when considering the valuable textiles presented to the gods or in royal warehouses in the Hittite written documents, the information about where the workshops were, or how they functioned are lacking[125]. There are not enough resources for the weavers to continue their professional occupations in the cities for this period[126].

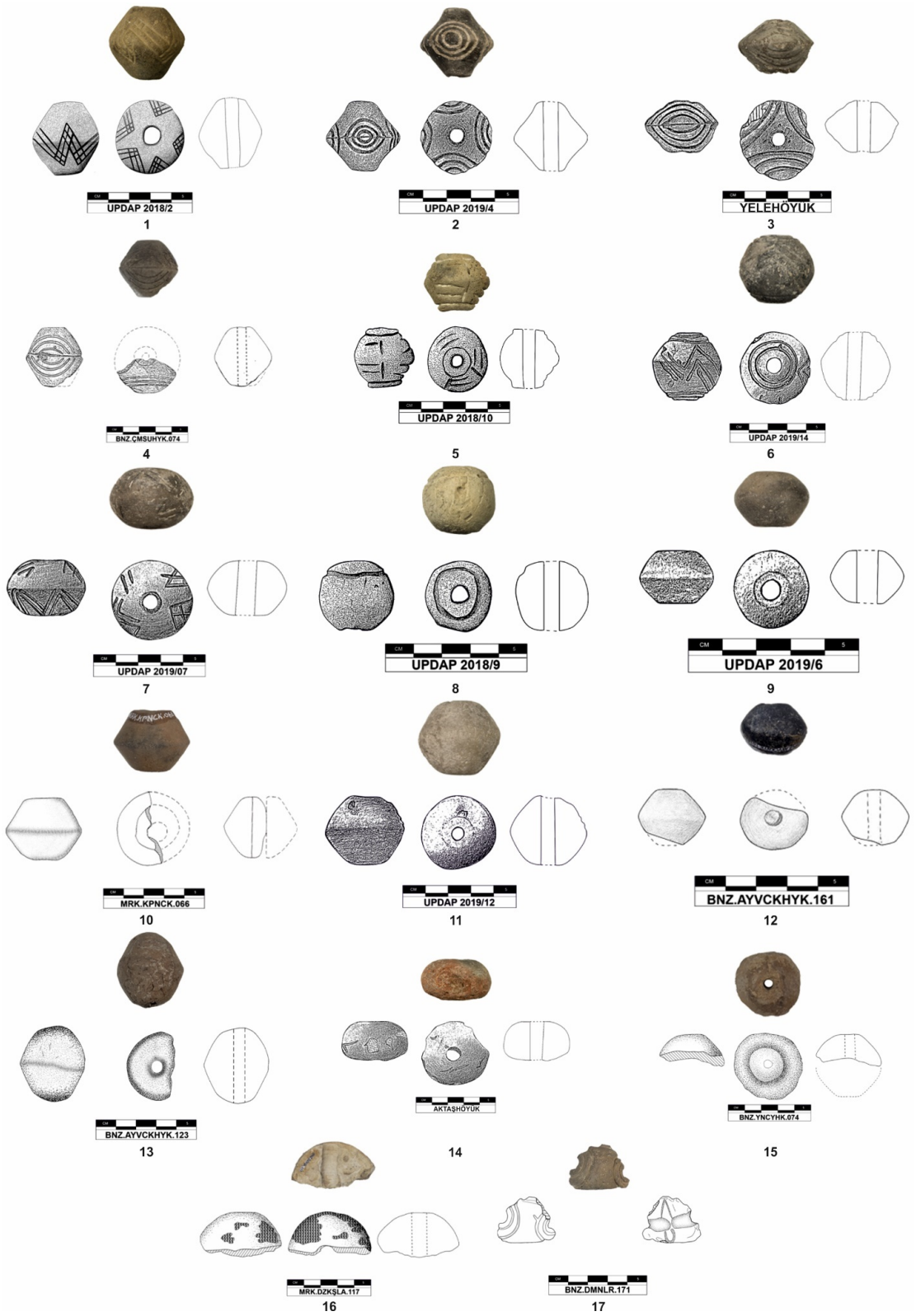
It is noteworthy that Uşak, where the first textile productions date back to the Late Neolithic, represents an important region for understanding the textile sector from prehistory until modern times. It is likely that the MBA period was the beginning of the process that lead to the industrialization of textile productions, which began to expand after the EBA. Although we have limited information about this process in Western Anatolia in the later MBA and LBA, the established trade networks and records kept turned these weaving activities into an "industry" that continued in the region, to the present day.

[123] Ergün 2020, 9.

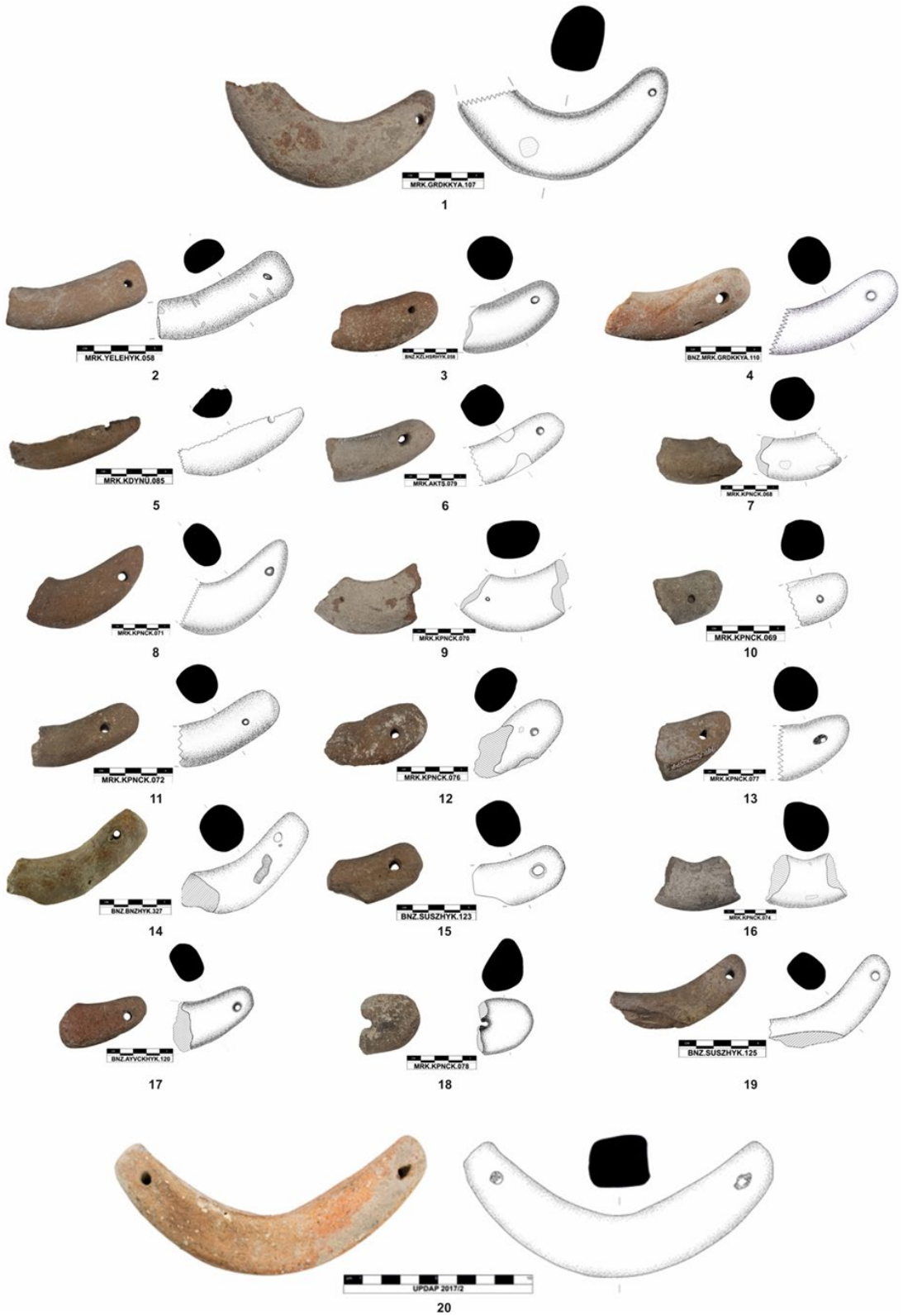
[124] Ergün 2020, 16.

[125] Baccelli *et.al* 2014, 98.

[126] Yiğit 2000, 80.

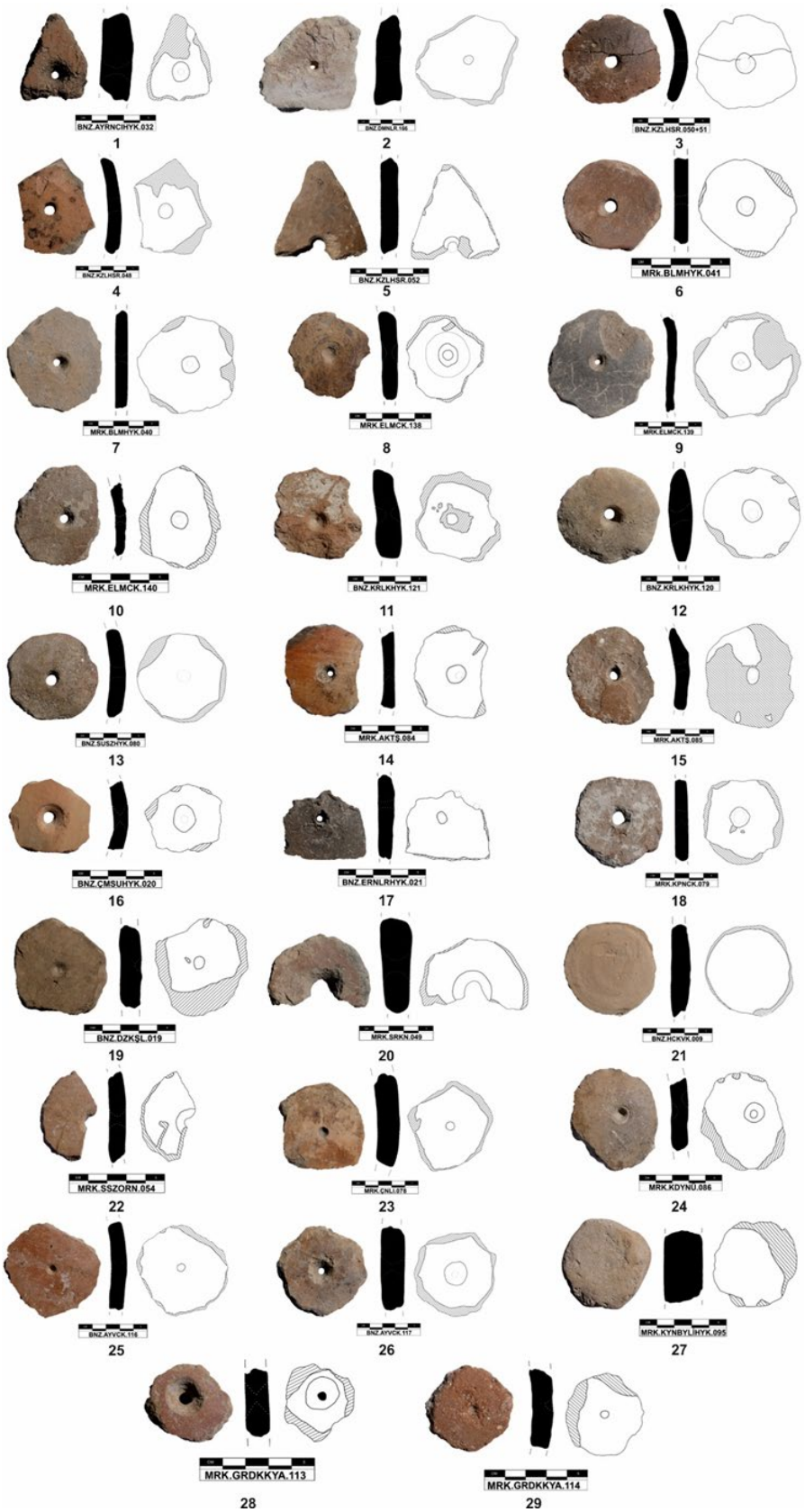


Pl. 1. *Spindle Whorls*



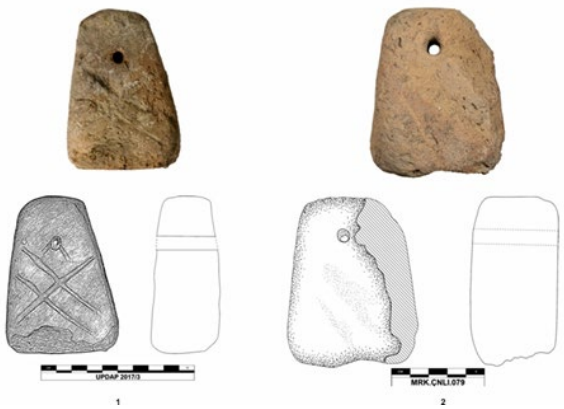
Pl. 2. *Crescent-Shaped Loom Weights (1-18: circular-sectioned; 19-42: rectangular-sectioned)*

Pl. 3. *Crescent-Shaped Loom Weights (1-18: circular-sectioned; 19-42: rectangular-sectioned)*



Pl. 4. *Disc-Shaped Loom Weights*

Pl. 5. *Weaving Tools Microscopic Sections (1-17: Circular-sectioned Crescent, 18-39: Rectangular-sectioned Crescent, 40-42: Disc-Shaped, 43-47: Spindle Whorls)*



Pl. 6. *Pyramidal-Shaped Loom Weights*

BİBLİYOGRAFYA

Abay E. 2014, "Kazı Verileri Işığında Arkeolojik Mekan Analizleri, Beycesultan Örneği". Eds. B. Erdoğu & Ö. Çevik, *Yerleşim Sistemleri ve Mekan Analizi-Tematik Arkeoloji Serisi 1.* İstanbul, 175-189.

Alp S. 1994, *Konya Civarında Karahöyük Kazılarında Bulunan Silindir ve Damga Mühürleri*. Ankara.

Andersson-Strand E. 2014, "Sheep, Wool and Textile Production. An Interdisciplinary Approach to the Complexity of Wool Working". Eds.C. Breniquet & C. Michel, *Wool Economy in the Ancient Near East and the Aegean. From the Beginnings of Sheep Husbandry to Institutional Textile Industry*. Oxford, 41-51.

Andersson-Strand, E. 2015, "The Basics of Textile Tools and Textile Technology-From Fibre to Fabric". Eds. E. A. Strand & M-L. Nosch, *Tools, Textiles and Contexts Investigating Textile Production in the Aegean and Eastern Mediterranean Bronze Age.* Oxford, 39-60.

Andersson E., L. Martensson, M- L. Nosch & L. Ramstorf 2006, "New Research on Bronze Age Textile Production". *Bulletin of the Institute Classical Studies* 51, 171-174.

Andersson-Strand E. 2018 "Early Loom Types in Ancient Societies" Eds. M. Siennicka, L. Rahmstorf, A. Ulanowska, *First Textiles. The Beginnings of Textile Manufacture in Europe and the Mediterranean. Ancient Textiles Series* 32. Oxford, 17-30.

Arık R. O. 1937, *Alaca Höyük Hafriyatı. 1935'deki Çalışmalara ve Keşiflere ait İlk Rapor*. Ankara.

Atasoy A. 2017, *Uşak Atlası*. Kayseri.

Baccelli G., B. Belucci & M. Vigo 2014, "Elements for a Comparative Study of Textile Production and Use in Hittite Anatolia and in Neighbouring Areas". Eds. M. Harlow, C. Michel & M-. L. Nosch, *Prehistoric, Ancient Near Eastern and Aegean Textiles and Dress an Interdisciplinary Anthology.* Oxford, 97-142.

Barber E. J. W. 1991, *Prehistoric Textiles. The Development of Cloth in the Neolithic and Bronze Ages with Special Reference to the Aegean*. Princeton.

Beckman G. M. 1999[2], *Hittite Diplomatic Texts.* Atlanta.

Bilgen N. & Tütüncüler-Bircan Ö. 2017, "Seyitömer Höyük Buluntularından İp/Urgan ve Dokuma Kumaş ile Deri Ayakkabı Numuneleri". *Arkeoloji ve Sanat Dergisi* 155/Mayıs-Ağustos, 23-34.

Blegen C. W. 1958, *Troy: Settlements VIIa, VIIb and VIII.* Princeton.

Blegen C. W., J. L. Caskey & M. Rawson 1951, *Troy. Settlements VIIa-VIIb and VIII. Vo.IV*, ABD.

Breniquet C. 2013, "Functions and Uses of Textiles in the Ancient Near East. Summary and Perspectives". Eds. M-L. Nosch, H. Koefoed & E. A. Strand, *Textile Production and Consumption in the Ancient Near East. Archaeology, Epigraphy, Iconography.* Oxford, 1-25.

Breniquet C. & Michel C. 2014, "Wool Economy in the Ancient Near East and the Aegean". *Eds.* C. Breniquet & C. Michel, *Wool Economy in the Ancient Near East and the Aegean: From the Beginnings of Sheep Husbandry to Institutional Textile Industry.* Oxford, 1-11.

Burke B. 2010, *From Minos to Midas: Ancient Cloth Production in the Aegean and Anatolia.* Oxford.

Breniquet C. & Michel C. 2013, "*Wool Economy in the Ancient Near East and the Aegean*". *Eds.* C. Breniquet & C. Michel, *From the Beginnings of Sheep Husbandry to Institutional Textile Industry.* Oxford & Philadelphia, 1-11.

Britsch C. & Horejs B. 2014, "The Role of Textile Production and Fishing in the EBA Metallurgical Centre of Çukuriçi Höyük (Turkey)". *Ägypten und Levante/Egypt and the Levant* 24, 227-240.

Çilingiroğlu Ç. 2009, "Of Stamps, Loom Weights and Spindle Whorls: Contextual Evidence on the Function(s) of Neolithic Stamps from Ulucak, İzmir, Turkey". *Journal of Mediterranean Archaeology* 22/1, 3-27.

Derin Z. 2020, "İzmir-Yeşilova Höyüğü". *İzmir Araştırmaları Dergisi* 12, 1-10.

Dönmez Ş. 2017, "Oluz Höyük 2011 Dönem Çalışmalar". Eds. Ş. Dönmez, *Amasya-Oluz Höyük: Kuzey-Orta Anadolu'da Bir Akhaimenid (Pers) Yerleşmesi; 2009-2013 Dönemi Çalışmaları Genel Değerlendirmeler ve Önsonuçlar*. Amasya, 87-154.

Dönmez Ş. & Naza-Dönmez E. E. 2010. "Oluz Höyük 2007 Dönemi Çalışmaları". Eds. Ş. Dönmez, *Kaşku*

Ülkesi'nin Önemli Kenti Amasya-Oluz Höyük: 2007 ve 2008 Dönemi Çalışmaları: Genel Değerlendirmeler ve Ön Sonuçlar. Ankara, 21-31.

Emre K. 2020[2], *Yanarlar: Afyon Yöresinde Bir Hitit Mezarlığı/Yanarlar: A Hittite Cemetery Near Afyon*. Ankara.

Ergün G. 2020, "Late Bronze Age Spindle Whorls and Loom Weights from Beycesultan in Western Anatolia: New Findings, New Observations". *Mediterranean Archaeology and Archaeometry* 20/2, 1-18.

Erkanal H. & Keskin L. 2009, "The Relations Between the Urla Peninsula and the Minoan World". Eds. C. F. McDonald, E. Hallager & W. D. Niemeier, *The Minoans in the Central, Eastern and Northern Aegean: New Evidence*. Danish Institute at Athens Monograph 8, 97-110.

Fazlıoğlu İ. 2001, *Eskiçağda Dokuma*. İstanbul.

Frangipane M., E. Andersson-Strand, R. Laurito, S. Möller-Wiering, M-L. Nosch, A. Rast-Eicher, & A.W. Lassen 2009, "Arslantepe, Malatya (Turkey): Textiles, Tools And Imprints of Fabrics from the 4th to the 2nd Millennium BCE". *Paléorient* 35/1, 5-30.

Fischer F. 1963, *Die Hethitische Keramik von Boğazköy*. Berlin.

Galili E., A. Zemer & B. Rose 2013, "Ancient Fishing Gear and Associated Artifacts from Underwater Explorations in Israel - A Comparative Study". *Archaeofauna* 22, 145-166.

Gleba M. & Cutler J. 2012, "Textile Production in Bronze Age Miletos: First Observations". Eds. M-L. Nosch & R. Laffineur, *KOSMOS: Jewellery, Adornment and Textiles in the Aegean Bronze Age; Proceedings of the 13th International Aegean Conference, 21-26 April 2010*. Leuven, 113-120.

Goldman H. 1956, *Excavations at Gözlü Kule, Tarsus. From the Neolithic through the Bronze Age*. Princeton.

Gunter A. C. 1991, *The Bronze Age. Gordion Excavations Final Reports III*. Philadelphia.

Guzowska M., R. Becks, E. A. Strand, J. Cutler & M-L. Nosch 2015, "Textile Tools from Troia, Western Anatolia". Eds. E. A. Strand & M-L. Nosch, *Tools, Textiles and Contexts Investigating Textile Production in the Aegean and Eastern Mediterranean Bronze Age,* Oxford, 309-328.

Guzowska M. & R. Becks 2005, "Who Was Weaving at Troia? On the Aegean Style Loomweights in Troia VI and VIIa". Eds. R. Laffineur & E. Greco, *EMPORIA: Aegeans in the Central and Eastern Mediterranean; Proceedings of the 10th International Aegean Conference/10e Recontre egeenne internationale, Athens, Italian School of Archaeology, 14-18 April 2004.* Liege, 279-286.

Hepiyiler-Mamikoğlu M. 2019, *Yassıtepe Höyüğü'nde Erken Tunç Çağ'da Dokumacılık*. Yayımlanmamış Yüksek Lisans Tezi, Ege Üniversitesi. İzmir.

Joukowsky M.S. 1986, "*Prehistoric Aphrodisias. An Account of the Excavations and Artifact Studies, Vol I: Excavations and Studies*". Brown University, Center for Old World Archaeology and Art, Rhode Island.

Kara H. 2010, *Banaz İlçesinin Coğrafyası*. Konya.

Karaoğlan H. 2018, "Seyitömer Höyüğü'nden Orta Tunç Çağına Tarihlendirilen Bir Grup Dokuma Tezgâh Ağırlığı". *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi* 58, 15-30.

Karaoğlan H. 2020, "Seyitömer Höyük Orta Tunç Çağ'ına Ait Açı Biçim Bezemeli Ağırşaklar". *Journal of Social, Humanities and Administrative Sciences* 6/34, 2244-2254.

Keith K. 1998, "Spindle Whorls, Gender, and Ethnicity at Late Chalcolithic Hacinebi Tepe". *Journal of Field Archaeology* 25/4, 497-515.

Koçak Ö., M. Bilgin & H. G. Küçükbezci 2019, *MÖ II. Binyılda Afyonkarahisar ve Çevresi Kültürleri*. Ankara.

Konakçı E. 2018, "Asopos Tepesi MÖ 2. Binyıl Tezgah Ağırlıkları ve Ağırşakları". *Arkeometri Sonuçları Toplantısı* XXXIII/1, 259-274.

Korfmann M. 1983, "*Demircihüyük: Die Ergebnisse der Ausgrabungen 1975-1978. Band I: Architektur, Stratigraphie und Befunde*". Mainz am Rhein.

Koşay H. Z. & Akok M. 1966, *Türk Tarih Kurumu Tarafından Yapılan Alaca Höyük Kazısı: 1940-1948'deki Çalışmalara ve Kesiflere ait İlk Rapor*. Ankara.

Koşay H. Z. & Akok M. 1973. *Alaca Höyük Kazısı: 1963-1967 Çalışmaları ve Kesiflere ait ilk Rapor; Türk Tarih Kurumu Tarafından Yapılan/Alaca Höyük Excavations*. Ankara.

Kull B. & Korfmann M. 1988, "*Demircihüyük: Die Ergebnisse der Ausgrabungen 1975-1978. Band V: Die*

Mittelbronzezeitliche Siedlung". Mainz am Rhein.

Lamb W. 1936, "Excavations at Kusura near Afyon Karahisar". *Archaeologia* 86, 1-64.

Lassen A. W. 2013, "Technology and Palace Economy in Middle Bronze Age Anatolia: The Case of the Crescent Shaped Loom Weight". Eds. M-L. Nosch, H. Koefoed & E. A. Strand, *Textile Production and Consumption in the Ancient Near East: Archaeology, Epigraphy, Iconography*. Havertown, 78-92.

Lassen A.W. 2015, "Weaving with Crescent Shaped Loom Weights. An Investigation of a Special Kind of Loom Weight". Eds. E. A. Strand & M-L. Nosch, *Tools, Textiles and Contexts Investigating Textile Production in the Aegean and Eastern Mediterranean Bronze Age* Oxford, 127-137.

Lloyd S. & Mellaart J. 1962, *Beycesultan: Vol. I. The Chalcolithic and Early Bronze Age Levels*. London.

Lloyd S. & Mellaart J. 1965, *Beycesultan: Vol. II. Middle Bronze Age Architecture and Pottery*. London.

Maner Ç. 2018, "Anadolu'da Dokuma Devrimi Neolitik Çağ'dan Demir Çağı'na Yünün Tarihi ve Maddi Değeri". Ed. E. Kızılcık, *Tarihi Dokumak: Bir Kentin Gizemi, Sof*. Ankara, 43-63.

Martensson L., M. L Nosch & E. Andersson-Strand 2009, "Shape of Things: Understanding A Loom Weight". *Oxford Journal of Archaeology* 28, 373-398.

Massa M. 2016, *Networks before Empires: Cultural Transfers in West and Central Anatolia during the Early Bronze Age*. Yayımlanmamış Doktora Tezi, UCL. London.

Mellaart J. & A. Murray 1995, *Beycesultan: Vol. III. Part. II Late Bronze Age and Phrygian Pottery and Middle and Late Bronze Age Small Objects,* London.

Mellink M. J. 1956, *A Hittite Cemetery at Gordion*. Philadelphia.

Michel C. (2014), "The Assyrian Textile Trade in Anatolia (19th century BCE): From Traded Goods to Prestigious Gifts". Eds. K. Droß-Krüpe, *Textile Trade and Distribution in Antiquity/Textilhandel und -distributionin der Antike*. Wiesbaden, 111-122.

Michel C. & Veenhof K. 2010, "The Textiles traded by the Assyrians in Anatolia (19th-18th Centuries BC)". Eds. C. Michel & L. Nosch, *Textile Terminologies in the Ancient Near East and Mediterranean from the Third to the First millennia BC*. Oxbow Books. 209-269.

Obladen-Kauder J. 1996, "Demircihüyük IV: Die Kleinfunde aus Ton, Knochen und Metall". Eds. M. Korfmann, A. Baykal-Seeher & J. Obladen-Kauder, *Die Kleinfunde*. Mainz am Rhein.

Olofsson L., E. Andersson-Strand & M-L. Nosch 2015, "Experimental Testing of Bronze Age Textile Tools". Eds. E. A. Strand & M-L. Nosch, *Tools, Textiles and Contexts Investigating Textile Production in the Aegean and Eastern Mediterranean Bronze Age*. Oxford & Philadelphia, 75-100.

Öner B. 2009, *Küllüoba Höyüğü Geç Kalkolitik ve İlk Tunç Çağı Küçük Buluntuları (Yontmataş Aletler ve Metal Eserler Hariç)*. Yayımlanmamış Yüksek Lisans Tezi, İstanbul Üniversitesi. İstanbul.

Özgüç T. 1950, *Kültepe Kazısı Raporu, 1948: Türk Tarih Kurumu Tarafından Yapılan*. Ankara.

Rahmstorf L. 2015, "An Introduction to the Investigation of Archaeological Textile Tools". Eds. E. A. Strand & M-L. Nosch, *Tools, Textiles and Contexts Investigating Textile Production in the Aegean and Eastern Mediterranean Bronze Age*. Oxford, 1-23.

Sarı D. 2012, "İlk Tunç Çağı ve Orta Tunç Çağı'nda Batı Anadolu'nun Kültürel ve Siyasal Gelişimi". *Masrop E-Dergi* 7, 112-249.

Sarı D. 2017, "Frigya Dağlık Bölgesi'nde Yer Alan Keçiçayırı İlk Tunç Çağı II Kalesi Küçük Buluntuları". *Arkeoloji Dergisi* XXII, 117-147.

Sarı D. 2018, "The Early Bronze Age Textile Implements from the Eskişehir Region in İnland Northwestern Anatolia", Eds. M. Siennicka, L. Rahmstorf, A. Ulanowska, *First Textiles. The Beginnings of Textile Manufacture in Europe and the Mediterranean. Ancient Textiles Series 32*. Oxford, 213-222.

Schmidt E.1932. *The Alishar Hüyük. Seasons of 1928 and 1929*. Part I. Chicago.

Schmidt K. 2002. *Norşuntepe. Kleinfunde II, Artefakte aus Felsgestein, Knochen und Geweih, Ton, Metall und Glas*. Mainz am Rhein.

Schoop U. D. 2014, "Weaving Society in Late Chalcolithic Anatolia: Textile Production and Social Strategies in the 4th Millennium BC". Eds. B. Horejs & M. Mehofer, *Western Anatolia before Troy: Proto-*

urbanisation in the 4th Millennium BC?: Proceedings of the International Symposium held at the Kunsthistorisches Museum Wien, Vienna, Austria, 21-24 November, 2012. Vienna, 421-446.

Sipahi T. & İ. Ediz 2008, "2006 Yılı Boyalı Höyük Kazısı". *KST* XXIX/3, 505-514.

Schoop U. D. 2012, "Weaving Society in Late Chalcolithic Anatolia: Textile Production and Social Strategies in the 4th Millennium BC". Eds. B. Horejs & M. Mehofer, *Western Anatolia before Troy. Proto-Urbanisation in the 4th Millennium BC?* Austria, 421-446.

Skals I., S. Möller-Wiering & M-L. Nosch 2015, "Survey of Archaeological Textile Remains from the Aegean and Eastern Mediterranean Area". Eds. E. A. Strand & M-L. Nosch, *Tools, Textiles and Contexts Investigating Textile Production in the Aegean and Eastern Mediterranean Bronze Age*, Oxford, 61-74.

Tuncer H. 2020, *Hititçe Çivi Yazılı Metinlerde Dokuma,* Yayımlanmamış Doktora Tezi, Ankara Üniversitesi. Ankara.

Tütüncüler Ö. 2005, *M.Ö. 2. Bin Ege Bölgesi Dokuma Aletleri*. Yayımlanmamış Doktora Tezi, Ankara Üniversitesi. Ankara.

von der Osten H. H. 1937, *The Alishar Hüyük. Seasons of 1930-32*. Part I. Chicago.

Yılmaz D. 2016a, "Geç Tunç Çağı'nda Batı Anadolu'da Tekstil Üretimi: Çine-Tepecik Höyüğü Tezgah Ağırlıkları". *TÜBA-AR* 19, 93-111.

Yılmaz D. 2016b, "Late Bronze Age Textile Tools from Maydos Kilisetepe in Gallipoli (Turkey) and Their Aegean Connctions". *Trakya Üniversitesi Edebiyat Fakültesi Dergisi* 6/12, 47-66.

Yılmaz M. Ali 2019, "Uşak Protohistorik Dönem Yüzey Araştırmaları Projesi (UPDAP) 2017 Yılı Sonuçları (İlk Sezon)". *AST* XXXVI/2, 425-452.

Yılmaz M. A. 2020, "İç Batı Anadolu Neolitik-Kalkolitiğine Dair Yeni Bulgular: Düzkışla Höyük, Uşak". *Anadolu Araştırmaları* 23, 1-40.

Yılmaz M. A., R. M. Czichon, M. Deniz, H. Dülger, S. Akın, A. Nacar, A. Söyler, H. Çelik & F. Yiğit 2019, "Uşak Protohistorik Dönem Yüzey Araştırması (UPDAP) 2018 Yılı Sonuçları". *AST* XXXVII/2, 435-468.

Yurtsever-Beyazıt A. 2014, "Güncel Arkeolojik Bulgular Işığında MÖ 2. Binyılda Amasya Bölgesi". *TÜBA-AR* 17, 83-110.

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