T Ü R K T A R İ H K U R U M U

BELLETEN

Cilt/Vol.: 88 - Sayı/Issue: 313
Aralık/December 2024

https://belleten.gov.tr

Başvuru/Submitted: 16.05.2024
Kabul/Accepted: 29.08.2024

DOI: 10.37879/belleten.2024.663

Araştırma Makalesi/Research Article

Middle Bronze Age II Pottery Kiln at Oylum Höyük

Oylum Höyük Orta Tunç Çağı II Seramik Fırını

Sabahattin Ezer*

Abstract

Despite the newly acquired information with increasing studies in Türkiye, archaeological evidence regarding ceramic production in some regions and periods is still not sufficient. Although our knowledge about prehistoric and protohistoric pyrotechnology increases, we can currently say little about the size of ceramic production, the settlement and regional density of pottery kilns, their distribution, development and contexts, in short their roles. The pottery kiln discovered at Oylum Höyük in 2020 and dated to Middle Bronze Age II is in good physical condition compared to its contemporaries in Anatolia, Mesopotamia, and the Levant. Oylum Höyük kiln is currently the best documented MBA kiln in Türkiye. Therefore, all its technological features could be identified, revealing valuable information for understanding pottery kiln technology and development. The kiln, consisting of three parts including ash pit, combustion chamber and firing chamber, can be described as an updraught kiln with an arched combustion chamber and a firing chamber with

* Assoc. Prof., Adıyaman University, Faculty of Arts and Science, Department of Archaeology - Doç. Dr., Adıyaman Üniversitesi, Fen Edebiyat Fakültesi, Arkeoloji Bölümü, Adıyaman/TÜRKİYE, sezer@adiyaman.edu.tr https://orcid.org/0000-0002-9244-5802

Citation/Atıf: Ezer, Sabahattin, "Middle Bronze Age II Pottery Kiln at Oylum Höyük", *Belleten*, Vol. 88/No. 313, 2024, p. 663-695.

circular plan. Extensive data from the MBA pottery kilns unearthed in the Levant allows us to compare the Oylum Höyük kiln with its contemporaries and to conclude that it is typologically and technologically closer to the Levant kilns. The area, which was represented in the MBA I by a monumental structure probably with administrative function, started to be used as an industrial production site with several pyrotechnic installations in the early phase of MBA II. We can say with certainty that there was a radical change in the settlement organization.

Keywords: Oylum Höyük, Pottery Kiln, Middle Bronze Age, Pyrotechnic Installations, Southeastern Anatolia.

Öz

Türkiye'de sayıları her geçen gün artan arkeolojik çalışmalar neticesinde seramik üretimi hakkında yeni bilgilere ulaşılmaktadır. Ancak, özellikle bazı bölge ve dönemlere ilişkin seramik üretim sürecine ait arkeolojik kanıtlar henüz yeterli değildir. Piroteknik teknolojisinin bir ürünü olan seramik fırınları hakkında bildiklerimiz artsa da prehistorik ve protohistorik dönemlerde bu teknolojiye bağlı üretimin boyutları, seramik fırınlarının yerleşme ve bölgesel ölçekte yoğunlukları, dağılımı, gelişimi, konteksleri; kısacası rolleri hakkında söyleyebileceklerimiz şu an için sınırlıdır. Oylum Höyük'te 2020 yılında açığa çıkarılan ve Orta Tunç Çağı II'ye tarihlenen seramik fırını, Anadolu, Mezopotamya ve Levant'taki çağdaşları arasında, şimdiye kadar tespit edilmiş ve fiziki durumu en iyi korunmuş seramik fırını olarak kabul edilebilir. Bu sayede seramik fırını teknolojisi ve gelişimini hakkında önemli bilgiler elde edilmiştir. Kül çukuru, yanma odası ve pişirme odası olmak üzere üç bölümden oluşan fırın, kemerli bir yanma odası ve dairesel planlı bir pişirme odası olan yukarı çekişli bir fırın olarak tanımlanabilir. Yapılan karşılaştırmalar Oylum Höyük seramik fırınının Levant Bölgesi fırınları ile yakın benzerlikler gösterdiğini ortaya koymuştur. OTÇ I'de muhtemelen idari işlevi olan anıtsal bir yapı ilen temsil edilen alan, OTÇ II'nin erken evresinde birçok piroteknik ünitenin bulunduğu endüstriyel üretim alanı olarak kullanılmaya başlanmıştır. Alanın farklı kullanımına ilişkin farklı yorumlar geliştirilebilir. Ancak, burada yerleşim organizyonu ile ilgili radikal bir değişimin olduğu kesin bir şekilde söylenebilir.

Anahtar Kelimeler: Oylum Höyük, Seramik Fırını, Orta Tunç Çağı, Piroteknik Kurulumlar, Güneydoğu Anadolu

Introduction

Oylum Höyük is located within the borders of Kilis province in Southeastern Anatolia, at a position overlooking the fertile plain where the Anatolian plateau ends and the Syrian plain begins (Figure 1). With its dimensions of 460 x 370 m and 37 m height, the settlement is one of the largest mounds (höyük) of the region[1]. After the 18th century BC, the settlement expanded beyond the fortification walls that surround the mound, growing from 17 hectares to 35 hectares[2].

Archaeological research at Oylum Höyük has been carried out continuously since 1986. The excavations, which were conducted under the direction of Engin Özgen between 1986 and 2011, have been continued by Atilla Engin since 2012 on the western slope of the mound in 22 trenches over an area of approximately 55x70 m. The excavations carried out by native and foreign researchers in different parts of the mound led to the identification of settlement layers from the Chalcolithic Age to the Iron Age.[3] The layers unearthed during the studies led by Atilla Engin yielded an uninterrupted stratigraphy from the Middle Bronze Age I to the end of the Iron Age[4].

During the archaeological studies in 2020, a pottery kiln dated to the Middle Bronze Age II was identified in trench L-23. It was also found out that the kiln sits on top of a Middle Bronze Age I palace structure, which was destroyed by a fire and whose remaining walls were partly damaged by the kiln (Figure 2). The kiln architecture was well preserved except for the superstructure (dome) and the northern part. With detailed studies on the kiln, its technical characteristics were

1 Engin Özgen-Barbara Helwing, "On the Shifting Border Between Mesopotamia and the West: Seven Seasons of Joint Turkish-German Excavations at Oylum Höyük" *Anatolica* XXIX, 2003, p. 61.

2 Atilla Engin, "A Middle Bronze Age Palace at Oylum Höyük and New Findings", *Arslantepe I. Uluslararası Arkeoloji Sempozyumu Bildirileri/Arslantepe Proceedings of the I. International Archaeology Symposium*, eds. Neslihan Durak-Marcella Frangipane, 2019, p. 237.

3 In 1990, a team led by Prof. Dr. Elizabeth Carter investigated the layers and graves dated to the Early Bronze Age III-IV on the northeastern and western slopes of the mound. Between 1995 and 2002, the studies under the direction of Prof. Dr. Barbara Helwing focused mostly on the Chalcolithic Age layers in the same area. See Engin Özgen, Barbara Helwing, Atilla Engin, Olivier P. Niewenhuyse, Richard Spoor, "Oylum Höyük 1997-1998. Die spätchalkolithische Siedlung auf der Westterrasse", *Anatolia Antiqua* 7, 1999, pp. 19-67; Engin Özgen-Barbara Helwing, "Ausgrabungen auf dem Oylum Höyük, 1997-2000. Zweiter vorläufiger Bericht", *İstanbuler Mitteilungen* 51, 2001, pp. 61-136.

4 Atilla Engin, "Oylum Höyük", *Prehistorik Dönemlerden Geç Antik Döneme Gaziantep Arkeolojisi*, eds. Atilla Engin-Kutalmış Görkay, Türk Arkeoloji ve Kültürel Miras Enstitüsü, Gaziantep 2022, p. 53, table 1.

determined in all its phases.[5] In the following sections of the paper, the technical and typological characteristics of the Oylum Höyük pottery kiln, its context, stratigraphic status and dating will be discussed and its technical and typological similarities and differences with the kilns from other archaeological sites will be presented. The last section includes the discussion and conclusion.

1. Technical and Typological Characteristics

The pottery kiln can be analyzed in three parts: firing chamber, combustion chamber, and ash pit. The kiln structure has a circular plan, with its entrance facing southeast. The length of the kiln including its ash pit is approximately 6 m (Figure 3).

The firing chamber of the kiln has a circular plan with end-to-end diameter of approximately 3.60 m. The mudbrick masonry of the dome that covers the firing chamber has been preserved up to a height of 40-50 cm. The thickness of the firing chamber wall is 30 cm. In the best-preserved part, five superposed rows of mudbricks were found. The mudbricks have 10 cm thickness and varying widths. In addition to 20x16 cm mudbricks, 41x41 cm mudbricks were used in the construction of the kiln. To achieve the circular plan, some mudbricks are wider on the outside and slightly narrower on the inside. The mudbricks therefore have a slightly skewed prism form. The most distinct skewed prism mudbrick is 42x30 cm. The mudbricks are plastered from the inside with thick clay mortar (4-7 cm). Due to the intensity of the fire, the plaster layer turned yellow and greenish yellow. It was observed that in the parts where the plaster fell off, the mudbricks took on a red hue (Figure 4).

The floor of the firing chamber, which is approximately 3 m in diameter, was recovered in a very good condition. The plaster on the inner surface of the firing chamber wall also covers the entire floor. Although the firing chamber floor is slightly sagging at its center, it was deliberately built sloping towards the center. The floor has 17 holes for heat transmission ducts that connect the combustion chamber and the firing chamber. Together with the missing northern part of the kiln, it is estimated that the number of heat transmission ducts should be at least 18. The mouths of the heat transmission ducts are square, round or oval shaped. Of the ducts with the widest measured mouths, the square ones are 14x14 cm, the oval ones are 12x10 cm, and the round ones are approximately 9 cm in diameter (Figure 5).

5 For the phases and the development of the kiln excavation, refer to table 1 and figure 10.

The combustion chamber consists of a fire pit dug about 2 m deep into the ground and an arched mudbrick structure that covers it. The ovoid pit dug into the ground is about 255 cm long and 85 cm wide. The height from the floor of the combustion chamber to the top of the arch is 155 cm (Figure 6).

The side walls of the combustion chamber were built with mudbricks and plastered (Figure 6). The outer surface of the plaster and the mudbricks was slagged due to the intensity of the fire, taking on a shiny gray appearance. The parts that were less affected by heat are in colors ranging from red to black. In some places, the mudbricks are in yellow, greenish blue tones. The mudbricks of the combustion chamber were measured to be 40 cm long and 8-9 cm thick where they could be identified. There is 2 cm pointing between the mudbricks. The combustion chamber protrudes approximately 85 cm south from the entrance of the kiln.

It was observed that the mudbricks were placed vertically at the top of the arched structure to achieve the curvature and to increase stability (Figure 7-8). The red-colored mudbrick texture on the inner surface of the arch is visible. The exterior of the arch was quite hardened with mortar reinforced with lime and gravel. The gravel-reinforced mortar can be seen at the entrance of the kiln as well. The length of the heat transmission ducts on the arch, which connect the combustion chamber to the firing chamber, reach 30 cm vertically in the middle and approximately 50 cm slightly horizontally towards the edges. Therefore, we can say that the thickness of the walls of the arch structure is approximately 30 cm.

The entrance of the kiln faces southeast. The ash pit is approximately 50-60 cm below the living level and sloping towards the kiln entrance. The ash pit, which has an oval form, is 150 cm long and 120 cm wide. Some mudbricks were found bordering the ash pit from both sides of the kiln entrance. While the mudbricks on the western side form a more regular row, those on the eastern side are slightly more irregular. These mudbricks start from the kiln entrance and extend about 1.20 m to the south. Dark black colored ashy surfaces were encountered in and around the ash pit. The living area around the ash pit has become quite compressed and hard ground, probably due to the intense activity on it.

2. Technological Evaluation

The pottery kiln unearthed at the Oylum Höyük MBA II layer differs from its contemporaries found so far in Türkiye as it has more advanced technological features. The working principle of the kiln consists of a combustion chamber and

a domed firing chamber, as in many pottery kilns. The connection between the combustion chamber and the firing chamber, which are placed vertically on top of each other, is provided by heat transmission ducts.

During the construction of the kiln, an arched structure made of mudbricks was placed in a 2 m deep pit dug into the ground. The rows of mudbrick that line the kiln entrance were found to have stone foundations. Stone was probably used in the foundation of the mudbrick walls that form the arch as well. The mudbricks at the ceiling of the arch were placed vertically. In this way, a more statically stable combustion chamber with a low probability of collapse was constructed. Thermal insulation to save energy was achieved with a deep combustion chamber that was built with mudbricks and plastered. Hence, it was ensured that the combustion chamber heats up in a short time and the temperature remains at the desired level for longer. This facilitates temperature control in the combustion chamber. With this technique, crucial and probably difficult to supply fuel could be saved. The entrance and upper part of the arch were covered with mortar reinforced with gravel to render the mudbrick material more durable. Thanks to the portion of the combustion chamber that protrudes from the 85 cm long and 90 cm wide entrance, the combustion chamber can be entered or intervened easily from the outside when necessary.

Another feature that distinguishes the Oylum Höyük MBA II pottery kiln from its contemporaries is its heat transmission ducts. While some of the heat transmission ducts in the combustion chamber are directly connected to the firing chamber, others open to the firing chamber indirectly. The first three heat transmission ducts near the entrance of the firing chamber and the middle two rows (six in number) of heat transmission ducts at the upper center of the arch open directly to the combustion chamber. The heat transmission ducts at the edges of the firing chamber which are on the same axis with the heat transmission ducts at the center are connected to the combustion chamber with an extension, sloping towards the center. In other words, the heat transmission ducts that extend approximately 40 cm vertically from the combustion chamber to the firing chamber split into two channels near the bottom of the firing chamber. While one channel continues vertically and reaches the firing chamber above, the other extends horizontally below the firing chamber floor about 50 cm and opens to the edge of the firing chamber (Figure 8).

Six of the ducts were clearly recovered on the eastern and western edges of the kiln. It is estimated that there should be two more ducts on the damaged northern side of the kiln. The ducts that extend with a slight inclination or horizontally under the floor of the kiln's firing chamber are supported with mud mortar and ceramic sherds against collapse. These supports for the heat transmission ducts are placed opposite each other under the floor of the firing chamber. Seven of these supports were identified. After the interstices between the supports were filled with soil, they were plastered with thick clay mortar to form the floor of the firing chamber (Figure 9).

The circular plan of the firing chamber and the arched structure of the combustion chamber increase the possibility that the superstructure was dome shaped. A dome-shaped superstructure facilitates the circulation of heat within the firing chamber. This ensures that the heat was distributed homogeneously, and the ceramic was fired with high quality. It is probable that there was a small flue or aperture at the top of the dome. Thus, thanks to the updraft, the smoke accumulated in the firing chamber could have been discharged and more efficient heating could have been obtained. No doors or openings were found on the preserved walls of the firing chamber. However, there must be an opening to place the vessels in the firing chamber. For this reason, it is considered that the door in question was slightly higher than the firing chamber floor and that it was blocked up and reopened between each firing.

3. Context and Dating

The studies at Oylum Höyük have been concentrated on the northwestern part of the mound since 2007. The earliest period unearthed in this area is the Oylum VIc layer dated to the MBA I. Above this layer, two MBA II phases, namely early (VIb) and late (VIa), were identified. Calibrated radiocarbon analyses of olive pits discovered in the monumental mudbrick structure (palace) that represents the MBA I yielded a date range of 1900-1745 BC for this structure. It was found out that the palace, of which 15 rooms have been recovered so far, has 1.80 m wide walls, a terrace section on the west and a courtyard on the east (Figure 2). The structure extends towards the southwest[6].

6 Engin, "A Middle Bronze Age Palace at Oylum Höyük and New Findings", p. 238; Atilla Engin-Engin Özgen-Macit Aşir- Sabahattin Ezer-Abdülhamit Kavak-Aydoğan Bozkurt-Derya Bozkurt-Şenay Doruk Engin, "Oylum Höyük 2018", *41. Kazı Sonuçları Toplantısı-I*, 2020, p. 250.

After the monumental structure was destroyed by a massive fire, the early phase (VIb1) of layer VIb is represented by a dumpsite and a workshop, and the slightly later phase (VIb2) is represented by graves. Above the palace structure, there is a dumpsite, whose thickness reaches 2.50 m, with abundant ash deposit, which contains dense ceramic sherds,[7] animal bones, bone and bronze objects, and clay human and animal figurine fragments[8]. Kilns with different functions, which we think are contemporary with this dumpsite, are also located in the same area. The Oylum Höyük pottery kiln discovered here sits on top of a wall of the MBA I palace in the next lower phase and it damaged this wall (Figure 2).

The architecture identified in both phases of the Early MBA II (VIb1-b2) does not provide a comprehensible settlement plan. Despite being damaged, the architectural remains identified around the dumpsite were found to be buildings with stone foundations, mudbrick walls and multiple rooms, opening onto narrow streets[9]. Several graves were found between or on the floors of these structures. It was observed that the dumpsite belonging to the VIb1 phase was also used as a cemetery in the VIb2 phase. It was found that after the Early MBA II settlement at Oylum Höyük was destroyed by a fire, the houses in the late MBA II phase were built significantly larger compared to the previous phase. It was understood that the late MBA II houses were also destroyed by a fire[10].

Four pyrotechnic installations were found in the VIb layer which is dated to the early phase of MBA II.[11] We believe that these installations may be metal, glass[12] and ceramic kilns. These four pyrotechnic installations found in an area of

7 The ceramic samples presented in the article were collected from the kiln and its immediate surroundings. All of them are wheel-made. They are of a high-quality ware group, generally light colored (mostly from the Munsell Soil Color Charts YR group), self-slipped, well-fired, with well-purified clay. See Figure 11. For a brief evaluation of the ceramics discovered at Oylum Höyük MBA II layer, see Atilla Engin, "Oylum Höyük and Alalakh: Cultural Relations in The Second Millennium BC", *In Alalakh and Its Neighbours. Ancient Near Eastern Studies. Supplement 55*, eds. Kutlu Aslıhan Yener-Tara Ingman, Peeters Publishers, 2020, p. 286.

8 Engin et al., "Oylum Höyük 2018", p. 248; Engin, "Oylum Höyük and Alalakh", p. 284.

9 Engin, *ibid*., p. 284.

10 Engin, *ibid*., p. 284.

11 The kilns other than the one discussed in this article will be the subject of another study including the analysis results to be obtained.

12 For the MBA II glass finds from Oylum Höyük and the results of their analysis, see Atilla Engin, Şeniz Atik, Ali Özer, "Middle Bronze Age Vitreous Material of Oylum Höyük and New Findings", *ANNALES, du 21e Congrès de l'association Internationale Pour l'Histoire du Verre*, ed. Orhan Sevindik, AIHV, Vadi Grafik Tasarım ve Reklamcılık Ltd. Şti., 2021, pp. 35-48.

approximately 2000 m² indicate the presence of workshops related to industrial production in this area. At least some of the archaeological material found in the thick ash deposit in the same area is considered to be the waste of these workshops. It is possible that the structures belonging to the Early MBA II phase were used by craftsmen who carried out the industrial tasks in this area.

All phases of the 2nd millennium BC have been identified at Oylum Höyük[13]. The archaeological data obtained from the layers of this millennium and C14 analyses facilitated the dating of these layers. As mentioned above, the dating of the monumental structure belonging to the MBA I is in the range 1900-1745 BC. Calibrated C14 analysis results of a sheep's jawbone discovered in the VIb layer of the Early MBA II, where the pottery kiln is located, allow us to date the layer in question to 1880-1680 BC[14]. The VIa layer of the late MBA II at Oylum Höyük has two phases. C14 analysis results of this layer yielded a date range of 1765-1630 BC for the early phase and 1685-1530 BC for the renewal phase[15]. Together with the C14 analysis results obtained from the Late Bronze Age layers, a reliable stratigraphy could be established for the Oylum Höyük 2nd millennium BC cultural deposit.

4. Comparisons

There are very few published pottery kilns dated to the MBA within Türkiye. Some of these have not been fully documented or were found in poor condition. The only archaeological site in Southeastern Anatolia where MBA pottery kilns have been unearthed and published is Şaraga Höyük. Two kilns that belong to the MBA II were documented at Şaraga Höyük, which is located approximately 80 km as the crow flies east of Oylum Höyük and on the western bank of the Euphrates. The technological features of these two kilns, one of which is large and the other small, are similar to each other. The working principle of the Oylum Höyük pottery kiln is the same as the two kilns found at Şaraga Höyük. However, the Oylum Höyük kiln shows some typological and technological differences. The larger of the kilns at Şaraga Höyük is similar to the Oylum Höyük kiln in terms of its dimensions, having combustion and firing chambers, and its heat transmission

13 Engin, *ibid*., p. 285, table 1.

14 Engin, *ibid*., p. 284.

15 Engin, *ibid*., p. 284.

ducts.[16] The Oylum Höyük pottery kiln differs from the Şaraga Höyük kilns in terms of its circular plan, arched combustion chamber built of mudbrick, and the operating system of some of its heat transmission ducts. The heat transmission ducts of the Şaraga Höyük pottery kilns have a single flue and are directly connected to the firing chamber. Some of the heat transmission ducts of Oylum Höyük kiln, on the other hand, were designed such that two heat transmission ducts merge close to the combustion chamber (Figure 8).

Another kiln was discovered at the MBA layer in Samsat Höyük, which is currently flooded by the waters of the Atatürk Dam[17]. As only the part close to the floor level of this ovoid kiln that has a foundation of a single row of stones and a gravel-paved floor could be identified, we do not have any clear information about the function of this kiln. However, a socket stone belonging to a potter's wheel found in this layer gives a clue about the ceramic production at this place[18].

We do not have any information other than the existence of the pottery kiln described as belonging to the MBA in the excavation report of Müslüman Tepe, which was unearthed in the Bismil district of Diyarbakır, in the Tigris Valley[19].

In Western Anatolia, pottery kilns that belong to the MBA have been uncovered in Kocabaş Tepe[20], Miletus[21], Limantepe[22] and Panaztepe[23]. At these sites, only

16 Sabahattin Ezer, "Middle Bronze Age Pottery Kilns at Şaraga Höyük", *Belleten*, Vol. LXXVII/No. 278, 2013, pp. 1-14.

17 Nimet Özgüç, *Samsat. Sümeysat, Samosata, Kumaha, Hahha, Hahhum*, Türk Tarih Kurumu, Ankara 2009, p. 68, fig. 317.

18 Özgüç, *ibid*., p. 67, plate 144, 312.

19 Eyyüp Ay, "Yukarı Dicle Bölgesinde Müslümantepe'de Açığa Çıkarılan Bir Hurri-Mitanni Tapınağı ve Ortaya Koyduğu Yeni Bulgular", *Gaziantep University Journal of Social Sciences*, Vol. 20/No. 2, 2021, p. 344.

20 Ayşegül Aykurt, "Kocabaş Tepe Seramik Fırını", *Hayat Erkanal'a Armağan: Kültürlerin Yansıması/Studies in Honor of Hayat Erkanal: Cultural Reflections*, ed. Betül Avunç, Homer Kitabevi, İstanbul 2006, pp. 113-119.

21 Amy Raymond, "The MBA Hearths and Kiln at Miletus", *Hayat Erkanal'a Armağan: Kültürlerin Yansıması/Studies in Honor of Hayat Erkanal: Cultural Reflections*, ed. Betül Avunç, Homer Kitabevi, İstanbul, 2006, pp. 612-617.

22 Ayşegül Aykurt-Hayat Erkanal, "Archaeological Evidence for an Early Second Millennium BC Potter's Kiln at Liman Tepe", *Belleten*, Vol. LXXX/No. 287, 2016, pp. 1-22.

23 Armağan Erkanal, "Panaztepe Kazısının 1985 Yılı Sonuçları", *VIII. Kazı Sonuçları Toplantısı-I*, 1987, pp. 254, 261, Figure 3; Sevinç Günel, *Panaztepe II, M.Ö 2. Bine Tarihlendirilen Panaztepe Seramiğinin Batı Anadolu ve Ege Arkeolojisindeki Yeri ve Önemi/Die Keramik von Panaztepe und Ihre Bedeutung für Westkleinasien und die Agais Im 2. Jahrtausend*, Türk Tarih Kurumu Yayınları, Ankara 1999, p. 25,

the remains of the combustion chambers of the kilns have been identified. These kilns, which have similar plan features, have combustion chambers in the form of grates. In this respect, we can say that the Western Anatolian MBA pottery kilns are different from the Oylum Höyük kiln.

The pottery kilns unearthed in the Levant cultural region,[24] with which Oylum Höyük is associated, and dated to the MBA allow us to make a comparison and evaluation. Significant evidence of ceramic production, including pottery kilns, was obtained at the excavation area J at Tell Mishrifeh (ancient Qatna), located near Homs in the Levant, approximately 250 km south of Oylum Höyük[25]. A large number of kilns were found in Qatna in the J 17-10 (J17 MBA I, J14-10 MBA II) layers dated to the MBA[26]. Here, the kilns of the J17 phase, which are dated to the MBA I, are examined under three types. Among these, the kiln that is the most common and the most preferred since the early phase of MBA II is classified as Type 3.[27] The Oylum Höyük pottery kiln is comparable to Qatna's Type 4 kiln 1295 in the J14 phase, which is generally dated to the early phase of MBA II. Some

figure 3.

24 The Kilis Plain, where Oylum Höyük is located, and the Amik (Amuq) Plain, where Tell Atchana is located, show many cultural similarities in the first half of the 2nd millennium BC. The architecture, ceramics and baked clay figurines from this period in both regions are quite similar. It can be clearly seen that this cultural similarity extends along the Orontes Valley into the Levant. See Leila Badre, *Les figurines anthropomorphes en terre cuite à l'Age du Bronze en Syrie*, Librairie Orientaliste Paul Geuthner, Paris 1980; Engin, "A Middle Bronze Age Palace at Oylum Höyük and New Findings"; Engin, "Oylum Höyük and Alalakh"; Elif Genç, "Tilbaşar Orta Tunç Çağı Mezarı Işığında Pişmiş Toprak Çıplak Kadın Figürinleri ile İlgili Bazı Düşünceler", *Anadolu/Anatolia* 45, 2019, pp. 81-112; Marco Iamoni-D. Morandi Bonacossi, "The Middle Bronze Age I-III Pottery Sequence from the Italian Excavations at Mishrifeh/Qatna, Syria. Archaeological Contexts and Ceramic Evidence", *Berytus* 54, 2011, p. 182. In addition, the political activity in the 2nd millennium BC provides information about the relations in these regions. See Atilla Engin, "Oylum Höyük İçin Bir Lokalizasyon Önerisi: Ulisum/Ullis/İllis", *Armizzi: Engin Özgen'e Armağan/Studies in Honor of Engin Özgen*, eds. Atilla Engin-Barbara Helwing-Bora Uysal, Asitan Kitap, Ankara 2014, pp. 129-149.

25 D. Morandi Bonacossi, "The Central Mound of the Qatna Acropolis in the Bronze and Iron Ages: Operation J", *Akkadica*, Vol. 124/No. 1, 2003, p. 102; Marco Iamoni, "Pottery Production during the Third and Second Millennium B.C. in Western Syria. The Development of Ceramic Technology as a Result of the Rise of Qatna as a Regional Capital", *The Transmission of Technical Knowledge in The Production of Ancient Mediterranean Pottery. Proceedings of the International Conference at the Austrian Archaeological Institute at Athens. 23rd-25th November 2012*, eds. Walter Gauß-Gudrun Klebinder-Constance von Rüden, 2015, pp. 187-189.

26 D. Morandi Bonacossi, "The Central Mound of the Qatna Acropolis…", pp. 101-104.

27 For the typological features of the kilns, see Bonacossi, *ibid*., p.102.

technical and typological features of the Type 4 kiln found in a test trench at Qatna[28] show similarity with the Oylum Höyük pottery kiln. However, the illustrations and visuals provided[29] are not sufficient to make a full comparison with the Oylum Höyük kiln. Both kilns have the same working principle. However, we do not have any information about the connection between the firing and combustion chambers and especially the details of the heat transmission ducts of the Qatna kiln. The Oylum Höyük kiln is larger and its combustion chamber is deeper than the Qatna kiln, and it shows different technical and typological characteristics with the design of its heat transmission ducts and its arched structure.

A kiln was discovered in the layer called *City II* of Tell el-Hesi, which is located approximately 25 km east of Gaza and was excavated in the early 1890s. The kiln structure, for which detailed information on technical features and finding state was given, was coded as M[30]. However, although no clear conclusion regarding its intended use has been reached, it was mentioned that it may have been used for firing ceramics[31]. The *City II* layer in which the kiln was discovered was dated to 1500 BC, and the kiln was dated to 1500-1400 BC[32]. The structure, which we consider to be a pottery kiln, is quite similar to the Oylum Höyük kiln in architectural, technical and typological terms. Apart from the fact that the Tell el-Hesi sample has a circular plan and consists of two chambers, the similarity of the heat transmission ducts is particularly striking. As in the Tell el-Hesi sample[33], some of the heat transmission ducts in the Oylum Höyük pottery kiln bifurcate into two. Due to these features, the two kilns are different from other contemporary kilns identified so far in the Near East.

Another center in the Levant, where a large number of pottery kilns belonging to the MBA have been uncovered is Tell Aviv and its environs. Studies conducted in Tell Michal, Ramat Aviv and Ben-Nun provide important information on this subject[34]. At Tell Michal, two kilns (L.446 and L.481) positioned facing each other

28 Bonacossi, *ibid*., p.103

29 Bonacossi, *ibid*., p.114, fig. 11-12.

30 Frederick Jones Bliss, *A Mound of Many Cities. Tell El Hesy Excavated*, The Committee of the Palestine Exploration Fund, London 1898, pp. 45-50.

31 Bliss, *ibid.,* p. 51.

32 Bliss, *ibid*., pp. 47, 132, 138.

33 Bliss, *ibid.,* p. 47, fig. 94.

34 Raz Kletter-Amir Gorzalczany, "A Middle Bronze Age II Type of Pottery Kiln from Coastal Plain of Israel" *Levant* 33, 2001, pp. 95-104.

were dated to the MBA II[35]. The firing chambers and entrances of these kilns have not been fully identified. The working principle of both kilns is the same as the Oylum Höyük pottery kiln. The fact that the combustion chambers of both kilns are covered with mudbrick can also be shown as a similar feature. Having oval form, these kilns are different from the Oylum Höyük pottery kiln in terms of shape. Due to our lack of information on other details of the Tell Michal kilns, we cannot make a full technological evaluation.

Two pottery kilns were found during the salvage excavations in Ramat Aviv. These kilns were numbered as 808 and 123[36]. Kiln 808 is typologically and technically quite similar to the Oylum Höyük kiln. We interpret some of the descriptions regarding the Ramat Aviv kiln 808 differently. It was reported that the floor of the firing chamber of the kiln 808 was destroyed and that only nine supports for carrying the firing chamber floor were identified[37]. It is expressed that the identified flues were made for oxygen flow inside the kiln, entrance of cold air and discharge of hot air. However, no information is provided about the connections of the flues. Moreover, a few holes in the sides of the flues are considered to be rodent holes[38]. The supports for carrying the firing chamber mentioned in the publication were actually made to ensure that the heat transmission ducts do not collapse and function properly. Technically, there is no functional requirement to leave the spacing between the supports empty. The identified spaces that are considered to be flues or holes should be heat transmission ducts. The authors also stated that the Ramat Aviv kiln 123 was much damaged by bulldozers, however it was similar to kiln 808 in terms of direction, structure and dimensions[39].

Only part of the kiln at Ben-Nun Street was excavated and it shows similarity with the Ramat Aviv kilns[40].

There is not sufficient data to make a comparison with the kilns dated to the MBA in Northern Syria and Northern Mesopotamia. Tell Barri and Tell Brak, which

35 Kletter- Gorzalczany, *ibid*., pp. 96-98, fig. 2-3.

36 Kletter-Gorzalczany, *ibid*., pp. 97-98; Raz Kletter, "A Middle Bronze Age II Site West of Tell Qasile", *Atiqod* 53, 2006, pp. 93-95.

37 Kletter-Gorzalczany, *ibid*., pp. 97-98; Kletter "A Middle Bronze Age II Site West of Tell Qasile", p. 94.

38 Kletter-Gorzalczany, *ibid*., pp. 97-98

39 Kletter-Gorzalczany, *ibid*., p. 98

40 Kletter-Gorzalczany, *ibid*., pp. 99-100, fig.7.

have only 10 km distance between them, provide us with a little information on this subject.

Although not yet published, two pottery kilns that belong to the MBA were identified in Tell Barri excavations[41]. Two other pottery kilns found in Tell Barri G excavation area in the MBA-LBA transition layer were published[42]. Another pottery kiln was unearthed in the LBA layer of the same area[43]. The oval, horizontal kilns dated to the MBA at Tell Barri were badly preserved[44]. It is understood that the MBA, MBA/LBA transition phase and LBA kilns uncovered in Tell Barri are different from the Oylum Höyük pottery kiln[45].

There is no comprehensible information about the architecture and function of the kiln located in a sounding trench (Trench A4) at Tell Brak and dated to the MBA. It can be understood that this kiln has a circular plan and its side walls and upper floor were built with mudbricks. In the relevant publication, it is inferred from the explanation regarding the lower kiln chamber in the figure caption that the kiln should have an upper chamber as well[46]. However, if this is a pottery kiln, its floor should have holes, where heat transmission ducts are connected. D'Agostino categorized this kiln at Tell Brak as a horizontal kiln[47]. Due to the lack of information we have mentioned, we cannot make a comparison between the Tell Brak kiln and the Oylum Höyük pottery kiln.

Although a large number of pottery kilns have been discovered in Iran, those dated to the MBA are fewer in number than the kilns dated to other periods. We see that in addition to single-chamber kilns, double-chamber kiln technology was used in Iran since the prehistoric periods[48]. Over 50 kilns were discovered in Tepe Rud-i Biyaban

41 Anacleto D'Agostino, "Kilns and Ovens from the 2nd millennium BC Settlement of Tell Barri (NE Syria)", *Proceedings of 7th International Congress on the Archaeology of the Ancient Near East, (ICAANE),* Vol 1, eds. Roger Matthews-John Curtis, Harrassowitz Verlag, Wiesbaden 2018, p. 424.

42 D'Agostino, *ibid*., pp. 422-425, fig. 2-3.

43 D'Agostino, *ibid*., p. 423, fig. 4.

44 D'Agostino, *ibid*., p. 424. The publication by D'Agostino includes comprehensive information about the typology, intended use, regional comparisons and chronology of the kilns. D'Agostino, "Kilns and Ovens from the 2nd millennium BC Settlement of Tell Barri".

45 D'Agostino, *ibid*., pp. 423- 424.

46 David Oates-Joan Oates-Helen McDonald, *Excavations at Tell Brak. Vol. 1: The Mitanni and Old Babylonian Periods*, British School of Archaeology in Iraq, London 1997, pp. 21-22, fig. 37-39.

47 D'Agostino, "Kilns and Ovens from the 2nd millennium BC Settlement of Tell Barri", p. 430.

48 Yousef Majidzadeh, "The Development of the Pottery Kiln in Iran from Prehistoric to Historical Periods", *Paléorient* 3, 1975, pp. 207-221; Abbas Alizadeh, "A Protoliterate Pottery Kiln from

near the Shahr-i Sokhta settlement[49]. Very few of these remarkably dense kilns have been excavated. The excavated pottery kilns were divided into two groups, with single and double combustion chambers[50]. Moreover, the Tepe Rud-i Biyaban kilns are downdraft[51]. Due to its single combustion chamber and updraft features, the Oylum Höyük pottery kiln is different from the Tepe Rud-i Biyaban kilns.

5. Discussion

Ceramics are the most basic dating material discovered in archaeological excavations. Our knowledge about the ceramic production technology, which we frequently encounter in archaeological publications, is increasing day by day with excavations, interdisciplinary studies, and advancing technology. Likewise, our knowledge about ceramic firing methods and technology, which is one of the major stages of the ceramic production process, is also increasing in parallel.

Although we have some knowledge about pottery kilns, which are the product of pyrotechnic technology, what we can say about the settlement and regional densities, distributions, developments, dimensions of production, and contexts of kilns, in short their roles, is limited at the time.

We encounter pottery kilns with different types and technological features, which we know to have been used since prehistoric periods, in Iraq, Syria, the Levant and Iran, regions neighboring Southeastern Anatolia.[52] Chronologically speaking, we can list the locations of the pottery kilns at Tell Kurdu dated to the Late Chalcolithic Age[53]; at Lidar Höyük[54] and Gaziantep Kalehöyük[55] to the Eary Bronze Age; at Şaraga

Chogha Mish", *Iran*, Vol. 23/No. 1, 1985, pp. 39-50.

49 Maurizio Tosi, "Survey of Excavations in Iran during 1970-71, Shahr-i Sokhta Project: Tepe Rud-i Biyaban", *Iran* 10, 1972, p. 175.

50 Maurizio Tosi, "Survey of Excavations in Iran during 1968-69, Shahr-i Sokhta", *Iran* 8, 1970, p. 189.

51 Tosi, "Survey of Excavations in Iran during 1970-71", p. 175.

52 For some general publications about the typology and technology of pottery kilns, see Gilbert Delcroix-Jean L. Huot, "Les fours dits de potier dans l'Orient ancien", *Syria 49*, 1972, pp. 35-95; Majidzadeh, "The Development of the Pottery Kiln in Iran"; M. Prudence Rice, *Pottery Analysis. A Sourcebook, Second Edition,* The University of Chicago Press, Chicago and London 1987; Peter R. S. Moorey, *Ancient Mesopotamian Materials and Industries: The Archaeological Evidence,* Clarendon Press, Oxford 1994.

53 K. Aslıhan Yener-Christopher Edens-Jesse Casana-Benjamin Diebold-Heidi Ekstrom-Michelle Loyet-Rana Özbal, "Tell Kurdu Excavations 1999", *Anatolica* XXVI, 2000, pp. 55-57, fig. 3.

54 Harald Hauptmann, "Lidar Höyük 1981", *Türk Arkeoloji Dergisi,* Vol. XXVI/No. 2, 1983, pp. 95-96, Figure 5-6; Harald Hauptmann, "Lidar Höyük, 1984", *Anatolian Studies* 35, 1985, p. 205; Harald Hauptmann, "Lidar Höyük and Nevali Çori, 1986", *Anatolian Studies* 37, 1987, p. 206.

55 Fikri Kulakoğlu-Hamza Güllüce-M. Kemal Sertok-F. Flomena Squadrone, "Gaziantep

Höyük to the Middle Bronze Age[56]; at Tell Atchana[57], Ziyaret Tepe[58] and Tatarlı Höyük[59] to the Late Bronze Age as the centers closest to Oylum Höyük. Lidar Höyük, Oylum Höyük and Tell Kurdu pottery kilns, which are located on a northeast-southwest stretch of approximately 170 km, are important for understanding the ceramic production potential of the region from the Chalcolithic Age to the Late Bronze Age. In addition, recent archaeological findings in this region allow us to evaluate the development of pottery kiln technology. Even though we do not have comprehensive information, the pottery kilns discovered in Tell Kurdu, located in the southwest of Oylum Höyük, and in Lidar Höyük, located in its northeast, are considered as evidence of industrial production[60]. Despite the poor state of preservation of the kilns unearthed at Tell Kurdu, they are reported to be single- or double-chamber pottery kilns with similar features to their contemporaries[61]. Although the kilns found in Tell Kurdu are of different types, straw-mixed mortar and reed were used as building materials in all of them[62]. Lidar Höyük EBA pottery kilns have a variety of typological features. Among these, the horseshoe-shaped kilns with double combustion and single firing chambers designed side by side are characteristic of Lidar Höyük. Unlike Tell Kurdu, the building element used in the pottery kilns in Lidar Höyük is mudbrick. The Oylum Höyük MBA kiln, on the other hand, shows more advanced technological features with its deep, arched combustion chamber built of mudbrick and different heat transfer channels.

Kalehöyük 2003 Excavations", *Proceedings of the 4th International Congress of the Archaeology of the Ancient Near East. Volume 2: Social and Cultural Transformation: The Archaeology of Transitional Periods and Dark Ages, Excavations Reports*, eds. Hartmut Kühne-Rainer M. Czichon-Florian Janoscha Kreppner, 2008, p. 348, fig. 15.

56 Ezer, *ibid.*

57 K. Aslıhan Yener, *Tell Atchana, Ancient Alalakh Volume 1. The 2003-2004 Excavation Seasons*, Koç Üniversitesi Yayınları, İstanbul 2010, p. 31, fig. 2.11- 2.12.

58 Timothy Matney-Michael Roaf-John MacGinnis-Helen McDonald, "Archaeological Excavations at Ziyaret Tepe, 2000 and 2001", *Anatolica* XXVIII, 2002, pp. 61-62.; Timothy Matney-Lynn, Rainville, "Archaeological Investigations at Ziyaret Tepe 2003-2004", *Anatolica* XXXI, 2005, p. 29.

59 Gonca Dardeniz-K. Serdar Girginer-Özlem O. Girginer, "A Pottery Kiln from Tatarlı Höyük (Adana, Turkey) and its Implications for Late Bronze Age Pottery Production in Cilicia and Beyond", *Adalya* 21, 2018, pp. 118-120, Fig. 2, 5, 8.

60 Yener et al., "Tell Kurdu Excavations 1999", pp. 56-57; Harald Hauptmann "Lidar Höyük, 1983", *Anatolian Studies* 34, 1984, p. 227; Harald Hauptmann, "Vier Jahrtausende Siedlungsgeschichte am mittleren Euphrat", *Archäologie in Deutschland. 1*, 1993, p. 11.

61 Yener et al., "Tell Kurdu Excavations 1999", pp. 55.

62 Jesse Casana, "Pyrotechnic installations." in "Tell Kurdu Excavations 1999" *Anatolica* XXVI, 2000, pp. 56.

The best region to compare the Oylum Höyük kiln with its contemporaries is Israel and its surroundings, where a large number of MBA pottery kilns have been documented. Each year, 200 to 300 archaeological sites are excavated in Israel.[63] Considering Israel's surface area of 22.145 km², we can say that intensive archaeological activities are being carried out in this region. Hatay and the Southeastern Anatolia Region combined cover an area of 64.579 km². Although this area is three times that of Israel, the number of archaeological excavations is not half of those conducted in Israel. There may be two reasons why more pottery kilns are known from Israel and its surroundings than from other regions: The first is that a large number of excavations are being carried out in the region, and the second is the possibility that this region was a ceramic production center. Based on the available information, we can say that there was intensive ceramic production in Israel and its surroundings during the MBA. However, in order to ascertain whether this intensity is specific to this region, we have to wait for excavations to be carried out with the same intensity in other regions. Nevertheless, it can be predicted that the number of pottery kilns in the Southeastern Anatolia Region will increase with the increase in the number and area of excavations.

MBA pottery kilns found in Israel and Palestine generally show technical and typological similarity with the Oylum Höyük kiln. The technical similarity between the bifurcating heat transmission ducts of the kiln found during the excavations conducted at Tell el-Hesi, located in the south of Gaza, in the late 1800s and the Oylum Höyük pottery kiln is striking. This similarity in detail may be one of the factors that prove the interaction between the two regions.

In studies on ceramics, the origin and expansion area of ceramic groups especially from different periods have always been the subject of debate. Many ceramic groups have been characterized as region-specific or imported. With the discovery of pottery kilns, opinions on this subject changed and it was understood that ceramics were produced locally in many regions. For example, after the Şaraga Höyük kilns, the pottery kiln found at Oylum Höyük also showed that the inhabitants of the region were able to produce their own ceramics at least during the MBA II.

63 This number was 424 in 2019; see Josie Glausiusz, "Paving Over the Past", *Nature, News Feature*, No. 582, 2020, p. 475. For statistical studies regarding archaeological fieldwork conducted in Israel between 1989 and 1998, see Raz Kletter-Alon De-Groot, "Excavating to Excess? Implications of the Last Decade of Archaeology in Israel", *Journal of Mediterranean Archaeology 14/No.1*, 2001, pp. 78-80.

The excavations carried out in the northwestern part of Oylum Höyük since 2012 reached an area of approximately 3850 m². After the Iron Age layers identified throughout the excavation area, the earliest MBA I layers were reached in some parts of the area. The MBA I layers are mostly represented by the palace structure. As a result of the studies conducted in this excavation area, three pyrotechnic installations belonging to the Iron Age and four pyrotechnic installations belonging to the MBA II were discovered. After the palace was destroyed by a massive fire, no monumental structure was encountered in Phase II of the MBA at least in this area. The dump fill with abundant ash deposit and the pyrotechnic installations discovered in the MBA II layers in this area indicate industrial production. The main reason why this part of the settlement was deliberately chosen for the pyrotechnic installations can be explained by the fact that at Oylum Höyük the wind predominantly blows from the west. This area was also used as a cemetery both during the active use of the kilns and in the next phase. In order to understand the reason for this change in the settlement organization, we have to wait for the general settlement plan to be clarified through the excavation of the Oylum Höyük MBA layers over a large area.

We are certain that the architectural unit that is the subject of this article is a pottery kiln. However, there are some problematic issues. One of the main questions is that no in-situ finds related to the use of the kiln have been recovered inside the kiln. Only a small number of ceramic sherds were found inside and around the kiln. Apart from this, a small number of bones that belong to cattle and sheep were found in approximately 20-30 cm of fill above the firing chamber. Although it is possible that this place could have been used as a cooking kiln after ceramic production, we do not have sufficient evidence. In addition, no fired or unfired ceramic wasters, which we can describe as production waste, were encountered around the kiln. By contrast, all evidence of ceramic production was found in the MBA II kilns of Şaraga Höyük, located 80 km east of Oylum Höyük. The most probable answer to this question is that the dumpsite in this area was used for both industrial and domestic waste. The dense ash deposit in the dumpsite cannot be explained only by the ashes of domestic fireplaces. There are views that some kilns interpreted as pottery kilns were used purely for domestic work and that some pottery kilns were cleaned after production[64]. It is highly probable that some kilns

64 Harriet E. W. Crawford, "Some Fire Installations From Abu Salabikh, Iraq (Dedicated To The Memory Of Margaret Munn-Rankin)", *Paléorient* Vol. 7/No. 2, 1981, pp. 110.

were used for other purposes after ceramic production. It would be costly and unnecessary to build such a technically sophisticated kiln for domestic use alone. The figurine fragments found in large numbers in the dump fill can be considered as production waste. This increases the possibility that figurines were fired in the kilns in this area, which indicates the existence of workshops.

Conclusion

The pottery kiln at Oylum Höyük and two other kilns at Şaraga Höyük show that similar technology (updraft kilns with a combustion chamber at the bottom and a firing chamber at the top) was used in the region. Although we do not yet have the analysis results, analogical comparisons and ceramics collected from the kiln and its surroundings clearly show that high quality firing at high temperatures could be achieved in it. The archaeological data from Oylum Höyük and its surroundings suggest that the kiln may have been used for different purposes other than its main function.

The area, which was represented in the MBA I by a monumental structure probably with administrative function, started to be used as an industrial production site with several pyrotechnic installations in the early phase of MBA II. Speculations can be made about the usage of the area. However, we can say with certainty that there was a radical change in the settlement organization.

Very few pottery kilns belonging to different periods were found in Oylum Höyük and its vicinity. The scarcity of MBA kilns in Southeastern Anatolia should be attributed to insufficient research due to the short duration and small number of excavations. Nevertheless, we can conclude based on the available data that the kilns in this region underwent significant technical and typological changes from the 5th millennium BC to the middle of the 2nd millennium BC.

Another conclusion suggested by the kiln studied here and other archaeological data found in the same layer is that Oylum Höyük is culturally associated mainly with the Levant region.

BIBLIOGRAPHY

Alizadeh, Abbas, "A Protoliterate Pottery Kiln from Chogha Mish", *Iran,* Vol. 23/ No. 1, 1985, pp. 39-50.

Ay, Eyyüp, "Yukarı Dicle Bölgesinde Müslümantepe'de Açığa Çıkarılan Bir Hurri-Mitanni Tapınağı ve Ortaya Koyduğu Yeni Bulgular", *Gaziantep University Journal of Social Sciences,* Vol. 20/No. 2, 2021, pp. 338-361.

Aykurt, Ayşegül, "Kocabaş Tepe Seramik Fırını", *Hayat Erkanal'a Armağan: Kültürlerin Yansıması/Studies in Honor of Hayat Erkanal: Cultural Reflections*, ed. Betül Avunç, Homer Kitabevi, İstanbul 2006, pp. 113-119.

Aykurt, Ayşegül-Erkanal, Hayat, "Archaeological Evidence for an Early Second Millennium BC Potter's Kiln at Liman Tepe", *Belleten,* Vol. LXXX/No. 287, 2016, pp. 1-22.

Badre, Leila, *Les figurines anthropomorphes en terre cuite à l'Age du Bronze en Syrie*, Librairie Orientaliste Paul Geuthner, Paris 1980.

Bliss, F. Jones, *A Mound of Many Cities. Tell El Hesy Excavated*, The Committee of the Palestine Exploration Fund, London 1898.

Bonacossi, D. Morandi, "The Central Mound of the Qatna Acropolis in the Bronze and Iron Ages: Operation J" *Akkadica,* Vol. 124/No. 1, 2003, pp. 97-120.

Casana, Jesse, "Pyrotechnic installations" in "Tell Kurdu Excavations 1999" *Anatolica* XXVI, 2000, pp. 55-58.

Crawford, Harriet E. W., "Some Fire Installations from Abu Salabikh, Iraq (Dedicated To The Memory Of Margaret Munn-Rankin)" *Paléorient,* Vol. 7/No. 2, 1981, pp. 105-114.

D'Agostino, Anacleto, "Kilns and Ovens from the 2nd millennium BC Settlement of Tell Barri (NE Syria)", *Proceedings of 7th International Congress on the Archaeology of the Ancient Near East, (ICAANE),* Vol 1, eds. Roger Matthews-John Curtis, Harrassowitz Verlag, Wiesbaden 2018, pp. 421-446.

Dardeniz, Gonca-Girginer, K. Serdar-Girginer, O. Özlem, "A Pottery Kiln from Tatarlı Höyük (Adana, Turkey) and its Implications for Late Bronze Age Pottery Production in Cilicia and Beyond" *Adalya* 21, 2018, pp. 117-134.

Delcroix, Gilbert-Huot, Jean, L., "Les fours dits de potier dans I'Orient ancien" *Syria* 49, 1972, pp. 35-95.

Engin, Atilla, "Oylum Höyük İçin Bir Lokalizasyon Önerisi: Ulisum/Ullis/İllis", *Armizzi: Engin Özgen'e Armağan/Studies in Honor of Engin Özgen*, eds. Atilla Engin-Barbara Helwing-Bora Uysal, Asitan Kitap, Ankara 2014, pp. 129-149.

Engin, Atilla, "A Middle Bronze Age Palace at Oylum Höyük and New Findings" *Arslantepe I. Uluslararası Arkeoloji Sempozyumu Bildirileri / Arslantepe Proceedings of the I. International Archaeology Symposium*, eds. Neslihan Durak-Marcella Frangipane, 2019, pp. 237-252.

Engin, Atilla, "Oylum Höyük and Alalakh: Cultural Relations in The Second Millennium BC", *Alalakh and Its Neighbours. Ancient Near Eastern Studies. Supplement 55*, eds. Kutlu Aslıhan Yener-Tara Ingman, Peeters Publishers, 2020, pp. 275-306.

Engin, Atilla, "Oylum Höyük", *Prehistorik Dönemlerden Geç Antik Döneme Gaziantep Arkeolojisi*, eds. Atilla Engin-Kutalmış Görkay, Türk Arkeoloji ve Kültürel Miras Enstitüsü, Gaziantep 2022, pp. 47-82.

Engin, Atilla-Özgen, Engin-Aşir, Macit-Ezer, Sabahattin-Kavak, Abdülhamit-Bozkurt, Aydoğan-Bozkurt, Derya-Doruk, E. Şenay, "Oylum Höyük 2018", *41. Kazı Sonuçları Toplantısı-I*, 2020, pp. 243-264.

Engin, Atilla-Atik, Şeniz-Özer, Ali, "Middle Bronze Age Vitreous Material of Oylum Höyük and New Findings", *ANNALES, du 21e Congrès de l'association Internationale Pour l'Histoire du Verre*, ed. Orhan Sevindik, AIHV, Vadi Grafik Tasarım ve Reklamcılık Ltd. Şti., 2021, pp. 35-48.

Erkanal, Armağan, "Panaztepe Kazısının 1985 Yılı Sonuçları", *VIII. Kazı Sonuçları Toplantısı-I*, 1987, pp. 253-262.

Ezer, Sabahattin, "Middle Bronze Age Pottery Kilns at Şaraga Höyük", *Belleten,* Vol. LXXVII/S. 278, 2013, pp. 1-14.

Genç, Elif, "Tilbaşar Orta Tunç Çağı Mezarı Işığında Pişmiş Toprak Çıplak Kadın Figürinleri ile İlgili Bazı Düşünceler" *Anadolu/Anatolia* 45, 2019, pp. 81-112.

Glausiusz, Josie, "Paving Over the Past" *Nature, News Feature,* Vol. 582, 2020, pp. 474-477.

Günel, Sevinç, *Panaztepe II, M.Ö 2. Bine Tarihlendirilen Panaztepe Seramiğinin Batı Anadolu ve Ege Arkeolojisindeki Yeri ve Önemi/Die Keramik von Panaztepe und Ihre Bedeutung für Westkleinasien und die Agais Im 2. Jahrtausend*, Türk Tarih Kurumu Yayınları, Ankara 1999.

Hauptmann, Harald, "Lidar Höyük 1981" *Türk Arkeoloji Dergisi,* Vol. XXVI/No. 2, 1983, pp. 93-110.

Hauptmann, Harald, "Lidar Höyük, 1983" *Anatolian Studies* 34, 1984, pp. 226-228.

Hauptmann, Harald, "Lidar Höyük, 1984" *Anatolian Studies* 35, 1985, pp. 203-205.

Hauptmann, Harald, "Lidar Höyük and Nevali Çori, 1986" *Anatolian Studies* 37, 1987, pp. 203-207.

Hauptmann, Harald, "Vier Jahrtausende Siedlungsgeschichte am mittleren Euphrat" *Archäologie in Deutschland.* 1, 1993, pp. 10-15.

Iamoni, Marco, "Pottery Production during the Third and Second Millennium B.C. in Western Syria. The Development of Ceramic Technology as a Result of the Rise of Qatna as a Regional Capital", *The Transmission of Technical Knowledge in The Production of Ancient Mediterranean Pottery. Proceedings of the International Conference at the Austrian Archaeological Institute at Athens. 23rd-25th November 2012*, eds. Walter Gauß-Gudrun Klebinder-Constance von Rüden, 2015, pp. 183-206.

Iamoni, Marco-Bonacossi, D. Morandi, "The Middle Bronze Age I–III Pottery Sequence from the Italian Excavations at Mishrifeh/Qatna, Syria. Archaeological Contexts and Ceramic Evidence", *Berytus* 54, 2011, pp. 181-212.

Kletter, Raz, "A Middle Bronze Age II Site West of Tell Qasile", *Atiqod* 53, 2006, pp. 65-128.

Kletter, Raz-De-Groot, Alon, "Excavating to Excess? Implications of the Last Decade of Archaeology in Israel", *Journal of Mediterranean Archaeology*, Vol. 14/No. 1, 2001, pp. 76-85.

Kletter, Raz-Gorzalczany, Amir, "A Middle Bronze Age II Type of Pottery Kiln from Coastal Plain of Israel" *Levant* 33, 2001, pp. 95-104.

Kulakoğlu, Fikri-Güllüce, Hamza-Sertok, M. Kemal-Squadrone, F. Flomena, "Gaziantep Kalehöyük 2003 Excavations", *Proceedings of the 4th International Congress of the Archaeology of the Ancient Near East. Volume 2: Social and Cultural Transformation: The Archaeology of Transitional Periods and Dark Ages, Excavations Reports*, eds. Hartmut Kühne- Rainer M. Czichon- Florian Janoscha Kreppner, 2008, pp. 345-352.

Majidzadeh, Yousef, "The Development of the Pottery Kiln in Iran from Prehistoric to Historical Periods", *Paléorient* 3, 1975, pp. 207-221.

Matney, Timothy- Roaf, Michael- MacGinnis, John- McDonald, Helen "Archaeological Excavations at Ziyaret Tepe, 2000 and 2001", *Anatolica* XXVIII, 2002, pp. 47-89.

Matney, Timothy-Rainville, Lynn, "Archaeological Investigations at Ziyaret Tepe 2003-2004", *Anatolica* XXXI, 2005, pp. 19-68.

Moorey, Peter, R. S., *Ancient Mesopotamian Materials and Industries: The Archaeological Evidence*, Clarendon Press, Oxford 1994.

Oates, David-Oates, Joan-McDonald, Helen, *Excavations at Tell Brak. Vol. 1: The Mitanni and Old Babylonian Periods*, British School of Archaeology in Iraq, London 1997.

Özgen, Engin-Helwing, Barbara-Engin, Atilla-Niewenhuyse, Olivier-Spoor, Richard, "Oylum Höyük 1997-1998. Die spätchalkolithische Siedlung auf der Westterrasse", *Anatolia Antiqua* 7, 1999, pp. 19-67.

Özgen, Engin-Helwing, Barbara, "Ausgrabungen auf dem Oylum Höyük, 1997-2000. Zweiter vorläufiger Bericht", *İstanbuler Mitteilungen* 51, 2001, pp. 61-136.

Özgen, Engin-Helwing, Barbara, "On the Shifting Border Between Mesopotamia and the West: Seven Seasons of Joint Turkish-German Excavations at Oylum Höyük", *Anatolica* XXIX, 2003, s. 61-85.

Özgüç, Nimet, *Samsat. Sümeysat, Samosata, Kumaha, Hahha, Hahhum*, Türk Tarih Kurumu Yayınları, Ankara 2009.

Raymond, Amy, "The MBA Hearths and Kiln at Miletus", *Hayat Erkanal'a Armağan: Kültürlerin Yansıması/ Studies in Honor of Hayat Erkanal: Cultural Reflections*, ed. Betül Avunç, Homer Kitabevi, İstanbul 2006, pp. 612-617.

Rice, M. Prudence, *Pottery Analysis. A Sourcebook, Second Edition*, The University of Chicago Press, Chicago and London 1987.

Tosi, Maurizio, "Survey of Excavations in Iran during 1968-69, Shahr-i Sokhta" *Iran* 8, 1970, pp. 188-189.

Tosi, Maurizio, "Survey of Excavations in Iran during 1970-71, Shahr-i Sokhta Project: Tepe Rud-i Biyaban", *Iran* 10, 1972, p. 175.

Yener, K. Aslıhan, *Tell Atchana, Ancient Alalakh Volume 1. The 2003-2004 Excavation Seasons*, Koç Üniversitesi Yayınları, İstanbul 2010.

Yener, K. Aslıhan-Edens, Christopher-Casana, Jesse-Diebold, Benjamin-Ekstrom, Heidi-Loyet, Michelle- Özbal, Rana, "Tell Kurdu Excavations 1999", *Anatolica* XXVI, 2000, pp. 31-119.

APPENDICES

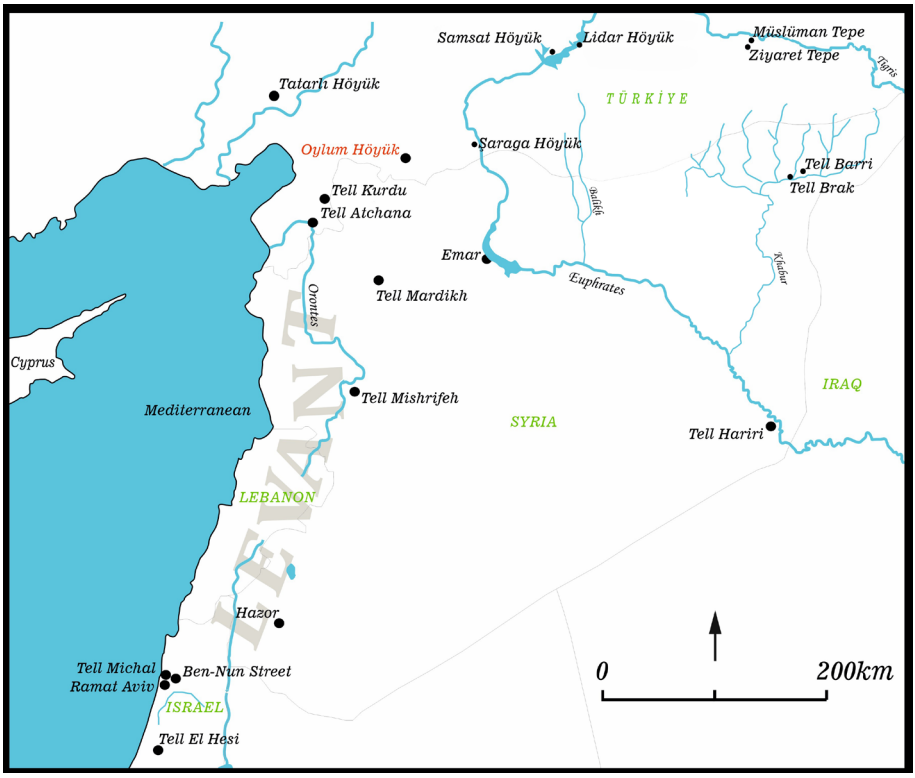

Figure 1: Centers where pottery kilns were found, located in regions with cultural relations to Oylum Höyük and some well-known centers from the region.

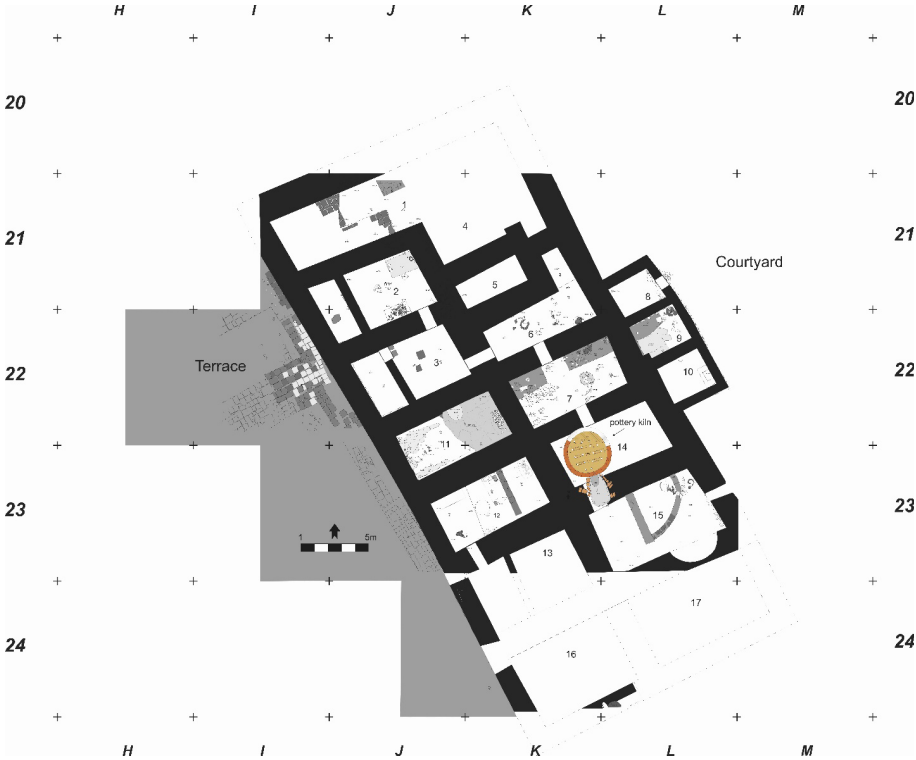

Figure 2: Middle Bronze Age I palace and Middle Bronze Age II pottery kiln.

Figure 3: MBA II pottery kiln and MBA I palace walls belonging to a lower phase damaged by the kiln.

Figure 4: Firing chamber wall and floor of the kiln.

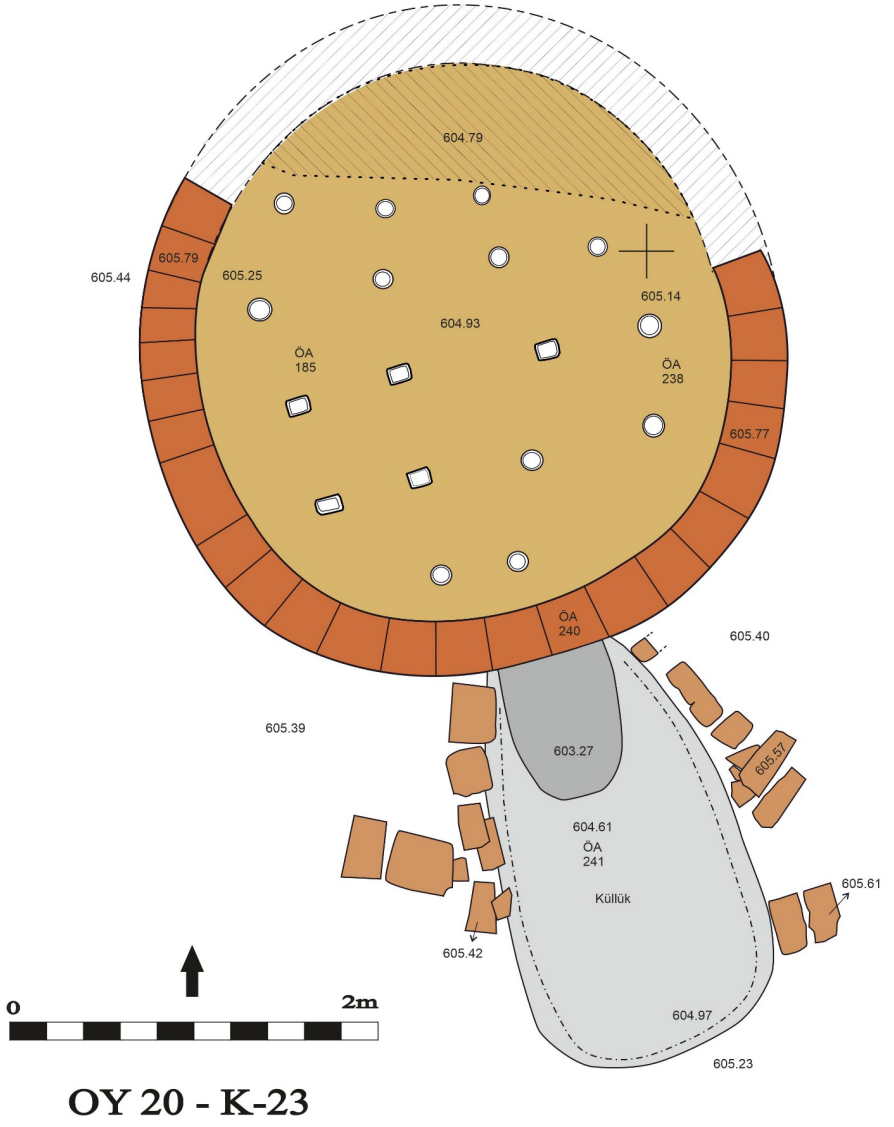

Figure 5: Architectural drawing of the kiln.

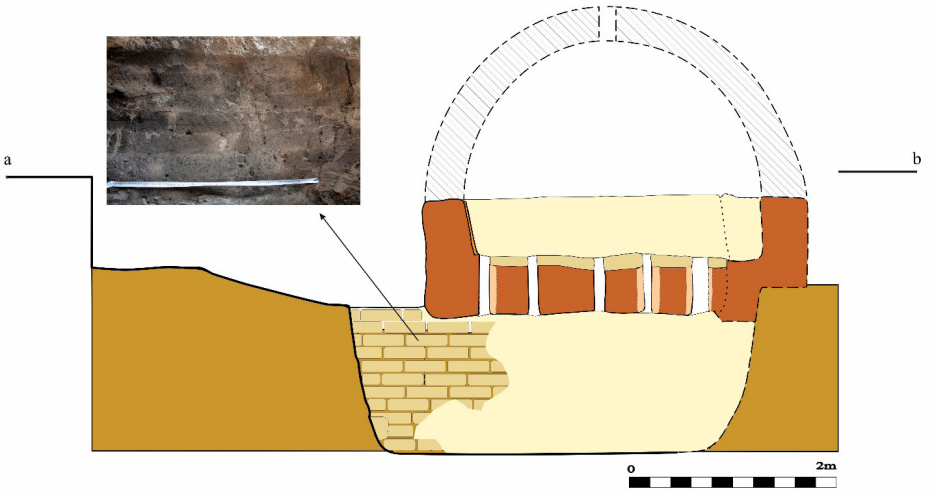

Figure 6: Sectional drawing of the kiln in south-north direction.

Figure 7: Arched structure of the combustion chamber.

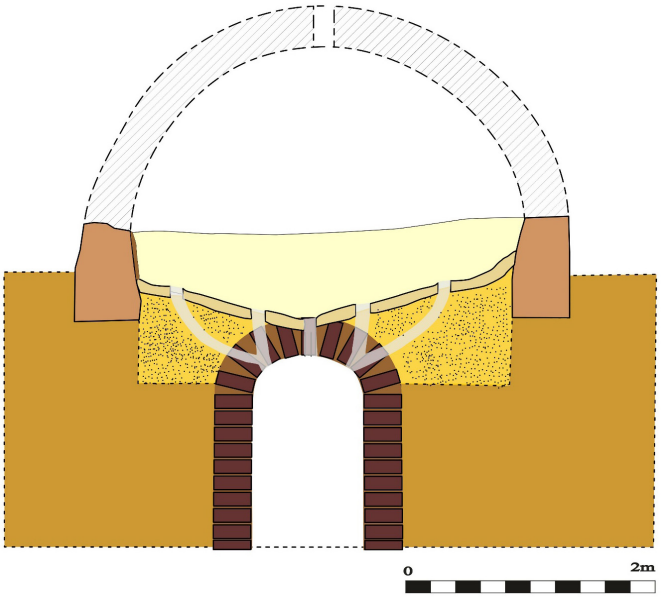

Figure 8: Sectional drawing of the kiln in east-west direction. Arched structure of the combustion chamber and heat transmission ducts.

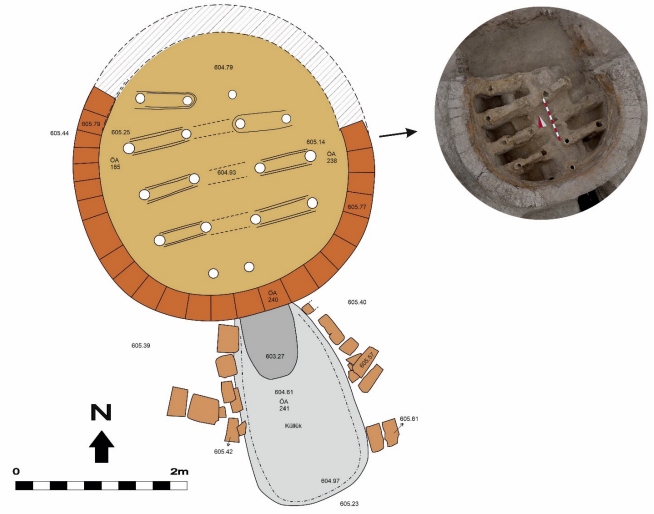

Figure 9: Underneath the floor of the firing chamber. Grate-shaped supports for heat transmission ducts.

Figure 10: Photographs from the kiln excavation phases.

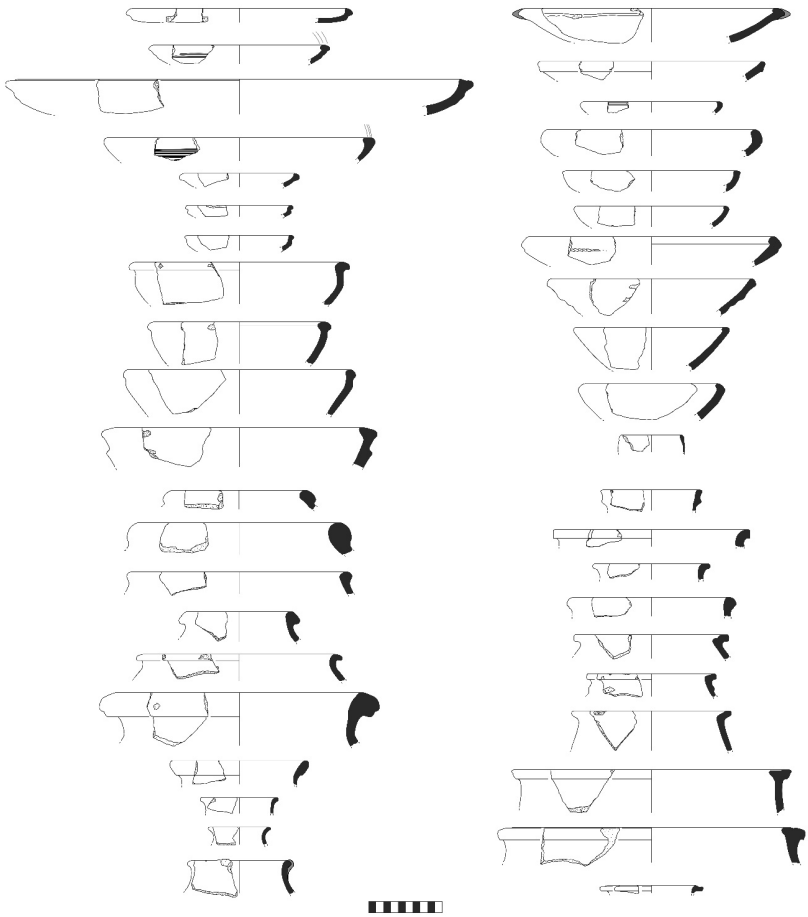

Figure 11: MBA II ceramics collected from the kiln and its surroundings.

Excavation Phases	Ash Pit and Vicinity	Firing Chamber	Combustion Chamber
Phase 1		Identification of the kiln	
Phase 2	Identification of the black ashy area in the south of the kiln.	Identification of the mudbricks of the firing chamber. At least five superposed rows of mudbricks. Mudbricks have varying size.	Identification of the entrance of the combustion chamber.
Phase 3	Dense mudbrick debris fill in front of the entrance. Identification of the borders of the ash deposit.	Hard, brown, and sometimes red rubble fill.	Excavation of the combustion chamber starting from the entrance.
Phase 4	Documentation of mudbrick debris. Compressed ground around the ash pit (living level).	Mudbrick debris fill and animal bones. Cattle leg and jaw bones, and a dog skeleton.	Approximately 1 m progress in the combustion chamber. Identification of the plastered side walls of the arch. Identification of the forward and downward extension of the arch wall.
Phase 5	Removal of mudbrick debris fill. Small amount of animal bones and horns and two bone awls inside the debris.	Identification of the floor of the firing chamber. Sloping towards the center and covered with a thick plaster layer.	Identification of the first heat transmission duct in the ceiling of the combustion chamber. Dense, black, soft, and light ash deposit on the floor. Small amount of clagged plaster, mudbrick fragments, ceramic sherds, animal bones.

Phase 6	Identification of some rows of mudbricks bordering the ash pit at the entrance. Soil fill with dense ash deposit.	Identification of the holes for the heat transmission ducts and emptying some of them.	Identification of the extension of the arch. Levelling work at the base. Mostly black ash deposit. Hard mudbrick rubble that is chalky in places.
Phase 7	Identification of the borders of the ash pit	Removal of the plastered base. Identification of the connection between the heat transmission ducts.	Identification of the mudbricks and pointing under the plaster of the arch side walls. Realization that the arch structure was built entirely of mudbricks.
Phase 8	Identification of the living level around the ashy area. Compressed and hard ground.	Identification of the arched structure from above	2 m progress in the combustion chamber. Increase of whitish yellow hard mudbrick rubble in the interior. Identification of the combustion chamber walls at the entrance. Side plasters are slagged and in greenish color.
Phase 9		.	Approximately 30 cm of gray, very soft ash deposit under the mudbrick rubble.
Phase 10			Identification of the brown compressed soil base after the ash deposit. 2 m below the living level.

Table 1: Phases of kiln excavations.