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A Technology Study on the Late Neolithic Pottery of Hakemi Use, Southeastern Türkiye

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ABSTRACT
Hakemi Use is a mound settlement on the right bank of the Tigris, within the borders of Diyarbakır province in southeast Türkiye. Within the scope of the Ilısu Dam Project built on the Tigris River, field studies were carried out between 2001-2012. The existence of two periods, Late Assyrian and Late Neolithic, was determined. The main cultural deposit in the mound covers the period known as *Hassuna/Samarra* in the traditional cultural definition of Mesopotamia. Both material culture and ^{14}C results show that the settlement was inhabited between 6100-5950 BCE. Approximately 25,000 pottery sherds were collected in five building levels of the Late Neolithic Period. Comprehensive studies on these sherds continue both typologically and technologically. In this study, various recipes for pottery paste, mineral, and organic admixture (including dung), different construction methods of ceramics, including using molds (textile and skin prints have been found), and other stages of ceramics manufacturing were studied in the pottery of the Late Neolithic Period of Hakemi Use. The production technology of different ceramic groups and other contemporary Mesopotamian sites were compared.
Keywords: Hassuna, Samarra, Pottery Technology, Late Neolithic, Mesopotamia

Introduction[1]

Hakemi Use consists of two side-by-side mound settlements in southeast Türkiye, approximately 250 km from the Syrian border. These mounds, 70 km east of the modern city of Diyarbakır, are located on the Bismil Plain, on the bank of the old bed to the right of the Tigris River. Bismil Plain, which forms the flat area of the Upper Tigris Valley, has an average altitude of 550 m and is a fertile plain irrigated by the Tigris River and its tributaries. Southeast Taurus Mountains are located 100 km north of this plain, Raman Mountains 70 km east, the volcanic Karacadağ 80 km west, and the Mardin Mountains 50 km south (Figure 1). Today, the Tigris River flows approximately 100 m north of the mound.

Figure 1: The position of Hakemi Use in the Upper Tigris Valley

The excavations in the settlement were carried out between 2001-2013 by a team from Ankara Hacettepe University under the Diyarbakır Museum Directorate, with the financial support of the General Directorate of State Hydraulic Works within the scope of the Ilısu Dam Project. After the field studies were carried out for the last time in 2012, they were only carried out in the form of material studies in the excavation house and Diyarbakır Museum in the 2013 season.

Today, the mound on agricultural land is a person's private property and the cultural deposit on the surface has been badly damaged due to years of agricultural activities. Among the two-mound settlements side by side, the one on the west was named Hakemi Use I, and the existence of the Late Assyrian and Late Neolithic periods was determined. Only

1 This article was prepared within the framework of the research theme of the IA RAS "Interdisciplinary approach to the study of the formation and development of ancient and medieval anthropogenic ecosystems" (No. NIOKTR 122011200264-9)

the medieval (14th century CE) village settlement was named Hakemi Use II in the east. The mound in the west has a width of about 1.2 h. Excavations were concentrated in this mound. Existing cultural deposits in the two building levels belonging to the Late Assyrian period were found in the upper half-metter section of this 4 m settlement. The bottom five building levels were found in the 3.5 m cultural deposits, representing the material culture of Mesopotamia known as Hassuna/Samarra. Both the relative dating of the typological material culture and the radiocarbon results from the intact contexts show that the first inhabitants of the settlement settled on the flat area at the banks of the Tigris River in 6100 BCE and left the settlement in 5950 BCE, after an uninterrupted settlement approximately 150 years. Unfortunately, no reliable data could be found on the reasons for this abandonment during the excavations. However, surveys carried out by the excavation team in the region point to this abandonment originating from the Tigris. In the last years of the settlement, a natural blockage occurred in the narrow valleys beyond the Raman Mountains, causing floods in the Bismil Plain; this may have caused the abandonment. The fact that the settlements after 5800 BCE (Early Halafian period) were at least 100 m inland from the Tigris and on high terraces in the survey conducted in the region supports this view.

An area of approximately 1350 m^2 was opened in the Hakemi Use excavations, and most of the virgin soil was reached (Tekin 2020). Except for one of the architectural remains unearthed, it was determined that there was no stone foundation in all the buildings, and it was determined that the mud was built in the *pisé* technique with a wooden-like mold (Tekin 2011, 152). The buildings mainly consist of a few rooms with rectangular plans, and the doorway is rarely seen. Considering the smallness of the rooms, it is understood that the existing wall remains are the storage areas on the lower floor of the buildings, and the room/rooms that make up the living area are on the second floor.

Approximately 25,000 sherds dated to the Late Neolithic consist of four main groups. These are the *Standard Ware*, the *Dark Faced Burnished Ware* (DFBW), the *Orange Fine Ware*, and the *Fine Ware*, and the main pottery in five building levels consists of vessels collected under the name of the *Standard Ware* (Tekin 2013, 496, Tab. 44.1).

Results of Previous Studies of Hakemi Use Pottery and Its Technological Descriptions

Pottery fragments unearthed during the excavations were divided into four main groups and sub-divided according to the surface quality. *Fine Ware* is categorized into four subcategories in the assemblage of pottery based on their surface decoration: *Simple Fine Ware, Painted Fine Ware, Incised Fine Ware,* and *Samarran Pottery* (İlhan 2022; Tekin 2011,153-156; Tekin 2020, 150-151) (Figure 2). The major pottery group - the *Standard Ware* found in relatively high proportions (69-76% from different building levels), seems to have been produced in Hakemi Use or a nearby settlement. Significantly less is the pottery

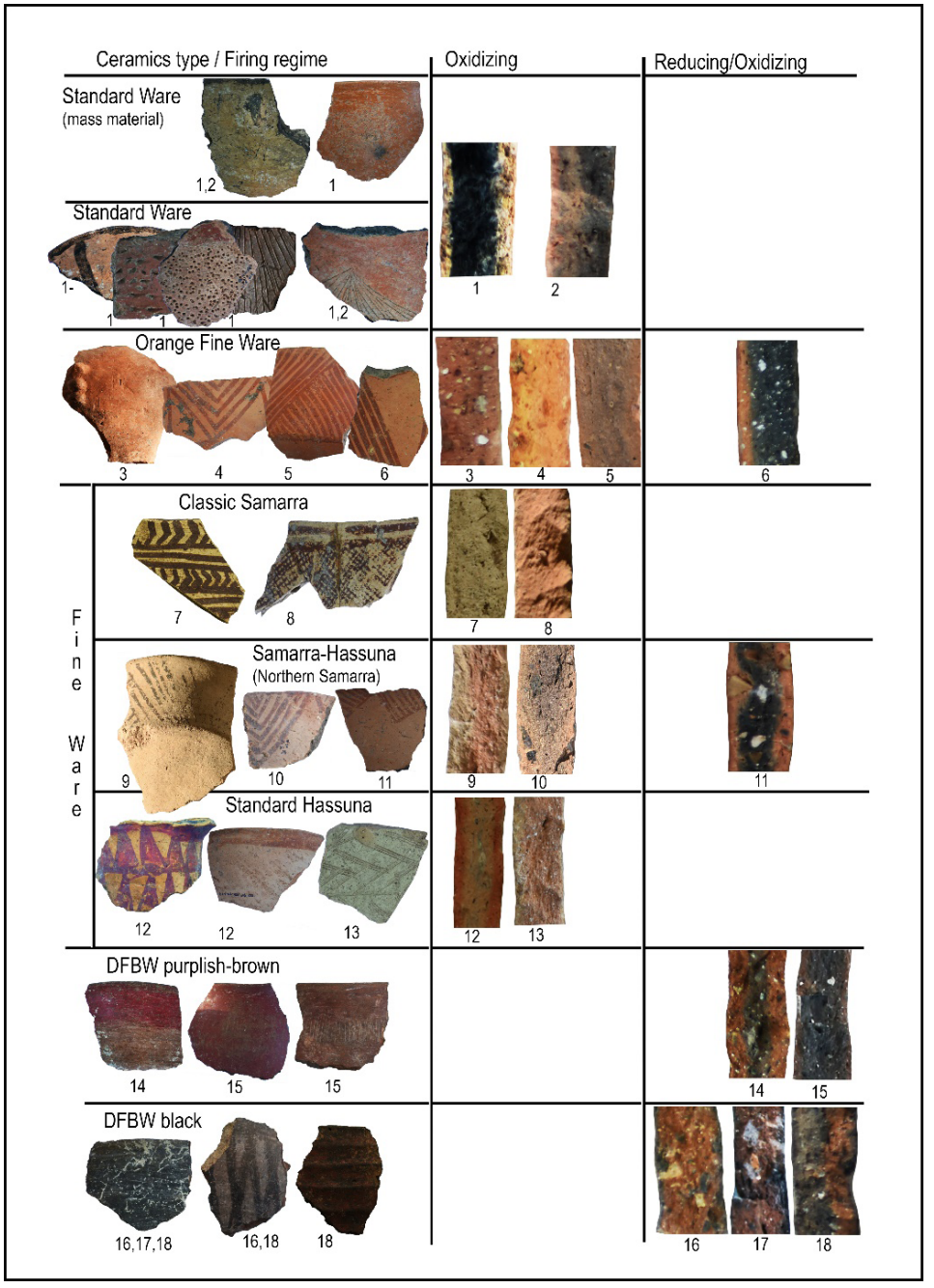

Figure 2: The main pottery groups of Hakemi Use. Numbers in this table-numbers of the cross-sections related to different ceramic types with varying variants of firing regime and mineral inclusions.

the *Orange Fine Ware* (12-13%) and the *Dark Faced Burnished Ware* (9-12%). *Samarran Pottery* is rare and limited to the upper layers, which might have been imported (Tekin 2013; Tekin 2020, 151). *Samarran Pottery* occurs only in the first and second building levels of the settlement, disappearing by the third building level. The number of *Samarran pottery* sherds found at Hakemi Use is only forty, a dozen of which are in the painted "*Classical Samarran*" style. The latter is confined to the uppermost layer. It should be noted that both the *Samarran Pottery* and the *Pattern Burnished Ware* (only in the upper two building levels) are found together and disappear simultaneously.

Standard Coarse Ware is characterized by rough surfaces that are either left untreated, wiped, or wet-smoothed; the most common surface color is buff, while some are light brown. In addition to dense plant temper, grit, and limestone temper are in the fabric of these Ware. The *Slipped Ware* – the external surface has red or reddish slip, and the majority with burnishing, but there are also samples without evidence of polish. *Incised* and *Impressed Ware,* comprising one percent of the *Standard Ware,* has two apparent variants: plain and slipped. The paste includes organic as well as sand and lime temper. The *Standard Painted Ware* (red and bitumen painted) has an extensive organic temper; their surface color is buff, and they are not well-fired, having a thick core of about a centimeter. The *DFBW* has mineral-tempered fabrics.

The vessels were fired at high temperatures, and their surfaces were well-burnished. Sub-groups were defined according to their slip colors: gray/black and purplish-brown. Several sherds within the gray/black slipped the *DFBW* group are pattern-burnished. The *Orange Fine Ware* has lime and sand inclusions; small amounts of organic temper are also present. The vessels are 4-5 mm thick and well-fired at high temperatures. Some are slipped on both surfaces. *Simple* and *Painted Fine* paste is well tempered with fine sand, lime, and organic temper. The colors range from light buff to beige. *Samarran pottery* is very fine textured. Organic temper is either absent or occurs very seldom. The vessels are all well-fired. The wall thicknesses of the sherds rarely exceed 5 mm, and the surface colors are in shades of buff (Tekin 2007, 163-166; Tekin 2008, 273-274; Tekin 2011, 153-156; Tekin 2020, 150-151).

Distributions and Studies of Different Pottery Types

The *Standard Ware* is familiar throughout Upper Mesopotamia in the period under consideration. It varied significantly in surface treatment and ornamentation but always contained many plant impurities. It could be both "Coarse" and "Fine" (Le Mière and Nieuwenhuyse 1996; Nieuwenhuyse *et al.* 2002, 43; Tekin 2007, 163-166). Other pottery types found on Hakemi Use "Fine Ware" distinguished by surface treatment, ornamentation, and fire regimes. Their main distribution is recorded in different territories. The *Orange Fine Ware* is distributed in the western part of Mesopotamia: in settlements of the Euphrates River

and its tributaries – Tell Sabi Abyad (Le Mière and Nieuwenhuyse 1996, 173), Tell Chagar Bazar (Cruells 2008, 676), Tell Boueid II (Nieuwenhuyse *et al.* 2002) and others, as well as at the foothills of the Taurus – Gre Fılla (Ökse 2021, 313). *Painted Fine Ware* is similar to the *Hassuna Standard Painted Ware,* which is common in the eastern part of Upper Mesopotamia – Tell Hassuna (Lloyd and Safar 1945, 279, Fig. 11-14) and Yarim Tepe I (Merpert and Munchaev 1973). *Incised Fine Ware,* as a variant of *Standard Hassuna pottery*, is most widespread in the foothills of Northwestern Zagros –Tell Mattarah (Braidwood and Howe 1960, 26, 35-37; Odaka 2019, 252-259), Shaih Marif II settlement (Odaka *et al.* 2019, 72-76). *Classic Samarran pottery* is conventionally considered specific to Middle Mesopotamia – Tell es-Sawwan (Ippolitoni 1970-71) and Chogha Mami (Oates 1969). But the "northern style" of *Samarra* (Northern Samarra)[2] (Gut 1995, 191) is defined in many sites of Upper Mesopotamia: Tell Chagar Bazar (Cruells 2008, 675), Coba Höyük/Sakçagözü (Taylor *et al.* 1950, 56), Tell Baghouz (Nieuwenhuyse 1999; Nieuwenhuyse *et al.* 2001; Odaka 2003, 25-27), Tell Sabi Abyad (Le Mière and Nieuwenhuyse 1996), Tell Halula (Cruells 2008, 675) and others. *Northern Samarra* type is difficult to distinguish from the *Painted Fine Ware/Standard Hassuna* ceramics: the presence of ornamentation characteristic of *Standard Hassuna*, but the morphology is typical for *Samarra*. The *Dark Faced Burnished Ware* was initially defined at Tell el-Cüdeyde (Tell al-Judaidah) in the Amuq Plain (Braidwood and Braidwood 1960, 73). It is widely distributed in littoral areas of the Mediterranean in Northern Syria and Cilicia (Çukurova). The most famous site presenting this ceramic type is Yumuktepe (Mersin) (Balossi Restelli 2006).

Methodology

The technological analysis includes studying different stages of pottery technology: raw materials, pottery paste, construction methods, surface treatment, and firing. The study is based on a freshly broken cross-section; the relief makes it possible to distinguish the details of impurities better and joints between construction elements.

Raw material and pottery paste: Different types of clay ferrugination and the presence of natural inclusions were recorded. We suggest mineral inclusions are natural if they are less than 0.2 cm and have rounded outlines. Mineral inclusions were added intentionally if they were more than 0.2 cm, not single, and had acute-angled outlines (Bobrinsky 1999; Nieuwenhuyse 2007). In studied ceramics, it can be detected following organic inclusions: dung and straw (Bobrinsky 1999, 18-19, 32-33, 41-44, 86; London 1981; Rice 1987, 82; Tsetlin 2003). Significant quality of plant residues of 0.2-1 mm wide and some millimeters long can tell us about the presence of dung (Petrova 2019; for more detail: Petrova, in press).

2 For "*Northern Samarra*" also use the terms "*Samarra-like*", "*Samarra derivate*", "*Samarra-influenced"* (Cruells 2008, 673, 675).

Construction methods: It is possible to judge construction methods by the presence of traces left unsmoothed on the ceramic surface, changes in the relief of the vessel walls at the places of joints of sequential elements, and the presence of mold or a link between the vessel and the mold. The fact of junctures inside vertical and horizontal cross-sections indicates the manufacture of the vessel from various clay elements (coils, slabs, bands) (Bobrinsky 1978, 174-184; Roux 2019, 164-166; Rye 1981; Shepard 1956, 184; Vandiver 1987, 30-31): coils - the extended slightly inclined line of juncture in the horizontal cross-section, separation into many separate parts by horizontal or oblique or arcuate short joins in the vertical cross-section; slabs - vertical and horizontal cross-sections are divided by junctures at a large angle to the walls of the vessel into many separate parts; and bands -a single horizontal joint along the entire length in a horizontal cross-section, long inclined or curved joint in a vertical cross-section (Bobrinsky 1978, 175-176; Rice 1987, 125; Vasil'eva and Salugina 2010, 72-87; Petrova 2021).

Surface treatment: Various types of smoothing, burnishing, and additional clay coating are determined. In the latter case, characteristic rounded (micro) cracks appeared on the vessel's surface (Rye 1981, 41, 54; Shepard 1956, 67), resulting from uneven shrinkage of the clay, composing the elemental paste composition and coating. We divided the concept of "slip" into two types: "coating of the same clay" of varying thickness - a kind of clay similar to the main raw material without using additional admixtures; while "slip" - applying of the same clay mixed with a pigment or just different clay.

Firing: The firing regime, duration, and temperature are determined based on the thickness of the oxidized and not completely oxidized layers and the quality type of the transition of a margin between them (sharp or gradual) in the cross-sections, as changes in intentionally mixed or natural inclusions. The color of the surface determines the firing atmosphere: orange tones of varying intensity are characteristic of the oxidation regime, and gray tones are characteristic of the reduction regime (Balossi Restelli 2006, 102-103; Bobrinsky 1999, 93-95; Nieuwenhuyse *et al.* 2001; Rye 1981, 118).

Technological Analysis of Hakemi Use Pottery

Our analysis aimed to determine the main technological characteristics that distinguish different types of ceramics in the settlement and to compare the obtained technological knowledge with the data available on other settlements for the subsequent reconstruction of the cultural traditions of the ancient population. One hundred eighty ceramic fragments from the Hakemi Use settlement were studied from different ceramic types from all five building levels. Ceramics will be considered into main groups are the *Standard Ware* (Figure 2.1, 2), the *Orange Fine Ware* (Figure 2.3-6), the *Fine Ware, and DFBW* (Figure 2.14-18), but definable types of the *Fine Ware* will be considered separately "*Classic Samarra*"

(Figure 2.7,8), "*Northern Samarra*" (Figure 2.9-11), the *Standard Hassuna* (Figure 2.12,13). According to the studied ceramics, the most numerous groups of *Standard Ware* consists of vessels of different categories (bowls, jugs, pots, storage vessels, basins, husking trays). The wall thicknesses are between 9 and 18 mm (average of 11-13 mm). All other ceramic groups belonging to tableware (bowls, pots, jugs) are more thin-walled - from 4 to 10 mm. Open forms prevailed among the *Orange Fine Ware* and *Samarran* ceramics, among *DFBW*-closed forms.

Raw Material

It is possible to distinguish some groups of raw materials in the *Standard Ware* group. In most cases (mass material for the settlement), ferruginous, slightly - sandy clay with an admixture of mica is observed. In other types, sometimes ocher, quarts, and lime were fixed in small amounts. The last one is connected with painted types (Figure 2.1-2). In the *Orange Fine Ware*, different variants of ferruginous raw material are noted. It occurs in lime in different concentrations (Figure 2.3, 4, 6) and sometimes big size (up to 0.5 mm), but always has rounded outlines (Figure 2.6). Also, it can fix ocher and sometimes mica. Ceramics of the *Classic Samarra* type were from two kinds of clay: supposedly unferruginous (but there is another explanation, which will be discussed below) without visible inclusions (Figure 2.7) and slightly ferruginous with tiny lime in low concentration (Figure 2.8). In the *Northern Samarra* type, it is also possible to distinguish some variants of clay. It contains lime in different concentrations and sizes of mineral particles, but always with rounded outlines (Figure 2.9-11), sometimes with additions of mica and ocher. Ceramics of the *Standard Hassuna* type also have different clays: partly just lime (in different concentrations but always very small) (Figure 2.13), partly just with mica, and partly with a mixture of lime, mica, ocher, and quarts. In *DFBW*, lime is presented in all samples in different concentrations (mostly high) and minimal size. Also, in some samples, another mineral component could be detected (possibly ocher and some others) (Figure 2.14-18).

Pottery Paste

Two types of intentionally added inclusions are noted in the pottery paste of studied ceramics: organic and mineral.

Organic inclusions are represented by an admixture of dung and coarser plant inclusion (crushed straw) in various concentrations. Dung was noted in all samples of the *Standard Ware*, and its concentration in these products is very high - from half to a third of the volume of the pottery paste, but gradually decreases. It can be said that the dung (from cattle, supposedly) was added there in a slightly dried state since, along with strongly curved prints of the plant (Figure 3.3a), prints with breaks made in a dry state are recorded (Figure 3.3b). Also, dung was noted in a minor concentration in separate fragments of the *Orange Fine Ware* and the *Standard Hassuna* ceramics (no more than 1/10 from all volumes of pottery

Figure 3: The trace of dung in the core

paste). At an even lower concentration, an organic impurity of minimal size was noted in almost all samples of the *DFBW*.

The admixture of straw is represented by larger lamellar plant remains, from 2-3 mm or thicker, most likely associated with the leaves or stems of plants. It is sometimes fixed in the

Standard Ware, supposedly with the combination of dung, and in some cases of *Coarse Ware* without any ornamentation, it was used just straw.

Among intentionally mixed mineral inclusions, is basalt, which is fixed in some fragments of *Northern Samarra* type of ceramics (Figure 2.10). It can also be found in the *Standard Ware* (different types). Different basalt variants were detected (colors and composition: homogeneous and with inclusions) even in one fragment (Figure 4.4-5). Basalt is always combined with clay, which includes an admixture of mica. We also detected beige intentionally added mineral inclusions fixed in *Northern Samarra* type (Figure 2.11), possibly in the *Orange Fine Ware*. Black and light gray intentionally added minerals were found in *DFBW* (Figure 2.16-17).

Construction Methods and Forming

Different construction methods the *Standard Ware* were discovered. In the lower building levels, it was made using coils and short bands or elongated slabs. In both cases, vessels were made accessible – without any molds[3]. They were constructed with elongated slabs in two layers in the upper levels, seen from the multilayer flat junctions, dividing the cross-section into two parts (Figure 5.4-5). Large cracks sometimes occur on the outer or inner surface, passing along the boundaries of the slabs (Figure 5.3).

The same method is fixed in the *Orange Fine Ware* (Figure 6.8-10) and all other *Fine Ware* types: *Classic Samarra* (Figure 6.1-5), *Northern Samarra* (Figure 6.6-7), and the *Standard Hassuna* (Figure 7). The size and form of elements could be varied (Figure 6.3-4). The layering is visible in the break of the fragments related to *Classical Samarra*. The vessel was thrown into apparently incorrect high-temperature firing, as a result of which the clay slabs parted and a void formed between them (Figure 6.5). Also, the presence of various clay structural elements can be determined by the presence of open surfaces of lower elements (Figure 6.6-7). Unfortunately, given the paddling and a dark gray cross-section, it is difficult to say something about the clay elements used for making *DFBW*.

Regarding two-slab constructions, it can be assumed that this technique was used to strengthen the joints while paddling on the mold. We have evidence of mold mainly on the inner surface from different materials: skin, wicker prints of thin and rude textiles, or wicker. We can see marks from pulling the bag (thin textiles?) in the *DFBW* and the *Orange Fine Ware* on the inside under the rim (the rim was stuck on top) (Figure 8). It's possible to suggest the bag was used during the construction of *Standard Painted* and *Incised Ware* - several protruding lines are fixed on the inner side, radiating from the rim. The material's contraction creates waviness (Fig. 9.2a). It can be supposed to be the imprint of the cord (Figure 9.2b). In one case, bag prints were found on the outer surface of the *Standard Coarse Ware* (Figure

3 This will be discussed in more detail in the next article.

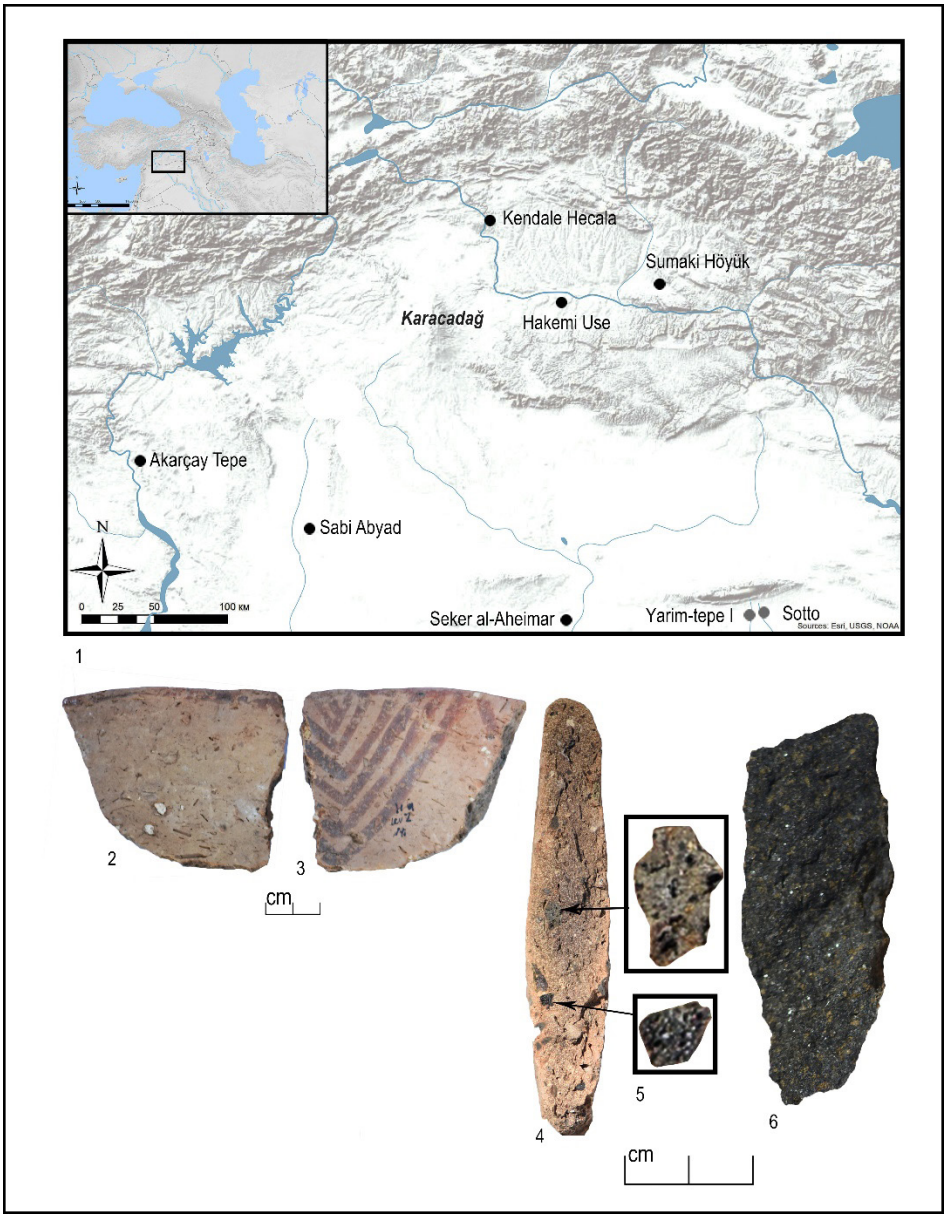

Figure 4: The basalt tempered

9.3). Wicker or knitted prints are located on the inner surface of the *Orange Fine Ware* (Figure 9.5-6). A skin mold on the inner surface of the *Standard Hassuna Ware* (Figure 7.2-3). In all considered cases, these bags could be either an independent mold filled with any soft material or a link between the mold and the clay vessel.

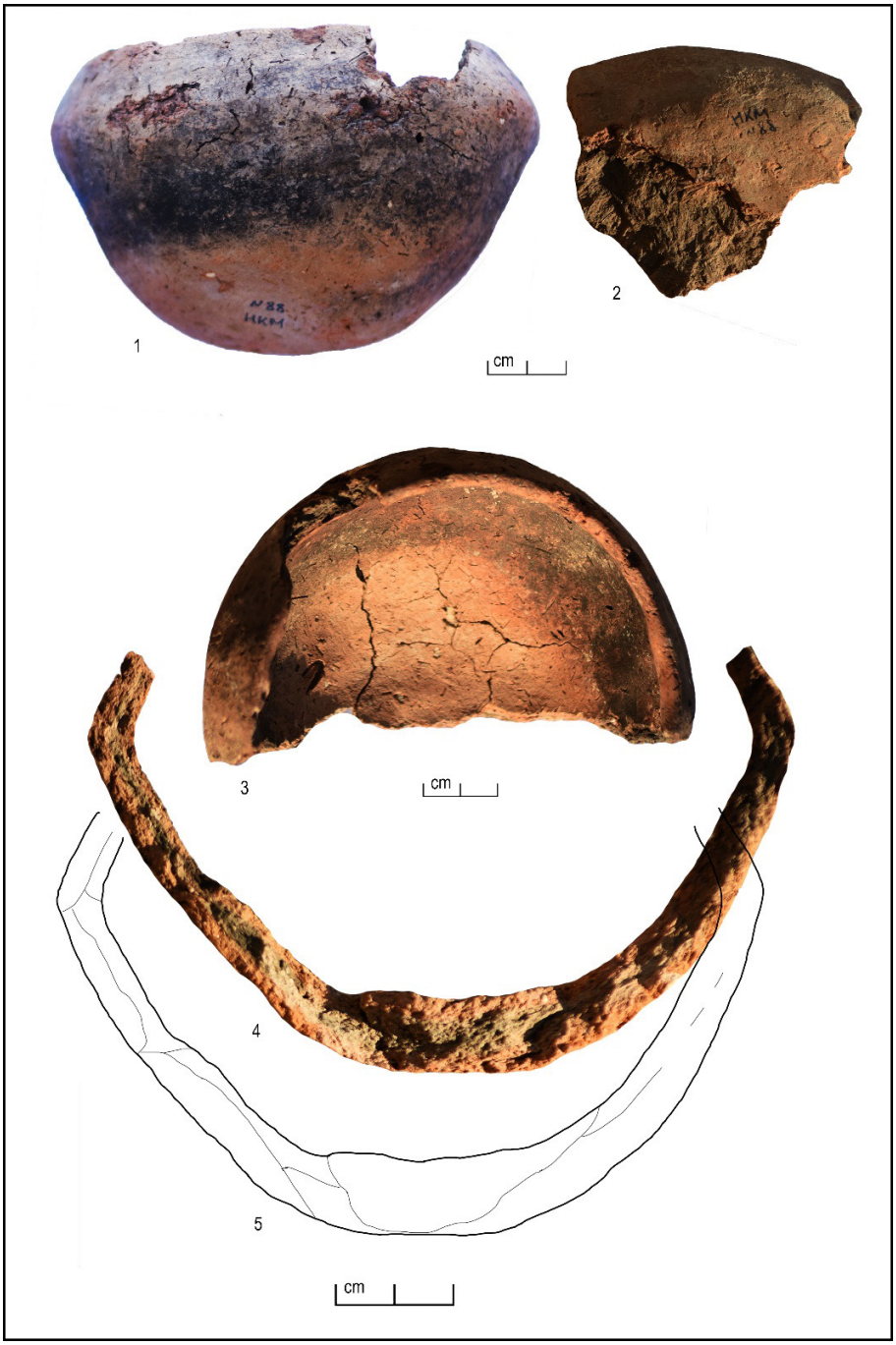

Figure 5: Two-layer slab construction in the *Standard Ware*.

Figure 6: *Samarran (1-7)* and the *Orange Fine Ware (8-10), made with slabs.*

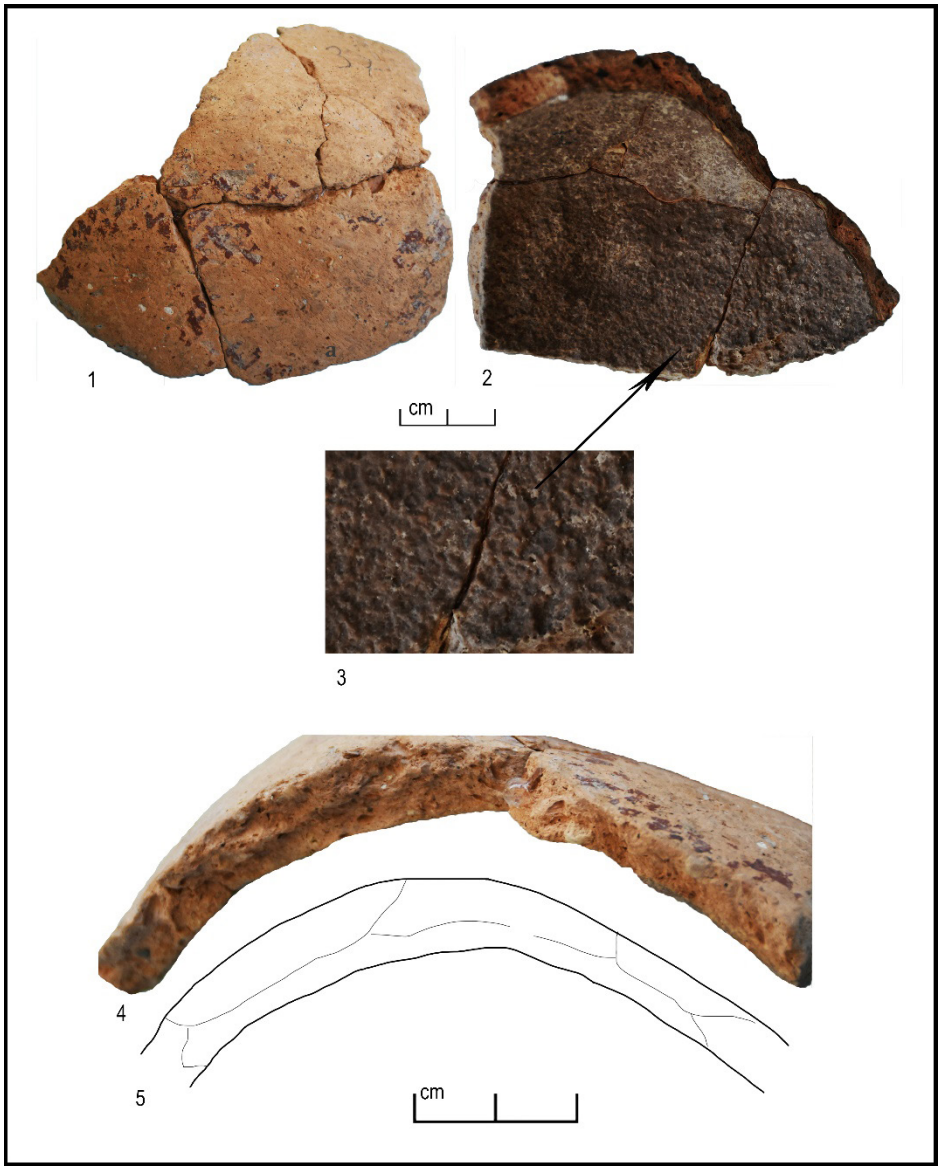

Figure 7: The prints of two-layer slabs in the horizontal cross-section (4, 5) and skin mold (or link) (2, 3) on an inner surface of *Standard Hassuna Ware*

Surface Treatment

In most cases, on the surfaces of the *Standard Ware,* the *Orange Fine Ware*, and the *Northern Samarra,* fixed additional covering with the same clay was found. This layer peeling (Figure 10.2, 7; 5.2), curly cracks of this layer (Figure 10.5; Figure 5.1), and small

Figure 8: The prints from pulling the bag (thin textile?) in *DFBW* and *Orange Fine Ware*

curly losses of this layer were found along the cracks (Figure 10.9). Most often, the clay covering is combined with dung in pottery past, which is visible under this layer. It could be suggested that vessels containing the dung in the pottery paste in high concentrations were deliberately covered with an additional layer of clay, probably to reduce the porosity. Cases of using a slip-clay solution that differs from the raw material's main composition are rare: just in instances, the *Standard Hassuna*. It was the admixture of clay with light pigment

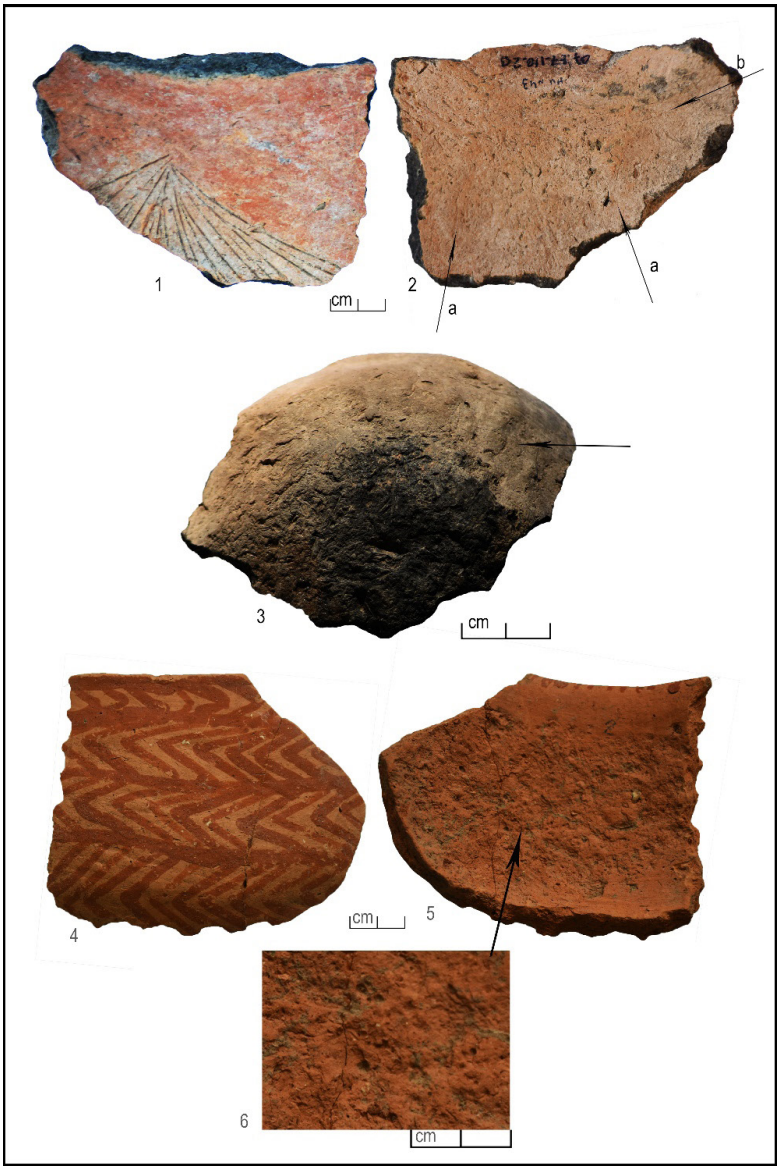

Figure 9: The traces of mold on the *Standard Ware* and *Orange Ware* (wicker prints knitted link)

(Figure 10.1). In two cases, it could suggest the presence of red slip (clay + pigment) in the *Standard Ware*. But the mostly red color is achieved by burnishing on a hard-dry surface, sometimes covered with red paint.

Another prevalent surface treatment is burnishing, which reduces porosity and increases

Figure 10: The traces of clay covering

moisture resistance (slightly). Burnishing could be carried out on an almost dry surface (the so-called "leather-hard" state). This situation is fixed on the *Standard Ware*, and burnishing gives a "red" effect (Figure 11.1). On the *DFBW,* both burnishing on a "leather-hard" surface and a not completely dry were found - while grooves from the polishing tool remained on the surface (Figure 11.2). The complete covering of the surface with burnishing is fixed in not big-size vessels of *Standard Ware* and *DFBW* ceramics (Figure 11.1-2). Burnishing is

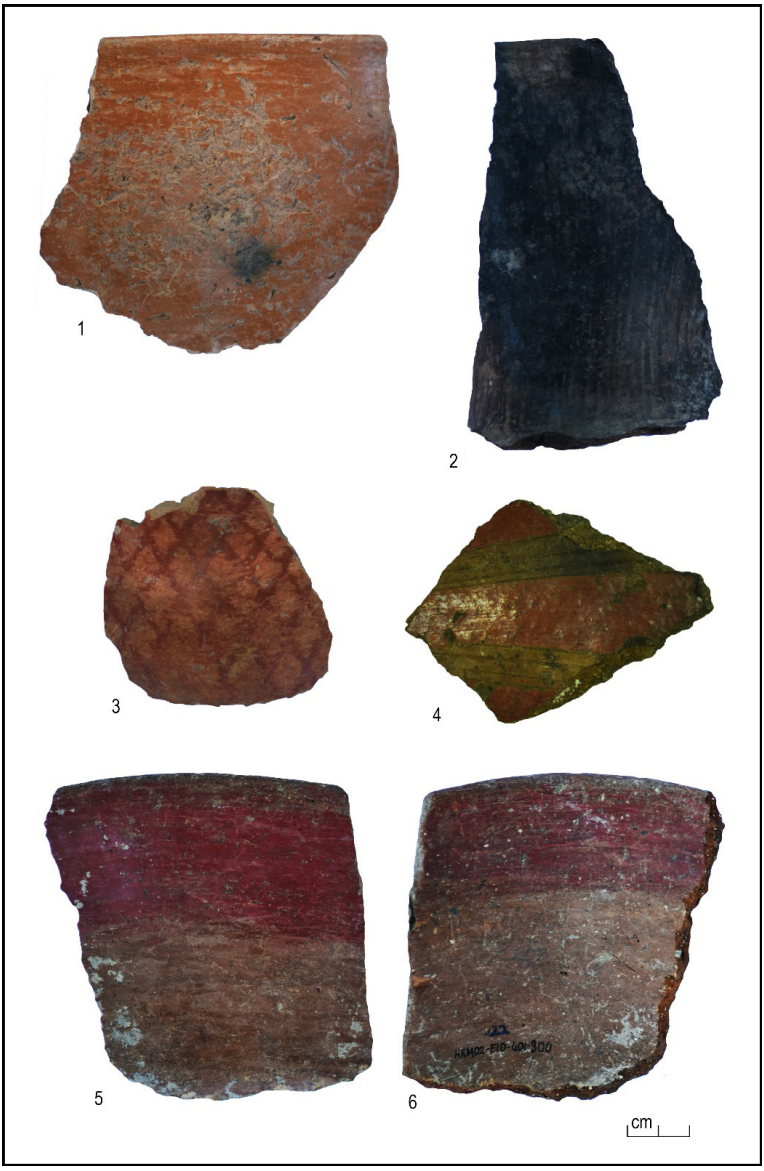

Figure 11: Surface treatment (burnishing).

like ornamentation on different ceramic types (Figure 11.3-6). Smoothing of the surface with various tools (presumably fingers, grass, cloth, and stone tools) is also periodically recorded.

Firing

During the firing of the *Standard Ware* group, an oxidative atmosphere was used. In most

cases, the *Standard Ware* ceramics of all types were exposed to high temperatures (700-800°C) for a short time, after which it was abruptly removed from the fire. This is evidenced by thin oxidized (orange) layers near the surface, as well as a thick (black) inner layer (core) that has not been exposed to high temperatures (Figure 2.1). In some cases of the *Standard Ware*, the use of these temperatures was longer, and the vessel was under their influence for a longer time, which gives a gradual transition of colors from orange to light gray (Figure 2.2).

The *Orange Fine Ware* and the *Fine Ware*, in most cases, were exposed to high temperatures for a long time (Figure 2.3-5, 7-8, 9-10, 12-13), in some cases exceeding the specified temperature values for a short time resulting in a highly oxidized (bright orange) layer near the surface (Figure 2.12). Interestingly, the firing was fixed in *Classic Samarra* (Figure 2.8), *Northern Samarra* (Figure 2.9), and *Standard Hassuna incised* (Figure 2.13), when light layers of different thicknesses appeared near the surface of the vessel subjected to high-temperature oxidative firing. This situation is highlighted by "self-slip" - the covering of the vessel, which "consists of the same material that constitutes the body clay", which "results from carefully wiping the vessel surface". It also noted that this "treatment brings the finer particles and salts present in the clay to the surface. In combinations with neutral firing conditions, this may contribute a pale surface color" (Rice 1987, 151; Nieuwenhuyse 2007, 70). In cases studied by us, the suggestion that salts present in the clay rise to the surface due to treatment is contradicted by the fact that the lighter layers of the cross-section near the outside and inside surface of the vessel wall are of different thicknesses. The outer layer is always thicker. We assume that this situation is related to the achievement of high firing temperatures, probably around 1000°C, when the next stage should be the greening of the surface, which is known on the ceramics of the *Standard Hassuna* and the *Samarra* (Nieuwenhuyse *et al.* 2001, 153; Petrova 2022, 34). It is possible that the ceramics of *Classical Samarra* were also subjected to such firing, only for a longer time (Figure 2.7). The desired color contrasts were achieved by firing the vessels at sufficiently high temperatures for the pigments to melt in alternating reducing-oxidizing circumstances (Courtois and Velde, 1984; Nieuwenhuyse *et al.,* 2002, 40).

We discovered exciting groups of *Orange Fine Ware* and *Northern Samarra Ware*, where the vessels were initially fired in a reducing atmosphere (without access to oxygen), as their core has an intense dark gray-blue core (not light gray) (Figure 2.2), as in the case of gradual firing in an oxidizing atmosphere, and not be black, and as in the case of full firing in an oxidizing atmosphere, when the core remains not fully fired (Figure 2.1), and then subjected to oxidized firing - resulting in an outer orange layer (Figure 2.6,11).

DFBW black was mainly fired in a reducing/oxidizing atmosphere from the beginning because its core has a dark orange hue. But in the end, such vessels were subjected to short-term firing in a reducing atmosphere (Figure 2.16-18). *DFBW purplish-brown*,

on the contrary, has a core, indicating the initial reductive firing, but at the end of it, the atmosphere became reductive-oxidative (Figure 2.14-15). However, the exposure time to such final temperatures was different (oxidizing or reducing), which is also the reason for layers of different thicknesses near the surface. In the case of prolonged firing in a reducing atmosphere, a dark gray-blue color is also fixed (compare Figure 2.15 with Figure 2.6 and Figure 2.11).

General Discussion of Technological Stages

In general, the collected data showed a wide variety of cultural traditions in the field of ceramic technology, which provided many opportunities for further study and raised many interesting questions. For example, mica is a characteristic mineral inclusion of the raw materials of the Taurus foothills and is the typical impurity of the Hakemi Use *Standard Ware* mass material clays. It is not common in *Standard Ware* pottery originating from the more southerly settlements of Upper Mesopotamia – Tell Sabi Abyad and Tell Boueid II, where the natural clay inclusions are calcium carbonate of microfossil origin and quarts (Nieuwenhuyse *et al.* 2002, 44; Nieuwenhuyse 2007, 74). The presence of a significant amount of natural admixture of limestone in such ceramic types as *Orange Fine Ware, Standard Hassuna,* and *Samarran* is not surprising and points to the Mesopotamian plain (Nieuwenhuyse 2007, 85; Petrova 2021). But the existence of mica in the *Orange Fine Ware* and the *Samarra Ware* in Hakemi Use ceramics and in the *Samarra Ware* from Tell Boueid II (Nieuwenhuyse *et al.* 2002, 40) gives rise to different assumptions: some of the pottery was imported from the southern regions, but some could have been produced in the foothills of Taurus. It is also interesting that on the Tell Sabi Abyad settlement, the *Orange Fine Ware* ceramics and Hakemi Use were made from different types of clay: both with limestone (microfossil origin) and without it (Nieuwenhuyse 2007, 74).

Of no less interesting is the study of intentionally included impurities. The presence of dung in ceramics connected us with Upper Mesopotamia and Zagros, where this tradition was spread in the second half of the 7th Millennium BCE. But in the period under study, it has been recorded everywhere in the eastern and southern parts of Fertile Crescent (Petrova 2019; in press). The presence of the dung is fixed in the *Standard Ware,* the *Orange Fine Ware,* and the *Gray-Black Ware*[4] ceramics of Tell Sabi Abyad settlement of this period (Transitional or Proto-Halaf in term of Sabi Abyad) and Tell Boueid II (Nieuwenhuyse *et al.* 2002, 43, 55; Nieuwenhuyse 2007, 75). By the definition O. Nieuwenhuyse, no vegetal temper was added to *DFBW* pastes from Tell Sabi Abyad (Nieuwenhuyse 2007, 86). It is different from Hakemi Use data. In addition to dung, more significant plant residues are often recorded in the coarse vessels of all named settlements. However, their interpretation

4 *Gray-Black Ware* – ceramic type close to *Standard Ware with* grey surface colour (Nieuwenhuyse 2007, 75).

is difficult. The only case when extensive plant remains can be confidently associated with threshing waste was recorded at Tell Koshak Shamali, where many impressions of husks were noted in ceramics (Le Mière 2001, 182; Petrova in press).

The study of specially added mineral impurities can also help discover the place of origin of various ceramics types. For example, basalt is relatively common in the Taurus foothills and nearest regions (Figure 4). It is found in *Northern Samarra* and, possibly, in the *Standard Ware* of Hakemi Use pottery. Coarse admixture of basalt to ceramics is known as the first half of the 7th mil. BCE on this territory: *Mineral Coarse Ware* – Kendale Hecala (Ökse 2021, 309) the *Early Mineral Tempered Pottery – Sumaki Höyük (*Erim-Özdogan 2011, 29; Gündüzalp 2021, 30). A small admixture of basalt is also recorded in ceramics of this time in Akarçay Tepe (Cruells *et al.* 2017, 31) on the river Euphrates and its tributaries: Khabur River – Tell Seker al-Aheimar (Basalt Tempered Ware) (Nishiaki and Le Mière 2017, 46); the Balikh River – Tell Sabi Abyad I and II *Early Mineral Ware* (EMW) (Nieuwenhuyse *et al.* 2010, 77). In the "Transitional" period at Hakemi Use, basalt-temper is also noted in *Mineral Coarse Ware* type, among others, deliberately added temper in Tell Sabi Abyad (Nieuwenhuyse 2007, 80). Not far from the Hakemi Use settlement, numerous outcrops of basalt are associated with the activities of the volcano Karacadağ (Lustrino *et al.* 2012) (Figure 4). Also, it's possible to add that when basalt is combined with an admixture of mica, it indicates the local origin of ceramics. A detailed study of the mineral impurities composition in the future will help with different questions, including understanding *Northern Samarra* ceramics.

We also documented intentionally added dark (black and light-gray) mineral inclusions in *DFBW* from Hakemi Use. Some of them are probably amphibole[5], which were in the *DFBW* "Pre-Halaf" and "Transitional" periods of Tell Sabi Abyad settlement (Le Mière and Nieuwenhuyse 1996, 126, 147; Nieuwenhuyse 2007, 52, 82) and Boueid II (Nieuwenhuyse *et al.* 2002, 62).

In the *Orange Fine Ware* paste of Tell Sabi Abyad and Tell Boueid II ceramics, we documented large (more than 2 mm) and angular to sub-angular orange, reddish-orange, dark-gray, and black colored inclusions, mudstone, sandstone, and calcium-carbonate particles (Nieuwenhuyse *et al.* 2002, 55-56; Nieuwenhuyse 2007, 86). In studying *Orange Fine Ware* from Hakemi Use, reddish-orange inclusions (ocher?) and calcium-carbonate particles (lime) look like natural inclusions and can be more extensive but consistently rounded outlines. But we also documented beige (or light orange) angular inclusions, which can be intentionally added.

The study of construction methods also can tell us about relations between populations of the region, in studied period coils noted in ceramics from Tell Halula (Calvo *et al*. 2018, 158)

5 Deposits of amphibole is hundreds of kilometres of Sabi Abyad (Nieuwenhuyse 2007, 52, 82).

and Tell Sabi Abyad. In *Standard Ware*, *Gray-Black Ware*, and *Mineral Coarse Ware*. For *Orange Fine Ware* and *Samarra Ware,* the construction method is described as follows "the base was pressed out in a mold, after which the wall was built with coils" (Nieuwenhuyse *et al.* 2002, 45; Nieuwenhuyse 2007, 77, 79, 80, 86). The last method is also suggested for the *Samarra Ware* from Tell Baghouz (Nieuwenhuyse *et al.* 2001) and Tell Boueid II (Nieuwenhuyse *et al.* 2002, 39). Along with slab construction in two layers on a base mold, coils are also noted for *Proto-Hassuna* and *Archaic Hassuna* pottery in the eastern part of the Fertile Crescent. During the *Standard Hassuna* period, coils almost wholly disappeared in this area. Ceramics of the *Standard Hassuna* and *Samarra* are made using a base mold using a two-layer slab construction (Petrova 2021; Petrova 2022).

The usage of the mold was found in the manufacture of *Samara* ceramics in all studied cases (Nieuwenhuyse *et al.* 2001; Nieuwenhuyse *et al.* 2002, 45; Nieuwenhuyse 2007, 77, 79, 80, 86; Petrova, 2022).

Construction methods of ceramics, referred to as the *Standard Ware* require a more careful study in various territories since they can differ significantly and testify to different relationships. In Hakemi Use, we documented three construction methods in the *Standard Ware*. Coiling and making vessels from elongated slabs or short bands without mold, were found in the lower part of the settlement. On the upper level, we also discovered a two-layer slab construction of *Standard Ware* vessel on a base mold. Possibly it happened under the outside influence because this method is also fixed on ceramics of *Orange Fine Ware*, the *Samarra,* and the *Standard Hassuna* from Hakemi Use. It may be indirect evidence of the direct contact of the bearers of different technological traditions and that ceramics came to the settlement not only in finished form.

We found the prints of the mold (or link to the mold) of different types on Hakemi Use: from the skin, coarse textile, and possibly thin textile (bag). Such prints are known on the ceramics of Upper Mesopotamia from the Proto-Hassuna period (Nieuwenhuyse *et al.* 2012, Fig. 4, 5; Berghuis 2018; Petrova 2019, Fig. 5). Weaving prints are also known on the lid of a vessel originating from Hakemi Use (Tekin 2017, Fig. 20).

Details of surface treatment, require clarification, especially the question associated with different types of additional clay coating of the vessel surface. The presence of slip (red slip or lightly-colored 'self-slip') was found on Tell Sabi Abyad and Tell Boueid II ceramics *Standard Ware,* sometimes *Gray-Black Ware* and *Orange Fine Ware* (Nieuwenhuyse *et al.* 2002, 56; Nieuwenhuyse 2007, 76, 79, 86). We also assume the presence of an additional clay coating on these types of vessels. Still, we propose to single out the coating from the same clay and the slip itself (as a changed composition or different from the composition of the clay from which the vessels were made). Previous authors have probably used the

term “wash” for the first case. But it seems unfortunate since “wash” involves a skinny clay coating highly diluted with water. While on the ceramics we studied, the clay coating is thick enough to cover all inclusions (organic and mineral), often in high concentrations.

Also, explaining the “dark” surface color of the *DFBW* presents a challenge. Le Mière thinks it is generally not a firing result, but it depends on the clay used. Also, she noted that these “vessels were often slipped, which gave a bright, cherry-red color” (Le Mière and Nieuwenhuyse 1996, 126-127). The same is suggested for the *DFBW* from Tell Boueid II (Nieuwenhuyse *et al.* 2002, 62). But for Tell Sabi Abyad *DFBW* ceramics, Nieuwenhuyse noted that some part of it was fired in reducing circumstances, including *Pattern-Burnished Ware* (Nieuwenhuyse 2007, 82-83). F. Balossi Restelli suggested that the dark color of the *DFBW* surface on ceramics from Yumuktepe, both modern for Hakemi Use and later periods, occurred for some reasons: the reduced firing regime, the covers with grits and very watery wash (Balossi Restelli 2006, 19). The ceramics of *DFBW* that we studied (with the black and purplish-brown color on the surface) Hakemi Use don’t show any traces of slip. In this regard, we also want to mention that burnishing is the main characteristic of the *DFBW* (Balossi Restelli 2006, 18; Nieuwenhuyse 2007, 79). It gives a more intense color on the surface: in the case of more ferruginous clay in the oxidized regime, it will be red; in the case of the reductive regime - it will be black.

Studying the details of the firing condition also sets us the vector for searching for ceramic bonds. The oxidative firing regime is typical for the eastern part of the Fertile Crescent. It was used in *Proto-Hassuna* and *Hassuna* ceramics (Petrova 2021; Petrova *et al.* in press), *Orange Fine Ware*, and most *Standard Ware* (Nieuwenhuyse 2007, 76, 86). The reducing firing regime is mainly known in the western part of Upper Mesopotamia and the Mediterranean coast (Balossi Restelli 2006). It is fixed in *Gray-Black Ware, DFBW,* and *Mineral Coarse Ware* in Tell Sabi Abyad. Nieuwenhuyse noted the use of different firing regimes in *Gray-Black Ware* and *DFBW* (Nieuwenhuyse 2007, 79). This is also typical on *DFBW* from Hakemi Use. And just about 20% of ceramics from Yumuktepe are fired in reducing atmosphere (Balossi Restelli 2006, 18).

Interesting is the existence in the collection of Hakemi Use ceramics groups of the *Orange Fine Ware* and the *Northern Samarra* types, initially fired in a reduction firing, and then experienced a reducing atmosphere. This may indicate their Western connections. It was noted already that the main features of *Samarran* pottery found at Hakemi Use are similar to that of the southern regions (Nieuwenhuyse 1999; Nieuwenhuyse 2000); however, there are still some differences between the two areas both “in fabric and designs” (Tekin 2011, 153-156). Therefore, the study of firing and the analysis of raw materials and impurities can tell us that some of the ceramics were local, and some were of southwestern origin.

Discussion of the Problems of *Orange Fine Ware* Connections

It is supposed that *Orange Fine Ware* is common to the *Archaic Painted Ware* (Le Mière and Nieuwenhuyse 1996, 173; Ökse 2021; Tekin 2013) of the eastern part of Upper Mesopotamia – Tell Hassuna (Lloyd and Safar 1945, 278, Fig. 7) and Yarim Tepe I settlements (Merpert and Munchaev 1993, 87-89). But later, Le Mière admitted that she did not identified *Orange Fine Ware* on the Sinjar sites – Yarim Tepe I, Tell Sotto, Kültepe (Le Mière 2000, 132). Nieuwenhuyse also pointed out the resemblance of *Standard Ware* from Tell Boueid II to *Proto-Hassuna* (Umm Dabaghiyah, Tell Sotto, Külltepe, Tell Kashkashok, Tell Hazna II, Tell Seker al-Aheimar) and *Archaic Hassuna* (Yarim Tepe I, Tell Shemshara). Besides this, he noted that *Archaic Hassuna* ceramics from Tell Hassuna and grit-tempered *Red-Burnished Pottery* from Tell Kashkashok II are closer to *Orange Ware* from Tell Boueid II (Nieuwenhuyse *et al.* 2002, 54, 60-61). This is a significant remark and requires a separate study. In any case, in addition to the discussions of *Orange Fine Ware* connections, it emphasizes that *Standard Ware* is a heterogeneous phenomenon; it may differ on different sites.

We can say that judging by the studied *Orange Fine Ware* from Hakemi Use and ceramics of *Archaic Hassuna* pottery from Yarim Tepe I and Tell Sotto (Petrova 2021), there is no complete correspondence between these ceramic types. All the studied groups of this pottery differ either in the composition of the raw materials used or are very similar in raw materials (clay with limestone admixture) but have a different type of firing (Fig. 2.6). The composition of ornaments is parallel (mainly simple lines and triangles). Still, we have to add that the quality of execution is very different. The painted lines on *Orange Fine Ware* are more even, neat, and thicker than on the ceramics of *Archaic Hassuna*. Also, of note is the absence of polished ornament on the last one, characteristic of *Orange Fine Ware* on Hakemi Use and Tell Sabi Abyad (Le Mière and Nieuwenhuyse 1996, 173). Firing of *Orange Fine Ware* is more high-temperature and longer, as evidenced by the bright orange surface noted by all researchers (Le Mière and Nieuwenhuyse 1996, 168; Ökse 2021, 313; Tekin 2013, 496). At the same time, the surface of the *Archaic Hassuna* ceramics is light orange (buff color). On the Tell Sabi Abyad, where *Orange Fine Ware* ceramics were allocated initially, it appears in the period called "Proto-Halaf" (or "Transitional"), which corresponds to Hassuna III "bears strong resemblances to the Hassuna and Samarra cultures known from northern and central Iraq" (Cruells and Nieuwenhuyse 2004, 48-49; Le Mière and Nieuwenhuyse 1996, 168). Therefore, the *Archaic Hassuna* pottery represents an earlier stage, probably existing only in the eastern part of Upper Mesopotamia. But whether there is a connection between these two types of ceramics still requires further consideration. Possibly*, Archaic Hassuna ceramics is the* predecessor of *Orange Fine Ware*.

Conclusions

As was said before, ceramics from Hakemi Use indicate that the Upper Tigris Valley was in interaction with other parts of the Near East, as far as the littoral areas of the Mediterranean, the Upper and Middle Mesopotamia, and the foothills of Northwestern Zagros. We can see the same situation at this region's sites like Gre Fılla (Ökse 2021, 309-314) and Til Huzur/Yayvantepe (Caneva 2011, 176). In addition, the technological study of Hakemi Use ceramics shows that even within the same type, ceramics are not homogeneous and most likely have different places of origin. Indeed, some of the pottery of *Orange Fine Ware, Standard Hassuna,* and *Samarra* types were imported, and some could have been made in the foothills of the Taurus. Just ceramics *DFBW*, *Classic Samarra,* and *Standard Hassuna incised* can be called wholly imported.

The connection between the Upper Tigris region and the southern regions probably ran via the Mardin mountains (with an average elevation of 1000 m), the *Tur-Abdin* via the Tigris River and its tributaries (particularly along the stream of Şeyhan Çay), or through Savur and Derik (province Mardin). Ways to the obsidian sources in the northeast likely took the passes still used today by the most critical land roads, i.e., the Batman-Baykan-Bitlis-Van route. No significant barrier is located to the west since the Karacadağ massif is not an obstacle: it offers an easy course via Viranşehir (province Şanlıurfa) to the south. It can be passed on its sides, enabling travelers to reach the Balikh and Euphrates regions via Şanlıurfa, the Amuq region, and Cilicia. The pottery and small finds of Hakemi Use reflect the inhabitants' relationship to all of these regions (Tekin 2013, 499). However, judging by the analysis of ceramics, the most extensive ties among the population of the Upper Tigris at the beginning of 6th mil. BCE developed precisely in the southeastern direction (ceramics of *Orange Fine Ware*, *DFBW,* and some *"Northern" Samarra* samples).

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Ancient Cylinder Seals from Upper Mesopotamia

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ABSTRACT
This study examines 14-cylinder seals from the Diyarbakır Archeology Museum. Unfortunately, the museum inventory does not provide any information about their definition, period, or the culture they belong to. To determine their cultural significance, relevant details were presented to the academic community by comparing them with examples and similar items from previously published scientific papers. The seals discussed in this paper were exposed to abrasion, and some have signs of deterioration due to excessive use and scraping. The cylinder seals of this study represent the Akkadian, Old Babylonian, Mitanni, and Assyrian seal arts, depicting scenes from mythology, worship, hunting, and struggles.
Keywords: Cylinder Seal, Akkadian, Old Babylonian, Mitanni, Middle and Neo-Assyrian

Introduction[1]

In the ancient Near East, seals were defined as an object used to determine ownership, allowed people to sign documents, ensured the inviolability of goods and properties, and formalized all kinds of business and transactions (Özkan, 2011: 148). These artifacts were typically made of solid materials such as stone, sometimes ivory, bone, glass, tile, metal, wood, hard-dried clay or baked clay (Collon, 1987: 4; Pittman, 1987: 12; Yücel ve Parlıtı, 2020: 34). The origin of the seals, which are still actively used today, date to the Neolithic Period. Around 7000 BC, when seals were extensively utilized in the region spanning from Northern Syria to Southeastern Anatolia and Central Anatolia. In the prehistoric period when only stamp seals were produced, they were decorated with geometric patterns and animal scenes (Tsouparopoulou and Casties, 2014: 39). The increased trade of the Neolithic cultures during the Hassuna period coincided with the growing use of seals. Throughout the Halaf period, seals with similar forms and designs continued to be used as a shared artistic concept in the settlements of Southeastern Anatolia, Northern Syria, and Mesopotamia (Özkan, 2001: 16; Özkan, 2011: 148). In the Uruk period, animal scenes were preferred, and a wide variety of animals were represented. Another characteristic of glyptics of this period was the priest-king (Tsouparopoulou and Casties, 2014: 39). With the transition to cylinder seals, important transformations occurred in the Near East trade. One of the most significant indicators of merchants bridging Anatolia and Mesopotamia during the Assyrian Colonial Period were the hundreds of cylinder seal impressions found in Central Anatolian settlements (Özkan, 1993: 501). Cylinder seals continued to be used for the next millennium, eventually ending with the Achaemenid period (Özkan, 2011: 149).

Due to their extensive usage over long periods, seals, despite their small size, gained significant importance in the analysis of political, cultural, and economic relations between different continents and cultures, as well as in understanding the societal roles of humans[2]. Archaeological evidence revealed that cylinder seals became an integral part of daily life in Ancient Mesopotamia and Anatolia. In contrast to royal reliefs or monumental sculptures, these seals depicted events from everyday life. Seals were widely used by individuals ranging from kings to slaves, in daily tasks and correspondence. Production of seals was carried out by specialized seal makers known as “burgul” in Sumerian and “purkullu” in Akkadian

1 This study was conducted with the permission of the Diyarbakır Archaeology Museum, under the auspices of the Directorate of Culture and Tourism of the Governorship of Diyarbakır, Turkey, with permission dated 29.03.2019 and numbered 51045164-155.01-E.272234.

2 For example, the shipwrecks of Uluburun and Gelidonya, dating back to the 13th century BC and originating from Syria, carried various goods belonging to civilizations as distant as Anatolia, Syria, Cyprus, the Baltic, and Egypt. The Gelidonya shipwreck yielded scarab seals associated with Egyptian culture. Additionally, the significance of a mace head fragment bearing the seal of Pharaoh Ramses II, discovered in the vassal kingdom center of Kargamış, held great importance. In Panaztepe, a Mycenaean Age pithos tomb contained two scarabs, with the name of Pharaoh Amenhotep III deciphered on one of them, while another pithos tomb dating back to the 12th century BC contained a single scarab. For more information, refer to Özkan, 2007, 93-94, Fig. 8, 10.

(Dede, 2014: 21; Yücel, & Parlıtı, 2020: 34). Cylinder seals primarily served as objects of prestige. They were preferred over stamp seals, which were previously used in trade, due to their more appealing narrative and religious expressions. Crafted from valuable or semi-precious stones, cylinder seals, especially the finest examples were believed to belong to the royal family, indicating their ownership.

Methodology and Aim

The seals included in the study were organized and described in a catalog. Detailed descriptions, evaluations, and comparisons were provided within the catalog. The examined seals were numbered from one to fourteen and classified according to their chronological and typological characteristics. Consequently, the museum cylinder seals are from the Akkad, Old Babylon, Mitanni, Middle Assyrian, and Neo-Assyrian cultures. To facilitate a description of the objects, terms commonly used in work related to cylinder seals were included in the present study. This study's goal was to examine the correlation between the museum seals by using the previous research of scholars in the field. These seals, believed to have originated from Diyarbakır and its surroundings, which are now housed in the Diyarbakır Museum, depict scenes such as mythological stories, struggles, offerings, and worship. Additionally, these seals served as protective amulets and tools for trade.

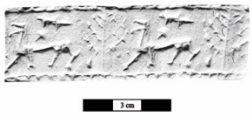
When considering the southern and eastern parts of Anatolia, these seals from the Akkadian, Old Babylonian, Mitanni, Middle Assyrian, and Neo-Assyrian civilizations are represented by a small number of examples. From this perspective, this study and similar works are of great importance in understanding and analyzing the belief systems, trade relations, and political structures of these civilizations in the region as a result of their relationships and expansions into Anatolia. With this purpose and following the methodology applied in an evaluation of the seals, the dual or single scenes depicted on the seals are associated with similar examples. Not only the iconography but also the narrative structure and the technique of execution are crucial in this regard. In the cylinder seals discussed in our article, those with dual scenes depict a primary narrative followed by a secondary narrative. For seals with single scenes, the narrative is depicted from left to right, top to bottom, and filler motifs are discussed.

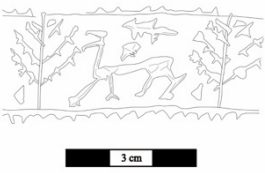
Results and Catalog

The scenes depicted in modern impressions of the seals were arranged chronologically in the catalog headings. The cylinder seals we discuss are introduced starting from the main scene and progressing towards the side scenes. In dual scenes, the artifacts were analyzed from right to left and from top to bottom. It is understood that the photographs of the seals were taken by museum officials in very low resolution. Therefore, to enhance their clarity and comprehensibility, the images have been digitally enhanced and drawings were made.

1. Mythological Scenes

***Catalog No*: 1**	***Picture and Drawing No:*1**		***Museum Inventory Number:*** 26/47/866
Type: cylinder Seal	***Material:*** Black Hematite Stone	***Period:*** Second half of the 3rd millennium BC (2500-2100 BC)	***Arrival to the Museum:*** Transfer from the Anatolian Civilizations Museum
Dimensions: length: 2,7 cm, diameter of: 1,2 cm			
Analogues: Ward, 1909: 209; Ornan, Ortiz, & Wolff, 2013: 8; Ökse, 2006: 559; Danışmaz, & Şahin, 2022: 4.			
Definition and Explanation: The upper part of the seal and the figurative area are eroded by time and use. The earliest examples of similar seal scenes were found in Arslantepe VI B Early Bronze Age I A, layers at Aşvan and Norşun Tepe dated to the early 3rd millennium BC, and in plates from the early 3rd millennium BC at Amuq G and Tell Brak (Ökse, 2006: 554). The seal was carved with a tool (rasp?) made with very deep cuts. The seal is limited to a single repeated scene. It depicts an animal with an open mouth and stylized leaf motifs on it. In front of the animal is a stylized tree of life. It has a distinct artistic style. The figure is schematically engraved with angular lines, without regard for body proportion or anatomical structure. A close comparison of motifs was made with the decorations on cylinder seals from the Ras-Shamra/Ugarit in Syria (Danışmaz, & Şahin, 2022: 5). The peculiarity of this seal is that instead of the usual method of drilling or cutting into hard micro-quartzite stones such as hematite, chalcedony, jasper or carnelian, the engraver chose the method of carving with a file on a hard stone (Ornan, Ortiz & Wolff, 2013: 7). The cylinder seal impressions consisting of animal and human figures engaged in farming were found on large pottery in the Tell Mardikh G palace, which are thought to store agricultural products because the seals are the same as those described for use by rural agricultural societies. (Ökse, 2006: 555).			





Picture and Drawing No: 1

***Catalog No*: 2**	***Picture and Drawing No:* 2**		***Museum Inventory Number:* 21/9/10**
Type: Cylinder Seal	**Material:** Serpentine	***Period:*** Akkadian	***Arrival to the Museum:*** Confiscation
Dimensions: length: 3,4 cm, diameter: 1,5 cm			
Analogues: Teissier, 1984: 123, 135; Ward, 1909: 34.			
Definition and Explanation: The repeating motif of warriors on the cylinder seal originates from the Akkadian and Amorite periods. Typically, it portrays a central composition depicting a struggle between a bull-man-human or a lion-bull-man. However, the seal was reinterpreted, presenting a scene of a human battling a giant serpent. Upon examination of the scene, it becomes evident that Gilgamesh and Enkidu (?) are depicted. Gilgamesh could represent the portrayal of a ruler of animals by gripping the giant serpent with his hand. In fact, an Assyrian Palace relief discovered in Dur-Sharrukin and exhibited in the Louvre Museum, portrays Gilgamesh as the lord of animals, holding a lion in his left arm and a snake in his right hand (Delorme, 1981: 55). Among the naked heroes, a tree of life is prominently depicted along with a saw-shaped tool on the tree. Geometric shapes are used as a filling motif behind the back of the naked hero holding the snake.			

Picture and Drawing No: 2

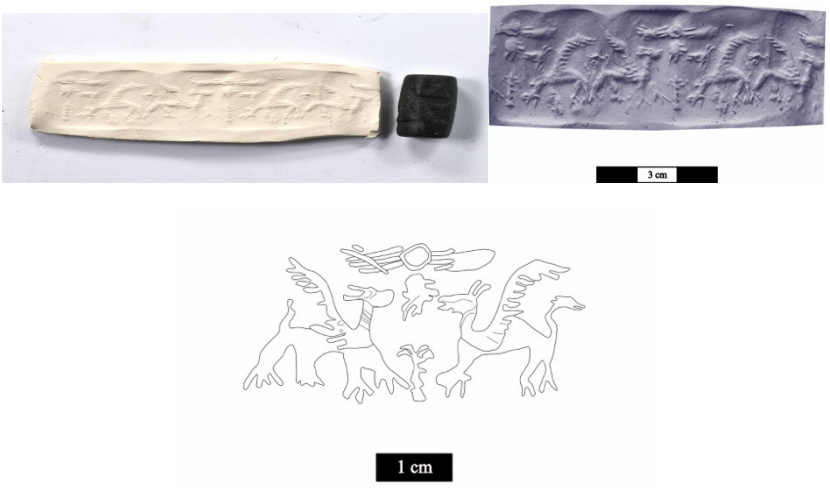
Catalog No: 3	***Picture and Drawing No:*** 3		***Museum Inventory Number:*** 5/5/75
Type: Cylinder Seal	***Material:*** Frit	***Period:*** Akkadian	***Arrival to the Museum:*** Confiscation
Dimensions: length: 2,4 cm, diameter: 1,1 cm			
Analogues: Ward, 1909: 34.			
Definition and Explanation: The cylinder seal features a single scene. In the center of the seal, Gilgamesh is depicted as a naked, bearded figure with a belt or sash around his waist. The three curls in Gilgamesh's hair are depicted as triple dots (Rehm, 1994: 269-270). Gilgamesh is shown with his arms outstretched, capturing two bulls. The bulls are standing upright with their heads turned backward. There are figures of a scorpion and a bird (?) among the other figures (Von der Osten, 1934: Cat. 295) The subject matter is similar to seals from the Akkadian period. In figure groups from this period, the figure band was cut in a linear style.			

Picture and Drawing No: 3

***Catalog No*: 4**	***Picture and Drawing No:*4**		***Museum Inventory Number:*** 14/3/12
Type: Cylinder Seal	***Material:*** Black Hematite Stone	***Period:*** Mitanni	***Arrival to the Museum:*** Confiscation
Dimensions: length: 2 cm, diameter: 1,2 cm			
Analogues: Teissier, 1984: 123, 135; Ward, 1909: 34; Von der Osten 1934: 147.			
Definition and Explanation: The cylinder seal comprises a single repeating scene, where a two-horned deer is seen walking toward the right. On the back of the deer, a smaller human figure is engraved to create a sense of distance. The figure has its arms raised in an adoring manner, while the body of the deer is adorned with geometric zigzag patterns. Between each of the human figures, there are additional geometric-shaped and ladder motifs. Quadruple rosettes are positioned behind the deer to represent the sun. The use of rosettes is a common motif, and they are generally placed for decorative purposes (Von der Osten, 1934: 146-147). Seals in the Mitanni style are divided into two groups by Frankfort, *the popular Mitanni style* (1700-1200 BCE) and *the fully developed Mitanni style* (1500-1350 BCE) (Frankfort, 1939: 273-283). The seal examined in our study was crafted in *the popular Mitanni style*. In *the popular Mitanni style*, single scenes, and figures such as *the tree of life* and *deer* are commonly depicted. These cylinder seals, belonging to the Mitanni culture dating back to the mid-2nd millennium BCE, suffered from wear and tear, excessive use, and second-time engraving. Some of them could have been damaged due to the forcible removal of ornate gold caps, that are similar to early Kassite seals (Thorn and Collon, 2013: 125).			

Picture and Drawing No: 4

***Catalog No*: 5**	***Picture and Drawing No:*5**		***Museum Inventory Number:*** 3/2/98
Type: Cylinder seal	***Material:*** Black hematite stone	***Period:*** Middle Assyrian	***Arrival to the Museum:*** Purchasing
Dimensions: length: 2,8 cm, diameter: 1,3 cm			
Analogues: Ward, 1909: 34, 197, 200; Niederreiter, 2020: 63, 66; Avcı, 2013: 214, 216; Sezen, 2015: 254; Von der Osten, 1934: 248; Porada, 2014: 329.			
Definition and Explanation: Positioned below the winged sun disc is a depiction of the sun, and beneath it a stylized tree. Flanking the stylized tree are two goats with lion's claws, and a tail with snake head and wings. The presence of winged animals in scenes has been documented since around 2200-2100 BC (the Third Dynasty of Ur period) (Avcı, 2013: 72). The stylized tree symbol is the most widespread ornamentation in the art of Sami in Mesopotamia. During the Neo-Assyrian period, it became an imperial symbol and its extensive use led to its dissemination throughout the entire Near East until the end of the first millennium, according to some researchers (Parpola, 1993: 167; Avcı, 2013: 4, 72). The sun disk and the sun (often accompanied by a crescent) are frequently depicted in Late Assyrian artworks.			



Picture and Drawing No: 5

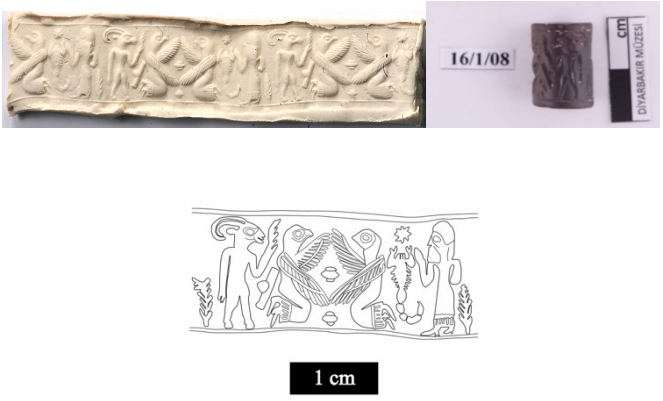
Catalog No: 6	***Picture and Drawing No:***6		***Museum Inventory Number:*** 8/2/97
Type: Cylinder seal	***Material:*** Quartz Stone	***Period:*** Neo-Assyrian	***Arrival to the Museum:*** Confiscation
Dimensions: length: 2 cm, diameter: 1,1 cm			
Analogues: Ward, 1909: 353; Teissier, 1984: 99; Tosun, 1956: 67.			

Definition and Explanation: In the single scene engraved on the cylinder seal, there is a winged, horned, bird-headed creature along with other creatures known as griffins, which have horns, bird heads, and human bodies. They are holding a fruit resembling a pineapple/date fruit in their hands. The winged, horned, bird-headed creature in the background extends its left hand toward the altar. Bird-headed human figures were also depicted on the seals of the Alişar, Acemhöyük, and Karahöyük civilizations. In Alişar, the winged bird-headed creatures held an antelope in one hand and a curved weapon in the other (Özkan, 2022: 77). In a seal impression found in Alişar, a bird-headed human was depicted with pine trees on either side. In the seal impression from Acemhöyük, mixed creatures with bird-like wings for arms and bird-like feet for legs were shown. The demons depicted were holding a date palm tree with a crescent symbol on it (Özkan, 2022: 77).
Complex religious ceremonies in Anatolia were depicted on seals, metal ritons, relief vases, rock monuments, and from the 14th century BCE onwards, on orthostats. In seals dating back to the late 18th century BCE, libations were performed by griffin-headed demons or priests wearing masks (Collon, & Sevinç, 2004: 86-87). These depictions are precursors of the griffin demons seen in Middle Assyrian and Neo-Assyrian art. In the seal from Catalog 5, which is believed to be from the Neo-Assyrian period, the central griffin-headed demon is depicted holding the fruit of a pineapple/date tree. On the far right, just below a wild goat, there are three concentric circle-shaped symbols. These symbols were found on seal impressions, cylinder seals, altars, and braziers discovered in the excavations of Konya Karahöyük (Alp, 1994: 102-103). Alp suggested that concentric circles could be associated with the cult of the sun (Alp, 1994: 102). The triple griffin figures are facing towards the right. There is an altar between the central griffin and the one in the back, while the griffin on the far right extends its hand offering the fruit. Two of the griffins have wings, while the central one is wingless. The wingless griffin holds the pineapple/date-like fruit with both hands. In the upper frieze, a crouching horned antelope is placed as a filling motif. Just below the antelope figure, there are three nested circles (guilloche), and beneath the circles, a goose is depicted with its wings spread open. In Assyrian seals, filling motifs are typically represented with rosettes (Von der Osten, 1934: 45; Tosun, 1956: Cat. 9).

Picture and Drawing No: 6

2. Antithetical Scenes: Hybrid Creatures and Animals

Catalog No: 7	***Picture and Drawing No:***7		***Museum Inventory Number:*** 16/1/08
Type: Cylinder seal	***Material:*** Black Steatite Stone	***Period:*** Neo-Assyrian (8th century BC)	***Arrival to the Museum:*** From Ergani Çakırtaş village.
Dimensions: length: 1,6 cm, diameter: 1 cm			
Analogues: Teissier, 1984: 17-18; Nys, 2018: Cat. 32.			
Definition and Explanation: The criterion in bird/gryphon-man depictions revolves around whether they possess wings or not. The portrayal of griffins has had a historical presence in Anatolia since the Age of Assyrian Trade Colonies. An example of such depictions was found on a seal discovered during the Konya-Karahöyük excavations, wherein a winged birdman was depicted kneeling on one leg along with a seated god (Erkanal, 1993: 33, Lev. 58). In Catalog 7, in the central scene, there are two birdmen facing each other, with a goat-headed figure behind the birdman on the left and behind the birdman on the right, there is a scorpion and a human figure. The human figure raises its right hand upward in an adoration position. Between the horned, goat-headed figure and the birdman on the left, there is a vessel believed to contain elixir. There are two symbols resembling Hittite hieroglyphic signs between the birdmen (Erkanal, 1993: 143). Above the scorpion, there is an eight-pointed star symbol. The symbol between the birdmen could be a variation of the Hittite hieroglyphic sign (Erkanal, 1993: 143).			



Picture and Drawing No: 7

3. Hunting and Fighting Scenes

***Catalog No:* 8**	***Picture and Drawing No:***8		***Museum Inventory Number:*** 19/26/06
Type: Cylinder Seals	***Material:*** Black Hematite Stone	***Period:*** Neo-Assyria	***Arrival to the Museum:*** Purchasing
Dimensions: length: 2,7 cm, diameter: 1,2 cm			
Analogues: Nys, 2018: Cat. 32; Niederreiter, 2020: 32.			
Definition and Explanation: This repeating scene depicts a winged dragon (bull) and the seal's owner. Between the winged dragon/bull and the seal's owner, there is the symbol of Ishtar, represented by an eight-pointed star. Notably, the seal's owner is depicted without a beard. Usually, a winged horned dragon (bull) on a seal symbolizes Marduk. But, the bull (dragon) portrayed here as a griffin represents Tiamat. On the right, presumably the owner of the seal, is in a kneeling position with one leg inside a garment, arms open in the air, holding an object, possibly in a position that suggests creation. The seal's owner may have wanted to convey the idea of being created by Marduk, just as Marduk created Samsu-iluna. For in the mythological narrative, the story is conveyed as follows: *"When you strike the foreign lands that are hostile to you like a violent storm, let your head be held high, O king; let your head be held high, O Samsu-iluna! In Babylon, the city of divine powers of Suen, let your intellect shine like the sun! May the god Marduk who created you raise your head among lords and princes!"* (Falkenstein, 1949: 218).			

Picture and Drawing No: 8

Catalog No: 9	***Picture and Drawing No:9***		***Museum Inventory Number:*** 20/6/10
Type: Cylinder Seals	***Material:*** Sintered Quartz Stone	***Period:*** Neo-Assyrian (883-612 BC)	***Arrival to the Museum:*** Purchasing
Dimensions: length: 2,6 cm, diameter: 1 cm			
Analogues: Von der Osten, 1934: 248; Ward, 1909: 197, 200; Avcı, 2013: 214, 216; Nys, 2018: Cat. 32, 82, 83; Niederreiter, 2020: 63, 66; Sezen, 2015: 254; Ensert, 2017: 104; Genç, 2017: 128, Pic. 2b; Munn-Rankin, 1959: Plate VII-26.			
Definition and Explanation: Sintered[3] quartz cylinder seals typically depict a standing god (Marduk), a two-legged animal, or a hybrid creature hunting. The scene is then bordered with double lines across the top and bottom. The targets aimed at with arrows are in the linear style of Assur and generally consist of a bull, wild goat, or wild sheep (sometimes a winged human-bird) (Niederreiter, 2020: 33). The god depicted is likely Marduk with a two-winged scorpion-man (Munn-Rankin, 1959: 27). This rendering is a well-known subject and can be seen in several known examples from the Assyrian cities of Assur and Kalhu, as well as from border areas of Iran, such as the Zagros cemetery near Sanandaj (Niederreiter, 2020: 33). The scene consists of a single frieze. The bodies are roughly carved in a flat manner, and the details are roughly rendered with a grooved-mouthed stylus, with some details shown in relief. (Ensert, 2017: 101). In some seal examples, a bearded sphinx with raised wings is depicted, along with a bearded, long-tuniced archer (deity) aiming at it with a bow and arrow. In front of the sphinx, there is a motif of the Tree of Life. A hybrid creature can also be depicted with a human bearded head, bird tail, and feline claws, and there is a deity shooting an arrow towards it. The hybrid creature likely represents one of the protective entities from Assur (Ornan, Ortiz, & Wolff, 2013: 14). In this depiction, the hybrid creature is walking to the right and the god is aiming an arrow at the creature's back.. In front of the hybrid creature is the tree of life, and in front of the god are two wing-like objects (Yücel, & Parlıtı, 2020: 8). The subject matter of this seal is associated with a group of locally found Assur or Assurized seals, prevalent in the western regions of the Assyrian Empire, depicting only animals or hybrid creatures (Reich., & Brandl, 1985: 47, Cat. 6:3).			

1 cm

Picture and Drawing No: 9

3 Sintering or fritting is the process of compressing and forming a solid mass of material by pressure or heat without melting it to its liquefaction point. Sintering occurs as part of a manufacturing process used with metals, ceramics, plastics, and other materials.

Catalog No: 11	***Picture and Drawing No:*** 11		***Museum Inventory Number:*** 30/3/13
Type: Cylinder Seals	***Material:*** Calcite	***Period:*** Neo-Assyrian (9th century BC)	***Arrival to the Museum:*** Confiscation
Dimensions: length: 2 cm, diameter: 1,15 cm			
Analogues: Ward, 1909: 372.			
Definition and Explanation: The scene is bordered by a raised line across the top and bottom. Between the two borders that frame the scene, there is a hunting scene with three figures. It belongs to Assur's linear/style. The three figures likely represent the god Ninurta. In each depiction of Ninurta, he is in a standing position facing the viewer with a sword in his right hand and a trident in his left. He is wearing a long, belted robe with a band diagonally placed across his chest, and the lower part of the robe is adorned with a fringed skirt. He has a belt around his waist and a sheath for a dagger attached to it. Flanking each Ninurta in the upper area are an eight-sided star and a crescent above a sphere. Below the eight-sided star and crescent are a pair of bulls facing each other. One of the bulls is kneeling and the other is raising its two front legs. (Niederreiter, 2020: 30) The earliest known example of a similar scene on a cylinder seal can be traced back to the reign of Kassite King Kurigalzu II (1332-1308 BCE). In this earlier depiction, Ninurta is holding a trident with three arrows and the two bulls are in a combat position in front of him.			

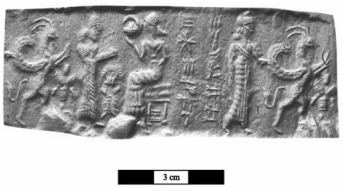
1 cm

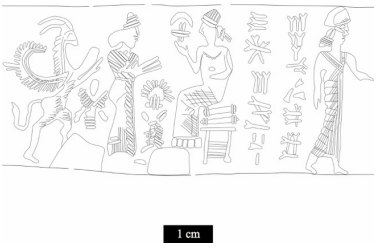
Picture and Drawing No: 11

4. Presentation, Worship, Offering Scenes

Catalog No: 12	***Picture and Drawing No:*** 12		***Museum Inventory Number:*** 1/5/01
Type: Cylinder Seals	***Material:*** Black Hematite Stone	***Period:*** Old Babylonian (1820-1730 BCE)	***Arrival to the Museum:*** Purchasing
Dimensions: length: 3,6 cm, diameter: 2,3 cm			
Analogues: Ward, 1909: 372; Özkan, 1993: 503, pl 90.			

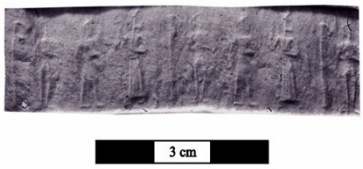
Definition and Explanation: It consists of a quadruple figure scene depicting an offering to the goddess. This theme emerged during the Third Dynasty of Ur and continued during the Babylonian period. In the scene, the goddess is seated on a decorated throne on the right, while on the left, a protective deity presents an offering. The leftmost part of the scene features cuneiform inscriptions and symbols (Von der Osten, 1934: Cat. 174). In our example seal, the scene depicts a goddess facing left, seated on a lavishly decorated low stool, wearing a round headdress, a fringed mantle, and bracelets, while holding a small cup. Facing the goddess is a protective deity wearing a horned headdress, and right behind the deity is a creature resembling a horned and winged goat, which is being presented to the goddess as an offering. Behind the creature, there is another deity wearing a round headdress and a fringed mantle, also presenting themself to the goddess. In the background, three figures are walking towards the deity, with a filler motif positioned between the creature and the bearded deity in front of it. A similar figure is also present between the goddess and the protective deity. In front of the seated goddess, there is a disk with a crescent-shaped star inscription. At the end of the scene, there is a panel with a two-line inscription. The god Amurru, representing the Amorite people (Akkadian Amurru), is represented in cylinder seals as early as the 2nd millennium BCE. It is likely that the god Amurru, as a personification of the semi-nomadic Amorite tribes he shared his name with, was created by the urban elites of southern Mesopotamia. The symbols associated with this deity - horned animals, a crooked staff, and in some cases, a distinctive headdress or stylized mountain - all emphasized his foreignness. In this cylinder seal, Amurru is depicted in a subordinate position, standing before a seated (and traditionally attired) god. Such cylinder seals in the ancient Near East served as both a form of talisman and a mark of ownership or identity. The representation of Amurru on this seal may have appealed to its owner as a symbol of their Amorite identity in Mesopotamia or, more likely, as a protective device, as the god is associated with exorcism and healing. The worship and presentation scene are similar to those found on seals of ancient Assyrian kings (such as Erishum and AN-LUGAL..., the city ruler of the god Assur, son of Ikunum). In these ancient Assyrian seals, a seated god holding a cup is being worshipped by a male figure (the king) brought by the goddess Lama (Özkan, 1993: 502).

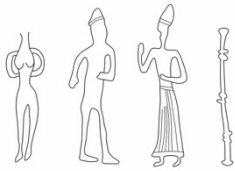




Picture and Drawing No: 12

Catalog No: 13	***Picture and Drawing No:*** 13		***Museum Inventory Number:*** 26/48/86
Type: Cylinder Seals	***Material:*** Diorite Stone	***Period:*** Old Babylonian (1820-1730 BCE)	***Arrival to the Museum:*** Museum of Anatolian Civilizations.
Dimensions: length: 1,8 cm, diameter: 1 cm			
Analogues: Nys, 2018: Cat. 32; Von Bakel, 2019: 7.			
Definition and Explanation: A triple deity and goddess group depicted in a single frieze. The deity in the center has their left hand placed towards their chest. The adorned goddess on the right has her right hand raised upwards and her left hand positioned at the waist. The naked goddess on the left is depicted frontally, holding her breasts with both hands.			





1 cm

Picture and Drawing No: 13

Catalog No: 14	***Picture and Drawing No:*** 14		***Museum Inventory Number:*** 5/1/84
Type: Cylinder Seals	***Material:*** Steatite	***Period:*** Neo-Assyrian	***Arrival to the Museum:*** Purchasing
Dimensions: length: 3,4 cm, diameter: 1 cm			
Analogues: Nys, 2018: Cat. 32.			
Definition and Explanation: The seal consists of a single scene, featuring two opposing altars in an antithetical form, with a smaller altar in the center. On top of the altars, there are depictions of winged sun disks within the altars.			

Picture and Drawing No: 14

Conclusions

The seals examined in the current study indicate the existence of a strong network of trade or powerful colonies established by dominant states of the period in Diyarbakır. Almost all of these cylinder seals were acquired through illegal excavations, purchases, and seizures, and subsequently added to museums. Scientific excavations would contribute to completing numerous missing pieces related to Mesopotamian and Anatolian civilizations, including many seals like these.

Morever, these cylinder seals, reflecting the glyptic elements, depict Assur and Assurized objects. They are likely part of Assur palace items used and presented by administrative or military officials associated with Assur, along with other findings such as armor scales, horse

trappings, and components of Assur-style architecture. However, the acquisition of these cylinder seals through illicit excavations and purchases has hindered obtaining information about other components of Assur. These particular cylinder seals, potentially belonging to the period following the Assyrian campaign led by Tiglath-Pileser III in 734/733 BCE, demonstrate the influence of Neo-Assyria.

These seals deviated from the usual Assur linear style and demonstrate a completely different application method, indicating the utilization of techniques from various cultures in the Neo-Assyrian period (8th century BCE) throughout the Near East. From this perspective, it seems that Assur embraced the cultures of the territories it conquered, even benefiting from them, and further developing its own. For instance, the use of minimal perforations with a tool resembling a sickle on quartz, a hard stone, as seen in Catalog 9 and Catalog 10, is an unusual practice. All these factors contributed to the creation of the Assur seal style. Additionally, the transformation of a curved or feathery scorpion tail into a hybrid dragon tail demonstrates the influence of local productions and how seals were influenced by Assur imperial artworks.

When evaluating the mythological scenes, the origin of the winged horse and the possible Tree of Life scene depicted in Catalog 5 can be traced back to the 3rd millennium BCE. This mythological narrative continued to be influential until the Neo-Assyrian period, eventually becoming a symbol of the empire. As a result of its political impact, this motif successfully spread throughout the entire Near East. The main elements of the naked bull-man depicted in Catalog 2 and Catalog 3 can be traced back to the Akkadian period. The mythological narrative portrayed in Catalog 3, with its foundation in the Epic of Gilgamesh in Sumerian culture (2800-2500 BCE), demonstrates the influence of this mythology on later cultures. The seal depicted in Catalog 4, featuring a horned deer and a human figure with raised hands above it, reflects the style of the Popular Mitanni culture (1700-1200 BCE). Seals portraying compositions of deer, the Tree of Life, and figures are associated with the Mitanni culture dating back to the mid-2nd millennium BCE. In the scene depicted in Catalog 6, there are depictions of winged, horned, bird-headed creatures and horned, bird-headed, human-bodied griffins. This similar popular scene composition was used from Anatolia to Mesopotamia, starting from the Middle Assyrian period.

Catalog 7 depicts a scene of hybrid creatures and animals in an antithetical composition, featuring two standing birdmen facing each other. In this scene, it is noteworthy that there is a symbol resembling Hittite hieroglyph between the goat-headed figure standing behind the birdman figure on the left and between the two birdmen. It is possible to trace the origin of this symbol and the narrative depicted on the seal back to the period of the Assyrian Trade Colonies in Anatolia.

One of the most exquisite examples of hunting scenes depicted on seals can be found in Catalog 8, where Marduk's winged dragon is portrayed, and the beardless figure likely represents the owner of the seal. This depiction offers significant insights into the concept of private property and its political, social, and religious implications. Catalog 9 showcases an archer figure, a bipedal hybrid creature, and a scene featuring the Tree of Life, which was widely appreciated across the geography from Mesopotamia to the Zagros Mountains in Iran. Another seal, depicted in Catalog 10, featuring an archer scene, has spread to another geographical region, the Levant, and Southeast Anatolia. The significance of this seal lies in the archer figure shooting the snake, which corresponds to the most well-known mythological narrative of Mesopotamia, stretching from Israelite centers to Diyarbakır. In Catalog 10, we observe the depiction of a dragon, a human archer, and the Tree of Life, indicating their popularity during the Neo-Assyrian period. In Catalog 11, we encounter a similar mythological depiction where Ninurta is confronted by a bull, a different animal from the snake found in Mesopotamia's tradition.

The presentation, worship, and offering scenes depicted on seals, such as in Catalog 12, extend in subject matter until the end of the 3rd millennium BCE. This mythological scene continued to be depicted on seals in the 2nd millennium BCE and persisted into the 1st millennium BCE. In Catalog 13, two divine figures are shown making an offering before a goddess. Catalog 14 features an altar and a winged solar disc within the altar. These scenes demonstrate the uninterrupted application of symbols known from Mesopotamian culture, particularly during the 3rd millennium BCE, into the inner periods of the 1st millennium BCE.

Suggestions

Most of the seals currently housed in the Diyarbakır Museum warehouse were obtained through purchases and confiscations. The procurement of these seals by the Diyarbakır Archaeology Museum primarily occurred as a result of illicit excavations in the mounds located within and surrounding the region of Diyarbakır. Consequently, it is necessary to initiate systematic mound excavations in Diyarbakır, a region of great significance in terms of historical settlements in Mesopotamia. Such endeavors will not only unveil previously undisclosed facets of artifact smuggling but also elucidate the intricate relationship between Mesopotamia and Anatolia.

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Stables and Pens in the Citadels and Residential Areas of the Urartian Kingdom: A Textual, Archaeological and Ethnographic Evaluation

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ABSTRACT
This study presents a comprehensive evaluation of stables and pens in settlements of the Urartian Kingdom period. Urartian royal inscriptions contain references to such structures; however, the interpretation of their functions, the translation, and the meaning of these words remain ambiguous. Considering that the subsistence economy in the landscape ruled over by this kingdom was mainly based on animal husbandry, evidence for stables/corrals and sheepfolds/pens in the archaeological record appears elusive. For this reason, this study first evaluates textual evidence and then moves on to reanalyze archaeological remains obtained from Urartian royal settlements and lower towns together with the results of ethnographic research conducted in the region, and it suggests new interpretations for the functions of relevant architectural remains at Urartian settlements to identify the structures that may have served as pens and stables.
Keywords: Urartian Kingdom, Animal Husbandry, Stables, Pens

Introduction

The geography that the Urartian Kingdom ruled over is composed of high mountain ranges, pastures, and deep river valleys. As they expanded the borders of their kingdom, the Urartians established many new fortresses and settlements of varying dimensions in the conquered territories. These settlement sites and fortresses are formed of a citadel and a lower town, and they are founded upon rocky ridges on the skirts of mountains, in agricultural plains, or at strategic points controlling the juncture of major road networks. Until the present day, research in Urartian archaeology has typically focused on the excavation of fortresses, which were established by the Urartian monarchy. Meanwhile, relatively fewer excavations have been conducted in the lower towns found at the foot of these fortresses. Excavations of fortress sites have been prioritized targeting the discovery of royal inscriptions, architectural complexes like storage buildings, temples, and rich metal assemblages. It should also be noted that, apart from a few exceptions (e.g., Çavuştepe, Armavir, Arinberd, etc.), most of the excavated sites are dated to the mid-7th century BC, corresponding to the reign of king Rusa, son of Argišti.

Unfortunately, in the Urartian landscape, mound settlements where the great majority of the population must have lived have not been investigated sufficiently. It can be said that most archaeological data from excavations at Urartian sites are the products of the kings, the royal family, and the ruling elite, and they are restricted to a brief historical period (Çifçi, 2020: 30-31). For this reason, extant evidence in general is far from informing us about the broader social structure of the Urartian period. Likewise, excavations in lower town or outer town settlements surrounding Urartian period fortresses have exposed only limited areas and results have remained insufficient in answering many basic questions about society. Importantly, no comprehensive study has yet been conducted on architectural elements such as storage units, hearths/ovens, workshops, and animal pens in domestic compounds within lower towns, and the character and functions of such architectural remains have not been analyzed systematically.

The Urartian state's investment in building infrastructure for agriculture is a well-recognized research subject. In contrast, the scarcity of evidence for stables/pens for domesticated animals from lower town excavations appears as a significant problem, especially considering animal husbandry was (and is) the main basis of the subsistence economy in eastern Anatolia (Figure 2-3). In addition to tangible factors like the very limited expanse of lower town excavations and insufficient information about the functions of unearthed architectural remains, what appears as a major problem is that animal husbandry and related questions have not found their rightful place among research priorities for archaeologists who undertake excavations in the region. Therefore, in this study, we evaluate archaeological evidence from Urartian fortresses and lower town settlements in conjunction with the results

of ethnographic studies conducted in the region. The study aims to investigate the functions of the architectural elements of the excavated domestic spaces as a whole, especially in the lower city settlements, and to identify the structures that may have served as sheepfolds/pens and stables for horses.

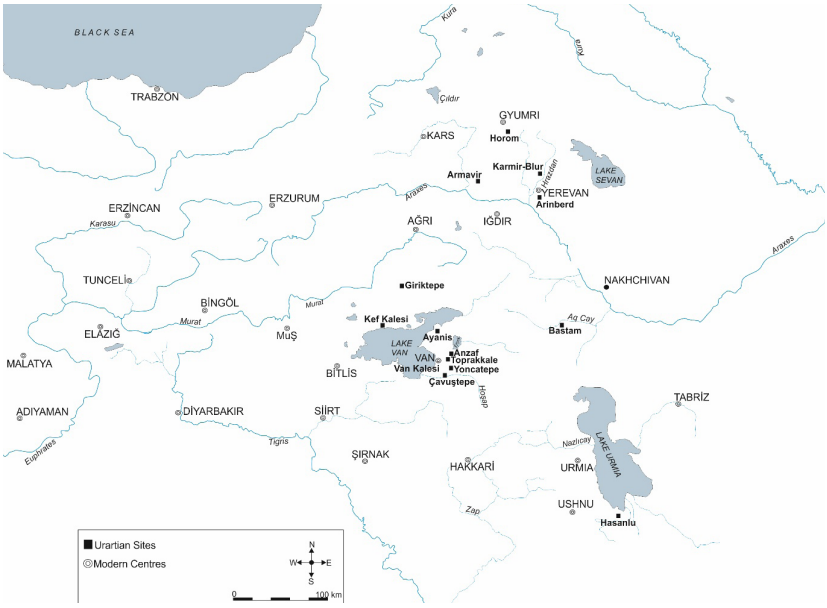

Figure 1: The map shows the modern centres and site names mentioned in the text.

Figure 2: A herd of sheep grazing in the Keşiş Göl area of Van
(Courtesy of Erkan Konyar, September 2009)

Figure 3: Cattle grazing in Kayalıdere village of Varto/Muş
(Courtesy of Erkan Konyar, August 2009)

Reassessment of Textual Evidence

Urartian royal inscriptions reveal that the Urartian kings regularly launched military campaigns into neighboring regions to gather war booty, tribute, and various resources. According to the inscriptions, some of the military campaigns were organized to gather live animals. Royal annals of the kings Argišti I (A 8-3)[1] and Sarduri II (A 9-3) are particularly informative in terms of the war booty acquired by military campaigns (Çifçi, 2017: 98-105, Table 9). For instance, inscriptions mention cattle, sheep, goats, horses, and even camels in some cases. Nevertheless, while the texts provide detailed information about animals gathered as war booty or animals sacrificed to the gods in various ceremonies, Urartian royal inscriptions do not directly speak of any buildings associated with domesticated animals such as stables/corrals, pens, or sheepfolds in pasturelands.

A structure called "*burganani*" in the inscriptions from the reigns of Išpuini (A 2-1; A 2-9 A-B; A 3-1; A 3-11)[2] and his son Minua (A 5-28; A 5-29; A 5-30; A 5-31), dating to the late 9th century BC, has been interpreted as a "corral" or a "pen" used for keeping sacrificial animals (König, 1955/57: 179; Balkan, 1960: 137; Salvini, 2006: 161). There are, however, different opinions on the translation of this word (Çifçi, 2017: 236-237, Table 26); e.g., "fortress" (?) (Melikishvili, 1960: 53, 392)[3] and "pasture" or "meadow" (Dinçol and Kavaklı, 1978: 13). Therefore, the meaning of the word "*burganani*" remains ambiguous and the function of the structure/building that it represented remains open to interpretation.

1 Urartian inscriptions cited in this study follow Mirjo Salvini's *Corpus dei testi Urartei (CTU)*.

2 In the Assyrian version of the Kelishin inscription (A 3-11), the part that corresponds to the section where *burganani* is mentioned in the Urartian version is unfortunately broken.

3 Melikishvili (1960: 53 and 392) interprets the word [*burgana*] *burgalali* (*burganali*) as "fortress" (?); *cf.* Harouthiounyan (2001: 441): "castle" or "fortress".

Another relevant building type known from textual sources appears in "the *siršini* of Minua" inscription (A 5-68 and A 5-69), dated to king Minua's reign, and found associated with a structure built on the north slope of the rock massif on which Van Kalesi fortress lies (**Figure 4**). Based on the inscription, this structure was identified as a "royal pen" where sacrificial animals were kept before being offered to the gods (Tarhan, 2011: 318-319). With a single entrance (8.5 m wide x 2 m high) facing the north, this *siršini* structure carved into the bedrock measures 20 m x 9 m and is 2.5 m high (Konyar, 2018: 162). It is difficult to imagine, however, that a building with such a narrow doorway, high walls with no window openings, and no air circulation could have served as a pen. It would not be possible to keep animals alive for a long time inside such an enclosure (Çifçi, 2015: 217).

Figure 4: The 'siršini' of Minua on the northern slope of Van Kalesi (September 2012)

Another building type called ^{É}*sirḫanini* that is attested in *susi* temple inscriptions at Karmir-Blur and Ayanis (A 12-1 II, A 12-1 III, A 12-2 II), dated to the reign of king Rusa, son of Argišti, is interpreted in relationship to a series of rituals in which animals are sacrificed for the god Haldi and his consort, the goddess Arubani. Additionally, in the inscriptions at Armavir (A 12-3) and at Bastam (A 12-5), the same building name is also seen associated with a temple dedicated to an unidentified deity. In studies on the translation of the Ayanis temple inscription, it is indicated that sacrifices were offered to the deities when the king was in Rusahinili (Salvini 2001: 260). On the other hand, it has also been suggested that this building was allocated to the *mare*-men (*ma-ri-a-ḫi-ni*[4] or *ma-ri-gi*[5]) (Diakonoff, 1991: 15,

4 A 12-1 II 10′, A 12-2 4′, A 12-3 8′.
5 CT Tk-1 Ro 9′.

no. 27), a group of officials on duty at the fortress, who were in charge of slaughtering the animals from the ^{É}*sirḫanini*[6] to be sacrificed to the Haldi Gates and the temple (Diakonoff, 1991: 15, no. 26). Therefore, there must have been two royal pens associated with different rituals mentioned in Urartian royal inscriptions, one that belonged to the royal family, and another that belonged to the high-ranking officials on duty at the palace. That said, there is a certain degree of ambiguity in the translation of the inscriptions related to the subject matter.

Royal Settlements and Stables/Pens

The building types mentioned in the royal inscriptions, *burganani*, *siršini*, and ^{É}*sirḫanini*, have not been directly equated with any specific building found at excavated royal settlements so far.[7] Some of the royal settlements like Çavuştepe, Bastam, Karmir-Blur, Armavir, and Arinberd are excavated in their entirety, while others like Kef Kalesi, Yukarı Anzaf, and Toprakkale are investigated in limited exposures (Figure 1). Archaeological excavations have shown that these royal construction projects were carried out abiding by a plan that included architectural units such as palace and temple complexes, large storage rooms including pithoi, residential quarters, and workshops. No stables or pens were identified at these sites, except the examples from Çavuştepe and Bastam fortresses and the area nearby fortifications of Ayanis, which will be reviewed below.

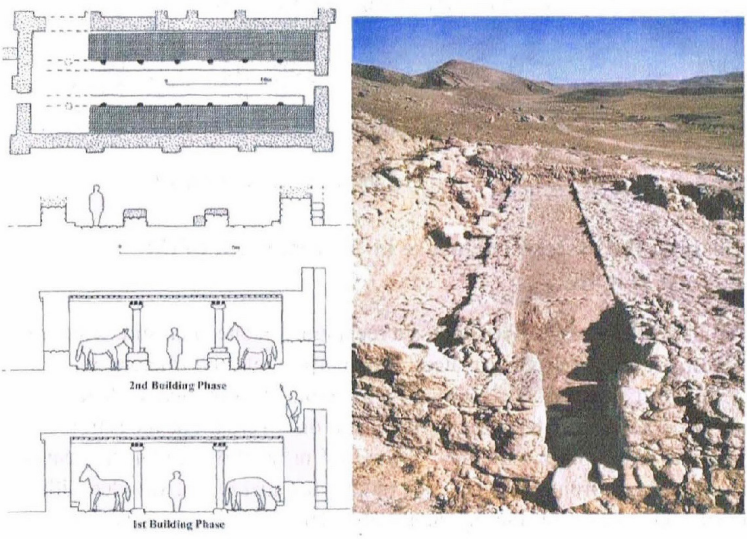

Figure 5: The paved tripartite stable area near the Northern Gate at Bastam (Kroll 2018: 137, Fig. 3)

6 Diakonoff (1991: 15) reads it as "*serhane*-house".

7 It has been proposed that a stable dedicated to the gods may have existed in an area nearby the pond on the southern skirts of Aznavurtepe (Balkan, 1960: 144). However, because no excavations were conducted in this sector of the fortress, there is no evidence for the presence of a building that can be called "temple stables".

At Bastam, dated to the reign of Rusa, son of Argišti, two long buildings with a tripartite plan were found in two separate areas by the south gate and by the north gate, and they were identified as stables for horses. The tripartite hall near the south gate measures 47 m by 9 m and consists of three long, parallel hallways, used as a stable (Kleiss, 1980: 299-300).[8] The two hallways on the sides would have served as stalls and the low walls that separate the central corridor from the stalls would have been used for troughs or feed tubs. The floors of the stalls on the two sides were paved with stones, while the central corridor had a clay-packed floor. Low stone platforms along the outer walls were most probably used for feeders (Kroll, 2018: 138, Fig. 4). The rectangular tripartite hall by the north gate measures about 29 m x 10 m (Figure 5**)**. Like the tripartite hall by the south gate, in this building, too, the central corridor is separated from the two halls on the sides, in this case, with roughly dressed stone column bases (Kroll, 2018: 137, Fig. 3). Additionally, a large area surrounded by an enclosure wall was also unearthed by excavations east of the fortress at Bastam, which may have been a stable or a pen. Chemical composition analyses of soil samples from the floors of tripartite halls by the north and south gates have shown a high amount of urine (Kroll, 1989: 329-333). This finding corroborates the identification of these two buildings at Bastam as stables where horses were kept. The structures at Bastam bear similarities to a building at Hasanlu, also in Lake Urmia basin, found in level IVb (Kroll, 1992, 2012: 280), which dates to the pre-Urartian period (Dyson, 1989).

Another stable discovered by excavations is known from the royal settlement of Çavuştepe. On the northern skirts of the Lower Fortress of Çavuştepe, a road with two ramps leads up to the citadel. A structure with cyclopic walls, identified as "royal/state stable" in excavation reports, is found north of the road (Erzen, 1978: 17). Another structure, also built on the citadel skirts and surrounded by an enclosure wall, was identified as a military post with stables. The cultural deposit inside this building contained manure-rich organic soils and a large amount of rubble (Erzen, 1966: 55).[9] Additionally, a small building, destroyed by an intense fire, northwest of the citadel at Yukarı Anzaf fortress may have also been a stable (Belli, 1998: 510). Two horse skeletons were unearthed in the southeast corner of the structure, in addition to a 1.5-m-thick ash deposit containing organic remains such as chaff, hay, and wood.[10]

8 Wolfram Kleiss (1980: 300) estimates that, as a stable, this structure could have held 35 horses in each stall.

9 The first structure is larger, covering an area of about 18 x 100 m. The "barracks"/military post building in the second area measures about 70 x 20 m (Tarhan, 2021: figs. 3 and 8). In the first building, above the floor fill, a mudbrick blockage made of more than a dozen courses supports the foundation, which is built with large field stones, and the floor fill is packed with paving blocks and the floor is paved with stone slabs (Tarhan, 2021: 578).

10 The dimensions of the building are not reported directly. In the excavation reports, it is indicated that the excavation area was defined by joining two 5 m x 5 m trenches and then the area was expanded by a 7 m x 19 m trench (Belli, 1998: 510).

In an area known as Güneytepe just by the citadel fortifications of Ayanis fortress, a structure that was detected by geophysical surveys and further investigated by a test trench is also thought to be a stable (Fig. 6). The structure consists of a courtyard paved with large and heavy stone slabs and a building surrounded by low walls, along the edge of the stone pavement, separating it from the unpaved area. The outer walls feature buttresses suggesting an association with Urartian royal architecture and bronze and iron arrowheads discovered in excavations suggest that it was related to military activity (Stone and Zimansky, 2003: 222-223, Fig. 11.11). Moreover, in terms of its location and architectural characteristics, parallels can be drawn between this structure and the stables at Bastam (Stone, 2005: 192; Stone and Zimansky, 2003: 222-223, Fig. 11.10; 2004: 238-239).[11]

At another Urartian period fortress, Horom, a rectangular building (16 m x 10 m) with a floor paved with large slab stones was unearthed by excavations in an area close to the center of the Citadel Wall Terrace C (Kroll, 2018: 141-142; Badaljan *et al.,* 1993: 18, Fig. 18). Only a portion of the corner of this building was exposed. The building has a tripartite plan like the stables at Bastam, and its stalls are paved with stones, while the central corridor has a clay-packed floor (Kroll, 2018: 141, Fig. 7).

The existence of stables in royal settlements is also corroborated by the Assyrian king Sargon II's account of his military campaign against the Urartian king Rusa I in 714 BC. Here, Sargon speaks of stables inside the citadel walls of Urartian settlements like Tarui and Tarmakisa in Baru province.[12] Therefore, while archaeological evidence may be debatable, the presence of stables inside Urartian citadels is evident based on texts.

No stables are reported from the excavations of the Aşağı Anzaf fortress, which was built as a military garrison near the Urartian capital Tushpa, positioned on the main eastern road (Çifçi and Gökce, 2021) that connects the capital city to the Lake Urmia basin (Belli, 1999: 9-15). At fortress sites and especially those that served as military posts, there must have been places for keeping the horses of the soldiers who lived in the fort. Also, such fortresses should have contained stables/pens with hay and feed for pack animals that were raised or were waiting to be loaded for transporting goods. Hence, we need to consider that part of the built spaces at Aşağı Anzaf fortress and other fortresses on major roads were likely to be reserved for animals, and we should also anticipate that future excavations at other fortress sites with military or strategic importance may reveal stables.

11 Based on their proximity to the citadel gates, it has been proposed that both buildings may have been stables for the horses and the chariots of royal army regiments (Stone, 2005: 189).

12 "*Tarui and Tarmakisa, strong, walled cities, situated in the plain of the land of Dalaia, where he had great supplies of grain, whose walls were very strong, whose outer walls were well built, whose moats were very deep and completely surrounded them; in the midst of which are stabled the horses, reserved for his royal army, which they fatten each year ...*" (Luckenbill, 1989: no. 159).

Figure 6: Stable building in Unit PP51 on Güneytepe in Ayanis Outher Town (Stone and Zimansky 2003: 223, Fig. 11.10)

Lower Settlements and Stables/Pen

At most royal settlements and fortresses of the Urartian period, except Toprakkale and Çavuştepe, a lower town settlement is found at the skirts of the citadel hill or on the settlement plain below (Çifçi, 2017: 142-145). The Urartian state relied on the population of these lower towns for human resources necessary for building an army, constructing various buildings including citadels, and maintaining its security and sustenance needs. In some cases, as it is stated in the temple inscription of Ayanis (A 12-1 VI–VII), war captives were deported and employed as labor force for the construction of the fortress, the citadel, and public buildings, and they were also settled in the lower town in the settlement plain. At a few Urartian royal settlements (Van Kalesi, Bastam, Ayanis, Karmir-Blur, and Armavir),

in addition to the excavations on the citadel, excavations were also conducted in the lower towns, albeit in limited areas (Figure 1). Lower town excavations at these sites have revealed different numbers and types of domestic buildings.

Residential contexts unearthed by excavations in the Ayanis lower town settlement area show that there were two domestic building types, which their architectural layout and construction techniques can distinguish. The first building type is represented by buildings with sturdy walls and regular floor plans found in an area close to the citadel walls. It has been suggested that these residential compounds were built by the state and were inhabited by citadel personnel, military officials, and the hereditary elite. In some of these buildings, e.g., Building 6 in Ayanis Güneytepe, it is noted that there are no spaces that can be associated with stables, pens, hearths, ovens, and other features related to domestic activities (Stone, 2012: 93, Fig. 06-05). Excavators suggest that the residents of these domestic units must have relied on the citadel for food and related services. The second building type is found on the slope of Güneytepe, farther away from the fortress, and is characterized by buildings that do not abide by a standard plan and are built using various construction techniques. These domestic buildings are composed of various units including workshops, kitchens, storerooms with pithoi, bread-ovens (*tannurs*), and stone-paved areas, which are identified as stables by the excavators. Ethnoarchaeological studies have documented that in present-day Ayanis village, the floors of the stables are paved with large stone slabs (Çilingiroğlu *et al.,* 2009: 186, Res. 77). Likewise, ethnographic studies in the 1970s carried out part of Keban Project in Elazığ Altınova villages have also documented that the stables attached to the houses had stone-paved floors (Peters, 1972: 166-168). In the Elazığ Altınova villages and the Ayanis village, these stone-paved stables were reserved for raising and keeping cattle. As opposed to packed earth floors, stone-paved floors have practical benefits; stone-paved floors are easier to keep clean from animal dung, and they also provide a more stable ground that can sustain the weight and the trampling of the animals.

Stone-paved rooms identified as possible stables were found in most residential buildings unearthed in Ayanis lower town excavations (Buildings 1, 9, 11, 12, 13, and 14, etc.) except a few examples like Buildings 3, 6, and Building 15, of which only a small portion is excavated (Stone, 2012: 94, Fig. 06.06). In Building 1, for example, a room with a stone-paved floor was identified as a possible stable, and an L-shaped area with an earthen floor was identified as a sheepfold/pen (Stone, 2012: 94, Fig. 06.06). In Building 11 and Building 14, two two-storied buildings built into the bedrock on a slope at Güneytepe, the ground level of the houses were designed as a stable/pen, where evidence for cheesemaking was also recovered by excavations (Stone, 2012: 96, Fig. 06.07, 06.08).

At the Karmir-Blur and Bastam fortresses, which date to the same period as Ayanis, lower town excavations were carried out in limited areas. Although the Urartian period lower

town of Karmir-Blur spreads over an area of about 40 hectares, residential areas have been investigated only in limited exposures located south and southeast of the citadel (Piotrovsky, 1952: 79-86; Ogenesian, 1955:16-35). Domestic compounds unearthed in excavations here consist of independent residential units that are in most cases formed of two or three rooms and a courtyard, featuring stone-paved areas (Ogenasian, 1955: figs. 5 and 9 B). At Bastam, the Urartian period domestic contexts again were unearthed in a limited area, as well, consisting of an excavation trench measuring 35.50 m x 29 m. Excavations revealed a domestic building with eight rooms and part of another building that extends further east into the unexcavated area (Kleiss, 1979: 24-30, 1988: 19-20, Abb. 11-12, Taf. 11.2). Urartian period houses in this area have two subphases and, like the houses found in other Urartian lower towns, they are formed by adjacent rooms built around a courtyard. Excavated buildings have yielded contexts with various functions such as workshops, kitchens, storage rooms, and ovens, as well as stables with stone-paved floors.

At Armavir, residential buildings are found in an area that lies between the two citadels, east of the West Citadel fortifications (Martirosjan, 1974: 103, Fig. 38). Eight of these multi-roomed domestic buildings were unearthed by excavations. Houses are formed by a central colonnaded hall or a courtyard with adjacent rooms that were used as workshops, kitchens, and storage rooms. Three of the houses (House 1, 2, and 8) feature stone-paved contexts (Martirosjan, 1974: 104-119, figs. 39, 41, 45). Excavators suggest that the stone-paved areas in these houses were used as stables/pens (Martirosjan, 1974: 104, 108-109, 114-115, figs. 39, 41, 45). For example, in House 1, in direct alignment with the storeroom with pithoi in the northeast corner, is a rectangular area with a stone-paved floor, where stone troughs and feeders are found, which appears as a stable. Excavators estimate that 30-40 cattle could be kept in this stable/corral (Martirosjan, 1974: 104).

Among the rural settlements of the Urartian period some can be defined as mansions of tribal lords (Köroğlu, 2009), and two of the examples investigated by excavations are Yoncatepe (Belli, 2006) and Patnos-Giriktepe (Balkan, 1964: 139-143; Schachner, 2021). At these settlements, stone-paved areas were unearthed by excavations, but they were not interpreted to be stables according to the excavation reports. The mansion at Yoncatepe is a two-story building with its entrance on the east side. To the west of the entrance, there are two large courtyards, reported as unroofed spaces, and their floors are paved with large stone slabs (Köroğlu, 2009: 384, Res. 2). Further into the building, there is another, smaller courtyard, where a low mudbrick bench is built all along the foot of the walls (Konyar, 2022: 208). Most rooms on the ground floor of the building complex were identified as workshops, storage rooms, and kitchens. Considering that Yoncatepe lies in a region where animal husbandry is the main subsistence activity, it is interesting not to see any built spaces dedicated to animals in this mansion and other similar structures. At the same time, however,

some of the excavated areas may have functioned as stables/pens, although not identified as such by the excavators who have investigated these sites. In this respect, we suggest that the stone-paved areas, identified as unroofed courtyards at Yoncatepe can be identified as stables and the smaller area with mudbrick benches may have been a corral/pen where the benches were used for troughs and feeders. The ethnographic record provides architectural parallels supportive of this interpretation. In the present-day vernacular architecture of the region, the two-story houses are designed so that a part of the ground level with its stone-paved floor is used as a roofed space dedicated to stables, feeders, and storage rooms, while in one-storied houses, a part of the house is used as a stable or a pen (Peters, 1972: 166-168). There are practical benefits to using the ground floor of a house as stables and pens. Keeping the domestic animals in a built space on the lower level of a house allows for a close watch against dangers and it also raises the temperature in the living spaces on the upper floor, which is a sustainable solution against the cold during the harsh and long winters as experienced in the region (Yakar, 2000: 153). It is reasonable, therefore, to define some of the contexts on the ground floor of the mansion at Yoncatepe as stables and pens.

Like Yoncatepe, some of the architectural contexts in the mansion of Patnos-Giriktepe were identified as workshops, storage rooms, and kitchens by the excavators, as well. As in the case of Yoncatepe, animal husbandry and related spaces like stables and pens have not been a subject of consideration in the evaluation of the architectural remains from Patnos. Inferring from previous examples, we suggest that the stone-paved area seen in the north of the settlement layout plan of Patnos-Giriktepe (Schachner, 2021: 312, Fig. 4) may be identified as stable.

A final example comes from Van Kalesi's mound. The building labeled "House 2" at the mound is a building complex with a central colonnaded hall, a parallel but narrower hall, and ten rooms. Room 1 at the northern end of the building features a courtyard-like, stone-paved area in its eastern portion (Konyar, 2022: 199, figs. 128, 130). In the light of examples in other excavated domestic buildings of the Urartian period, this context can be identified as a stable.

Conclusions

In this study, firstly we have provided an overview of textual evidence and then moved to the excavated contexts, that have been and can be identified as a stable or a pen, at Urartian period settlements. The climate and the natural topography of the landscape ruled over by the Urartian Kingdom is not immediately suitable for large-scale agricultural production, and animal husbandry has been the main basis of the subsistence economy in the region. Since early prehistory, intermontane valleys and highland plateaus of eastern Anatolia, Transcaucasus, and northwestern Iran were inhabited by pastoralist communities who relied

on animal husbandry for their subsistence before and after the establishment of the Urartian Kingdom. Therefore, considering the number, diversity, and geographical distribution of excavated Urartian period settlements, we should expect to find substantial evidence related to animal husbandry at Urartian sites. Unfortunately, however, excavated contexts in citadels and lower town settlements have yielded very limited zooarchaeological evidence[13] and only a few buildings are identified as stables and pens.

Ethnoarchaeological work in the region has shown that cattle are typically raised and kept in roofed spaces. On the contrary, sheep and goats are kept and raised in temporary sheepfolds and pens away from the village settlements, because especially from the spring until the winter, the herds are grazed in pasturelands (Hopkins, 2003: 33-34; Sezer and Işıklı, 2021). It is unlikely that pens and stables would have been situated inside the fortresses of the Urartian period. Considering the formal characteristics, construction techniques, and functions of the architectural units unearthed in excavated citadels, which were used and inhabited by royalty and high-ranking administrative officials, the citadels would not have been the location for animal shelters. However, as in the Bastam and Çavuştepe examples, stables for horses were built in the citadel areas, especially close to the citadel gates. At Ayanis, a stable for horses was built close to the citadel walls. Horses were crucial for transportation for the Urartian army in the rural landscape and they must have been raised in certain regions of the kingdom, overseen by the state (Çifçi, 2017: 100-101). The horses of the ruling elite and the high-ranking military officials, however, must have been kept inside the citadel walls of royal fortresses.

Excavations in the lower towns or outer towns of royal settlements with citadels like Ayanis, Karmir-Blur, Bastam, and Armavir have revealed multi-roomed domestic buildings, in which rooms with stone-paved floors were identified as stables and pens. While this seems to hold for some contexts, stone-paved floors may have served other purposes, as well. Therefore, every stone-paved context cannot be directly associated with animal shelters, and it is necessary to evaluate other parameters like the location and the size of these stone-paved contexts when defining their function. At the same time, there remains the possibility that other contexts with unpaved floors in the settlements may have also served as animal shelters. Urartian texts do not yield clear or coherent information on the location of stables/pens and animal-keeping practices. Moreover, no analytical method has yet been employed for understanding the function of architectural contexts that are identified as possible stables and pens with the exception of Bastam, where chemical composition analysis of soils provides evidence for urine concentration. The ethnographic record of eastern Anatolian villages provides close parallels, which aid in the identification of archaeological contexts.

13 For a general evaluation of the analyses of faunal assemblages found at Urartian settlement sites, see Çifçi, 2015: 219-220 and 2017: 105-112.

It has been ethnographically documented that, domestic animals, especially cattle, are raised and kept in roofed spaces with stone-paved floors that constitute a part of the village houses. A viable research strategy for definite answers about the function of so-called stables and pens in the archaeological record of the Urartian sites would entail conducting chemical elemental composition analyses of soil samples from the contexts in question, which would provide us with significant empirical information about the activities that took place in these spaces whether related with animals or not.

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Achaemenid Period Ceramic Typology from the Ramhormoz Plain in Southwest Iran: Eastern Anatolia, Southern Mesopotamia Relations

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ABSTRACT

The Ramhormoz Plain and large portions of its northern piedmont are part of modern-day Khuzestan province. A season-long survey was conducted in this region in 2020. During this survey, cultural artifacts were identified and recorded at 36 sites from the Achaemenid period. This identification was based on the pottery seen on the surface. The identification of Achaemenid settlements in the Ramhormoz plain was made possible by taking into account the local pottery of Khuzistan reported from the Tappeh Darough. This study both describes the types of pottery from the Achaemenid period as well as introduces various settlements of this period. Two of the most diagnostic vessel forms of the Achaemenid period in the Ramhormoz collection are carinated bowls and jars with everted rims. Most of the pottery discovered is local, but the overall study of the Achaemenid pottery of the Ramhormoz Plain shows the limited influence of the pottery tradition of the Persians and of northwestern Iran. Pottery traditions of eastern Anatolia and southern Mesopotamia can only be identified to a limited extent in the Ramhormoz Plain.

Keywords: Southwest Iran, Khuzestan, Ramhormoz Plain, Achaemenid Period, Ceramic Tradition, Settlement

Introduction

The Ramhormoz Plain is one of the least investigated regions in southwestern Iran. Even in its brevity, the results of the 1969 Wright-Carter survey)Wright & Carter 2003, pp. 61-82) showed that the Ramhormoz region is promising in shedding light on the relationship between the highlands and lowlands of southwest Iran. (Alizadeh 2014, pp. 230). The Ramhormoz region and large portions of its northern piedmont are part of the modern-day Khuzestan province (Alizadeh 2014, pp. 3).

The intensive production of pottery for everyday use, its exportability, and its use in the transportation of trade goods make it the best cultural material for understanding ethnic groups and communities, and pottery plays an important role in communication between regional cultures (Majidzade 1991, pp. 4). One of the essentials of a methodical study of Achaemenid pottery is to focus on understanding the pottery traditions of indigenous societies. The focus of Achaemenid material culture studies on royal artifacts has long hindered the study of rural and indigenous communities in the region. This process also weakened targeted research aimed at recognizing non-royal pottery traditions. Today, archaeological research has accelerated efforts to fill this gap in the Achaemenid geography, as in other regions.

The recognition of the Achaemenid period pottery in the Ramhormoz Plain is based on the archaeological survey of the Tappeh Darougeh. Tappeh Darougeh is located in the southwestern region of Iran, to the west of the Mianab Shushtar Plain and near the Karun River. The survey of Tappeh Darougeh yielded remains from the Achaemenid, post-Achaemenid (Atayi 2006) and Seleucid-Parth periods (Khosrowzadeh & Ali 2006).

The Ramhormoz region did not attract archaeological attention until the late 1948s. Archaeological research in this plain began with surveys and excavations by Donald McCown (McCown 1954, pp. 56-67). In the 1960s, archaeological excavations began at Tol-e Bormi, one of the most important Elamite settlements in the region (Alizadeh 2014, pp. 230). Later, in 1969, a series of regional scientific surveys were conducted by Henry Wright and Elizabeth Carter (Wright & Carter 2003, pp. 61-82). In 2006, Lily Niakan of the Archaeological Research Institute and Abbas Alizadeh of the Chicago Institute of Oriental Studies conducted more extensive archaeological research on this plain (Niakan & Alizadeh 2007). Later, between 2007 and 2009, the Ramhormoz Plain was studied further by Loghman Ahmadzadeh and Mehdi Omidfar, the final results of which were published under Alizadeh's supervision (Alizadeh, 2014). The most recent archaeological survey on this plain was conducted in 2020 under the direction of one of the authors of this present study (L. Afshari) [1] (Afshari 2021).

1 The archaeological survey of the Ramhormoz Plain was carried out for one season in February 2020 under license number 98103611 of the Research Institute of Cultural Heritage & Tourism.

In 2020, an archaeological survey was conducted in the central area of the Ramhormoz Plain, on both sides of the Ala River, in an area of approximately 530 square kilometers. In this survey, 36 Achaemenid settlements were identified. This result is important and significant in the archaeology of the Achaemenid period in southwest Iran and it will change common views about the area. The survey suggests that the settlement pattern in the center of the Ramhormoz Plain was clustered in two areas, northwest and southeast, on both sides of the Ala River. The table below lists basic information for each site (Table 1, Map 1-2).

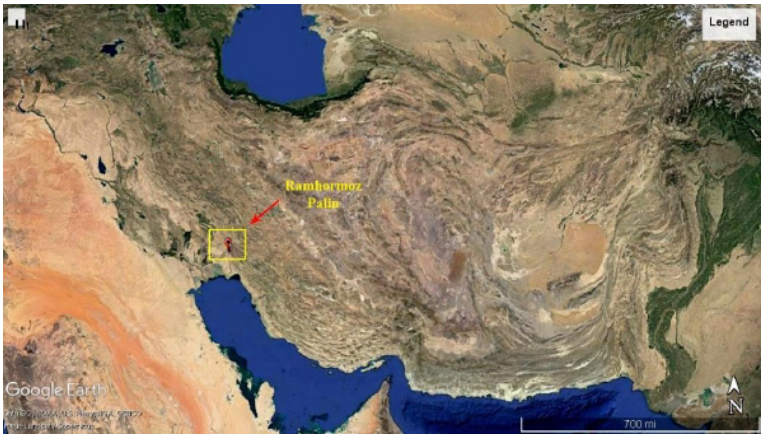
With the end of archaeological research in the Ramhormoz Plain and the analysis of the findings and data from this study, an overview of the distribution of cultural remains and settlements of the Achaemenid period can be provided.

The distribution of the potsherds identified in our study provides us with a substantial amount of data on the character and policy of the settlements. First of all, the settlements are located near, or connected to, the Susa-Persepolis trade route. The rich geographical conditions of the plain affected the dynamics of the settlements in the historical period. The archaeological studies conducted under the direction of Ismail Yaghmaei (Yaghmaei 2016, pp. 4), which were important in the identification of the remains of settlements on the Susa-Persepolis Royal Road, revealed the nature of this settlement policy. Examples of similar settlements include Tol-e Ishan Gazo, Tappeh Mehr Al-Nesa and Tappeh Kheyr Al-Nesa. The settlements are located at short distances from each other along the route of the Royal Road. This shows that the road was decisive in the settlement concept in the region. These settlements provided economic relations with the caravans passing along the Royal Road. This led to the economic progress and prosperity of the plain. In other words, the most important factor that brought the Ramhormoz Plain into prominence during the Achaemenid period was its location on the Susa-Persepolis Royal Road.

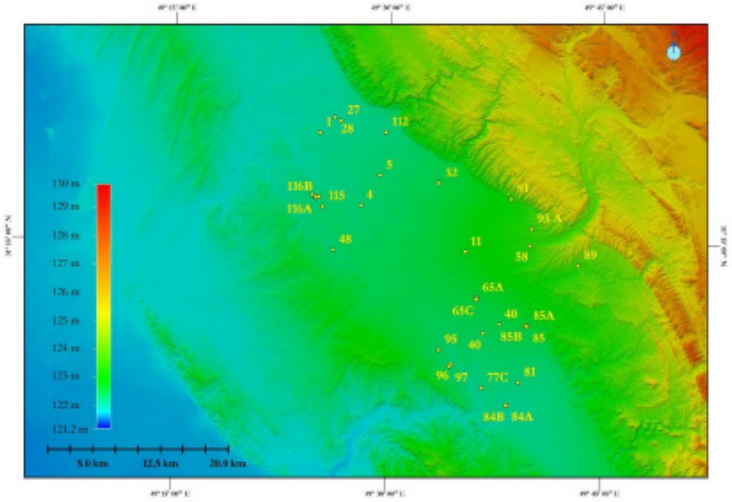
Table 1: Achaemenid Period settlements in the Ramhormoz Plain

No	Settlement Name	Settlement Code	Elevation (above sea level)	Area (ha)	Geographic Reference: UTM Zone
1	Tol-e Geser	RH001	55 m	12.8	E 34 96 48 N 34 70 416
2	Tol -e Quvileh	RH 004	350 m	8.6	E 35 41 54 N 34 62 351
3	Tol-e Ishan Gazo	RH 005	243 m	3.6	E 35 63 25 N 34 65 691
4	Tol-e Bormi	RH 011	158 m	18	E 36 57 37 N 34 57 164
5	Char Peer	RH024	103 m	15	E 34 94 02 N 34 64 276
6	Tappeh Ariz Ahmadi	RH027	68 m	1.6	E 35 20 01 N 34 71 733
7	Tappeh Cham Rejy or Cham Hendevaneh	RH028	77 m	1.6	E 35 13 30 N 34 72 098
8	Tol -e Abbas	RH032	136 m	2.3	E 36 28 67 N 34 64 791
9	Tol -e Mava	RH040	126m	0.9	E 36 95 23 N 34 49 099
10	Tol -e Mokhtari	RH045	90 m	1.7	E 34 87 89 N 34 63 559
11	Tappeh Qaravol	RH048	96 m	1.3	E 35 10 97 N 34 57 411
12	Jobaji	RH058	215 m	62.2	E 37 29 45 N 34 57 852

13	Tappeh Mehr Al-Nesa	RH065 A	123m	1.1	E 36 69 98 N 34 52 083
14	Tappeh Kheyr Al-Nesa	RH065 C	131m	1.4	E 36 70 04 N 34 51 856
15	Tol-e Ishan Seyyed Shebeiyb or Tol-e Toppi	RH071	120 m	2.6	E 36 55 71 N 34 46 874
16	Tol -e Gapo Cham	RH077C	87m	3.6	E 36 75 34 N 34 42 087
17	Tappeh Ishan Embrij or Tappeh Selsebil	RH081	90 m	2.1	E 37 16 27 N 34 42 667
18	Tol -e Gobeir A	RH084 A	98 m	8.7	E 37 02 54 N 34 40 124
19	Tol -e Gobeir B	RH084 B	84 m	0.2	E 37 04 32 N 34 40 067
20	Tol -e Rigi (Tol-e Suz)	RH085	154 m	3.8	E 37 2591 N 34 48 843
21	Tol -e Rigi A	RH085 A	138 m	3.7	E 37 26 84 N 34 48 946
22	Tol -e Rigi B	RH085 B	143 m	0.7	E 37 23 76 N 34 48 973
23	Qale Sefid	RH086	208 m	10.2	E 37 48 63 N 34 54 951
24	Ab Mahak/ Abshar Mahak	RH089	237 m	1.8	E 37 83 23 N 34 55 596
25	Pacheh Kuh	RH091	193 m	1.4	E 37 08 81 N 34 63 031
26	Tol -e Gur Piyazi	RH093 A	223 m	1.4	E 37 31 15 N 34 59 678
27	Char Taqi/ Char Taq	RH093 B	231m	1.1	E 37 33 51 N 34 59 645
28	Ein Korreh	RH095	103 m	10.2	E 36 28 40 N34 46 298
29	Tappeh Bulaibul	RH096	109 m	0.5	E 36 41 61 N 34 44 679
30	Tappeh Dimeh Sadat	RH097	99 m	4.1	E 36 39 87 N 34 44 468
31	Tol-e Kayd	RH104	96 m	0.6	E 36 63 71 N 34 59 444
32	Shifeh	RH112	89 m	0.4	E 35 69 42 N 34 70 474
33	Tol -e Mentar	RH115	92 m	5.6	E 34 98 86 N 34 62 254
34	Tol -e Kaviri	RH116 A	97 m	1.8	E 34 90 89 N 34 63 212
35	Tol-e Karami B	RH116 B	97 m	1.1	E 34 91 68 N 34 63 270
36	Tol -e Karami C	RH116 C	97 m	0.4	E 34 94 83 N 34 63 330



Map 1: Location of the Ramhormoz Plain (Google earth.com)



Map 2: Distribution of Achaemenid period settlements in the Ramhormoz Plain (Afshari 2020)

Achaemenid pottery from the Ramhormoz Plain

In order to analyze the pottery of the Achaemenid period, we first classified the items in terms of form. At this stage, comparative studies were carried out to date the pottery. According to the research, the pottery traditions of the Achaemenid period continued until some time after the end of this period.

Thus, it is important to note that the material and settlements presented in this paper could potentially span the period from the Achaemenid period to a century later.

After the relative certainty of dating the pottery to the Achaemenid period, the types in the collection were dated. The Achaemenid pottery from the Ramhormoz Plain can be divided into five different types: 1- Common ware, 2- Light green slipware, 3- Red slipware 4- Eggshell ware 5 - Painted ware. The pottery is also divided into 5 different groups in terms of form: 1- Carinated bowls 2- Bowls with simple rims 3- Jugs 4- Short necked jars 5- Storage jars.

Pottery Typology and Classification

Light green slip ware

The thick light green slip on the exterior and interior surfaces of the vessel is the most distinctive feature of this ware group. Only one example shows the use of a light green slip on the outer surface and a red slip on the inner surface. The paste color of the light green

slip ware, which occurs in coarse, medium or fine versions, is predominantly orange and brown, and to a lesser extent orange-brown, buff and gray. The paste is tempered with fine, medium and coarse grit, sand, white particles (lime?) and chaff fragments. All of the sherds in the light green ware group were fired at high temperatures. Although most of the sherds are wheel-made, a few examples were hand-shaped. In terms of green coating, there is a similarity between this type of ceramic and the ceramics from the Tappeh Darougeh in the Mianab Shushtar Plain. This type is typical of local ceramics made in the Ramhormoz Plain (Atayi 2006, pp. 143-164).

Red slip ware

The most prominent feature of the red ware group is its red surface color. In terms of paste inclusions and firing characteristics, the majority of red ware items are composed of medium ware with fine and medium inclusions which were fired at high temperatures. The medium samples of the red ware group have predominantly orange and to a lesser extent camel and light brown paste colors. The medium and fine ware is tempered with grit, sand and white particles (lime?). All of the pottery in the red ware group was fired at high temperatures. The paste color of the medium ware of this group is predominantly orange with buff and brown tones to a lesser extent. The clay of the fine ware is better levigated than the coarse ware and is tempered with fine grit and sand. All fine and medium specimens of the red ware group are covered with red slip. Most specimens of this ware are wheel-made. However, some sherds were found to be hand-made.

Common ware

The sherds belonging to this group have a predominantly orange paste, but to a lesser extent brown, gray and buff colors as well. The paste is well levigated, medium to fine, tempered with grit, sand, white particles (lime?) and chaff. All pottery fragments in the non-slip plain ware group were fired at high temperatures. Some of the samples show color variations on the exterior and interior surfaces due to firing; mostly orange, light brown, gray and buff are quite dominant. Most of the sherds belonging to this group are wheel-made but a few were made by hand and most of them are of medium quality. The exterior surface of the sherds belonging to this group is decorated with horizontal bands or stepped decoration. Some specimens of the common ware bear incised and or applique decoration (Figure 1).

Figure 1: Motifs of the decorated non-slip ware group (Afshari 2020)

Eggshell ware

Eggshell ware accounts for 1% of the pottery types found on the Ramhormoz Plain. Only two sherds of this pottery were recovered from two sites. One of these sherds belongs to a carinated bowl with an everted rim and was recovered from Mehr al-Nesa settlement; the other is a fragment of a simple bowl with a simple rim and was recovered from Ishan Seyyed Shebeiyb or Tol-e Toppi settlement. This type of thin-walled eggshell pottery is mostly found in Southern Mesopotamia (for this type in Southern Mesopotamia see Fleming 1989).

Painted ware

This group of ware was found on the surface of a handful of settlements. The painted sherds are tempered with fine grit and sand. The paste color is predominantly orange and buff and all sherds are well-fired. The painted pottery is wheel-made and fine in quality. The motifs are usually found on the exterior surface. The motif repertoire consists of geometric and thin horizontal bands. On the monochrome-painted sherds, the motifs are painted in red in parallel lines on the rim or body. In some examples, geometric motifs are painted on light green slip. Tol-e Karami B, Tol-e Mava and Tol-e Suz or Tol-e Rigi provided this pottery (Figure 2).

Figure 2: Painted ceramics recovered from the Ramhormoz Plain (Afshari 2020)

Forms of Achaemenid pottery from the Ramhormoz Plain

Carinated Bowls or S-Carinated Bowls

A significant portion of the vessels from the Ramhormoz Plain are bowls, which are discussed here together with their subtypes. Of all the ceramics recovered from the Ramhormoz Plain settlements attributed to the Achaemenid period, it can be said that the S-carinated bowl was the most widespread throughout the Achaemenid Empire.

Visual images of these bowls can be seen in the reliefs of the eastern staircase of the Apadana at Persepolis (Schmidt 1963, Loh 32). Although this type of bowl was produced to a limited extent in other cultural periods, by the middle of the 1st millennium BC it was clearly distinguished from other examples from other periods by its paste color, additives, firing temperature and exterior characteristics (Farjami 2022, pp. 59).

A bowl with a carinated body and an everted rim from Tappeh Mehr Al-Nesa (Plate 1, no. 1) is similar to bowls from the Choghamish site in Iran (Delougaz & Kantor 1996, Plate 74, no. A) and from the Karakoyunlu Kale II settlement (Özfırat 2019, Figure 10, no. 11). Of special note is a bowl (Plate 1, No. 2) with an inverted rim and a carinated body. Parallel examples of this bowl were recovered from Level I of Kultepe Hadishar in Iran (Abedi et al 2014, Fig 59, no. 1) and from Tetikom in Eastern Anatolia (Senyürt & Ekmen 2005, Type 1.8., no. 1).

Another example of the Achaemenid pottery culture is a sherd from the Tol-e Gapo Cham settlement with a carinated body and a flared rim (Plate 1, no. 3). Similar examples have not been reported from other sites.

A bowl with a thickened rim from Cham Reji (Plate 1, No. 4) is similar to one from the royal city of Susa II, level 5A in Southwest Iran (de Miroschedji 1987, Figure 8, no. 11).

A bowl from the Tol-e Abbas site with a slightly inverted rim and a carinated body (Plate 1, no. 5) is similar to examples found in the Mianab Shushtar Plain in southwestern Iran

(Atayi 2006, Fig. 13, no. 22), as well as at Saz Tape (Cimin Tape II) in eastern Anatolia (Summers 1993, Fig. 9, no. 8). Other samples of pottery from the period include another sherd with an everted rim from Tol-e Abbas (Plate 1, no. 6). Parallel sherds to this come from a survey conducted on the Mianab Shushtar Plain (Atayi 2006, Fig. 13, no. 13, Fig. 14, no. 8). They also come from the Choghamish site (Delougaz & Kantor 1996, Plate 74, no. I) and from excavations carried out at Tetikom in Eastern Anatolia (Şenyürt & Ekmen 2005, Type 1.20., 8) as well as from the Choghamish settlement (Delougaz & Kantor 1996, Plate 74, no. I), from the excavations conducted at Tetikom in Eastern Anatolia (Şenyürt & Ekmen 2005, Type 1.20., no. 7), from level III of Karagündüz Höyük (YiğitPaşa 2016, Plate 18, no. 1) and from level II B of Sös Höyük (Kalkan 2008, Plate I, no. 2).

A bowl sherd, similar to the bowl sherd from Tol-e Rigi or Tol-e Suz with a carinated body and everted rim (Plate 1, No. 7) was recovered from the Tetikom excavations (Şenyürt & Ekmen 2005, Type 1. 20: 11). Similar bowls to the one with a carinated body from the Jobaji site (Plate 1, no. 8) (Plate 1, no. 8) were found at Tol-e Nurabad in the Fars region of Iran, in phase B5a (Weeks et al 2009, Fig 3.132, no. TNP 2215) and at the Karagündüz Höyük dating to the Late Iron Age/Achaemenid period in Eastern Anatolia (Kalkan 2013, Abb 5, no. 13,25).

This ceramic form has been found in most of the settlements of the Achaemenid Empire, and its distribution in the east and west of the empire appears to have been uniform and to have been influenced by both indigenous and local influences.

Bowls with a simple rim

Similar to the bowl with a simple rim from Tol-e Ishan Seyyed Shebeiyb or Tol-e Toppi (plate 2, no. 1) are those found in level 4 of the royal city of Susa II (de Miroschedji 1987, Figure 10, no. 1) and among the ceramics from the Saz Tape surveys (Işıklı & Özdemir 2019, Figure 1, no. m).

These bowl types are among the common forms of bowls found both in southwestern Iran and in Eastern Anatolia.

Similar to the bowl with an everted rim from the Char Taqi/Char Taq site (Plate 2, no. 2) are the ones recovered from the royal city of Susa II, level 5A (de Miroschedji 1987, Fig 7, no. 15) and from the Karakoyunlu fortress II in Eastern Anatolia (Özfırat 2019, Fig 10, no. 12).

Another bowl with an inverted rim and a globular body from Tappeh Mehr Al-Nesa (Plate 2, no. 3) is similar to the one recovered from Persepolis in Iran (Atayi 2004, Loh-e 31, no 8) and to the one from Zivistan (Lower Elmalık) in Eastern Anatolia (Kalkan 2008, Plate, ZİV-I, no 10).

A sherd bowl with a simple rim from Tappeh Mehr Al-Nesa (plate 2, no. 4) is similar to one found in the Mianab Shushtar Plain in southwestern Iran (Atayi 2006, Fig. 15, no. 20).

A similar bowl with an inverted rim (plate 2, no. 5) was also found in the excavations at the Persepolis fortification (Atayi 2004, Loh-e 13, no. 13).

Within this group of samples, mention should be made of the bowl with an inverted rim (Plate 2, No. 6) from Tol-e Quvileh. Similar bowls of this form were recovered from level 3 of Karagündüz Höyük (Kalkan 2008, levha KGH XXXI, no. 2) and from the excavations at Tetikom (Şenyürt & Ekmen 2005: Type 2. 13., no. 10).

Similar bowls with simple rims (Plate 2, No. 7) were recovered from Karakoyunlu Kale II (Özfırat 2019, Fig. 10, no. 1) and from İmikuşağı levels 5b-a (YiğitPaşa 2016, Plate 6, no. 3).

Similar examples of the bowl with a simple rim from Ein Korreh (Plate 2, no. 8) were also found at Tappeh Darougeh Level 5 (Atayi 2006, Figure 136, no. 10, 13) in Iran and at phase B5a of Tol-e Nurabad (Weeks, et al 2009, Fig 3.132, no. TNP 2246) in the Fars Region. Other similar bowls with a simple rim (Plate 2, no. 9) were recovered from phase B5a at Tol-e Nurabad (Weeks et al 2009, Figure 3.132, no. TNP 2246) and from layer 5 at Tappeh Darougeh (Atayi 2006, Fig. 136, no. 10,13) in Iran.

Jugs

Along with all the Achaemenid ceramic forms from this plain mention should also be made of jugs. A parallel example of a long-necked jug with an everted rim from the Jobaji site (Plate 3, no. 1) was also found at the Tol-e Espid site in the Fars region of Iran. Others were found at phase 12 (Asgari Chaverdi, Petrie & Seyedin 2014, at Tasvire 4.97, no. 499) and at the Van Kalesi mound in Eastern Anatolia as well as from Level IIa-2 (Kaygaz 2002, Plate 63, no. 3; Kalkan 2008, pp. 118).

Similar to the example of a long-necked jug with an inverted rim (Plate 3, No. 2) from Ein Korreh were the ones recovered from the Mianab Shushtar Plain in Iran (Atayi 2006, Figure 18, no. 17) and from the survey at Zivistan (Aşağı Elmalık) in Eastern Anatolia (Kalkan 2008, Plate ZİV-I, no. 4).

Worthy of note is a fragment of a long-necked jug with an inverted rim recovered from the Kheyr Al-Nesa site (Plate 3, no. 3). A similar example of this jug was recovered from level 5 A of the royal city of Susa II (de Miroschedji 1987, Fig 17, no. 2).

The jugs with everted rims found at Tol-e Geser reveal another characteristic form of the Achaemenid Period ceramics. Parallel examples of these thickened long-necked jugs with everted rims (Plate 3, no. 4) were also discovered at the Choghamish archaeological site in Iran (Delougaz & Kantor 1996, Plate 75, no. AA) and at the tombs of Ur in Southern Mesopotamia (Woolley 1962, Plate 51, No. 159b, Plate 42, no. 62).

Mention should also be made of the long-necked jugs with thickened rims recovered from the Tol-e Abbas settlement (Plate 3, no. 5); similar examples have not been reported from other sites.

Another sherd recovered from Shifeh, which has a parallel in Pasargad (Stronach 1978, Fig 106, no. 7), is a jug with an everted rim (Plate 3, no. 6). The fragment of a cup (Plate 3, no. 7) with an exquisitely shaped and everted rim, which has a very important form, is similar to the ones from layer 6 of Tappeh Darougeh (Atayi 2006, Fig. 136, no. 21), from the Choghamish site (Delougaz& Kantor 1996, Plate 75, no. B&C), from Tol-e Takht in Pasargad (Stronach 1978, Fig. 106, no. 2), and from level II of the Achaemenid architectural remains of Nippur in southern Mesopotamia (Gibson 1975, Fig. 49, no. 020127).

The jug with an inverted rim from the Tol-e Mentar site has a long-necked form (Plate 3, No. 8) and its parallel was found at Level 5 A of the royal city of Susa II (de Miroschedji 1987, Figure 17, no. 2).

Short Necked Jars

A storage jar with an everted rim (plate 4, no. 1) was recovered from Tappeh Bulaibul in the Mianab Shushtar Plain in southwestern Iran (Atayi 2006, Figure 17, no. 6). Similar examples to the one with a spherical body and everted rim from the Pacheh kuh site (Plate 4, no. 2) were also found at Level 10 of Tille Höyük (Fuensanta & charvat 2013, Tasvire 6, no. B) and at Level 3 of Karagündüz Höyük (Kalkan 2008, Plate XI, no. 4).

Another example of the spherical body storage jar from Tol-e Bormi (Plate 4, no. 3) with an inverted rim and a spherical body was found at level 2B at Yanık Tape in northwestern Iran (Summers& Burney 2012, Fig 17, no. 27). Similar examples of storage jars with everted rims found at Tol-e Bormi (Plate 4, no. 4) were also found during the excavations of the Persepolis fortification (Atayi 2004, Loh-e 49, no. 12).

Another fragment from the Cham Raji site is a storage jar (Plate 4, no. 5) with an everted rim. A similar example of this storage jar was found in layer 5A of the royal city of Susa II (de Miroschedji 1987, Figure 15, no. 7).

Similar to the sherd with a short neck and an everted rim from Tol-e Gobeir B (Plate 4, no. 6) were those recovered from Saz Tape (Cimin Tape II) (Summers & Burney 2012, Fig 8, no. 7), Karakoyunlu Kale II (Özfırat 2019, Fig. 10, no. 13) and from the tombs of Ur in Mesopotamia (Woolley 1962, Plate 47, no. 118).

Among the other pottery types, the sherd with a flat rim, short neck and spherical body from Tol-e Gobeir B (Plate 4, no. 7), which is a common form in both Iran and Eastern Anatolia, is similar to the sherds found at Saz Tape (Summers & Burney 2012, Fig 8, no. 7), Level

IIB of Sös Höyük, (YigitPaşa 2016: Plate 27, no. 1) and Karakoyunlu Kale II (Özfırat 2019, Fig. 10, no. 10).

Storage Jars

Among all the Achaemenid ceramic forms from the Ramhormoz Plain mention should also be made of storage jars. Of note among these is a thickened storage jar with an inverted rim from the Tol-e Bormi site (Plate 5, no. 1). A similar example was recovered from the Mianab Shushtar Plain in southwestern Iran (Atayi 2006, Figure 17, no. 2). Other examples of this type of vessel are the two storage jars (plate 5, no. 2,3) with inverted rims from the Tol-e Bormi site. Similar examples of these vessels are those found at Dahane Gohlaman (Zehbari, Mehr Afarin & Musavi Haji 2015, Fig 21, No. 41) in southeastern Iran. Another example of these jars has an everted rim and it was found at Tol-e Bormi (Plate 5, no. 4). Parallel examples were recovered from the royal city of Susa II, from level 5 A (de Miroschedji 1987: Figure 17, no. 4) and from the Van KaleMound, level IIa-2 (Kaygaz 2002, Plate 63, No. 2; kalkan 2008, pp. 118). Another sherd, also of a special form and with an inverted rim, was found at the Pacheh Kuh site (plate 5, no. 5), and is similar to the one from level 4 of the royal city of Susa II (de Miroschedji 1987, Figure 8, no. 3).

A similar example to the one with a short neck from the Dimeh Sadat site (Plate 5, no. 6) was found in the Mianab Shushtar Plain (Atayi 2006, Figure 17, no. 6).

Another example of these storage jars is a thickened sherd with an inverted rim from Tappeh Dimeh Sadat (Plate 5, no. 7). The closest parallel of this sherd is reported from layer 7 of Tappeh Darougeh (Atayi 2006, Figure 140, no. 6). A similar storage jar with an inverted rim (Plate 5, no. 8) was also recovered from phase 11 of Tol-e Spid (Asgari Chaverdi et al 2014, Fig. 4-101: TS 340) and from Level II a-2 of the Van Kalesi Mound (Kalkan 2008: Plate VKH-III, No. 6) dating to the Late Iron Age / Achaemenid period in Eastern Anatolia.

Among these, a storage jar with an inverted rim (Plate 5, no. 9) from Tol-e Gobeir A is similar to the finds from the tombs of Ur (Woolley 1962, Plate 44, no. 90).

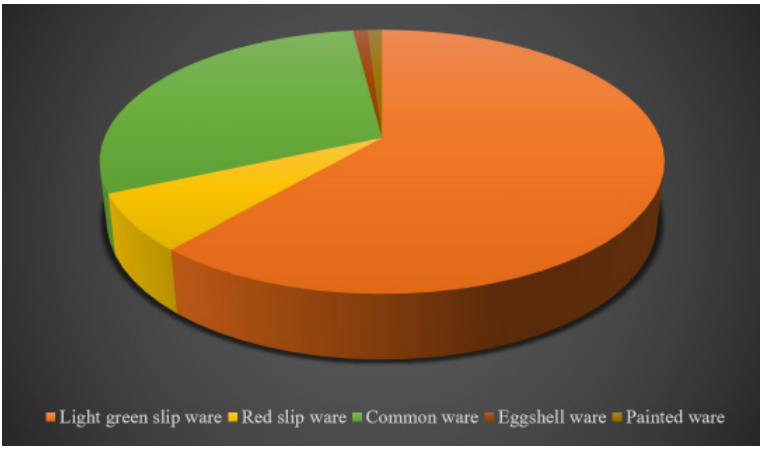
Conclusion

In this paper we have tried to provide at least basic information about the Achaemenid settlements and the pottery of the Ramhormoz Plain. The importance of this research is that it shows that paying attention to local pottery traditions and knowing the local characteristics of each region can increase our archaeological understanding.

The number of settlements indicates that this plain was one of the prosperous regions of Khuzistan during the Achaemenid period. Comparing the number of sites in this plain with Shushtar (23 site) (Moghaddam 2005, pp. 143-164; map 9), with the Khuzestan Plain (23

site) (de Miroschedji 1981: 171, tab. 1, Fig. 56) and with the Patak-Imamzadeh Abbas region (5 site) (de Miroschedji 1981: 174, tab 2, Fig. 60), a significant numerical superiority is evident. Of course, this context should be approached with caution, since there was a period when there was not enough information about local pottery traditions in, for example, the Susiana Plain, Khuzistan (Vanke 2003, pp. 497-562; Figure 74). Therefore, these plains need to be re-examined with new methods and in terms of indigenous species. Of course, this issue is not specific to the Achaemenid period, but should be considered for all cultural periods, especially the historical and Islamic periods.

The Achaemenid pottery from the Ramhormoz Plain can be divided into five different types: 1- Light green slipware 2- Red slip ware 3- Common ware 4- Eggshell ware 5- Painted ware. The pottery is also divided into 5 different groups in terms of form: 1- Carinated bowls 2- Bowls with simple rims 3- Jugs 4- Short necked jars 5- Storage jars. The light green slipware was recovered from the excavations at Tappeh Darougeh and has been identified as the local ware of this region (Atayi 2006, pp. 477-496). Most of these vessels were produced for daily use. The decorations used on the surface of the ceramics are embossed parallel horizontal bands or fingerprinting. 61% of the Achaemenid ceramics of the Ramhormoz Plain are light green slip ware and 7% are red slip ware. Painted wares with horizontal parallel lines account for only 1% (Graph 1). Among the Achaemenid ceramic forms of the Ramhormoz Plain, we can mention the bowls with an everted rim and carinated body (S-Carinated), which is one of the characteristic forms of the Late Iron Age and the Achaemenid period. The study shows that the regional pottery of the Achaemenid period is similar to that of Khuzistan, Fars and to some extent the northwestern region of Iran. The comparisons also show that the pottery of this period was not entirely local and was influenced by neighboring regions such as Eastern Anatolia and Southern Mesopotamia; however, some of this pottery was also entirely local and not influenced by other regions. Regarding the technique of manufacture and the tempering agent, the red slip ware collections of the Ramhormoz survey are different from those of the eastern Anatolian sites, but they are similar to those found at Jubaji in the Ramhormoz plain, which date to the Neo-Elamite period (Shishegar 2015). In terms of form, they are, however, comparable to the Late Iron Age /Achaemenid pottery of eastern Anatolia (Şenyurt, kamış & Akçay 2011). Therefore, we may conclude that, despite the long distance between these two regions, the tradition of making such pottery vessels was initiated in eastern Anatolia and then reached the Ramhormoz plain via the Royal Road. Moreover, since eggshell ware is mostly found in Southern Mesopotamia, it was probably imported from this region to the Ramhormoz Plain.



Graph 1: Percentages of Achaemenid Period Ware Groups Found in the Ramhormoz Plain

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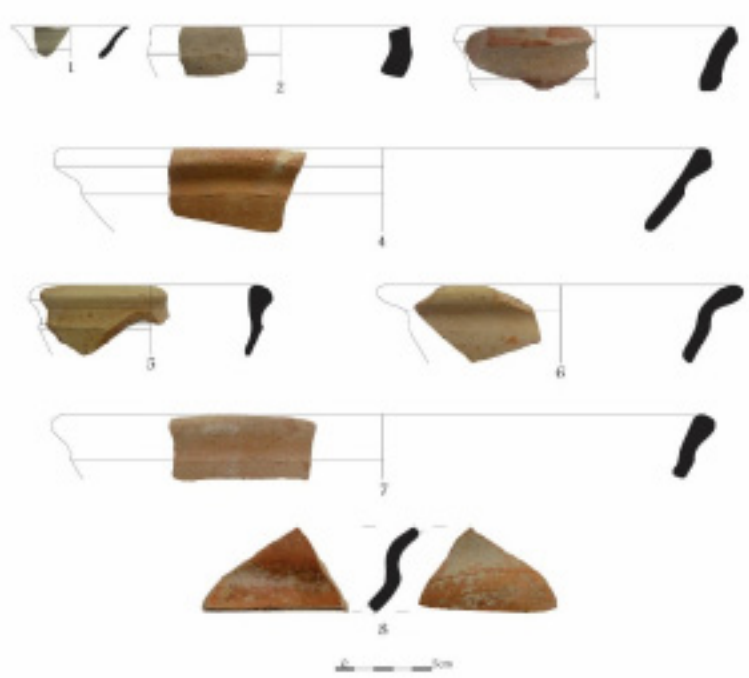

Plate 1: Achaemenid carinated bowls from the Ramhormoz Plain

Plate 1: Technical characteristics of the Achaemenid Carinated bowls from the Ramhormoz Plain

No.	Settlement Code	Settlement Name	Form	Manufacture	Interior Color	Exterior Color	Paste Color	Firing	Temper	Surface treatment		Quality		Decorations	Parallels
										Interior Surface	Exterior Surface	Interior	Exterior		
1	065A	Tappeh Mehr Al Nesa	Carinated Bowl	Wheel-made	Buff	Buff	Buff	adequate	Grit , sand	-	-	fine	fine	-	**Delougaz , Kantor 1996: Plate 74, No. A., Şenyurt, Kamış ve Akçay 2005: Tip 6.3., No. 193, Özfırat 2019: Resim 10, No. 11**
2	065A	Tappeh Mehr Al Nesa	Carinated Bowl	Wheel-made	Buff	Buff	Buff	adequate	Grit , sand	-	-	medium	medium	-	**Abedi et al 2014: Fig 59, No. 1, Şenyürt , Ekmen 2005: Tip 1.8., No. 1**
3	077C	Tol-e Gapu Cham	Carinated Bowl	Wheel-made	Light green	Light green	Orange	adequate	Grit , sand	Slipped	Slipped	medium	medium	-	-
4	028	Cham Rejy	Carinated Bowl	Wheel-made	Light green	Light green	Orange	adequate	Grit , sand, white particles , chaff	Slipped	Slipped	medium	medium	-	**Kalkan 2008: levha I, No. 2**
5	032	Tol-e Abbas	Carinated Bowl	Wheel-made	Light green	Light green	Orange	adequate	Grit , sand	Slipped	Slipped	medium	medium	-	**Atayi 2006: Şekle 13, No. 22, (Summers 1993: Fig 9, No. 8)**
6	032	Tol-e Abbas	Carinated Bowl	Wheel-made	Light green	Light green	Orange	adequate	Grit , sand	Slipped	Slipped	medium	medium	-	**Atayi 2006: Şekle 13, No. 13, Şekl-e 14, No. 8, Delougaz , Kantor 1996: Plate 74, No. I, Şenyürt , Ekmen 2005: Tip 1.20., No. 7, YiğitPaşa 2016: levha 18, No. 1, Kalkan 2008: levha I, No. 2**
7	085	Tol-e Rigi	Carinated Bowl	Wheel-made	Light green	Light green	Orange	adequate	Grit, sand, chaff	Slipped	Slipped	medium	medium	-	**Şenyürt , Ekmen 2005**
8	058	Jobaji	Carinated Bowl	Wheel-made	Red	Red	Dark buff	adequate	Grit, sand	Slipped	Slipped	fine	fine	-	**Weeks et al 2009: Fig 3.132, No. TNP 2215, Kalkan 2013: Abb 5, No. 13,25**

Plate 2: Achaemenid bowls with simple rim from the Ramhormoz Plain

Plate 2: Technical characteristics of Achaemenid bowls with simple rims from the Ramhormoz Plain

No.	Settlement Code	Settlement Name	Form	Manufacture	Interior Color	Exterior Color	Paste Color	Firing	Temper	Surface treatment		Quality		Decorations	Parallels
										Interior Surface	Exterior Surface	Interior	Exterior		
1	071	Tol-e Toppi	Simple Bowl	Wheel-made	Light green	Light green	Orangish brown	adequate	Grit, sand	Slipped	Slipped	medium	medium	-	**de Miroschedji 1987: Figure 10, No. 1, Işıklı , Özdemir 2019: Figür 1, No. m**
2	093 B	Char taghi	Simple Bowl	Wheel-made	Orange	Light green	Orange	adequate	Grit, sand, white particles	-	Slipped	medium	medium	-	**Özfırat 2019: Resim 10, No. 12**
3	065A	Tappeh Mehr Al Nesa	Simple Bowl	Wheel-made	Red	Red	Orange	adequate	Grit, sand	Slipped	Slipped	medium	medium	-	**Atayi 2004: Loh-e 31, No. 8, Kalkan 2008: levha, I, No. 10**
4	065A	Tappeh Mehr Al Nesa	Simple Bowl	Wheel-made	Light green	Light green	Orange	adequate	Grit, sand, white particles	Slipped	Slipped	medium	medium	-	**Atayi 2006: Şekle 15, No. 20**
5	065A	Tappeh Mehr Al Nesa	Simple Bowl	Wheel-made	Light green	Light green	Orange	adequate	Grit, sand	Slipped	Slipped	medium	medium	-	**Atayi 2004: , Loh-e 13, No. 13**
6	004	Tol-e Quvileh	Simple Bowl	Wheel-made	Orange	Light green	Orange	adequate	Grit, sand, white particles	-	Slipped	medium	medium	-	**Kalkan 2008: levha XXXI, No. 2 Şenyürt , Ekmen 2005: Tip 2. 13., No. 10**
7	116 B	Tol-e Karami B	Simple Bowl	Wheel-made	Reddish brown	brown	Orangish grey	adequate	Grit, sand	Slipped	Slipped	fine	fine	-	**Özfırat 2019: Resim. 10, No. 1, YiğitPaşa 2016: levha 6, No. 3**
8	095	Ein Korreh	Simple Bowl	Wheel-made	Orange	Light green	Orange	adequate	Grit, sand	-	Slipped	medium	medium	-	**Atayi 2006: Şekle 136, No. 10,13, (Weeks, et al 2009: Fig 3.132, No. TNP 2246),**
9	095	Ein Korreh	Simple Bowl	Wheel-made	Orange	Light green	Orange	adequate	Grit, sand, white particles	-	Slipped	medium	medium	-	**Weeks et al 2009, Figure 3.132, no. TNP 2246, Atayi 2006, Şekle 136, No. 10,13,**

Plate 3: Achaemenid jugs from the Ramhormoz Plain

Plate 3: Technical characteristics of Achaemenid jugs from the Ramhormoz Plain

No.	Settlement Code	Settlement Name	Form	Manufacture	Interior Color	Exterior Color	Paste Color	Firing	Temper	Surface treatment		Quality		Decorations	Parallels
										Interior Surface	Exterior Surface	Interior	Exterior		
1	058	Jobaji	Jug	Wheel-made	Red	Red	Buff	adequate	Grit, sand	Slipped	Slipped	fine	fine	-	Asgari Chaverdi, Petrie , Seyedin 2014: Tasvire 4,97, No. 499, Kaygaz 2002: levha 63, No. 3
2	095	Ein Korreh	Jug	Wheel-made	Orange	Light green	Orange	adequate	Grit, sand, chaff	-	Slipped	medium	medium	-	Atayi 2006: Şekle 18, No. 17, Kalkan 2008: levha, I, No. 4
3	065 C	Tappeh Kheyr Al Nesa	Jug	Wheel-made and hand-made	Orange	Light green	Orange	adequate	Grit, sand	-	Slipped	medium	medium	-	de Miroschedji 1987: Fig 17, No. 2
4	001	Tol-e Geser	Jug	Wheel-made	Light green	Light green	Orange	adequate	Grit, sand, chaff	Slipped	Slipped	medium	medium	-	Delougaz , Kantor 1996: Plate 75, No. AA, Woolley 1962: Plate 51, No. 159b, Plate 42, No.62
5	032	Tol-e Abbas	Jug	Wheel-made	Light green	Light green	Orange	adequate	Grit, sand	Slipped	Slipped	medium	medium	-	-
6	112	Shifeh	Jug	Wheel-made	Light green	Light green	Orange	adequate	Grit, sand	Slipped	Slipped	medium	medium	-	Stronach 1978: Fig 106, No. 7
7	112	Shifeh	Jug	Wheel-made	Brown	Brown	Brown	adequate	Grit, sand, white particles , shiny particles	-	-	medium	medium	-	Atayi 2006: Şekl-e 136, No. 21, Delougaz , Kantor 1996: Plate 75, No. B&C, Stronach 1978: Fig 106, No. 2, Gibson 1975: Fig. 49, No. 020127
8	115	Tol-e Mentar	Jug	Wheel-made	Brown	Light green	Brown	adequate	Grit, sand, chaff	-	Slipped	medium	medium	-	de Miroschedji 1987: Figure 17, No. 2

Plate 4: Achaemenid short-necked jars from the Ramhormoz Plain

Plate 4: Technical characteristics of Achaemenid short-necked jars from the Ramhormoz Plain

No.	Settlement Code	Settlement Name	Form	Manufacture	Interior Color	Exterior Color	Paste Color	Firing	Temper	Surface treatment		Quality		Decorations	Parallels
										Interior Surface	Exterior Surface	Interior	Exterior		
1	096	Bulaibul	short-necked jar	Wheel-made	Orange	Light green	Orange	adequate	Grit, sand	-	slipped	medium	medium	-	Atayi 2006: Şekle 17, No. 6
2	091	Pacheh kuh	short-necked jar	Wheel-made	Light green	Light green	Orange	adequate	Grit, sand, chaff	slipped	slipped	medium	medium	-	Fuensanta , charvat 2013: Tasvire 6, No. B Kalkan 2008: levha XI, No. 4
3	011	Tol-e Bormi	short-necked jar	Wheel-made	Light green	Light green	Dark gray	adequate	Grit, sand, white particles	Slipped	Slipped	medium	medium	-	Summers , Burney 2012: Fig 17, No. 27
4	011	Tol-e Bormi	short-necked jar	Wheel-made	Light green	Light green	Orange	adequate	Grit, sand, chaff	Slipped	Slipped	medium	medium	-	Atayi 2004: Lohe 49, No. 12
5	028	Cham Rejy	short-necked jar	Wheel-made	Orange	Orange	Orange	adequate	Grit, sand, white particles	-	-	medium	medium	-	de Miroschedji 1987: Figure 15, No. 7
6	084 B	Tol-e Gobeir	short-necked jar	Wheel-made	Dark orange	Dark orange	Dark orange	adequate	Grit, sand, white particles	-	-	medium	medium	-	Summers , Burney 2012: Fig 8, No. 7, Özfirat 2019: Resim. 10, No. 13, Woolley 1962: Plate 47, No. 118
7	084 B	Tol-e Gobeir	short-necked jar	Wheel-made	Dark orange	Light green	Dark orange	adequate	Grit, sand, white particles	-	slipped	medium	medium	-	Summers , Burney 2012: Fig 8, No. 7, YiğitPaşa 2016: levha 27, No. 1, Özfirat 2019: Resim. 10, No. 10

Plate 5: Achaemenid storage jars from the Ramhormoz Plain

Plate 5: Technical characteristics of Achaemenid storage jars from the Ramhormoz Plain

No	References	Settlement Name	Form	Manufacture	Interior Color	Exterior Color	Paste Color	Firing	Temper	Surface treatment		Quality		Decorations	Parallels
										Interior Surface	Exterior Surface	Interior	Exterior		
1	011	Tol-e Bormi	storage jar	Wheel-made	Light green	Light green	Dark orange	adequate	Grit , sand, white particles	Slipped	Slipped	medium	medium	-	Atayi 2006: Şekle 17, No. 2
2	011	Tol-e Bormi	storage jar	Wheel-made	Light green	Light green	Light brown	adequate	Grit, sand, chaff	Slipped	Slipped	medium	medium	Applique decoration on the exterior	Zehbari, Mehr Afarin , Musavi Hâji 2015: Fig 21, No. 41
3	011	Tol-e Bormi	storage jar	Wheel-made	Dark gray	Light green	Dark gray	adequate	Grit, sand, white particles	-	Slipped	medium	medium	-	Zehbari, Mehr Afarin , Musavi Hâji 2015: Fig 21, No. 41
4	011	Tol-e Bormi	storage jar	Wheel-made	Light green	Light green	Brown	adequate	Grit, sand, white particles	Slipped	Slipped	medium	medium	-	de Miroschedji 1987: Figure 17, No. 4, Kaygaz 2002: levha 63, No. 2
5	091	Pache kuh	storage jar	Wheel-made	Light brown	Light green	Light brown	adequate	Grit, sand, white particles	-	slipped	medium	medium	-	de Miroschedji 1987: Figure 8, No. 3
6	097	Dimeh Sadat	storage jar	Wheel-made	Gray	Gray	Gray	adequate	Grit, sand	-	-	medium	medium	-	Atayi 2006: Şekle 17, No. 6 Şenyurt, Kamış , Akçay 2005: Tip 12.1., No. 241
7	097	Dimeh Sadat	storage jar	Wheel-made	Brown	Light green	Brown	adequate	Grit, sand	-	Slipped	medium	medium	-	Atayi 2006: Şekle 140, No. 6
8	095	Ein Korreh	storage jar	Wheel-made	Orange	Light green	Orange	adequate	Grit, sand, chaff	-	Slipped	medium	medium	-	Asgari Chaverdi et al 2014, Fig. 4-101: TS 340, Kalkan 2008: levha, III, No. 6
9	084 A	Gobeir A	storage jar	Wheel-made	Dark orange	Light green	Dark orange	adequate	Grit, sand	-	Slipped	medium	medium	-	Woolley 1962: Plate 44, No. 90

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Araştırma Makalesi / *Research Article*

Doric Capitals in Pessinus: A Brief Overview of Pessinus Architectural Activities

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ABSTRACT

The city of Pessinus is located within the boundaries of Ballıhisar Village, approximately 16 km south of Sivrihisar district in Eskişehir, Turkey. The area where the city is situated was first known as Phrygia and then as Galatia in ancient times. A significant portion of the ancient city currently remains buried beneath the village settlement. The conducted excavations and research have demonstrated the city to have been an important cult center during Hellenistic and Roman times. Pessinus has a rich cultural heritage, and impressive examples of architectural layouts and designs can evidently be found within its ancient ruins. One of the notable surviving examples of ancient architecture in the city is the Doric capitals identified at various points. This study provides a detailed analysis of the material, design, and stylistic features of the Doric capitals identified in Pessinus. Furthermore, it examines the typological variety, details, and regional variations of these capitals, along with their contributions to the overall architectural design.

Keywords: Pessinus, Doric capitals, architectural documentation, architectural order

Introduction

The scientific excavation and research in the important ancient cult center of Pessinus has a long history. Between 1967-2008, Prof. Dr. P. Lambrechts and Prof. Dr. J. Devreker conducted research with some interruptions on behalf of Ghent University (Claerhout & Devreker, 2008). Since 2009, research activities have been carried out under the direction of Prof. Dr. G. R. Tsetskhladze on behalf of Melbourne University (Tsetskhladze, 2019), and these studies continued uninterrupted until 2015.

The archaeological research that was carried out in the city has led to significant results regarding its historical period. These studies have provided valuable information about the city's relationship with the Hittite[1] culture (Claerhout & Devreker, 2008, p. 97; Tsetskhladze, 2019, pp. 24–25), the Phrygian culture (Tsetskhladze, 2009, pp. 703–710; Tsetskhladze, 2019, pp. 26–32; Verlinde, 2015a, p. 71), the development of the city's identity during the Hellenistic period (Verlinde, 2010, pp. 116–119; Verlinde, 2015a, p. 65), and its development during the Roman imperial period (Verlinde, 2010, 2015b). The detailed study of this significant cult center in Central Anatolia has not only shed light on the archaeological significance of the region but also improved the understanding of the characteristics of its cultural heritage.

This study focuses on the Doric capitals, specifically those discovered in the garden of the excavation house and those identified in the Eastern Stoa of the Quadriporticus (Devreker et al., 1995, p. 143; Devreker et al., 2009, pp. 64–67; Devreker et al., 2010, pp. 149–153),[2] known as Sector H (Verlinde, 2010; Verlinde, 2015). While the Doric capitals in the Quadriporticus display similar stylistic features, the origins and precise arrival date of those found in the excavation house garden remain uncertain, making their unique stylistic characteristics all the more intriguing. Despite this, a comprehensive stylistic analysis of these capitals has not been undertaken, and beyond those already documented, no additional examples of Doric capitals were found during the field survey of the ancient city of Pessinus.

The diversity in the quality of materials the stonemasons of the time used demonstrate their skill in working with different types of stone. The Doric capitals found near the excavation house are made of marble, whereas those discovered in the East Stoa of the Quadriporticus were crafted from sandstone. Such variation in building materials suggests the presence of craftsmen capable of working with both types and also implies different material preferences for distinct architectural structures. This study aims to meticulously examine the materials, designs, and stylistic features of the Doric capitals discovered in Pessinus. Based on the results of this research, the study proposes a date for these capitals and assesses

1 During the Pessinus excavations, a hearth dated to 1500 BC was found in Area B6a.

2 This Quadriporticus, a structure planned by Peristyl, is located in front of the temple area dedicated to the cult of the emperor, which was built in the second quarter of the 1st century AD.

their significance within the city's historical context. Furthermore, this study presents fresh insights and interpretations regarding the function of the Sector H structure that was analyzed in terms of the Rhodian Peristyle plan (Vitr. De arch. VII.7,3; Verlinde, 2015a, p. 61).

Methodology, Materials, and Profile Characteristics

The catalog prepared for the Doric capitals found at Pessinus reveals that certain groups of capitals share common stylistic features. Each Doric capital has been described in detail in the catalog's tables, with exemplary capitals having been numerically categorized from Cat. No. 1 to Cat. No. 9 (see Table 1). Notably, three distinct groups (i.e., Cat. No. 1, Cat. Nos. 2-4, and Cat. Nos. 5-9) have been identified due to their similarities in stylistic features. These groups were formed based on considerations of the capitals' profile characteristics, dimensions, and decorative details. The process of stylistic analysis and exemplification has been elaborated for each capital by drawing upon different well-dated examples, which has been crucial in establishing the main elements for dating.

The documentation of the capitals has been a significant aspect of this study, particularly with the inclusion of profile drawings. Detailed profile drawings have been meticulously prepared for each grouped capital. Special attention has been given to the echinus and annulet profile types, leading to the creation of large-scale drawings that aid in better comprehension. These profile drawings are essential in determining the capitals dating and identifying the differences and similarities in their stylistic features (Fig. 1). In addition to conventional documentation methods, a tablet computer equipped with a LiDAR sensor has been utilized for scanning each documented capital (Yurtsever, 2023, pp. 200–206). This innovative approach has allowed the preservation of digital scans of the columns, resulting in the establishment of a comprehensive database. By employing both traditional and modern documentation methods, this research ensures a robust and comprehensive analysis of the Doric capitals stylistic evolution and architectural significance at Pessinus.

During the documentation, the condition, preservation status, profile characteristics, and material quality of the Doric capitals were able to be better understood. The Doric capital displayed in Cat. No. 1 (see Figs. 2 and 11) is considerably damaged and incomplete. The design features of the capital can be understood thanks to the intact sections and their profile characteristics. The neck section exhibits concave curves with sharp edges, and its arris are band-shaped with Ionic fluting. Above the fluting, an annulet is depicted in two steps. The echinus on the annulet slightly curves outward and rises slightly proud, with a thin line appearing where the echinus meets the abacus table. The abacus table has some erosion, and a band-shaped crown profile can be observed on the table. The typological feature of the crown profile could not be determined due to the preservation status.

The Doric capital referred to as Cat. No. 2 (see Fig. 3) has largely preserved its profile characteristics, and the lower part of the capital has a dowel socket measuring 4x4x5 cm at

the center. The neck section has a band-shaped relief ornament in the form of a half-circle with sharp edges, and a depiction of an arrow/spearhead is placed between each half-circle relief. Therewithal, the general form of the neck decorations resembles a different variation of the Ionic cymatium. The only difference here is the absence of the egg in the hollow. The decorative style in question can also be interpreted as spearhead-like embellishments rising to the starting point of the annulets and terminating in a semi-circular form between the grooves. The annulet on the neck section shows a style known as a "saw-toothed," or V-shaped, annulet. The transitions between the neck and annulet are harmonious, resulting in a seamless and aesthetically pleasing appearance. The echinus on the annulet slightly curves outward and rises slightly proud with fine comb traces in its central part. Based on the documented capitals of the same type and profile characteristics, one can infer that the abacus has a flat band-shaped profile and carries a "Pergamon Ovolo" crown (Shoe, 1936, p. 22; Vasdaris, 1987, pp. 62–69; Gider Büyüközer, 2013, pp. 53–60, figs. 20-21; Yurtsever & Yılmaz Kolancı, 2022, p. 195, fn. 17). The Doric capitals labeled Cat. Nos. 3-4 (see Figs. 4-5) also exhibit similar profiles and stylistic features with Cat. No. 1. The profile features of the capitals with Cat. Nos. 2-4, which likely belong to the same building, were analyzed by comparing the intact sections of these capitals with each other, resulting in the creation of a restitution proposal for the capitals (see Fig. 12).

The Doric capital labeled Cat. No. 5 (Fig. 6) is well-preserved and fully maintains its profile characteristics. The neck section of the capital contains shallow line ornamentation, and the neck is slightly inclined downward from the annulet. The annulet is saw-toothed (i.e., V-shaped).[3] The transitions between the neck and annulet are smooth and natural. The echinus on the annulet slightly curves outward and rises slightly proud. The abacus table is flat and carries round corner consoles. The Doric capitals labeled Cat. Nos. 6-8 (Fig. 7-9) display the same profile and stylistic features. Only the dimensions of the capital labeled Cat. No. 9 (Fig. 10) are taller compared to the other capitals in the same group. Additionally, thicker comb traces can be observed on the longer neck section of this capital. This might be a later application that occurred in a subsequent period. A restitution drawing has also been created for these capitals belonging to the same structure (see Fig. 13).

Stylistic Analysis and Dating

The Doric capitals found in the city of Pessinus have provided sufficient profile features for conducting a stylistic analysis. Despite fractures and missing parts, the reconstruction of the complete form of the capitals has been achieved through this analysis. Dating the Doric capitals presents stylistic challenges (Rumscheid, 1994, p. 302; Mert, 2016, p. 382; Yurtsever & Yılmaz Kolancı, 2022, p. 199). However, this study has relied extensively on capitals from securely dated structures as reference points.

3 For the rest of the text, the term V-shaped annulet is preferred.

The stylistic analysis will commence with the Doric capital cataloged as Cat. No. 1. The significant features of the neck, annulet, echinus profile, and ovolo profile on the abacus are essential points of examination. The neck of the capital displays Ionic flutes with a straight band formed between them (Hellström, 1985, p. 132; Gider Büyüközer, 2013, pp. 35–39). F. Rumscheid (1994, p. 303) attributed this band design and the flutes to Ionic influence, categorizing such capitals under Group 4, which suggests their presence in Anatolia during the High and Late Hellenistic periods. According to Z. Gider Büyüközer (2013, pp. 98–99), the Ionic flutes on the neck section with a flat top fall under the category type "By6". These types were used from the 2nd century BC to the early 1st century AD. Although the annulet appears round due to wear, it has a double-stepped form worked outwards, separating from the echinus in intact portions (Vasdaris, 1987, pp. 143–146; Yurtsever & Yılmaz Kolancı, 2022, pp. 194–195, fn. 15). Gider Büyüközer (2013, pp. 82–85) classified this type of annulet as Type An3 and noted it to have been in use from the 2nd century BC to the 1st century AD. When examined stylistically, the first annulet from the bottom in the Pessinus capital is aligned with the second and third annulets, forming a stepped configuration. These features are observed in Doric capitals from the 2nd century BC, as exemplified by the Skythinos Monument Column in Pergamon (Rumscheid, 1994, Cat. no. 210, Taf. 125. 5) and the North Stoa in Priene (Rumscheid, 1994, Cat. no. 305 Taf. 165-5).

The echinus of the Cat. No. 1 capital slightly curves outward, and the top point of the echinus is connected to the underside of the abacus through an inward turn, forming an angular transition. Capitals with such an echinus profile were in use from the 4th century BC until the 1st century AD (Gider Büyüközer, 2013, pp. 63–65, fn. 341).[4] The outward-bulging echinus turns inward at its upper point, connecting to the abacus table. Despite fractures and missing parts, the abacus table displays a cymatium, but its exact type cannot be identified. When considering all these features, similar examples can be found in the capitals of the Northern Stoa of the Hekate Sanctuary (Gider, 2012, pp. 264–265, 271, figs. 6-7; Gider Büyüközer, 2013, pp. 37, 664) and of the West Stoa (Gider Büyüközer, 2013, pp. 37, 651–652, 655) at Lagina, dating to the Early Augustan Period. In the restituted drawings of the Pessinus capital, the abacus appears to have a width of at least 50 cm, a lower diameter of 40 cm, and 20 Ionic flutes (Fig. 11).

The Doric capital from the stage building of the Augustan-period theater in Stratonikeia (Mert, 2002, p. 187; 2008, pp. 133, 150 abb. 25-26; Ismaelli, 2009, p. 381, fig. 408; Gider Büyüközer, 2013, fig. 37; Söğüt, 2019, p. 55) provides another comparable stylistic example. The Stratonikeia capital displays triple-arranged annulets and Doric characteristics on the neck flutes, unlike the Pessinus capital. However, the abacus, echinus profile, and annulets

4 Gider Büyüközer listed early examples dating back to the 4th century BC with this type of profile in the Caria region and stated the earliest example to have been identified in the Oikoi Building in Labraunda.

are stylistically similar to those of the Pessinus capital. Similarly, comparable profile features can be observed in Doric capitals from the Gymnasium of Hierapolis (Ismaelli, 2009, pp. 165–169, 380–384, 443–445), dating to the early 1st century AD. The Gymnasium capital has a more inflated echinus and step-shaped annulets on a polygonal fluted neck, terminating in semicircular shapes at the top. Therefore, the Pessinus capital was likely not produced after the Augustan Era.

Another noteworthy feature of the Pessinus capital is the unfluted section on the neck that begins after the termination of the Ionic fluting. An excellent example of such Doric capitals can be observed in the Water Structure of the city of Stratonikeia, where they were repurposed and dated to the early Roman Imperial period (Gider Büyüközer, 2013, pp. 37, 105, fig. 41, pl. 9, 4). The Doric capitals of the Stratonikeia Water Structure have a section without grooves, elevated between the termination point of the grooves and the annulets. Regarding the Pessinus capital, a flat-surfaced band is created after the annulets in the transition to the neck section. Therefore, in terms of the treatment of the neck section, the Pessinus capital falls into Typology Type By6 as defined by Gider Büyüközer (2013, p. 99).[5] The abacus, echinus, and annulet profile of this capital closely resemble those of the Pessinus capital, with the neck section of the Pessinus capital exhibiting a distinctive variant characterized by a lower unfluted portion. Furthermore, the capitals on display in the Milas Museum, stylistically dated to the second half of the 1st century BC, particularly exhibit stylistic similarities in the cyma on the abacus and the fluting on the neck section, akin to the stylistic features of the Pessinus capital.

The examined comparative examples, including the Cat. No. 1 Doric capital from Pessinus, unequivocally suggest that this capital cannot be dated earlier than mid-1st century BC, nor can it be placed in a period later than the Augustan Era. Notably, the examples from Lagina, as well as the other specifically dated Doric capitals that have been studied analogically, support the attribution of the Pessinus capital to the Early Augustan Period.

The Doric capitals Cat. Nos. 2, 3, and 4 from Pessinus exhibit distinctive stylistic features, particularly in their decorative details in the neck section. During the research conducted in the city, two more capitals with similar profiles and stylistic characteristics as Capital No. 2 were identified. Therefore, the Doric capitals Cat. Nos. 3 and 4 have shared stylistic features and have been collectively evaluated. Each of these capitals has been preserved to some extent, enabling restitution after individual examinations. Consequently, the neck, echinus, and abacus of each capital were crafted together. Although their heights vary between 21.5 and 25.5 cm, the restitution drawing indicates a height of 24.5 cm. The lower diameter should be 55 cm, and the abacus width should be at least 70 cm. The columns supporting the capitals were also suggested to have been fluted and each column to have maybe had at least 20 flutes.

5 Gider Büyüközer has stated that these types of capitals emerged in Anatolia during the Hellenistic period and continued to be used in the 1st century AD.

The decorative features in the neck section of the examined Doric capitals present a distinct design element. Notably, between the consecutive semi-circular, sharp-edged bands in the neck section, each capital has arrow-/spear-shaped forms inserted (Figure 12). Alternatively, the stonemason might have aimed to create a different design of the groove/tongue motif for Doric or Ionic arris. In the literature, examples of such decorative elements on the neck section of Doric capitals are not widely known. Just above these decorative elements are annulets arranged in groups of three and forming stepped patterns.[6] The first annulet extends perpendicular to the echinus profile at an angle slightly exceeding 90 degrees, with the second and third annulets following it, extending downwards at a 90-degree angle. Hellenistic period examples of annulets with triple arrangements in the literature are quite numerous (Rumscheid, 1994, tafs. 112, 1; 117, 6; 136, 1; 165, 1; 169, 1; Rumscheid, 2000, p. 199, fig. 173; Gider Büyüközer, 2020, p. 135, fig. 10a), and understood to have been in use throughout the 1st century AD. (Bernardi Ferrero, 1988, p. 168, fig. 230; Rumscheid, 1994, taf. 10, 4; Smith, 2013, p. 31, pl. 4A-E; Uz, 1985, pp. 108, 230 figs. 16 & 19; Uz, 2013, p. 45, pls. 18a, 38, 44; Kadıoğlu, 2021, pp. 188–240; Ismaelli, 2009, p. 362, fig. 395; Yurtsever & Yılmaz Kolancı, 2022, pp. 202–203 figs. 9-11). A recent study by Yurtsever & Yılmaz Kolancı (2022, p. 199) also pointed out the complexity of dating based on the number and stylistic features of annulets.

The echinus profiles of the capitals are slightly convex and bulge outward as they rise, aligning with the level of the abacus top surface. The abacus of the capitals has a Pergamene ovolo profile (Shoe, 1936, p. 22; Gider Büyüközer, 2013, pp. 53–60, figs. 20-21; Yurtsever & Yılmaz Kolancı, 2022, p. 195, fns. 17-18). For this reason, capitals with Cat. Nos. 2-4 are referred to as Doric capitals crowned with a Pergamene ovolo. The Pessinus capitals exhibit the characteristics of the Pergamene ovolo Type IV (Shoe, 1936, p. 22; Gider Büyüközer, 2013, p. 142), and this type of capital was known to have been used from the 3rd-2nd centuries BC to the 1st century AD (Ismaelli, 2009, pp. 380–381; Gider Büyüközer, 2013, p. 56). When considering the examples from the Hadrianic Forum in the ancient city of Cremna in Pisidia, this usage period can be extended up to the mid-2nd century AD (Mitchell, 1995, pp. 59–63, fig. 14). Therefore, dating the capitals based solely on the features of the annulet profiles does not appear possible. In this context, the evaluation of the Pessinus capitals will be based on comparative examples with similar abacus, echinus, and annulet profiles.

The Doric capitals at Pessinus, characterized by their triple arrangement of annulets, slightly convex rising echinus, and abacus section beginning in line with the echinus, closely resemble the Doric capitals found in the agora of Lyrbe, that have been dated to the first

6 Due to significant abrasion developed over time on Doric Capitals Cat. Nos. 2, 3, and 4, the annulets appear in different forms in the figures. However, field research and profile drawings of the intact sections of the capitals have indicated that the annulets are crafted in a stepped pattern. Please refer to Figures 1 and 12 in the study.

quarter of the 1st century AD (Rumscheid, 1994, taf. 181, 4; Yıldırım, 2018, p. 834, res. 3-22). Moreover, similar profile characteristics are observed in the Doric capitals from Antioch of Pisidia (Taşlıalan, 1994, pp. 250–251, fig. 19; Ismaelli, 2009, p. 381, fig. 408), the Augustan period theater in Stratonikeia (Mert, 2002, p. 187; 2008, pp. 133, 150 abbs. 25-26; Ismaelli, 2009, p. 381, fig. 408; Gider Büyüközer, 2013, fig. 37; Söğüt, 2019, p. 55), the Stoas of the Gymnasium in Hierapolis (Ismaelli, 2009, pp. 443–445, fig. 407), and at Attouda (Yurtsever & Yılmaz Kolancı, 2022, pp. 202–203, cat. nos. 7 & 9). Based on these examples, to consider the Pessinus capitals labeled Cat. Nos. 2-4 as dating to the Augustan period would be reasonable. However, further examination is required to explore the depiction of the arrow/spearheads in the neck section. These motifs appear to be compressed between the two consecutive semi-circular bands and are of particular significance. A similar motif can be observed on a block located at the center of the gate of the Port in the ancient city of Ephesus. Similar to the Pessinus example, the decorative element from the time of Julius Claudius also exhibits sharp-edged arrow/spearheads emerging between the two bowls (Alzinger, 1974, p. 61, tafs. 31, 55; tafs. 85, 140b). Furthermore, within the same city and structure, a capital displaying a similar style of spearhead can be found (Alzinger, 1974, p. 61, taf. 68, 106a). When considering these examples, one may plausibly assert that the Pessinus capitals cannot be dated to a period before the Augustan era or after the time of Julius Claudius. The primary proposal is based on the stylistic similarity of the profiles by considering the examples from Stratonikeia and Hierapolis and suggests the Augustan period. This period coincides with a revival of Doric architecture in Anatolia, albeit to a limited extent (Fochetti, 2020, pp. 120–129; Yurtsever, 2022, pp. 204–205, fn. 83).

Cat. Nos. 5-9 of the Doric capitals will be examined together due to their common profile characteristics and their discovery in the same area, referred to as Sector H by the excavators. The structure (Sector H) where these capitals were found has been identified as having a Rhodian Peristyle plan, with evidence of partial anastylosis applied to the Eastern Stoa (Devreker et al., 2009, p. 66, fig. 6; Devreker et al., 2010, pp. 152–153 fig. 9). Previous studies have considered various designations for this area, including the agora, an independent palestra, gymnasium, and Heroon (Verlinde, 2010, pp. 121–124; Verlinde, 2015a, p. 61, fn. 113).[7] Excavation works have revealed the structure in Sector H to date back to the Late Hellenistic Period, to have been constructed in 129-120 BC, and to have been destroyed by a fire between 80-75 BC (Verlinde, 2010, pp. 119–127, fig. 10; Verlinde, 2015a, pp. 33, 60). P. Pensabene (2004, pp. 110–112, fig. 17; Verlinde, 2010, p. 126) dated the Doric capitals recovered from the Eastern Stoa to a period between 200-150 BC by referencing Vasdaris work (1992, pp. 169, 218).

7 Verlinde, in his study, compared this structure to the Eudemos Gymnasium in Miletus and the Hellenistic Temenos in Pergamon.

This study will carry out a detailed stylistic analysis of the Doric capitals (Cat. Nos. 5-9), in addition to the discussions and dating mentioned above. The common profile characteristics observed in all these capitals include an elongated neck section with a downward inclination starting from the annulet, a thin line at the exact center of the plain neck, V-shaped annulets arranged in sets of three, a slightly proud echinus rising to meet the abacus, and a thin band separating the abacus table from the echinus at the point of contact. The abacus table is flat. Previous studies have suggested the structure with Doric elements in this area to adhere to the canonical proportions indicated by Vitruvius (Vitr. De arch. IV.3,4; Vasdaris, 1992, p. 40; Verlinde, 2010, p. 120). The Doric capitals have been reexamined in detail, revealing that the capitals themselves also exhibit a canonical design. For this purpose, a unit ratio has been considered of 8 cm (modulus) between the sections of the capitals. By distributing this ratio among the sections, the lower diameter becomes 40 cm, and each of the neck, echinus, and abacus parts measure 8 cm, while the width of the abacus table is 60 cm. Detailed measurements provided in the catalog section for the capitals indicate very little variation in height, supporting the presence of a canonical design for these Doric capitals (Fig. 13).

Numerous examples of Doric capitals with canonical designs can be found in the Caria Region dating from the second half of the 4th century BC to the early Roman Imperial period (Gider Büyüközer, 2013, pp. 51–52). Doric capitals with triple-set V-shaped annulets have been documented in various structures, including the Milas Museum (Gider Büyüközer, 2013, pp. 81–82, fig. 406a-b), Attouda (Yurtsever & Yılmaz Kolancı, 2022, pp. 203–204, figs. 12-13a-b), the Propylon of Athena sanctuary in Pergamon (Bohn, 1885, p. 55, fig. 64; Rumscheid, 1994, p. 35), the Banquet Hall (H) (Schazmann, 1923, pp. 58–60, pls. 20, 33), stoas in the Middle and Upper Terrace Gymnasia (Schazmann, 1923, pp. 28–40, 47–48, pl. 20-26, 30; Rumscheid, 1994, p. 35), and Sillyon's Doric Stoa (Lanckoroński, 1890, pp. 82–83, fig. 66; Rumscheid, 1994, tafs. 184, 352, 3). These examples date from the 2nd century BC to the 1st century BC, and the use of such annulets came to an end during the Augustan period (Gider Büyüközer, 2013, p. 81, fn. 444; Yurtsever & Yılmaz Kolancı, 2022, p. 203). The Pessinus examples demonstrate a canonical design with the use of canonical measurements and a natural appearance, indicating that the Pessinus capitals should be dated to an earlier period than later examples.

Based on the mentioned examples and historical context, the stylistic features of the Doric capitals in Pergamon serve as a valuable reference for dating the Pessinus capitals (Cat. Nos. 5-9). The political relations between the two cities between 163-156 BC and the secret correspondence between the King of Pergamon and the High Priests of the Mother Goddess of Pessinus are well-documented (Coşkun, 2019; Avram & Tsetskhladze, 2014). During this period, Pessinus is expected to have experienced significant development activities with the support of the Pergamon Kingdom. The Pessinus capitals, which stylistically resemble the

Doric capitals of the lower level of the Stoa of Attalus in Athens, are likely to have been produced during the reign of Attalus II, when the secret correspondence between the two cities was ongoing. Hence, dating the Doric capitals in Cat. Nos. 5-9 to the period between 159-138 BC would be reasonable.

Another piece of evidence supporting this dating is the capitals from the North and East Stoas of the Athena Sanctuary in Pergamon, which have been dated between 197-159 BC (Rumscheid, 1994, p. 35, pl. 113, 8). These capitals display close stylistic similarities to the Pessinus capitals. However, the echini in the Pessinus examples rise at a steeper angle to the abacus, and the workmanship of the annulets is less plastic compared to the Pergamon examples. These stylistic differences suggest a period after the Pergamon examples. Considering that the structure housing the Pessinus capitals was a significant public building, it must have involved substantial costs. Pessinus is also known to have suffered a monetary loss after Rome's annexation of the Pergamon Kingdom in 133 BC (Verlinde, 2010, p. 132). Therefore, one may plausibly consider that this public building, along with the Doric capitals, had been constructed before 133 BC.

In conclusion, the stylistic analysis and historical evidence support dating the Doric capitals in Cat. Nos. 5-9 to the reign of Attalus II between 159-138 BC, during the time of increased political relations between Pergamon and Pessinus. This dating aligns with the significant development activities in Pessinus and takes into consideration the historical context of the monetary losses suffered after Romes annexation of Pergamon. Significant observations can be made regarding the architectural identity of the structure where Doric capitals have been extensively identified. Recent findings from studies on ancient structures surrounded by stoas necessitate a reevaluation of this structure. The following subsection conducts an examination of the architectural identity of the Quadriporticus (Sector H) based on current research and brings forth new interpretations regarding the structure's architectural identity.[8]

8 The Quadriporticus (Sector H) where the Doric capitals labeled as Cat. Nos. 5-9 were found has been the subject of extensive archaeological excavation. These excavations have provided valuable information about the architectural characteristics of the structure, indicating it to have the characteristics of a Rhodian peristyle/quadriporticus, particularly in relation to the east and north stoas (Devreker et al., 2008, pp. 152–153, fig. 9; Devreker et al., 2009, p. 66, fig. 6; Verlinde, 2010, p. 124; 2015a, p. 61). Throughout the exploration of this area, various designations have been proposed, such as an agora, an independent palestra, a gymnasium, and a heroon (Verlinde, 2010, pp. 121–124; Verlinde, 2015a, p. 61, fn. 113). However, before delving into these studies and proposals, understanding the architectural character of gymnasia in Anatolia is essential. A. Yurtsever (2022, p. 368) identified four key features of Hellenistic gymnasia in Anatolia: an area surrounded by columns (palestra/peristyle), a monumental entrance structure (propylon), covered private spaces located directly opposite the monumental entrance, and integration with water features, often transformed into bathhouses in the Roman period and usually associated with water. Some of these features are evident in the specific peristyle structure of Pessinus, including the palestra/peristyle and the accentuated design of the front facade opposite the entrance. Archaeological findings have also revealed the presence of alabastron in the area and provided information about the water system on the north side (Verlinde, 2015a, p. 61). However,

Conclusion

This research has aimed to examine the architectural features and historical significance of the Doric capitals in Pessinus. Throughout the article, the analyses and comparative studies have revealed the Doric capitals in Pessinus to exhibit a striking style and the influence of Pergamon to be evident due to the close relationship between the two cities. The different styles of the neck sections of the capitals, adorned with stepped profiles and V-shaped annulets, the variety in the echinus profiles, the flat abacus tables, and the crowning parts with Pergamon ovolo all indicate a rich diversity in architectural activity. The study has also focused on the dating of the Doric capitals in Pessinus, with the analyses suggesting these capitals to have been used from the 2nd century BC to the first quarter of the 1st century AD. Between the 3rd-2nd centuries BC, the Doric order was widely used in large public buildings in Anatolia. Fochetti (2020, p. 120) made a significant observation regarding the historical evolution of the use of the Doric order in Anatolia:

> *Doric order's prominent use in public buildings in the Province of Asia spanned from the 3rd century BC to the late 2nd century BC. The decline in its use started in the early 1st century BC due to reduced architectural activities in Asia Minor, a consequence of political instability during the last years of the Roman Republic. However, during the Augustan age when public construction activities revived, the decline of the Doric order had already*

for a definitive classification of the area as a palestra or gymnasium, the available data may be insufficient. Furthermore, the purpose of the water channels on the north side of the Quadriporticus remains unclear, making determining the exact function of the structure difficult.

The identification of the Quadriporticus as a traditional gymnasium/palestra is doubtful, as its characteristics do not fully match those of other Hellenistic period gymnasia in Anatolia. The definition proposed by Verlinde (2010, pp. 121-125) based on the gymnasium in Miletus known as the Gymnasium of Eudemos (Emme, 2013, pp. 113–118), has also been challenged by recent research, revealing its affiliation with the administration of the city of Miletus (Emme, 2013, pp. 113–118; 2018, p. 145; see also Trümper, 2015, pp. 196–203). According to B. Emme (2018, p. 145), the structure in Miletus commonly referred to as the gymnasium can be explained "due to its position at the center of the city as well as its spatial and chronological relationship to the neighboring bouleuterion, the alleged Hellenistic gymnasium of Miletus might have housed a political or administrative institution of the city, instead." Furthermore, drawing parallels between the Quadriporticus in Pessinus and the Hellenistic ruler cult temenos in Pergamon as made by Verlinde reveals few comparable qualities. Emme (2018, pp. 144–149) offered valuable insights into the potential mislabeling of structures as gymnasia and highlighted the influence of symposium halls where city elites gathered on the design of such buildings. From this perspective, the Quadriporticus may have served as a meeting place for the city's elite, especially for priests. It may also have been associated with the administration of the city. In addition, the incomplete excavation and underground nature of a significant portion of the structure leave its relationship with the surrounding area unresolved. Attempts at restitution based on the limited documentation of structural elements should be treated as speculative hypotheses at this point. Patience is required, and further progress in archaeological excavations in this area may yield new findings that will contribute to a more comprehensive understanding of the true purpose and architectural identity of the Quadriporticus at Pessinus.

In conclusion, despite extensive research, uncertainty still exists in ascertaining the precise function of the Quadriporticus due to the lack of definitive evidence. As a result of its unique architectural characteristics and discrepancies concerning traditional gymnasia, an interpretation with caution is required. Keeping in mind the complex historical and cultural context of the region, future archaeological excavations and discoveries will be crucial in elucidating the enigmatic Quadriporticus and its significance in the ancient city of Pessinus.

> *begun. The long decline of the Doric order in public buildings culminated in its general disuse from the late 1st century AD. As evidence of this, Doric public buildings from the 2nd century AD are scarce in the Province of Asia, much like in Asia Minor, and can be seen as isolated cases*.

Fochetti's significant observation regarding the use of Doric architecture in Asia Minor should be applicable to the usage of Doric architecture in Pessinus as well. Pessinus is likely to have produced noteworthy architectural achievements during the Hellenistic and Augustan periods. Notably, these eras witnessed significant cultural and artistic advancements in Pessinus, and the Doric capitals under consideration are regarded as valuable relics from that era. When considering the form and dimensions of Cat. Nos. 2-4, investigating the existence of a substantial public building or a temple associated with the Augustan period in Pessinus becomes imperative.

The section on the Architectural identity of the Quadriporticus emphasizes the importance of the excavations carried out in the area where the Cat. Nos. 5-9 Doric capitals were found. The data obtained in this section, along with the analyses and comparisons made on the structure, provide important information about the function of the building examined under different headings such as palestra/gymnasium. However, more archaeological data and progress in excavation work are said to be needed regarding the structure. The Doric capitals in Pessinus are an important part of the ancient artistic heritage and belong to a rich architectural period. They are considered valuable representatives of the city's architectural identity and cultural heritage. However, some questions remain unanswered about the exact structure and usage purpose of these capitals, as information about their original findspots or the buildings they belonged to are yet to be had.

In conclusion, this study provides a detailed examination of the architectural and stylistic features of the Doric capitals in Pessinus and makes a unique contribution to the artistic heritage of ancient cities in Asia Minor. Additionally, the close relationship between Pergamon and Pessinus has served as a significant reference for explaining the influence on the architectural style in Pessinus. The findings from this study will shed light on the understanding of other ancient structures in Asia Minor and guide future archaeological research.

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Table 1. Catalog information of the Doric capitals

Cat. No.	Material Type	Discovery Location	Dimen.	Ovolo Profile	Aba. H.	Ech. H.	Ann. H.	Neck H.	Dowel	Proposed Dating
1 (Fig.2,11)	Marble	Excavation House Garden	H. 16cm, W. 39 cm, D. 33 cm	3 cm	5,5 cm	3 cm	1 cm	3.5 cm	-	Early Augustan Period - 27 BC to 14 AD
2 (Fig.3, 12)	Marble	Excavation House Garden	H. 25.5 cm, W. 64 cm, D. 55.5 cm	-	8 cm	8 cm	3.5 cm	6 cm	4x4x5 cm	Augustan Period
3 (Fig.4, 12)	Marble	Excavation House Garden	H. 21.5 cm, W. 65 cm, D. 55 cm	-	8 cm	5.5 cm	3.5 cm	4.5 cm	4x4x4 cm	Augustan Period
4 (Fig.5, 12)	Marble	Excavation House Garden	H. 24.5 cm, W. 65 cm, D. 55 cm	3.5/4 cm	5 cm	6 cm	3.5 cm	6.5 cm	5x4x4 cm	Augustan Period
5 (Fig.6,13)	Sandstone	Temple Area-Quadriporticus East Stoa	H. 23.5 cm, W. 55.5 cm, D. 42 cm	-	8 cm	6 cm	2 cm	7.5 cm	7x7x5 cm	159-138 BC (Proposed)
6 (Fig.7,13)	Sandstone	Temple Area-Quadriporticus East Stoa	H. 23.5 cm, W. 63 cm, D. 41 cm	-	8 cm	5 cm	2 cm	8.5 cm	7x7x6 cm	159-138 BC (Proposed)
7 (Fig.8,13)	Sandstone	Temple Area-Quadriporticus East Stoa	H. 24.5 cm, W. 60 cm, D. 43.5 cm	-	8 cm	6 cm	1.5 cm	9 cm	7x7x7 cm	159-138 BC (Proposed)
8 (Fig.9,13)	Sandstone	Temple Area-Quadriporticus East Stoa	H. 24.5 cm, W. 60 cm, D. 43.5 cm	-	8 cm	6 cm	1.5 cm	9 cm	7x7x7 cm	159-138 BC (Proposed)
9 (Fig.10)	Sandstone	Temple Area-Quadriporticus East Stoa	H. 27.5 cm, W. 58 cm, D. 43 cm	-	8 cm	7 cm	1.5 cm	11 cm	7x6x6 cm	159-138 BC (Proposed)

In the table: **H** stands for **Height, W** for **Width**, and **D** for **Depth**.
Dimen.: Dimencion, **Aba.**: Abacus, **Ech.**: Echinus, **Ann.**: Annulet

Figures

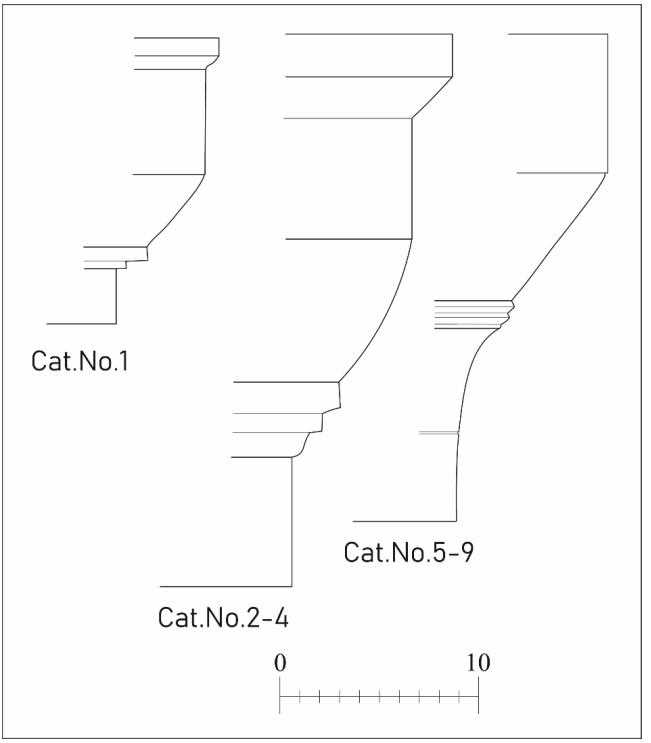

Figure 1: The profile drawings of the Doric capitals classified as Cat. Nos. 1, 2-4, and 5-9.

Figure 2: General view of the Doric capital with Cat. No. 1.

Figure 3: General and detailed view of the Doric capital with Cat. No. 2.

Figure 4: General view of the Doric capital with Cat. No. 3.

Figure 5: General and detailed view of the Doric capital with Cat. No. 4.

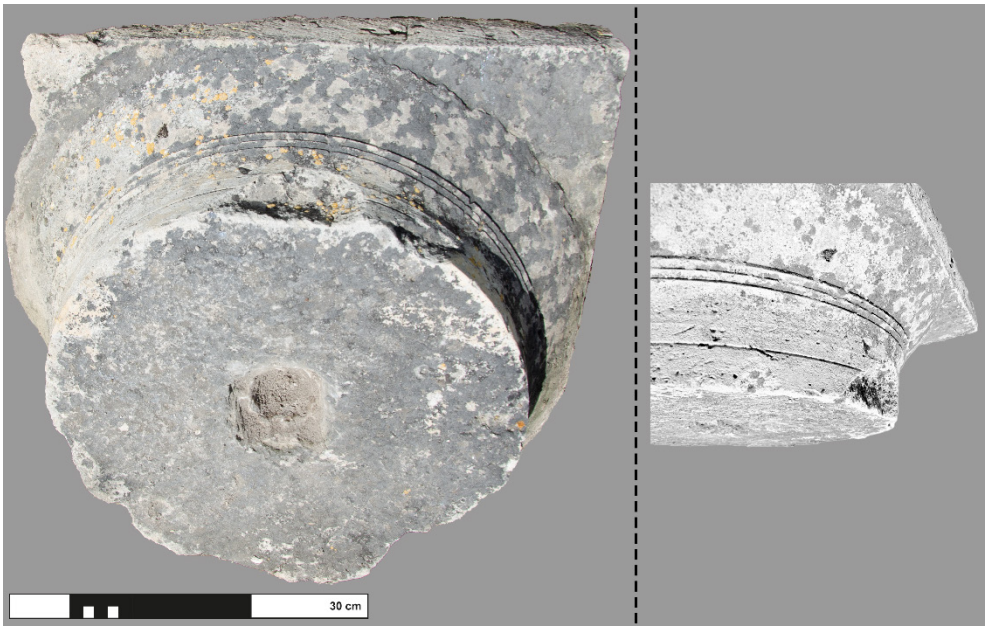

Figure 6: General and detailed view of the Doric capital with Cat. No. 5.

Figure 7: General and detailed view of the Doric capital with Cat. No. 6.

Figure 8: General view of the Doric capital with Cat. No. 7.

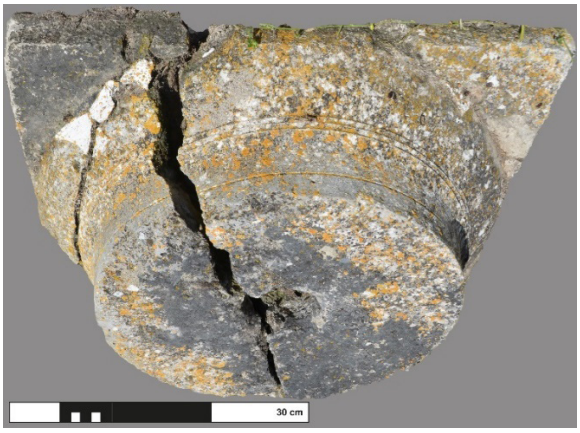

Figure 9: General and detailed view of the Doric capital with Cat. No. 8.

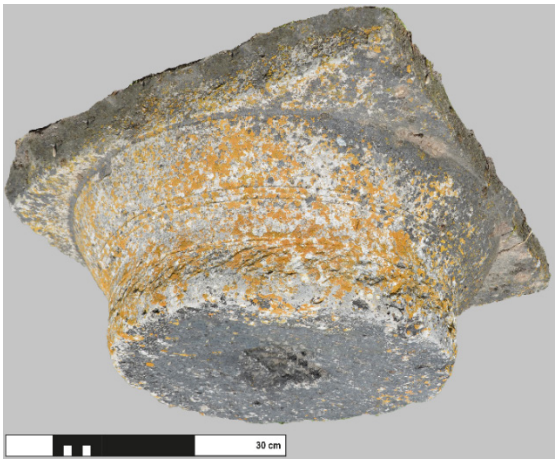

Figure 10: General and detailed view of the Doric capital with Cat. No. 9.

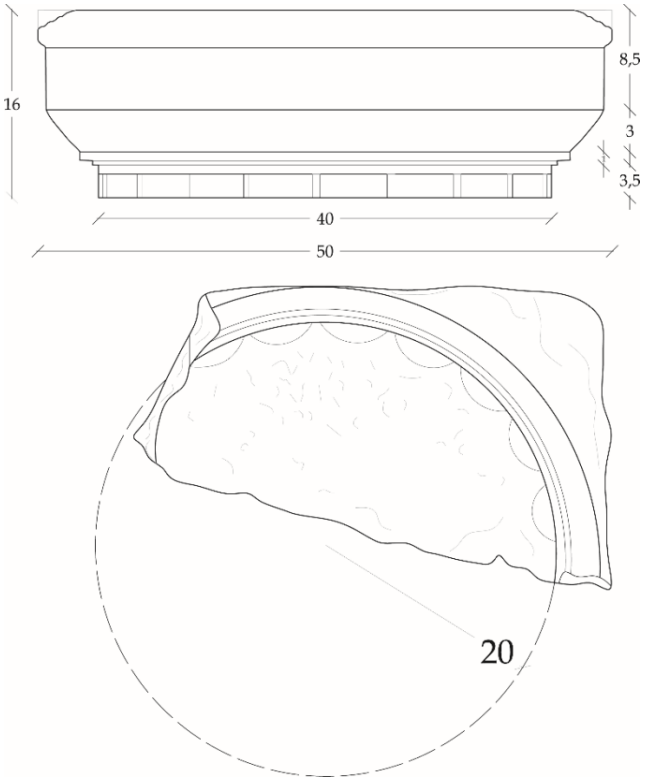

Figure 11: Scaled drawing of the Doric capital with Cat. No. 1.

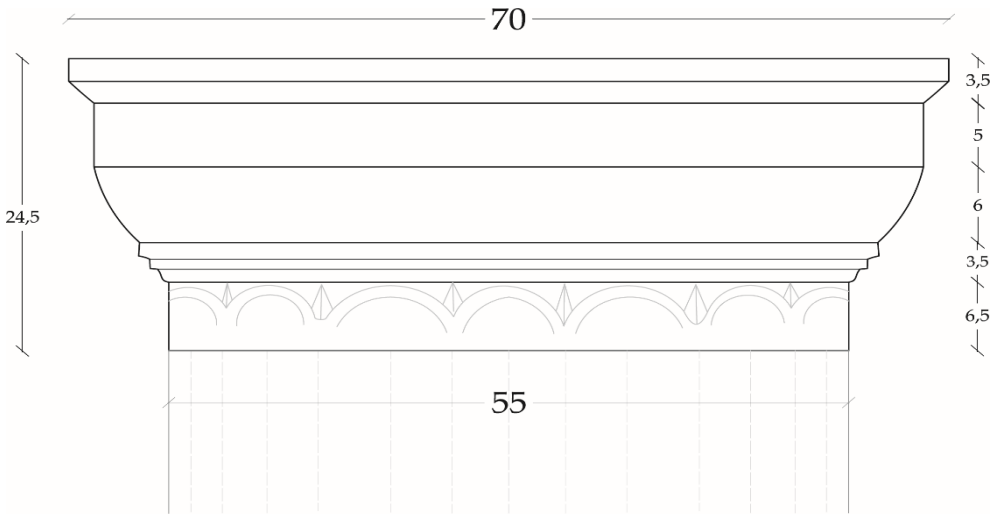

Figure 12: Restituted drawings of the Doric capitals with Cat. Nos. 2-4 scaled.

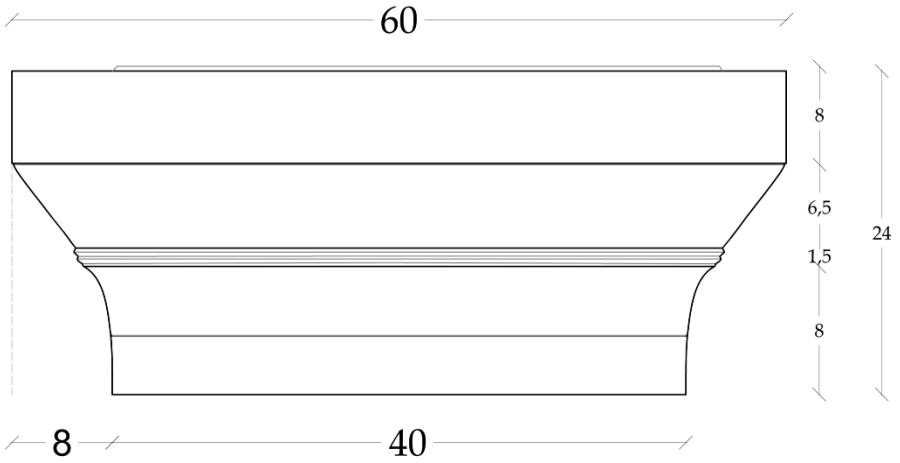

Figure 13: Restituted drawings of the Doric capitals with Cat. Nos. 5-8, based on canonical measurements.

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Assessments on an Unpublished Tarsus Coin and the Marsyas Statue of Tarsus Origin

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ABSTRACT

The tragic story of Marsyas has inspired many artifacts over many periods. This story is depicted in vase paintings, statues, sculpture groups, reliefs, sarcophagi, gems and coins. The inspiration for these descriptions is the Athena and Marsyas sculpture group of Myron, one of the Classical Period artists. After this group of sculptures, the artists dealt with and depicted the most tragic part of the Marsyas story, the music competition with the God Apollo and the punishment of Marsyas. Within the scope of the study, first of all, the story of Marsyas and its reflection on artifacts are discussed. Then, the main subject of the study, a coin belonging to Maximinus Thrax I, which was recovered from Tarsus, is unpublished scientifically and dated back to the 3rd century AD, depicting the musical contest between Apollo and Marsyas, is examined in detail. Later, a comparative evaluation is made of the coin and the Marsyas statue, which has the same subject, recovered from Tarsus and is currently exhibited in the Istanbul Archaeological Museums, and a new composition proposal is made for the statue.

Keywords: Cilicia, Tarsus, Apollo, Roman Coin, Marsyas Statue

Introduction

Over the centuries, Marsyas and his tragic story have inspired countless artifacts. Thus, the story of Marsyas is frequently depicted in vase paintings, reliefs, sarcophagi, gems, coins and paintings, primarily in sculpture groups and single sculptures. Within the scope of this study, focusing on the story of Marsyas, a scientifically unpublished coin from Tarsus and a statue originating from Tarsus are examined.

The coin that is the subject of the study was minted in the city of Tarsus during the reign of Maximinus Thrax I (235-238 AD). The coin was first offered for sale on an auction site[1] in 2005. Later, it was included in many web pages related to numismatics and in the catalog of a doctoral thesis completed in 2014 (Erhan, 2014), only in catalog form with incomplete and incorrect information. Therefore, the coin, which has a bust portrait of the emperor on the obverse and a depiction of the musical contest between Apollo and Marsyas on the reverse of the coin, has not yet been scientifically published.

Another artifact examined in the study, the Marsyas statue, was found in the city of Tarsus and is currently exhibited in the Collection of Stone Artifacts[2] in Istanbul Archaeological Museums [3] (Collignon, 1897; Mendel 1914). Many publications have been made about this statue from the late 19 th century to the present day. Accordingly, it is thought that the statue exhibited alone may be part of a group of statues originating from the Hellenistic Period.

Considering the fact the depictions on ancient coins have been influenced or copied by statues and statue groups since the Hellenistic Period, in the study a section on the re-evaluation of the Marsyas statue in IAM in the terms of composition is also added in addition to the scientific publication of the coin for the first time.

The Story of Marsyas and Its Reflection in Artifacts

Although it varies according to sources, Marsyas of Phyrgia is considered to be the son of Hyganis and the flute player Olympos (sometimes River God Oiagros) (Grimal, 1997). While he is an ordinary satyr or silenos, his story becomes widely known as a result of his competition with the God Apollo. In the texts, Herodotus (1991), Diodorus of Sicily (1814), Strabo (1928), Pausanias (1918) and Ovid (1987) tell us the story of Marsyas, one of the most striking examples of arrogance (hybris) and punishment as a result of competing with

1 CNG 69, Lot: 1163, June 2005. (Online, 23.07.2023: https://www.cngcoins.com/Coins_ archive. ,aspx?CONTAINER_ID=176&ITEM_IS_SOLD=1

2 Istanbul Archaeology Museums, Stone Artifacts Collection, In. Nu. 400. The work permit of the Marsyas statue was received from IAM in 2016, but the publication process was prolonged.

3 In the following sections, the institution will be referred to with the abbreviation IAM.

the gods. The starting point of the story is the invention of the aulos (double flute).[4] The story continues with Athena, angry at Hera and Aphrodite, cursing the flute and throwing it into a river in the Phyria.[5] The development and main point of the story is the events that occur after Marysas finds the aulos in the waters of the river and challenges the God Apollo. There is no difference in tradition or the version here. A similar story is told in every source.[6] The difference is only in the identities of the referees in the competition held.[7] But the main story and tragic outcome do not change.[8]

This unfortunate and sad story has been told for centuries. In this way, what will happen as a result of competing with the gods and being arrogant is engraved in memory. This subject is so loved that the story of Marsyas is constantly depicted in many artifacts from ancient times to the present day.

4 According to some sources, Marsyas invents the aulos. Strabo (1928) considers Silenos, Marsyas and Olympos as the inventors of the flute. However, in other sources Goddess Athena is mentioned as the inventor of aulos. Athena invents the aulos from deer bone during a feast before the gods (Grimal, 1997; Ausoni, 2005).

5 Although the discovery of aulos is told in two different versions or traditions, the transition point that allows us to step from the beginning of the story to its development is the same. In both versions, while Goddess Athena is very happy to play the aulos, producing divine melodies, Goddess Hera and Aphrodite see her; they make fun of Athena by looking at her face as her cheeks swell when she blows the aulos. Athena, resentful and upset by this situation, sits on the bank of a river in the Phyrgia; while playing the aulos, she also looks at the shape of her face. She finds her face while playing the musical instrument really ugly and agrees with Goddess Hera and Aphrodite. In her anger, Athena throws the aulos into the waters of the river, and while doing this, she curses anyone who finds and plays this musical instrument, saying that it will bring bad luck and bad luck to him (Keer, 2004; Ausoni, 2005).

6 To continue the story; Marsyas begins to play the aulos he finds with pleasure, playing it so much that he becomes a master of this musical instrument. At this point, it is not known whether it is due to the curse of the Goddess Athena or whether he says that he masters something, that he is now the best, and that he falls into arrogance (hybris) like everyone else. Marsyas claims that he can compete with God Apollo's lyra. Arrogance (hybris), a trait that the gods do not like, can not go unpunished. Here too, God Apollo comes into play. Responding to Marsyas' challenge, Apollo demands that a music contest be held in which the winner offers the loser to do whatever he wants. According to ancient sources, the competition is held on Mountain of Tmolos (Bozdağ) in Lydia (Keer, 2004; Cömert, 2010).

7 According to some, Phyrgian King Midas and nymphs are the referees; according to some, Phyrgian King Midas and the mouses act as referees.

8 In the competition, God Apollo plays his lyra and Marsyas plays his aulos. Then God Apollo suggests playing musical instruments by turning them upside down. Apollo manages to play his lyra by turning it upside down, whereas Marsyas cannot play it, considering that it is not possible to play a flute upside down. While the Muses declared God Apollo as the winner; King Midas says Marsyas wins. Angered by this, Apollo turns King Midas' ears into donkey ears. Ultimately, Apollo wins the contest. He gets angry and has Marsyas tied to the tree by his arms. He hires a Scythian slave and skinnes Marysas alive. But later he becomes very upset about what he does, breaks his lyra with regret, turns Marsyas into a river and leaves music for a while (Tuchelt, 1970; Köktan, 2014; Cömert, 2010).

There are two types of Marsyas depiction in art. The first type is the group in which the unfortunate, tragic story of Marsyas is depicted.[9] The inspiration for this group is the Athena-Marsyas group, made by Myron, dated around 450 BC and reflecting the moment when Marsyas discovered the flute. (Carpenter, 2002; Junker, 2002; Keer, 2004) (Fig. 1). After this date, both this moment with and the moment of the competition of Apollo and Marsyas, and the punishment of Marsyas are depicted frequently in vase paintings, sculptures and reliefs.[10] Numerous stone and bronze Hellenistic and Roman copies, derived from the original of this group, exist (Fig. 1). The intensity, increased with the Hellenistic Period, reaches its peak, especially in the artifacts of the Roman Period and this story is also depicted in the sculpture groups, sarcophagi in open areas[11](Sande, 1982).

This story is often not conveyed holistically in stone artifacts. The story is shown in different versions in artifacts such as Marsyas alone, the Marsyas-Scythian slave group and the Marsyas-Scythian slave-God Apollo group. Especially while the number of examples showing Marsyas alone or with a Scythian slave is high; examples of multiple group sculptures are less common.

This subject is depicted very fondly, especially in the paintings and small artifacts of the Renaissance Period.[12] In the Type 2 depiction in ancient art, Marsyas is depicted alone, carrying a wineskin on his back. Here, Marsyas is shown slightly different from the physiological characteristics of the 1st type (short, pot-bellied, more in Silenos iconography). The first example of this type is a statue found in the Roman Forum, dated to 300 BC, according to sources. This type of Marsyas, of central Roman origin, is the source of inspiration for the Marsyas depictions on coins of the Republic and Imperial Periods (Schretz, 2005). This type has been a political symbol of the independence of Roman citizens since the 1st century BC. Especially during the Imperial Period, Marysas carrying wineskins can be seen quite often

9 Marsyas statues and sculpture groups within the scope of the first type can be divided into 2 subheadings in terms of their materials: red type and white type. The red type takes its name from the red veined marble. There are 3 examples made in red type. The white type gets its name because it is made of white marble. The number of examples of this type is 10 or more (Mendel, 1914; Üreten, 2013).

10 To give examples; in a red-figure Attic krater painted by the Pothos Painter and dated around 410 BC can be seen the moment of the musical contest between Apollo and Marsyas (Keer, 2004). On the relief of Mantineia, dated to 330 BC, the moment of competition between Marsyas-Apollo and a Scythian slave symbolizing the resulting punishment are depicted (Keer, 2004).

11 The story is told developmentally on the front of the vessel of a Roman sarcophagus in the Louvre Musuem, dated to the 3rd century AD (The story flows from left to right. Goddess Athena at the starting point of the story, the contest between Marsyas and Apollo, accompanied by King Midas, the Mouses at main center of the story and the moment that Marsyas is tied to a tree, skinned at the tragic ending of the story are all compressed into a single scene. Marsyas and the Scythian slave group, dated to the first half of the 3rd century AD, unearthed in Manisa, a location close to Mountain of Tmolos, where the competition of Marsyas and Apollo is held, is an example of Roman Period artifacts. (Feuser, 2013; Üreten, 2013; Durugönül, 2015).

12 A group of Marsyas and Scythian slaves are engraved on a dark red gemma belonging to Lorenzo Medici and currently exhibited in the Naples National Museum (Clark, 2018). Similarly, the story of Marsyas came to life again in a pencil drawing of the painter Pietro Novelli between 1632-33 (Ausoni, 2005).

on the reverse of coins minted in provinces outside the center of Rome. The best examples of this can be seen in the coins of Ninica-Claudipolis and Mallos, two colonial cities of the province of Cilicia where Tarsus is the capital. (Erhan, 2014) (Fig.2).

Tarsus Coin from the Period of Maximinus I

The coin, minted from bronze and preserved in medium condition, was first offered for sale on an auction site in 2005, was later included in some web pages related to numismatics and most recently in the catalog of a doctoral thesis completed in 2014 (Erhan, 2014) (Fig. 3). The coin has been included in these sources only in catalog form, with incomplete and incorrect information, since its first appearance in 2005.

Catalog:

Period of Maximinus I (Thrax, 235-38 AD)

Obverse: Radiate, clothed and armored bust of the emperor, to the right AYT K Γ IOY OYH MAΞIMƐINOC Π Π.

Reverse: Apollo sitting on the rock on the left, Midas sitting on the rock in the middle, Scythian slave sharpening his knife and Marsyas being hanged on the right, TAPCOY MHTPOΠOΛƐΩ A M K Γ B.

AE 35 mm., 24.36 gr., ky. 1, CNG 69, Lot: 1163, June 2005 (Fig.3).

The physical characteristics of bust portrait and the legend on the obverse show that the coin belongs to the period of Roman Emperor Maximinus I. The obverse legend of the coin is the same except for one of the 14 different coins minted in Tarsus during the emperor's reign (Fig. 3).

Maximinus I, the first emperor of the period called Soldier Emperors during the Roman Empire, is depicted with a long, wide, bearded face with a radiate representing the Sun God Helios/Sol on his head. His forehead is steep, high and has a flat profile. He has a long, arched nose in middle and sunken nose tip that droops downwards. He has a strong chin tip and weak, sunken cheeks (Fig.3).

Researchers have identified three different types in all coin portraits of the emperor. In these, the emperor is depicted as having a straight forehead, a two-lined forehead and a three-lined forehead. However, the differences between the descriptions are vague and it is not possible to see them in the marble portraits (Özgan 2015). On the other hand, these details can be seen in the aureus, denarius, bronze sestertius and dupondius coins from the Roman state edition (RIC, pp. 129-135; RIC Plate X, XI). Among these, the closest similarity to the Tarsus coin is the radiate portrait depicted on a dupondius dated to 236 AD (OCRE 56; OCRE 57).

City mints of the region of Cilicia, portrait depictions of the emperor are seen in 11 cities except Tarsus.[13] Among these, the coins belonging to the city of Ninica – Claudiopolis have the most diversity, with similar obverse portraits and 24 different reverse types. In Tarsus, 15 coins, including this coin, have both radiate portraits on the obverse and different types of reverse. Radiate portraits (two pieces in Anemurion and Philadelphia) are rarely seen in other cities. In Tarsus, the majority consists of radiate portraits (8 pieces). All of the obverses of these coins are produced from the same mold. The subjects on the reverses of these coins are Apollo Lykeios?, (BMC 215-6; Ziegler Kilikien 743; SNG Cop. 379; SNG France II, 1591), Emperor or Perseus (associated with the myth of the founding of the city) (BMC 218), judgement of Paris (SNG France II, 1587-1687.1), head of the City Goddess Tyche (Ziegler Kilikien, 744), City Goddess Tyche in temple (SNG Levante 1095; SNG France 1602), three graces (SNG Levante 1096; Ziegler Kilikien 741; BMC 233-235; SNG France II 1605-6; SNG Cop. 378; SNG Pfalz. 1382; SNG Righetti 1669; SNG Hunterian 34), Herakles and the golden apples of the Hesperides (SNG Levante 1097; SNG France II 1588; SNG Levante Suppl. 277). The sight of the emperor's radiate portrait on the obverses of this series, called "Maximinus' Mythological Series", should also indicate the existence of a cult related to the sun (Helios/Sol Invictus) in the city.

With the help of these coin depictions, four marble portrait replicas of the emperor have been identified so far, the most qualified of which are in the Roman Capitol Museum today. Other replicas are preserved in the Glyptothek in Copenhagen, the Louvre Museum in Paris and the National Museum in Rome (Özgan, 2015). The skull shape seen in the marble portraits repeats the portraits on the coins minted in 235-6 AD. This type, called the "Germanicus" type by researchers, must be the first original portrait type made on the occasion of Maximinus I becoming emperor (Özgan, 2015). It is possible to think that the type on the Tarsus coin should be evaluated in this group and called "Germanicus Type". Therefore, the year 235-6 AD can be suggested as the minting date for the coin without a date.

On the reverse of the coin, there is a mythological scene depicting the music competition between Apollo and Marsyas (Fig. 3). The Phrygian King Midas, in the middle of the scene, looks at the god Apollo playing the lyra on the left with "admiration". However, when we look at what is reported from ancient sources about this myth, it is understood that Midas declares Marsyas the winner as a result of the competition, and Apollo, who is angry at this, turns his ears into donkey ears. The fact that donkey ears are not seen in the depiction and, moreover, that the clothing is not in Phrygian style, raises questions about the identity of the figure (Fig. 3). Since there are no similar depictions on the coins, other artifacts are examined to solve this identification problem. Upon detailed examination, it is determined

13 These are Adana, Anazarbos, Flaviopolis, Epiphaneia, Eirenpolis- Neronias in Lowland Cilicia. These are Anemurion, Philadelphia, Karallia, Kolybrassos, Koropissos and Ninica Claudiopolis in Rough Cilicia.

that the artifact that most closely resembles the scene on the coin is the Roman sarcophagus, exhibited in the Louvre Museum, where the Apollo-Marsyas music competition is depicted. A scene consisting of 10 figures is depicted on one of the long sides of the sarcophagus. The story begins with Athena from left to right on the scene and ends with Marsyas being hanged. The sarcophagus is dated to the 3rd century AD (290-300 AD in some publications) (Fig.4). Although their numbers are different, the engraving of the figures on the sarcophagus is very similar to the scene on the coin. Moreover, the coin and the sarcophagus are produced in close proximity to each other. The figure in the middle of the coin is depicted as broader-shouldered and more masculine than both Apollo and Marsyas. If this is not an incompetence of the coin molder, as in other details, it is certain that the figure in the middle is male (Fig.5). In the sarcophagus, the figure in the middle (the third figure from left to right) is almost completely similar to the figure on the coin, except for the movement of the head back (which is to look at Apollo). However, the prominent depiction of breasts in this figure suggests that it may be one of the mouses (possibly Euterpe) (Fig.5). However, in the continuation of the story in the sarcophagus, towards the end of the scene, there is another male figure at the top (seventh figure from left to right), which is similar to the male figure in the coin in terms of sitting and clothing (Fig. 6). Studies on the sarcophagus suggest that this figure is Midas. In light of this information, it turns out that identifying the figure on the coin as Midas is the most accurate option for now.

In the scene on the coin, the figure between Midas and Marsyas is referred to as “animal”, “?”, “lion” in all previous sources. However, it is clear that this figure, which is often seen next to Marsyas in artifacts, is a Scythian slave sharpening his knife. It can be thought that this error is caused partly by the incompetence of the coin molder and partly by the poor condition of the coin. As a matter of fact, the figure located right next to Marsyas in the Roman sarcophagus is depicted very similarly, although his head is facing the opposite direction compared to the coin (Fig. 6).

In the scene, from left to right, there is Apollo sitting on a rock and holding a lyra in his hand, Midas sitting on a rock to his right, a Scythian slave sharpening his knife, and Marsyas hanging on a tree on the far right (Fig.3). This scene with four figures is not seen in any other artifact with this arrangement and number. Therefore the description is unique not only in coins but in all artifacts.

There is no definitive evidence as to why this scene is chosen on the coin. However, it is clear that this group, called the “Maximinus’ Mythological Series”, is related to the crisis of Rome in the 3rd century AD. In this crisis environment which emerges due to reasons such as the Sasanian threat in the East, the rise of Christianity and economic difficulties, it is not a coincidence that myths, which have an important place in the belief system of the local people, are featured on the coins in this density. Here, Tarsus’ effort to regain the regional

leadership it lost to Anazarbos during the Severus Dynasty and to obtain some privileges must play in an important role. For Rome, the perception that "Emperor cares and protects the people of Tarsus" may be created in order to increase the loyalty of the local people.

The main reason why this scene is chosen on the coin must be related to the cult of Apollo in the city, rather than Marsyas. The settlement history of Tarsus dates back the Neolithic Period. Despite this, the city's colonization by the Argives, probably starting from the 7th century BC, also affects the belief system of Tarsus in the Archaic and Classical Period. During this period, the Greek tradition of attributing a city-founder hero to each city led to Perseus taking place of Sandan, who is accepted as the local founder of the city in Tarsus, especially from the Hellenistic Period onwards. Because Perseus, from Argos, is considered the ancestor of many Greek heroes and ctistes especially Heracles. As a matter of fact, when it comes to the Roman Imperial Period (2nd and 3rd centuries AD), an iconography similar to Perseus and Apollo Lyceios (even though they are not actually related) is frequently seen on Tarsus city coins, related to the cult and city foundation. Although it has been attempted to connect the god sometimes with the Lycian Region and therefore the light and sometimes with the wolf, due to the iconographic similarity, these claims have not been definitively proven. However, since Apollo is the god or ancestor of the Argives and all the city founder Greek heroes, he must also be accepted as the ancestor of Perseus. So, the cult of Apollo must have settled in Tarsus and found its place on the Maximinus coin.

Evaluations on the Composition of the Marsyas Statue in IAM

Many publications have been made about the Marsyas statue in IAM.[14] The statue, found around the second Roman bath in Tarsus and brought to IAM, is within the scope of the first type depicting the story of Marsyas (Collignon, 1897; Mendel, 1914). A detailed description

14 The first publication about this statue is made by Collignon (1897). Later, when Mendel (1914) publishes the catalogs of the artifacts in the musuem, he also includes the Marsyas statue. Among the current publications, the Marsyas statue is discussed in Özgan's (2018) publication.

of the statue is made by Mendel (1914)[15] (Fig. 7). In modern researches, it is suggested that the tension observeds in all details on Marsyas's body is caused by a cut on his back that is apparently made with a cutting tool[16] (Fig. 8). The statue is dated by almost all researchers to the High Hellenistic (Baroque Style) Period, mainly to the end of the 3rd century BC[17].

Although the Marsyas statue is produced as a single statue, it is certain that it is

15 The current height of the statue made of crystallized white marble is 130.5 cm. The statue above the bicep and below the knee is broken and missing. The right and left legs below the kneecap, the tail and the genitals are missing and broken. The nose, the arch of the right eyebrow, the left eyelid, the tips of the ears, the right curls of the hair are damaged. There is wear on the forehead, left brow arch, and right ear. There are slits on the right side of its back, where it is attached to the tree trunk. There is calcification and blackening in the back area between the hips and the chest. The antique shine on the front has been preserved. The figure is hung on a tree branch by its arms. Marsyas' head is turned slightly to the left, with his chest bent forward. Due to the hanging movement, the arms and upper chest are pulled vertically and tensely to the sides. The skin is stretched on the ribcage and protrudes downwards from the ribs. The abdominal cavity has collapsed inward and the hips, which are stretched in front and behind, have become narrow. The artist does his best to reflect the tense and angry inner world of Marsyas. All anatomical details have been carefully crafted on the weak, dry and tense-looking body. The curly hair on the forehead and temples is tangled and fluffy. Their mustaches and beards, which also have the same curl characteristics, are combined. His forehead protrudes forward. The arch of the eyebrow is highly emphasized above the bridge of the nose. The nose, which has wide holes, is very prominent because it is sunken inwards. His eyes are rendered as if they were popping out of their sockets. Slightly parted lips, as if screaming. There is a very strong expression of anger on the face along with pain (Mendel, 1914)

16 The artist has reflected Marsyas's situation and his mood in a very subtle way. The pain on the face and the suffering during torture are perfectly rendered. Anatomical details such as tense muscles and bone structure are compatible with the movement of the figure. According to the story, Marsyas is skinned. The artist emphasizes this detail very well in the artifact. There is a knife-shaped slit on the figure's back. This slit made with cutting tools is 6 cm wide and 15 cm long. The artist even reflects muscle tissue through this slit (Karagöz, 2008).

17 Stylistic features such as the structure of the body and muscles, the embodiment of tension and pain in the details, dynamism and mobility are evident. On the face, opposites are given together. On the one hand, the wrinkled forehead and sagging skin, but on the other hand, the tension caused by anger and the suffering of torture can be seen on the face. If we look at examples of analogies in the context of style criticism and dating; The Galatian head from the Great Galatian Group (Özgan, 2018), dedicated to Attalos I (King of Pergamon) and dated to around 230 BC, bears similarities with the facial details of the Marsyas figure. In both figures, the head turned to the left, forehead wrinkles caused by pain, flared nostrils, half-open mouth slightly open due to pain, thick bangs, active and messy hair are similar. As another analogical example in terms of dating, it is possible to give the gigants on the Gigantomakhia Frieze in the Zeus Altar of Pergamon, dating back to around 180 BC, from the period of Eumenes II. The tension and detailed rendering in the body muscles of the Alcyoneus figure, the expression of pain, dramatization, wildness on the face, the depiction of the hair in thick, messy tufts, the wrinkled forehead, thick eyelids, protruding eyes, and the mouth slightly open due to pain show similarities with the Marsyas statue. Qualities such as dynamism, pathos and exaggerated reflection of emotions, which are the most basic of baroque features, are present in both sculptures. For the dating of the statue, the style features, the statements of the researchers and the analogy point to the High Hellenistic Period. It is possible to date the Marsyas statue towards the end of the 3rd century BC. In addition to all these, Fleischer (1991) states in his publication that the Marsyas statue group is more than a mythological story and can also be associated with a historical event. Around 250 BC, many important historical events take place in Western Anatolia. One of the most important of these events concerns the Seleucid King Antiochus III (223-187 BC). Since the king will make an eastern expedition, he assigns his commander Akhaios to protect the west (214-213 BC). But Achaeus, who gains power, declares himself the king of Sardis and mints coins in his name. But Antiochus, who receives this news, immediately comes to Sardis and punishes Akhaios. This punishment is similar to Apollo's method of punishing Marsyas. For this reason, Fleischer (1991) emphasizes that a historical event is immortalized with a mythological story.

iconographically part of a group statue. There are various composition suggestions regarding the figures next to the statue. According these suggestions, Marsyas is depicted as one. It is depicted as the Marsyas–Scythian slave group or Marsyas-Scythian slave-Apollo group. According to the suggestion of Karagöz (2008) who has recently worked on the statue, it can be thought that on the right of Marsyas hanging from the tree, there is a Scythian slave crouching down, sharpening his knife to start the skinning process, and on the left of Marsyas, there is the God Apollo watching this event. Karagöz (2008) states that the composition should be like this, citing examples on the subject from both Anatolia and Rome.

According to Özgan (2018), as can be understood from the Marsysas copies of the Roman Period, it is possible that the Marsyas statue in the IAM and the Scythian slave in the Uffizi Gallery in Florence are a group together. According to the suggestion, Marsyas is shown in the group with his hands tied to a tree. Directly opposite him, a Scythian slave with a himation on his back is crouching on the ground. He sharpens his knife with both hands. The Scythian slave raises his head slightly and looks at Marsyas in front of him (Özgan, 2018) (Fig. 9). This suggestion reinforces the identification of the third figure in the depiction on the Tarsus coin as a Scythian slave. However, according to the coin, it should be facing Apollo and Midas, not Marsyas.

In addition to these suggestions made by sculpture experts, it is possible to propose a new composition for the Marsyas statue in the IAM in relation to the scene on the reverse side of coin, which is examined in detail for the first time in this study. As a matter of fact, the depiction of the statue groups, especially cult statues, from the Archaic and Classical Periods on coins is very common in ancient numismatics since the Hellenistic Period. This tradition continues during the Roman Imperial Period. It is possible to see this situation frequently in city coins in the region of Cilicia. Especially as a reflection of the crisis of the 3rd century AD in Rome, mythological scenes, which have an important place in the belief system of the local people, begin to appear frequently on coins from the second quarter of the century. It is possible to say that the reason for this is that the Cilicia Region is behind the front lines of the struggle with Parth/Sassanid in the East, the empire wants to increase the loyalty of the cities, and the cities of the region try to obtain some privileges from Rome. During this period, especially from the second quarter of the 3rd century AD, mythological depictions begin to appear on the coins of the city of Tarsus in a way that have never been seen before. In this context, it is possible to say that the scene on the reverse of the coin, which is one of the best examples of the group we call "Maximinus' Mythological Series", may be influenced by the Marsyas sculpture group. This view is supported by the fact that no political events occur in the city that lead to the destruction of the Marsyas group statue, from the end of the 3rd century BC, when the statue belongs, until the second half of the 3rd century AD, when the coin belongs. Based on this situation, it is possible to say that the Marsyas statue group is well preserved in the region until the end of the Roman Imperial Period.

In light of all this information, it is highly likely that the figures in this group of statues are God Apollo, King Midas and the Scythian slave. Moreover, considering the cut mark on Marsyas' back, which highlights the moment of his skinning, the statue group must be standing in a place visible from both the front and back. Therefore, it is possible to think that the Marsyas group statue is positioned freely in a monumental building or square. Based on Roman Period copies, it is possible to say that the Marsyas group statue is located in front of or on a bath, nymphaeum, theater or similar monumental structure in the city.

Conclusions

In the study, the reflections of a legendary and striking example of arrogance, which is considered one of the greatest evils in all faiths in the world, with Anatolian- Ancient Greek motifs, on the ancient art, are discussed through an unpublished coin and a group of statues and have made new suggestions with the informations obtained.

According to this, it is determined that the bust portrait depiction on the obverse of Tarsus coin from the period of Maximinus I belongs to the "Germanicus" type of the emperor and that the coin was minted in 235-236 AD. It is determined that from left to right in the mythological scene about the Apollo-Marsyas music competition, which is found to be unique on the reverse of the coin, the second figure is Midas and the third figure is a Scythian slave. In this way, the coin is introduced to the scientific world in detail for the first time.

In addition, thanks to the findings on the coin, a new one has been added to the composition suggestions published since the discovery of the Marsyas statue in the study. Accordingly, it is possible that the coin molder is influenced by the Marsyas group statue in Tarsus or copies the artifacts. If this possibility, which is very common in the ancient time, is accepted as true, it will be appropriate to suggest Apollo, Midas, a Scythian slave and Marsyas for the sculpture composition.

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Figures

Figure 1: Roman replica of Myron's Athena-Marsyas group, Vatican Museums (Author's photo archive)

Figure 2: Mallos coin from the period of Gordianus III (Erhan, 2014) (http://www.wildwinds.com/coins/ric/gordian_III/_mallus_ SNGRighetti_1592.jpg)

Figure 3: Tarsus coin from the period of Maximinus I (https://www.wildwinds.com/coins/ric/maximinus_I/_tarsos_CNG_69-1163. Jpg18.07.2023)

Figure 4: Roman sarcophagus, Louvre Museum
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Figure 5: Tarsus coin, detail (Apollo, Midas, Marsyas) (Figure 3) and Roman sarcophagus (Euterpe?) (Figure 4)

Figure 6: Roman sarcophagus (Scythian slave crouching on the ground, Midas on top) (Figure 4) and Tarsus coin, detail (Midas, Scythian slave crouching next to Midas' feet) (Figure 3)

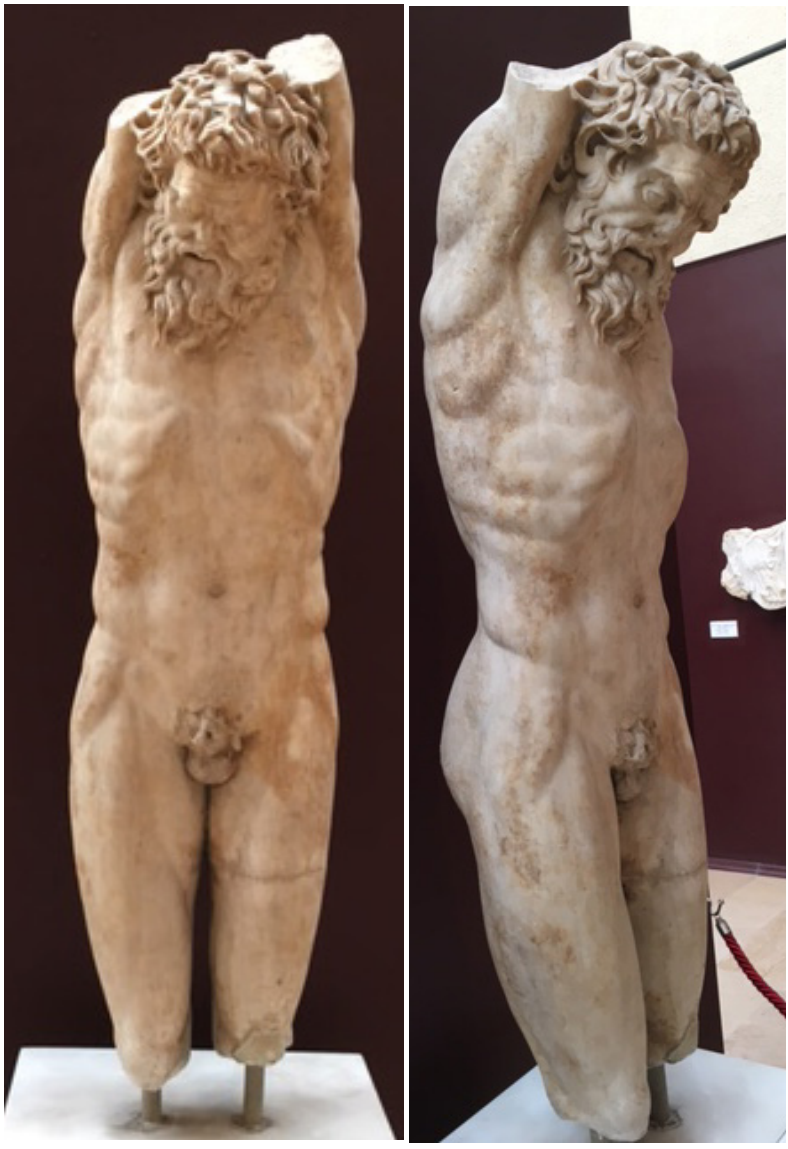

Figure 7: Marsyas statue, IAM (Author's photo archive)

Figure 8: Knife-shaped lift of the Marsyas statue's back, IAM (Author's photo archive)

Figure 9: Photomontage: Scythian slave (Florence, Uffizi Gallery) and Marsyas (IAM) (Özgan, 2018); Tarsus coin, detail (Scythian slave and Marsyas) (Figure 3)

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Microdebris Analysis of the Central Sewer and the Drainages of the Domus at Pompeiopolis

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ABSTRACT
In archaeological research, the discard behavior of domestic and industrial spaces can be mostly understood through the inspection of primary refuse contexts such as intra-site garbage pits, cesspits, last activity remains of fireplaces, activity floors, or extramural dumping areas as secondary refuse contexts. Other than these features and refuse contexts in the Late Antique / Early Byzantine period Domus at Pompeiopolis, the central sewer, and the drainage have the potential to provide alternative information related to the consumption, production, and discard behaviors of the households and the community in general. In this paper, microdebris samples taken from the street sewer, the drainage of the Domus, and a direct refuse link from a kitchen space adjacent to the street sewer were analyzed and discussed in consideration of the formation processes of the archaeological record.
Keywords: Refuse pattern, Late Antique, Early Byzantine, Black Sea, artifacts, ecofacts

Introduction: Theoretical and Methodological Background

The microdebris analysis aims to recover and screen artifactual and ecofactual remains either as whole elements or in fragments, originating from human activities such as production, consumption and discard behaviours, which are otherwise invisible in detection with the naked eye and hand collection[1]. On the other hand, it helps understand the contextual patterns and formation processes of the archaeological record and taphonomy of artifacts, where both various cultural and natural factors are effective.

While the aim of the technique is common, among scholars there is variety in the use of terminology and no standard size for the materials included in the analyses. The terminology for the technique appears as micro-artifacts, micro-debris, micro-artifact studies, or micro-archaeology (Rainville, 2012, p. 145; Parker et al., 2018, p. 59), however, the last refers mostly to the study of archaeological materials only possible with the aid of microscopes (i.e. stereotype, polarizing microscope- petrographic, SEM- scanning electron microscope). Even though there is no standard size in the application, the method includes materials from microscopic, under 1 mm up to 3cm in size, thus a better recovery method compared to dry sieving (Rainville, 2012, p. 145).

Microartifact materials are mostly categorized into groups such as ceramics, animal bones, shells, lithics, charred and mineralized macro botanical remains, metals, glass, and special small artifacts (also see Parker et al., 2018, p. 60). Especially, fish and bird bones, shells, and beads can only be recovered by sorting the heavy residue of the microdebris samples (also see Rainville, 2012, p. 156; Özbal, 2012, p. 329), otherwise, the data is lost. This results in the invisibility of small species such as fish, birds, and rodents within the taxa, while the larger bones are recorded through hand collection. Also, the vast majority of the micro bones could not be identifiable at the species level (see Rainville, 2012, pp. 156-157). Within the microdebris, due to their size, rodent and fish bones can be recovered in identifiable complete forms (also see Rainville, 2012, p. 158), as well as the fragments and other small parts of the middle-large size animals (i.e. ovicaprid sesamoids).

Microdebris studies aim to screen the micro-artifact densities or "cleanliness index" (see Özbal, 2012, p. 330) within the sample contexts for comparisons and to identify activity discards. Density comparisons are made through calculations of identifiable elements, either with fragment counts or taking weights of the artifacts (ceramics, metal, glass, coins, beads)

1 The technique was developed and widely used since 1960s when emerging concepts such as intrasite spatial analysis (Hodder & Orton, 1976; Clarke, 1977; Blankholm, 1991), interpretation of archaeological record (Binford, 2002; Schiffer, 1972; 1983; 1996; La Motta & Schiffer, 1999), contextual archaeology, behavioral archaeology (Reid et al., 1975), ethnoarchaeology, experimental archaeology, household archaeology (Wilk & Rathje, 1982; Allison 1999; Parker & Foster, 2012), environmental archaeology and use of statistics (Whallon, 1973; 1974) became a trend during the rise of the new archaeology (processual approach).

and ecofacts (bones, plants, egg, and sea-land shells) in grams in each sample volume per liter (see Rainville, 2012, p. 146).

At Pompeiopolis, microdebris samples were taken during the excavation of the Late Antique/Early Byzantine period Domus and its close environment. Samples were taken from the central sewer, the drainage, and a direct refuse link from a kitchen space adjacent to the street sewer, having the potential to provide alternative information related to the consumption, production, and discard behaviors of the households and the community in general through micro artifacts and ecofacts.

The preliminary results were also promising in showing some invisible insights for the socio-economic organization of the community, were useful in the interpretation of the contexts in a higher resolution, and enabled a better understanding of the processes effective in the formation of the archaeological record.

Context of the Study

During thirteen excavation campaigns between 2009 and 2021 (Musso et al., 2011; Brizzi et al., 2021; Summerer, 2008; 2012; 2013; 2014; 2016; 2017; 2018; Summerer & Çevik, 2015; Summerer & von Kienlin, 2009; Summerer et al., 2010), an Italian-Turkish team explored over 3000 m^2 of a housing unit on the north-eastern slopes of Zımbıllı Tepe (Taşköprü – Kastamonu district) already identified in the 19th century as the site of Roman colony of Pompeiopolis in Paphlagonia (Fourcade, 1811; Marek, 2001; Summerer, 2011) (Fig. 1). The excavation, documentation and restoration works are still in progress. In the sequence recorded so far, five main phases can be simplified as follows (Brizzi et al., 2021).

The Late Antique Grand Domus. Around the middle of the 3rd century AD, a grand domus was built on the edge of the ancient city, in an area developed by a system of perpendicular road axes (Fig. 2). The Domus occupies an entire block, is articulated on least two levels along the hillside, it is organized around a central open area originally with porticoes, and a reception court on the northern side which provides access to the residential part of the house around the peristyle and, through a monumental staircase, to a suite of representative rooms located on the higher level. On the southern side, along the main paved road climbing the hill, only service access is preserved, but more investigation is needed as regards the most ancient phases in this part of the house. The grandeur of the building and the richness of the decorations, mostly mosaic floors and marble revetments, are an indicator of the status of the owners of this residence whose rank was certainly at the top of the city.

The Transformation of the Domus. In the second half of the 6th century, a progressive transformation of the Domus is recorded (Fig. 3). The spaces of the house are divided into smaller rooms where there is evidence of craft activities and the setting up of storage facilities. The hypocaust heating systems are disabled and their elements are recycled in

different ways. Also, the central garden is occupied by buildings while the infrastructures for the disposal, and/or collection of rainwater are rearranged. This transformation continued unsystematically and with disparities over the entire area of the house until the end of the 7th century when the disappearance of the original roofs and more radical changes to the wall structures testify to the total transfiguration of the building's identity.

The Early Byzantine hamlet. As result of these transformations, the townscape of this part of the site, outlined during the 2nd and 3rd centuries of the current era, since the 8th century became a rural landscape through different forms of housing and land use (Fig. 4). By recomposing the scarce evidence recorded during different excavation campaigns, it has been possible to reconstruct a settlement made up of isolated small buildings, likely developed in height, arranged around a central open area where large storing jars were installed. The buildings occupy indiscriminately what were public and private spaces of the previous urban organization, highlighting an administrative caesura from the earlier phases even if the massive works of leveling of the debris of the ruins attest to the presence of an authority still managing this territory.

The Middle Byzantine Chapel. During the 10th-11th century the hamlet was abandoned, perhaps after a violent destruction (Fig. 5). Right after, a quadrangular building was built in the area. The lime for the construction was produced on-site in a limekiln fed by the building elements of the surrounding ruins (see Fig. 5 for the spot of the limekiln on the architectural plan). Along the southern side of this building, about ten burials were built in stones and bricks, east to west oriented, some multiple, a couple with grave goods that have allowed them to be dated to the 11th-12th century. The building was intentionally destroyed. The presence of fragments of wall paintings found in its rubble and above all the presence of the small necropolis placed around have led to the acknowledgement of the religious character of this building.

The late rural use. After the destruction of the religious building, probably coinciding with the Seljuk control of the site in the 13th century, all subsequent interventions are attributable to simpler works for terracing and/or delimiting plots of land arranged for agricultural use. Rare episodes of spoliation, especially for the reclamation of fired bricks from the old structures, are still recorded.

The samples examined in this paper come from contexts relating to the first three phases described above, contexts which will be individually described and critically interpreted (Fig. 6).

Methodology

Light fractions (LF) and heavy residues (HR) recovered from 15 flotation samples, having a total volume of 400 liters, were analyzed for this study, which represented refuse contexts both of the Domus and the settlement in general (Table 1). The sampling strategy was judgemental and no limit was defined for the amount of flotation samples. The contents of each sample were calculated in weights (gr) per liter to make an equal comparison among sampling contexts. Stratified contexts such as the sewer were sampled gradually in depth to distinguish the sewer floor and the fill covering the top of it.

The samples were washed through a siraf-type flotation barrel, which had two intakes: one from a water source and the other from an air compressor. The air circulation helps to resolve the soil easily and makes the light fractions float. The floated light fractions (LF) were collected in a 100-micron tulle cloth stretched on the top of a perforated bucket set, where the water ran off. The sunken heavy residue (HR) was collected in a 1 mm plastic mesh, which was spread inside the barrel. All soil samples were measured by a scaled bucket in liters before floating. So, the density of materials per liter could be calculated.

After the LF and HR were dried, all samples were sieved with 2 mm, 1mm, and 0.5 mm steel sieves. All the HR and LF over 2mm were sorted and the materials collected were identified. 1mm and 0.5 mm samples were kept for further study. Among the identified materials were glass, metal, tesserae, glass slags, metal slags, ceramics, animal bone fragments of middle-large species, birds, rodents, and fish bones, seeds of economic plants, and parts of cereals and grapes. All wild plant species were grouped as weeds.

Animal bones were evaluated in two groups: unidentifiable fragments of middle-large species and identifiable bones of small species, such as birds, fish, and rodents. Identifications were made generally at the species level as birds, fish, and rodents. Therefore, this study does not include the identification of genus, skeletal representations, NISP, and MNI calculations, which should be further conducted by a zooarchaeologist. This basic grouping of bones, calculated in grams per liter, aimed to show the contextual patterning and the potential of microdebris analysis for the recovery of small species.

Since the laboratory part of the study was performed during the excavation season, for the identification of plants, *Digital Atlas of Economic Plants in Archaeology* (Neef et al., 2012), *A Manual for the Identification of Plant Seeds and Fruits* (Cappers & Bekker, 2013), and *Jacomet's manual Identification of Cereal Remains from Archaeological Sites* (Jacomet, 2006) were used.

Identified plant seeds and parts were counted. Weights of artifacts and bone fragments recovered from the HR samples were taken in grams since the vast majority of the remains

were fragments. Materials larger than 3 cm were not included in the analysis. All materials recovered from samples were calculated as gr/liter or count/liter (for plants).

Memorandum on the sampling contexts

Before analyzing the contexts in detail, it is necessary to reflect upon the process of forming the deposits inside the investigated channels, pipes, and drainages. It is reasonable to consider the deposit inside a water duct as the clue of its dismissal or in any case a phenomenon that characterizes the final part of the life of that infrastructure. But how long the burying of each drainage was and how much the disuse rather than lack of maintenance affected this process, are questions that cannot always be answered[2]. The unknown maintenance procedures of these structures, e.g. the periodical cleaning of the drainages, both public and private ones, their frequency and degree of effectiveness, surely affected the formation of the deposit, as it is plausible to expect that every intervention didn't result with a total reset of the internal dirt but even a small part of the materials remained in the drainages, mixing with previous and subsequent artifacts and ecofacts until the final abandonment. Other variables such as pressure and flow speed, also condition the formation of the sediment, but in this case, the technical characteristics of each drain, at least for the section investigated, can help our understanding. In any case, rather than the chronology of the construction of each feature, it looks important for the interpretation of their fillings to circumscribe the moment of their abandonment.

Furthermore, the stratification of these deposits may have been progressive, and protracted over a period that must be analyzed on a case-by-case basis, but apart from the observation of the microstratigraphy, it is very difficult to measure this period without turning to archaeometric measurements. This leads us to face the problem of dating which is not only of these contexts but of the whole site. Since the 6th century, the help of the pottery classes for the definition of the chronology is extremely reduced, the presence of recognizable coins is very rare as well, and the notorious problem of residuals which in poor assemblages and with few datable materials becomes an unsolvable variable. While proceeding through the quantitative analysis of the contents of each context, these considerations should constitute the preliminary framework for any interpretation.

Interpretation of Data

Artefactual remains

Samples 24, 25, 33, and 27-28 were significant respectively (Fig. 7a). Sample 24 had the vast majority of metal slag fragments with 1.119 gr/liter (Table 1). It was taken from channel

2 The lack of maintenance of the sewer does not mean that the area was abandoned and uninhabited, but the city lacked the organizational system for the cleaning operations (Also, for the case at Trajan Forum in Rome, see Meneghini, 2017, p. 24).

1480, very close to the sewer, and disengaged from the Domus across the street, which might have a mix of refuse disposal from a metal working space during the 6th-7th century (Period 2) (Fig. 7b).

Sample 25 was significant with metal (0.566 gr/liter), glass (0.198 gr/liter), and some metal slags (0.045 gr/liter) (Fig. 7a, Table 1). The sample was from the floor of the main sewer 1479 and this density of artifact fragments was expected due to its collecting role from various spatial units of yet unexcavated building blocks. Glass as the most fragile element among artifacts, was present almost in all samples, but the most density was in Sample 33, from the drainage 985 in the Domus (Period 2) (Fig. 7a, Table 1).

Ceramics were distinguished from other artifact data sets in comparisons, due to their abundance and high weights. Rather compared with bone fragments of middle-large size animals to see on which scale the main artifact and ecofact remains were dumped into the drainage. Ceramic fragments were present in all sample contexts but were most abundant on the drainage floor (Sample 25 with 4.269 gr/liter and Sample 19 with 3.475 gr/liter) (Fig. 7b, Table 1).

Ecofactual remains

Animal bone fragments of middle-large species were distinguished from the smaller species such as birds, fish, rodents, and shell remains. As stated above, rather compared with ceramic fragments to see the patterns in refuse contexts. A significant observation is that the animal bones were in almost all samples and more abundant than ceramics in the sewer and most drainage contexts. Particularly, the floor of the central sewer contexts (Samples 25 and 19), which were distinguished from the sewer fill during the sampling, had more animal bones than ceramic fragments (Fig. 7b). This indicated that the rate of animal food consumption refuses from the Domus and potentially from other building blocks along the road dumped into the central sewer was high.

Other than the bone fragments originating from middle-large species, small-size bones of birds, fish, shells, and rodent bones as intruding animals were found in the sample contexts (Fig. 7c) (Fig. 13). The first three groups were consumables. Among the four, birds were the most abundant in the samples. Sample 25 from the sewer was significant of bird bones with 0.2 gr/liter but also had 0.045 gr/liter fish and 0.037 gr/liter rodents (Fig. 7c), (Table 1).

The other two samples significant for bird bones were Sample 24 (0.071 gr/liter) from duct 1480 and Sample 2 (0.053 gr/liter) from drainage 1345. The most significant content for fish remains was Sample 1 from the drainage 1345 context having 0.12 gr/liter (Period 1-final phase). Sample 2 from the same context and period had the only shell remaining (0.0125 gr/liter). While shell fragments were only seen in one case, birds, fish, and rodents were the characteristic elements of the central sewer and the drainage contexts (Fig. 7c), (Table 1).

Looking at the macro botanical patterns (for a sample of the species see Fig. 12), Sample 24 had only weed and richest among others (Fig. 7d), (Table 1). This sample from a duct across the Domus seems to have no plant food-related activity and the weeds might have been present as contamination. This sample context was also rich in metal slag fragments, thus supporting the suggestion of a possible workshop function nearby. However, it was a feature to bring clean water therefore the presence of slag remains might have originated due to post-abandonment formation processes, as well as the weeds even if not as contaminations.

Sample 30 from a latrine context had the most abundant cereals among all with 0.21 count/liter (Fig. 7d), (Table 1). Except for two central sewer samples (Sample 19 had 0.023 count/liter cereals, Sample 1 had 0.1 count/liter legumes) (Fig. 7d), (Table 1), no grains were found in the samples, but ash and charcoal remains were densely observed. Even though the evidence of whole grains was limited, fire-related refuse including food was dumped into the sewer. Also, it should be considered that the dynamic movement within the sewer might have affected the integrity of the charred grains, which are quite fragile.

Samples 27-28 were significant in terms of the variety of economic food plants, which were recovered from a manhole cover on the street having a direct refuse link from the Domus. The sample had 0.0853 count/liter cereals, 0.0213 count/liter cereal components, 0.0213 count/liter legumes, and 0.0426 count/liter grape remains (Fig. 7d) (Table 1).

Contextual patterns

Contextual observation of the samples aimed at three aspects: (1) to see the material density between the sewer floor and the sewer fill, thus the formation process during its operation (Fig. 10a-d); (2) to understand the refuse pattern and relation between sewer and the direct link from the Domus space (Fig. 11c); and (3) to define and compare the character of refuse disposal to the central sewer and the drainage system (Fig. 11a-b) as representatives of the Domus.

Samples 19, 20-21, 25, 26, 27-28, and 29 were combined and grouped as sewer floor, sewer fill, below drainage lid, and rubbish chute to drainage. The sewer floor significantly had the most density of metal, glass, and metal slags compared to other contexts having equal densities (Fig. 8a). The picture was similar in the ceramic vs bone density comparisons but

the bone refuse to the sewer floor was higher than the ceramics (Fig. 8b). Small size animal bones were also highest on the sewer floor (Fig. 8c).[3]

At Pompeiopolis, while drainages have less micro-artifact densities, the central sewer, as more representative of the community, had more micro-artifact density.[4]

The presence of ceramics, bones, bird and fish bones under the drainage lid, and fish remains in the rubbish chute to the sewer confirms that this line was used to dump animal food refuse of the Domus to the sewer (Period 1-2). The presence of rodents in the sewer context was also something expected.

For the macrobotanical remains three significant suggestions can be made (Fig. 8d): (1) variety and amount of economic species such as cereals, legumes, and grapes were highest under the drainage lid, which represented the Domus refuse through the rubbish chute, (2) there was evidence of cereals in the sewer floor but in a lesser amount, probably due to the weathering conditions of the sewer stated earlier above, and (3) the sewer fill had the highest amount of weeds, where vast majority were mineralized due to its water logged condition. It is also considered that these might be later contaminants originating from the natural formation processes.

Artifacts were the most abundant in the central sewer compared to the drainages, with an exception for metal slags (Fig. 9a). However, they were recovered from a context extraneous from the Domus. The vast majority of ceramic, bone fragments, bird, fish, and rodent bones were also recovered from the sewer contexts (Fig. 9b, Fig. 9c). Very limited shell remains were found in the sewer.

The majority of the economic species such as cereals and grapes were found in the drainage contexts, which affected the weathering of charred remains less than in the sewer context (Fig. 9d). The presence of weeds was balanced in both contexts, and legumes were only present in the drainage.

3 A rich content of carbonized and mineralized seeds, eggs, shells and mostly fish bones were recovered through microdebris analysis conducted at Herculaneum Cardo V sewer system (1st century AD), which was turned into periodically cleaned long cesspit in the absence of an exit point and a running water source (Rowan, 2014, p. 62). For the description of the sewer system at Herculaneum, see Camardo, 2011. Even if the period, size and organization of the features and contexts are not directly comparable, there is potential at Pompeiopolis to further investigate sewer and drainage floors for the recovery of small size organic materials.

4 Özbal suggests that rooms are cleaner than respectively courtyards, trash deposits and streets at the Chalcolithic site of Tell Kurdu according to "cleanliness index" (Özbal, 2012, pp. 330-331). Sewer and drainage contexts at Pompeiopolis could be preliminarily compared following this behavioral assumption.

Discussion and Conclusions

At Pompeiopolis, a central sewer system was well-functioning from the 5th century up until the 6th-7th centuries. Well functioning of the sewer connected to the 6th-7th centuries drainage system (Samples 33 and 38) of the Domus, is an indication of the maintenance of the urban function in this period, even if the archaeological data represents the Domus, other spatial units of the yet unexcavated building blocks and the small part of the street contexts. Archaeobotanical data (Tatbul & Gürdal, 2022) indicate the beginning of the ruralization practices in this period based on the presence of parts of the cereals, such as cereal nodes and cereal straws in the Domus complex, but strongly ruralized in the 8th-10th centuries, as also stated by the excavations team based on the contextual observations (Brizzi et al., 2021). 6th-7th centuries could be seen as a transition period to rural practices but still the functioning of the urban features.

The manhole attests to the refuse channel connection from the Domus to the street sewer. This proves that the refuse disposal of the Domus goes immediately to the central sewer through this connection, which was supported by the microdebris analysis. While domestic food refuse such as animal bones macrobotanical remains and fragments of discarded artifacts enter into the sewer, the contrary side of the street, based on only very limited samples (Sample 24), had metal slags that might have represented industrial activity refuse. This observation might be used to question whether the spaces on the contrary side of the street were functioning for industrial purposes. But still needs more data to make secure suggestions.

During the soil sampling for the microdebris analysis, artifact sizes were almost very small, and only a few sherds and bones (over 3cm) were separated from the sampled soil. Based on this observation it can be suggested that the refuse disposal to the manhole was deliberately small in size. Therefore, large-size refuse must have been disposed of differently. An analogy can be made from the present day that what goes through the sink and latrine to the sewer and what goes through the garbage bin to the street container differs.

Another important question for the future study is where the sewer ends, does it have a collection pool or whether it falls into the river bed (Gökırmak), which runs not more than 1 km NE below the settlement and the street sewer goes towards as well.

At Pompeiopolis, the microdebris analysis enabled the recovery of micro-artifacts and an understanding of the formation of the archaeological record, which represents the sewer and drainage contexts. The small animal and macrobotanical species at Pompeiopolis could be recorded through microdebris inspection only. Small species such as birds, fish, rodents, and shells were otherwise invisible within the taxa. However, genus and skeletal representations have to be studied in detail further.

As stated earlier in the description of the sample contexts, we approach the microdebris data in caution whether they were formed as a result of cultural or natural formation processes. In case they represent any behavioral signature, they must have been formed during the final period of each phase before abandonment. The fill over the most secure bottom part of the sewer and drainages must have accumulated due to the post-abandonment natural formation processes. Also, the sewer could have been filled as a result of heavy floods during the occupation, but in that case, it must have been cleaned to maintain its operation. Comparison between sewer bottom and sewer fill proves that the vast majority of artifacts and bone fragments were found in the sewer bottom samples. Almost all wild seeds were found within the sewer fill context, which might attest to the processes of formation due to natural reasons.

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Illustrations

Fig.1: Map showing the location of the site

Fig. 2: The Domus in the mid-5th century AD

Fig. 3: The Domus in the mid-7th century AD

Fig. 4: The area of the Domus in the mid-9th century AD

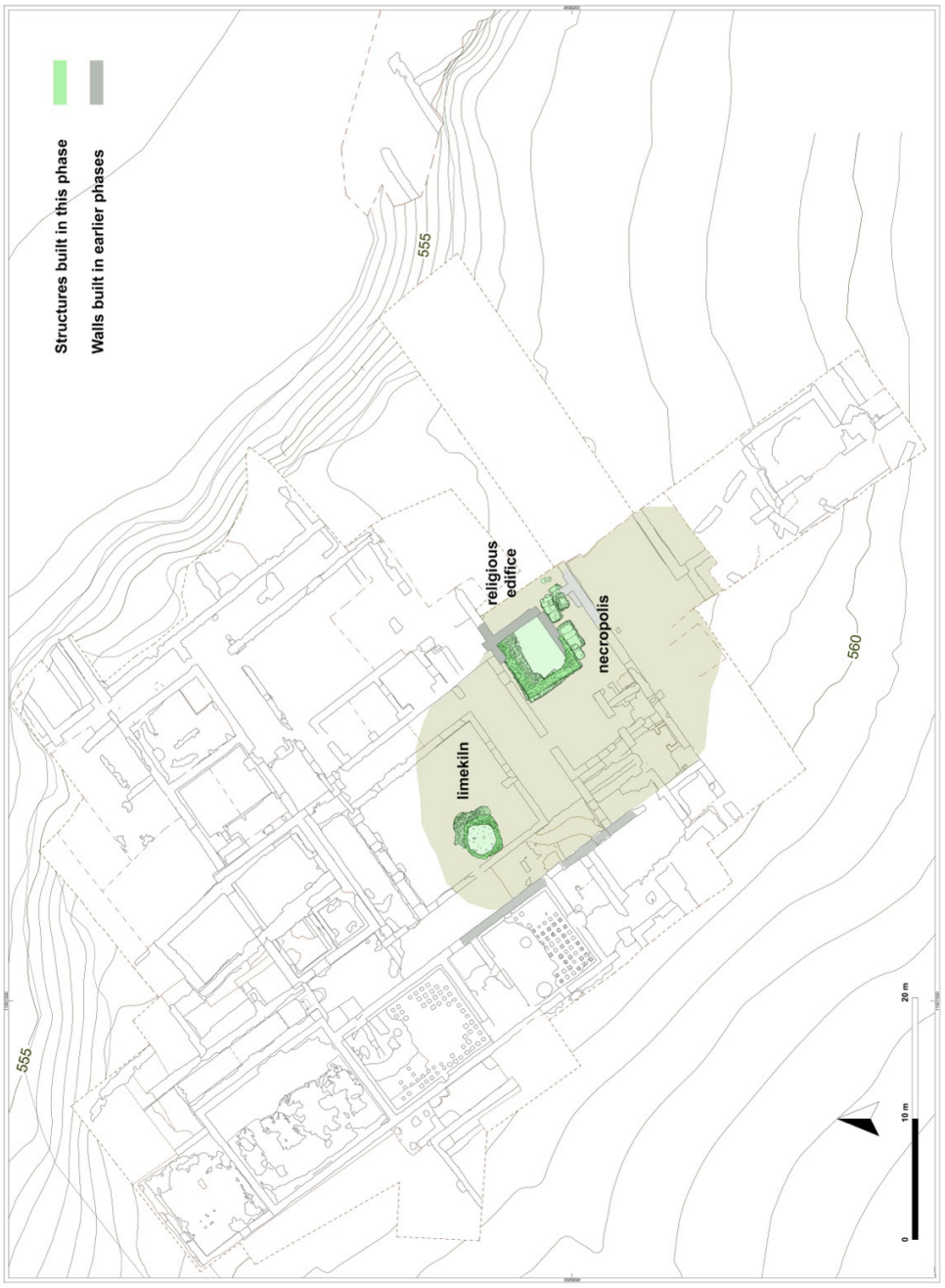

Fig. 5: The area of the Domus in the mid-11th century AD

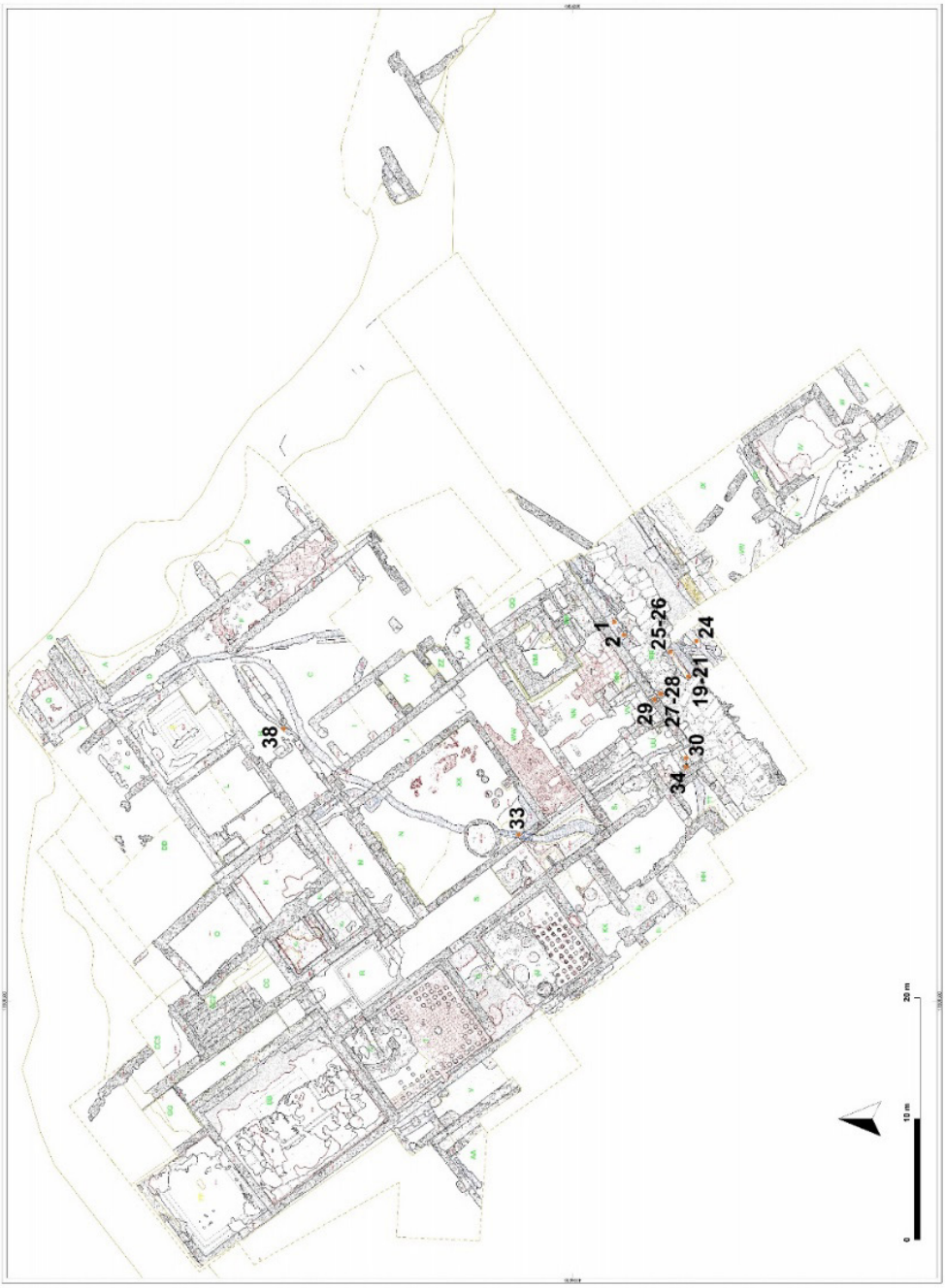

Fig. 6: Sample locations

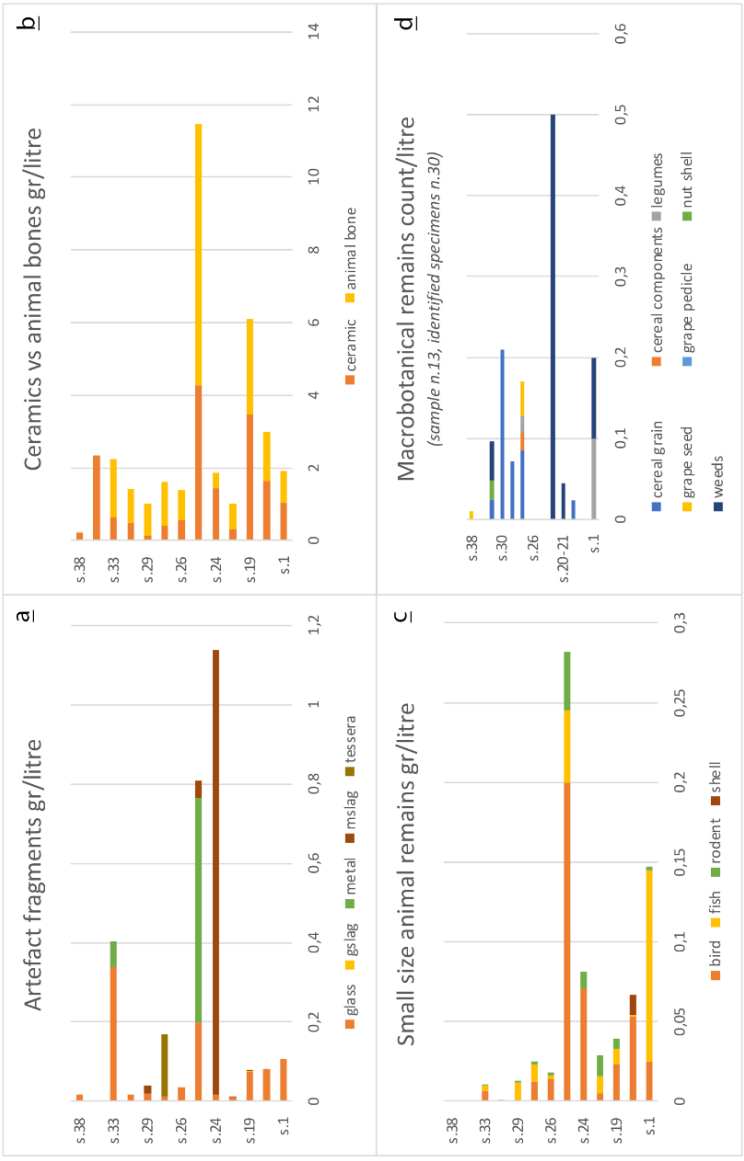

Fig. 7: a.Glass, metal, and tessera fragments within the HR samples; b.Ceramic vs animal bones within the HR samples; c.Small size animal bones within the HR samples; d.Plant remains identified within the LF samples

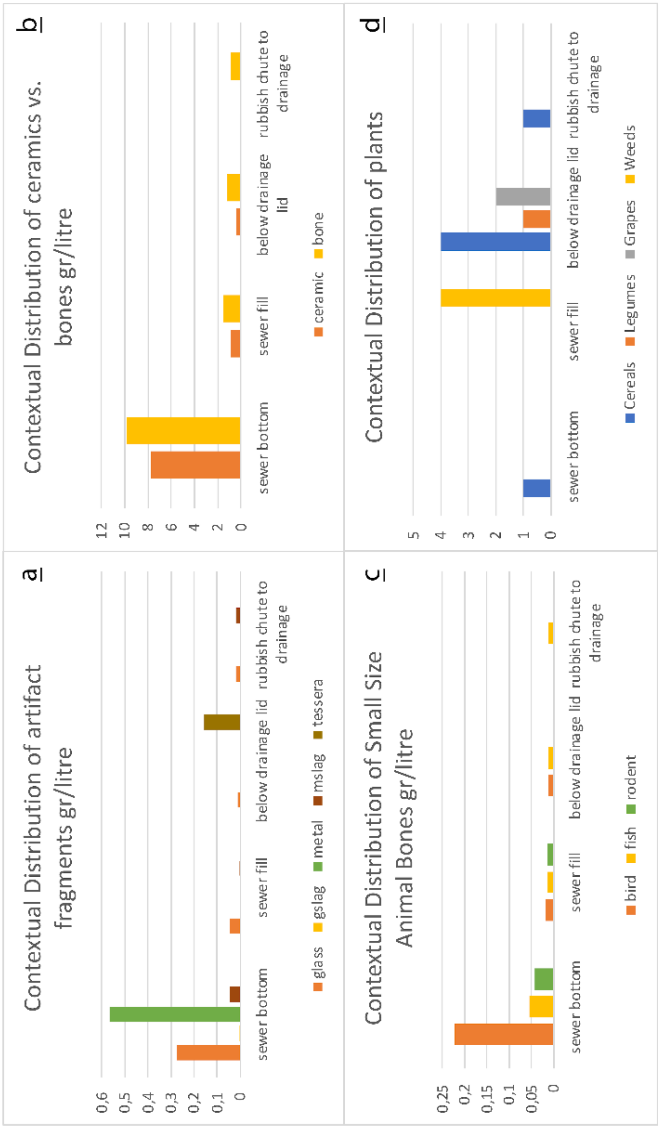

Fig. 8: a.Contextual distribution of artifacts; b.Contextual distribution of ceramics vs animal bone fragments; c.Contextual distribution of small-size animal bones; d.Contextual distribution of macrobotanical remains

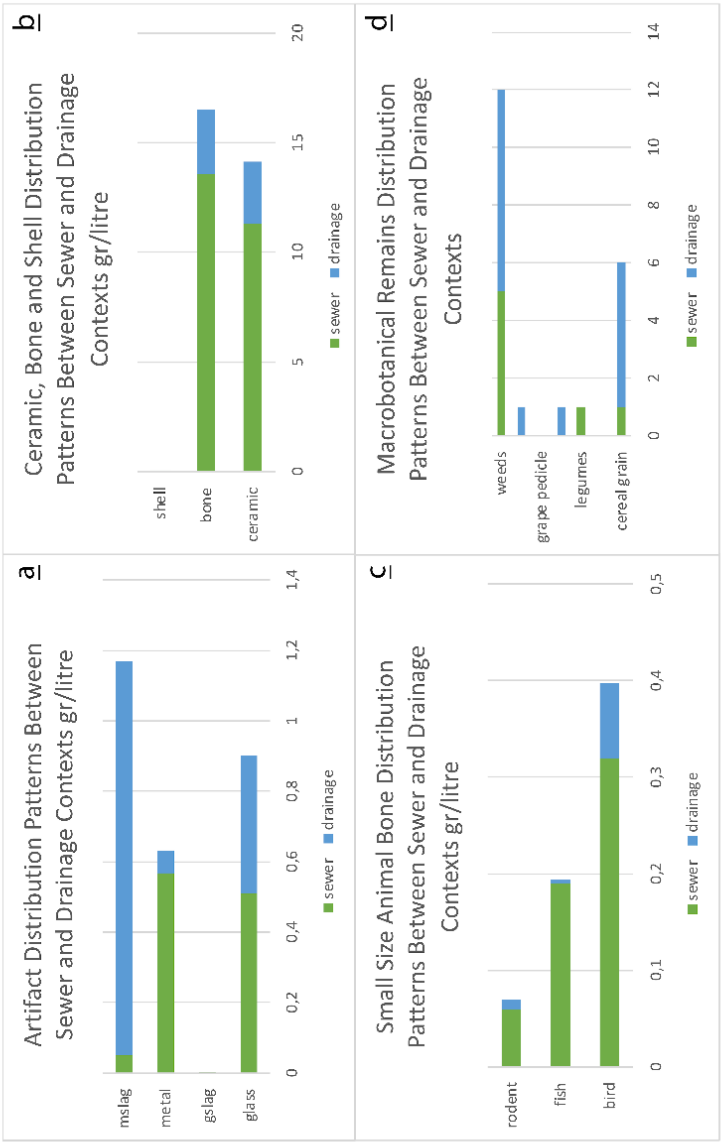

Fig. 9: a.Artifacts between sewer and drainage; b.Ceramics, animal bone fragments, and shells between sewer and drainage; c.Small size animals between sewer and drainage; d.Macrobotanical remains between sewer and drainage

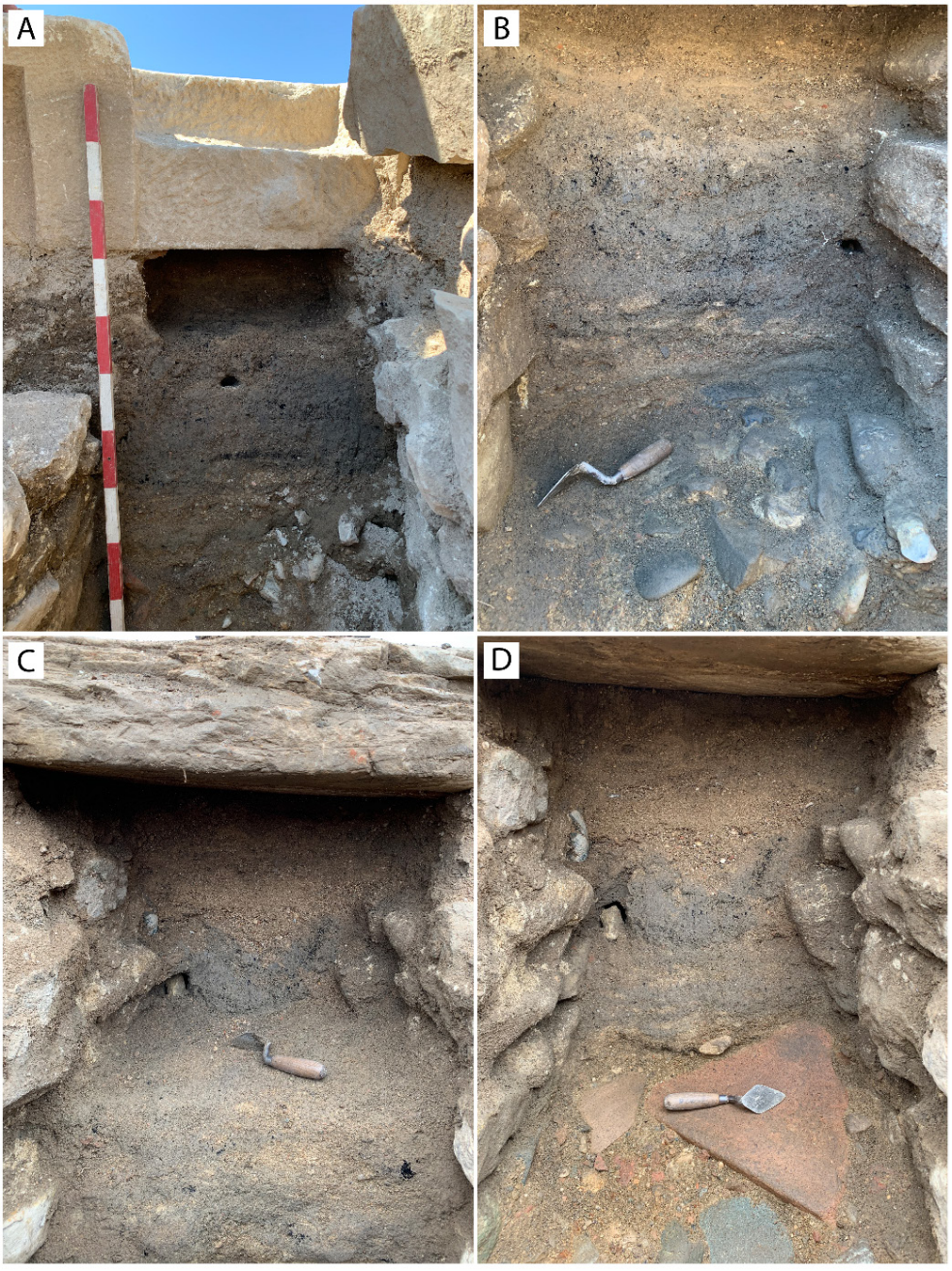

Fig. 10: Sewer upper part: a.Sewer fill; b.Stone base under the cocciopesto floor revetment which was eroded in time due to water stream; Sewer lower part: c.Sewer fill; d.Tile base under the cocciopesto floor revetment which was eroded in time due to water stream

Fig. 11: a.Sampled drainage; b.Closed context of drainage top covered; c.Rubbish chute from the Domus kitchen to the sewer

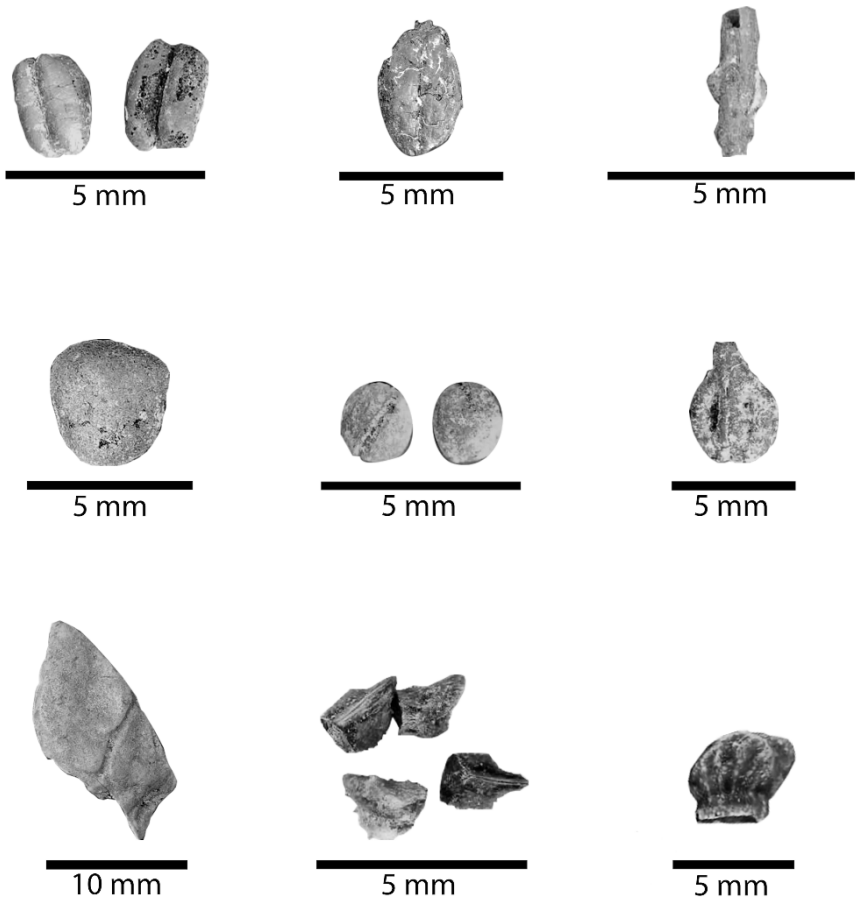

Fig. 12: Macrobotanical remains recovered from the microdebris samples, top to the bottom respectively: *Triticum sp., Hordeum sp., Cerealia rachis, Lathyrus sativus, Vicia sativa, Vitis vinifera, Juglans regia, Echium sp., Anchusa sp.*

Fig. 13: Small size animal bones, top to the bottom respectively: bird phalanges, bird carpometacarpus, fish vertebrae, fish opercular, fish pharyngeal, fish opercular, rodent tibia and femur bones, rodent mandibular, shrew (nonrodent) maxilla and mandibular

Table 1: Microdebris data table

sample no.	**1**	**2**	**19**
unita stratigraphica	1266	1265	1414
context	Drainage	Drainage	Sewer bottom L1
phase	Period 1 - final phase	Period 1 - final phase	Period 1 - Period 2 (Road III)
TPQ	5th c.	Late 5th – 6th c.	5th c.
function	Drainage	Drainage	Sewer
sample volume (litre)	10	8	43
artefacts gr/litre			
ceramic	1.05	1.6525	3.475
glass	0.107	0.08125	0.075
glass slag			0.0028
metal			
metal slag			0.0026
tessera			
animal bones gr/litre			
bone fragment	0.862	1.35	2.63
bird	0.025	0.053	0.023
fish	0.12	0.00125	0.01
rodent	0.002		0.006
shell		0.0125	
plant remains (count/litre)			
triticum spp.			0.023
hordeum spp.			
cerealia			
rachis			
spikelet fork			
culm node			
straw			
vicia sativa			
lathyrus	0.1		
vitis vinifera			
grape pedicle			
juglans regia			
weeds	0.1		

Table 1: (continues)

sample no.	**20-21**	**24**	**25**
unita stratigraphica	1413	1426	1414
context	Sewer fill L1	Drainage	Sewer bottom L2
phase	Period 1 - Period 2 (Road III)	Period 2 (Road IV)	Period 1 - Period 2 (Road III)
TPQ	5th c.	6th - 7th c.	5th c.
function	Sewer	Drainage	Sewer
sample volume (litre)	89	10	16
artefacts gr/litre			
ceramic	0.303	1.435	4.269
glass	0.011	0.017	0.198
glass slag			
metal			0.566
metal slag	0.0022	1.119	0.045
tessera			
animal bones gr/litre			
bone fragment	0.71	0.435	7.2
bird	0.005	0.071	0.2
fish	0.011		0.045
rodent	0.013	0.01	0.037
shell			
plant remains (count/litre)			
triticum spp.			
hordeum spp.			
cerealia			
rachis			
spikelet fork			
culm node			
straw			
vicia sativa			
lathyrus			
vitis vinifera			
grape pedicle			
juglans regia			
weeds	0.045	0.5	

Table 1: (continues)

sample no.	**26**	**27-28**	**29**
unita stratigraphica	1413	1445	1444
context	Sewer fill L2	Manhole cover	Connection from VV to main drainage
phase	Period 1 - Period 2 (Road III)	Period 1 - Period 2 (Road III)	Period 1
TPQ	5th c.	5th c.	4th c.-5th c.
function	Sewer	Below drainage lid	Drainage
sample volume (litre)	91	47	14
artefacts gr/litre			
ceramic	0.564	0.407	0.133
glass	0.0364	0.012	0.02
glass slag			
metal			
metal slag			0.021
tessera		0.156	
animal bones gr/litre			
bone fragment	0.818	1.21	0.88
bird	0.014	0.0123	
fish	0.0025	0.011	0.012
rodent	0.0014	0.0017	0.0007
shell			
plant remains (count/litre)			
triticum spp.		0.064	
hordeum spp.			0.0714
cerealia		0.0213	
rachis		0.0213	
spikelet fork			
culm node			
straw			
vicia sativa		0.0213	
lathyrus			
vitis vinifera		0.0426	
grape pedicle			
juglans regia			
weeds			

Table 1: (continues)

sample no.	**30**	**33**	**34**	**38**
unita stratigraphica	1443	1439	1446	1515
context	Catch pit of the latrine flushed by channel US1526	Drainage	Drainage	Drainage
phase	Period 1	Period 2	Period 1	Period 2
TPQ	4th c.-5th c.	6th-7th c.	Mid-3rd c.-4th c.-5th c.	6th-7th c.
function	Latrine	Drainage	Drainage flushing if the latrine	Drainage
sample volume (litre)	19	42	1	10
artefacts gr/litre				
ceramic	0.5	0.65	2.35	0.225
glass	0.017	0.34		0.018
glass slag				
metal		0.064		
metal slag				
tessera				
animal bones gr/litre				
bone fragment	0.92	1.588		0.01
bird		0.0067		
fish	0.0005	0.0036		
rodent	0.0005	0.0002		
shell				
plant remains (count/litre)				
triticum spp.	0.21	0.024		
hordeum spp.				
cerealia				
rachis				
spikelet fork				
culm node				
straw				
vicia sativa				
lathyrus				
vitis vinifera				0.1
grape pedicle				
juglans regia		0.024		
weeds		0.048		

Appendix: Description of the sampling contexts

Stratigraphic Unit 1266 (sample n. 1)

Sand and silt within drainage 1345, downstream of closure 1346. Drainage 1345 was set up along the northern edge of the roadway, abutting the southern perimeter wall of the Domus. Its walls are built with mortared bricks and the bottom, sloping to the east, is made of large tiles where preserved, and the cover is made of slabs of local stones summarily dressed. It was built to receive the wastewater coming from the ducts arranged inside the Domus. A stretch of the drainage was disabled by blocking the duct with stones and fragments of bricks. Upstream of this block, a breach was opened in the southern wall of the drainage to allow the waste to flow towards the central sewer of the road. Downstream of the block, the duct is filled with sand and silt 1266 which probably mixes with a deposit already present in the channel and is then covered by a new penstock. Above all, this diversion highlights the disuse of drainage 1178 which likely conveyed the waters of an 'overflow' from the Domus to the outside, revealing a reorganization of the Domus' water collection and disposal at this stage. The terminus post quem provided by the pottery found in the context can be traced between mid-6th and mid-7th century AD.

Stratigraphic Unit 1265 (sample n. 2)

Sandy silt within drainage 1345 (see above), west of closure 1346. The context fills a part of the structure where the cover is missing after the spoliation of the slabs of the road. Compared to the fill 1266 this layer has a higher percentage of silt and a lower presence of artifacts reduced to minimal dimensions. It has been interpreted as the sediment of the waste from the western part of the Domus passing through the drainage addressed to the street sewer following the closure described in the previous context, therefore later than 1266.

Stratigraphic Unit 1414 (samples n. 19, 25)

Sandy silt within sewer 1479. The sewer is made up of parallel side walls 55 cm thick in limestone blocks. It is 50 cm wide and 60 cm high. The surface of the sliding bottom was covered by waterproof mortar almost entirely eroded by the flow of water. The cover of the sewer is made of the paving slabs of the road, selected with regular shape and wider size. The sewer was built together with the paving of the road still in situ which has been dated based on pottery and coins found in the preparatory layers, to the first half of the 5th century AD, therefore about two centuries after the first construction of the Domus. As seen for the 1479 drainage, other drainage systems probably pre-existed this central sewer, adapting to it after its construction. Other inlets from the buildings along the road were built at the same time as and later than the setup of the sewer. The dimensions of the walls and the conditions of the bottom show that the sewer was not only used for urban wastewater but also for the disposal

of rainwater. It has been exposed and investigated for a stretch of about 3 m. The lumen of the sewer is entirely occupied by a fill-in and five different stratigraphic units have been identified. Above a layer that fills the removal of the bottom composed mainly of pebbles and sand, a sequence of three levels of sandy silt has been identified, sealed at the top by a sandy layer that reaches the top of the channel, completely blocking the duct. The grey-brown silt layer 1414 is a horizontal deposit 8-10 cm thick above the layers 1415 and 1416, deposited when the conduit was still almost entirely free. Its formation can be rightly placed during the lifetime of the sewer, which as mentioned above was built during the 5th century AD. The samples have been collected at the eastern and western ends of the portion investigated.

Stratigraphic Unit 1413 (samples n. 20, 21, 26)

Brown sandy silt and scattered gravel overlaying layer 1414 in the sewer 1479. The layer is 25-30 cm high, the surface is flat sloping to the east. It contains few ceramic fragments of minute dimensions spread not homogeneously. It has been interpreted as the filling of the sewer in the absence of regular maintenance, lasting for a duration difficult to evaluate and at a time equally difficult to pinpoint, probably between the end of the 6th and the 7th century. The samples have been collected at the eastern and western ends of the portion investigated.

Stratigraphic Unit 1426 (sample n. 24)

Brown-yellow silty sand filling the duct 1480. Unlike sewer 1479, conduit 1480 was built for the supply of drinking water to an unknown facility further downstream. It has been excavated for a length of about 3.60 m. For the installation of this infrastructure, the paving slabs of the southern half of the road were probably raised and a trench dug down to the bedrock where the conduit was built. The duct is 15 cm wide and 20 cm high, built with parallel walls in limestones and mortar, set over a row of tiles, entirely coated by waterproof mortar. The cover is also made of stones and mortar to carefully seal the water duct. The trench was refilled with a compact sandy layer in which unfortunately no dating materials were found. In the excavated section, the installation of the conduit cut and disabled drainage whose mouth in the central sewer was closed with bricks and mortar, therefore the conduit is later than the sewer but it was built when the last one was still working and kept under maintenance. However, there are no clues as to when the duct stopped working. The internal sediment 1426 is very homogeneous, it almost fills the internal space of the duct, as if the occlusion had occurred in a limited period. A section of the layer of about 40 cm, corresponding to the uncovered part of the channel, was sampled.

Stratigraphic Unit 1439 (sample n. 33)

Silty sand and gravel fill the drainage 985. This meandering drainage (985=1736=11) was built on the earth floor laid over the mosaics of corridor S1 and crosses the Domus from

SW to NE in the transformation that we have described as the second period of the building. Pottery and numismatic finds from its construction cut date this infrastructure to the second half of the 7th century AD. It is not yet clear what the source of the water was in room LL where the drainage starts. It likely ended in a collecting cistern to the northeast of the Domus, in an area not yet investigated. The drainage was built with large arched terracotta slabs aligned to form the bottom, while the side walls were built with reused bricks bonded with clay and covered with stone slabs of various kinds. This drainage very well expresses the transformation of spaces and functions inside the Domus, opening breaches in at least five walls to pursue the objective of collecting and storing water, likely rainwater, in an area different than the infrastructures used in the earlier phases of the Domus. The sample has been taken from the part of the drainage at the very west of area XX.

Stratigraphic Unit 1515 (sample n. 38)

Sandy silt filling the drainage 9. Drainage 9 is a stretch 8 m long of channel investigated in the northern corridor of the peristyle, cut both upstream and downstream by the larger and later drainage 11 which probably replaced the smaller 9 in the second half of the 7th century. The dating of the drainage 985=1736=11 therefore chronologically frames the sampled silt filling the drainage 9. The latter is built by placing a row of reused curved kalypteres in a trench cut in the earthy floors; both side walls are built with cobbles and fragments of bricks bound with mortar, covered with recycled square bricks placed at the level of the floor. Given the way it was covered, it is possible that part of the sampled deposit was not only the residue of the water passing through the drainage but that part of it was infiltrated from the outside.

Stratigraphic Unit 1443 (sample n. 30)

Sand, silt, and gravel in the latrine 1745. The latrine is a quadrangular pit, 1.25 m long, 0.40 m wide, and 0.50 m high, built with mortared stones and the bottom with large tiles, close to the southern perimeter wall of the Domus. Two phases of this facility have been recognized: the first is probably equipped with seats and a running water system for washing, in the second the latter is diverted directly into the pit which was covered with simpler perforated stone slabs. The pit originally had an inlet of water through a pipe coming from the road whose origin is unknown, while it drained downstream to the east, probably through a channel linked to the road drainages which has not yet been investigated. The sample was taken from the bottom of the pit after the removal of other sandy sediments that covered it.

Stratigraphic Unit 1446 (sample n. 34)

Silty sand deposited in the hydraulic structure 1466. The latter was built in the refurbishment of the latrine in 1745 with the arrangement of perforated stone slabs above the pit. The running water for washing, previously passing through the small channel cut into

the limestone blocks of the earlier phase, was blocked by this structure built around a new circular cut in the stone and directed towards the mentioned slab. The deposit fills this cut and part of the small collection structure built around it. This phase of the Domus has been dated to the 4th century AD.

Stratigraphic Unit 1444 (sample n. 29)

Incoherent ashes, charcoal, and sand in the drainage 1430. This drainage was built by opening a breach in the southern perimeter wall of the Domus and building a chute with bricks that dumps into an inspectionable manhole with cover in the paving of road 1339. The manhole is connected via drainage to the central sewer 1479 of the road (see above). The drainage 1430 can be understood together with the evidence of a large structure for firing immediately north of it. This structure identifies this room of the house as a kitchen for preparing food, equipped with a hob 1.50 m long. The drainage is therefore a feature for cleaning the kitchen, into which food waste and combustion residues were probably dumped during its use. Although this area of the Domus was arranged as a kitchen in the 4th century, the later cut in the wall and above all the unity of this arrangement with the construction of the central sewer and the paving of the road, move the dating of the structure to the 5th century AD. On the other hand, it is much more difficult to date its dismissal. There is no evidence of major transformations up to the early Byzantine fillings, therefore it is likely that the kitchen and drainage continued to be used throughout the 6th until the 7th century.

Stratigraphic Unit 1445 (samples n. 27-28)

Incoherent ashes and sand in the manhole 1533. The manhole collects the waste from drainage 1430 (see above) and from here it is directed to sewer 1479 in the middle of the road, where the outlet has been identified, built at the same time as the central sewer. As with the drainage 1430 that fed it, this manhole may have worked for a long time. Given its location, it is likely that it also collected surface water flowing along the road.

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c) Dissertation/Thesis from Web

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