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The Proto-Hassuna Pottery of the Upper Tigris Basin, Evidence from Sumaki Höyük

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ABSTRACT
The emergence of pottery has been regarded as the hallmark of the cultural changes explicitly related to the late 8th and the first quarter of the 7th millennium BCE in Southwest Asia. Accordingly, the initial pottery; mineral-tempered, hole-mouth-shaped, burnished and dark-surfaced vessels with lugs close to the mouth on both sides, appeared almost simultaneously in a series of settlements in Upper Mesopotamia and the Northern Levant in the first quarter of the 7th millennium BCE. Pottery production increased in the second quarter of the millennium, followed by the appearance of plant-tempered pottery after ca. 6.500 BCE. Plant-tempered pottery, spreading throughout Southwest Asia, symbolizes the diversification of pottery as much as we can speak of regional traditions. This study aims to define plant-tempered Proto-Hassuna pottery from Sumaki Höyük, located in the Upper Tigris Basin, to understand better the similarities and differences between the initial mineral-tempered and plant-tempered pottery groups, thus pointing out the possible regional characteristics of the assemblage.
Keywords: Upper Tigris, Neolithic, Pottery, Proto-Hassuna, Sumaki Höyük

Introduction

Pottery is an essential indicator of the cultural similarities and relationships between prehistoric societies and their subsistence strategies, social values, and attitudes. The invention of pottery had long been recognized as a marker of farming communities and the Neolithic way of life. Over the last decades, research has revealed that pottery was invented long before settled life and agriculture began. Although pottery was invented independently by hunter-gatherers in various regions of the world in the Upper Palaeolithic (Kuzmin, 2015; Close, 1995), the beginning of pottery use is still a vital distinction for the Neolithic period in Southwest Asia. Pottery production in Southwest Asia started approximately three thousand years after the Neolithic settled life emerged. Traditionally, the Neolithic in this region has been divided into two periods: Pre-Pottery and Pottery Neolithic. This distinction also underlines large-scale social changes in the last quarter of the 8th and first half of the 7th millennium BCE. Agriculture and animal husbandry became the primary modes of subsistence in this period. This transformation did not begin and was not limited to pottery production. However, after the invention[1] of the technique, it spread throughout Upper Mesopotamia and the Northern Levant and became an integral part of daily life.

A considerable amount of literature has been published on the beginning of pottery production in Southwest Asia (Tsuneki et al. 2017 and references herein). Research conducted in the last 20 years clearly outlines that pottery production began in the first centuries of the 7th millennium BCE. The initial pottery has been found in several sites throughout the Northern Levant and Upper Mesopotamia: Yumuktepe (Balossi-Restelli, 2017), Tell al Judaidah (Braidwood & Braidwood, 1960), Tell el-Kerkh (Miyake, 2003), Kumartepe (Le Mière, 2017), Mezraa-Teleilat (Özdoğan, 2009), Akarçay Tepe and Tell Halula (Cruells et al. 2017) in Upper and Middle Euphrates Valleys, Tell Sabi Abyad (Nieuwenhuyse 2017) and Tell Damishliyya (Akkermans 1988) in Balikh Valley, Tell Seker al-Aheimar (Nishiaki & Le Mière, 2005) in Habur Valley, Salat Cami Yanı (Miyake, 2011) and Sumaki Höyük in Upper Tigris Basin. Despite the differences in the cultural elements of these sites, Early Mineral Tempered Pottery has similar features: mineral tempered (generally volcanic minerals), hole-mouth-shaped, well-burnished, and mostly dark-surfaced vessels with lugs close to the mouth on both sides. A few mineral-tempered potsherds were found in the Initial Pottery Neolithic (hereafter PN) levels at almost all mentioned sites (except at Sumaki), which became more numerous towards the middle of the 7th millennium BCE. Because of their shapes, mineral tempers, and lugs, which could be used for placing and lifting pots on the fire, this initial mineral-tempered pottery was quite suitable for cooking (Le Mière, 2017) and even probably made for that purpose (Miyake, 2016).

1 The invention of pottery mentioned here is not referring to fired-clay vessels made for various purposes in the PPN, but it refers to a production cycle in which pottery technology shows a particular development and continuity, which is related to the daily practices and subsistence of the Neolithic societies.

According to the summarised data above, pottery production in Upper Mesopotamia and Northern Levant started in the first centuries of the 7th millennium BCE. It was produced for approximately 500 years without significant technological and typological change. Plant-tempered pottery traditions emerged in the second half of the millennium and rapidly spread throughout SW Asia. Plant-tempered pottery differs from the mineral-tempered tradition of the previous period in terms of the choice of temper, paste colour, surface treatments, form, size, and, hence, the purpose of use (Le Mière & Picon, 1998). Plant-tempered pottery symbolizes increased production, the diversification of ware types, and the birth of regional traditions, so-called Pre-Halaf in Northern Levant, Proto-Hassuna in Upper Mesopotamia -especially Tigris Basin- and Zagros Group in Western Iran (Bader & Le Mière, 2013).

Pre-Halaf is characterized by convex bodies, collar necks, painted surfaces, and incised decorations (Le Mière 2013: 325-327). The Proto-Hassuna pottery includes various sizes of carinated (double-ogee form) and everted-rimmed red slips, paint, or appliqué-decorated vessels. This group was accepted as the predecessor of Hassuna and was named Proto-Hassuna (Merpert et al. 1978: 49). Proto-Hassuna primarily refers to plant-tempered pottery that appeared in the Tigris Basin. However, after Braidwood (1945) identified Hassuna Ia as an early Neolithic phase, Proto-Hassuna and its characteristic plant-tempered pottery were adopted by Soviet archaeologists to encompass the initial Neolithic culture as a whole (Bader, 1993a). Although an earlier Pottery Neolithic phase has been identified over the last few decades, Proto-Hassuna is still a proper term for describing the Neolithic cultures that emerged in the last quarter of the 7th millennium BCE.

Aurenche and Kozlowski (1999: 141) suggested that closed-form vessels were dominant in the Proto-Hassuna, and open forms were dominant in Pre-Halaf. Nevertheless, some researchers have argued that the morphological differences between the two traditions may be related to vessel function rather than culture (Nieuwenhuyse, 2013). Finally, Zagros Group pottery in western Iran is uniquely painted and plant-tempered. However, it shares some features with Neolithic pottery groups in Mesopotamia (Bader & Le Mière, 2013). Because few sites represent continuous layers, the relationship between mineral and plant-tempered traditions is not fully understood. At some Neolithic sites in the Khabur and Euphrates valleys, plant tempers were used in small quantities and combined with volcanic minerals, then gradually replaced by them (Le Mière, 2009).

The coarse, unburnished, buff-coloured Proto-Hassuna pottery was first found in the layers just above virgin soil at Tell Sotto, Kültepe (Bader, 1989), Yarim Tepe (Merpert & Munchaev, 1987), Telul et-Thalathat (Fukai & Matsutani, 1981), Tell Kashkashok (Furuyama, 1991) and Umm Dabaghiyah (Kirkbride, 1972) dating back to the second half / last quarter of the 7th millennium BCE. Subsequent research has revealed many Proto-Hassuna sites in the Tigris Basin and provided more comprehensive information on the general characteristics

of the culture (Figure 1). However, fewer studies have been conducted on this period in the Upper Tigris. All three sites[2] -Salat Cami Yanı, Kendale Hecala (Ökse, 2022), and Sumaki (Erim-Özdoğan, 2011)- in the region have continuous layers from the first half to the end of the millennium and generate valuable data regarding the Proto-Hassuna pottery. This study aims to show the general characteristics of plant-tempered pottery from Sumaki Höyük in the Upper Tigris Basin, determine its place within the Proto-Hassuna culture, and reveal possible regional or interregional differences and similarities.

The Neolithic Occupation of Sumaki Höyük

Sumaki Höyük is one of the earliest Pottery Neolithic sites in the Tigris Basin and situated northwest of the lower Garzan River, one of Tigris's longest tributaries. The Neolithic settlement is located on low terraces, and seasonal streams flow north and south of the site (Figure 2). The Kıradağı basalt flow composed of Upper Miocene claystone, sandstone, and conglomerates located south of the settlement currently extends over the Şelmo Formation. The Neolithic layers are just below the Medieval occupation. The Neolithic cultural deposit is approximately 1.90 m thick. It was opened to 2180 m^2 in the three sectors, making Sumaki an essential site for a better understanding of the beginning and development of pottery production during the Neolithic. The site's layers are divided into seven architectural phases (N7-N1).

From the earliest N7 to N3, significant changes have been observed in the settlement patterns and building types. The last two layers cover approximately 1204 m^2 in these phases. The buildings in Phase N2 were temporary, rectangular, and single-roomed. No pottery was found in any of the buildings. The hearths and fire pits were similar to those of the preceding phases. Phase N1 corresponds to the end of the Neolithic period in Sumaki. The architecture of N1 differs from the earlier layers in terms of using stones as construction materials. The large basalt ground stones from earlier phases were reused to construct rows of foundations. No fire pits were found in this phase, and the lower floors of the seven oval or round hearths were paved with stones (Erim-Özdoğan & Sarıaltun, 2018).

According to thirteen ^{14}C dates obtained from phases N7-N3, it is possible to date the Neolithic occupation of Sumaki from the beginning to the end of the 7th millennium BCE (Gündüzalp 2021, Table 3.1). A single ^{14}C date ascribes the earliest phase N7 to 7327-7036 cal. BCE. However, Phase N7 is more accurately dated to the first quarter of the 7th millennium BCE, according to statistical modelling of ^{14}C dates, given the plateau of the carbon curve. On the other hand, radiocarbon dates indicate that mineral-tempered pottery was produced for an extended period, approximately 750 years. Although no absolute dates

2 Although no extensive archaeological excavations have been carried out, recent surveys indicate that Proto-Hassuna pottery can be found at other sites in the Upper Tigris Basin (Kodaş, 2022).

have been obtained from phases N2 and N1 thus far, pottery assemblages and small finds suggest they belong to the last centuries of the 7th millennium BCE.

During the first half of the 7th millennium BCE (Phases N7-N3), only Early Mineral Tempered Pottery was produced in Sumaki. There is no significant change in the typology and technology of the mineral-tempered pottery during the N7-N4 phases. A few necked jars first appeared in Phase N3, which dated back to 6534-6368 cal. BCE. Similar forms were also present in the plant-tempered Proto-Hassuna group in Phases N2-N1. The mineral-tempered necked jars do not differ from the other mineral-tempered pottery in terms of temper choice and construction technique.

On the other hand, there are no plant-tempered sherds in Phase N3. Very few mineral-tempered potsherds (n=147) were found in phases N2-N1. They are typologically and technologically similar to the wares produced in the previous phases, but their walls are slightly thicker than earlier ones. However, no evidence exists of a direct relationship between mineral and plant-tempered vessel groups.

General Features of the Proto-Hassuna Pottery from Sumaki Höyük

The latest settlement layers of Sumaki Höyük contain vast quantities of Proto-Hassuna pottery. The paste components, temper choice, building, and firing techniques of the Proto-Hassuna pottery are considerably different from those of the initial mineral-tempered pots. The most remarkable change lies in the produced amount; in about 200 years, three times more plant-tempered pottery than mineral-tempered pots was produced in over 700 years. This study is based on 32,184 potsherds (11,051 sherds studied in detail) found in open spaces in the N2 and N1 phases. The Proto-Hassuna pottery is divided into two groups according to their typology, size, and pastes conditions: Plant Tempered Plain Ware (80.55% of the assemblage) consists of relatively large vessels with thick-walled and coarse paste. The red slip is associated with the Red Slipped Ware (19.45% of the assemblage) and applied mainly on the exterior surface. The Red Slipped Ware vessels are small, quite elaborate and have thin walls. Small carinated bowls, oval- and open-shaped pots, carinated jars, oval cooking wares, and trays are other typical forms in the assemblage. The carinated vessels and open forms are characteristic of Proto-Hassuna pottery, and the small numbers of knobbed decorations close to the vessels' mouths are remarkable.

Morphology

Although Proto-Hassuna pottery is divided into two groups, they share many similar features. Chemical analyses showed that the plant-tempered pottery of Sumaki was produced from calcareous clays containing various types of calcium and high amounts of Fe, Ni, and Ba. (Gündüzalp et al. forthcoming). A large number of sherds (weighing 639.75 kg), and the

fact that the large vessels in the assemblage were unsuitable for transportation all suggest that the plant-tempered pottery was produced locally.

Paste condition is nearly the same in the two ware types. Most of the sherds have a porous and sandy paste. Sand grains are present in 53% of the Proto-Hassuna pottery from Sumaki and are less than 0.5 mm in diameter. It is uncertain whether sand was deliberately added to the vessel paste. Lime and mica particles are also visible. The lime particles are generally larger than mica particles. The proportion of lime particles in both Plain and Red Slipped wares ranges between 4 and 6% (Gündüzalp, 2021).

The Proto-Hassuna pottery is mostly plant-tempered. Only a few sherds contain small amounts of basalt, lime, and grit in their paste. Plant tempers were never added to the Early Mineral Tempered Pottery; thus, it is impossible to discuss the gradual transition from mineral to plant tempers at Sumaki Höyük. The plants used for temper were initially chopped in various sizes. The proportion of plants is above 50% in most sherds, and traces of burnt plants can be seen on the inner and outer surfaces of the vessels because they were not burnished. The proportion of temper with diameters larger than 3 mm is higher in the Plain Ware sherds than in the Red Slipped sherds.

Nevertheless, the quantity of temper is similar between the two types, and ware size and wall thickness are related to the size of the temper. The most distinct difference between the groups is the more frequent use of grit temper in Plain Ware, which might have been selected to increase porosity and improve resistance to thermal stress (Gündüzalp, 2023).

The Proto-Hassuna pottery from Sumaki was shaped using multiple techniques, while the most applied technique was sequential slab construction (Vandiver, 1985). The bases and bodies of the vessels were shaped mainly by connecting slabs with similar dimensions. Coils were applied only to the upper part of the body. Moulds might have been used to support the bodies of vessels at wide angles (Gündüzalp, 2023). These results are consistent with previous studies on plant-tempered Neolithic pottery from Southwest Asia (Vandiver, 1985; Petrova, 2022).

Typology and Function

Sumaki Höyük plant-tempered pottery has typical characteristics of the Proto-Hassuna culture; however, some features are unique to the site. More than 70% of the Sumaki samples consist of broken body fragments. Diagnostic sherds (rim, neck, base, and carination) make up 21.77% of the assemblage, and the proportion of sherds for which the vessel form can be determined is 10.44%. Proto-Hassuna pottery is divided into four primary vessel forms; bowls, pots, jars and oval vessels/trays (Table 1).

Carinated and oval open-shaped bowls constitute 17.33% of the sample (Figure 3-4). The average rim diameter of the bowls is approximately 10 cm. The proportion of bowls in the Red Slipped group (36.09% of the sample) is almost three times higher than that of the Plain Ware (12.66%). In other words, bowls are more prevalent in the Red Slipped group. There are no traces on the surface of the bowls to determine their function. Considering their size, the bowls were unsuitable for transport, storage, or cooking and were probably used for food consumption. Currently, it is difficult to determine the exact shape of the base of the bowls, as sherds rarely have a complete profile. The bowls were produced from the same paste and probably had similar functions in both ware groups.

Almost all pots (10.83% of the assemblage), including rectangular vessels, belonged to the Plain Ware group. The Oval Pots are elliptical and slightly low-bellied, similar to modern cooking earthen wares (Figure 5). The base of these pots is nearly round, and the rim is asymmetrical. The rims are relatively flat and slightly inclined inwards on both vessels' sides. The approximate volume of the Oval Pots is between 6–9l. The identified rim fragments are usually more than 7cm long, and many have finger flutings on their inner or outer surfaces. The finger flutings may have been made while pressing and rubbing larger slabs or strips to make them fit more securely into the body. There are no traces on these vessels' interior and exterior surfaces to determine their function. However, their oval-contoured bases, bodies, and open-mouth shapes are suitable for cooking as suggest the shapes of modern cooking pots. Such forms as in the Oval Pots from Sumaki were not found in other Proto-Hassuna sites in Upper Mesopotamia. However, the elliptical vessels with a rounded rim, recorded at Umm Dabaghiyah (Kirkbride, 1972) and the Late Neolithic site of Aknashen/Armenia (Harutyunyan, 2014) have vague similarities to Sumaki's Oval Pots.

Furthermore, Rectangular Vessels are characterized by shallow, straight, or steeply angled base turns with sides rising at nearly vertical angles (Figure 6). Depending on their size, body height changes between 10 and 14cm. These vessels had relatively thick walls; the average wall thickness was 2.7 cm. All these samples were in the Plain Ware group. Considering all their characteristics, it can be assumed that these vessels were used for cooking. However, their angular shapes reduce thermal stress resistance. There is no soot trace on the outer surfaces due to direct contact with fire. Therefore, if Rectangular Vessels were used for cooking, it is possible that cooking was carried out in ovens. Similar vessel types were found at Tell Kashkashok II (Matsutani, 1991), Telul eth-Thalathat Levels XV and XVI (Hori, 1981), and Tell Sotto (Bader, 1993b). It has also been reported that some rims and base fragments indicating rectangular shapes were found in Salat Cami Yanı Phase 2 (Miyake, 2011).

A single Carinated Pot (Red Slipped) was identified at Sumaki (Figure 7). The pot's form is slightly open, and the rim diameter is 20cm. The wide-angled carination is on the center of the body. This type of pot was found at almost all PN sites in the Upper Tigris.

The jars were the most common vessel form (67.16% (n=775) of the identified sherds) in the Proto-Hassuna assemblage, whereas they belong to 68.07% (n=629) of the Plain Ware group and 63.48% (n=146) of the Red Slipped Ware. Four jar types, which were divided into subgroups, were identified. Narrow Rimmed Jars (two sub-types were identified – Figure 8) comprise 25.04% of the identified sherds. Their relatively thin walls (average wall thickness being 1,10 cm), dimensions, narrowed rims, and possibly carinated or low-bellied bodies indicated that these jars were used for liquid(?) or food storage.

Globular Jars (Figure 9) constitute 2.92% of the Plain Ware and 7.39% of the Red Slipped Ware. The exact dimensions of the vessels could not be determined. However, the convex and slightly closed-rim fragments indicated that these jars had globular bodies. The average wall thickness of these vessels is 1.06 cm, and the average rim diameter is ~20 cm. The function of the vessels is uncertain.

Necked Jars (Figure 10) were the most commonly produced vessels in the Proto-Hassuna sample (31.72% of the identified sherds). There are two necked (short and long-necked) jar types. These jars are relatively big, carinated or low-bellied vessels, suggesting they could have been used for storage instead of transportation. The average rim diameter of the necked jars is ~18 cm, and the wall thickness is 1.08 cm. Although short-necked jars are typical of plant-tempered pottery traditions in SW Asia, they first appeared in the mineral-tempered pottery group during Phase N3 in Sumaki, dating back to 6.476-6.206 cal BCE. These jars have the same features as mineral-tempered pottery except for their shape, indicating a possible relationship between them. Both necked jars are characteristic of Proto-Hassuna and Pre-Halaf pottery and were found at all PN sites in SW Asia in the late 7th mill. BCE.

Flat Rimmed Jars were only observed in the Plain Ware group (6.59% of the identified sherds). The upper part of the rim was flattened and, in some cases, widened to be slightly curved. The body of the vessels probably rises steeply; the average wall thickness is 1.4 cm, and the rim diameter is 19.45 cm. Flat Rimmed jars first appeared in the Early Mineral Tempered Pottery group in Phase N3, and these jars are similar in both groups (Figure 11).

Oval Vessels/Trays (Figure 12) are shallow and splayed vessels with a height between 9 and 14cm, width between 14 and 18cm, and length between 25 and 40cm. The oval vessels' shape is similar to the Husking Trays, the well-known form dating back to the beginning of the 6th millennium BCE. The internal surfaces of the Husking Trays were crossed by scored patterns. It has been suggested that the Husking Trays were used for cereal processing (Lloyd & Safar, 1945) or bread baking (de Contenson, 1992; Voigt, 1983). Sumaki's Oval Vessels are smaller than the standard Husking Trays. The inner surfaces of the Oval Vessels were not crossed or incised, and no other traces could determine their function. However, Oval Vessels

are unsuitable for storage and transportation. They were only found in the Plain Ware group, as in other cooking vessels, indicating that Oval Vessels were used for cooking.

It is uncertain whether the Oval Vessels from Sumaki are precursors of Husking Trays. The fact that oval shapes are primarily associated with Husking Trays makes it challenging to understand their place in the early PN. The first examples of oval-turned and tray-shaped vessels are known from stone vessels from the PPN levels of Ali Kosh (Ali Kosh Phase) in the Deh Luran Plain in the Central Zagros (Hole et al. 1969: 107-Fig. 42s). In the second half of the 7th mill. BCE, plant-tempered oval-shaped vessels were found at Akarçay Tepe Level 1 (Arimura et al. 2000), Salat Cami Yanı Level 3 (Miyake, 2011), Umm Dabaghiyah (Kirkbride, 1972), Yarim Tepe I Levels 12-7 (Merpert & Munchaev, 1987), Telul eth-Thalathat Levels XV-XVI (Hori, 1981), and Tell Kashkashok II (Maeda, 1991). However, oval and shallow potsherds were found in the Later Manifestation group from the PN phase of Jarmo (McAdams, 1983) and the Buff Ware group from Level R of Tepe Guran (Mortensen, 2014).

One of the essential differences between plant-tempered Proto-Hassuna pottery and Early Mineral Tempered Pottery was the disappearance of lugs. There are seven lugs in the Plant Tempered Plain Ware group from Sumaki (Figure 13). On the other hand, lugs were not a functional addition because the jars, which have been used for long- or short-term storage, did not need to be transported or moved frequently. The Coarsely Made Plant Tempered Ware group at Tell Sabi Abyad had lugs close to the rim (Akkermans et al. 2006). A small number of vertical perforated lugs were found in the plant and basalt-tempered pottery at Tell Seker al-Aheimar (Nishiaki &Le Mière, 2017, Fig. 5.9-3), Salat Cami Yanı Phase 2 (Miyake, 2007), and Telul eth-Thalathat II (Fukai & Matsutani, 1981). Moreover, there are few horizontal lugs in the Hassuna Ia phase at Tell Hassuna (Lloyd & Safar, 1945), the Coarse Pottery group at Tell Kashkashok II (Matsutani, 1991), and Umm Dabaghiyah (Kirkbride, 1972).

The appearance of carinated forms is vital for Proto-Hassuna pottery. Two hundred and twenty two carination fragments, categorized as narrow and wide based on the rotation angle, were found in Sumaki Höyük (Figure 14). Twenty five of them belonged to bowls and pots. The other carination fragments were larger and probably belonged to the necked jars. The carinas were mainly located near the middle of the vessel's body. At the other Proto-Hassuna sites, especially at Umm Dabaghiyah and Tell Sotto, carinated jars have relatively small bases, their body opening with a wide angle and narrowing through to the rim with sharply angled carination. These vessels were probably used to store or preserve various liquids or foods. Because of the sharp body turns, they were fixed to the ground or placed in a pit. The carination angles at Sumaki Höyük were softer and more oval. This difference may be related to the function or how they are used.

Decoration

Pottery decoration in various ways has become one of the defining features of pottery traditions within the Proto-Hassuna in SW Asia. In particular, paint decoration became widespread in the late 7th millennium BCE and became one of the defining features of Hassuna, Samarra, and Halaf cultures in the 6th millennium BCE (Bader & Le Mière, 2013). The painted decoration is not typical in Proto-Hassuna pottery and varies from site to site. Although appliqué decoration has been accepted as a significant feature of Proto-Hassuna pottery, it has rarely been applied (Nieuwenhuyse, 2013).

A red slip is usually applied to the entire surface of the vessel and does not contain any motifs. In some examples, it was applied to limited areas on the inner or outer surface of the wares (Figure 15). In addition, the red slipped vessels are smaller and thinner than the plain ones. From this point of view, red slip is also a paint decoration. In addition to the red-slipped wares, 39 potsherds of Sumaki Höyük Proto-Hassuna pottery yielded three types of decoration: knobbed, appliqué/relief, and painted.

Knobbed decoration added near the rim of the vessels constitutes 84.61% (n=33) of the decorated sherds. This type was found only on bowls and jars and was not added to cooking wares. Because the knobs were found only on the broken body and rim fragments, it is uncertain whether the vessels were decorated with a single figure or more than one. The knobbed decoration was applied to most Proto-Hassuna sites in SW Asia. There was mostly a single knob, but two or three knobs were laid side-by-side in some examples. A similar knobbed decoration with Sumaki was found at Tell Hassuna Ia (Lloyd & Safar, 1945), Umm Dabaghiyah (Kirkbride, 1972), Tell Sotto (Bader, 1989), Yarim Tepe I (Merpert & Munchaev, 1987), Telul eth-Thalathat II (Hori, 1981), Tell Kashkashok II (Matsutani, 1991), Salat Cami Yanı Phase 3 (Miyake, 2011), and Mezraa-Teleilat Phase IIB (Aytek, 2008).

A skeuomorphic relationship can be established between the knobbed decoration of the Proto-Hassuna and the Early Mineral Tempered Pottery lugs. It is challenging to talk about a continuous connection between the two. However, the EMTP was produced at Sumaki Höyük during the 7th millennium BCE, even in small numbers in the Proto-Hassuna phases. We can speak of a connection between the two pottery cultures that influenced each other to a certain extent in the late 7th millennium BCE. In this respect, it can be assumed that the knobbed decorations near the rim have a skeuomorphic relationship with the lugs in the EMK group (Figure 16).

Relief and appliqué decorations were found only in four body sherds in Sumaki. Although appliqué and relief decorations are uncommon in Proto-Hassuna culture, the number of decorated sherds at Sumaki Höyük is significantly lower than at other Proto-Hassuna sites. The relief decorations resemble splayed lugs (Figure 17). Appliqué decorations

in the form of crescents/horseshoes (Figure 18) were present at all Neolithic sites where knobbed decorations were found. In addition, there are also examples where the crescent/horseshoe motif is painted on the vessel surface at Umm Dabaghiyah (Kirgbride, 1972), Tell Sotto (Bader, 1989), Tell Kaskashok II (Matsutani, 1991: Pl. 65.32), and Tell Shimshara (Mortensen, 1970: Fig. 96a-b) in the last quarter of the 7th millennium BCE. The 'T' shaped appliqué decoration is one of the typical figures of Proto-Hassuna, and different versions are known from Proto-Hassuna sites in the Tigris Basin.

Although paint decoration is typical in Proto-Hassuna pottery culture, only two painted body fragments are in the Sumaki Höyük sample (Figure 19). Because the body fragments are tiny, the decoration motif could not be entirely determined. However, a geometrical pattern resembles a filled triangle with vertical and horizontal lines.

Conclusions

Pottery production began in SW Asia in the first centuries of the 7th millennium BCE. The initial pottery was mineral tempered, well-burnished, mostly hole mouth-shaped, and spread over a wide area from the Upper Tigris Basin to the Mersin region. It was produced without significant technological or typological changes until the middle of the millennium. Although it is possible to mention some local differences in the use of temper and vessel forms, especially at sites in the northern Levant, mineral-tempered pottery was similar at all sites in the regions mentioned above.

Plant-tempered pottery traditions appeared during the second half of the 7th millennium BCE. This pottery rapidly spread throughout SW Asia, symbolizing the emergence of different ware types and regional traditions. The Proto-Hassuna pottery group in the Tigris and Khabur valleys does not have hole-mouth-shaped or steep-rising-sided jars. In addition, lugs, a typical feature of initial mineral-tempered pottery, almost disappeared. The plant-tempered pottery yielded several bowls, pots, and jars, each produced for specific purposes, in contrast to multi-purposed mineral-tempered pottery. In this respect, although Proto-Hassuna pottery is traditionally referred to as 'coarse' at many sites, it is more advanced than Early Mineral Tempered Pottery.

Most of the Proto-Hassuna sites do not have preceding periods (initial PN) in their stratigraphy, and therefore their earliest occupation started with plant-tempered pottery. Sumaki Höyük, one of the sites which contain both Early Mineral Tempered Pottery and Proto-Hassuna, has the advantage of being widely excavated and having a large pottery assemblage, making it an important site for understanding the relationship between the two pottery cultures. Studies in the Khabur Valley suggest a gradual transition between mineral- and plant-tempered pottery manifested in temper choices (Le Mière, 2009). At Sumaki Höyük, however, there was no gradual transition between the two groups using

tempers. One remarkable fact from the settlement is that the production of mineral-tempered vessels continued during the Proto-Hassuna layers (N2 and N1). Although there are few mineral-tempered potsherds from Phase N2-N1, they are typologically and technologically indistinguishable from the wares produced in the earlier phases of Sumaki. In this context, it is noteworthy that while there was a technological transformation in Upper Mesopotamia in the second half of the 7th millennium BCE, especially in temper and construction techniques, mineral-tempered pottery continued to be produced using the same technique. This result shows that two different construction and bodily techniques could have been applied together and that construction techniques could have changed according to the raw materials used.

On the other hand, there were some typological changes in mineral-tempered pottery in the second half of the 7th millennium BCE in Sumaki. The appearance of Short Necked Jars indicates introducing features specific to plant-tempered pottery. Although there was no continuous transition between the two, the Flat Rimmed Jars seen in both pottery groups from Sumaki suggest that the two pottery groups influenced each other typologically.

Although the Proto-Hassuna culture represents a regional tradition, it is not homogenous (Bader, 1993a). In terms of pottery, Oval Pots, Rectangular Vessels, and rounded carinas from Sumaki, which are thought to have been produced for cooking purposes, show some forms specific to the settlement. These vessels do not have lugs or handles, and there is no evidence of contact with fire on their exterior surfaces. Therefore, it can be concluded that there has been a change in cooking techniques with the emergence of plant-tempered pottery. However, whether this change is unique to Sumaki or a general feature of the Upper Tigris region is unclear. Further studies of pottery from other sites in the area shall provide a better understanding of these regional and interregional relationships.

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Figures

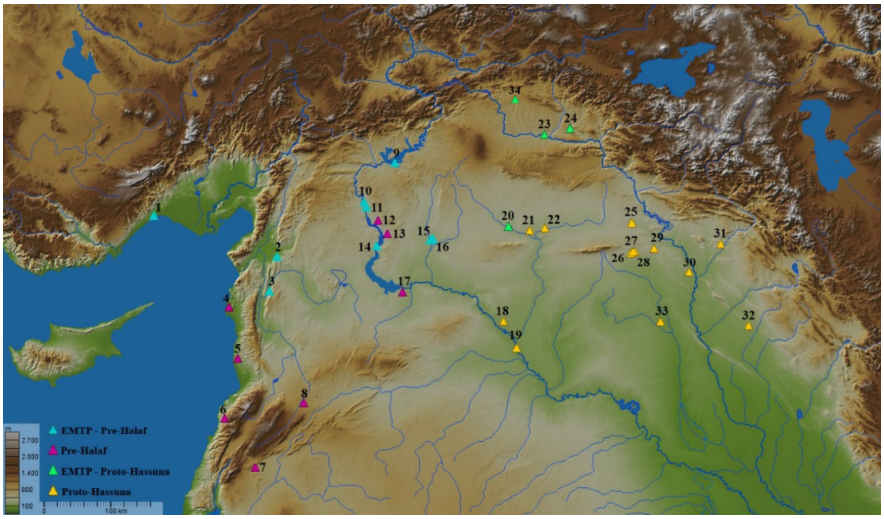

Figure 1: The map of Pottery Neolithic Sites: 1- Yumuktepe, 2- Judaidah, 3- Tell el-Kerkh, 4- Ras Shamra, 5- Tabbat al Hammam, 6- Byblos, 7- Tell Ramad, 8- Labweh, 9- Kumartepe, 10- Mezra-Teleliat, 11- Akarçay Tepe, 12- Dja'de, 13- Tell Kosak Shamali, 14- Tell Halula, 15- Tell Damishliyya, 16-Tell Sabi Abyad, 17- Abu Hureyra, 18- Tell es-Sinn, 19- Tell Bouqras, 20- Tell Seker al-Aheimar, 21- Tell Kashkashok, 22- Tell Hazna, 23- Salat Cami Yanı, 24- Sumaki Höyük, 25- Ginnig, 26- Kültepe, 27- Tell Sotto, 28- Yarım Tepe, 29-Telul eth-Thalathat, 30- Tell Hassuna, 31- Tell Nader, 32- Matarrah 33- Umm Dabaghiyah, 34- Kendale Hecala

Figure 2: Neolithic Settlement of Sumaki Höyük

Figure 3: Open-Shaped Bowls

Figure 4: Carinated Bowls

Figure 5: Oval Pots

Figure 6: Rectangular Vessels

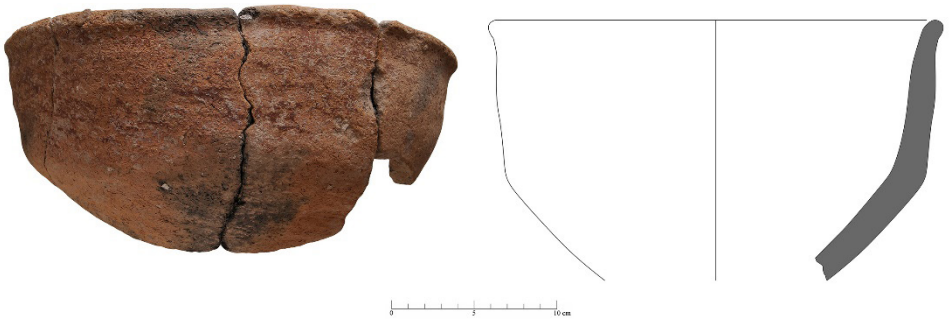

Figure 7: Carinated Pots

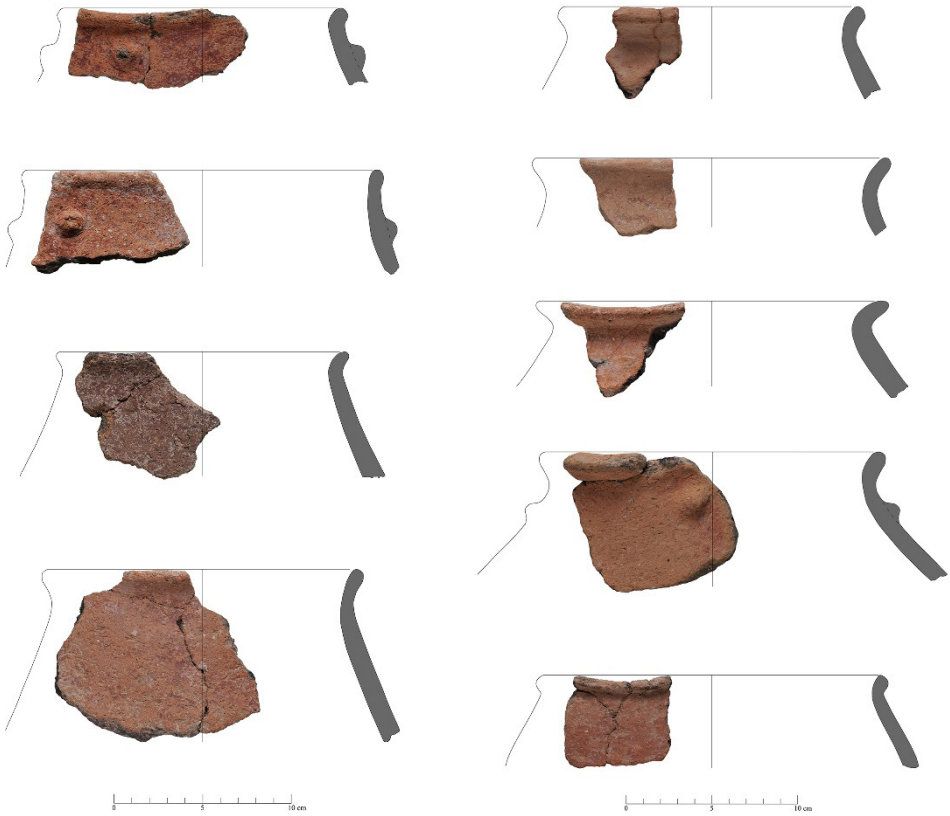

Figure 8: Narrow-Rimmed Jars

Figure 9: Globular Jars

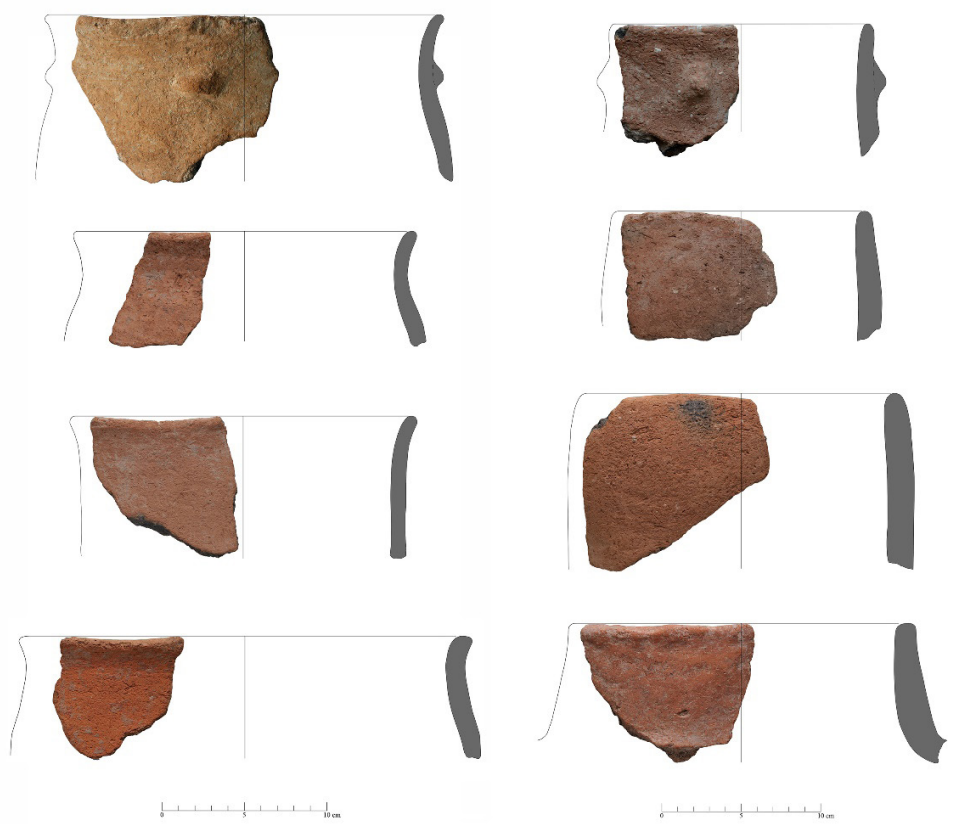

Figure 10: Necked Jars

Figure 11: Flat Rimmed Jars – Plant-tempered (right), Mineral-Tempered (Left)

Figure 12: Oval Vessels/Trays

Figure 13: Different Lug Types

Figure 14: Carinated Ware Fragments

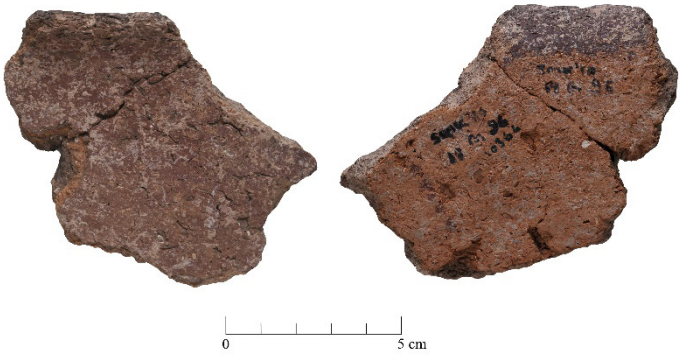

Figure 15: Red-slipped sherd

Figure 16: a) EMTP Lugs from Phase 7, b) Proto-Hassuna Knobbed Decorations from Phase N2/N1

Figure 17: Relief Decoration

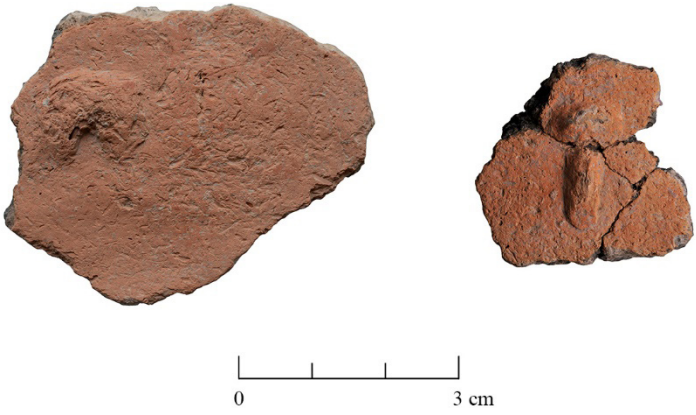

Figure 18: Applique Decorations

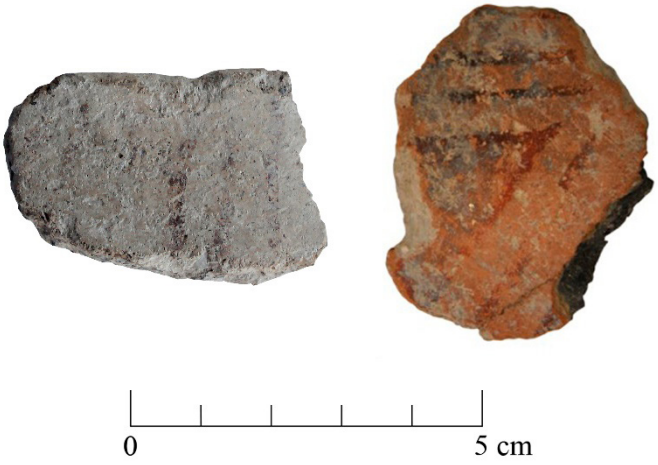

Figure 19: Painted Decorations

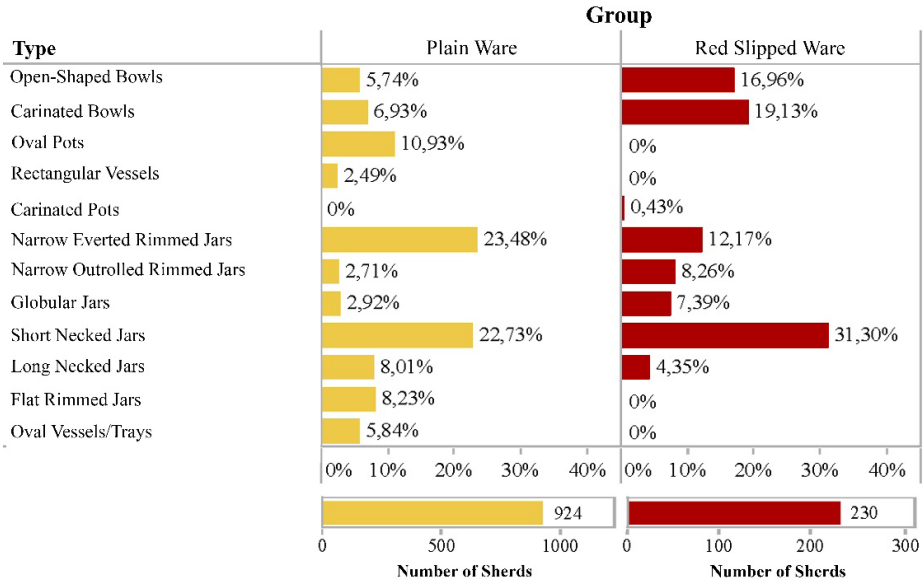

Table 1. Ware types of Proto-Hassuna Pottery