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イラク・ロシア合同考古学調査団によるイラク南部テル・ワジェフ遺跡の
現地調査（英文）

シャフマルダン・N・アミロフ, アレクセイ・I・ジャンコフスキー=ディアコノフ,
ラバダン・G・マゴメドフ, マクシム・Y・メンシコフ, ナタリア・Y・ペトロワ,
リディア・A・グサク, ムルタダ・ハシム, マフムード・モフセン, ルア・サアド

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足立拓朗

キシユ遺跡で出土した分銅に関する予備的研究（英文）

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FIELD INVESTIGATIONS OF IRAQI-RUSSIAN ARCHAEOLOGY MISSION ON THE SETTLEMENT OF TELL WAJEF IN SOUTHERN IRAQ

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In April 2024, a joint mission of the State Board of Antiquities and Heritage of the Ministry of culture, tourism and antiquities of Iraq, the Institute of Archaeology and the Institute of Oriental Studies of the Russian Academy of Sciences, within the framework of the Iraqi-Russian Multidisciplinary Project (IRMP) conducted archaeological excavations of Tell Wajef in the governorate of Maysan in Southern Iraq.

The tell is located 60 km NE of the governorate's capital of Amarah, 5 km from the border with Iran, and about 10 km from the low spurs of the Zagros Mountains (Fig. 1), in close proximity to the bed of the Teeb River (Fig. 2).

Physical geography of the region

The climate of the Southern Iraq, and in particular in the Tell Wajef location, is continental, close to tropical, with a dry hot summers and relatively rainy cool winters. The average January temperature in the region is about +10–12 °C. The average temperature in July is about +34–35 °C. On some days of the summer season, the temperature rises to +48 °C. The absolute maximum observed is +57 °C in the shade.

Rain falls mainly in winter, but also during the growing season in the spring months. The annual rainfall on the plain varies from 50 mm in areas close to the Tigris River to 500 mm in the Zagros foothill belt and more than 1000 mm in the mountainous zone [Danzig 1955; 1960; Khmish and Sinchenko 2021: 113].



Fig. 1. The landscape of Tell Wajef area. View northward to the spurs of the Zagros Mountains.



Fig. 2. The area of Tell Wajef. The Teeb (Mehmeh) River.

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Landscape

Within the Maysan governorate, the landscape diversity of the lowland region, about 60–65 km wide, bounded to the South by the Tigris River, and to the North by the Zagros Mountains is due to the variability of rainfall. Based on the differences in the natural vegetation, three landscape zones, oriented from the NNW to the SSE, can be distinguished here. The steppe landscape is represented by a strip stretching along the low spurs of the Zagros Mountains, and has a width of about 10 km in Tell Wajef region. This is the strip of the so-called “Fertile Crescent”, which in this part of Mesopotamia is about 10 times narrower than in Jazira region. This is a zone of relatively stable rainfall, which is characterized by significantly greater moisture content than for the plain areas of Mesopotamia, remote from the Zagros Mountains (Fig. 3).

The settlement of Tell Wajef is located directly in the middle part of the steppe belt of the “Fertile Crescent” narrow strip. Despite the fact that this zone is currently under irrigated cultivation, outside of irrigated areas, due to natural rainfall, free growth not only of xerophytes such as camelthorn (Gen. *Alhagi*), but also cereals is noted. The semi-desert landscape frames the belt of the “Fertile Crescent” relatively stable rainfall from the SW side. This belt is characterized only by abundant xerophytic vegetation. The width of the semi-desert landscape to the south of the Tell Wajef region is approximately 35 km. A completely desert landscape borders the semi-desert one on the south and southwest sides up to the Tigris riverbed in the Amarah region, in a strip about 20 km which continues on the right bank of the Tigris. The xerophyte vegetation of this zone is minimal.

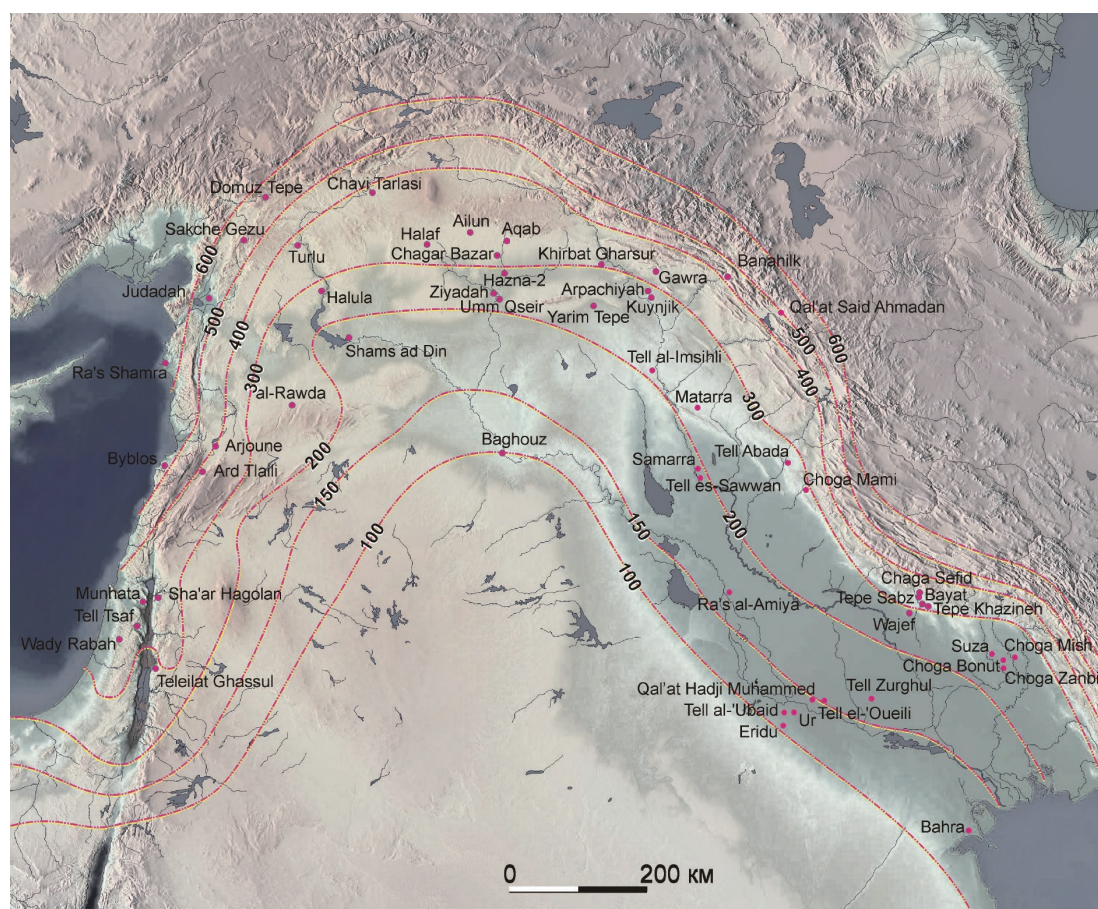


Fig. 3. Map. Distribution of some late Neolithic settlements of Mesopotamia and adjacent regions according to modern annual precipitation.

Hydrography. Surface and groundwater

As already noted, the settlement of Tell Wajef is related to the bed of the Teeb River. This river, called Meymeh in Iran, originates in the Zagros Mountains. Its total length is about 500 km. It flows through the Iraqi territory from north to south for about 55 km and ends its watercourse in the swampy area of Sennaf, 16 km south of the city of Amarah [Khmish, Sinichenko and Vetrova, 2023: 135–137]. It is highly likely that in wetter epochs the Teeb River was a left tributary of the Tigris¹⁾, but currently does not reach its bed. The current width of the relatively shallow Teeb riverbed in the Tell Wajef area is about 50 m. The water flow is rapid. The river carries a significant amount of solid particles. The flow of the river is seasonal, but currently, throughout the month of April and, accordingly, during the entire growing season of cultivated vegetation, the river retains full water, with the riverbed is placed approximately 800 m eastwards of Tell Wajef. However, between the settlement and the modern riverbed, there are traces of the former meander belt²⁾. The ancient settlement is located next to the western visible limit of the meander belt. As the field studies have shown, the site is characterized by significant alluvial deposits of Holocene time, having a thickness of more than 1.5 m, which is what one could expect of a settlement standing in the margin of the meander belt.

The groundwater of the Tell Wajef microregion is confined to Quaternary sediments, they represent the main aquifer for most of the studied area. The depth of the aquifer is 10–20 m below the modern surface [Khmish, Sinichenko and Vetrova, 2023: 136]. During the periods of maximum humidification of the Holocene optimum, the groundwater level should have been higher than in modern times. Currently, the river and the groundwater of the Quaternary aquifer is classified as moderately brackish [Al-Abadi, 2011].

Vegetation and land use

The peculiarity of the Tell Wajef settlement location is the fact that it is placed on the border of the zone of non-irrigated agriculture (“Fertile Crescent”) and the alluvium of Mesopotamia, where life is possible only with the use of irrigation. Despite the fact that nowadays the cultivation of plants in the area of Tell Wajef is carried out using irrigated water from the Teeb River, nevertheless, natural rainfall is sufficient for unstable agriculture.

The vegetation of cereals in the Tell Wajef region and in adjacent territories ends in early May, when the rainy season stops. Judging by our observations, cloud cover in the region in April 2024 persisted throughout the month. During the same time, five rains of varying intensity have passed here, with the heaviest downpour occurring at the turn of April and May. The distribution of precipitation in this part of the “Fertile Crescent” is radically different from the Jazira region, which is characterized by strong westerly winds at the same time of the year, and almost complete cessation of rainfall after the first decade of April until the last decade of September [Amirov 2010: 26–27].

Nowadays the main agricultural crops in the Tell Wajef region are cereals, mainly wheat. Ripening and harvesting take place in late April - early May. By the time of ripening the height of the grain ears of crops reaches 65–70 cm.

1) According to paleogeographic reconstructions the Teeb River in some periods of the Early and Middle Holocene (in particular, in the era of the ceramic Neolithic and early civilization), could even flow directly into the lagoon associated with marine waters [Day and Goodman *et al.* 2021: 11–17; Pittmann 2023: 32].

2) For the climatic fluctuations of the Mesopotamian plain of the Early and Middle Holocene epoch [see e.g.: Amirov 2010: 29–32; Amirov 2014: 3–17; Amirov2018a: 173–193 etc.].

The Settlement

Tell Wajef has an area of about 1 ha. Its original post-depositional height above the level of the surrounding plain cannot be accurately determined, because being in the sighting line of the Teeb River passage from Deh Luran Valley, it was used for artillery positions during the Iran-Iraq war and a lot of earth was moved across it. For this reason, the Iraqi-Russian Multidisciplinary Project has rescue tasks at Tell Wajef, contributing to the protection of the cultural heritage of Iraq.

Nevertheless, the preserved height of the tell, including the redeposited soil, is about 4.5–5 metres above the level of the modern plain (Fig. 4). Excavations carried out in 2024 showed that the cultural deposits of the settlement continued at least 1.5 metres below the surface of the modern plain. Although the virgin soil has not been reached, it is clear that the total thickness of the cultural deposits of the settlement must exceed 6.5–7 metres.

The aim of the current season was to study the stratigraphy of the settlement. For initial investigation, we choose an area on the northern slope intact from military earthworks (Fig. 5). Four adjacent 4×4 m squares were excavated in this area, which together represented a stepped stratigraphic trench along the south-north axis (Fig. 6). The squares were given a designation with a letter on the latitudinal and a number on the longitudinal axis. To allow easy naming for future extension, the letters A to C and the numbers 1 and 2 were reserved for future work. Thus, the

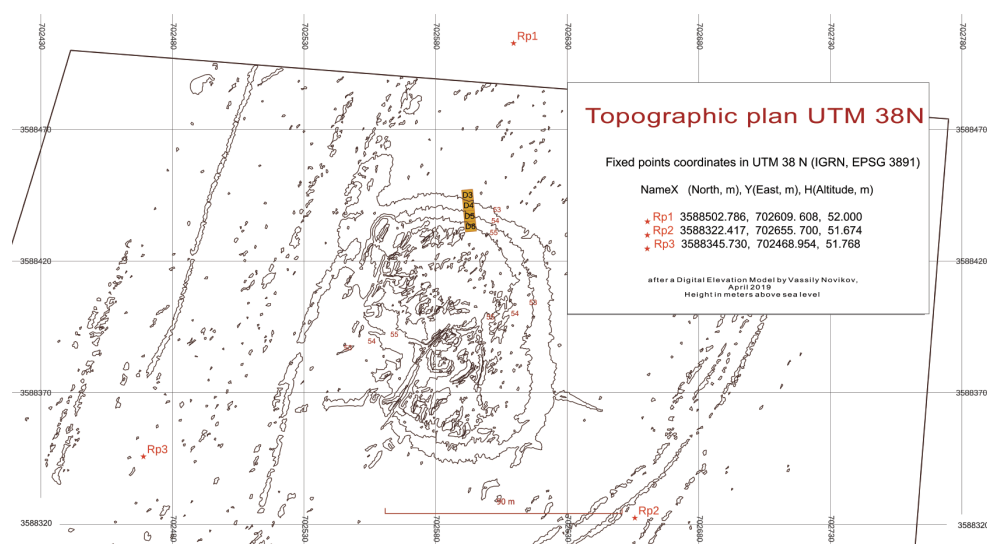


Fig. 4. Tell Wajef. Topoplan.



Fig. 5. Tell Wajef. General view from North-East.



Fig. 6. Tell Wajef. View to the D4 stratigraphic trench from the north.

squares excavated in 2024 were designated, from north to south, as D3, D4, D5 and D6.

Further deep, each of the squares was excavated on an area of 4×2 m, and the northern square D3 in the lower part of the tell was further excavated on a 2×2 m area. This helped save time and created additional stepping for better access. During the initial survey of Tell Wajef in 2019, most of the surface scatter was represented by Pottery Neolithic, with some sherds tentatively dated from late 4th to mid-second millennium BCE. This was what we expected to meet in the cultural deposits.

Stratigraphy

The depth of anthropogenic deposits in the excavated area on the northern slope is more than 5 meters thick. In the upper part of the trench (D6), two distinct layers of the Sumerian Periods took about 1 m of depth. All underlying sediments with a cumulative thickness of more than 4 m are from the Neolithic Periods. Although the virgin soil could not be reached during the first field season, nevertheless, in the stratigraphic sondage in the lower part of the tell, the cultural deposits were traced to a depth of 1.5 metres below the modern alluvial plain and may well have an additional thickness of several dozens of centimeters. It is obvious that in the central part of the settlement the cumulative thickness of the cultural deposits and of the constituent layers was greater.

In the excavated area there were 15 distinctive layers (Fig. 7), of which two of the Sumerian

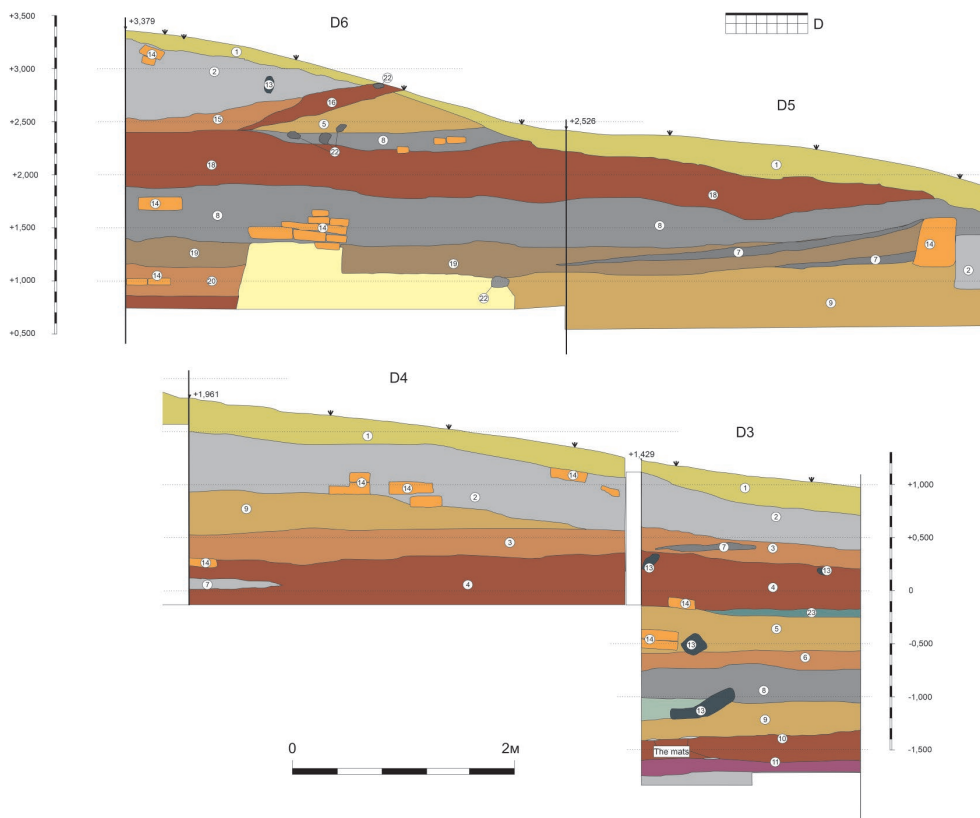


Fig. 7. Tell Wajef. Stratigraphy. Drawing of the western side of trench D4. Legend for the stratigraphic section of the D4: 1. Present-day soil 2. Dense light grey loam 3. Dense light brown loam 4. Dense deep brown loam 5. Loose lumpy brown loam 6. Dense light brown loam 7. Ash 8. Dense light grey loam 9. Loose light brown loam 10. Dense dark brown loam 11. Dark deep brown loam with ash inclusions 12. Dense light grey loam 13. Animal's burrow 14. Tauf structure.

Period, and 13 of the Neolithic one. The Neolithic cultural deposits are horizontal or close to horizontal with regular (progressive) accumulation. In their upper part, they have two building layers, below which no architectural remains have been identified so far.

Building remains per stratigraphic contexts

The most recent deposits in the square D6 are represented by an accumulation of ceramic fragments, probably a dump. This dump, in its turn, overlays a horizontal arcshaped structure (Object 3) made of two rows of river cobbles put vertically (Fig. 8) A fragment of a tall cup base WJ24-69 (D6c; +2,054 m³) (Fig. 15: 1), found below it, can be tentatively attributed to the first half of the 3rd millennium BCE.

The 3rd millennium layers directly overlap the cultural deposits of the Neolithic period. In squares D6 and D5, two layers containing the remains of mud structures were identified.

The upper, most recent structure of the Ceramic Neolithic period is the Object 1 (Fig. 9). It is represented by an adobe floor platform with dimensions of approximately 2 × 2 m, 10 cm thick in the southern part to 20 cm in its northern part. The structure was oriented in a NNW-SSW direction. Fragments of the walls of the building were preserved only in the southern part of the structure, they were about 30–35 cm thick and are built in the *pise* technique.



Fig. 8. Tell Wajef. Square.D6/c-d, object No. 3.

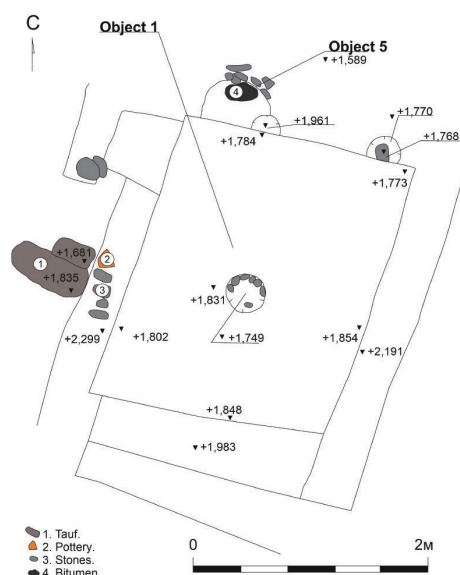


Fig. 9. Tell Wajef. Square D5. Objects Nos.1 and 5.

3) All the elevations are given from a fixed point (Rp1) with the approximate coordinates of 3588502.786 (North), 702609.608 (East), 52.000 (Altitude) in meters, UTM38N (EPSG:3891).

In the central part of the floor platform, on the mark of +1.813 m at the surface, there was a pit covered with cobblestones. Since this pit had no traces of fire, one has to assume it served to fix the pillar supporting the roof. This fact suggests that this building could have had a flat roof, which was supported by a central column and adobe walls. Ethnoarchaeological data allow us to reconstruct such a roof as follows: relatively short branches rested directly upon the post, on top of which a reed mat was placed, covered with a layer of compacted earth.

Two other pits of smaller diameter and of unclear purpose were found in the floor. There were no traces of any hearth inside the room. Another two small pits were identified on the NE side of the structure, immediately adjacent to the floor platform. A stone was found inside one of these pits. They could also be intended for posts, possibly made from reed bundles. These posts could be there to frame a doorway about 80 cm wide, probably also covered with a reed mat.

The floor platform of the Object (Construction) No. 1 partially overlapped Object No. 5 placed on its northern end, on the mark of +1,680 m. It was an accumulation of bitumen on a pavement made of river stones with a diameter of about 50 cm (Figs. 9–10). Prior to the construction of Object No. 1, this part of the settlement served for works on bitumen, a material widely used in the daily activities of the settlement inhabitants.

In the western part of square D5, an Object No. 4 was identified, as a structure made of mud walls (Fig. 11). The upper part of the wall of Object (Construction) No. 4, is located below the level of Construction No. 1 and Object No. 5. A part of the north and east walls of Construction No. 4 was uncovered. The north wall overlaps the east one. A possible explanation is that this structure was rebuilt and reused as a dwelling after the erecting of the north wall. The top surface of the north wall of Object 4 was at +1,700 m. There are accumulations of at least three ashy layers on the southern side of this wall at +1,500....+1,300 m, indicating a domestic use of this structure. Its primary functional purpose remains unclear.

In the square D6c, immediately south of Object No. 1, there was a two m-long cobblestone structure, extending NW-SE. It is recorded as Object No. 6 and is located adjacent to and predates the southern mud wall of Object No. 1 (Fig. 11). The absolute marks of Object No. 6 masonry are approximately in the range of +1,450 m. In its turn, Object 6 frames on the northern side the mud walls of the underlying Objects No. 7–8, the edge of which was found in the southern part of square D6c. Such cobblestone framing of the mud structures is typical for architecture of the similar period in Deh-Luran Valley [Hole, Flannery and Neely 1969: pl. 10a; 16b, c].

Thus, the Object 6, judging by stratigraphy and by absolute depths, is synchronous with Object No. 5, the latter covered by the floor platform of Object No. 1. Objects No. 7–8, which precede in time Object No. 6, are



Fig. 10. Tell Wajef. Square D5. Object No. 5.

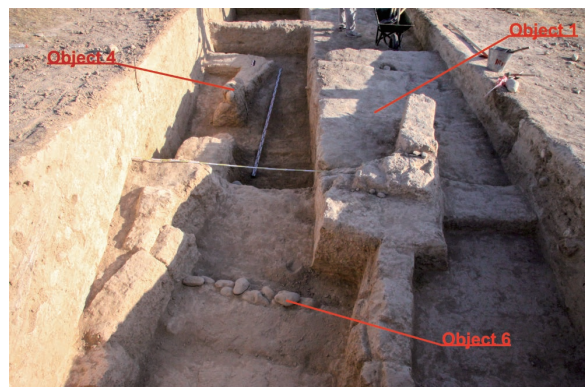


Fig. 11. Tell Wajef. Squares D6-D5. Objects Nos. 1; 4 and 6.

apparently synchronous with the time of existence of Object No. 4. The observations made in squares D5 - D6 suggest at least three periods of use of this part of the tell during the final phase of the Neolithic settlement. All the deposits further in depth, investigated mainly in square D3c, did not provide information on any mud structures of earlier periods (Fig. 12). Nevertheless, in the northern margin area, of the main settlement, lightweight reed structures were used. In square D3c there are surfaces with imprints of reed mats at $-1,350$ and $-1,500$ m (Figs. 13–14). It was not possible to measure the size of the mats, however, it is clear they were rectangular and oriented with their angles in the cardinal directions. It is likely that these were floor mats, and together with the abundant ceramic material accompanying them, they marked the presence of lightweight reed structures in this part of the settlement.

In general, it is worth noting the presence of various building techniques at Tell Wajef, such as *tauf*, *pise*, and reed. It is premature to judge the evolution of building techniques here, but some observations can be made based on the stratigraphy of different examples of them.

First of all, mud elements similar to moulded bricks were recorded in the western part of the dig on the border of D6 - D5, in the deposits above the floor of Object No. 1, possibly related to the accumulations of the time of existence of that Object, but which could be also of later periods (3rd millennium BCE). The structures made of *tauf* type blocks are directly related to constructions of the late Neolithic settlement, as it was noted in particular for Objects No. 1 and No. 4. The walls built in the *pise* technique can be dated to the same period. The question of the introduction of moulded mudbricks at the settlement remains open, it requires further investigations of the main building area.

As already mentioned, reed structures have been recorded so far only in the lower part of Tell Wajef cultural deposits, which certainly does not tell anything about the evolution of building techniques, but may rather point to differences in the settlement layout. It should also be noted that the construction technique of Tell Wajef was likely combining clay and reed to create load-bearing structures, while reed mats could be widely used for ceilings and interior. In particular, this may be evidenced by the numerous clay “nails” that may have been used to fix reed mats to the inner side of the walls.



Fig. 12. Tell Wajef. Square D3/c. stratigraphic sondage.



Fig. 13. Tell Wajef. Square D3/c. Reed mats imprints.

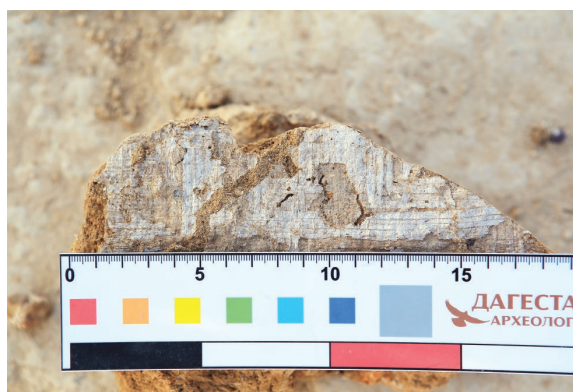


Fig. 14. Tell Wajef. Fragment of reed mat imprint.

Pottery

A total of 4,100 ceramic fragments were recovered during the 2024 season. About 990 fragments were considered diagnostic and were photographed. Those with the best preserved profile and decoration were recorded graphically (a total of 278 vessels, mostly in fragments).

Most of the diagnostic material is Neolithic pottery (about 890 fragments), a much smaller part of the collection (less than 100 fragments) is from the Sumerian times.

The latter was collected exclusively in the upper part of D6, and this is the northernmost point on the site where such pottery was found. The Sumerian settlement at Tell Wajef appears to have been smaller than the Neolithic one, and was situated more on the southern part of the site. During the survey of 2019 on the southern slope of the mound a single beveled rim bowl and probably some Early Dynastic material was found in the surface scatter. Most of the late pottery comes from a garbage heap, while a smaller proportion of ware from the same time was found in the layer under the heap.

The collected Sumerian time pottery are represented by fragments of tableware and household vessels (Fig. 15). The tableware ceramics were made on a potter's wheel. More coarse vessels were sometimes hand made. No painted vessels were found among this part of the collection, but a small part of them has incised or impressed decorations.

Among the 890 fragments of diagnostic Neolithic sherds, 70% are vessels decorated with painting (Figs. 16–19) and 30% are unpainted. The Neolithic ceramics of Tell Wajef were classified, according to the division proposed for the pottery of fairly close settlement of Tepe Sabz [Hole, Flannery and Neely 1969: 109–113]. The majority of Neolithic pottery is represented by vessels of the “*black on buff*” type (475 fragments, or 53% of the entire collection). A thin-walled (2–3 mm wall thickness) variety of the same ware was recorded separately as “*fine black on buff*”, represented by 85 fragments, or 9.5%. Unpainted “*buff pottery*” is represented by 222 fragments (25%); “*red on buff*” vessels are represented by 19 fragments (2.1%); “*red on red*” - by 43 fragments (5%); red-slip vessels of “*red pottery*” - by 45 fragments (5%).

Thus, vessels of the “*black on buff*” together with their thin-walled subtype make about 60%, and together with technologically similar coarser unpainted pottery (“*buff*”), sum up to 85% of the total amount of Neolithic sherds. At Tell Wajef, this is the leading type of pottery (Figs. 16: 4–10; 17; 18) These vessels are made of pure clay, without inclusions visible to the naked eye. Pottery was fired uniformly in prolonged firing conditions at temperatures above 850°C, which indicates the existence of pottery kiln firing in the settlement. The widespread use of a rotary mechanism has been noted for applying decoration, but at the same time there have been no obvious signs of forming these vessels on the kind of pottery wheel so far. This pottery is identical to the Deh Luran ware starting from the end of the Hazineh and extending to the following Mehmehe phase, and to the Susiana pottery of period C [Hole, Flannery and Neely 1969: 141–164]. On the other hand, a part of the ceramic collection is represented by relatively small groups of vessels, probably imports (“*red on red*”; “*red on buff*”) and other types (Fig. 16: 1–3). This pottery differs from the predominant ware, both in technology and in decoration. Such vessels make 7–8 % of all the Neolithic vessels. These vessels were made using the technology of sequential sticking of clay elements, they have mineral and organic impurities in the pottery paste. The firing regime is characterized by a short duration in the high temperature, as a result of which the core of the ceramic fragments remained dark. Iron oxides were used as a coloring agent for the decoration. The decoration was applied without any traces of a rotating mechanism. Such ceramics, which are relatively few in number, are also characteristic to the Mehmehe phase of the Deh Luran Plain [Hole, Flannery and Neely 1969: 159–164; Fig 66].

In addition to this, 5–6% of all Neolithic pottery is represented by red-slip sherds (black

slip sherds were also found but even less frequently), with a smoothed surface. According to the typology proposed for the Deh Luran settlements, this type of pottery was recorded as belonging to the “red” group. However, it should be remembered that already at Deh Luran the red-slip pottery occurs in two periods, and the corresponding pottery differs both technologically and morphologically [Hole, Flannery and Neely 1969: 110]. Red-slip pottery from Tepe Sabz is known from Hazineh period, at mid-6th millennium BCE. However, it has actually been known in this area since the 7th millennium BCE. Ceramic of this type contains an admixture of dung, is made

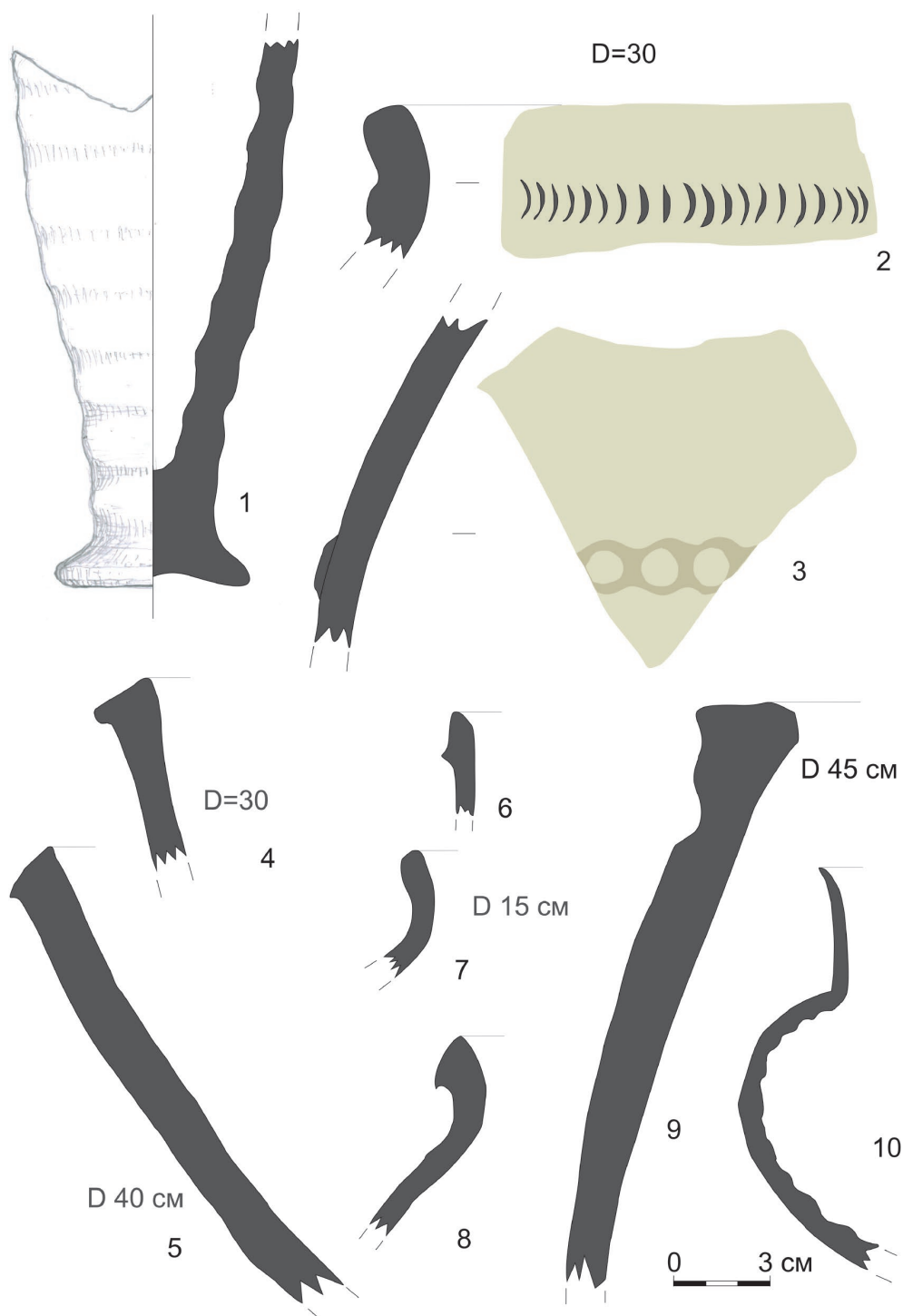


Fig. 15. Tell Wajef. The Sumerian time pottery.

using the technology of slab construction, covered with red slip and polished [Petrova and Darabi, 2022: 318–342]. Similar features are also recorded at a later time [Hole, Flannery and Neely 1969: 121]. On the other hand, at Tepe Sabz settlement, starting from the Bayat Phase, which overlies the Mehmeleh deposits [Hole, Flannery and Neely 1969: 164–167] and dates to the 5th millennium BCE, red-slip pottery identical to the Susa A period in Khuzestan and to the later pottery from the Uruk period of Mesopotamia is also known. This type of pottery is made of sandy clay without any artificial organic residues, formed on a rotary device and has a smoothed surface [Hole, Flannery and Neely 1969: 164].



Fig. 16. Tell Wajef. Neolithic pottery.

At Tell Wajef, fragments of red-slip pottery were recorded in all the exposed layers, including the earliest, lower layers at D3c. In the lower layers the red-slip vessels are represented mainly by heavily fragmented sherds, but in the top layer in D6 we found a few fragments from one typical closed vessel of an Uruk shape, with a funnel neck sharply bent away from the body, obviously made with the help of a rotating mechanism. The “red pottery” of Tell Wajef also likely belongs to two chronologically and culturally different ceramic traditions.

In most cases, the pottery of Mehme phase at Deh Luran plain, as well as the pottery of its neighbour Tell Wajef, is difficult to distinguish from the synchronous ‘Ubaid ceramics of the

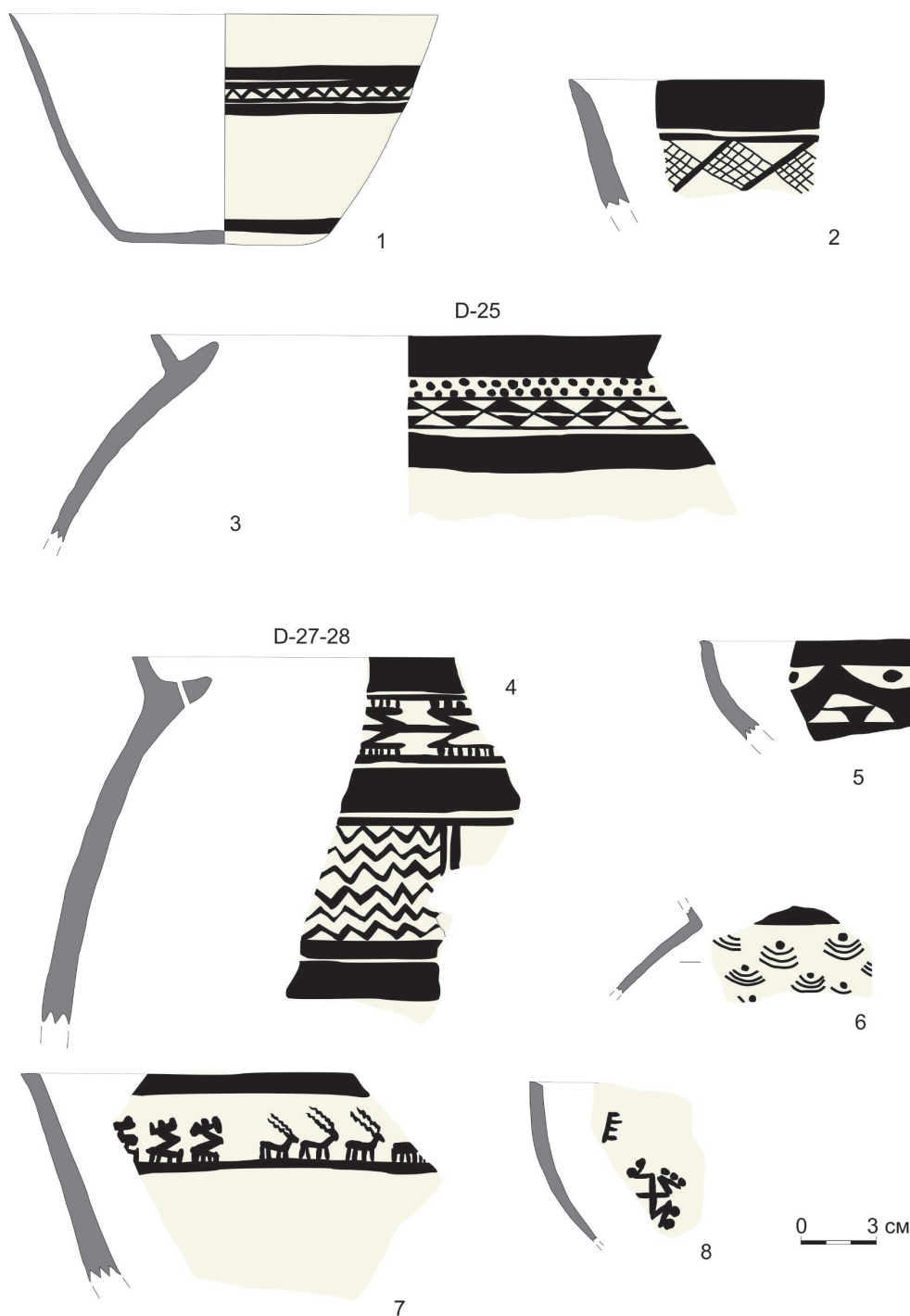


Fig. 17. Tell Wajef. Neolithic pottery.

Southern Mesopotamian alluvium of the middle and late 6th millennium BCE. This concerns the technology, the use of dyes, the technique of decoration and a significant part of motifs and compositions, which allow us to consider all this pottery as a supra-cultural “*Ubaid/black on buff pottery*” [Volpi 2023: 96–97]. Nevertheless, within this unity there are local features that are typical, in particular, exclusively for the pottery of the Transtigradian and Zagros zones and are not found on the alluvium [Volpi 2023: 109–113]. These include, in particular, such a popular motif at Tell Wajef as naturalistic depictions of horned artiodactyl animals, of the genus *Capra* most

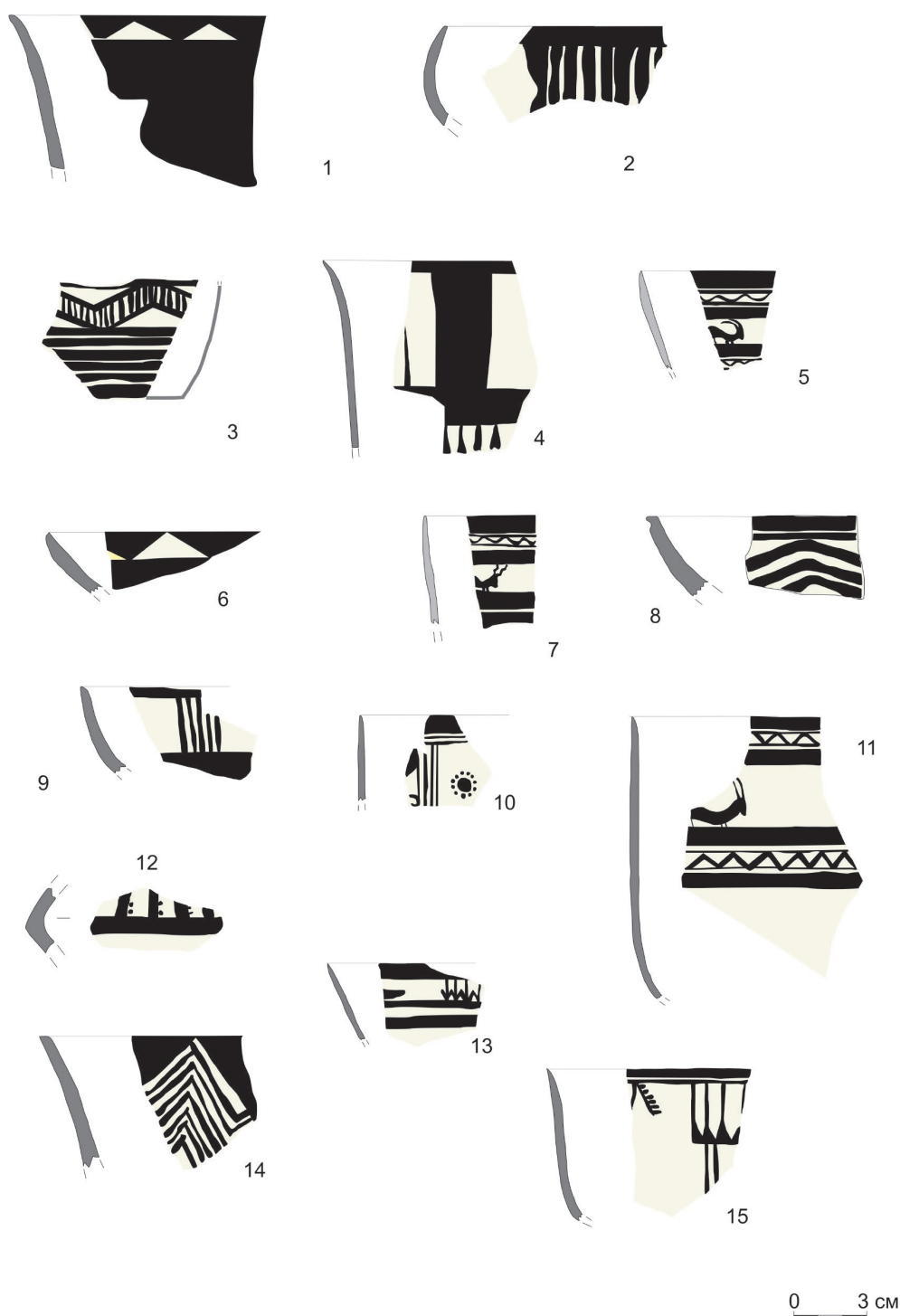


Fig. 18. Tell Wajef. Neolithic pottery.

probably variety of gazelles and goats (Figs. 16: 8; 17: 7; 18: 7, 11).

The autochthonous tableware of Tell Wajef (groups “black on buff”, “fine”, “buff”) is mostly represented by open forms (“bowls”, “plates”, “cups”). Among the open forms the most part (230 vessels, ~ 90% of the recorded Neolithic sherds) are deep vessels, i.e. bowls of different sizes and of different degrees of opening. Some of them belong to maximally open forms or “plates” of various sizes starting from small ones, 10–15 cm diameter, to large ones, 30 cm and more. The inside decoration of these vessels is usually richer than the outside ones. In total, the season 2024 yielded about 35–40 plates, that is, ~ 17 % of all discovered Neolithic forms. Among the “plates” 9 vessels (~ 4% of all open forms) have a rosette on the interior bottom as the centre of the composition. For example, a ceramic plate found in sq. D5a at +0.746 m (Fig. 19: 3–5).

Closed forms represent only about 20 vessels in the collection, which is only 8%. Some of them (6 items) are vessels without an out-curved rim (“hole-mouth jars”), the remaining 14 have an out-curved rim, and much less often an elongated neck. Vessels with an out-curved rim frequently have a typical ledge for the lid on the inner side (“ledge rim vessels”), often with through-holes (Fig. 17: 3–4). In total 8 such vessels were found. Among closed forms, there are also spouted vessels (3–4 in 2024 collection), both tubular spouts and open spouts. Among the closed vessels there are two squatted, the so-called “tortoise” vessels. One of them has its spout preserved was found in sq. D3c, at –0,230 m. The other could have a spout on the non preserved part of the vessel was found in sq. D6c, at +2,179 m (Fig. 19: 1–2).

Miniature vessels

There are 6 miniature vessels in 2024 collection (Fig. 20). One is an unpainted vial of Sumerian time was found in sq. D6a-b, at +2,73....2,63 m) (Fig. 20: 4). A miniature alabaster vessel was found in the topmost layer in D6b at +3,773 m and most likely belongs to the Sumerian time too (Fig. 20: 6). Other 4 miniature ceramic vessels are painted and belong to the Pottery Neolithic. Three of them are made in the autochthonous technique “black on buff” (Fig. 20: 1, 2, 5). Their

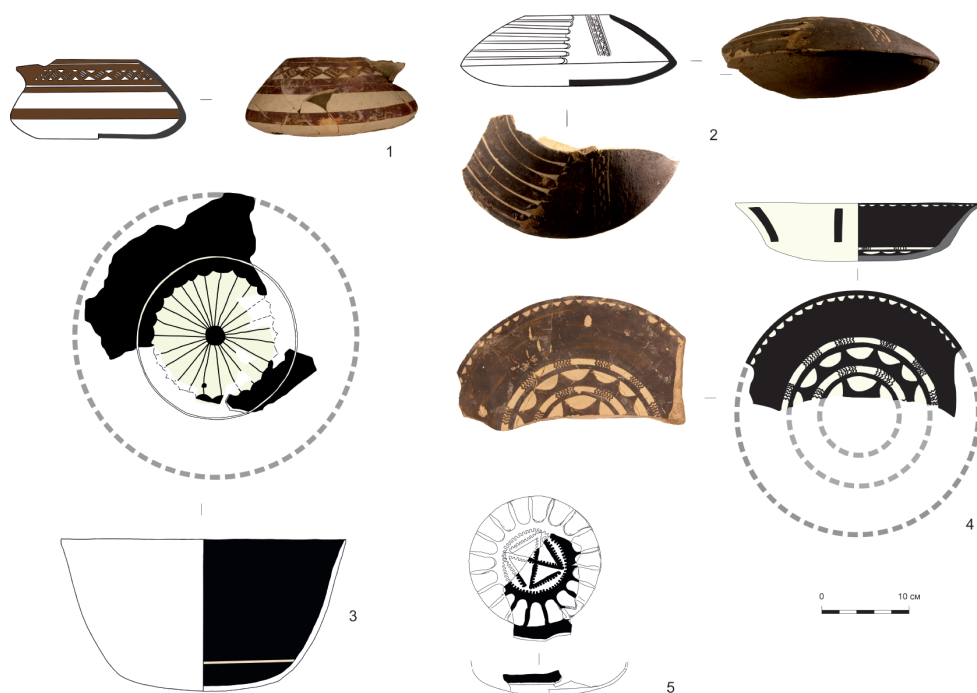


Fig. 19. Tell Wajef. Neolithic pottery.

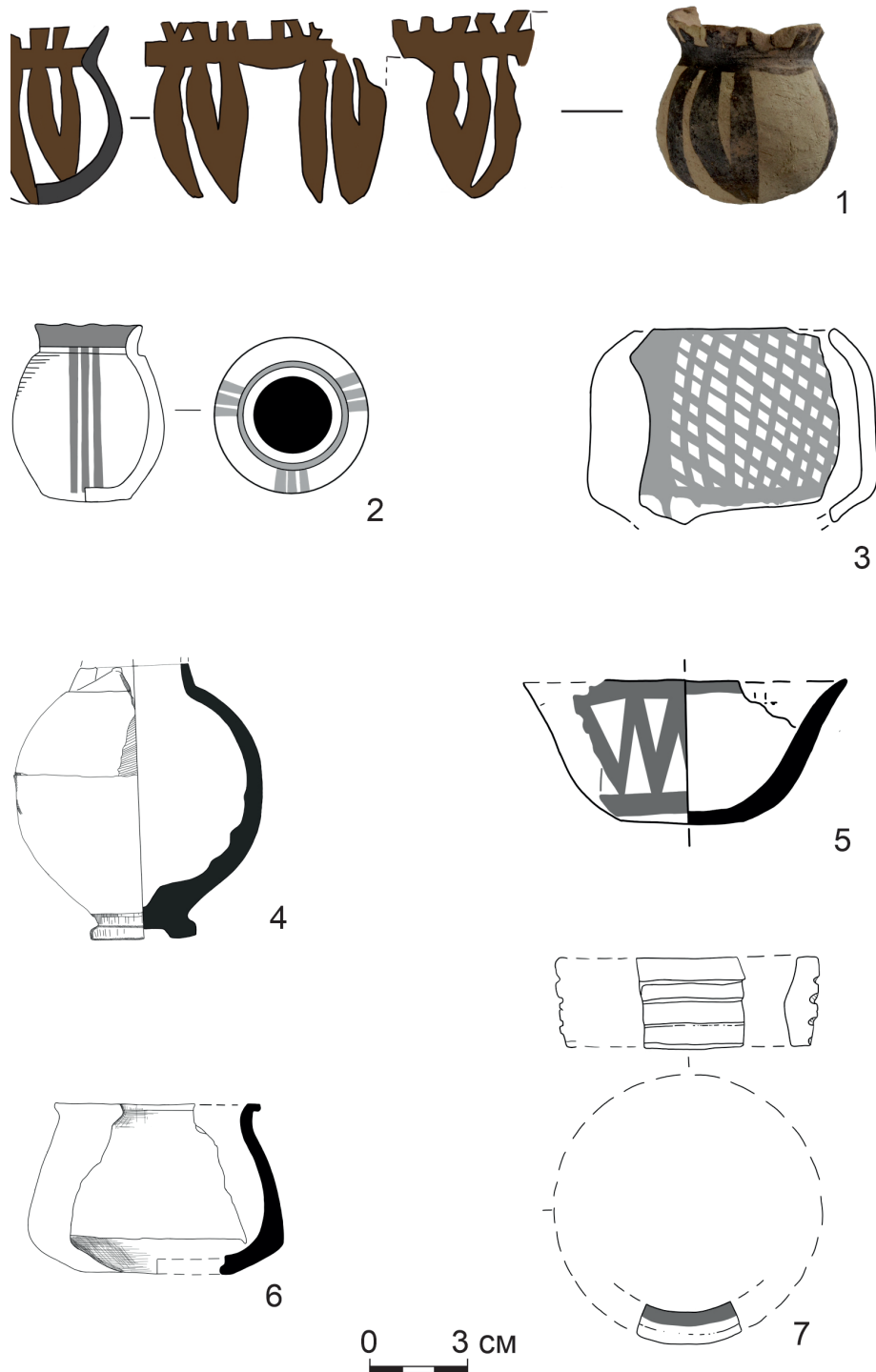


Fig. 20. Tell Wajef. Miniature vessels.

list concludes with a possibly imported miniature vessel decorated with red painting on reddish background (“*red on red*”), it was found in sq.D5c, at + 0.912 m, (Fig. 20: 3).

Painting on ceramic vessels

The majority of Neolithic vessels at Tell Wajef are painted. On the autochthonous pottery of Tell Wajef all painting is monochrome black, with mostly bitumen as dye. A rotating mechanism was

used to draw thin horizontal lines and stripes on the surface of the vessels. The painting motifs on the Tell Wajef “*black on buff*” pottery, could be classified as geometric figures and varieties of pictorial images. Most of them are represented by geometric figures.

The most popular motifs are vertical broad stripes, painted segments running down from the rim, chevrons, “*labrys*”, dot ornament, vertical painted lozenges, horizontal chains of shaded lozenges, drop-shaped motifs, repeated zigzags and wavy lines, wavy shaded stripes, sometimes with pointed tops, and chains with tops in form of dots. Another characteristic geometric element of decoration are triangles applied on flattened rims of vessels (Figs. 16–18).

One decorative technique on pottery of the “*black on buff*” type is a very dense crosshatching, in which the background of the vessel is visible as rectangular dots, a technique of decorative painting “in reserve” is typical to Tell Wajef ware. The most typical motif depicted in “*reserve*” is the central rosette on the interior of plates.

The pictorial representations on Tell Wajef ware can be divided into naturalistic and symbolic. Naturalistic depictions on the pottery are exclusively represented by images of artiodactyls. On 10 vessels there are depictions of goats, mostly on the outer surface of open deep, thin-walled vessels. In one case a procession of goats is drawn on the inner surface of a dish 30 cm in diameter (Figs. 17: 7; 18: 5, 7, 11). On the other hand, schematic anthropomorphic figures with their torsos grouped by three, known from ‘Ubaid settlements in alluvial Mesopotamia, were also noted at Tell Wajef pottery, so far only on the sherds from surface collection.

From the point of view of composition the painted pottery of Tell Wajef are mainly characterized by horizontal stripes of various widths, often filled with the pictorial motifs noted above, which are popular in the settlement. On the other hand, the autochthonous painted ceramics of Tell Wajef are also characterized by compositions organized in the form of panels. The less frequent (imported?) types (“*red on red*” etc.) are predominantly characterized by cross-hatching, which can sometimes also be organized into panels separated by broad vertical bands.

The bulk pottery of Tell Wajef settlement was dated, on the one hand, with the help of stratigraphic sequences of ‘Ubaidian sites of Southern Mesopotamia⁴⁾ and, on the other hand, of the Deh Luran plain and Suziana. These sequences, especially at Deh Luran [Hole, Flannery and Neely 1969: 110–169; figs. 64; 69], are continuous. In this regard, the dating value is not so much the fact of the presence of a particular variety of ceramics in the stratigraphical levels, as the frequency of their occurrence in cultural deposits of various settlements. Accordingly, so far, all observations made on the distribution of ceramic varieties in the Tell Wajef cultural deposits are preliminary and will become firm evidence only with an increase in the volume of the ceramic collection, and as a result its statistical value.

To give a date to the ceramic tradition of the ‘Ubaidian cultures, in addition to the frequency of motifs and compositions, one has to take into account the quantitative ratio of decorated vs undecorated vessels, the intensity of painting (up to the painting “in reserve”, the quality of painting, the frequency of thin-walled ware and the use of a rotating mechanism.

An increase in the quantity of painted pottery, the degree of intensity of painting and the quality of its execution was noted from the ‘Ubaid 0 period, to the ‘Ubaid 1-2 period, and then a gradual decline in the quality and quantity of painting towards the final period of ‘Ubaid culture existence [Huot 1983; 1987a; 1987b: 293–303; 1991; 1992: 192–193; 1996]. In particular, while the latest phase of the ‘Ubaid culture, most widely studied at Tell el-‘Oueili (‘Ubaid 4 phase) and Tell Zurghul (Area B), is characterised by a significant excess of unpainted pottery over decorated⁵⁾, the quantity of painted pottery is much higher at sites from the ‘Ubaid 2 phase. In particular, at

4) See, for example, J. Oates synthetic observations Oates 1960: 33–35; Oates, 1983: 251–281; Oates 1987; Oates 2010.

5) For the period ‘Ubaid 4 approximately 88% pottery on Tell ‘Uwaili is unpainted, while on Tell Zurghul close to 84% [Volpi 2020: 64].

Tell Qal'at Hajji Muhammad about 40% of recorded material was from painted vessels [Volpi 2021: 128]. At Tell Wajef, as already noted, painted pottery accounts for about 70%. This fact may reflect the regional identity of Tell Wajef⁶⁾, but also it can obtain some dating value. In this case it speaks in favor of the presence on the site of materials of a slightly wider chronological framework than they are represented on 'Ubaid culture eponymous settlement.

The intensity of decoration and the quality of painting also have a dating value for the Late Neolithic and Early Chalcolithic cultures in general, and the 'Ubaid culture in particular. On the pottery of this period, painting decoration can be represented by a single motif (such as a horizontal line or segments hanging from the rim), up to vessels with developed pictorial plots covering a significant surface area of the vessels. From the point of view of the intensity of painting, at Tell Wajef, is noted only about 30 (12%) vessel fragments of the collection, have a low intensity of painting, while ceramics with high intensity of painting are 154 fragments (about 62%). The most intense is the technique "*in reserve*", including a small number of vessels having images "*in reserve*", by drawing on the solid black coating. At Tell Wajef at least 10 vessels are painted "*in reserve*", which is ~ 4% of all graphically fixed painted pottery.

The quality of the painting used on the vessels of Tell Wajef is the highest of all possible diachronic varieties of the 'Ubaid ceramic tradition. This quality of painting is unknown neither on the earliest nor on the later 'Ubaid pottery.

An important dating technological feature is the presence of thin-walled "*black-on buff*" ware, including vessels of exceptional quality known as "*egg-shell pottery*". Their quantity is ~ 10% of all Neolithic pottery from Tell Wajef. The production of high quality ware is not known at the early stages of 'Ubaid culture evolution, such pottery was mass produced only at the developed stage of the 'Ubaidian ceramic tradition.

One more technological feature important for dating is the use of a rotating mechanism ("*tournette*") for painting decoration. In the Tell Wajef pottery collection, traces of a rotating mechanism usage have been repeatedly noted on vessels of the "*black on buff*" type. First signs of use of centered turning to draw thin horizontal lines on vessels are recorded during the 'Ubaid 2 period, at Tell el-'Oueili [e.g. Lebeau 1991: 241–266; pl. IV-VIII], Eridu XIV-XII [Lloyd and Safar 1948: 115–25; Safar *et al.* 1981: 148, fig. 72] and Qal'at Hajji Mohammed [Volpi 2021: 131–134].

Numerous analogies to the mass pottery of Tell Wajef, concerned morphology of vessels, production technology, as well as the set of motifs, the stylistics and technique of decoration, the compositions, the quantitative ratio of painted versus unpainted vessels, the intensity of painting, unambiguously testify in favor of dating the Neolithic deposits of Tell Wajef settlement to the period of 'Ubaid 2 (formerly "Hajji Muhammad"). Therefore, the deposits of Tell Wajef are to be synchronous with several studied 'Ubaid sites of Southern Mesopotamia: Qal'at Hajji Muhammad [Ziegler 1953], layers XIV-XII at the Temple Sounding at Eridu [Lloyd and Safar 1948: 115–25]; layers I-V at Ra's al-Amiya [Stronach 1961: 95–137]; and level 9 at the area Y27 at Tell el-'Oueili [Lebeau 1991: 241–266].

The autochthonous ceramics of Tell Wajef, in addition to the features common to the pottery of the 'Ubaid culture, which speak of a common cultural space on both sides of the Tigris River, may also show cultural influences and imitations of other synchronic cultures of Mesopotamia. In particular, on one plate (Fig. 19: 5), made in the "*black on buff*" technique, found in the lower part of the cultural deposits in D3c sondage, at –1.206 m, there is a swastika in the interior as a central rosette. This is typical for Samarran culture. A considerably greater number of motifs in Wajef pottery highlight influences given by Halaf culture. For example, it is concerned such motifs as "*labrys*", ornamentation in the form of large dots, chains of hatched lozenges. The same could be

6) In particular, it should be remembered that among the total number of painted ceramics of Tell Wajef, about 8-10% are represented by vessels of foreign cultural traditions.

said about panel compositions typical to the pottery of early Halaf period. These Halafian features were observed on about 6% of all Neolithic pottery of the settlement. It should be noted, that they are more characteristic for early and middle Halaf, and are not known during its late stage. In contrast, the central negative rosettes found on several Tell Wajef plates were common only on late Halafian pottery, which may indicate a reverse vector of cultural influences coming from Southern Mesopotamia northward at the second half of the 'Ubaid 2 period.

Similar to the correlation with the 'Ubaid culture of the alluvial plain of Mesopotamia, in addition to comparing the motifs and compositions of the painting, for synchronizing Tell Wajef deposits with the settlements of the Northern Mesopotamia, a number of other features are also of dating importance. In particular, they include such a technological feature as the time of the spread in the Jazira region the skills of using a rotary mechanism for ceramic decoration. The time of the first appearance in the north of Mesopotamia pottery with a decor applied using a rotary mechanism belongs to the late period of the Hassuna culture (standard Hassuna) existence and it is connected with import vessels of the Samarra culture, found, in particular, at the settlement of Yarim Tepe 1 [Petrova 2022: 29–38]. On the Halaf pottery from the settlement of Yarim Tepe 2, during the early period of life, traces of a rotary mechanism usage for applying the decoration of vessels, on the contrary, were not noted. Here, the regular appearance of vessels decorated with help of centered rotation is recorded after layer VI, that is, mainly during the late period of the Halaf culture, which is now happening under the direct influence of the 'Ubaid culture carriers [Amirov 2018b: 18–22; Amirov 2021: 100].

Synthesizing all of the above, we can conclude, that Tell Wajef Neolithic deposits, with numerous examples of the rotary mechanism usage for applying decoration, should be dated at least from the late stage of the Hassuna and Samarra cultures to the end of the middle stage of the Halaf culture.

On the other hand, another feature which has some dating significance, at least for the cultures of the ceramic Neolithic of Mesopotamia is of big interest. This feature is the ratio of the number of open and closed forms. In particular, for the Halaf culture, it was noted that the ratio of the number of open vs closed forms was not static, but diachronously varying, cyclically repeating value. At least two, but possibly three cycles of approximate equality and maximum opposition of the number of open and closed forms of table ceramics have been traced at the settlement of Yarim Tepe 2 [Amirov 1994: 19–20]. Statistically traced cycles of maximum dominance of the number of open forms over closed ones in the Yarim Tepe 2 deposits occur at the end of the early and at the late stages of the Halaf culture evolution. Similar fluctuations may well be found not only for the Halaf but also for other cultures of the ceramic Neolithic of Mesopotamia. The dynamics of these fluctuations is not yet logically understandable, but may reflect some adaptive reflections of the economic patterns of synchronously existing populations of the ceramic Neolithic era of the Great Mesopotamian Plain. As it was already noted, a disproportion was revealed for the Neolithic pottery of Tell Wajef, in which the main number of painted vessels found in the settlement belonged to open forms, and the number of closed vessels in the collection barely approached 10%. Even taking into account the possibility of sampling error, this ratio should reflect the general ratio of the number of open and closed forms in the settlement. Since the whole set of signs suggests that the Wajef deposits precedes the most recent period of the Halaf culture, this exceptional polarization of the number of painted ceramics forms may be close in time to the first cycle of opposition of open (85%) vs closed (15%) forms fixed for Yarim Tepe 2 cultural deposits, which falls on the boundary of the early and the middle stages of the Halaf culture [Amirov and Deopeak 1997: 73].

Thus, the correlation of the above noted features preliminarily allows us to date the settlement of Tell Wajef at an early stage of its existence as synchronous with the very end of Samarran culture, and during most of its life, synchronous with the early-middle Halaf. In absolute dates, basing on

the data currently available to us, it would be in the interval of the second and third quarters of the 6th millennium BCE, with the possibility of an extension towards the 5th millennium BCE. The latter is suggested by the presence of a limited number of sherds similar to the vessels of the Bayat phase of Deh Luran plain.

Figurines

Four zoomorphic statuettes, were found during the excavation, all of them in square D5. The figurines are made of well-fired clay and decorated with painting. Three of them are depicted quadrupeds, and the last one highly likely - a bird.

Ornitomorphed figurine (Fig. 21: 1) was found in D5b, at + 1.488 m mark. It has the dimensions

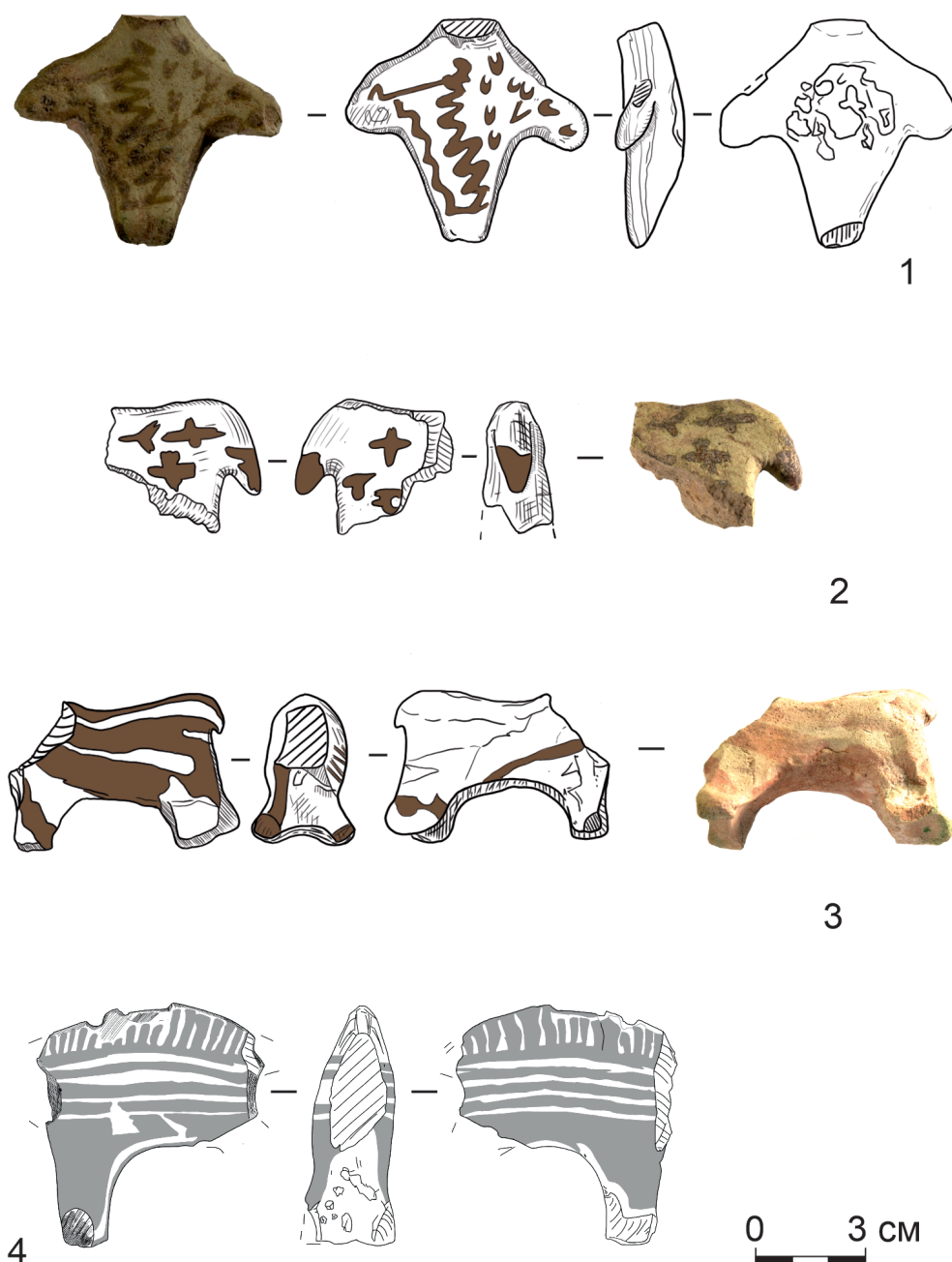


Fig. 21. Tell Wajef. Zoomorphic figurines.

of the preserved part 6.2×6.5 cm and reproduces the body of a bird. The head of the figurine has been broken off. Widely spaced from the body, short and flattened upper limbs could imitate wings. The chevrons and zigzag images covering the statuette from the front side, are likely to imitate feathers. The figurine has traces of bitumen on its back, which suggests that it was originally attached to some upper vertical or horizontal surface.

Typologically, this figurine is close to the bird imitations known on other settlements of the Late Neolithic and Chalcolithic periods placed on the wide territory of western part of Eurasia. In particular, typologically identical image of complete ornithomorphic figurine have been found in 'Ubaid cultural deposits in Ur [Woolley 1955: 255, Pl. 21]. Also, similar figurines are known in the western Anatolia and the Balkans regions. For example, numerous broken figurines of this type were found at the settlement of Yunatsite, in the layers of the Kodjadermen-Karanovo VI culture, dated to the second half of the 5th millennium BC. [Terziyska-Ignatova 2004: 379–390. fig. 1–3].

Quadruped figurines reproduce animals of at least two species. One of the figurines found in square D5c at +0.616 m, represents a piglet of the wild boar (*Sus scrofa*). It is represented by a fragment of the back part of the animal's torso. The dimensions of the preserved part of the figurine are 5.5×6 cm. The figurine is painted, including horizontal stripes running along the body and vertical stripes in the upper part, reproducing the bristles of the animal (Fig. 21: 4). Another figurine reproduces a hoofed, probably an artiodactyl animal (genus *Capra*). The figurine was discovered in sq. D5/b, at the mark around +1,600 m. The head of the statuette is broken off, so it is not possible to determine the species of the reproduced animal. The figurine has a painting in the form of sloping stripes running along the body, as well as a stripe running along the back of the animal. The preserved part of the figurine has dimensions of 6×4.5 cm (Fig. 21: 3). Another fragment of a zoomorphic figurine was discovered in sq. D5/a, at +1,434 m. The fragment reproduces the back part of the animal's torso, that has dimensions of 4×3.5 cm, and is painted with crossshaped images. Presumably, the figurine could also reproduce an artiodactyl animal (genus *Capra*) (Fig. 21: 2).

Thus, all the discovered statuettes are represented by fragments, which indicates their deliberate damage, an argument in favour of their use in some kind of ritual magical actions. Three statuettes were found in the immediate vicinity of Construction No 1 in the sediments of the same level, but slightly below the surface of its floor, and only statuette of the piglet was found in a preceding layer. The discovery of three statuettes near object No1 may indicate their connection with this construction and also testify in favor of some ritual-magical actions connected with this building or this part of the settlement's as a whole.

Ceramic 'nails'

Six so-called ceramic 'nails' were discovered, of which three in the surface scatter and another three in the cultural deposits of the settlement (Fig. 22: 1–2). Two items were found in square D4d at +1, 318 m, and at +1, 243 m). Another clay 'nail' was found in square D5c at +1, 150 m.

The 'nails' are quite sturdy and made of well-fired clay. They usually have a cap with a diameter of 6–7 cm and a pointed stem about 10–12 cm long. They are often broken, but in case they are fully intact, their stem is usually purposely bent during manufacture.

All of these items were found close together, in proximity to the area where the architectural constructions were uncovered, and have a stratigraphic position indicating the final period of the Prehistoric settlement existence.

'Clay nails' have been repeatedly found mainly in Southern Mesopotamia and Susiana, usually in the chronological interval of the middle to late period of the 'Ubaid circle cultures. In the Deh Luran Valley, of 35 such items, 33 were recorded within the Mehmeh phase deposits [Hole,

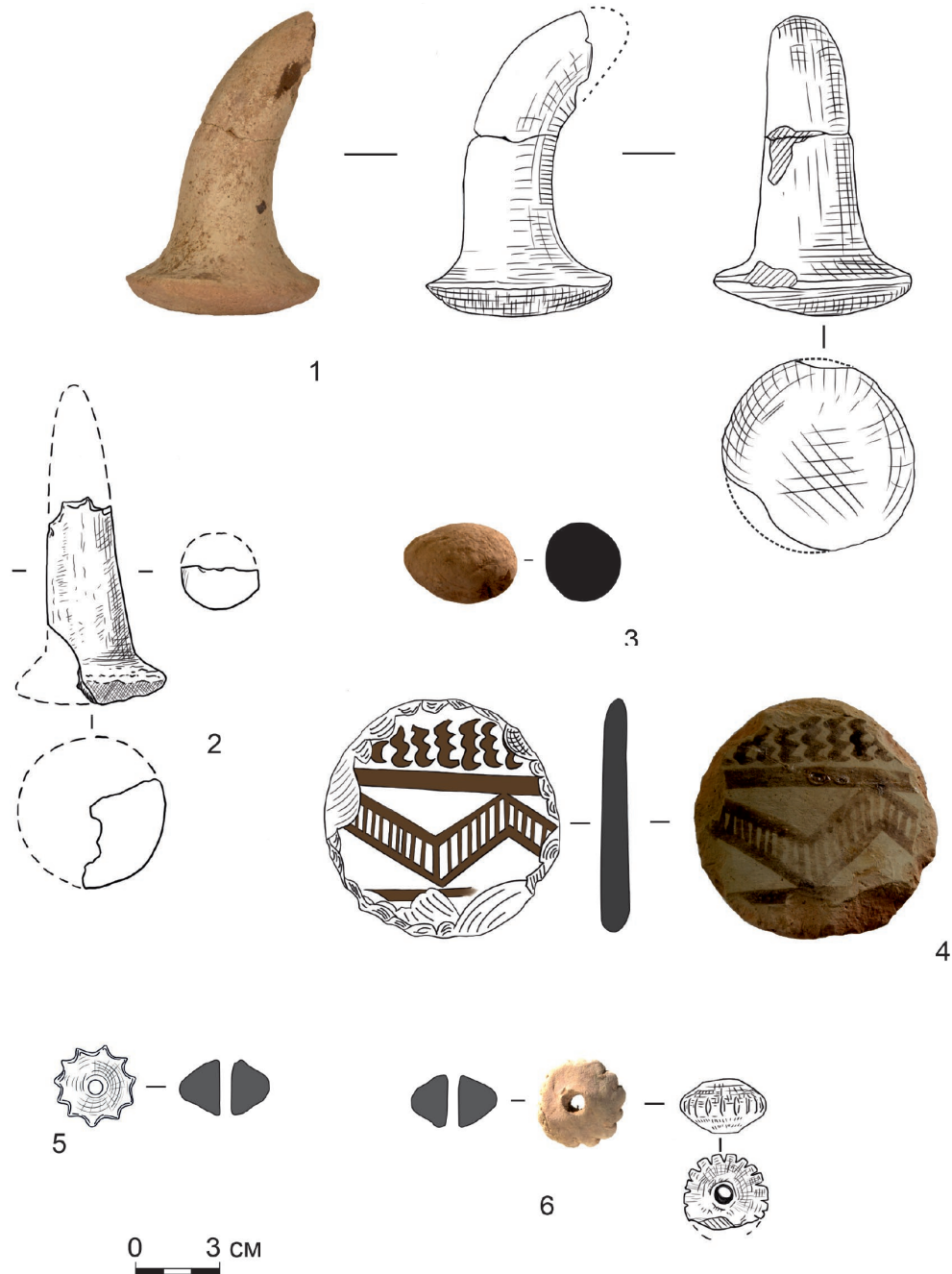


Fig. 22. Tell Wajef. Miscellaneous finds.

Flannery and Neely 1969: 210–211, fig. 91]. At Eridu, the ceramic nails appear from layer XII on, that is to say, starting from ‘Ubaid 3 [Oates 1960].

These items have never been discovered in situ, which makes their attribution hypothetical. However, it has long been noted that in those places where they were identified as relatively mass finds, for example at Tepe Gawra, they were usually associated with residential, but not temple architecture [Tobler 1950: 169].

“Clay nails” are found mainly in areas where reeds are widely used as a building material, and woven mats, in particular, as a decorative element of architecture. In this case it is plausible to assume that the clay ‘nails’ were used to fix reed mats to the walls of residential domestic structures, while more expensive decorative techniques, such as multi-coloured mosaics, were used in public

or religious buildings. This can also explain why clay nails are never found in situ: the mats were fixed to the unpreserved upper part of the walls.

Items of chipped stone

A total of 268 items made of knapped stone were found. The material is predominantly flint; only one obsidian object was found. The flint implements found are represented in most cases by flakes. The discovered flint tools are represented by blades. On the most tools (but not always), the presence of retouching, including bilateral one, is noted. Only one flint arrowhead (Fig. 23: 1) of the type known as transversal point was found in square D6c in the surface layer of the settlement. Such kind of arrowheads were widespread in Western Eurasia during the Neolithic period and later [see for example: Yaroshevich *et al.* 2010: 368–388; Schechter *et al.* 2016: 37; Ostashinsky 2008: 69, fig. 5]. They were used for hunting birds and small ungulates. In the same square, and also in the surface layer, a bitumen framed flint insert was found, which most likely represents a part of a reaping knife. The cultural attribution of these finds is difficult, as the layer in this part of the monument is mixed, but is represented mainly by deposits of the Sumerian period. Two more flint tools were found in the same square. A pencil-shaped flint nucleus (Fig. 23: 2) was found in the square D6c at the level of +2, 251 m, and a flint blade in D6d at +2,054 m. Another one pencil-shaped flint core was found in D3c at the mark of –1.00–1.13 m in the deposits of a relatively early period of the settlement existence.

A single obsidian⁷⁾ bladelette was found in square D4c at +0, 926 m. This mark corresponds with the final period of the Prehistoric settlement, but unfortunately in this square there were no remains of architectural constructions to which this find could be connected. Another one flint blade was found in the same square D4c at +0.7...0.8 m.

Thus, the chipped stone industry is equally represented as in the Pottery Neolithic as in the history period cultural deposits of the settlement. Further finds will allow to trace some diachronic dynamics, including the functioning of interregional trade relations.

Ground stone items

A common category of finds at Telle Wajef are ground tools made from river pebbles. As a rule, they are well sanded and have a carefully shaped working edge, bilaterally sharpened on the wide end. On the narrow end of such implements there sometimes are traces of bitumen. Apparently, these implements were used as chopping or digging tools (Fig. 23: 8). A total of 8 such items were found in the season of 2024. Among them 3 in stratified position, and 5 at the surface of the tell. One implement was interpreted as a blank for making an adze. It was found in the D6b at the mark of +3,770 m in the topmost level, among mixed deposits of the Sumerian time. A stone adze was found in D5a at +1.772 m in the final Prehistoric settlement deposits. Another, similar object, was found in D3 at +1,10...0,80 close to the surface layer. Taking into account that in this part of the site there were no deposits of the Sumerian time, this artifact, as well as the previous one, can be dated to the Neolithic period.

Similar chopping implements have been found in large numbers at the sites of ‘Ubaidian “black-on-buff” pottery in the Mesopotamia alluvium, in Khuzestan and in Deh Luran Plain. Similar to Tell Wajef, a number of artifacts found in the Mehme phase deposits also have traces of bitumen on the side opposite to the working edge [Hole, Flannery, and Neely 1969: 189–192, fig. 82].

7) Obsidian items at Wajef are evidently imported. The nearest natural deposits of obsidian are placed in Eastern Anatolia and Transcaucasia.

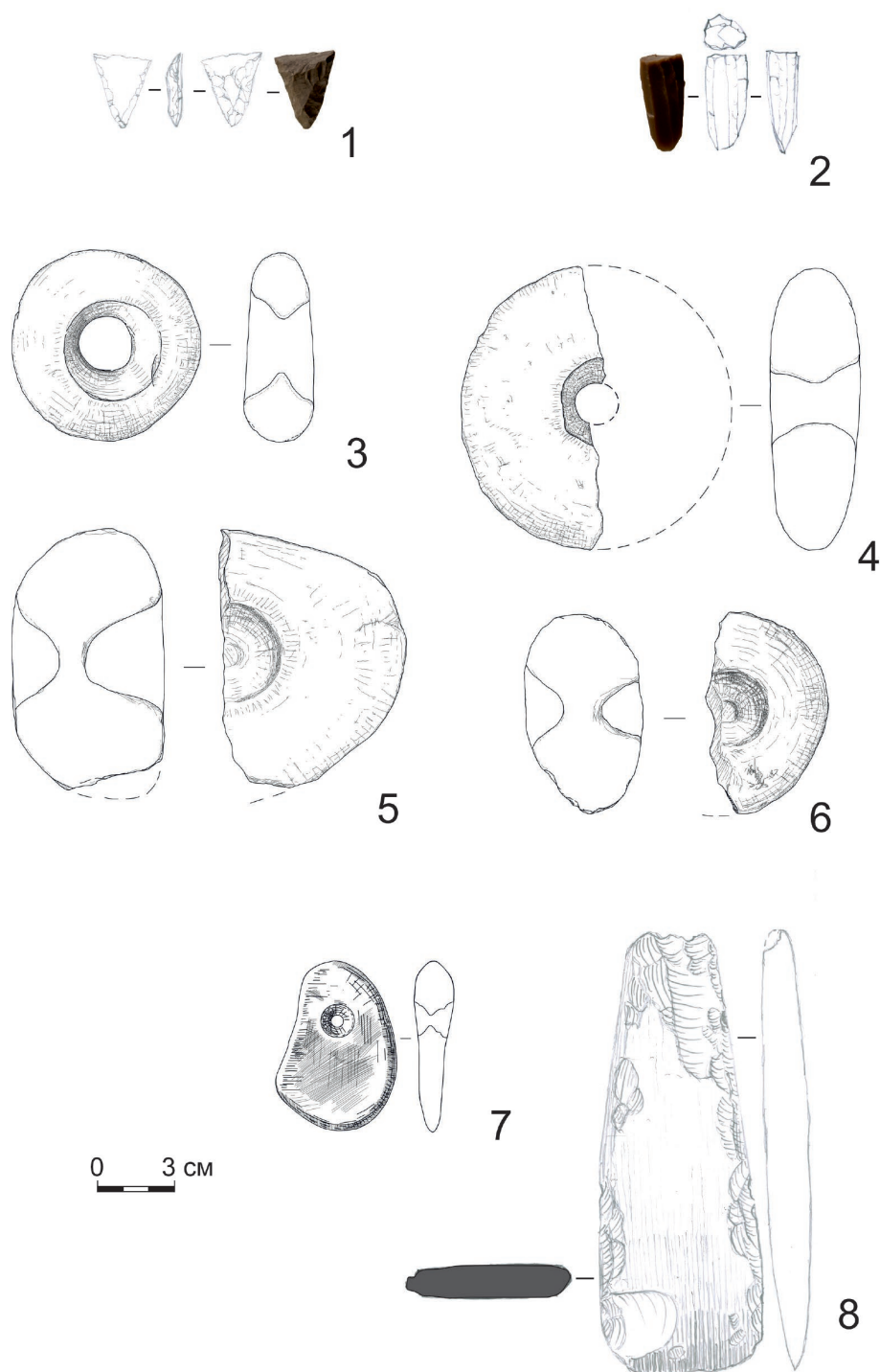


Fig. 23. Tell Wajef. Chipped and ground stone items.

Pebble stones with traces of bitumen on one edge

In a number of cases, bitumen marks have been found on unworked pebble stones, narrow, elongated in shape. Bitumen traces are always found only on one of the edges of such stones. Apparently, they served for stirring bitumen, which was widely used, in particular, to prepare the dye used for paint on ceramic vessels. Two such stones with traces of bitumen were found at Tell Wajef. One of them, was found in square D5c on the surface. Another one, was found in D6c in the upper part

of the deposits, at the mark of +2.848 m, in the mixed context, inside a dump accumulations of the Sumerian time together with objects from this and earlier periods.

Ring-shaped stone objects

A fragment of a ring-shaped object with an elongated, flat-convex shape in the vertical cross-section was found in the sq.D3c at the mark of -1,206....1,453). The outer, flat surface of the object is decorated with three horizontal lines (Fig. 20: 7). It has an outer diameter of 7 cm and a minimum inner diameter of about 5.5 cm. This artifact was found in the level, close to the earliest cultural deposits reached in 2024.

Fragments of seven similar objects decorated with horizontal engraved lines were recorded in the deposits of Tepe Sabz in Deh Luran (within Sabz phase, preceding to the Mehmehe one). They also have an outer diameter of about 7 cm and have been interpreted as stone bracelets [Hole, Flannery and Neely 1969: 239–240, fig. 104]. Judging from the inner diameters of about 5 cm, these objects cannot be bracelets designed for the hand of an adult, but may be adequate only for the hand of a child. It is more possible that these objects served as circular stone supports for small sized table round-bottom vessels.

Scrapers made on ceramic fragments

Scrapers made from the walls of discarded vessels are quite typical to the cultures of Late Neolithic Mesopotamia. As a rule, they have a rounded shape and retouched edges. One such an object was found at Tell Wajef (Fig. 22: 4) in sq. D5a at +1.10 m mark in accumulations immediately preceding to the latest period of the Prehistoric settlement existence. The scraper is made from a sherd of a typical '*black-on-buff*' ware.

Such a ceramic scrapers were very common, both in the 'Ubaid settlements of the Southern Mesopotamia as in the synchronous Halaf settlements of the Northern Mesopotamia.

Metal

The only metal object is a fragment of a bronze (copper ?), tetrahedral awl (Fig. 24: 1). It was found in square D6c, at +2.651 m, in the deposits of the Bronze Age, interpreted as a garbage dump.

Projectiles

Among the rather common finds at Tell Wajef settlement are stone balls of regular shape (Fig. 25). Their dimensions are usually in the range from 3 to 5 cm. It is logical to assume their use as projectiles for a slingshot. A total of nine such objects were found during the excavations. Four of them were found in the surface level. The rest of the balls have a reliable stratigraphic reference. All of them were found in squares of D5-D6 between the marks +1.045 m..... +3.775 m. From the distribution of these items is clear that although all the objects of this variety were found in the upper part of the cultural deposits, they are characteristic to the both Prehistoric and Sumerian times.

In addition to stone balls, egg-shaped objects made of weakly burnt clay were found. These objects have dimensions close to 3 × 4 cm. Such objects are found in abundance in cultural deposits of various Mesopotamian sites of VI-III mill. BCE and although their attribution is not absolutely clear, they are also usually interpreted as slingshot bullets. Three such objects were discovered at Tell Wajef: in the sq.D6 at marks of +2.100.....+2.551 m (see for example Fig. 22: 3). All of them

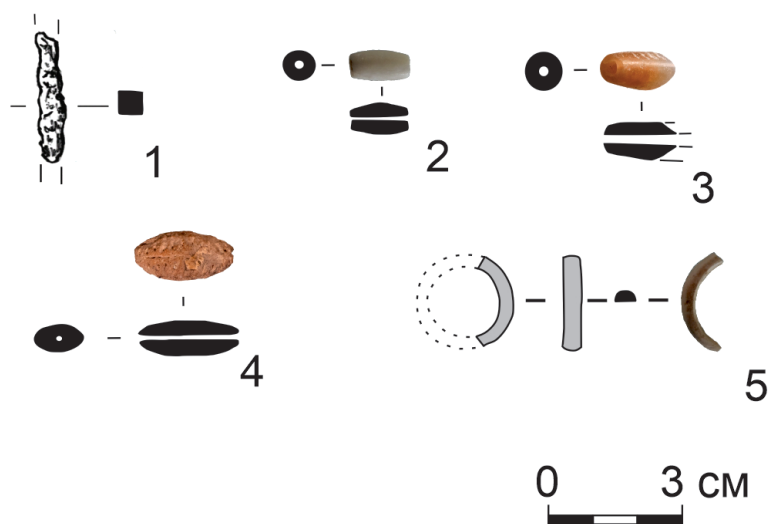


Fig. 24. Tell Wajef. Personal adornments and metallic item.

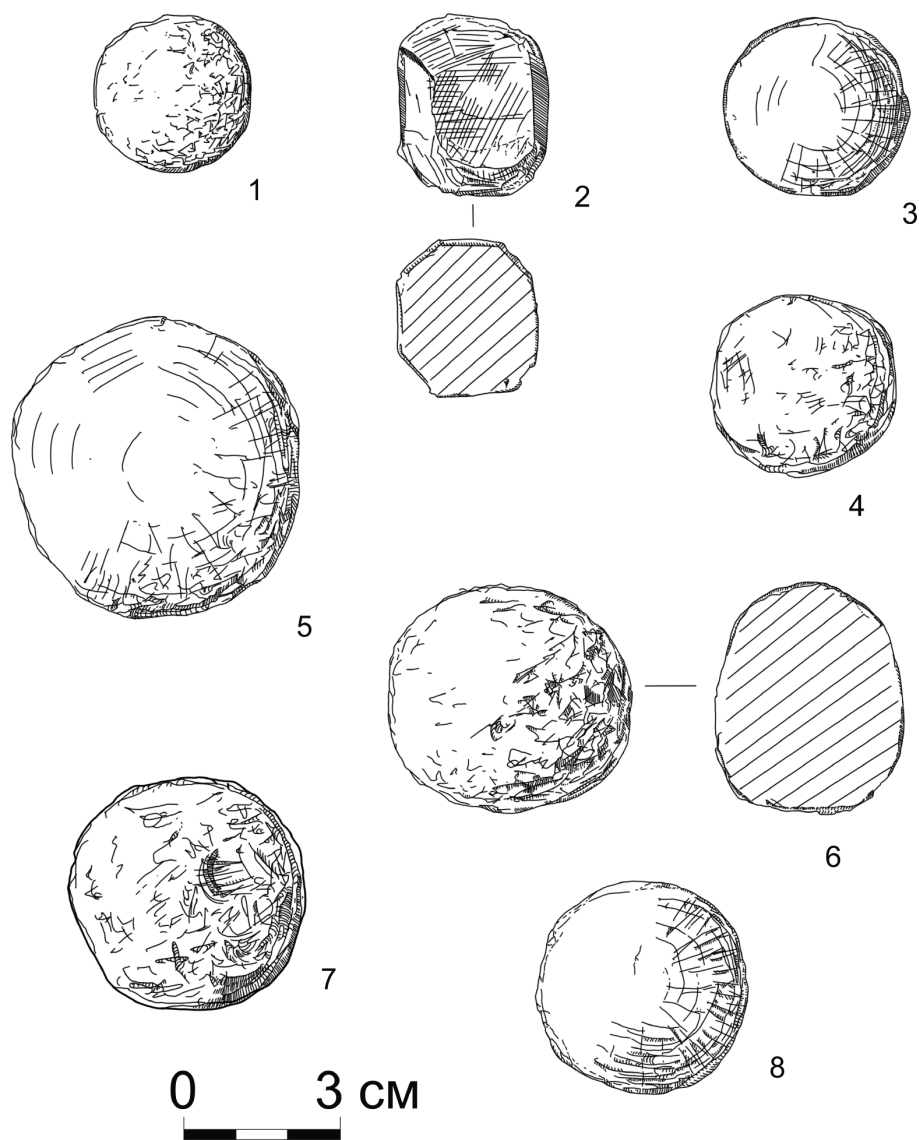


Fig. 25. Tell Wajef. Stone projectiles.

were found at one place, in the cultural level of normal accumulation dated to the Sumerian period, preceding the most recent deposits of this site, interpreted as a dump. It is premature to construct any stratigraphic patterns, as such items may also be found in earlier strata of the site.

Personal adornments

Only few of the objects interpreted as personal adornments were found, and most of them were fixed in the square D6. A fragment of an alabaster ring (Fig. 24: 5), was found at the surface level of sq. D6b. The other items of this category were found in securely stratified deposits. A clay bead (Fig. 24: 4) of biconical shape, with engraved decoration, was found in sq. D6d at +2.493 m. A chalcedony (?) bead (Fig. 24: 3) with engraved decoration was found in sq. D6a at +2,000 m. And only one alabaster bead of biconical shape was found outside D6, in the square D3c, at +0,396 m (Fig. 24: 2).

Spinning whorls

During the excavations, two objects interpreted as a spinning whorls, were discovered, (Fig. 22: 5–6). Both of them are toothed, convex discs with a diameter of 3 cm. Both objects were found in a close planographic and stratigraphic context. One of the spinning whorls was fixed in sq. D5/b., at +1.62 m., and the other one in the same square at +1.040m. The level of their discovery dates back to the period preceding the time of existence of the Structure No. 1.

Spinning whorls of various shapes and decorations are a fairly common category of finds on all sites of the Deh Luran plain, where 96 pieces were found [Hole, Flannery, Neely 1969: 205–210]. The toothed spindle whorls found on the Tell Wajef have the greatest morphological similarity with finds made in deposits dated to the Mehmeh and Bayat phases [Hole, Flannery, Neely, 1969: fig. 90].

Stone implements with opposing drilling on both sides

Flattened pebble stones of rounded, irregular shape, with untreated outer edge are quite common on Tell Wajef settlement (see for example Fig. 23: 5–6). These items are usually broken and have opposing recesses on both side without a through hole. These recesses are formed by bilateral purposeful rotation. Outer diameter of this kind of implements is usually between 7 and 10 cm. The diameter of the recesses made by centered rotation is usually 3–4 cm.

Most of them were collected as a surface finds, and only one was found in square D6b inside the upper level. Their purpose is unclear yet, but they may have acted as a bearing for horizontal rotation of a rotary mechanism of unclear purpose. The fact that they are usually broken may indicate high wear caused by long use. It has been noted that similar products have been found on a number of sites since at least the time of the Pre-Pottery Neolithic (Hole, Flannery, Neely 1969: 199; fig. 84d).

Another variety are discs drilled through (Fig. 23: 3–4). Unlike the previous category, they have a regular shape, of 5–10 cm in diameter. In total, three such objects were found. All of them are from the surface collection. They probably could served as sinkers for fishing nets.

There are also two more objects made from river pebbles, of a drop-shaped form, measuring about 5 × 7 cm, with a double sided drill on the narrow end (Fig. 23: 7). These objects found in sq. D6a, at +1.393 m; and sq. D4d, at +1.245 m. were interpreted as weights. It is unlikely that such a small objects were used as sinkers for fish nets, perhaps they could serve as sinkers for nets used in bird hunting, or something else, like weaving process.

Carbonised remains of woven mats

Dozens of fragmented prints of woven mats on clay were found during the 2024 field works. Their size is usually on an average 10×20 cm (Fig. 14). They were found in all uncovered layers both in the context of architectural structures and in layers without any architectural remains. The most expressive fragments were taken for collection storage.

In general, carbonized mats prints of various weaves are a common category of finds for the sites of the studied region [Hole, Flannery and Neely 1969: 220–223, fig. 95; 96].

Archaeozoology

A total of 380 specimens were collected during the field season. Preliminary assessment, and in particular the repeated finds of ungulate horns, suggests that the osteological materials of the settlement include quite a lot of Capricorn bones. However, a specialist's research is needed to analyze the collection.

Some short results

The settlement of Tell Wajef functioned for a long time during the Ceramic Neolithic period, and for a much shorter time during the Sumerian Age. Obviously, a significant time interval separates these two settlements. The Bronze Age settlement was considerably smaller than the settlement of the Prehistoric period. The Prehistoric deposits of Tell Wajef are shown to be synchronous with the Mehme culture of the Deh Luran plain, as well as the 'Ubaid 2 period of the Mesopotamian alluvium, and the early-middle period of Halaf culture in the Jazira region.

In general, the results of the excavations at Tell Wajef are extremely promising for defining the system of various contacts during the second half of the 6th millennium BCE between the foothills of the Zagros Mountains and the Great Mesopotamian Plain.

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The Iraqi-Russian Multidisciplinary Project and its Russian participants express their sincere thanks for the confidence and constant support from the State Board of Antiquities and Heritage of the Ministry of Culture, Tourism and Antiquities of the Republic of Iraq, which allowed us to start the first foreign archaeological investigation in Maysan Governorate. We extend our cordial thanks to the Chairmen of the State Board of Antiquities and Heritage Mr Ali Obeid Shalgham and previously, Dr Laith Majeed Hussein, to the Director General of the Investigations and Excavations Department Mr Ahmad Jabbar, and to the Inspector of the SBAH for Maysan Mr Murtadha Hashem, who first brought us to Tell Wajef in 2019.

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KARIMA SWR AND THE BABAN HIGHWAY ARCHAEOLOGICAL SURVEY

Saber Ahmed SABER*

1. Introduction

Archaeological research and excavation projects in Iraqi Kurdistan's Sulaimaniyah area began almost a century ago, with Mrs. Dorothy Garrod leading the way by excavating the caves of Hazar Merd and Zarzi in 1928 [Garrod 1930]. Even before her, European researchers and travelers had been discussing archaeological sites in Kurdistan [e.g., Porter 1822; Rich 1836; Fraser 1840; Speiser 1926–1927]. Hazar Merd is situated south of the city of Sulaimaniyah in the Baranan mountain range, while Zarzi is located in Chamirezan near the Qizqapan relief cave. In 1948, Robert Braidwood initiated the Charmo (Jarmo) project, which involved excavating the sites of Charmo and Karim Shair in the Chamchamal area [Braidwood and Howe 1960].

From 1960 onwards, archaeological work in Iraqi Kurdistan became increasingly difficult due to war and civil unrest. Iraqi regimes viewed archaeology as a nationalist issue, leading them to conduct only salvage excavations in Kurdistan. As a result, we estimate that 90% of all archaeological fieldwork during the Ba'athist period comprised salvage excavations, primarily to make way for construction projects such as the Dukan Dam and the Darbandi Khan Dam (Sulaimaniyah Province).

Today, under the Kurdish government's auspices, the focus on archaeological research and excavation continues. However, archaeological sites in Iraqi Kurdistan, particularly in major cities like Erbil and Sulaimaniyah, face a grave threat of destruction due to ongoing construction and development. With increasing petrodollars and favorable economic conditions, road and commercial building development is accelerating. Additionally, looting remains a significant threat to archaeological sites in the region.

2. Aim of the Project

The primary objective of the Baban Highway Archaeological Project was to document archaeological sites along the Baban highway route, starting from Arbat towards Tanjarow (Tasluja to Arbat). The project involved conducting rescue excavations and archiving all data pertaining to archaeology and cultural heritage.

The main motivation was the area's rich archaeological potential. Prior Iraqi investigation teams and recent surveys by German (Heidelberg and Munich Universities) and French teams (IFPO, CNRS) have confirmed numerous archaeological settlements in the region. Given the loss of many sites to previous development projects, it was crucial to record even the smallest sites and points to prevent further archaeological heritage loss.

3. Geographic Context of the Baban Highway Route

The Baban highway route from Tasluja to Arbat follows the Tanjarow River, the primary watercourse in the north-west of the Shahrizor plain (see Fig. 1), flowing in a south-easterly direction. The river originates near Sulaimaniyah and joins the main branch of the Sirwan west of Halabja, known as Upper Diyala, along with its eastern tributaries in the southeastern part of the Shahrizor.

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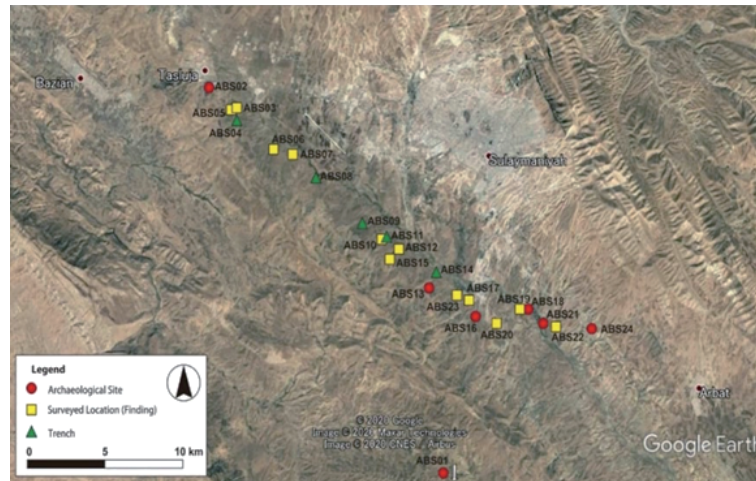


Fig. 1 Satellite map depicting archaeological sites surveyed along the Baban Highway route. Cartography by Shin Nishiyama using Google Maps.

This region forms part of the Diyala River's headwaters, connecting the area to central and southern Mesopotamia. The area is now submerged under the Darband-i Khan reservoir. Terraces formed by the Tanjarow River and its tributaries shape the surrounding Shahrizor plain [Altaweel *et al.* 2012, pp. 2–3].

The Tanjarow River played a crucial role in Zagros and northeastern Mesopotamian civilizations by structuring major overland communications. Due to the mountainous terrain, north-south passage was only possible at three main points: Raiat near Rawanduz, Halabja southeast of Sulaimaniyah, and Khanaqin on the upper Diyala [Roux 1992, p. 14]. The river's topographical significance is reflected in the numerous archaeological settlements along its floodplain, dating from prehistory to the Islamic period.

Archaeological Surveys

A French CNRS archaeological mission surveyed the area in 2011, recording 31 sites along the Tanjarow River. The current rescue investigations were conducted within the Baban Highway construction zone southwest of Sulaimaniyah, along the river's south bank. The highway route spans approximately 32 km from Tasluja to Arbat, with a width of around 200 m (Fig. 1, Table 1).

The archaeological sites along the Baban Highway vary in size, ranging from 1 to 4 hectares, with heights between 10 and 20 meters. Most consist of a single mound or a very low mound, with 10 sites including a lower town. Three temporary camps were identified through potsherd discoveries on natural hills, such as TJ 12 Shekh Wisal 2.

While many sites are not directly on the Tanjarow's banks, numerous are located along its tributaries, situated a few hundred meters to kilometers from the stream. Sites like Shekh Wisal (Table 2: 11 and 12) are positioned on natural hills or alluvial terraces, suggesting the river was prone to regular flooding [Kepinski *et al.* 2011].

Pottery Sequence in Tanjarow Line According to French Team and Sulaimaniyah Directorate Survey

We collected Hellenistic and Sassanian sherds, as well as Islamic and Ottoman sherds with incised or glazed ware at Karima Swr and Kani Jine. Additionally, we found some examples of Kurdish ware.

Table 1: Sites and waypoints surveyed along the route of the Baban Highway.

No. point	Name of sites	GPS point (UTM 38N)	
ABS point 1	Kani Jine cemetery	539911	3912213
ABS point 2	Kani Jine site	520877	3938199
ABS point 3	Kani Gawra finding place	522799	3936052
ABS point 4	Kani Gawra trench	522875	3935922
ABS point 5	Finding A	522799	3936048
ABS point 6	Finding B	525288	3934160
ABS point 7	Kani Ban finding place	526509	3933989
ABS point 8	Kani Ban trench	528135	3932722
ABS point 9	Aziz Awa finding place	531372	3929919
ABS point 10	Kani Haita finding palce 1	532969	3928967
ABS point 11	Kani Haita trench	532990	3928925
ABS point 12	Kani Haita finding place 2	533465	3928392
ABS point 13	Shex Wisal site	525595	3926272
ABS point 14	Shex Wisal trench	535779	3926938
ABS point 15	Kani Haita finding place 3	533409	3928186
ABS point 16	Grdi Manswr Awa, site	538360	3924542
ABS point 17	Pacha Rash, finding place	537612	3925234
ABS point 18	Grdi Karima Swr, site	541702	3924816
ABS point 19	Karima Swr, finding place	541529	3924763
ABS point 20	Qaradagh road, finding place	539547	3924794
ABS point 21	Tanjarow river, finding place	542716	3924380
ABS point 22	Arf Awa, finding place	543489	3924164
ABS point 23	Gopita, finding place	536967	3925518
ABS point 24	Damrkan	545899	3923628

Table 2: Sites in the Baban Highway survey area previously investigated by the French mission.

Site no.	Name	Site no.	Name
TJ 2	Qadar Kamala	TJ 17	Karima Swr
TJ 3	Kalespi	TJ 18	Barika Tanjarow
TJ 4	Unknown	TJ 19	Kamalan
TJ 5	Qadar Kunara	TJ 20	Yakhimali
TJ 6	Bingird	TJ 21	Qisirt Saru
TJ 8	Raziana	TJ 22	Saidwa-Shekhresh
TJ 9	Satubist	TJ 23	Yakmala
TJ 10	Kani Goma	TJ 24	Tepe Kal
TJ 11	Shekh Wisal 1	TJ 27	Qaratoghan
TJ 12	Shekh Wisal 2	TJ 28	Hazar Merd
TJ 13	Manswr Awa	TJ 29	Kharajian
TJ 14	Zrgwez Kwer	TJ 30	Yakhimali-Sarchawa
TJ 15	Barbakh	TJ 31	Kozaraqa
TJ 16	Gulalan		

Excavations

During the survey of the Baban Highway zone, four sites were identified as requiring excavation before anticipated destruction. Unfortunately, due to highway construction, following four sites were severely damaged or destroyed: Kani Jine, Shekh Wisal, Manswr Awa, and Karima Swr. In this report, we focus solely on Karima Swr. Karima Swr excavation was conducted by Sulaimaniyah Directorate of Antiquities, Field Director Saber A. Saber, team members Rawa Karim Salih and Rebin Mohammed Rashid.

Karima Swr

Karima Swr is located in southwest Sulaimaniyah, near the village of Chaqal-Jackal Awa, on the south bank of the Tanjarow River (Figs. 2 and 3). The site sits at an elevation of approximately 655 meters above sea level, with its lower southern portion slightly rising above the surrounding agricultural land. The eastern slope of the mound is more distinct, while the northern part of the hill has been affected by river erosion (Fig. 4). The western side of the site has been damaged by agricultural excavation, ploughing, and looting, which primarily occurred in the 1990s.

The site consists of several stratigraphic layers (Fig. 5). 1. Islamic period to present day; 2. Sassanian; 3. Neo Assyrian; 4. Bronze Age; 5. Ubaid, 6. Halaf. We observed that layers from the Islamic to Assyrian periods were mixed and destroyed, making it difficult to differentiate between one and two stratigraphic layers. While we could identify only five layers stratigraphically, pottery sherds suggested six layers.

Architecture

At Karima Swr, we excavated five areas, beginning with Area A and extending to A1, A2, and A3 (Figs. 6, 7). Each trench measured 3 meters wide and 4 meters long. We subsequently opened Area B to the southwest of Area A, which we divided into four parts: B1, B2, B3, and B4. Area C was located adjacent to the northern part of Area B2 and extended to the northeast of Area A3. We further divided Area C into C1 and C2.

Despite the challenges, we found several notable architectural features: In Area A1, we discovered wall number 1, located in the trench corner and stretching south to Trench B1. The wall merged with a pile of stones in B1, likely representing its disturbed continuation. The major part of this wall was located in the eastern part of ditch A3, where it merges with wall number 4. The wall extended southwest, as seen in the site plan. In ditch A3, we found a partially destroyed room,

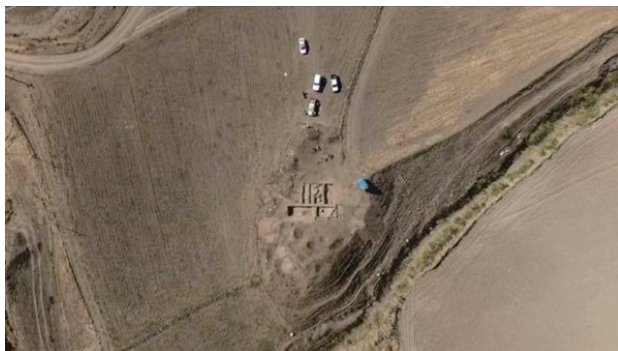


Fig. 2 Karima Swr aerial view, photo by Rabin Hama Rasheed.



Fig. 3 Karima Swr, taken from the east, photo by Saber Ahmad.

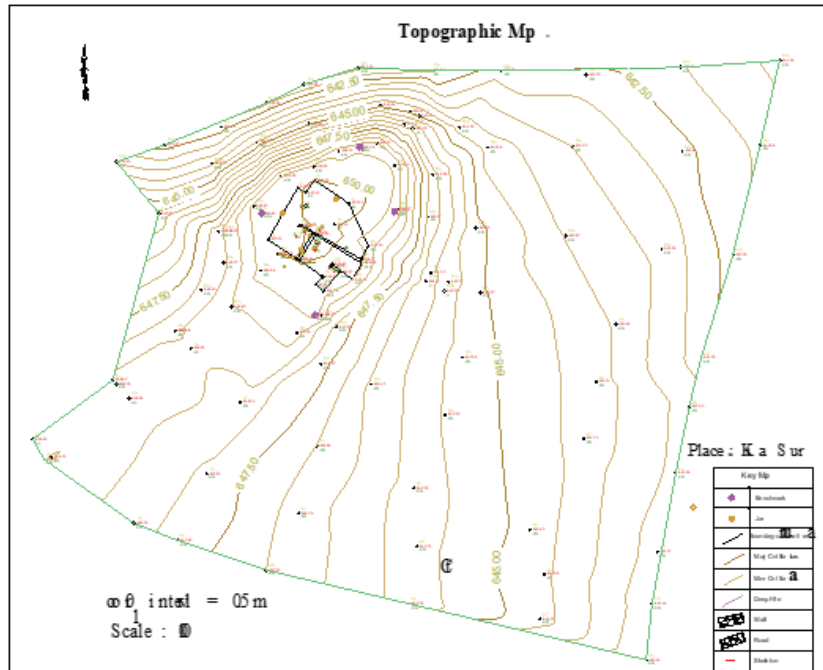


Fig. 4 Karima Swr contour map.

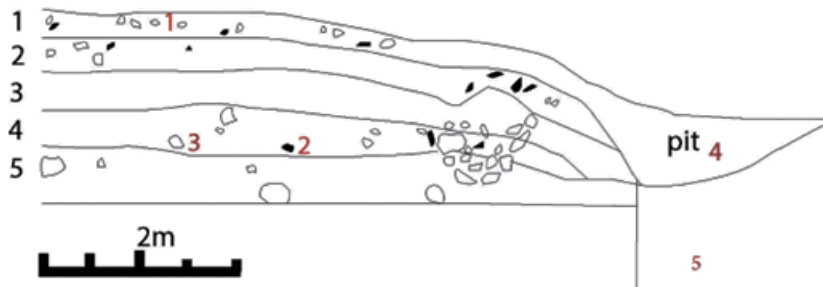


Fig. 5 Description of the Northern Section of Trench A1-2. Drawing by Saber A.

1. Lumpy soft soil mixed with tree roots and small stones, Soil color: 2.5Y 5/2, Loose, organic-rich layer.
 2. Soft soil with sparse small stones and tree roots, Soil color: 5YR 7/2, Contains scattered pottery sherds in some areas.
 3. Very hard soil with few small stones, Soil color: 5YR 8/3, Compact and dense soil.
 4. Very compact and hard soil with occasional medium-sized stones, soil color: 7.5YR 7/2, Highly consolidated layer.
 5. Hard soil with very few stones, Soil color: 5YR 8/3, Dense but with minimal stone inclusion.
- Red Number Annotations: 1. Stones, 2. Potsherds, 3. Human remains, 4. Filled pit, 5. Sounding for virgin soil

with additional sections in B1 and B2.

We believe the site experienced continuous occupation without major stratigraphic breaks, which explains the complex and mixed architectural remains. In B2, we found some thin constructions that were not well-ordered, and we could not identify their layout due to limited exposure.

In the eastern part of B1, we discovered a small pit filled with green mud. The purpose of this pit remains unclear, and no organic remains were found within it. Around the top of the mound, we found remains of a fortification. We believe that excavated wall number 7 was part of this defensive

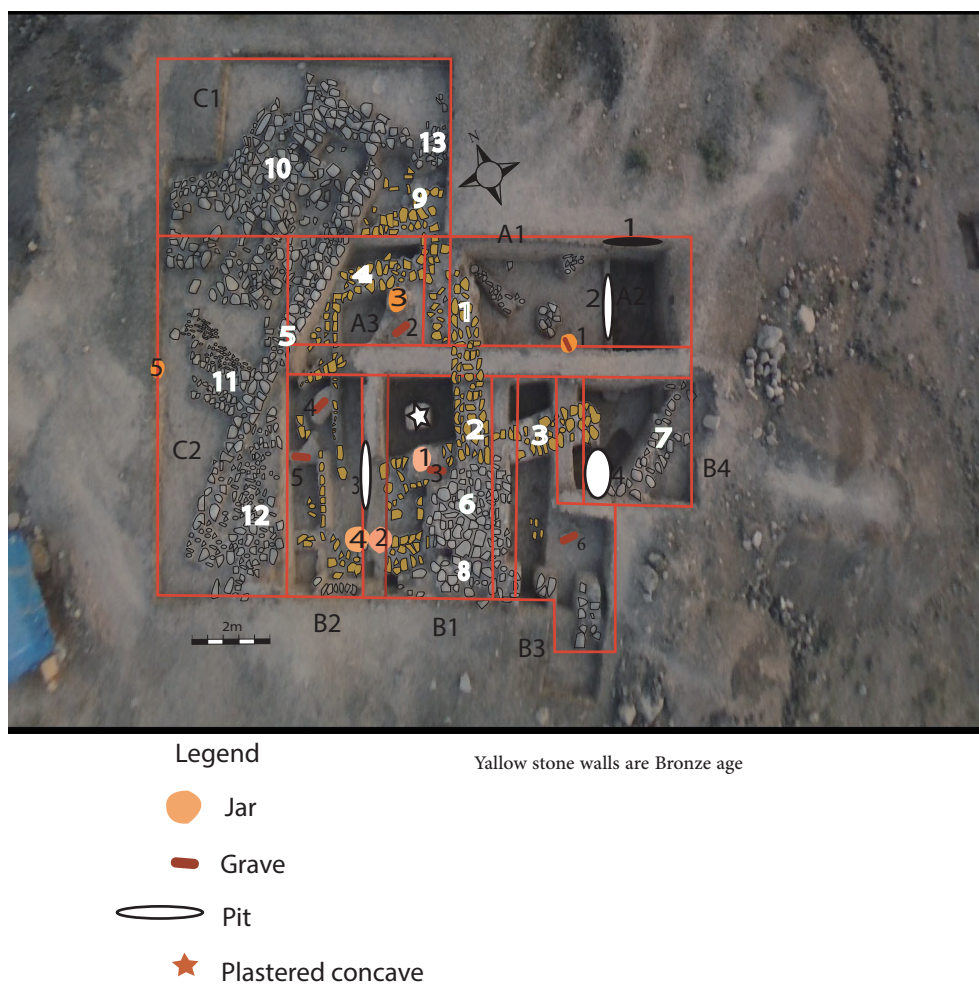


Fig. 6 Drone photograph of the Karima Swr excavation site and the layout of the ruins based on the photograph (by Saber A. Saber).



Fig. 7 Foundations of architectural remains at the Karima Swr.

construction.

On the north-east slope of the mound, we conducted a small excavation measuring one meter in width and two meters in length to determine the depth of occupation. We reached virgin soil after digging 0.8 meter down. However, due to the limited time frame of the rescue excavation, we were unable to fully document complete architectural constructions.

Instead, we found mixed constructions that were not clearly distinguishable, especially in the upper three disturbed levels. Nonetheless, we successfully identified and documented five intact stratigraphic levels. Our pottery analysis suggests that the site originally had seven or eight occupation levels, spanning from the Late Neolithic to the Ottoman periods.

The landowner informed us that in the late 1990s, they used an excavator to remove a thick layer of soil from the top of the site to flatten it for summer agriculture. This action led to the destruction of the upper stratigraphic layers. Although the pottery was mixed, we were able to identify four occupation periods from the Islamic, Sassanian, Hellenistic, and Assyrian periods by studying the pottery from this disturbed context.

Level 3: Iron Age

We were only able to identify one construction, designated as number 6: a cobbled courtyard typical of Neo-Assyrian or regional Iron Age architecture [as referenced in Radner *et al.* 2016 Volume 2, Gird-i Bazar Reports]. Constructions 11 and 12 appear to be water drains. Wall number 5 stretched from western C2 to northeastern C1 and seemed to frame the courtyard and surrounding rooms. It is important to note that these constructions were only partially exposed due to the rescue characteristics of the excavation. Therefore, more information may be revealed in future archaeological investigations.

The Iron Age pottery at Karima Swr remains unclear. As mentioned previously, the layers from this period were completely mixed and destroyed, and the pottery was significantly fewer in number compared to the Bronze Age materials. Among the constructions, we found pottery from different periods, including Hellenistic period (Fig. 8) and New Assyrian period (Fig. 9) [Kolinski 2019: 437-B24]. We have preserved most of the Iron Age pottery sherds in the museum magazine-store, as we did not have sufficient time to work on them thoroughly. We hope to conduct a more detailed analysis in future research.

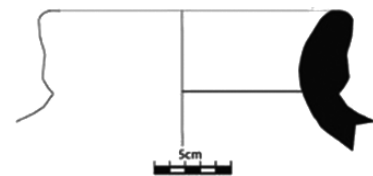


Fig. 8 Pottery of the Hellenistic period.

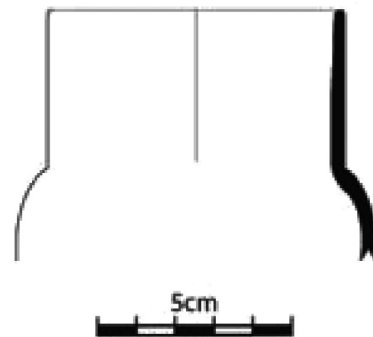


Fig. 9 Pottery of the Neo Assyrian period.

Level 4: Bronze Age

In terms of pottery, the Bronze, Chalcolithic, and Halaf periods are the most distinct, with material from later periods (Neo Assyrian, Hellenistic, and Islamic) being more scattered and rare due to site damage. The Bronze Age constructions at Karima Swr were first discovered in Area A1 with wall number 1. This wall is located in the corner of Trench A1 and extends south to Trench B1, where it is mixed with a pile of stones likely representing its disturbed continuation. The major part of this wall was located in the eastern part of ditch A3, where it merges with wall number 4. As seen on the site plan, the wall extended to the southwest. In ditch A3, we discovered a room, with additional parts found in Trenches B1 and B2. However, this room was partially destroyed, making it impossible to determine its precise dimensions. In the southern part of the room, between Trenches B1 and B2, two jars were uncovered.

We believe the site experienced continuous occupation without major stratigraphic breaks, which explains the complicated and mixed architectural remains. In Trench B2, we found some thin constructions that were not well-ordered, and we could not identify their layout due to limited exposure. In the eastern part of Trench B1, we discovered a small pit filled with green mud. The purpose of this pit remains unclear, and no organic remains were found within it. Around the top of the mound, we found remains of a fortification. We believe that excavated wall number 7 was part of this defensive structure.

The most distinctive aspect of Bronze Age pottery from Karima Swr is its consistency with other Bronze Age sites in the region. We can easily compare its pottery with artifacts from other archaeological sites. In other words, the Karima Swr Bronze Age pottery can be considered standard, as most pieces exhibit typical features of the period. In the Sulaimaniyah region, approximately 7 km west of Karima Swr, the Kunara settlement belongs to the Late Bronze Age. Similarly, Grdi Qala in Chamchamal contains Late Bronze Age pottery. Notably, Figs. 10: 1–4 can be found not only in Sulaimaniyah area Bronze Age sites but also across Mesopotamian archaeological sites.

Fig. 10: 1 represents the Middle Bronze Age or the beginning Late Bronze Age, with parallels in the Diyala and Hamrin regions. Similar styles can be observed in other sites, as documented

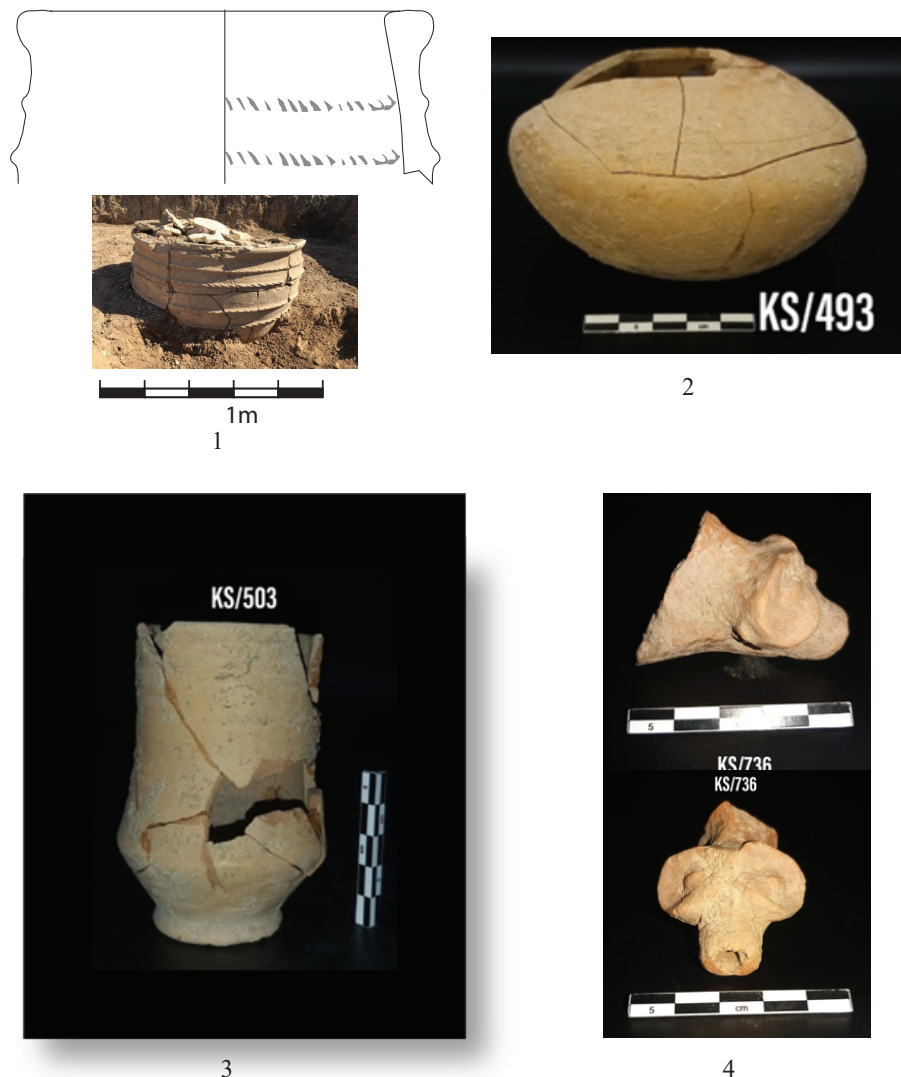


Fig. 10 Bronze Age pottery discovered from Karima Swr level 4.

by Gabuti [2002–2003, Table 56, No. 12], Rounault and Tommassini-Piere [2014], Armstrong and Gasche [2014, p. 185, A3.4], and Pfälzner and Schmid [2019]. Regarding figure 10: 4, a double-spouted rhyton has been found in Kunara at the Tanjarow River [Tenu 2018, p. 48, Fig. 23].

Levels 5 and 6: Chalcolithic and Neolithic Periods

In the Tanjarow region, Halaf settlements are relatively rare. However, evidence from the Chalcolithic period is substantial. The Ubaid culture initially emerged directly beneath the Bronze Age remains in the eastern sections of Trenches A1 and A2. Although no Ubaid structures were uncovered in this area—possibly because the house structure is located outside our excavation trench, and time constraints prevented further investigation—the remains of an infant burial in a broken jar (Fig. 11) provide clear evidence of Ubaid presence. Archaeological evidence of the Ubaid period is primarily represented by potsherds from specific contexts (Fig. 12). Diagnostic ceramics identified include specimens KS-B1.546, KS-A2.344 (referenced in Fig. 13: 1, 4), and KS-A2.32 (Fig. 13: 7), which are characteristic of the Ubaid III phase. Stratigraphically, Ubaid period deposits were encountered in Trenches B1, B3, and B4, positioned directly beneath Bronze Age layers. Notably, while Ubaid pottery was recovered, no associated architectural structures were discovered. In Trench B4, investigators excavated an Ubaid-period pit to a depth of 180 cm, revealing only soft, ashy soil containing scattered ceramic fragments [Mühl 2013; Carter and Philip 2006; Lebeau 1998; Mallowan and Rose 1935].

Archaeological materials from the middle Halaf period are illustrated in Fig. 13: 3, while Fig. 13: 5 exhibits artifacts from the transitional phase between the Halaf and Ubaid periods. At Karima Swr, the Middle Halaf period (Fig. 14: 1, 2, 4) is identifiable through its distinctive decorative pottery. Late Halaf pottery featuring a characteristic dot design (Fig. 14: 3) is also present. A comparable design has been documented in archaeological materials from Tepe Gawra [Tobler 1950: 353–355].

Glyptic art (engraved stone pendants) emerged as a hallmark of ancient Near Eastern culture, first appearing in the seventh millennium B.C. and continuing uninterrupted until the Hellenistic period. To date, the Western Zagros region is recognized as a place with a flourishing glyptic tradition during the Late Ubaid-Early Uruk period. During the excavation of level 5, numerous lithics and two stamp seals (Engraved stone pendants) (Figs. 15, 16) were unearthed, all dating to the Middle Halaf period and late Neolithic. The prevalence of this type of stone pendant in the region is suggested by similar finds at Tepe Marani in Halabja [Pittman 2001, 411–412; Wengrow *et al.* 2016: 270, Fig. 2]. One seal, identified as stamp number 711, was recovered from Trench A2. It is rectangular in shape with a hole for a necklace tie and features a geometric design. While

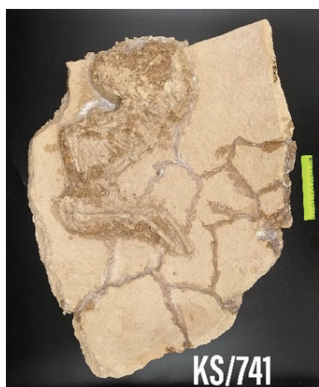


Fig. 11 An infant skeleton in a broken jar, photographed by Rebin Mohammed Rashid.



Fig. 12 Ubaid broken pot discovered at Trench B4, photographed by Rebin Mohammed Rashid.

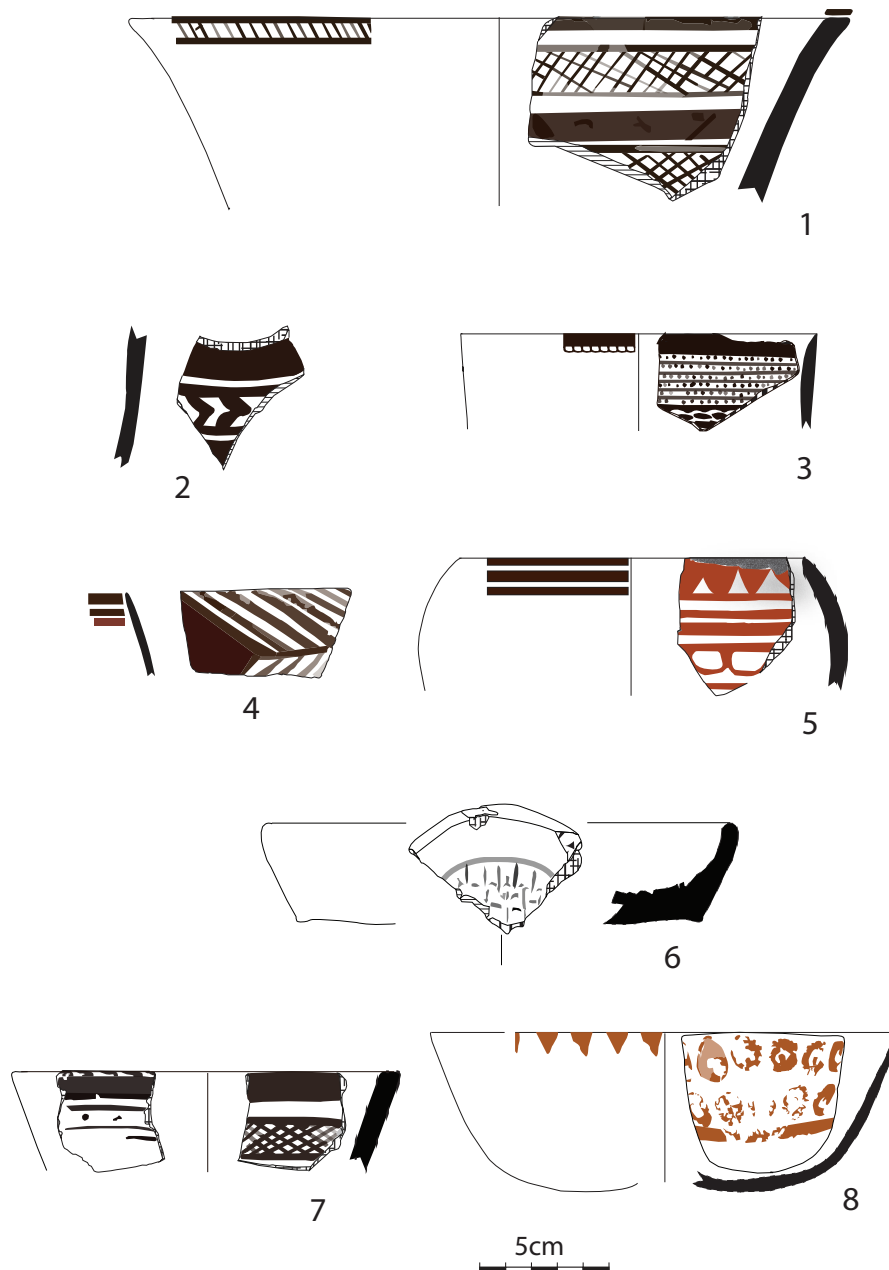


Fig. 13 Ubaid pottery and Halaf-Ubaid transition pottery discovered from Karima Swr.

the seal appears grey, it is uncertain whether this coloration is partially due to burning. The second stamp seal, number 713, was also found in Trench A2 and shares a similar geometric design and necklace hole. Such stamp seals with geometric patterns were characteristic of the Halaf period.

The lithic assemblage recovered during the excavation represents a collection of remarkable stone artifacts, characterized by their exceptional craftsmanship and well-preserved morphological features. The lithics exhibit consistent dimensions, with lengths systematically ranging between 4–10 cm, suggesting a standardized production technique employed by the prehistoric artisans (Fig. 17). In contrast to the meticulously crafted stone tools, the obsidian specimens presented a challenging preservation state. The volcanic glass fragments showed significant degradation, likely resulting from prolonged environmental exposure or complex taphonomic processes that compromised their structural integrity. This poor condition limits the potential for detailed technological and provenance analyses typically associated with obsidian artifacts.

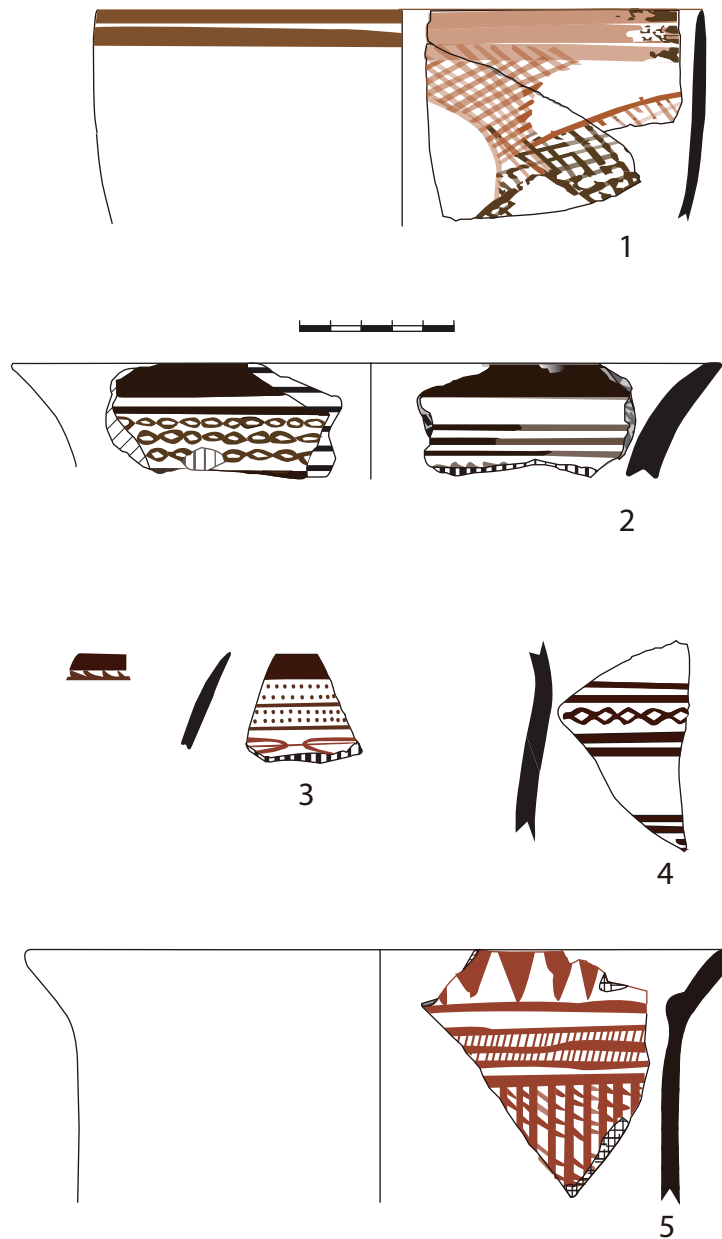


Fig. 14 Halaf pottery discovered from Karima Swr.

The variation in preservation between the lithic tools and obsidian fragments highlights the differential preservation potential of archaeological materials and underscores the importance of careful excavation and conservation techniques in archaeological research.

Burials

The archaeological site presented significant challenges in preserving graves and skeletal remains. Grave No. 1, located in Trench A, exemplifies these preservation difficulties. This Ubaid period burial contained the remains of an infant placed within a broken pot (Fig. 11). Despite extensive damage to the interment, we were able to collect bone samples for future scientific analysis. A comparable burial configuration was previously documented during the 2008 Tanjarow excavations.



Fig. 15 Halaf stamp seals discovered from Karima Swr.



1



2

Fig. 16 Halaf stamp seals discovered from Karima Swr.



Fig. 17 Lithics discovered from Karima Swr.



Fig. 18 Graves No. 4 and No. 5: Islamic period.



Fig. 19 Grave No. 6: Islamic period.

In total, our team uncovered six graves representing six individuals. With the exception of the aforementioned infant burial from the Ubaid period, the remaining burials date to later historical periods. Specifically, Graves No. 4 and No. 6 (Figs. 18, 19) can be confidently attributed to the Islamic period based on their distinctive burial styles.

Conclusion

Karima Swr was a multi-period archaeological site situated on the south bank of the Tanjarow River, located in fertile agricultural farmland. In modern times, the site has consistently faced significant challenges, including extensive looting and agricultural encroachment. Due to these factors, the stratigraphic levels of the site became complex and difficult to distinguish, particularly when transitioning from Islamic to Late Bronze Age layers. Consequently, ceramic analysis provides the most reliable method for identifying and differentiating site periods.

Excavation work was conducted expeditiously, driven by ongoing modern construction developments. Our archaeological investigation involved excavating five trenches of varying sizes. Notably, this site proved to be exceptionally rich in pottery, yielding artifacts from multiple historical periods. The most clearly identifiable periods include: Islamic (extending to the present day), Sassanian, Hellenistic, Neo Assyrian, Bronze Age, Ubaid, and Halaf periods.

The archaeological excavation revealed several mixed architectural layers, primarily identifiable from the Late Bronze Age and Assyrian periods. These periods are distinctly recognizable: the Assyrian layer is characterized by a clear stone pavement pattern, while the Bronze Age layer is notable for its significant quantity of Bronze Age pottery. As previously mentioned, the pottery assemblage included prominent examples from Halaf, Ubaid, and Late Bronze Age periods.

Based on the architectural evidence from the Bronze Age and Neo Assyrian periods, the site appears to have been a house-palace serving an administrative function or potentially an outpost. The construction suggests it was not intended for typical residential use during these periods.

The excavation uncovered a long-lasting settlement spanning multiple historical periods, including Middle Halaf, Ubaid, Late Bronze Age, Hellenistic, Sasanian, and Islamic periods. The site's prolonged occupation can be attributed to its strategic location: positioned for agriculture along the riverside and situated on a road connecting the Sulaimaniyah area and Shahrizur plain. The entire settlement was enclosed by a wall-fortification, indicating its significant importance in the regional context.

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ARCHAEOLOGICAL IMPLICATIONS OF MIDDLE BRONZE AGE NON-TANGED BRONZE DAGGERS IN THE SOUTHERN LEVANT AND BEYOND

Takuro ADACHI*

Introduction

New states were established in Western Asia during the Middle Bronze Age (MBA), and periodization is essential for explaining this process. In particular, the periodization of the Southern Levant is important for studying the correlation between Mesopotamia, the Levant, and Egypt. The periodization of the MBA in the Southern Levant was complex. Much research has been conducted on this topic [Albright 1966, Kenyon 1966, Dever 1987, Burke 2014, Sharon 2014, etc.]. Recently, Höflmayer proposed a new period division using radiocarbon data [Höflmayer 2022].

By analyzing non-tanged bronze daggers (NTBDs), a unique type of bronze dagger found in Western Asia, we reconsidered the periodization of the MBA in the Southern Levant and Western Arabian Peninsula within the framework of the MBA in the Southern Levant. NTBDs are rare among bronze daggers in Western Asia, but they are a special artifact with a wide distribution area that can serve as an indicator of the division of the MBA. In particular, the four-rivet, NTBDs mentioned in this paper has been found in the Southern Levant and desert regions of the southwestern Arabian Peninsula. This artifact symbolizes the dynamism in the Levant's MBA. In this study, we analyzed the classification and distribution of NTBDs and considered the significance of their distribution.

Research background for NTBDs

Maxwell–Hyslop first mentioned the NTBD as a Type 17 bronze dagger. The small size of some specimens suggests they were used as tools rather than weapons. They are classified into three variations, which are categorized based on the shape and presence of ridges and the cross-sectional shape of the body [Maxwell-Hyslop 1946: 20]. Maxwell–Hyslop localized NTBDs in the Southern Levant but also introduced a specimen from Alisar Höyük in Anatolia [Maxwell-Hyslop 1946: Pl. 11: 17B].

Later, Philip detailed the Type 34 bronze dagger and highlighted a small group of daggers of this kind that are less than 120 mm in length. The function of the smaller group as daggers remains unclear; further analysis is required. The edge of Type 34 can be convex, concave, or straight; the cross-section of the blade can be flat, diamond-shaped, or ridged, and it is believed to be distributed across the Southern Levant. Type 34 was dated as MBII, except for the specimen from Tomb 911D at Megiddo, which was dated as MBI. Regarding its origin, the possibility is mentioned in the introduction of Alaça Höyük from Anatolia, but the lack of similar examples in Syria and the small size of the Anatolian specimens make this unlikely [Philip 1989: 134].

Philip also mentioned a group of small Type 34 daggers in his analysis of the metalwork at Tell el-Dab'a, which he suggests may have been reused bronze daggers based on other sources [Phillip 2006: 54].

Gernez referred to the NTBD as Type P3D and listed similar examples from the Aegean region,

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Syria, and Anatolia. He pointed out that the spread of NTBDs over such a wide area may have been due to some degree of interaction among different people groups. He also indicated evidence dating back to the Chalcolithic period [Gernez 2008: 474–477]. Because we focused on the area south of the Southern Levant, we did not examine whether the NTBD is distributed over such a wide area; however, this should be considered in the future.

Method

We present the data of 31 NTBDs from 17 sites in the Southern Levant, Egypt, and the Western Arabian Peninsula (Figs. 1, 4, and 5). The histogram for the NTBDs shows a clear statistical division at 120 and 200 mm (Fig. 2). NTBDs can be classified into three groups based on their length. Large specimens measuring 200 mm or more in length are considered large (Fig. 4: 1–4). Medium-sized specimens measuring 120–200 mm in length are of the medium type (Fig. 4: 5 to Fig. 4: 26). Twenty-two specimens are 22 mm, making this the most commonly used specimen size. The small type is a specimen measuring less than 120 mm (Fig. 5: 27–30). A total of five specimens were collected. The small groups in this study are based on the same criteria as Philip's

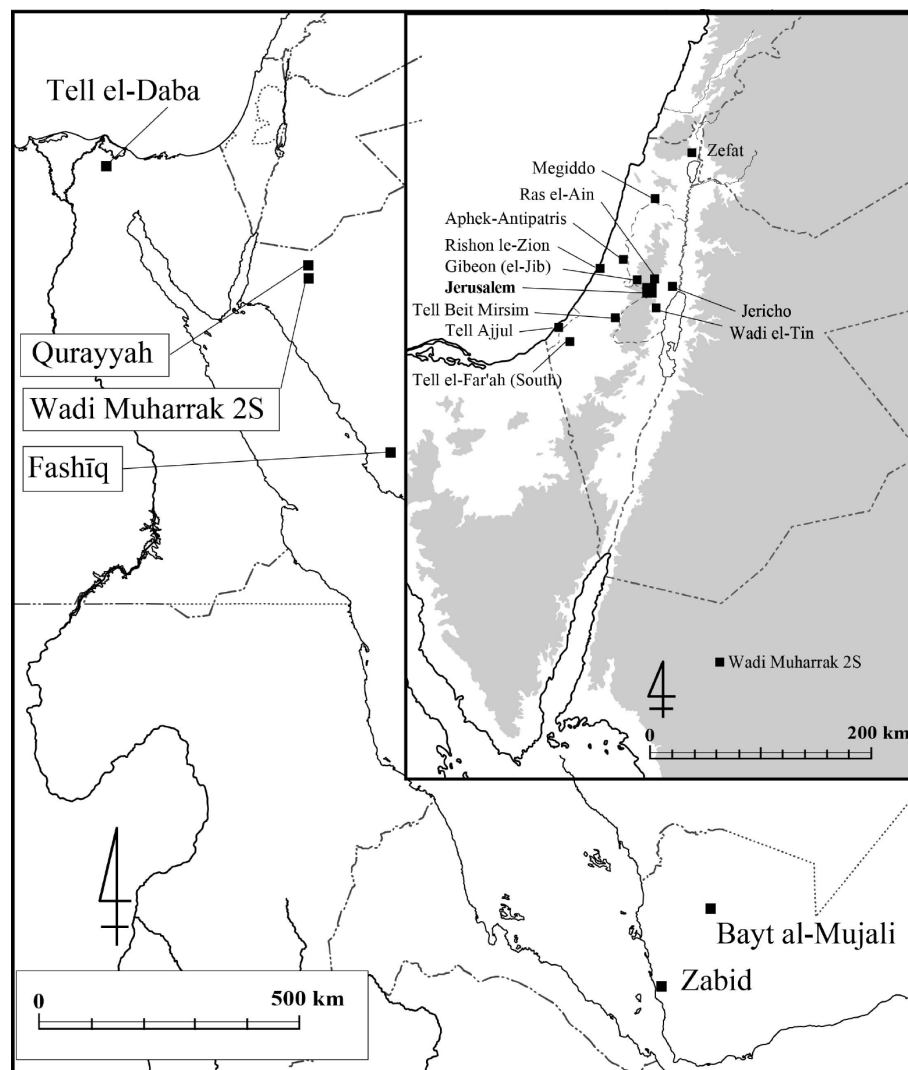


Fig. 1 Distribution map of archaeological sites where NTBDs have been excavated.

small group [Philip 1989: 134]. The average length of the NTBD is 158 mm.

The almost large and small have two rivets to secure the handle, whereas the medium type has four rivets, five of which are classified as a special kind (the four-rivet type) (Fig. 4: 6–10). Additionally, some medium and small types have blades with a concave edge; these were also extracted as a separate type (concave edge type) (Fig. 5: 21–25). Five specimens of this type were identified.

For each site, the authors described the period of the excavated NTBDs; however, as mentioned in the introduction, there are many ways of describing the periodization of the MBA in the Southern Levant, so it was necessary for us to determine a standard periodization for the analysis. Various theories exist regarding the absolute dates of period divisions. Hence, a table comparing them is required (Fig. 3) [Albright 1966, Kenyon 1966, Dever 1987, Bietak 2013, Burke 2014, Sharon 2014, Höflmayer 2022]. Sharon's periodization is considered the most common and intermediate [Sharon 2014: Table 4: 3]. As such, the boundary between the IB and MBI is fairly wide, from 2200 BC to 1900 BC, and that between MBI and MBII is approximately (Fig. 3).

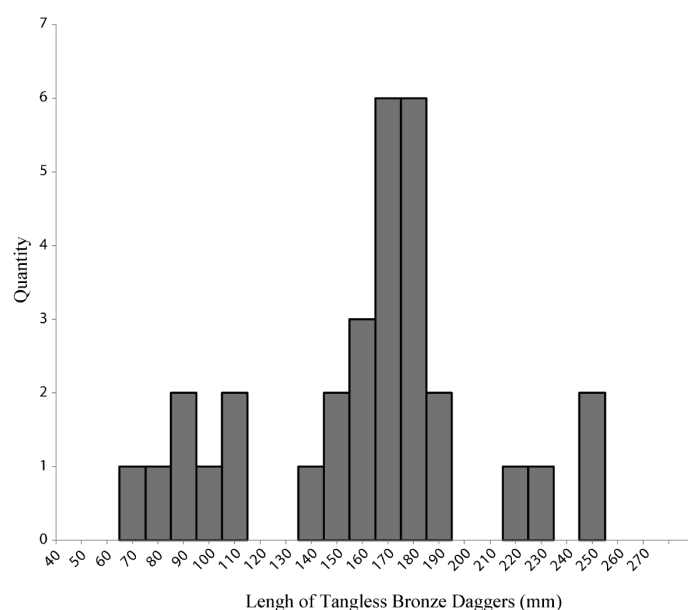


Fig. 2 Histogram of lengths of NTBDs.

	Albright 1966	Kenyon 1966	Dever 1987	Bietak 2013	Höflmayer 2022	Sharon 2014
2000BC	MBI	IB	EBIV	EBIV	EBIV	IB/ EBIV
1900BC	MBIIA	MBI	MBI	MBI	MBI	MBI
1800BC	MBIIB	MBII	MBII	MBII	MBII	MBII
1700BC	MBIIC	MBII	MBIII	MBIII	MBIII	MBIII
1600BC						

MBI: Middle Bronze Age I; MBII: Middle Bronze Age II; MBIII: Middle Bronze Age III;
EBIV: Early Bronze Age IV; IB: Intermediate Bronze Age

Fig. 3 Periodization of the MBA.

Data collection

We present a collection of 31 NTBDs from 17 sites (Figs. 1, 4, and 5; Table 1). We examined materials excavated from the Southern Levant, Egypt, and the Western Arabian Peninsula starting from the north. The longest piece of this collection, measuring 250 mm, was unearthed from Zefat. There is no ridge, and the blade is straight. Two rivets remain (Fig. 4: 1). It was buried along with 51 pottery vessels, 28 bronze weapons, and 24 toggle pins. The tomb itself was dated back

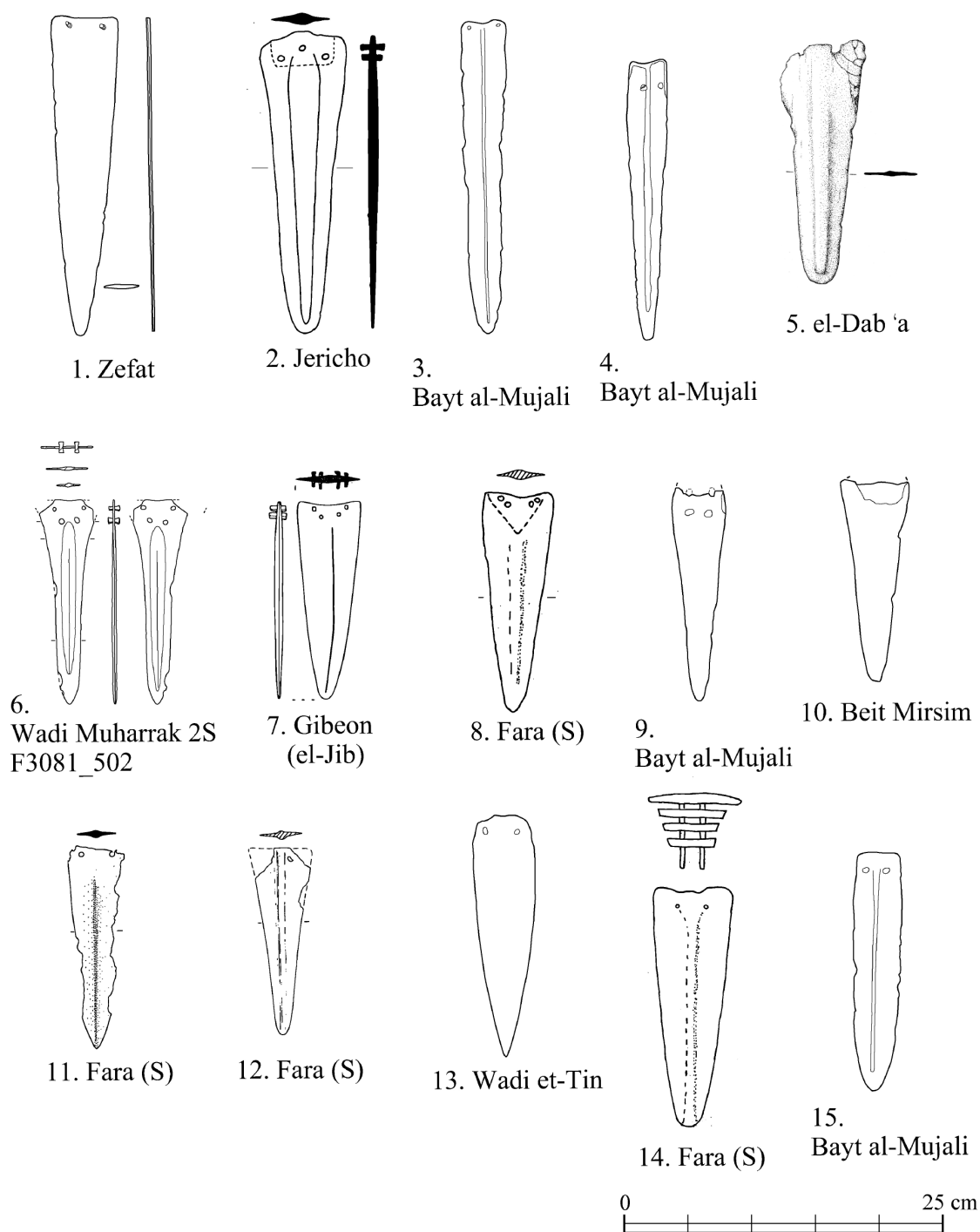


Fig. 4 Non-tanged daggers (1–4: large types; 5–15: medium type; 6–10: four-rivet type) (Numbers 3, 4, 9, 10, 13, 15 were drawn by the author from photographic illustrations.).

to the MB II [Damati and Stepansky 1996: Fig. 1–1]. However, Analysis of the bronze artifacts associated with it suggests that the NTBD belongs to MBI [Damati and Stepansky 1996: 107].

There are no ridges on the artifact excavated from Megiddo. It is a medium-sized object measuring 169 mm in length. Two rivet holes are present (Fig. 5: 23). A concave shape characterizes the cutting edge and belongs to the concave edge type described earlier in this study (Fig. 5: 21–25). It was excavated from a tomb at the MBI [Guy 1938: Pl. 122: 8; Philip 1989: 134].

Medium-sized (155 mm) and small-sized (74 mm) objects were excavated at Aphek Antipatris. Neither artifact has ridges, and the cross-section of the blades is flat. Both have two rivet holes; however, rivets only remain in the medium-sized item (Fig. 5: 18, 28). The medium-sized one was excavated from graves. In both cases, the authors dated the site back to the MBI (MBIIA) [Bunimovitz 2000: Table 13.1].

At Rishon le-Zion, the medium-sized (173 mm) object was excavated from a tomb (Fig. 5: 21). The shape is similar to that of the material excavated at Megiddo, with a concave edge, flat cross-section, and two rivet holes. This is the concave edge type used in this study (Fig. 5: 21–25). The authors suggested that these forms date back to the MBII [Kan-Cipor-Meron *et al.* 2018: 25].

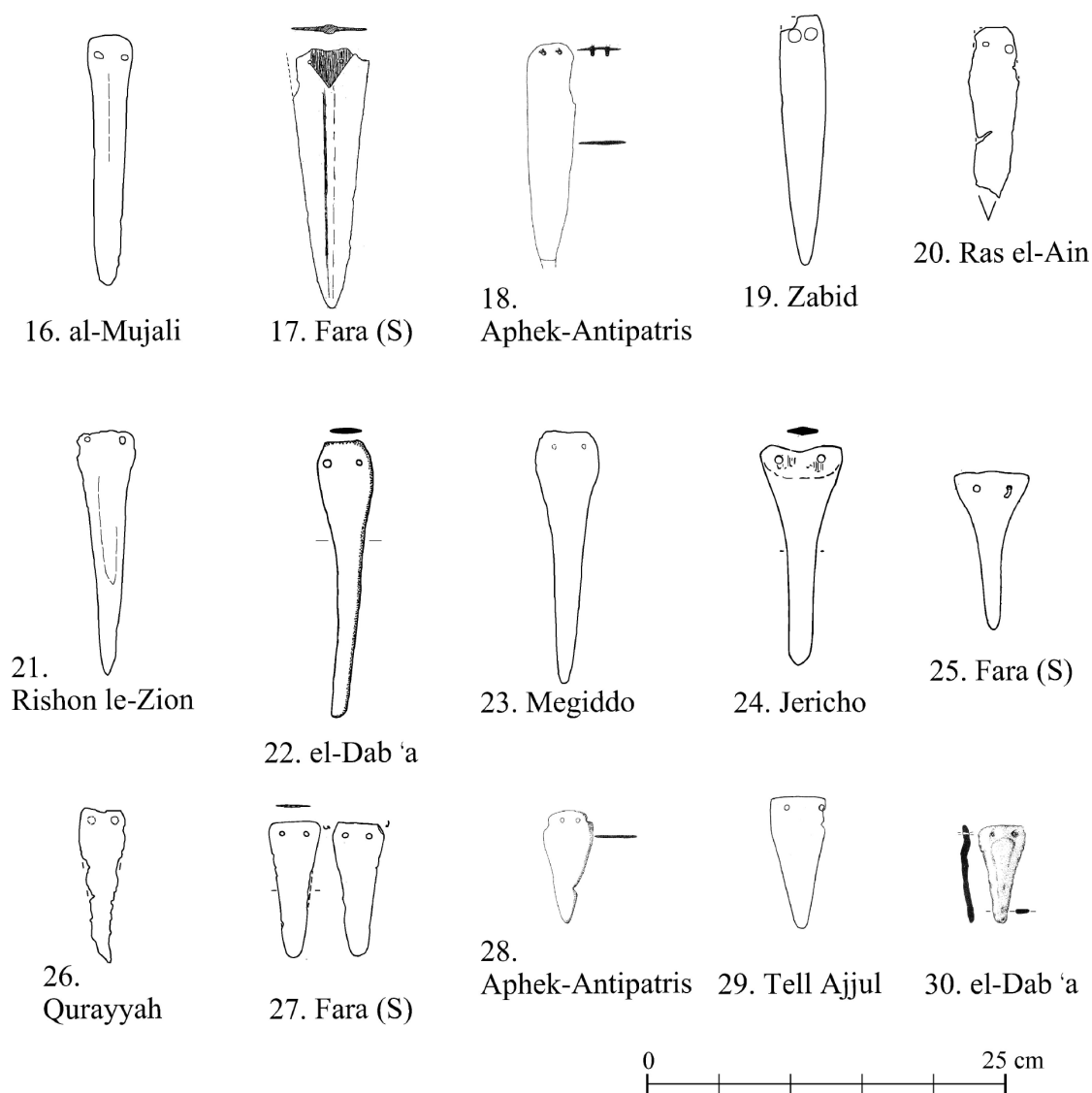


Fig. 5 Non-tanged daggers (16–26: medium type; 27–31: small type; 21–25 concave edge type) (Numbers 16, 19, 20, 21, 23, 26 were drawn by the author from photographic illustrations.).

A small, medium-sized object was excavated at Ras el-Ain. The remaining conditions are poor, with a length of 140 mm; however, this is an estimated value. Two rivets remain (Fig. 5: 20). It is accompanied by a socketed spear point [Ory 1938: 120] and is thought to belong to the MBA.

A medium-sized (161 mm) object with four rivets was excavated from Gibeon (Fig. 4: 7). The rivets remain. The material is roughly the same in form as that of Wadi Muharrak 2S (Fig. 4: 6), Tell Fara (S) (Fig. 4: 8), and Bayt al-Mujali (Fig. 4: 9), which we describe later. This is the four-rivet type model defined in this study. It was excavated from an underground tomb and dated back to the MBII [Pritchard 1963: 2].

Large (229 mm) and medium-sized (150 mm) objects were excavated in Jericho (Fig. 4: 2; Fig. 5: 24). One large item has three rivet holes, and the rivets remain. The three rivets are arranged in triangles. This is the only item in the NTDB collection that has three rivet holes. This specimen has a wide ridge, which is a common feature in relatively large specimens. The medium-sized specimens have a flat cross-section and a concave edge, an attribute shared with the specimens

Table 1

No.	Size	Site	Length (mm)	Period	Bibliography	Figure
1	Large	Zefat	250	MBI	Damati & Stepansky 1996	Fig. 17.2
2	Large	Jericho	229	MBII	Kenyon 1960	Fig. 146.4
3	Large	Bayt al-Mujali	246	MB?	Simpson 2002	p. 87: No. 95
4	Large	Bayt al-Mujali	215	MB?	Simpson 2002	p. 87: No. 96
5	Midium	Tell el-Dab'a	188	?	Philip 2006	Fig. 19: 2
6	Midium	Wadi Muharrak 2S	167	MBII or III?	Fujii <i>et al.</i> 2022	Pl. 8. 14: 4
7	Midium	Gibeon (el-Jib)	161	MBII	Pritchard 1963	Fig. 26.14
8	Midium	Tell Fara (S)	167	MBII	Price Williams 1977	Fig. 38.1
9	Midium	Bayt al-Mujali	157	MBII or III?	Simpson 2002	p. 87: No. 93
10	Midium	Tell Beit Mirsim	155	MBIII	Albright 1938	Pl. 41.6
11	Midium	Tell Fara (S)	168	MBII	Price Williams 1977	Fig. 28.8
12	Midium	Tell Fara (S)	146	MBII	Price Williams 1977	Fig. 45.5
13	Midium	Wadi el-Tin	180	MBII	Vincent 1947	Pl. VII
14	Midium	Tell Fara (S)	164	MBII	Phillip 1989	Fig. 48
15	Midium	Bayt al-Mujali	180	MB?	Simpson 2002	p. 87: No. 92
16	Midium	Bayt al-Mujali	177	MB?	Simpson 2002	p. 87: No. 94
17	Midium	Tell Fara (S)	177	MBII	Price Williams 1977	Fig. 16.5
18	Midium	Aphek-Antipatris	155	MBI	Bunimovitz 2000	Fig. 13.4: 5
19	Midium	Zabid	172	MB?	Giumlia-Maira <i>et al.</i> 2000	Fig. 2
20	Midium	Ras el'Ain II	140	MB	Ory 1938	Pl. 32B:2
21	Midium	Rishon le-Zion	173	MBII	Kan-Cipor-Meron <i>et al.</i> 2018	Fig. 2d
22	Midium	Tell el-Dab'a	187	MBII	Phillip 1989	Fig. 49
23	Midium	Megiddo	169	MBI	Guy 1938	Pl. 122.8
24	Midium	Jericho	150	MBII	Kenyon 1960	Fig. 146.1
25	Midium	Tell Fara (S)	110	MBII	Petrie 1930	Pl. VI-12
26	Midium	Qurayyah	107	MBIII	Luciani and Alsaoud 2020	Pl. 2.12: b
27	Small	Tell Fara (S)	94	MBII	Price Williams 1977	Fig. 108.1
28	Small	Aphek-Antipatris	74	MBI	Bunimovitz 2000	Fig. 13.4: 6
29	Small	Tell Ajjul	88	MBIII	Petrie 1931	Pl. XX-69
30	Small	Tell el-Dab'a	63	MBI	Philip 2006	Fig. 19: 3
31	Small	Fashiq	90	MB?	Personal Information	

excavated at el-Daba, Megiddo, and Rishon le-Zion. This is the concave edge type used in this study (Fig. 5: 21–25). Large objects were excavated from grave G37, and medium-sized objects were excavated from grave A34, both of which were dated back to the MBII [Marchetti *et al.* 1998: 121; Silverberg *et al.* 2022: Appendix].

Medium-sized (180 mm) objects were excavated from Wadi el-Tin (Fig. 4: 13). Although no cross-sectional shape is provided in this report, it is believed to display a flat shape. It was first unearthed from a cave. Based on the associated artifacts, it was dated back to the MBII [Vincent 1947: 277].

A medium-sized (155 mm) object was excavated from Tell Beit Mirsim (Fig. 4: 10). Although the base is broken, it is believed to have four rivet holes [Albright 1938: 52]. The arrangement of the rivet holes is unclear in the published photographs, but they appear to form a trapezoidal shape. Therefore, this material is thought to have the same shape as that found in Wadi Muharrak 2S (Fig. 4: 6), Gibeon (Fig. 4: 7), Tell Fara (S) (Fig. 4: 8), and Bayt al-Mujali (Fig. 4: 9), which corresponds to the four-rivet type defined in this study. The cross-section of the body is flat, and the blade is straight. It was excavated from Stratum D and dated back to the MBIII (MBIIC) [Albright 1938: 82].

Small objects (88 mm) were excavated at Tell Ajjul (Fig. 5: 29). The details are unknown; the objects were not excavated from a grave but from an archaeological layer of the Hyksos Age in the Upper City [Petrie 1931: Pl. VI]. Because the Hyksos Age parallels Stratum D of Tell Beit Mirsim [Yassine 1974: 131], this material was also dated back to the MBIII.

Many artifacts have been found at Tell Fara (S), including six medium-sized objects and one small object (94 mm) (Fig. 4: 8, 11, 12, 14; Fig. 5: 17, 25, 27). Figure 4: 8 shows a medium-sized specimen (167 mm) with three rivet holes, although the number three was questioned in the report [Price Williams 1977: 61]. As such, this study suggests that the four-rivet holes be arranged in an inverted trapezoidal shape. If this were the case, they would have the same shape as those excavated in Wadi Muharrak 2S (Fig. 4: 6), Gibeon (Fig. 4: 7), Bayt al-Mujali (Fig. 4: 9), and Tell Beit Mirsim (Fig. 4: 10). In this circumstance, the material corresponds to the four-rivet type defined in this study. Figure 4: 11 and 12 are medium-sized (168 and 146 mm, respectively), with two rivet holes and a narrow ridge on the body. Figure 4: 14 shows a medium-sized specimen (164 mm) and a rare example in which a handle was excavated. Figure 5: 17 also depicts a medium-sized specimen (177 mm). The base is missing; however, there seem to be two rivet holes. Figure 5: 25 displays the small type (110 mm). The edge exhibits a concave shape; this material belongs to the same concave edge type as that of el-Dab'a, Jericho, Meggido, and Rishon le-Zion (Fig. 5: 21–25). This is the only material with a small concave edge. The last type is small (94 mm) (Fig. 5: 27). The body is flat with two rivet holes and a round tip. All seven of these items were dated back to the MBII.

Tell el-Dab'a is an archaeological site in northern Egypt. Two medium-sized daggers and a small NTBD were excavated from the site. Figure 4: 5 portrays the medium-sized specimen (188 mm) and the largest medium-sized specimen. The base of this item is missing and the number of rivet holes is unknown; however, it is believed to be two. The body has a narrow ridge. This material was not excavated from a tomb but rather from near the surface; its date of affiliation is unclear [Phillip 2006: 54]. Figure 5: 22 is also a medium-sized (187 mm) material. The body of this specimen is long and slender with a concave-shaped edge. This material has the same shape as the materials excavated at Jericho, Meggido, Rishon le-Zion, and Tell Fara (S) and belongs to the concave edge type (Fig. 5: 21–25). The material was excavated from Stratum E/1–2 [Phillip 2006: 53] and dated back to the MBII [Bietak 2013: Fig. 8.1]. Figure 5: 30 is the smallest item in the collection of NTBDs presented in this study. The specimen has two rivet holes and its blade shape is slightly concave. It was excavated from Stratum G in sector A/IV (Phillip 2006: 54) and dated back to the late MBIIA (1790–1710 BC) [Bietak 2013: Fig. 8.1].

Qurayyah is an archaeological site in northwestern Saudi Arabia. A small object (107 mm) was excavated (Fig. 5: 26). Owing to its poor state of preservation, it is unclear whether it is an NTBD. The authors considered the Meggido specimen (Fig. 5: 19) to be the most similar [Luciani and Alsaud 2020: 60]. Hence, we concluded that it should be added to the assemblage of NTBDs. This item has two rivet holes. The tomb from which this material was excavated was radiocarbon-dated (1690–1559 cal. BCE) and is believed to parallel the MBIII period [Luciani and Alsaud 2020: Table 1: 6].

Wadi Muharrak 2S is a complex of multiple tower tombs, and the ritual and burial remains are located approximately 20 km south of Qurayyah. A medium-sized object (167 mm) was excavated (Fig. 4: 6). Although part of the base is missing, the four rivet holes are arranged in a trapezoidal shape, similar to those in Gibeon (Fig. 4: 7), Tell Fara (S) (Fig. 4: 8), Bayt al-Mujali (Fig. 4: 9), and Tell Beit Mirsim (Fig. 4: 10). As defined in this study, this is a four-rivet type; however, the edge is slightly concave. This item was excavated from a tower tomb and is thought to be a grave good for reburial [Fujii *et al.* 2022]. This material likely belongs to MBII-III.

Bayt al-Mujali is an archaeological site in northwestern Yemen. Two large and three medium-sized objects were excavated from the site. Figure 4: 3 shows a large specimen (246 mm), the second biggest after that of Zefat (Fig. 4: 1); its body shape is elongated and dissimilar. It has narrow and clear ridges. Figure 4: 4 also presents a large 215 mm specimen with a narrow, clear ridge. Both have two rivet holes. Figure 4: 9 depicts a medium-sized specimen (157 mm). Because the base is damaged, it is difficult to say with certainty, but four rivet holes are arranged in a trapezoidal shape. The material exhibiting this shape is of the four-rivet type defined in this study (Fig. 4: 6–10). Figure 4: 15 also portrays a medium-sized object (180 mm). Similar to the larger specimen (Fig. 4: 3 and 4), it has a narrow and distinct ridge. Figure 5: 16 shows the same kind of item (177 mm) as that displayed in Fig. 4: 15. These five specimens are housed in the National Museum of Sana'a [Simpson 2002]. Although they are dated from the catalog to the late third millennium BC [Simpson 2022: 86], they are more likely to belong to the MBA.

Zabid is an archaeological site in western Yemen on the coast of the Red Sea. A medium-sized object (172 mm) was excavated from a megalith (Fig. 5: 19). The cross-section of the body is flat, and two large rivets remain. The authors dated it back to the late third millennium BC to the early second millennium BC [Giumlia-Maira *et al.* 2000: 43], but it is more likely to date back to the MBA.

Fashīq is an archaeological site near the Red Sea in western Saudi Arabia. Archaeological results have not yet been reported, but a small NTBD (90 mm) was collected from inside the tower tomb during a general survey (Table 1: 31)¹⁾. There are two rivet holes with rivets. Its morphology is very similar to that of the Tell Fara (S) material (Fig. 5: 27) and can most likely be dated back to the MBA.

Discussion

The materials belonging to the MBI are the large-type Zefat (Fig. 4: 1), the medium-sized Meggido (Fig. 5: 23) and Aphek-Antipatris (Fig. 5: 18), and the small-type Tell el-Dab'a (Fig. 5: 30) and Aphek-Antipatris (Fig. 5: 28). This indicates that all sizes appear in the MBI. However, no specimen can be traced back to the IB with certainty. Furthermore, materials excavated at Zefat were unearthed from a tomb containing a mixture of MBI and II, and the MBI may be from a later period. We therefore placed the Tell el-Dab'a materials in the MBI (late MBIIA [1790–1710 BC]). If we were to use 1750 BC as the boundary between the MBI and MBII, the materials from Tell

1) Personal information from Hasegawa and Risa Tokunaga in 2021.

el-Dab'a would date back to the late MBI to the early MBII. Thus, we can deduce that NTBDs emerged near the latter half of the MBI period.

Only three NTBDs could be dated back to the MBIII. These materials are from the medium-sized site of Beit Mirsim (Fig. 4: 10) as well as the small-sized sites of Qurayyah and Tell Ajjul (Fig. 5: 26, 29). Beit Mirsim and Ajjul were reported in the 1930s, and their accuracy is questionable. However, recent investigations in Qurayyah have provided radiocarbon dates (1690–1559 cal. BCE) associated with NTBDs, and it seems certain that they survived in the MBIII. However, the peak use of NTBDs appears to have passed by the MB III.

As mentioned above, NTBDs also existed in the MBI and MBIII. Hence, their duration is thought to have declined during the 1800–1600 BC period, although this has not been confined to the MB II period. The earliest sources include NTBDs of all sizes, suggesting that this set may have been brought from the outside.

Next, we considered the four-rivet-type and concave edge type models. For the four-rivet type (Fig. 4: 6–10), materials dating to MB II were excavated from Gibeon and Tell Fara (S), and materials belonging to MB III were excavated from Tell Beit Mirsim. Although the materials from Wadi Muharrak 2S and Bayt al-Mujali cannot be clearly dated, their characteristic shapes match, suggesting that they belong to either the MB II or MB III. The shapes and sizes of the four-rivet types are extremely similar, making it highly likely that they were made by the same group. These uniform bronze daggers are distributed over a wide area, from the Southern Levant to the southwestern Arabian Peninsula. The average length of the four-rivet type is 161.4 mm. This figure is extremely close to the average length of the collected NTBD specimens (158 mm), and this four-rivet type may have been the standard length for the production of NTBDs. If this hypothesis is correct, we can assume that this four-rivet type is the original NTBD. However, there are currently not enough radiocarbon dates for NTBDs, so this hypothesis remains speculative.

The concave edge type was excavated from Megiddo, Rishon le-Zion, Jericho, Fara (S), and Tell el-Dab'a and is distributed from the Southern Levant to Egypt. Although not as common as the four-rivet type, the concave edge type is more widely distributed. Moreover, the concave edge type belongs only to the MB II. This has already been pointed out in the Rishon le-Zion report [Kan-Cipor-Meron *et al.* 2018: 25]. The concave edge type has no consistency in size or overall shape other than the shape of the edge. This may be an NTBD with worn edges. In fact, the Tell el-Dab'a material (Fig. 5: 22) may be a reused product [Philip 2006: 53].

Conclusion

NTBDs were distributed mainly throughout the Southern Levant and the Western Arabian Peninsula; they belong to MB II [Philip 1989: 134; Kan-Cipor-Meron *et al.* 2018: 25]. The dating of the excavated materials suggests that their use was centered around the MB II period (1800–1600 BC). Moreover, it has been demonstrated that MB I and/or MB III materials exist. In addition, there are special types of NTBDs, i.e., the four-rivet and concave edge types. Regarding the latter, there are differences in size and shape, implying that they may have been deformed through use or reuse. In terms of the former four-rivet type, they are extremely similar in size and shape and were distributed over a very wide area from the Southern Levant to the Western Arabian Peninsula. In the future, analyses of NTBDs will need to pay special attention to this four-rivet type.

This collection is likely still incomplete and NTBDs will continue to be found in Egypt and the Arabian Peninsula. Further efforts should be made to integrate these factors. Moreover, although it has not been possible to cover the issue in this paper, we have pointed out that bronze daggers also exist in Syria and Anatolia [Maxwell-Hyslop 1946: 20; Gernez 2006: 474–477]. Further collection of materials in Syria is necessary to consider the origin of the NTBD.

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A PRELIMINARY STUDY OF WEIGHTS EXCAVATED AT KISH

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Introduction

Kish is an ancient city located in central Iraq, about 15 kilometers east of Babylon. It covers a vast area of approximately 2,000 hectares, with numerous mounds scattered throughout the site [The Institute for Cultural Studies of Ancient Iraq 2024]. This city is described as part of Sumer and Akkad in the 3rd millennium BCE and is located in the vast plain of southern Mesopotamia, later referred to collectively as Babylonia. It is a major urban archaeological site [ibid]. According to the Sumerian King List, Kish is regarded as the city where kingship first descended after the Great Flood, and it held a special status [ibid]. There is also a tradition that Sargon of Akkad rose to power from this city and established the Akkadian Empire. These traditions suggest that throughout the 3rd millennium BCE, Kish remained an important city in the Sumerian-Akkadian region [ibid].

The major excavation of Kish was conducted from 1922 to 1933 through a joint survey by the University of Oxford and the Field Museum of Natural History in Chicago [ibid]. Subsequently, an excavation team from Kokushikan University conducted the first survey from 1988 to 1989. After the Gulf War, excavations resumed in 2000, and the third survey was conducted until 2001 [Matsumoto and Oguchi 2002; Matsumoto and Oguchi 2004]. Excavations have revealed a continuous stratigraphic sequence from the Sasanian period to the Jemdet Nasr period. Although no excavations have been conducted for the earlier Uruk and Ubaid periods, pottery from these periods has been found on the surface [The Institute for Cultural Studies of Ancient Iraq 2024]. The excavation by Kokushikan University reported the discovery of architectural remains from the 3rd and 1st millennia BCE on the western slope of the Ingharra Mound in eastern Kish. Notably, a wealth of materials from the 1st millennium BCE was uncovered [Matsumoto and Oguchi 2002; Matsumoto and Oguchi 2004].

The central area of the site consists of two main districts, now known as Ingharra and Uhaimir [The Institute for Cultural Studies of Ancient Iraq 2024]. The Ingharra district was referred to as “Hursagkalama” at least since the Ur III period. The Ingharra district, together with the original “Kish” centered around the Uhaimir region, formed a so-called “twin city” [ibid]. Together, they were known as “Kish, Hursagkalama” and continued to play a significant role in southern Mesopotamia beyond the 3rd millennium BCE [ibid]. In the Ingharra district, a temple built by Nebuchadnezzar II of the Neo-Babylonian period (604–562 BCE) still stands today [ibid]. Additionally, in the Uhaimir district (meaning “red” in Arabic), there is the site of a temple featuring a ziggurat from the Old Babylonian period [ibid]. The ziggurat stands out as a prominent “red” mound, as the district’s name suggests. It is known that this temple was dedicated to the god of war, Zababa [ibid]. Through these excavations, it has become clear that Kish played a significant role in ancient Mesopotamia.

Weights Excavated at Kish

Some of the weights excavated from Kish were housed in the Ashmolean Museum in Oxford after the joint excavations conducted by the University of Oxford and the Field Museum of Natural

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History from 1922 to 1933. Currently, some of these weights are publicly available as research materials. Therefore, this study focuses on 17 weights excavated from Kish, with manufacturing dates ranging from around 3,000 BCE to 500 BCE, and aims to examine the characteristics of these weights.

The lengths and weights of the 17 artifacts were measured and are shown in Table 1. According to Palmisano (2018), the standard value for one shekel in Mesopotamia during the 3rd to 2nd millennium BCE is considered to be 8.55 g in present-day weight [Table 4.14. on 53]. In light of this result, when classifying the weights excavated from Kish, the approximation of 8.55 g was found in two artifacts: No. 6 (5.57 g) and No. 15 (7.6 g). If we assume that one shekel equals 8.55 g, the approximation of 85.5 g, which is ten times that value, corresponds to three artifacts: No. 2 (81.31 g), No. 10 (81 g), and No. 17 (87.57 g). Furthermore, the approximation of 256.5 g, which is thirty times that value, was found in two artifacts: No. 4 (261.31 g) and No. 16 (259.11 g).

Moreover, considering the excavation locations of the weights, those found at Mound W (No. 13 and No. 17) have the characteristic of being bell-shaped and made of clay. In contrast, the stone weights found in the Ingharra district, which have a sphendonoid shape, exhibit different characteristics.

In addition, stone weights with a sphendonoid shape excavated from the Ingharra district have been found to feature vertical parallel lines engraved on their sides (No. 7, No. 11, No. 14, and No. 16). This phenomenon is not limited to Kish; similar markings, such as lines or engravings on the sides, have also been observed on weights excavated from Ashur and Nineveh [Powell 1971]. It has been suggested that these engraved lines may have been used to visually distinguish between different weight categories [ibid]. Engraved lines have also been identified on weights excavated from Kültepe in Anatolia, and it has been suggested that these markings may serve as indicators of specific weight units (such as one shekel or one mana) [Veenhof 1972]. Thus, while previous studies provide various interpretations of the engraved lines, what significance did the markings on the Kish weights hold?

Assuming that the lines engraved on the weights served as reference lines for measurement, the weight of a single line can be calculated using the formula: the weight of the weight divided by the total number of lines gives the weight of one line. For example, when calculating the weight of a single line for the four weights with engraved lines measured in this study, the results are as follows: For No. 7, the weight of one line is approximately 8.6 g; for No. 11, it is approximately 8.4 g; for No. 14, assuming there are four lines in total, the weight of one line is approximately 4.3 g; and for No. 16, it is approximately 64.8 g. If the current weight of one shekel in Mesopotamia during the 3rd to 2nd millennium BCE is 8.55 g [Palmisano 2018], it can be said that the engraved lines on No. 7 and No. 11 were likely drawn to correspond approximately to the weight of one shekel. Additionally, for No. 14, it can be understood that it corresponds to half the amount of one shekel (4.275 g). However, for No. 16, since the weight of one line differs from the other weights, it appears that the engraved lines were based on a unit larger than one shekel. Based on these results, it can be concluded, as Veenhof (1972) pointed out, that the lines engraved on the weights are likely marks indicating a specific weight unit (one shekel).

Conclusions

It is known from the study of cuneiform tablets and archaeological materials that merchants were actively engaged in trade in Mesopotamia. This period had already entered the historical era, and numerous cuneiform clay tablets excavated from Mesopotamia and its surrounding regions, including Kish, have provided valuable information regarding the economic conditions and the system of weights and measures of the time. In this context, focusing on the weights excavated

Table 1 Weights in the Ashmolean Museum Collection

	Ashmolean Museum Accession No.	length (mm)	width (mm)	weight (g)	Material and technique	area	level	shape	Reference URL
1	AN1929.224	18.8	33.6	27.98	haematite stone	Ingharra	B479 Y at 3 m	Sphendonoids	https://collections.ashmolean.org/object/463560
2	AN1931.54	38.8	34.0–31.6	81.31	limestone	Ingharra	K.1442, various plain level	hemisphere	https://collections.ashmolean.org/object/464984
3	AN1929.227	18.7	35.5	17.47	stone	Ingharra	–	Sphendonoids	https://collections.ashmolean.org/object/463930
4	AN1927.2103	44.7	52.1–73.8	261.31	brown sandstone	Ingharra	?458	Zoomorphic (unfinished)	https://collections.ashmolean.org/object/463942
5	AN1929.225	22.5	49	52.58	black stone	Ingharra	V536 C3 at 1 m	Sphendonoids	https://collections.ashmolean.org/object/465023
6	AN1931.61	14.1	25.7	7.6	banded marble	Ingharra	K1442: various plain level	Sphendonoids	https://collections.ashmolean.org/object/465153
7	AN1931.56	27.6	53.2	77.43	limestone	Ingharra	K1442: various plain level	Sphendonoids (9 lines)	https://collections.ashmolean.org/object/465445
8	AN1931.60	16.8	36.6	17.87	basalt	Ingharra	K1442: various plain level	Sphendonoids	https://collections.ashmolean.org/object/462266
9	AN1931.63	19.5	24.7	23.17	red serpentine	Ingharra	K1425: Surface	Sphendonoids	https://collections.ashmolean.org/object/465072
10	AN1931.55	30.1	65.1	81	basalt	Ingharra	K1442: various plain level	Sphendonoids	https://collections.ashmolean.org/object/465444
11	AN1931.57	18.8	35.9	25.22	grey sandstone	Ingharra	K1442: various plain level	Sphendonoids (3 lines)	https://collections.ashmolean.org/object/465446
12	AN1931.58	18.5	41.5	22.77	conglomerate stone	Ingharra	K1442: various plain level	Sphendonoids	https://collections.ashmolean.org/object/465447
13	AN1925.148	59.4	12.3–45.5	106.03	clay, unbaked	Mound W	1842	bell-shaped	https://collections.ashmolean.org/object/463719
14	AN1931.59	18.2	34	17.18	grey schist	Ingharra	K1442: various plain level	Sphendonoids (3–4 lines)	https://collections.ashmolean.org/object/464689
15	AN1931.62	9.1	27.8	5.57	polished brown stone	Ingharra	K1442: various plain level	Sphendonoids	https://collections.ashmolean.org/object/465154
16	AN1931.53	40.4	101.6	259.11	grey schist	Ingharra	K.1442: various plain level	Sphendonoids (4 lines)	https://collections.ashmolean.org/object/463825
17	AN1925.149	52	44.7–48	87.57	clay, unbaked	Mound W	1842	bell-shaped	https://collections.ashmolean.org/object/463906

from Kish, the following four characteristics have been identified: (1) Weights approximating the standard value of one shekel have been found; (2) Weights corresponding to multiples of that value have also been discovered; (3) The type of weight varies depending on the excavation site; (4) The lines inscribed on the weights likely serve as marks to indicate specific weight units. Based on the results of this study, the next steps should involve investigating whether there were specific places where certain weights were used, as well as clarifying the meaning of the lines on the weights, which indicate different units.

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[Editorial postscript (編集後記)]

In this 46th issue of *al-Rāfidān*, we are pleased to present two excavation reports, one research paper, and one preliminary study. Among them is a report on the archaeological investigations in southern Iraq by Dr. Shahmardan Amirov of the Russian Academy of Sciences, who has contributed to *al-Rāfidān* for the first time. Unfortunately, some manuscripts had to be postponed to the next issue during the editing process, but we are delighted to bring you this journal focusing on archaeology, with a particular emphasis on Iraq.

We would like to express our sincere gratitude to Professor Emeritus Akira Tsuneki of the University of Tsukuba for his invaluable support during the editing process. Additionally, we deeply appreciate the staff of Letterpress, printing and bookbinding company, who have always been wholeheartedly dedicated to supporting our editorial work. In particular, we would like to extend our gratitude to Ms. Ayano Takasaka, who has been in charge of this publication for many years. As we understand, she will be transitioning to a new role at the end of this fiscal year. We would like to take this opportunity to express our heartfelt appreciation for her dedication.

This year, we were deeply saddened by the passing of Professor Emeritus Kazuya Maekawa of Kyoto University, a distinguished researcher of cuneiform studies and a special researcher of the Institute for Cultural Studies of Ancient Iraq. His passing on September 12, 2024, is a great loss to the field. Currently, his academic students are working to publish his final paper in *al-Rāfidān* either next year or the year after. Additionally, the publication of cuneiform texts excavated at Umm al-Aqarib, a project he was working on with Dr. Haidar Oraibi Almamori and Dr. Wakaha Mori, is also planned.

Due to campus redevelopment at Kokushikan University, the building housing the repository, laboratory, and exhibition room on the Setagaya Campus is scheduled for demolition. As a result, the Setagaya branch of the institute will be closed at the end of March. We extend our heartfelt gratitude to all those who have contributed to the institute over the years. The institute at the Machida Campus will continue to operate as usual. There are also plans to establish a museum at the Setagaya Campus in the future, and we hope that the institute's collection can be exhibited there in the future.

Lastly, we would like to inform you that Professor Hiromichi Oguchi, who has been affiliated with the institute for more than 40 years, will be retiring at the end of March. We extend our sincere appreciation for his many years of dedication.

(K. Oguchi)

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