

HLC Project 2018: Jagiellonian University excavations in southern Jordan



Abstract: A complex view of the prehistory in southern Jordan emerges from the excavations of the Jagiellonian University team, which carried out in 2018 its second season of fieldwork at the sites of Munqata'a and Faysaliyya, even as analyses of finds from the previous season were underway. Human communities living here in the Neolithic and Early Bronze Age practiced both sedentary and mobile lifestyles. The changing landscape around them, caused by natural erosion processes and periodical climate change, is also taken into consideration while interpreting the explored relics.

Keywords: prehistory, Neolithic, southern Jordan, lithics, HLC Project

The HLC Project continued the excavation of the Faysaliyya and Munqata'a sites initiated in 2017, while focusing on verifying the provisional dating of sites in southern Jordan to the Early Bronze Age, which is one of the main goals of the project. Detailed research, including field survey and excavation, coupled with the processing of data collected over two seasons, have frequently confirmed or excluded such given dates, yielding an increasingly complex view of the late prehistory of this region, based on excavations as well as on surface prospection and landscape studies.

Significant obstacles are posed by the small number of dating finds from the excavated sites and the absence

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of material suitable for radiocarbon dating, which is the result of post-deposition processes and highly dynamic natural erosion processes at the sites. However, the huge quantity of flint material leaves no doubt as to the intensive activity of human groups at the studied sites as

well as in the whole region. Identified architectural relics of settlement and encampment structures are also proof of this activity. Of particular interest in this context is a landscape analysis of the region around Tafila and Shawbak, based on prospection data.

GEOARCHAEOLOGICAL OBSERVATIONS

Geoarchaeological research concentrated on the Faysaliyya archaeological site, extending the geological test trench dug the year before from level -170 cm to level -340/350 cm below ground surface without reaching bedrock. A rough estimation based on a trigonometric measurement of the bottom of a contemporary river bed shows that it could be another 200–300 cm down.

At least five geological layers were distinguished in the examined section. The first one (counting from the top) is a contemporary (Holocene) layer of silt–loess gravels formed in eolic and sporadic rainfall conditions. The second one consists of silt–sand and much more numerous gravel. It was formed probably in seasonal rain conditions. The third layer was formed in slow water, reductive conditions (small oxbows or puddles). Layer four is the outcome of seasonal but frequent and very dynamic water streams. The last layer is a typical fluvial sediment of a degraded mountain river. In general terms, the number and size of gravel blocks rises from top to bottom

with some levels being very rich in them. Terra rossa and/or rendzina horizons can be seen in the section.

The sediments were sieved, weighed, counted, and petrographically described to supply data for a reconstruction of the paleoenvironment. Importantly, prehistoric artifacts were noted at the bottom of the section, in secondary position as part of fluvial gravels. Their presence in Pleistocene sediments is an argument in favor of human settlement in the area.

Three OSL (optically stimulated luminescence) samples were taken at the Faysaliyya archaeological site, two from Zone B and one from Zone A. A fourth sample was taken from layer 4 in the geological test trench. Several samples for dating with the Uranium–thorium method were also taken because of calcareous duricrust, levels of caliche and carbonate mineralization in the gravel. The samples were expected to help to date the sediments, and especially the archaeological (human occupation) layers, independently.

FAYSALIYYA: FIELDWORK IN 2018

The fieldwork at Faysaliyya was carried out in two trenches located 65 m

apart in Area B. Research methodology followed the standards set for

the project in the 2017 season (see Kolodziejczyk et al. 2018). Strata in the two excavations, the eastern trench (Trench E) and the western trench (Trench W), were recorded separately without synonymy in the numbering [Table 1].

TRENCH E

A new square B4112 was opened north of last year's excavation in B4213, leaving a 0.50 m balk between them. The combined results of two seasons were summed up in the following break-up of the stratigraphy into three main strata:

Table 1. Faysaliyya: stratigraphic division of the archaeological record in the western and eastern trenches

Stratum	Chronology/origin	Loci Trench W	Loci Trench E	Description
1	Fluvial accumulation	L12 (topsoil) L14 (topsoil) L15 L19 (topsoil) L16=L17 L20=L17 L26	L115 L104 L101 L102 L116 L117 L119	Non-anthropogenic layer associated with processes of slope erosion. Contains numerous artifacts of varied chronologies
1a	<i>Post quem</i> Stratum 2a	–	W106 L107 W108	Layers associated with the occupation of the structure incorporating W106 in Trench E
2a	<i>Post quem</i> Stratum 2b	L13 L24 L33 L35	L105 L118 L122?	Phase following the occupation of stone structures: collapsed stone tumble (L118) in Trench E and structure with wall W11 (after its collapse) in Trench E
2b	Early Bronze IV/ Middle Bronze I Dating based on ¹⁴ C samples (i.a., L30, floor level, Trench W) and pottery typology	L15 L21=L22 W11 L25 W27 W28 L29? L30 L31 L34 L36?	L114 L113 L112 L111 L110 L122?	Occupation of stone structures, associated with wall W11 in Trench W and with stone rubble (L118) in Trench E
3	<i>Ante quem</i> Stratum 2	L32	L110? L103 L121 L120	Layer of fluvial accumulation under stone structures; associated with wall W11 in Trench W and stone rubble (L118) in Trench E

Stratum 1

Non-anthropogenic layer associated with processes of slope erosion, containing numerous artifacts of different chronology. *Stratum 1a* – anthropogenic layer connected with the functioning of Wall 106 (henceforth W106). All the loci from this stratum were discovered in 2017.

Stratum 2

Stratum 2a includes loci: L105, L118 and probably L122 (left unexplored). Stone rubble appeared in the western part of B4112 at a depth of 1234.55 m asl and was explored down to 1234.14 m asl. It consists of irregular and undressed stones of large and medium size. Sherds of a ceramic vessel were discovered under one of the larger stones

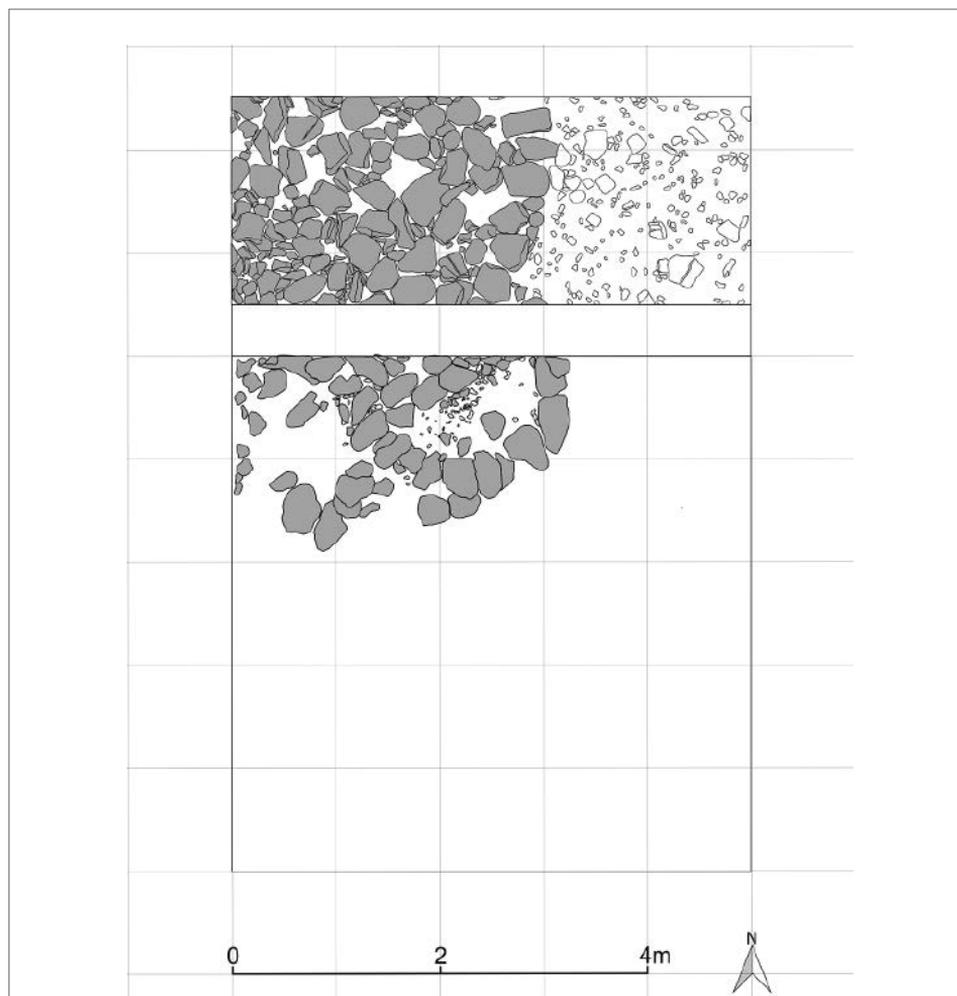


Fig. 1. Faysaliyya. Partly excavated stone structure in trench E (Squares B4213 and B4112) (Jagiellonian University HLC Project | drawing B. Witkowska, J. Karmowski)

in the western part of the rubble with several more fragments from the same vessel under other stones nearby at depths from 1234.20 to 1234.03 m asl (see below, section on the pottery). Drier and more compact pieces of clay among some of the larger stones could be the remains of mortar. There does not seem to be any arrangement or regularity in their location.

Stratum 2b comprised loci L111, L112, L113, L114 interpreted as contemporary with the tumble of a stone structure (L118). All the loci were discovered in 2017 in square B4213 (see Kołodziejczyk et al. 2018: 387–389). Circular stone structures (L112 and L113) continuing north of square B4213 should probably be connected with L118 and/or L122 at some level beneath the balk not explored in 2018 [Fig. 1].

Stratum 3

Most probably a fluvial layer of sediments underlying the stone structures of Stratum 2. The stones in locus L120 are sized from 3 x 3 x 2 cm to 27 x 19 x 10 cm with a significant predominance of the smallest size suggesting fluvial activity. A robber's pit in the northwestern part of the square B4213, which appeared following the 2017 season, turned out to be directly above bedrock. This was corroborated by cleaning the trench wall next to the pit: the rubble from Stratum 2 (L118/L122) was just 17 cm above bedrock, which was recorded at 90 cm below ground surface.

TRENCH W

Work in the western zone aimed to recognize a stone structure associated with Wall 11 discovered earlier (see Kołodziejczyk et al. 2018). The excavated area in squares B5111, B5112, B5212, B5313, B5314 was 32.50 m². Three main strata were distinguished:

Stratum 1

Non-anthropogenic layer associated with processes of slope erosion, not homogeneous, containing substantial material of diverse chronology—undoubtedly a secondary deposit.

Stratum 2

Stratum 2a, a layer that is not homogeneous in terms of the material, reflects the deserting and partial natural destruction of the stone structure. All the loci from this layer are stone drifts consisting of medium and large stones lying in a chaotic arrangement. They overlie the line of walls W11 and W27 (see Stratum 2b) suggesting that these had been higher once.

Stratum 2b, directly associated with the building and occupation of the stone structure with the biggest feature, wall W11, which is a single row of large boulders set vertically and packed with small stones at the base (see Kołodziejczyk et al. 2018) [Fig. 2 and inset]. It was a fence of sorts, traced over a distance of 14 m, without giving an idea of the size of the enclosure. Layers of middle- and small-sized stones, L22 and L29, were saturated with material. A hard layer of soil formed a tamped floor L30 in the northern part of the space.

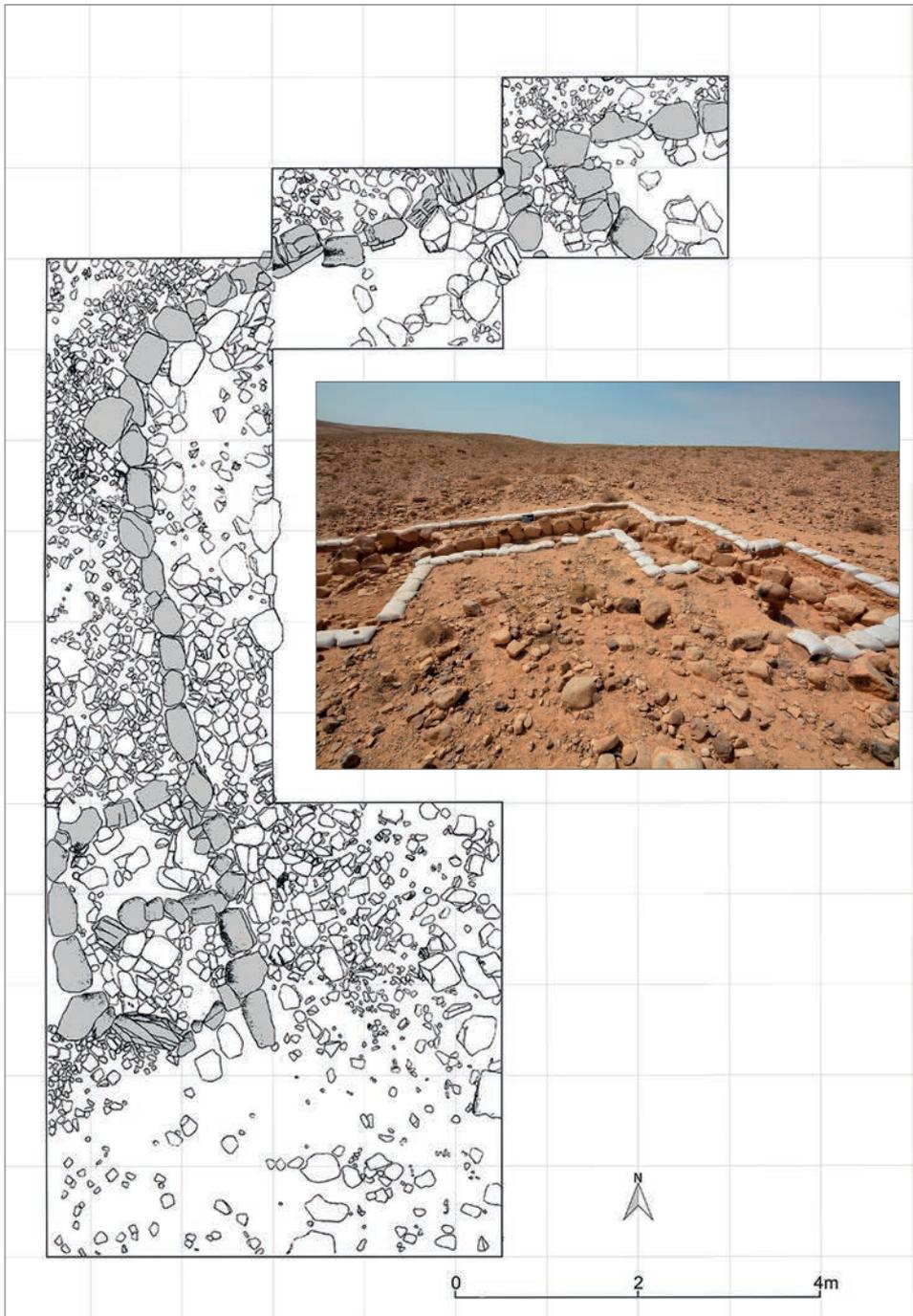


Fig. 2. Faysaliyya. Partly exposed stone structure in trench W (Squares B5112, B5111, B5212, B5313, B5314); inset, view of the structure looking west (Jagiellonian University HLC Project | drawing B. Witkowska and J. Karmowski, photo P. Kołodziejczyk)

Clusters of medium and large stones in the northern part of the trench may represent successive internal walls, but without opening a larger excavation it is not possible to verify this hypothesis. At this stage of research, it seems that the stone structure may be classified as a Cell-and-Fence type of structure (see Tarawneh and Abudanah 2013; Abu-Azizeh 2013), an idea supported by the presence of a circular structure surrounded by W27 located on the outer side of W11. A fireplace L25 and

numerous flint materials, fragments of ceramics and the bottom of a mortar-type stone vessel were found inside this structure [see Fig. 2].

Stratum 3

A layer (L32) interpreted as natural runoff serving as a base for the stone structure. Ground morphology here caused slope erosion, contributing both to the accumulation of successive layers and to their destruction and redeposition.

Table 2. Munqata'a: stratigraphic division (Trench E)

Stratum	Chronology/origin	Loci	Description
1	Non-anthropogenic layers	L1 L2	Non-anthropogenic layers connected with dynamic erosion processes typical of mountainous terrain
2a	PN mixed with PPN (secondary context)	L28 L14 L16	Layers located outside the curvilinear stone structure; result of fluvial accumulation
2b	PN (Jericho IX) based on pottery typology	L3 L4 L12 L13 W11 L15 L18* W21 L24 L25 L26 L29	Curvilinear stone structure
3	PN (Jericho IX) based on pottery typology and ¹⁴ C dating	L5 L6 L7 L8 L9 L18	Layers associated with several hearths located below the stone structure
4	PPN based on typology of flint material	L10 L17	Layers located below the hearths; only flint artifacts of earlier chronology

* At the current stage of research it is impossible to determine whether L18 belongs to Stratum 2 or Stratum 3.

MUNQATA'A: FIELDWORK IN 2018

Two zones were explored in 2018 [Fig. 3]. Trench E was a continuation of work from 2017 with the aim to identify the surroundings and the character of a stone structure (see Kołodziejczyk et al. 2018). Two extensions were dug (northern extension 17.5 m², eastern extension 6 m²). The second exploration zone, Trench W [Fig. 4], was located 9 m to the west and was associated with another stone structure, the outline of which was visible on the ground surface. Adding the 28.5 m² from this trench gives a total of 52 m² of area excavated in 2018.

TRENCH E

Northern extension located north of the area excavated in 2017 and separated from it by a balk 0.50 m wide. Another 8 m of wall W₁₁ was registered, running a curvilinear course from south to west in the northern part (marked as W₂₁). The construction of the wall was visible only in the southern section; it had two faces and a rocky debris core, measuring 0.70 m in thickness (see Kołodziejczyk et al. 2018) [see Fig. 3]. Observations in the northern part were hindered by a layer of stones (L₂₄), located on the west, in-

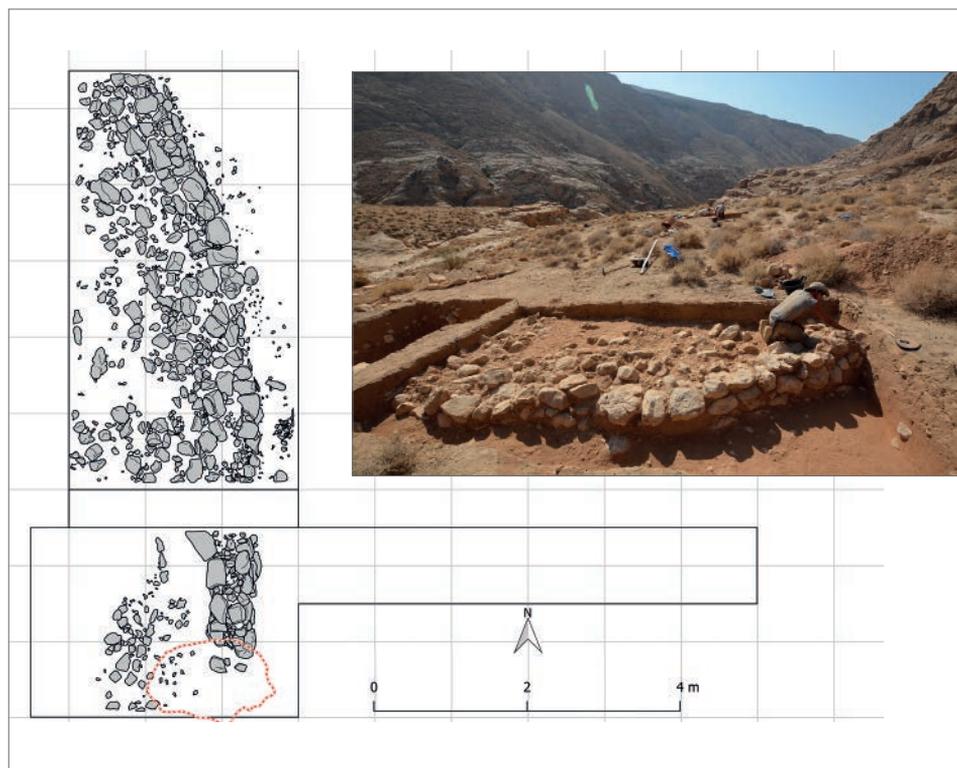


Fig. 3. Munqata'a. Neolithic stone wall and associated features in Trench E; inset, the structure in the trench during excavation, looking west (Jagiellonian University HLC Project | drawing B. Witkowska, J. Karmowski; photo P. Kołodziejczyk)

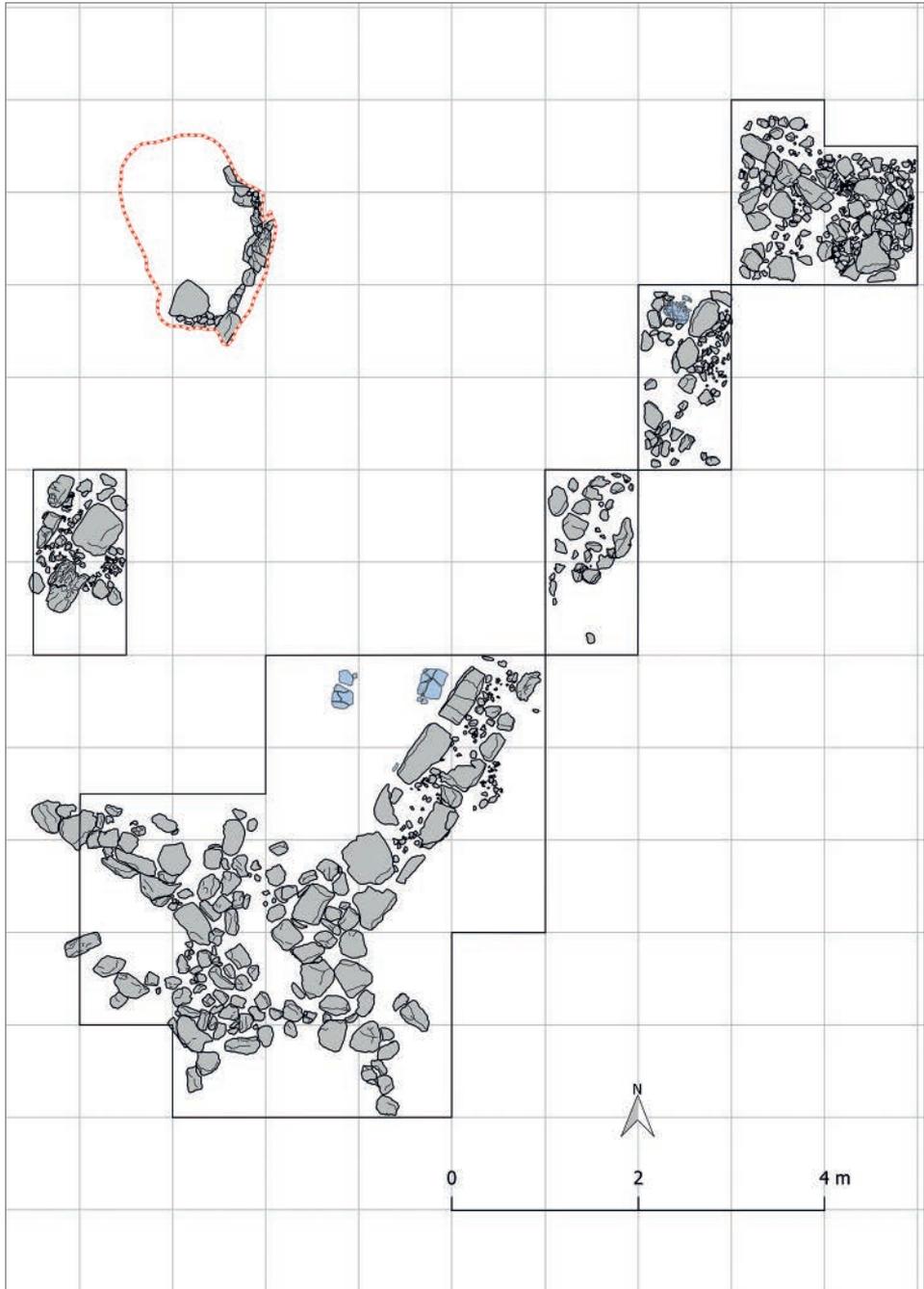


Fig. 4. Munqata'a. Neolithic layers of a stone building related to the Jericho IX horizon in Trench W (Jagiellonian University HLC Project | drawing B. Witkowska, J. Karmowski)

ner side of W₁₁ (Stratum 2b, see *Table 1*); possibly a collapse of W₁₁, it may reflect a secondary deposit.

On the outer side of the wall, a 0.80 m depth of the deposits was investigated (without reaching Stratum 3). There was practically no prehistoric material except for a ceramic vessel handle. A look at the stratigraphy visible in the northern trench wall indicated that L28 was a natural runoff with W₁₁ as a barrier (Stratum 2a, see *Table 1*).

Eastern extension. A 1 m-wide extension directly adjacent to the area excavated in 2017. A fireplace (L18) was discov-

ered in this section of the eastern trench, 7 m away from wall W₁₁; it is still not clear whether it belonged to Stratum 2 or Stratum 3. The space between the wall and the hearth was filled with runoff layers with a visible clustering of artifacts by the eastern face of W₁₁. It is probably due to slope erosion and, just like L28 in the northern extension, should not be seen as a homogeneous layer associated with the use of W₁₁ (Stratum 2a, see *Table 1*).

TRENCH W

Tracing stone walls discovered on the surface was the aim in opening this trench.



Fig. 5. Munqata'a. Partly exposed stone walls of a rectangular building in Trench W with one of the vessels *in situ* (Jagiellonian University HLC Project | photo M. Czarnowicz)

Additionally, a nearby looters' pit of about 2.50 m² was cleaned and documented. Exposing the walls and adjacent spaces revealed the outline of a rectangular room with sides of about 10.60 m by 5.50 m [see *Fig. 4*]. All the loci and walls discovered here in 2018 should seemingly be connected with the construction and occupation of the discovered building (all loci belong to the same stratum). The building is oriented NE–SW and consists of two well-preserved walls W19 and W32, built as two-faced structures with a core of smaller stones faced with larger ones on the outside. The uncovered walls are from 0.73 m to 0.90 m thick. The larger outer stones measure from 20 x 12 x 10 cm up to 70 x 32 x 30 cm. The ones in the inner core are much smaller, the largest measuring 16 x 12 x 4 cm, the smallest a mere 1.2 cm. All the walls were

exposed to the level of one course of stones. Floors were cleared adjacent to the stone walls in some places. A cross-section through a looters' pit suggested more stone courses, but at the present stage of research it could not be determined whether they were part of the wall structure traced on the surface. The location and structure of the rock rubble in the northern (L30) and southern (L22, L23) parts of wall W19 may suggest the presence of more walls extending from it in a NW–SE direction [*Fig. 5*]. The building thus seems to have consisted of more than one room, exceeding the current estimates of 55 m² of area. A floor of beaten earth (L20, L31) was noted 0.20 m below the topsoil. Ceramic vessels were found lying *in situ* on these floors and some of them appear to have been destroyed by the falling walls.

FLINT ARTIFACTS

FAYSALIYYA

During the research carried out at the site in 2018, a total of 3292 flint artifacts were discovered. The bulk of them came from three excavation units (Trench E, Trench W and the geological test trench). In addition, several dozen flint artifacts were collected from the surface in various parts of the site. All the artifacts are made of local raw materials easily accessible in the wadi itself or in its immediate vicinity. These are good quality flints, the most common being brown-beige (more than 80% of the artifacts) or less often grey (about 20%). The flint inventory is characterized by a relatively high proportion, more than 40%, of artifacts showing different degrees of patination and weathering of the surface. Some of them have

strongly smoothed surfaces (most often postpositional damage resulting from the interaction of various fluvial and eolic processes). There were also a few burnt flints (less than 1%) in the excavations.

Trench E

Of the 800 flint artifacts from this trench, more than 80% (648 specimens) were discovered in Stratum 1. Core forms are represented by eight specimens. These are mainly small, single-platform flake cores or blade-flake cores, the preparation of which is usually limited to the platforms. Two specimens may be considered as not very regular, recurrent Levallois cores. In both cases, they were intended for the production of flakes. A single hammerstone was also discovered.

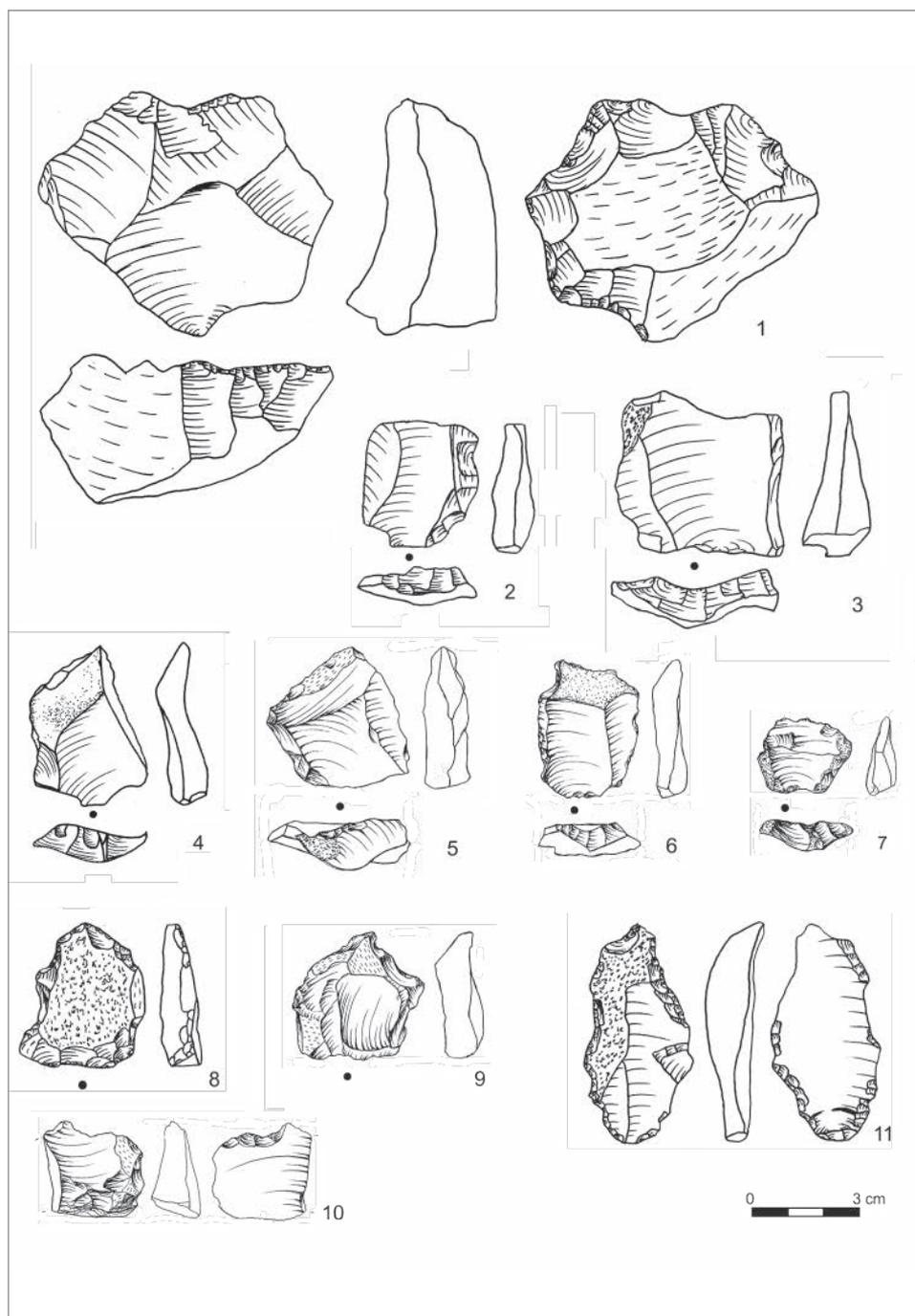


Fig. 6. Flint artifacts from Faysaliyya: 1 – Levallois core, 2–7 – Levallois flakes, 8–11 – notches and denticulates (Jagiellonian University HLC Project | drawing J. Zakrzeńska, A. Brzeska-Zastawna and J. Chowaniak)

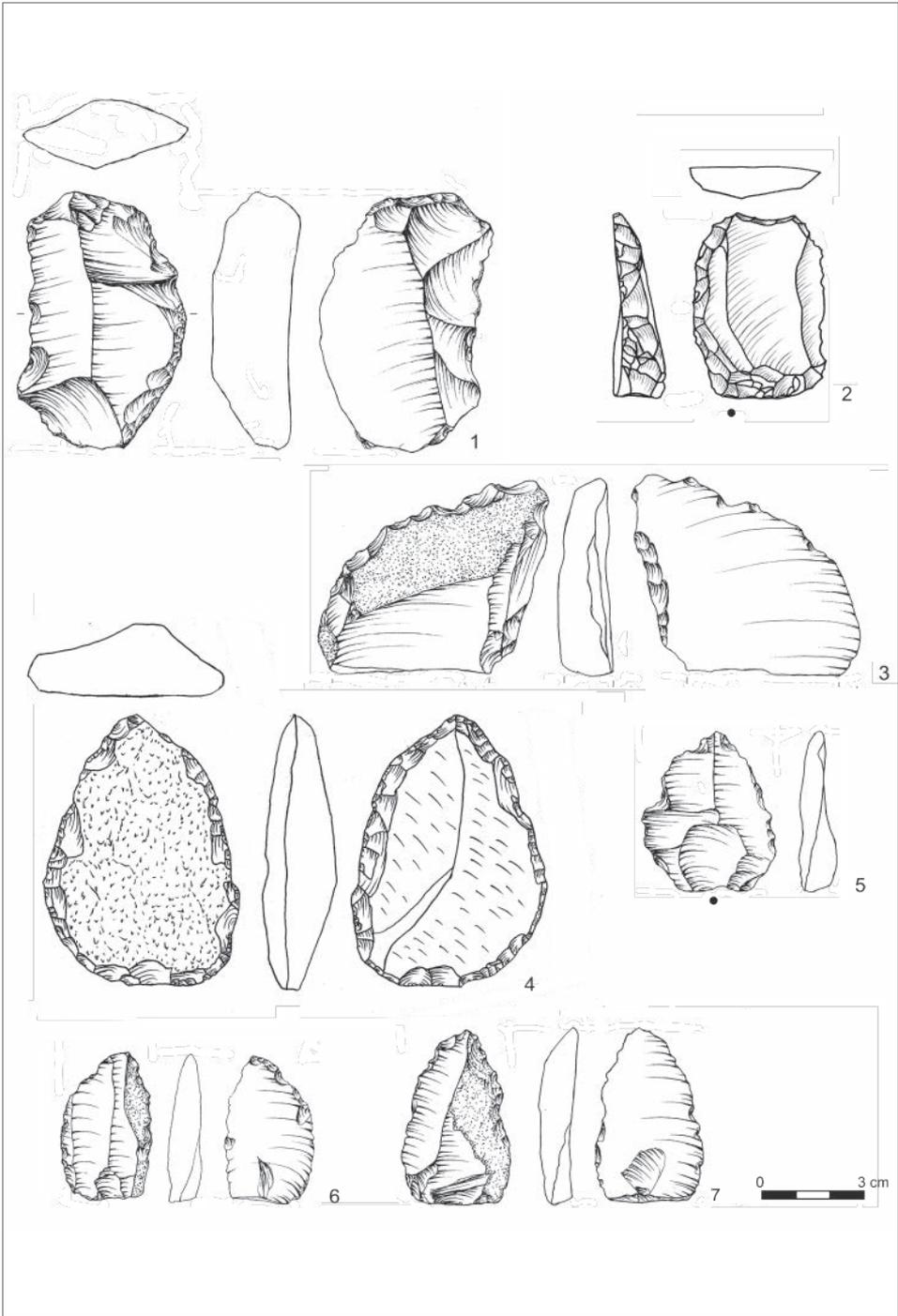


Fig. 7. Flint artifacts from Faysaliyya: 1-4 – scrapers; 5-7 Mousterian points (Jagiellonian University HLC Project | drawing J. Zakrzeńska, A. Brzeska-Zastawna and J. Chowaniak)

The bulk of the artifacts are non-diagnostic flakes, chips and undefined fragments. Among the flakes there are single, characteristic forms that can be combined with core preparation or later repair treatments, such as irregular crested and rejuvenation flakes. Blades are present, 54 specimens, from one-platform cores. Taking into account the metric data, 30 artifacts can be defined as bladelets (width less than 12 mm). A single, slightly damaged macro blade with a width of more than 50 mm was also distinguished. There were also 11 Levallois flakes and a single Levallois point.

Tools constitute a group of 73 specimens, among which ordinary retouched flakes (25 specimens) and denticulated/notched tools (21 specimens) predominate [Fig. 6:8–11]. Single Levallois specimens are present [Fig. 6:2]. There were also six retouched bladelets and blades. A relatively large group comprises scrapers (seven specimens), among which single forms, both lateral and transversal, predominate. Almost all of the scrapers were made of massive flakes (some can be considered as *débordant* flakes associated with the use of the Levallois technique). Two scrapers were made of primary cortical flakes, but only one can possibly be considered as tabular scraper because of blank morphology and the type of retouching. Other forms of tools included: four endscrapers (including three squat ones, made of flakes and one very slender, made of a regular blade), four microliths (two backed blades/crescents, a truncation and a rectangle), three fragments of tangs of points or small perforators, two flake perforators and a single blade truncation.

Stratum 1a did not provide any flint artifacts.

The next layer (Stratum 2a), connected with the stone rubble, yielded 136 flint artifacts. The core forms comprise a small, single-platform flake core with prepared platform and an irregular discoidal core. Nearly 90% of the artifacts are uncharacteristic flakes, chips and undefined fragments. Single irregular crested pieces were distinguished among the flakes. The six blades are all specimens separated from single-platform cores. Two Levallois flakes were noted. Nine tools were distinguished: two damaged points (probably Mousterian), two denticulated tools (including one made of a Levallois flake) and five retouched flakes.

Stratum 2b yielded only seven non-characteristic flakes and Stratum 3 (interpreted as a runoff layer on which the stone structures were built) nine flint artifacts: a single-platform flake core of small dimensions, a denticulated/notched tool and seven non-characteristic flakes.

Trench W

A total of 2377 flint artifacts was discovered in the trench W. More than 60% of them (1523 specimens) come from a runoff layer, marked as Stratum 1. Core forms are represented by 21 artifacts. The bulk of these are small, single-platform flake cores or blade-flake cores with preparation usually limited to a striking platform [Fig. 8:1,2]. In the case of two flake cores, one change of orientation was observed. In addition, the core group includes three Levallois flake cores: two recurrent and one preferential [Fig. 6:1]. There were also one hammerstone and four nodules with single scars, perhaps initial cores.

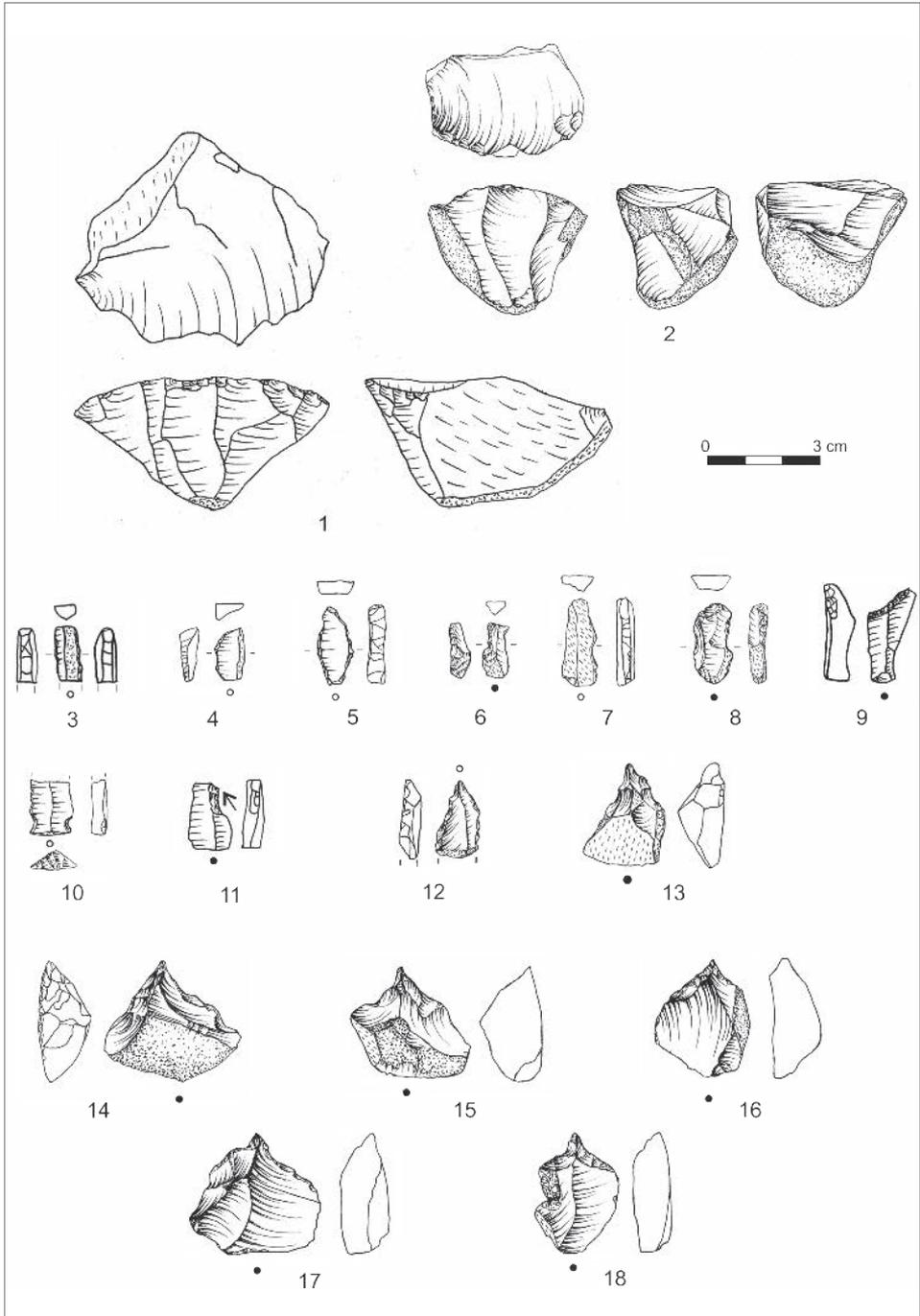


Fig. 8. Flint artifacts from Faysaliyya: 1-2 – single platform cores; 3-9 – microliths; 10 – el-Khiam point; 11 – microburin; 12-18 – perforators (Jagiellonian University HLC Project | drawing J. Zakrzęska, A. Brzeska-Zastawna and J. Chowaniak)

Making up the bulk of artifacts from Stratum 1 are ordinary flakes, chips and unspecified fragments. Several dozen characteristic forms associated with preparation or repairs of cores have been distinguished among the flakes, including irregular crested pieces, re-

juvenation flakes, tablets, as well as *débordant* flakes. The number of blades is 120. In metric terms, 44 artifacts can be defined as bladelets (width <12 mm) and five as macroblades (width about 40–50 mm). Among the blades there are several irregular crested blades. In ad-

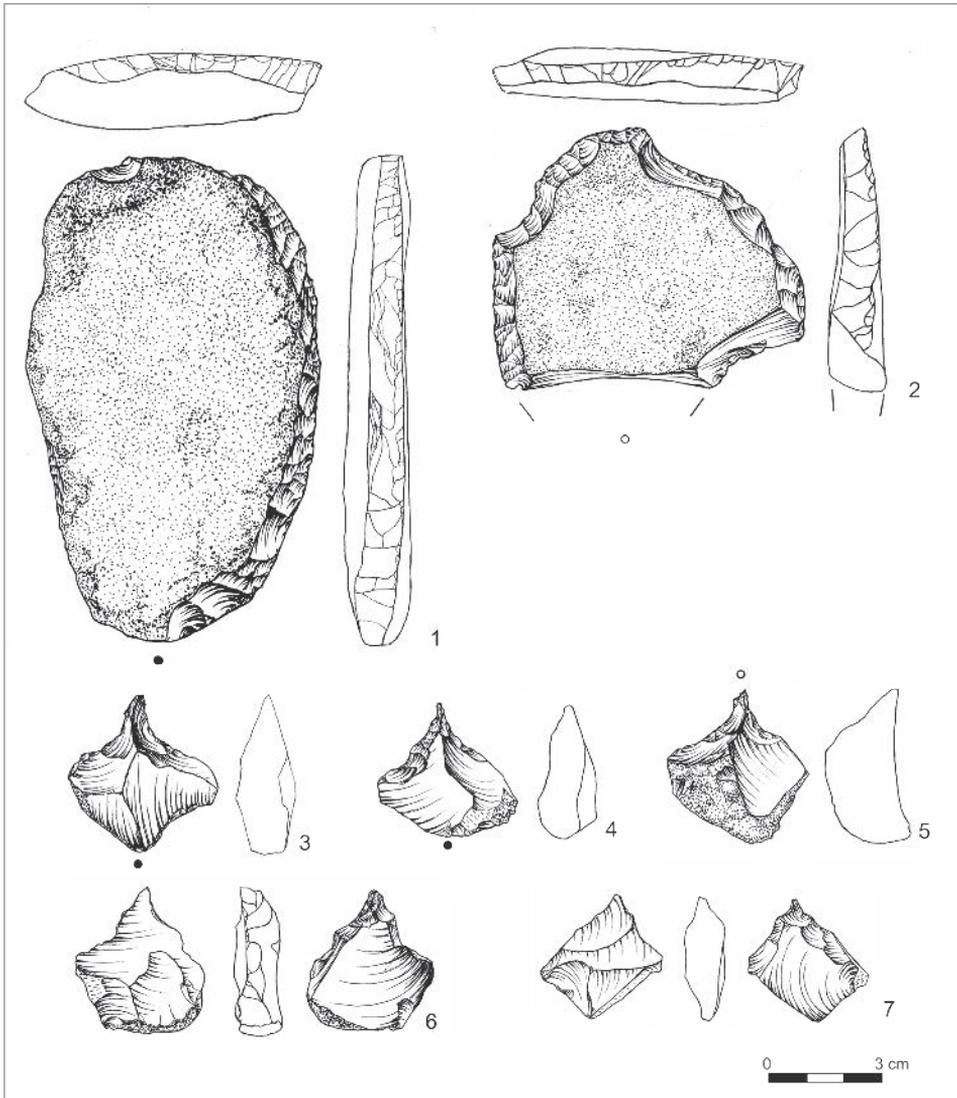


Fig. 9. Flint artifacts from Faysaliyya: 1–2 – tabular scrapers; 3–7 – perforators (Jagiellonian University HLC Project | drawing J. Chowaniak)

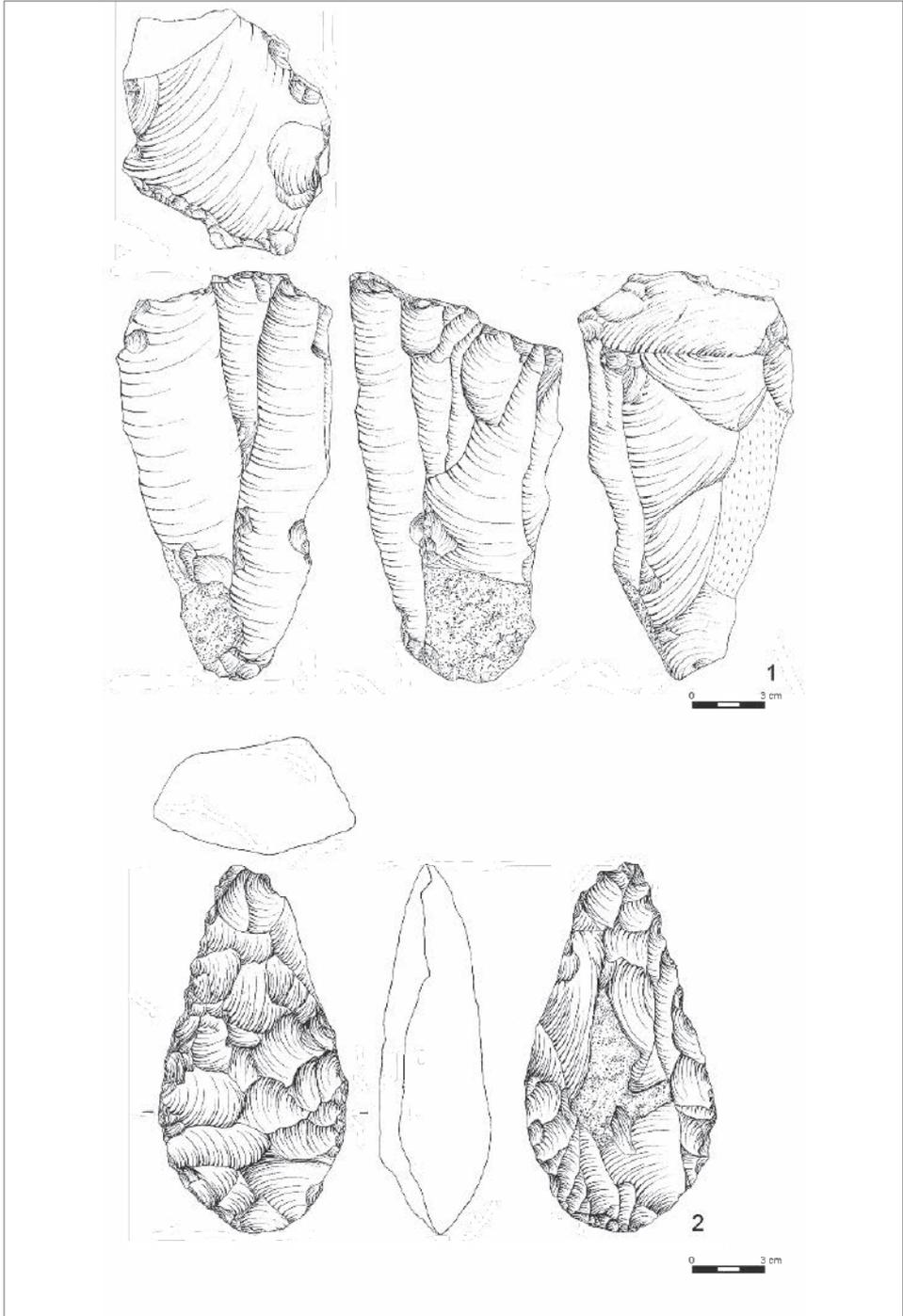


Fig. 10. Flint artifacts from Faysaliyya: 1 – pyramidal core; 2 – Micoquian handaxe (Jagiellonian University HLC Project | drawing J. Chowaniak)

dition, within the discussed layer, there are 25 Levallois flakes and six Levallois points [Fig. 6:3–7].

The tool group consists of 155 specimens. The most numerous are retouched flakes (45 specimens), including also single Levallois forms. One retouched Levallois point was distinguished. The number of retouched blades is six (including one retouched macroblade and two retouched bladelets). Extremely numerous are very standardized, stocky perforators made of small but very thick flakes (35 specimens) [Figs 8:12–18; 9:3–7]. Another group of tools are denticulated/notched forms (25 specimens), most often made of common flakes [Fig. 6:8–11], less often of Levallois forms. The number of scrapers is 13. They are diversified both in terms of morphology and used blanks: single lateral and transversal scrapers and double ones, most often convergent [Fig. 7:2,3]. Most of the scrapers were made on massive flakes. In some cases, they were combined with the Levallois technique. Two artifacts are made of flat, cortical flakes, which, combined with a characteristic circular retouching, allows them to be interpreted as tabular scrapers [Fig. 9:1,2]. One artifact can be interpreted as a kind of knife because of the clearly formed back opposite to the cutting edge [Fig. 7:1].

The eight microliths are backed pieces and truncations, one of which may be called a crescent [Fig. 8:3–9]. One artifact may be a proximal microburin(?) [Fig. 8:11]. Points are represented by four irregularly retouched Mousterian point [Fig. 7:5–7] and one damaged el-Khiam point [Fig. 8:10].

The remaining tools included seven less characteristic endscrapers (both flake and blade), five backed blades, five flake truncations, a burin and a rather primitive amygdaloid handaxe.

The next layer (Stratum 2a) contains 367 flint artifacts. The number of cores is 10. Two of them are Levallois flake cores (recurrent and preferential), the others are irregular, single-platform flake cores and blade-flake cores, with preparation usually limited to the striking platform.

Flakes, chips and undefined fragments constitute the bulk of the material. Among the flakes there are irregular crested forms, as well as core tablets and rejuvenation items. The number of blades amounted to 33; of these 10 could be defined as bladelets and one was a single crested blade. There were also four Levallois flakes and a single Levallois point.

The 26 tools comprised: three scrapers (including one which can be interpreted as a knife because of the back opposite the cutting edge), one Mousterian point, two flake perforators (identical as in Stratum 1), three endscrapers (including one made of a very regular blade), nine denticulated and notched tools (several made of Levallois forms) and eight retouched flakes.

The next layer (Stratum 2b), directly connected with wall W₁₁, provided 481 flint artifacts but their relationship with W₁₁ is doubtful. Among the cores (nine specimens) were six single-platform small flake cores, a double-platform(?) core for short blades and two Levallois flake cores (recurrent and preferential).

Flakes, chips and their fragments were again the most numerous. Among the flakes there were single crested forms, tablets, rejuvenation flakes and forms left by flaking surface repair of blade cores. The number of blades was 34, 10 of which were bladelets. A few were irregular crested blades. Seven Levallois flakes and two Levallois points were also found in the layer.

The tools (29 specimens) are represented by seven scrapers (mostly single), seven flake perforators (identical to the ones in the upper layers), three denticulated/notched tools, two endscrapers (flake and blade), two flake truncations, one fragment of an oval or discoidal handaxe and six retouched flakes.

The runoff layer, on which wall W₁₁ was built (Stratum 3) provided only six flint artifacts. Among them, four flakes and two non-characteristic retouched flakes were distinguished.

Geological test trench

Continued exploration down from a level of 170 cm yielded 67 flint artifacts. With depth, artifacts became visibly more and more smoothed by water, making recognition and classification significantly more difficult. The only core is a massive and irregular specimen that can be interpreted as a kind of initial form or a very large single-platform flake core. More than half of the artifacts (37 specimens) are uncharacteristic flakes and undefined fragments. Five irregular blades were discovered; one can be defined as a macroblade (width approximately 40 mm). There was a single Levallois flake. The tool group included 23 artifacts. Among these, two fairly primitive handaxes(?),

five scrapers: single, transversal, and convergent [Fig. 7:4], six denticulated/notched tools (one made of a fragment of a macroblade), three retouched blades (in one case the retouching has a backed character) and seven retouched flakes.

Surface finds

A small number of surface artifacts (47 specimens) was collected selectively from various parts of the site, their findspots tracked with GPS. The collection includes: nine cores, mainly Levallois, but also single discoidal core and two pyramidal cores for macroblades [Fig. 10:1], 12 handaxes, mainly cordiform and amygdaloid forms, as well as a single Micoquian handaxe [Fig. 10:2], four scrapers, one tabular scraper, one axe (unlike other artifacts collected on the northern slope of the wadi, it was discovered on the flattened south side), one scraper made of a macroblade, one Mousterian point, three retouched Levallois flakes, three denticulated/notched tools and 12 blades and macroblades (including six retouched).

Discussion

The chief research difficulty with the Faysaliyya site is its specificity, which significantly reduces comprehensive recognition and interpretation of the discovered remains of human settlement based on flint artifacts. Firstly, the site is a palimpsest with very broad chronology from the Lower Palaeolithic period at least to the Bronze Age, and its current state is the result of the accumulation of traces of countless settlement phases over hundreds of thousands of years. In addition, the site area is subject to strong fluvial

and eolic processes, which have significantly disrupted the original arrangement of flint artifacts, both vertically and horizontally. The result is a post-depositional mix of artifacts from different settlement phases. This makes it impossible to determine the chronology of a significant part of flint specimens discovered at the site, such as undiagnostic flakes or fragments of products. Moreover, even typologically characteristic forms of tools and cores often have a very long lifetime, covering different archaeological periods, and therefore cannot always be precisely dated. Finally, it should be noted that most of the chipped lithics from the excavations, including almost all the diagnostic forms, occurred in the upper parts of the stratigraphic sequence, considered as a “non-anthropogenic” runoff layer. The end effect is that none of these artifacts can be linked unambiguously with the discovered stone structures or ceramics.

Despite these difficulties, the general conclusion regarding the flint inventory from 2018 is that it does not differ significantly from that of 2017 (Kołodziejczyk et al. 2018). Three main chronological horizons can be distinguished, the first of these being connected with Late Acheulian and Middle Palaeolithic (Levantine Mousterian) settlement and confirmed by the handaxes present at the site (Brzeska-Zastawna, Zakrzeńska, and Witkowska 2018), artifacts associated with the use of Levallois technique (cores, flakes, blades) [Fig. 6:1–7], various types of scrapers [Fig. 7:2–4], knife-type tools [Fig. 7:1], retouched Mousterian points [Fig. 7:5–7] and a large number of denticulated/notched tools [Fig. 6:8–11]. This

phase is probably also associated with a part of the blades, especially massive macrolithic specimens. Considering the established overall predominance of a Lower and Middle Palaeolithic assemblage at the site [Fig. 10:1,2], most undiagnostic flint material should also be dated to this time. Determining whether the discussed phase is more Lower or more Middle Palaeolithic is significantly hampered by the post-depositional mix of materials and by the fact that almost all forms of artifacts occurring in the classical Middle Palaeolithic complexes of the southern Levant, together with the Levallois technique, appear already in the late phase of the Acheulian (Shea 2013: 74–76; Rollefson 2017: 578–580), although not all researchers would agree with this thesis. One should add that Lower and Middle Palaeolithic sites of mixed, palimpsest character are typical of southern Jordan; in addition to Faysaliyya, one should list nearby Fjaje (Rollefson 1981) and the sites located within and on the outskirts of the al-Jahr basin (Rollefson, Quintero, and Wilke 2005; Rech et al. 2007).

The second chronological phase based on the flint assemblage may be associated with the Natufian/early preceramic Neolithic. Since there is no significant change in the flint inventories of the southern Levant at the turn of the late Epipaleolithic and early Preceramic Neolithic (PPNA) (e.g., Belfer-Cohen and Goring-Morris 1996), the only way to approach the subject is to characterize the flint artifacts included in this phase together. In particular, some of the small flake and flake/blade cores found in the excavation units fit late Epipaleolithic or early Neolithic patterns

[Fig. 8:1,2]. It should be remembered that two regular bladelet cores were found in the previous season (Kołodziejczyk et al. 2018). Moreover, among the blades discovered at the site, a significant share is represented by bladelets whose morphology also corresponds to Natufian/PPNA. Stylistically, it also refers to a part of the slightly larger, regular blades and small flakes. Microliths present at the site are slightly more likely to point to the Epipaleolithic [Fig. 8:3–9]. Particularly important are single crescents, whose proportions and steep, backed retouch suggest a somewhat more late Natufian chronology (Bar-Yosef 1998 with further references). Theoretically, it can also be confirmed by a single microburin [Fig. 8:11], but the microburin technique can be treated as a reliable chronological determinant only in the case of large series of artifacts of homogeneous character (Henry 1974). Artifacts that seem to have a stronger connection with the PPNA include a fragment of an el-Khiam blade [Fig. 8:10], fragments of tangs of points or small perforators that are difficult to classify unequivocally, as well as numerous standardized flake perforators [Figs 8:12–18, 19:3–7], although in their case the chronology may be much wider (see below). For some tools, it is not possible to indicate a more likely chronology within this phase. This applies mainly to retouched blades that can be used as inserts, as well as other types of tools made of specific, most often microlithic blanks (Belfer-Cohen and Goring-Morris 1996).

The presence of pottery at the site, including an almost complete vessel from the Early or Middle Bronze Age prompted an examination of the flint inventory in

search of forms typical of the Bronze Age. Although few, they determine the third chronological phase that can be distinguished in the flint material. The most diagnostic artifacts are several specimens of tabular scrapers of various size [Fig. 9:1–2]. They all fall basically within the classical definition of these tools (Rosen 1983). Tabular scrapers appear in small numbers already in the Late Neolithic, but because the assemblage from the site includes no other forms characteristic of this period, they should be associated in this case with the Chalcolithic or the Early Bronze Age. Flake perforators may be another category of artifacts with a late chronology (Rosen 1997: 68–71). However, admittedly, artifacts of this type are also found in the Neolithic, including the early Preceramic period, which is postulated at the site. Some irregular flake cores (including discoid specimens) and some less diagnostic tools are likely to belong to this phase, but due to the disruption of primary contexts they cannot be separated from older, Palaeolithic materials.

MUNQATA'A

A total of 710 chipped lithics were obtained from the Munqata site in 2018, half of which, 355 pieces, comes from the surface. Almost all of the artifacts from the exploration units (340 specimens) were acquired from Trench E, the remaining 15 coming from Trench W.

Trench W

The small number of artifacts from the trench (W19, L20, L30, L31) is made up of 12 flakes, one irregular blade and two core forms. The latter category merits special attention. These were initial cores, one

a blade and one a flake core, with prepared platforms and one-sided crests on the right side [Fig. 11:1–2]. Both are treated in a very similar way, so one can even assume that they were made by a single producer. They exemplify the process of preparing semi-raw material for further processing with

an eye to their natural form: the oval concretion which was close to conical reveals blade negatives, while the brick shaped has flake negatives. Cores at such an early stage of exploitation are very rare, hence the difficulty in finding parallels. However, it should be noted that both cores were found

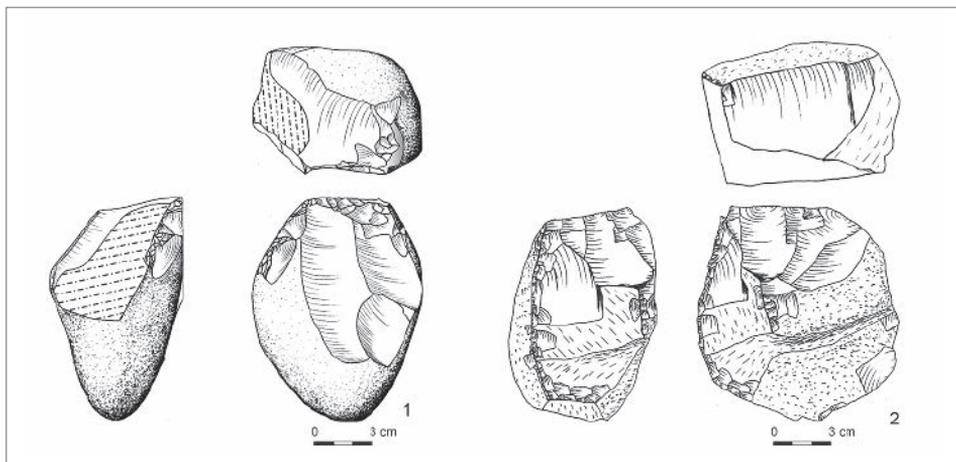


Fig. 11. Flint artifacts from Munqata'a: 1–2 – initial cores (Jagiellonian University HLC Project | drawing A. Brzeska-Zastawna [1], J. Zakrzeńska [2])

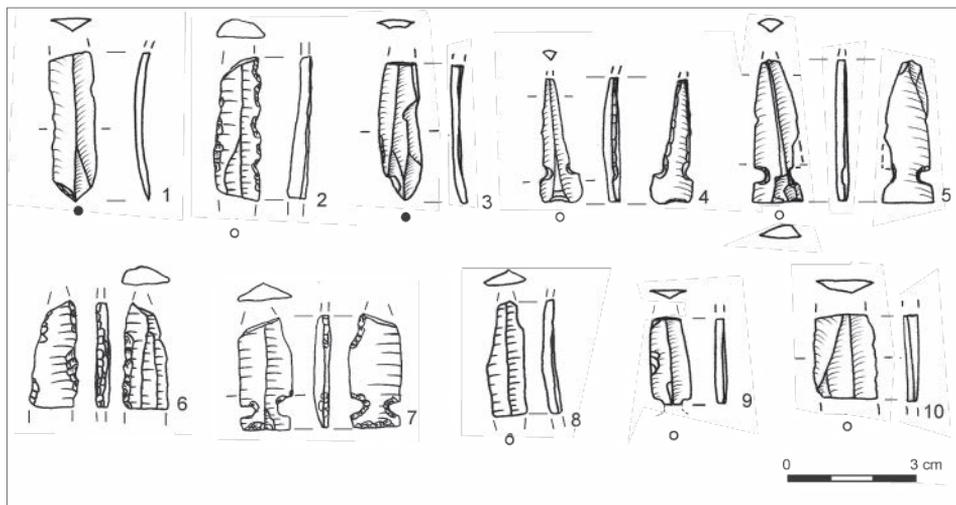


Fig. 12. Flint artifacts from Munqata'a: 1, 3, 8, 10 – bladelets; 2, 6 – retouched bladelets; 4, 5, 7 – El Khiam points; 9 – El Khiam point? (1–3 – surface finds; 4–12 – finds from Stratum 2b) (Jagiellonian University HLC Project | drawing A. Brzeska-Zastawna [1, 3–5, 9, 10], J. Zakrzeńska [2, 6–8])

together with Late Neolithic pottery (found *in situ*, see the pottery section below) within a single structure related to the use of a rectangular room discovered this season. This links them directly with the Pottery Neo-

lithic. One of the two described cores was in a vessel lying directly by the wall, which indicates that pre-prepared cores intended for further exploitation in the settlement were stored in clay vessels.

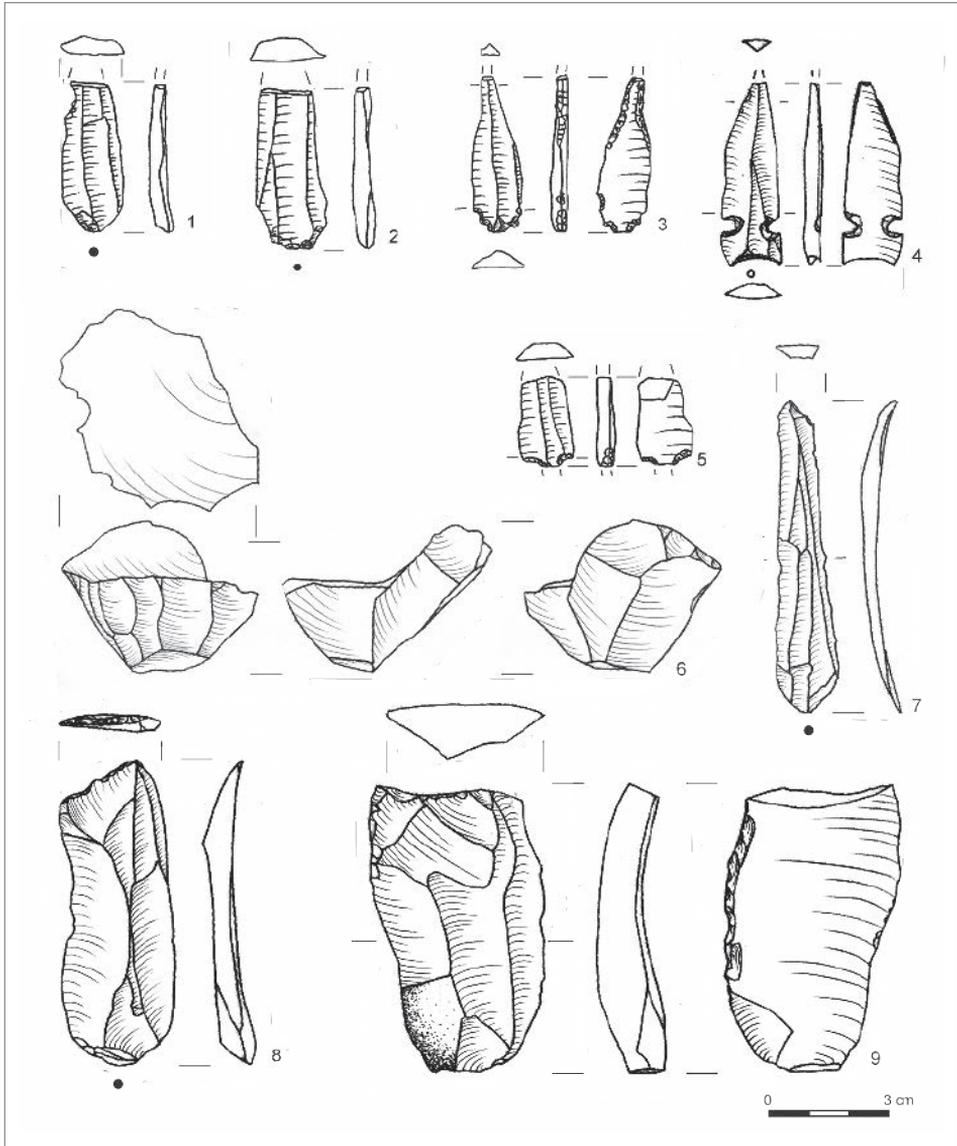


Fig. 13. Flint artifacts from Munqata'a: 1, 2, 7 – blades; 3 – Abu Maadi point; 4 – El Kham point; 5 – El Kham point?; 6 – fragment of bladelet core; 8 – truncated blade; 9 – retouched flake (Jagiellonian University HLC Project | drawing A. Brzeska-Zastawna [4, 6–9], J. Zakrzeńska [1–3, 5])

Trench E

Last year's findings from layers L10 as well as this year's from L14, L16 and L17 represent the oldest horizon recorded at the site. L10, L16 and L17 were located below

a layer associated with Neolithic pottery, which is however mostly redeposited. L16 is most likely the runoff from a layer associated with the Pottery Neolithic, L14 and L17 contained no pottery.

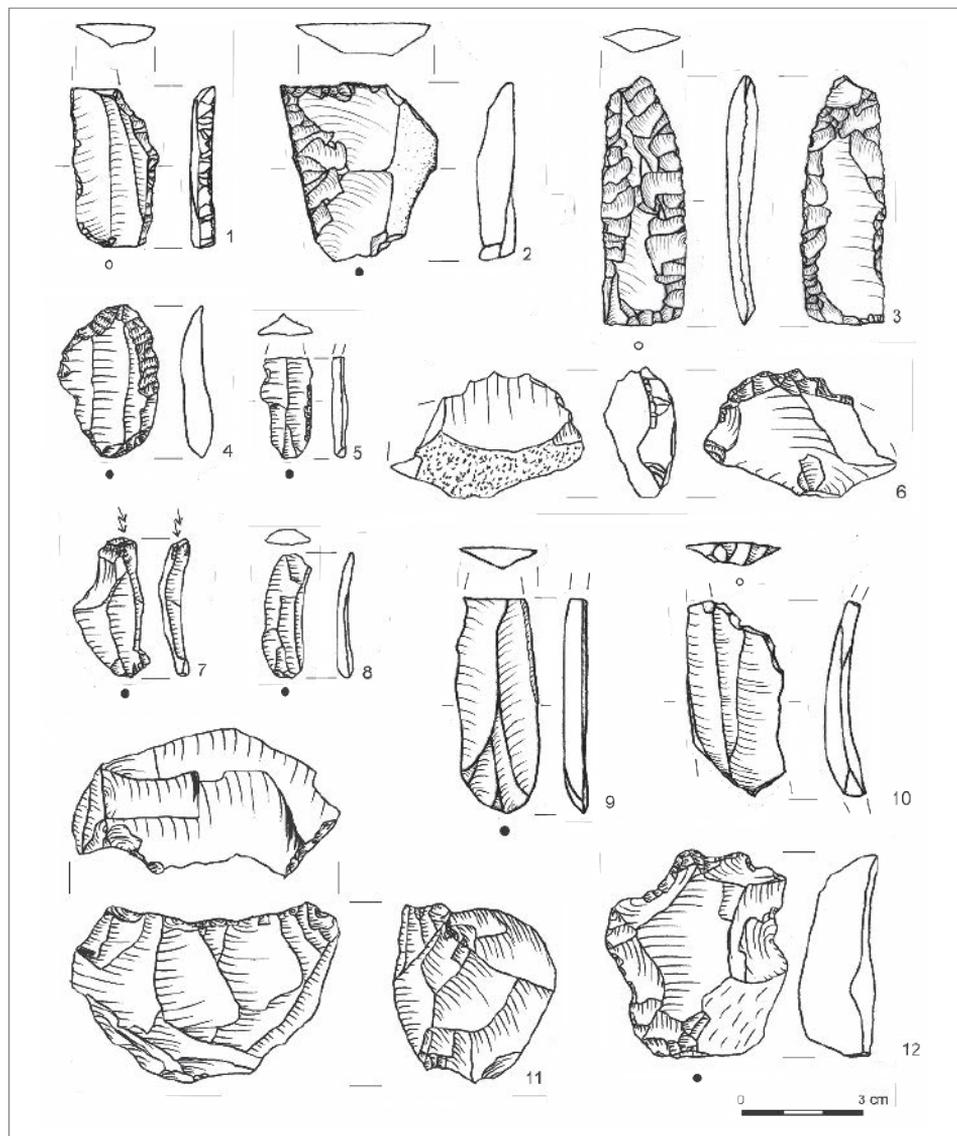


Fig. 14. Flint artifacts from Munqata'a: 1 – backed blade; 2 – perforator; 3 – sickle insert; 4, 6, 12 – retouched flakes; 5 – retouched bladelet; 7 – burin; 8 – bladelet; 9 – blade; 10 – truncated blade; 11 – single platform blade-flake core (Jagiellonian University HLC Project | drawing A. Brzeska-Zastawna, J. Zakrzeńska)

The flint inventory from layer L14 consisted of 58 artifacts: one fragmentarily preserved bladelet core [Fig. 13:6], 29 flakes, 19 blades from single-platform

cores [Fig. 13:1,2,7], four chips and chunks and seven tools. Among the tools were three points, including a fragment of an El Khiam point [Fig. 13:4], and prob-

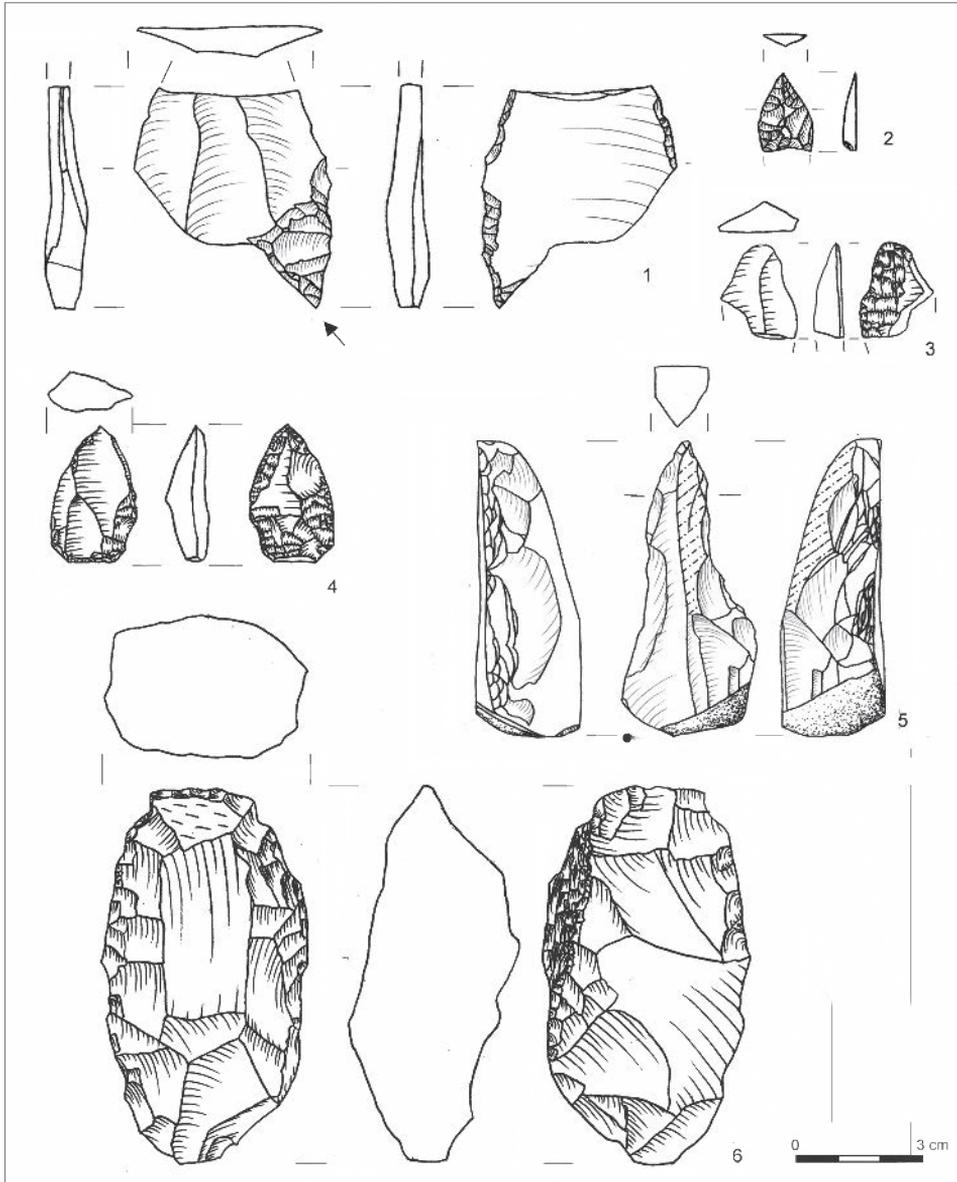


Fig. 15. Flint artifacts from Munqata'a: 1 – burin on a knife; 2, 4 – Nizzanim/Herzliya points; 3 – fragment of retouched tool; 5 – pick; 6 – bifacial tool of the axe-like type (Jagiellonian University HLC Project | drawing A. Brzeska-Zastawna [1, 2, 5], J. Zakrzeńska [3, 4, 6])

ably of another of this type [Fig. 13:5] and one Abu Maadi point [Fig. 13:3] (Gopher 1994: 31–32), one retouched flake and one retouched blade. L17 yielded four artifacts: a chip, one fragment of a core and two tools, one a truncated blade [Fig. 13:8] and the other a retouched flake [Fig. 13:9].

L16 qualifies for a separate discussion because of the most likely mixed pre-pottery and pottery Neolithic material. The flint material from this context was the most numerous, counting 147 artifacts: one flake core, 59 flakes, 18 blades and 17 bladelets from single-platform cores [Fig. 12:1,3,8,10], 44 chips and chunks and eight tools. Among the tools, three retouched blades [Fig. 12:2,6] and five points were noted [Fig. 12:4,5,7,9]. Three of them are certainly El Khiam points, commonly considered to be typical of PPNA (Nadel, Bar-Yosef, and Gopher 1991; Sayej 2007: 96) [Fig. 12:4,5,7], one is a fragment of a blade, perhaps also El Khiam or of the Helwan type [Fig. 12:9]. Apart from the three blades mentioned above, this material shows no features that would allow for a chronological stratification within the Neolithic period.

Stratum 3 in this trench was associated with the PN, based on numerous finds of Jericho IX pottery and a radiocarbon date, but the flint assemblage was poor, barely four specimens from L9, which however were not characteristic: two flakes, a damaged blade and one chip. As for Stratum 2b, with the exception of L16 describe above, it yielded 127 flint artifacts: 1 blade-flake core [Fig. 14:11], 88 flakes, 26 blades and bladelets [Fig. 14:8,9], four chips and chunks, a burin spall and

seven tools. The tools included three retouched flakes [Fig. 14:4,6,12], one bifacial tool of the axe-like type made on flake [Fig. 15:6], one burin [Fig. 15:1], one retouched bladelet [Fig. 14:5] and one probably unsuccessfully truncated blade [Fig. 14:10]. One of the flakes [Fig. 14:4] has a parallel/sub-parallel retouch that moderately overlaps the surface of the specimen, which may indicate association with the Middle or Late Neolithic. This stratum had yielded last year a group of blades/bladelets coming from single-platform cores and a group of not very regular flakes, blade sickle insert, three perforators, retouched flakes and blade arched endscraper (Kołodziejczyk et al. 2018). The strongly visible flake component argues in favor of a Neolithic connection, already suggested by the stratigraphy of the layers involved. Beside the bladelets [Fig. 14:8] one should also mention a few blades and tools made on blades, which indicate a production aimed at regular blade blanks larger than in the Early Neolithic, their width exceeding 2 cm [Fig. 14:9,10].

Artifacts with morphological features considered typical of phenomena later than the Early Neolithic period, come only from the surface: two fragments of Nizzanim/Herzliya points [Fig. 15:2,4], a fragment of an indeterminate retouched tool [Fig. 15:3], sickle inserts with parallel, low invasive retouch [Fig. 14:3], perforator made on a flake [Fig. 14:2], burin on a knife with flat and semi-flat invasive retouch (parallel and sub-parallel) [Fig. 15:1], backed blade made on a blade from a double platform core [Fig. 14:1]. The listed artifacts have flat invasive retouches, produced prob-

ably by the pressure technique, which are present from the Middle Neolithic and become common in the PPNC and PN (Shea 2013: 256, 280). The backed blade is an interesting example, having been obtained from a bidirectional blade core (one-on-one knapping scheme) that

is to be associated with the PPNB tradition (Barzilai and Goring-Morris 2010). Knives are also found very often in the context of the Middle Neolithic (Shea 2013: 252). A trihedral pick among the finds represents a form commonly found in Neolithic inventories [Fig. 15:5].

POTTERY FINDS

FAYSALIYYA

The bulk of the 124 pottery fragments from the Faysaliyya site is undiagnostic making precise recognition and dating almost impossible. Neither is the context stratigraphy always clear. Pottery fragments were found in rubble associated with a stone structure and stone backfill located in squares B4112–B4213 (Trench E).

Most of the fragments are dark brown and red brown in color. The mineral-tempered clay is like the fabric already described from the first season of work at the site.

Vessel morphology is not easy to establish because most of the fragments are body parts. However, there was one find of an almost complete vessel in square B4112, a bowl with a flat bottom and vertical walls. It has shed more light on the pottery assemblage from the site. This handmade vessel is decorated under the rim with a plastic cord-like element and above it a number of shallow oval hollows at intervals around the circumference [Fig. 16]. The decorative motif and its placement in the upper part of the vessel may suggest connections with the EB IV–MB cooking pots discovered at sites such as Murayghat, Abu Snesh and Shehem, indicating the possibility

of an earlier date for this assemblage. It would not contradict the findings from the first season of research, during which the only diagnostic element was a small

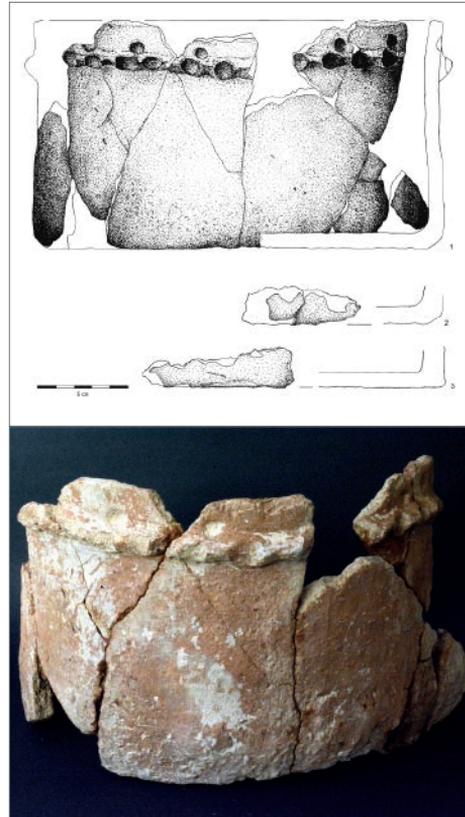


Fig. 16. Bowl with characteristic plastic decoration in the form of a rope (EBIV–MB), Faysaliyya, Trench W (Jagiellonian University HLC Project | drawing J. Ledwoń; photo P. Kołodziejczyk)

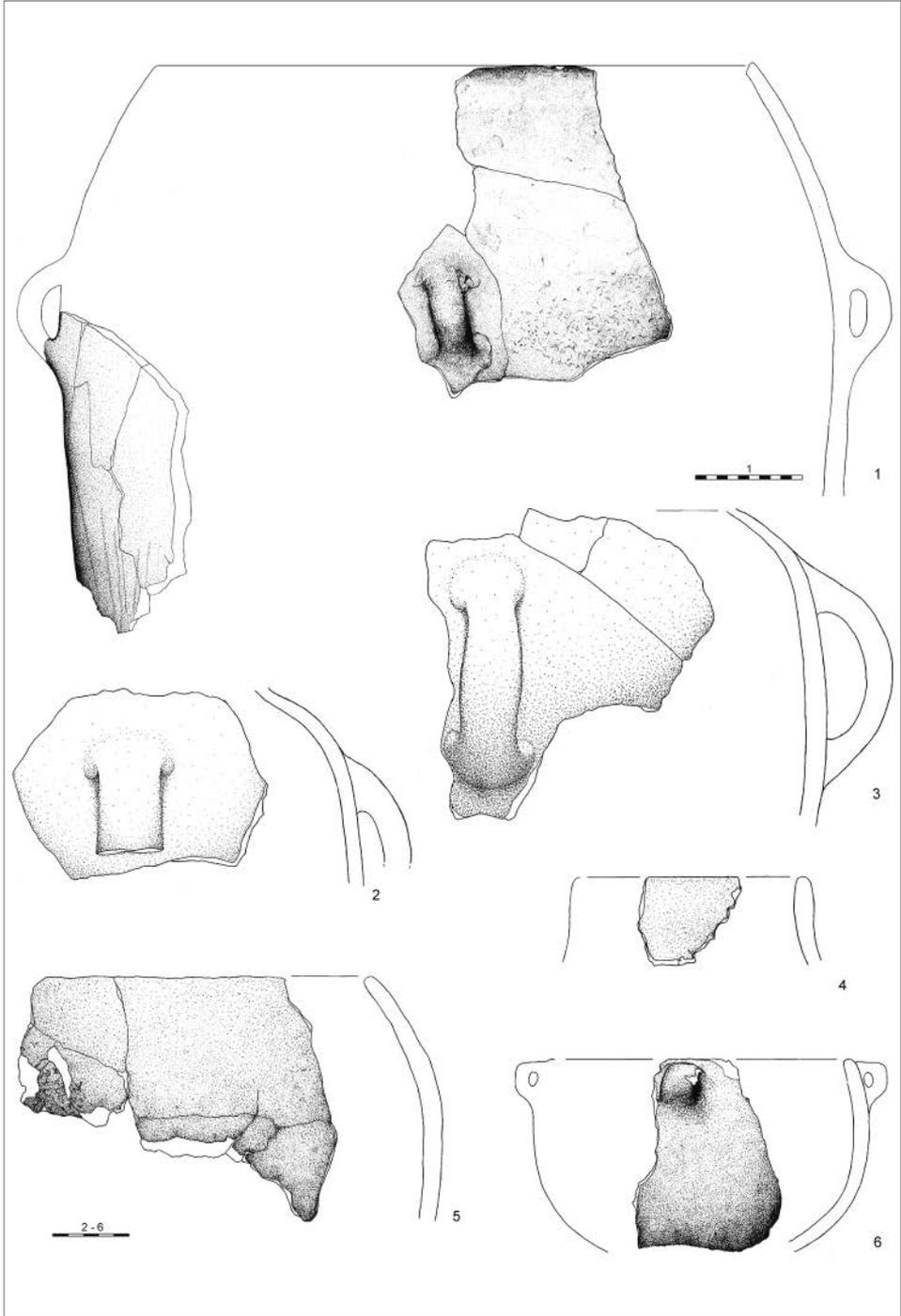


Fig.17. Pottery from the Jericho IX Horizon, Munqata'a (Jagiellonian University HLC Project | drawing B. Klose, J. Ledwoń, B. Witkowska)

fragment of the rim of a holemouth jar. A date in EB IV has also been suggested by a radiocarbon date of a sample from near the vessel (see below, *Table 3*: Sample PRO9/118).

Whether the vessel can be used for dating the whole complex is another issue, but at least two other bottom fragments discovered this season from a similar context belong to the same type of bowl.

Trench W did not yield any diagnostic pottery fragments.

MUNQATA'A

Fragments of pottery vessels were recorded in all of the 2018 trenches. In Trench E, the context was secondary in the case of

both extensions: tumble of a presumed wall continuing the W11 feature discovered earlier in the northern one and runoff associated with erosion in the eastern one. Trench W alone yielded artifacts that were in their original position, resting on the floor adjacent to an inner wall of a large building. Large vessel fragments were characteristically set flat on layers of compacted soil. Some vessels were found lying directly by the wall in the central part of the trench. They appear to have been used for the purpose of storing semi-finished flint products; an initial core was found in one of the pots, while another similar core lay next to it, covered with a heavily fragmented vessel crushed under wall collapse [*Figs 17–18, 19*].



Fig. 18. Pottery from the Jericho IX Horizon, Munqata'a (Jagiellonian University HLC Project | photo P. Kołodziejczyk)

Two chronological horizons could be identified among the finds, similarly as in the previous season (see Kołodziejczyk et al. 2018: 409). Vessels connected with the Pottery Neolithic Jericho IX culture predominated, whereas Roman-age sherds were noted in the runoff layers

and topsoil. Pottery from the classical period cannot be linked to any of the structures recognized in recent research on the site and should be considered as incidental, associated with erosive and post-depositional processes affecting the area around the site.

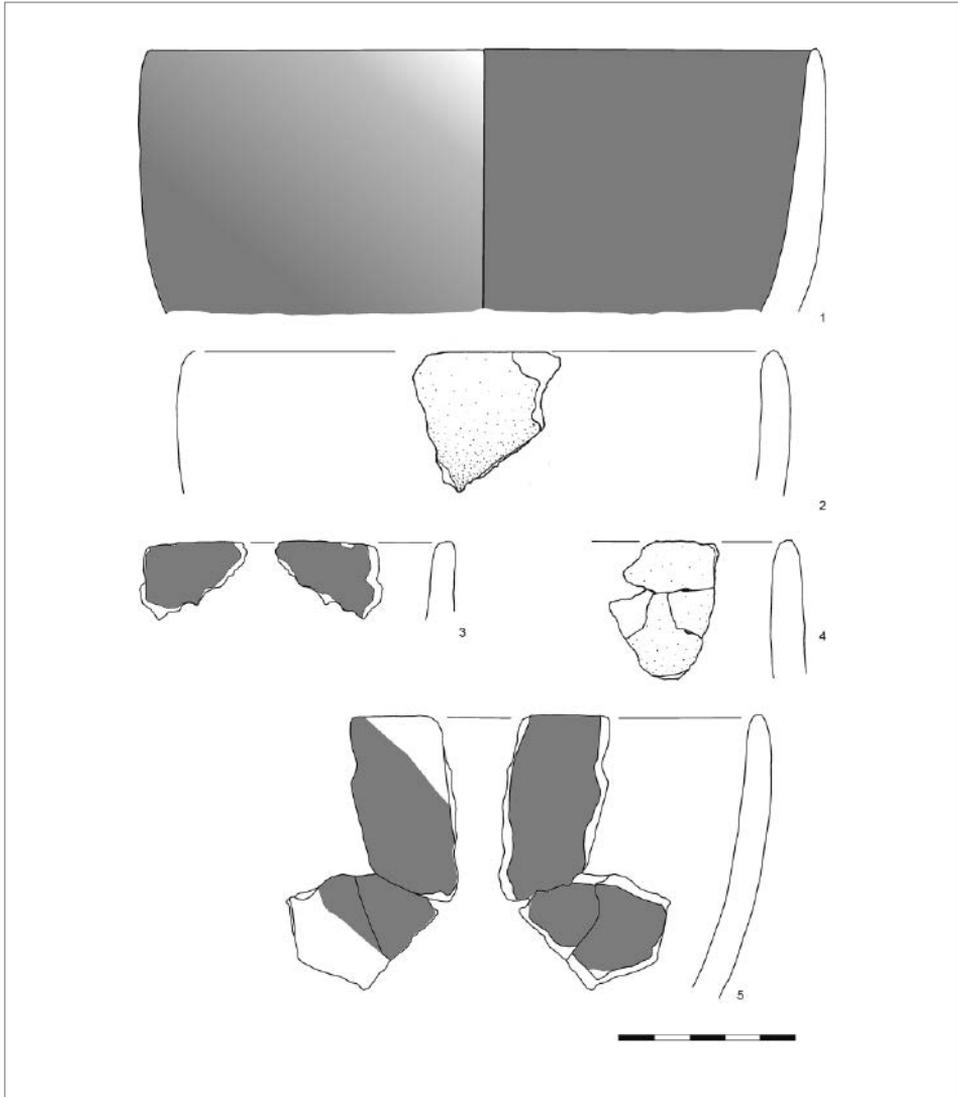


Fig. 19. Pottery from the Jericho IX Horizon, Munqata'a (Jagiellonian University HLC Project | drawing B. Klose)

Open forms prevail. These are various types of bowls, most often with burnished painted decoration characteristic of the Jericho IX horizon, classified in Garfinkel's groups C1–C2 and C6 (see Garfinkel 1999: 45–49). One of the bowls from the building mentioned above had small handles attached at the rim. The vessel was not decorated. Analogous objects were discovered, among others, at Jericho (Kenyon and Holland 1983: Fig. 38:15) and Lod (Paz et al. 2005: Fig. 4). Perhaps the bowl was used as a lid to cover a large storage vessel, fragments of which were found nearby.

The discovery of large storage vessels was a novelty in the assemblage considered to date. These vessels can be assigned to

two groups: necked pithoi, group F4 and hole-mouth pithoi, group E4 (see Garfinkel 1999: Figs 61 and 52 respectively). Both types have wide, simple rims. The most distinctive difference between the two is in the transition between the body and the neck. The F4 pots have simple loop handles. Analogous vessels come from Ashkelon (Gopher and Blockman 2004: Fig. 13:15–19) and Lod (Paz et al. 2005: Fig. 12). The Munqata's hole-mouth pithoi are of even simpler shape, characterized by a barrel-shaped body with relatively straight walls and a wide rim. Like the necked pithoi, they have loop handles of type 7 according to Gopher and Blockman (2004: 12).

CONCLUSIONS

The research at both Faysalliya and Munqata'a have contributed to expanding knowledge of the prehistoric human occupation of this extensive region, adding absolute dating evidence for the late prehistoric structures which started to be explored in the first year of the project in 2017. Samples have produced radiocarbon dates (¹⁴C AMS method, Poznań Radiocarbon Laboratory) for the small settlement or encampment in the range of the late phases of the Early Bronze Age or the beginning of the Middle Bronze Age [Table 3]. The proposed chronology is confirmed by a characteristic vessel found in locus 118 at the Faysalliya site [see Fig. 16], even if the remaining pottery assemblage is not sufficiently diagnostic to allow for reliable dating. Moreover, the destruction of the structure in square B4112 has obscured the relation of the vessel to the radiocarbon dates obtained for samples located several

dozen centimetres away from the vessel. It is also suspected that these layers underwent fluvial processes that disturbed the material at least in part. However, the flint materials found here (including the core and elements that could be refitted) seem to indicate that these layers were not completely destroyed and the suggested stratigraphy is correct. Taking into account the set of finds as a whole, we may suggest a dating of these structures as well as the collected finds to the Early Bronze Age IV or the beginning of the Middle Bronze Age (2400–2000 BCE). This chronology is also confirmed by the tabular scrapers occurring in large numbers, although this kind of object is known also from earlier periods.

It seems very probable that remains of earlier structures were used to build some fragments of the uncovered walls as attested by a tent/tethering stone [Fig. 20], characteristic of earlier periods (e.g., Fuji et al.

2012; 2017), that was found in the structure of W11. This feature had previously been interpreted as a probable dam or type of wall for retaining water, but in the light of the discoveries made in the extension to this trench it is now said to be a kind of home-stead with a stone enclosure surrounding



Fig. 20. Faysaliyya. Presumed tent or tethering stone from Wall 11 (Jagiellonian University HLC Project | photo P. Kołodziejczyk)

a camp or house made of large stones in its lower parts. Thus we may be dealing here with a settlement used intermittently since the Neolithic. The large share of ubiquitous flint objects from the Palaeolithic is still fascinating, confirming interesting ideas about local and regional erosion phenomena over hundreds of thousands of years which had led to this situation.

In turn, the work carried out at Munqata'a in the 2018 season has yet to supply convincing evidence of a Bronze Age settlement on the site. We are dealing here most probably with relics of a settlement located in a valley that was extremely difficult to access, which functioned from the Pre-pottery Neolithic period to the so-called Jericho IX horizon or the developed ceramic phase of the Neolithic. The only radiocarbon date [see *Table 3*] from the site confirms the dating of the youngest phases of the settlement to the Jericho IX horizon. However, earlier phases are visible in the flint assemblages. This observation is important because it would be to date the only settlement associated with the Jericho IX horizon in this area with the closest parallels coming from the territory of Israel. In this context one would like to know the reasons for settling in such a difficult and

Table 3. Radiocarbon dates from season 2018 (Poznań Radiocarbon Laboratory)

Site	C ¹⁴ sample/ locus	Sample material	14 C age ±1σ BP	±1σ Calibrated
Faysaliyya	PR01 / 118 (Poz-110497)	charcoal	3800 ± 35	2429BC (0.2%) 2425BC 2402BC (1.5%) 2382BC 2349BC (93.4%) 2134BC 2070BC (0.3%) 2065BC
Faysaliyya	PR09 / 118 (Poz-107899)	charcoal	4020 ± 35	2624BC (95.4%) 2468BC
Faysaliyya	PR07 / 30 (Poz-110498)	charcoal	3960 ± 35	2573BC (85.1%) 2391BC 2386BC (10.3%) 2346BC
Munqata'a	PR0 / 6 (Poz-107752)	charcoal	7200 ± 50	6211BC (95.4%) 5993BC

practically inaccessible place, which is also not conducive to plant cultivation. It thus raises questions about the geographical extent of this cultural unit. Perhaps pastoral traditions in this region are much older than previously assumed, something to be considered in future research.

The HLC Project also engaged in popularizing archaeology in the region in cooperation with the local universities. These activities continue to be developed. An important outcome to be reported is a series

of photo exhibitions illustrating the work of the project, as well as workshops for young people in southern Jordanian primary and secondary schools. Dealing also with geotourist attractions and regional promotion, the HLC Project also undertook some preliminary free climbing and trekking area reconnaissance, visiting in the process several new localities with rock walls that can be climbed. The photographic and descriptive record of these localities will serve as a basis for a new rock-climbing guide.

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