

HLC Project 2017: Jagiellonian University excavations in southern Jordan



Abstract: The HLC (Heritage–Landscape–Community) archaeological metaproject, carried out since 2016 by the Jagiellonian University in cooperation with the Department of Antiquities, Ministry of Antiquities and Tourism, Hashemite Kingdom of Jordan, targets the archaeological heritage of southern Jordan (Tafila region), focusing currently on remains of the Early Bronze Age and earlier cultures that were found in the region. The project has already identified and verified several previously undocumented or poorly documented sites. Its main objective is to establish chronological phasing of human activity in this microregion, particularly during the Early Bronze Age, and to assess the scale and nature of human presence in that period. Two sites, Faysaliyya and Munqata'a, were excavated within the frame of the project. The article presents the preliminary results of this work. An important side issue is the protection of Jordanian heritage in the Tafila region through the identification of natural and human agents that may damage or destroy it.

Keywords: Jordan, Neolithic, Early Bronze Age, late prehistory, Jordan, Levantine archaeology, protection of cultural heritage

1 INTRODUCTION

The HLC (Heritage–Landscape–Community) metaproject of the Institute of Archeology of the Jagiellonian University in Kraków (Poland), working in cooperation with the Department of Antiquities of the Ministry of Tourism and Antiquities of the Hashemite Kingdom of Jordan, began in September 2014 to explore the late prehistory of southern Jordan in the region of the city of al-Tafila [Fig. 1]. Following a reconnaissance in 2014–2016 (Kołodziejczyk et al. 2018), in 2017 the Project embarked on excavation of two sites: Munqata'a and Faysaliyya. The main objective was to establish the nature of human

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occupation at both sites and to determine their chronological phasing.

The driving idea behind the current research is a comprehensive review of the region in the Early Bronze Age, establishing the nature and dynamics of human occupation from a case study concentrating on the microregion of al-Tafila and its association within the context of neighboring areas. Key research issues include settlement patterns, social structure and organization, external relations and cultural influences within the Levant and possibly as far as Egypt, two regions known to have witnessed important events during that age. In addition, evidence of architectural and funerary traditions was observed in the archaeological record.

The picture of the Early Bronze Age of the region derived from the fieldwork

of the HLC Project will be considered against the backdrop of earlier cultural units and phases, from the Palaeolithic through the Chalcolithic periods, in order to present the path of development of the prehistoric and early historic communities in the region.

Detailed studies will focus on pottery and chipped stone working traditions, as well as the question of production technologies and foreign and local trade networks. Survey results encompassed into the study have highlighted the significant impact of environmental factors on the functioning of those early societies. There is evidence frequently of conditions, in particular due to fluctuation of annual precipitation, that may include semiarid and much wetter conditions resulting, for example, in a rising water table.

2 GEOLOGY, HYDROLOGY, GEOMORPHOLOGY AND PEDOLOGY

The archaeological site of Munqata'a is located about 3 km northwest of the modern town of al-Tafila, on the northern slope of a wadi, below 520 m ASL [see *Fig. 1*]. The wadi begins in the town and descends westward toward the Dead Sea Rift. The survey team documented high concentrations of loose artifacts along with remnants of stone walls in several places on the surface, suggesting substantial settlement in the area. Munqata'a is located in the lower part of the valley and could be reached only by a small path descending down the steep slope. Robbers' pits pockmark the site and chert, stone and ceramic artifacts from various periods scattered prolifically over the surface attest to recent plundering.

Faysaliyya lies about 5 km southeast of the town of Shawbak [see *Fig. 1*], on a plateau situated about 1200–1300 m ASL, in the northern part of the historical and geographical highland region of Edom. The Arabian Desert begins to the east and the Dead Sea Rift to the west; to the north, there is the Moab highland starting from Wadi Hasa. The area is also called the Eastern Highland or Jabal al-Adhiriyāt. It is actually the locale for a cluster of prehistoric sites, with at least two discovered in 2016 by the Jordanian Department of Antiquities surveying the area in connection with the planned construction of a wind farm. The sites were dated tentatively from the Stone

Age to the Bronze Age on the grounds of a huge flint assemblage on the surface and some presumed architectural remains of stone.

2.1 FAYSALIYYA

The site is located in an area of low, rolling hills, which are a dominant element in the landscape. They are formed on the Nubo-Arabian Shield tableland (Bandel and Salameh 2013; Bender 1975; Migoń 2009: 250–254) and cut with contemporarily episodic river beds forming several, almost parallel, V-shaped valleys that head eastward, to the desert, some as long as 50 km. The area under investigation is located in the upper and middle parts of these valleys.

River channels are 5–10 m wide and 1–5 m deep. The youngest, Holocene

banks are built of gravel–sand–silt material. The gravel have up to 1 m in diameter, with an average of 0.50–0.60 m. Modern river dynamics have caused intensive downward erosion with very intensive cutting.

The archaeological site lies on Quaternary sediments of Pleistocene-Holocene date, covering Tertiary- and Cretaceous-age rocks, which were observed in several locations (mostly in the river beds), small outcrops in the form of rock walls (up to 20 m) and valley steps. This is the upper part of the parallel horizontal layers of the Arabian–Nubian shield. The Tertiary sediments are referred to as the Dana Conglomerate (DC – Oligocene/Pliocene) and the Umm Rijam Chert-Limestone (URC – Paleocene/Eocene). The lowermost formations visible in the outcrops are the Cretaceous rocks of Muwaqqar Chalk Marl (MCM – Maastrichtian; see also Barjous 1988; Bandel and Salameh 2013). The MCM formation is interbedded with numerous (at least six) chert levels. They form widely extended nodular and tabular deposits of 10–30 cm in thickness. Several good quality chert outcrops are located in the vicinity of the site, their good to excellent mechanical properties enabling tool production on the spot. The cherts are very easily accessible in large quantities, both in primary and secondary deposits. As for the Tertiary URC and DC formations, they are observed in the river valley slopes as relics of old (Tertiary) river terraces. They were cut and severely eroded during the Quaternary and form rock walls or steps. These rocks contain several sorts of gravels (up to 60 cm in diameter but usually no more than 40 cm), sand and silt. Chert

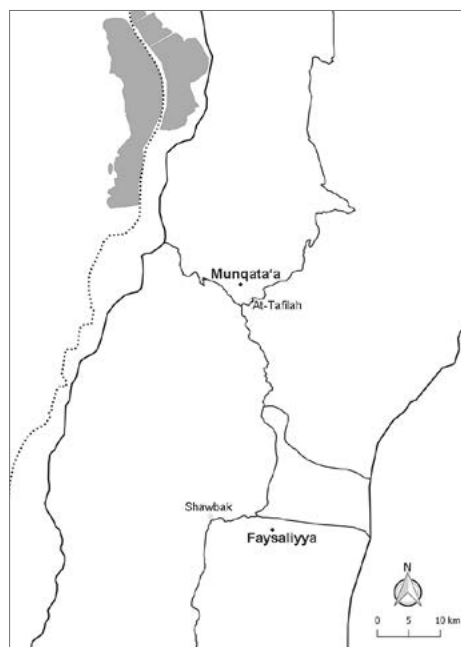


Fig. 1. Sites Munqata'a in the al-Tafilah directorate and Faysaliyya in the Shawbak directorate (HLC Project/drawing J. Karmowski)

and limestone with minor admixture of sandstone (sandstone was supplied from further west, that is, the Shawbak area, which was the river headwater) are the dominant types of primary rocks.

Seasonal rivers are active from October through March/April, but precipitation usually does not exceed 50 mm/month. However, as stated by numerous authors (e.g., Rahn 1967; for a summary, see Thomas 2011), even this low precipitation significantly affects the geomorphology. The region is frequently soaked by torrential rains, which have gained in frequency since the 1990s, but earlier episodes are known, too. Sheet floods caused by this type of rainfall have significant impact on slope morphology and on the character of sediments and soils. The area is deprived of permanent water flow or water sources. Modern agricultural activity is based on deep-drilled wells.

Typical dry-zone Aridisols (for soil taxonomy, see Mocek 2015: 384–385) developed mostly on hill-tops and ridges. In the area of the archaeological excavations on the hill slopes, the Aridisols are primitive and poorly developed owing to the sheet floods, surface runoff and slope erosion. However, typical E and B Aridisols horizons were described in the deeper test trenches. The second factor affecting soil formation are intensive eolian processes. The area under investigation is covered with a desert pavement built mostly of chert with limestone mixed in. Intensive eolian erosion is caused by June–to–August winds of 20–30 km/h (50–80%) and by February–to–June winds of 30–50 km/h (10–15%). It is interesting to note from this perspective the scarce or absent varnish and the high degree

of roundness. This could be explained by intensive rains and subsequent sheet floods. The factor has a big eroding and transporting potential.

The finer sediments (silt layers) present in the test trenches might indicate climatic change in modern times. This idea, however, needs a more detailed study.

2.2 MUNQATA'A

The modern geomorphology of the site area is very steep and erosional processes are very intensive, mostly in consequence of increased winter–spring precipitation and the influence of pastoral activity on the plant cover. The V-shaped stream beds are very deep and tortuous and cut through older colluvia. Several rocky shelves formed on harder geological strata are visible in the valley geomorphology, alternating with cliffs and steep slopes. In the flatter parts of the valley, screes and alluvial fans were formed. Not only is the local morphology marked by animal paths; it was in fact the paths that determined its formation. To this day, the area is crossed several times a day by herds of sheep and goats. Although potentially insignificant, this influence may produce visible changes in the geomorphology.

The upper parts of the valley (Tarawneh 1987; 1988; Bandel and Salameh 2013) are formed in Cretaceous limestones, sandstones, marls and clays (ASL – Amman Silicified Limestone formation of Campanian age, WUG – Wadi Umm Ghudran of Campanian-Santonian age and WAS – Wadi As Sir of Turonian age). There are chert levels in these formations. Beneath the ASL/WUG/WAS, the valley cuts through limestone and marl of the Cenomanian Shuelb-Hummar-Fuheis

and Naur formations (SHF/N). The profile continues downwards with Early Cretaceous–Late Paleozoic sandstone (Kurnub formation).

The rock shelves and boulders on the valley slopes originate from basaltic magma that formed a Pleistocene intrusion cutting across the ASL/WUG/WAS. All the geological layers described above are part of the Arabian–Nubian plate, with a slight incline to the west in the area analyzed. They form a typical cuesta morphology (e.g., Migoń 2009: 252) on the eastern border of the Dead Sea Rift.

The archaeological site lies on one of the rock shelves around 80–100 m above the modern river bed, in Kurnub sandstone layers. The shelf is flat or slightly inclined and is 200–400 m wide. The bedrock is covered with a very thin (0.30–3.00 m) colluvium layer. The modern location is completely deprived of water (stream or springs). The main water-bearing layer should be identified with the WAS rocks. The water sources in the al-Tafila region are located within the WAS/SHF geological contact zone (e.g., Kołodziejczyk et al. 2018), with their presence having also been documented 100–200 m upstream in the valley. However, water from these sources does not reach the Munqata'a site, at least not in the summer season.

On-site sediment and observations of the surrounding rock walls and slopes confirm that winter and spring rains affect substantially the hill slope processes. Beside this, very intensive particle falls, rock falls, avalanches and topples are reported all year round. In the vicinity of the archaeological site, hill slope erosion has been additionally enhanced by a newly-built road.

Settlement in the area and its use by humans is very difficult. However, it must be remembered that the Holocene brought about major changes in geomorphology (such as the river incision). Also the raw material (chert) is not well distributed within the site, but again, secondary deposits or intentional transport from the upper parts of the valley are very probable.

The Holocene stratigraphy of the Munqata'a archaeological site starts with a 0.30–0.50-m-thick layer of modern colluvium. It is formed of rock fragments, gravel, sand and silt, superimposed on the archaeological layers bearing artifacts mixed with colluvial material. At the bottom of the sequence is a thick (at least 1.50 m) layer of sand with some limestone blocks. Underlying it is the regolith level, but solid rock was not reached this season. The soil in the area of excavations is very primitive and could be classified as Lithosols, Regosols and Calcaric Regosols (Mocek 2015: 311).

3 EXCAVATIONS IN THE 2017 SEASON

3.1 FIELDWORK METHODOLOGY

The sites were tested archaeologically in two areas (A and B) on Faysaliyya and in only one area at the Munqata'a site. Site grids derived from earlier prospection with GIS software. TS and GPS handheld

devices (Garmin Etrex 20 and Garmin GPS map 62s) were used to mark out the trenches and benchmarks. Trenches (henceforth squares) at Faysaliyya were sized 5 x 5 m and identified by a unique number preceded by the letter assigned

to a specific area. At Munqata'a, one small test trench, 2.50 m square, later extended 1 m to the east (squares A and B), was dug, reaching 1.50 m at the deepest point.

An adapted version of the Wheeler–Kenyon fieldwork method was used and the documentation was prepared using Nest Forms, a mobile application for taking notes and pictures on site in real time,¹ processed after uploading onto a server to prepare the final documentation of the season. Several forms were created in the application, and a strategy was developed for filling them out to suit the purposes of the Project. Forms included Locus (henceforth L) and Wall (henceforth W) cards, recording specific characteristics and stratigraphical relations, as well as daily log cards and inventories.

In 2017, 66 such cards were generated for Faysaliyya and 19 for Munqata'a. All feature pictures, details of work progress, archaeological features and their stratigraphic relationships. Artifacts were collected from individual loci and assigned to dedicated cards with catalogued basket numbers. A GeoMax Zoom30 Total Station, Quantum GIS software ver. 2.18 and Agisoft PhotoScan Professional software ver. 1.2.6 were used to document archaeological features, prepare site plans and generate 3D photogrammetrical models.

All the squares were regularly secured with bags filled with earth placed around the perimeter to prevent baulk collapse.

3.2 FAYSALIYYA

Archaeological artifacts were collected from an area of the desert stretching for kilometers, hence while limiting the loca-

tion of the 2017 excavation to just about 3 ha, the Project implemented a vastly extended virtual grid, covering 50 ha and encompassing features recorded earlier in a field survey, to facilitate future work in the more remote areas of the site. Two areas of equal size were set out: Area A, located to the east, characterized by a denser concentration of stone cairns (145 out of 229 identified sites during the survey), and Area B, located to the west, featuring only a few concentrations of stone architecture. Stone remains included walls visible on the surface and clusters of rocks tentatively considered as rubble from walls.

Five squares were excavated in different parts of areas A and B [Fig. 2]. Two of the squares (A4052 and A3554) were located in Area A and were primarily intended to investigate cairns. The remaining three, all in Area B (squares B4213, B4314 and B5212), explored stone clusters in search of possible architectural remains. The distance between the two outermost squares excavated in areas A and B during the 2017 season was 300 m.

3.2.1 AREA A

Two stone cairns set 36 m apart were explored in two squares. The smaller of the two was in Square A4052 and the other in Square A3554. Surface material was collected and an arbitrary level (L1) of topsoil 0.15 m thick was removed. No traces of human activity could be observed around the cairn. The cairn itself (L2) was composed of middle-sized field stones of average dimensions, 15 cm by 10 cm. The largest stone measured approximately 30 x 20 x 10 cm and several stones were as small as 2–4 cm

¹ A service that allows to track, create and manage paperless forms and surveys under dedicated accounts and uses the forms from computer desktop and mobile devices.

in diameter. The roughly oval-shaped cairn measures 1.56 m on its longer and 1.31 m on its shorter axis. Its height at its center is 0.36 m from base to top. Although several chert artifacts were found within this pile, the stones were loose and exposed to external factors like erosion and its original aspect may have been different. Nothing like a substructure could be observed below the cairn. The square was subsequently dug deeper and used as a geological test trench (for the results, see above).

The cairn (L4) in Square A3554 was also of irregular oval shape, but larger, measuring 4.90 m on the longer and 2.48 m on its shorter axis; its height at the center was 0.59 m. Like the first cairn, the second one was built of mostly middle-sized field stones (average 15 x 10 x 5 cm), but with larger examples averaging about 30 x 20 x 10 cm, while the biggest were

between 30 and 45 cm in length, 25 cm in width and 12 cm deep. The size of the pile allowed us to excavate it in quarters. Some chert artifacts were found among the stones of the southwest quarter with fewer anthropogenic features found as the depth of excavation increased. No artifacts were found below the cairn.

3.2.2 AREA B

The three squares in Area B were intended to check for remains of stone architecture. Concentrations of stones were explored in adjoining trenches B4213/B4314 on the northern fringes of the site and in Square B5212, located 64 m to the southwest on the opposite side of the said area.

Squares B4213/B4314 were located on a slope descending southward with about a meter of difference in elevations between the northern and the southern

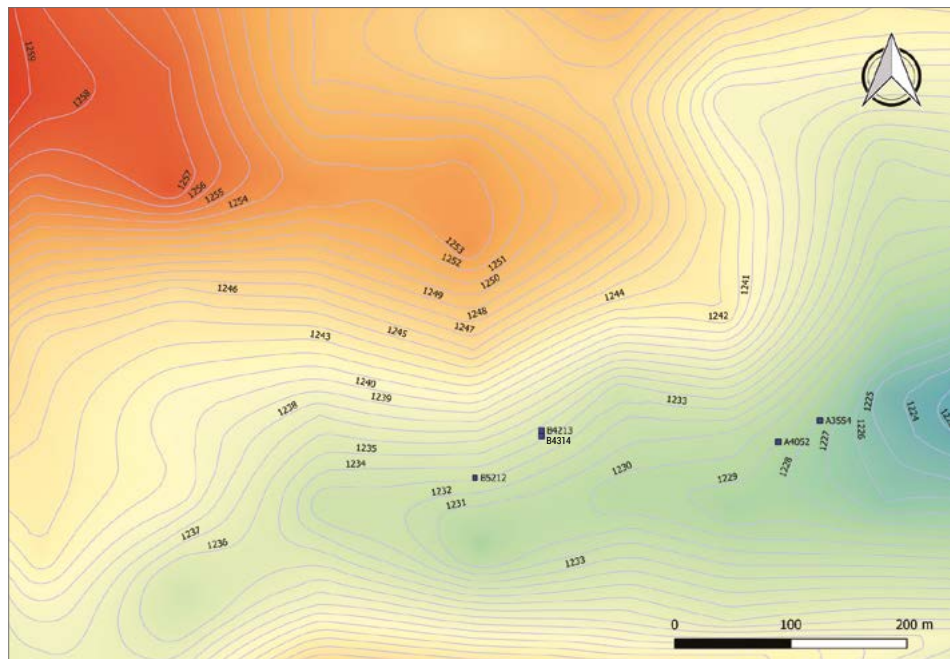


Fig. 2. Faysaliyya site: trenches excavated in 2017 (HLC Project/drawing J. Karmowski)

part of the trench. It had an unevenly scattered concentration of stones of different sizes (L102). Clearing 5 cm of the topsoil around the stones clarified their arrangement. One is a grinding stone (SF [= Special Find] 110). Several walls and different loci, primarily in Square B4213, were noted. Excavation reached 0.35 m below the modern surface in the northern part of the trench. Exposure to water and wind left little doubt as to the secondary position of the artifacts from the top levels. Walls W106, W108 and W109, clearly contemporary structures, were located under the first layer of loose rocks and two stone circles (L111 and L114) were found below the levels of the walls [Figs 3 and 4]. The different top levels of walls W106, W108 and W109 (1234.70, 1234.50 and 1234.30 m ASL, respectively) reflect sloping to the south. Wall W106 was built of 11 large stones [see Fig. 3], seven on the eastern side and four on the western side with a gap of 0.60 m between the two parts (tentative entrance). The stones differed in size, the smallest measuring 23 x 30 x 7 cm, the biggest 35 x 47 x 19 cm. The general orientation of the 5.12-m-long wall was from east to west with a slight curve from southeast to southwest. Below this feature were only randomly distributed rocks of different sizes (L105).

All walls consisted of a single course of stones. Another wall (W108), 1.54 m long, oriented north to south, abutted W106 from the south at its easternmost end. Wall W108 was composed of six irregularly laid stones of different sizes, the smallest one measuring 30 x 12 x 15 cm, the biggest 67 x 28 x 9 cm. The latter stone at the southern end of the wall was partly cov-

ered with densely compacted soil (L107). Wall W109 was discovered 0.95 m south of the empty space between the eastern and western segments of the 1.26-m-long wall W106, which was composed of three aligned stones, measuring respectively: 42 x 36 x 6 cm (northernmost), 27 x 32 x 12 cm (centrally placed) and 45 x 34 x 13 cm (southernmost). Densely compacted soil (L107) was found here and there beneath the walls and around the rocks. The texture of the soil in this locus was significantly harder than the soil around it, although both had a similar, light yellow color. It may have been a kind of mortar, that is, soil mixed with water, intended to bond the stones of the wall together, stabilizing and reinforcing the structure.

Two oval stone structures, L112 and L113, from the level beneath the walls are associated with two small pits, loci 111 and 114, located to their south. Their elevations indicate their contemporaneity to the constructed features and they appear not to have been disturbed by erosion. The two oval structures were composed of middle-sized stones: Locus L113 on the east, measuring 1.88 m x 1.45 m at least, covered 0.70 m² [Fig. 4] and Locus L112, slightly larger, measured 0.80 m². The two pits: L114 near Locus 112 and L111 adjacent to L113 were both oval in plan with an area of 0.10 m² (L111) and a depth of 6 cm, and an area of 0.011 m² (L114) and a depth of 5 cm, respectively. The fill of these pits was of a darker, almost gray color and of significantly looser texture.

The wall (W11) revealed in Square B5212 separated a concentration of middle-sized and large stones (L13, L22), located east of a gravel layer (L16, L17, L20) [Fig. 5]. The construction was vis-



Fig. 3. Faysaliyya. Stone wall W106 in Square B4213: top, view from the north; bottom, top plan (HLC Project/orthophoto processing J. Karmowski, photo P. Kołodziejczyk)



Fig. 4. Faysaliyya. Stone structure L113 under wall W106 in Square B4213: top, top view; bottom, top plan (HLC Project/orthophoto processing J. Karmowski, photo P. Kołodziejczyk)

ible in part on the surface prior to excavation. The bigger stones on the eastern side could be rubble from the wall, but the nature of the gravel to the west requires further investigation. The wall was oriented north to south with a slight NW–SE curve; its uncovered length is approximately 4.70 m, but it may continue beyond the trench borders. Making up the construction are 13 stones of different sizes, the biggest measuring 64 x 25 x 8 cm, the smallest 21 x 23 x 16 cm. At present, it is not known whether there are more courses of stones beneath the documented remains. One of the stones is notched, giving it an hourglass form; parallels from other sites in the region (Fuji et al. 2017: 571, 572, 575–576) suggest that it may have served to anchor the tie ropes of tents. The stone appears to be in secondary use in this wall.

3.3 MUNQATA'A

The site is scattered with archaeological material even in the steepest locations (probably redeposited from the top). The reconnaissance in 2015 and observations in 2017, coupled with a survey of hilltops and wadis around al-Tafila (Kołodziejczyk et al. 2018; Karmowski 2017), indicated a size of around 2.5 ha. Despite an out-of-the-way location, it seems to have been disturbed regularly by looters.

The mountainous area of the site was divided into various sub-areas located on the slopes. The trench in Squares A and B measured 2.5 m by 3.5 m after extension. It was located in the northeastern part of the site, 10 m south of one of the straight walls of the wadi that enclose the area on the north, on a slope dropping about 0.75 m from its northeastern

corner to its southwestern corner. One of the recently dug pits, where the dumped ash and potsherds suggested a disturbed archaeological feature, was intentionally included in the trench located in Square A. Four stratigraphic units were recorded, including 12 different loci and a wall segment.

A surface survey was conducted in a second area (S1) that was distinguished as a reference zone for the excavated portion of the site. The area was located 95 m to the northwest of the excavation trench and covered 1120 m². It yielded some 300 chert artifacts, representing Paleolithic, Neolithic and later periods (see below).

3.3.1 Stratum 4

One locus, L10, can be assigned to the lowermost stratum reached this season, observed between 531.23 m and 531.75 m ASL in the western part of Square A [Fig. 6 top]. The layer was bright yellow in color, with a sandy texture that looked almost natural. Nonetheless, it yielded archaeological artifacts including chert arrowheads. At 1.51 m below the surface (the deepest level of the locus reached during this season) there was no archaeological material present. Locus 10 may be the first layer above bedrock with evidence of human activity (to be confirmed in future fieldwork).

3.3.2 Stratum 3

The stratum reached on the western side of the trench consisted of loci L5, L6 and L7 presenting traces of burning and loci L8 and L9, pits containing a dark, almost black fill of ashes [Fig. 6 bottom]. Locus L6 in the eastern part of Square A was a layer of brown and loose soil with significant amounts of pottery and a spindle

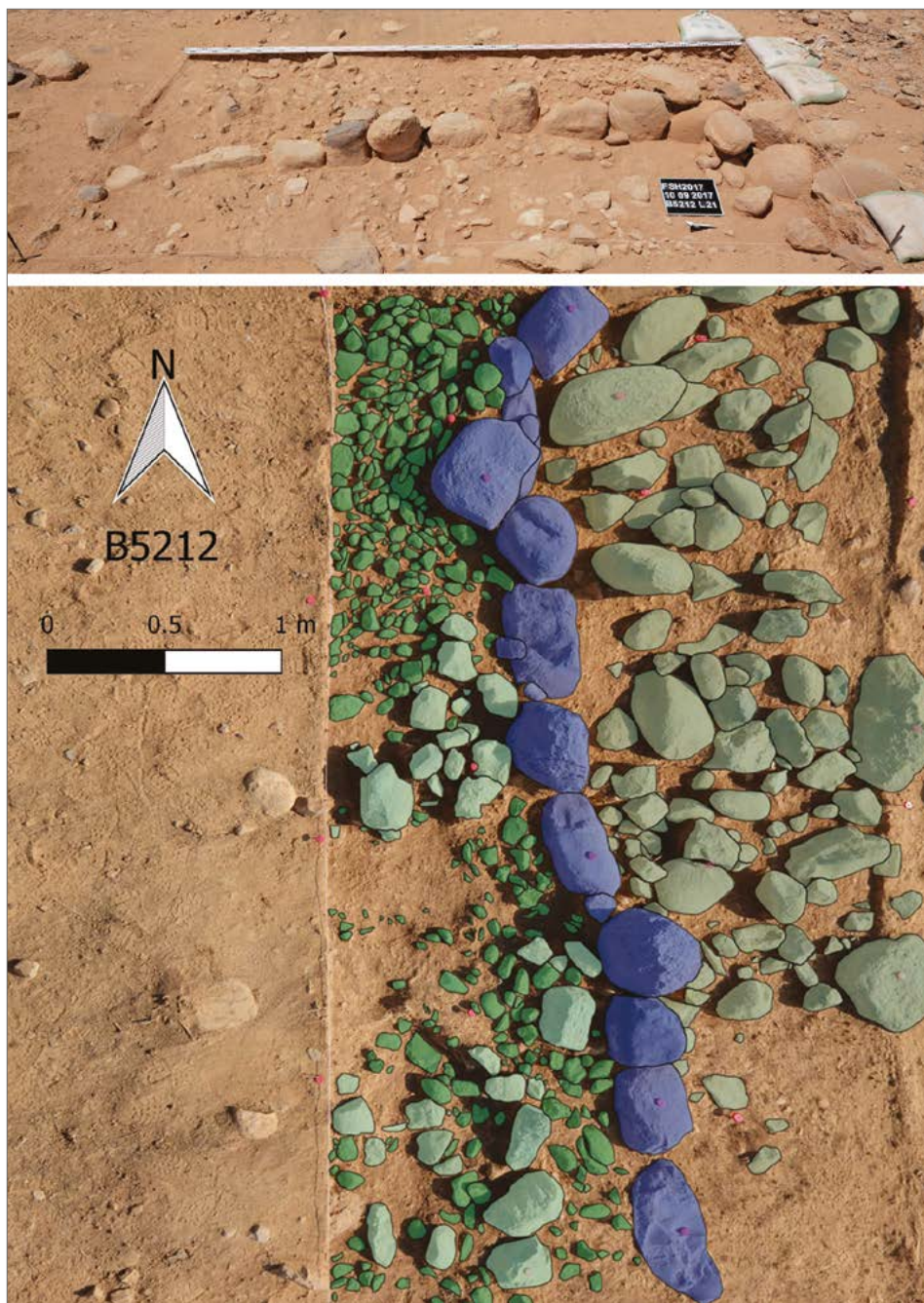


Fig. 5. Faysaliyya. Partly excavated stone structure W11 in Square B5212: top, view from the east; bottom, top view (HLC Project/orthophoto processing J. Karmowski, photo P. Kołodziejczyk)



Fig. 6. Munqata'a. Early Neolithic layers and associated features in Square A: top, stratum 4; bottom, stratum 3 (HLC Project/photos M. Czarnowicz)

whorl found *in situ* (SF 19). The pottery fragments found there tended to fall apart upon discovery, as if they had been made of clay that was either unfired or poorly fired. The context contained charcoal, but the layer overall did not show evidence of burning. Locus L5, however, located west of L6, was almost black/dark gray in color and presented significant traces of burning. It contained a great deal of small and middle-sized rocks in its central part and was separated from L6 by a number of middle-sized rocks aligned in a row. This locus was evident in the northern trench section. The rocks found here were burned. The assemblage from this locus consisted of pottery fragments and some chert artifacts. Locus 7 in the western part corresponded to L5 and may be equivalent to it, but no evident links between the two could be seen in the trench. It, too, was very well visible in the northern trench section and yielded dark soil with traces of burning as well as pottery and chert artifacts.

One of two ash-filled pits, L8, was located in the southeastern corner of Square A. It had been disturbed by looters. The fill was a mixed gray, brown and dark gray color and contained chert and pottery artifacts. The pit measured 0.53 m² in area and reached a depth of 0.31 m. The second pit, L9, was located at the westernmost edge of the trench. Its fill, composed of very dark, almost black soil, made it eminently visible on the surface and in section. The feature might have originally been a hearth or a fire pit. It contained a great deal of pottery and chert material (mostly in the upper parts of the feature), as well as burned rocks, mostly on the bottom. A large part of the

locus remains beyond the western border of the trench; the semicircular part seen inside the trench was 0.22 m deep at its center.

3.3.3 Stratum 2

This stratum featured a stone wall (W₁₁) in the eastern part of the trench [Fig. 7]. The need to uncover the eastern face of this wall necessitated the extension of the trench into Square B. The wall was fairly straight. The uncovered length is currently 1.52 m, the width varying between 0.75 m in the north, through 0.61 m in the center, to 0.44 m in the south. The excessive width of the wall in the northern part may be due to stone collapse. The stones were arranged in parallel rows, forming two faces (an additional course was found below the first one), the space between them filled with small rocks. None of the stones seems to have been worked, but their prevalent rectilinear shapes suggest careful selection. Stone sizes in both faces vary from 24 x 11 x 15 cm to 41 x 28 x 24 cm. The southern end of the wall was damaged by a robbers' pit, but the evidence of the southern trench section shows that it probably continued in this direction, as it does also northwards, beyond the excavated area. The structure stood on a thin layer of brown soil, spread under the wall in a foundation trench, which cut through an earlier feature (pit L8, see above). The height of the uncovered part of wall W₁₁ was about 0.40 m.

Layers with significant numbers of artifacts were found on either side of this wall. L3, a brown and light brown layer on the western side, yielded pottery and flint fragments, as well as



Fig. 7. Munqata'a. Fragment of stone wall W11 in trench A: top, top view; bottom, view looking east (HLC Project/photos M. Czarnowicz, P. Kołodziejczyk)

a grinding stone (SF 12) right against the wall. A pit (L4) with loose dark gray fill, perhaps ashes, contained burned sandstone (small-sized rocks), but no artifacts. It was 0.044 m² in area and 0.15 m deep. Loci L12 and L13 on the eastern side of the wall yielded pottery and chert artifacts; they corresponded to the brown color of L3, but without the light spots. Further exploration should indicate whether this was an external or internal wall of a larger structure.

3.3.4 Stratum 1

The topmost stratum (loci L1 and L2) was most likely a natural formation, composed of layers of sand with powdered sandstone. The recovered assemblage, mostly chert artifacts, also contained several pieces of limestone, which is not typically found at this level of the valley. These stones turned out to be, at least in part, rubble from the wall found in the second stratum.

4 COLLECTION OF CHERT ARTIFACTS

4.1 FAYSALIYYA

Of the assemblage of over 5,000 stone artifacts from Faysaliyya, approximately 60% came from the excavation and the rest was collected from the surface in various parts of the site. The artifacts are of local raw materials, mostly chert of a brown-beige color, but a steely grey chert of better quality is also in evidence. Many artifacts have white-grey patina and are characterized by numerous post-depositional bruises and edge damage, as well as traces of aeolian abrasion. On the whole, the Faysaliyya inventory is not very distinctive chronologically and culturally, but there are diagnostic forms attributable to different chronological horizons.

The oldest are Acheulian handaxes (21 pieces). Almost all were collected from the surface in the western part of the site. Several types identified in the typology of François Bordes (1961) are represented: cordiform, subcordiform, amygdaloid [Fig. 8A:1,2], ovate [Fig. 8A:3], discoidal [Fig. 8B:4] and ficron [Fig. 8B:5]. They are quite diverse in size, but most of them do not exceed 10 cm in length. Some have traces

of a soft-hammer finishing of the edges. In two cases, hand axes were used secondarily as flake cores. The exact chronology of the inventory under consideration cannot be specified, but morphological features indicate the most likely date either in Middle and Late Acheulean or exclusively Late Acheulean (Shea 2013: 73–76). Handaxes from Faysaliyya demonstrate a significant similarity to collections from other sites in southwestern Jordan, such as Fjaje and Wadi Qalkha (Al-Nahar and Clark 2009).

Numerous artifacts from all over the site, especially Square A4052, may be associated with the Middle Paleolithic horizon on the grounds of characteristic typological and technological features. Specimens associated with the use of the Levallois technique form a distinctive group. Levallois cores merit particular attention. They include both preferential and recurrent specimens; single-platform and multi-platform ones [Fig. 9]. Most of the Levallois cores should be considered as flake specimens, although irregular blade cores were also recorded. Levallois debitage is quite abundant. It is represented by flakes [Fig. 10:1],

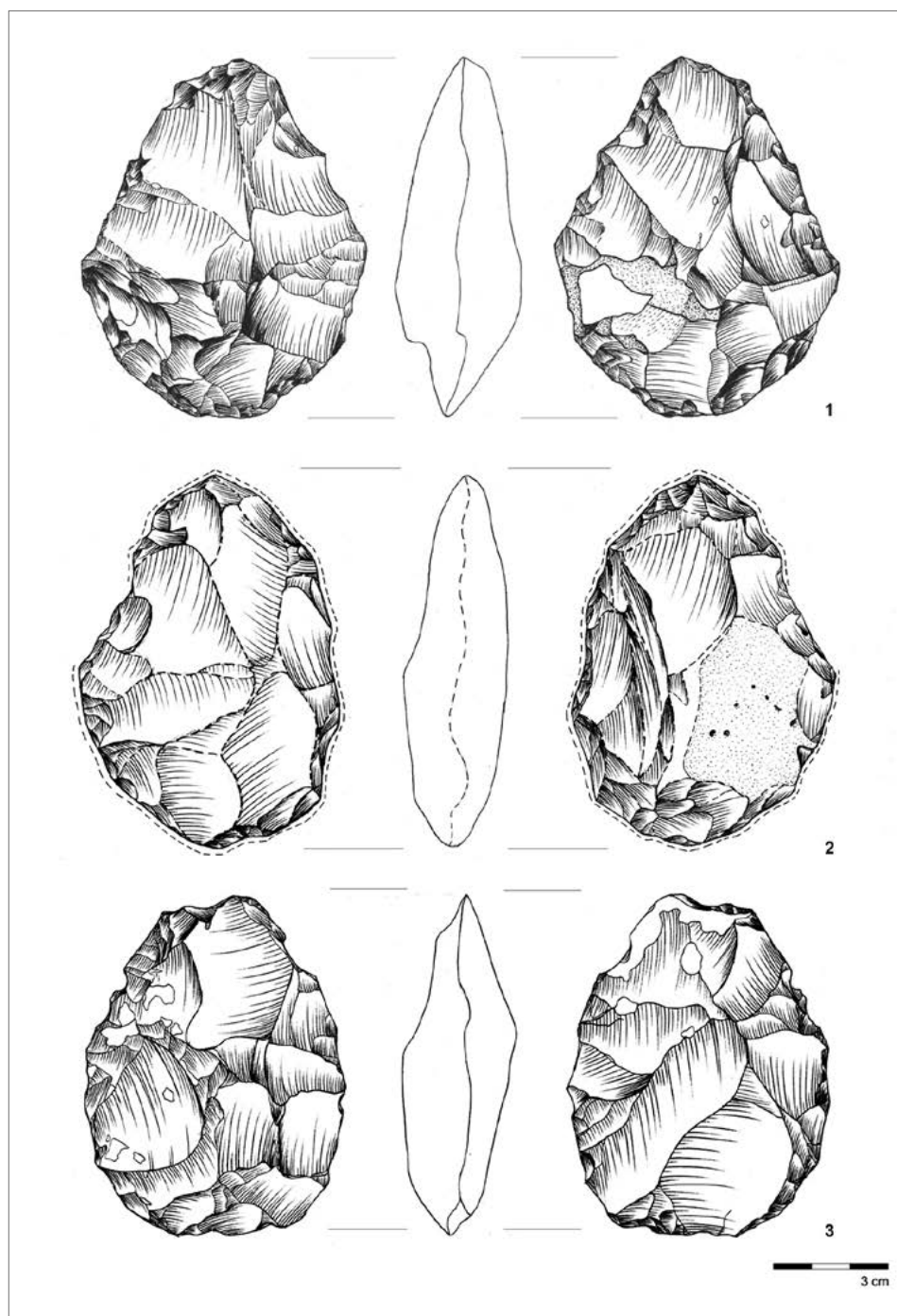


Fig. 8A. Faysaliyya. Lower Paleolithic chert artifacts: Acheulian handaxes: 1, 2 – amygdaloid; 3 – ovate (HLC Project/drawing and digitizing B. Witkowska)

points [Fig. 10:2,3] and trimming elements. Most of the discoidal cores and some flake, single-platform cores should also be dated to the Middle Paleolithic. In addition, a large number of scrapers was recovered. They are diverse, but most often they occur as side scrapers [Fig. 11:1,2], canted scrapers [Fig. 11:3] and convergent scrapers [Fig. 11:4]. Some of the latter may be considered as points. Very numerous notched and dentic-

ulated tools can also be associated with the Middle Paleolithic component. The joint occurrence of the Levallois and discoidal core techniques, as well as the presence of tools, such as scrapers, points and notched/denticulated specimens, suggest that the Paleolithic in Faysaliyya can be associated with the Levantine Mousterian. A more detailed chronology cannot be established at the current stage of research.

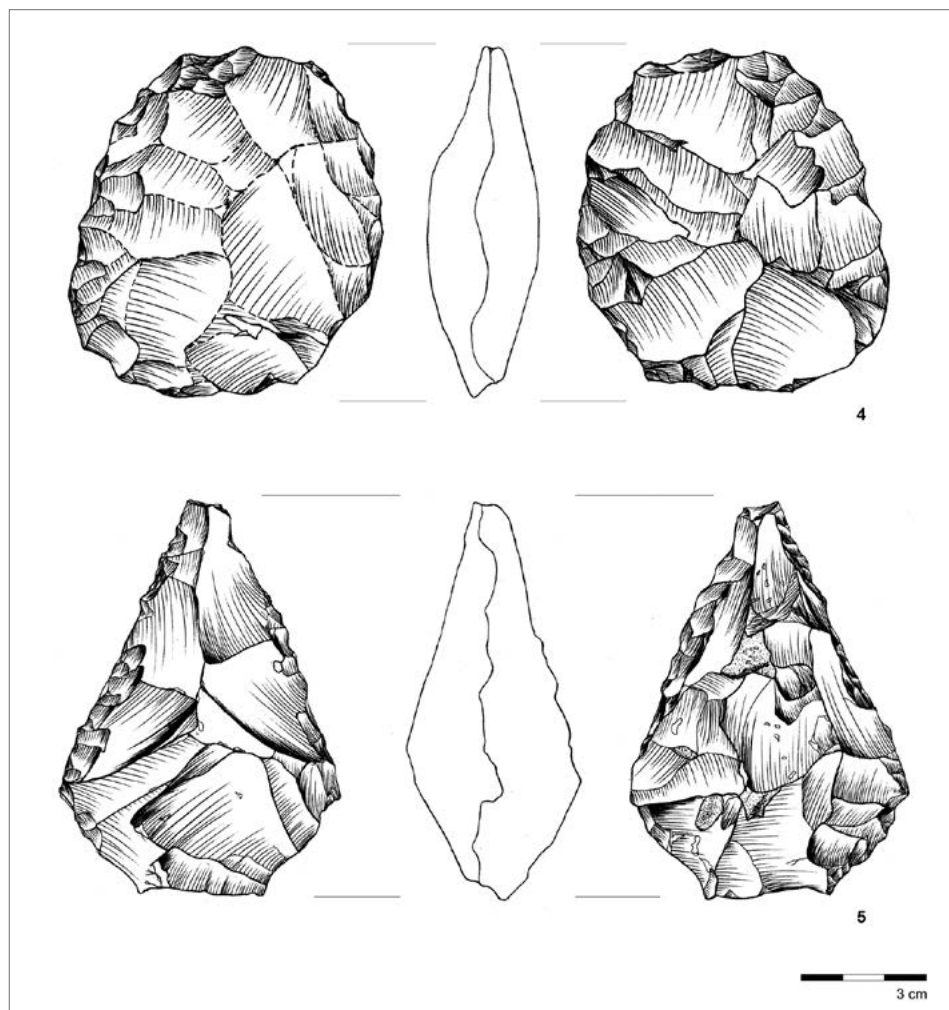


Fig. 8B. Faysaliyya. Lower Paleolithic chert artifacts: Acheulian handaxes (continued): 4 – discoidal; 5 – ficron (HLC Project/drawing and digitizing B. Witkowska)

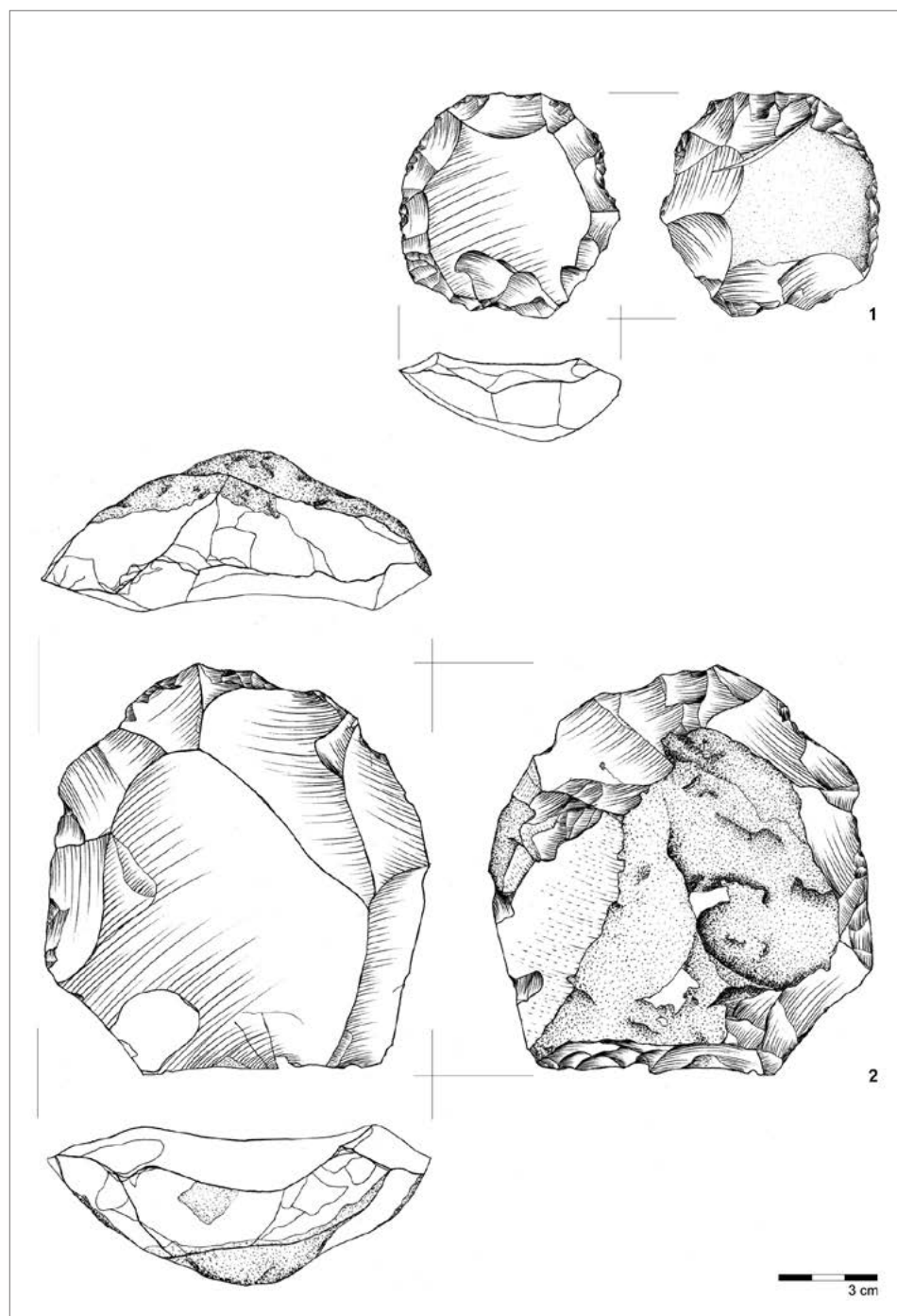


Fig. 9. Faysaliyya. Middle Paleolithic chert artifacts: 1, 2 – Levallois cores (HLC Project/drawing and digitizing B. Witkowska)

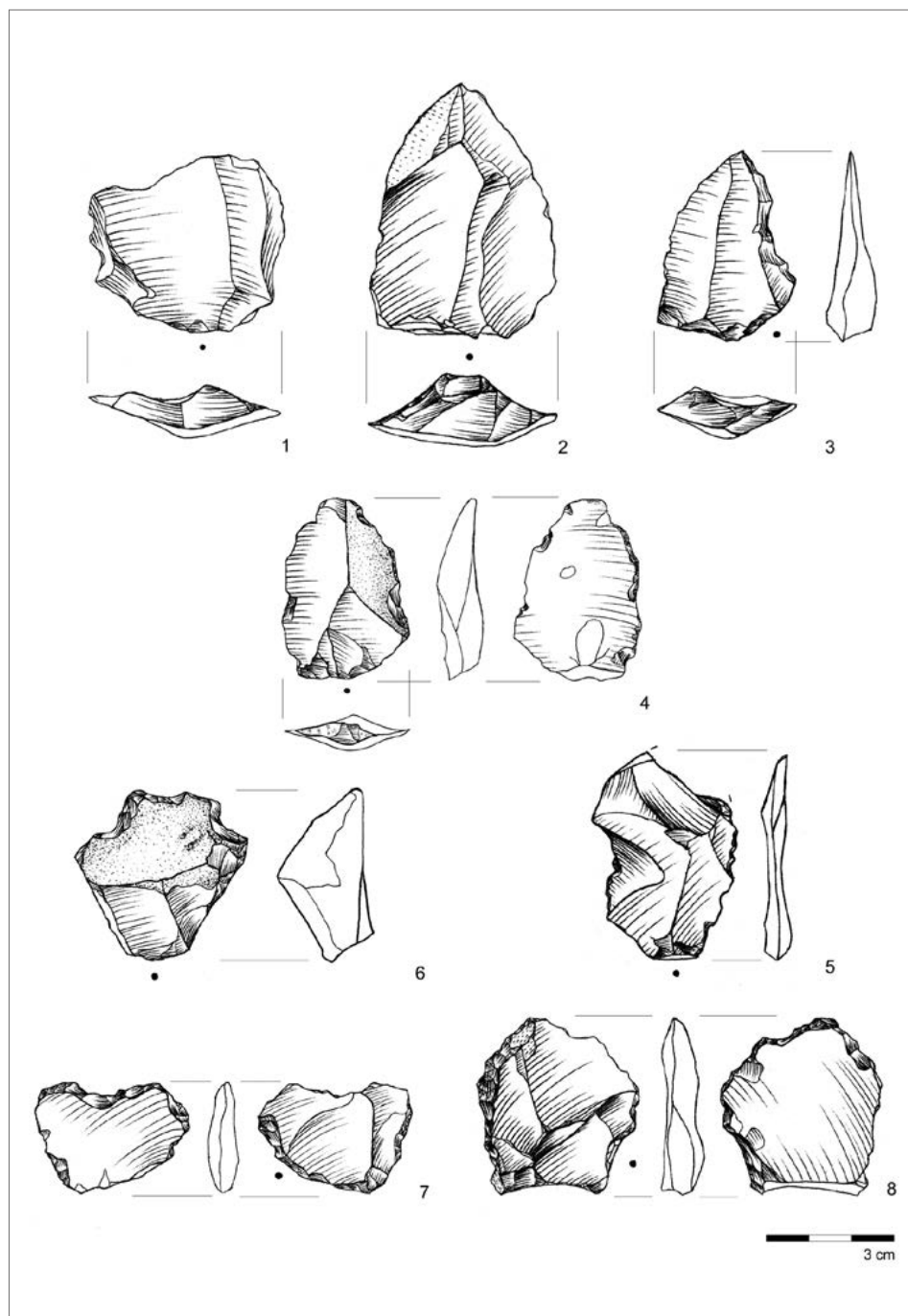


Fig. 10. Faysaliyya. Middle Paleolithic chert artifacts: 1 – Levallois flake; 2, 3 – Levallois point; 4–8 – notched and denticulated tools (4 – made on Levallois flake) (HLC Project/drawing and digitizing B. Witkowska)

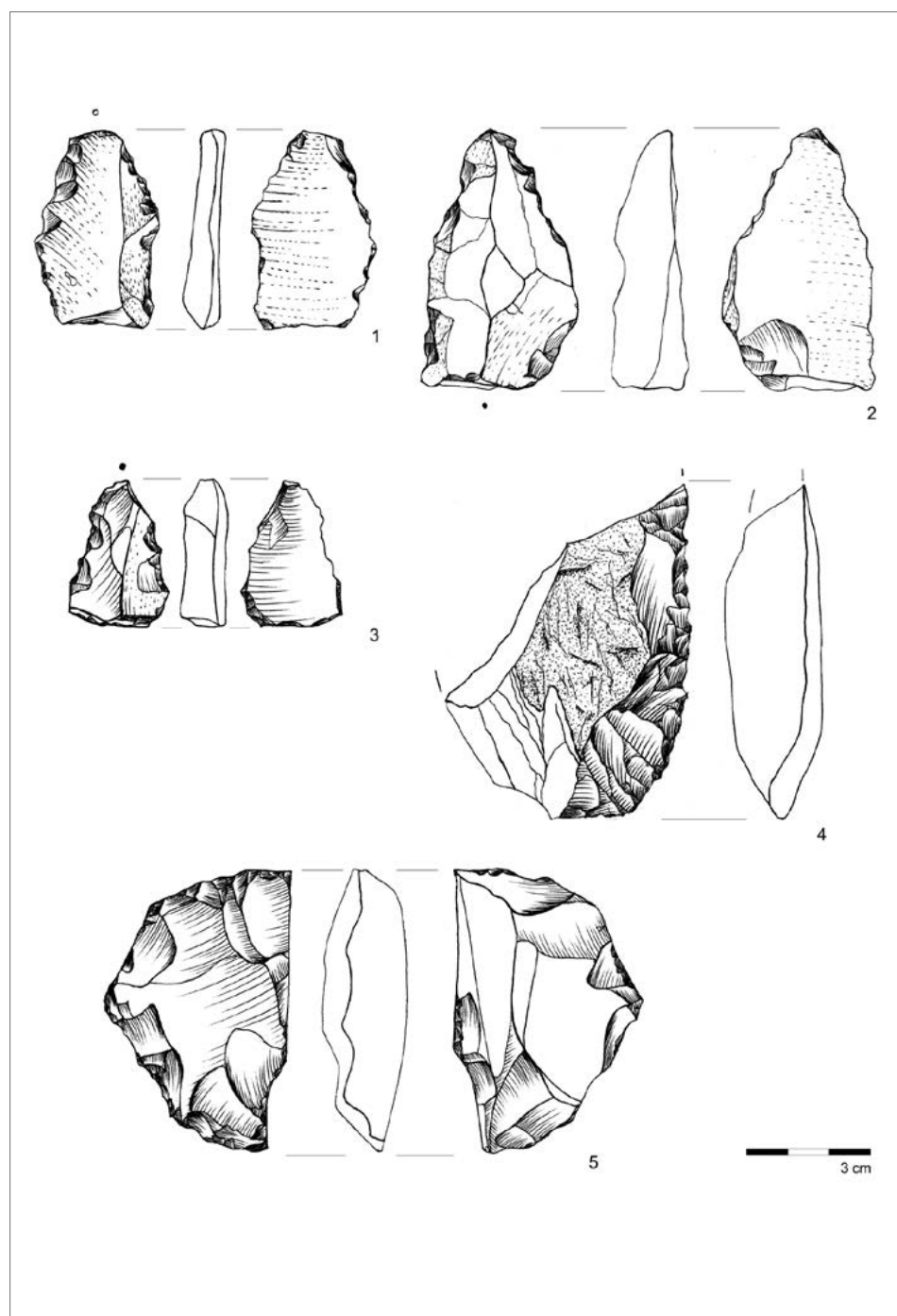


Fig. 11. Faysaliyya. Middle Paleolithic chert artifacts: 1, 2 – side scrapers; 3 – canted scraper; 4 – convergent scraper; 5 – Tayac point (HLC Project/drawing and digitizing B. Witkowska)

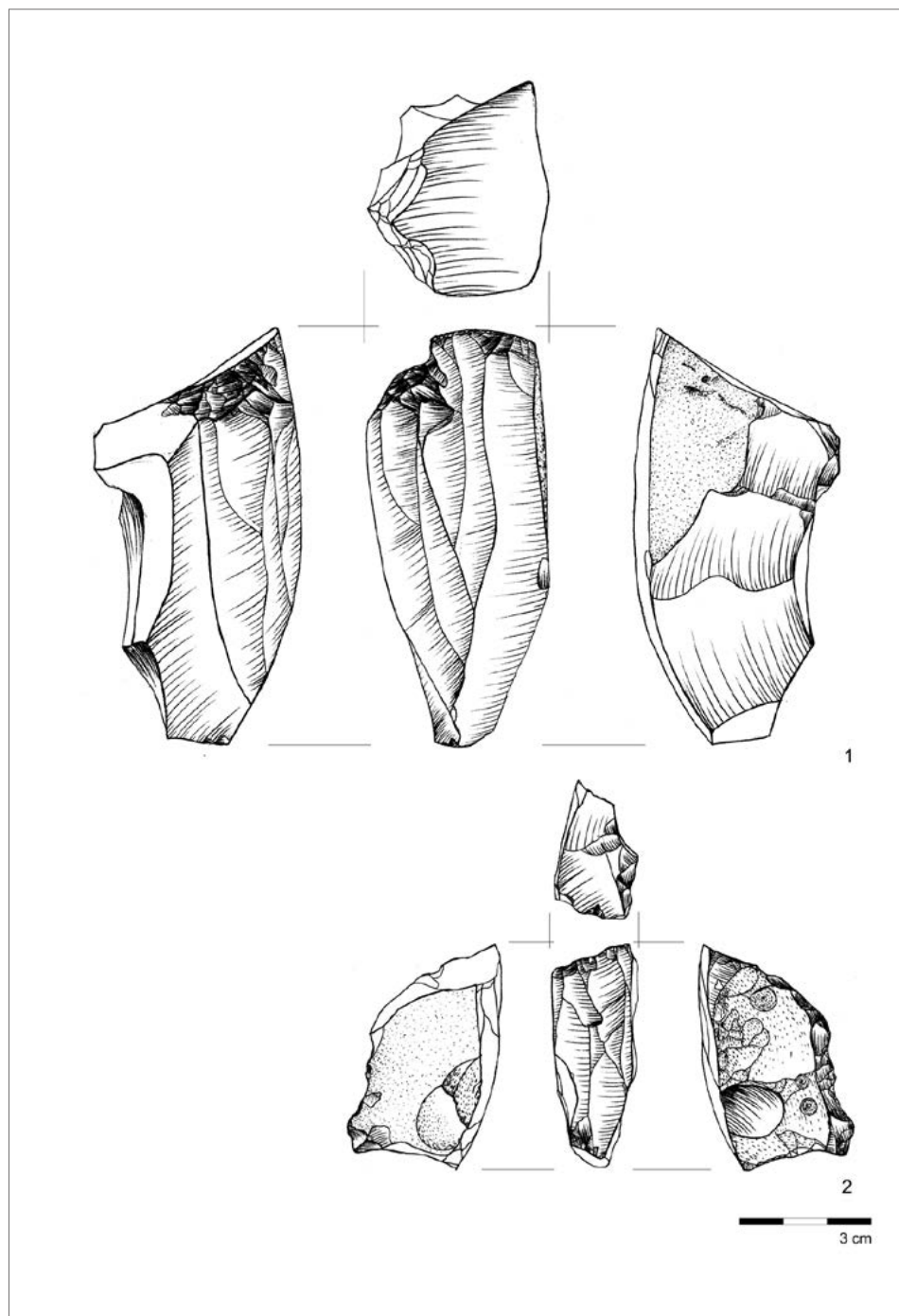


Fig. 12. Faysaliyya. Epipaleolithic chert artifacts: 1, 2 – single-platform bladelet cores (HLC Project/ drawing and digitizing B. Witkowska)

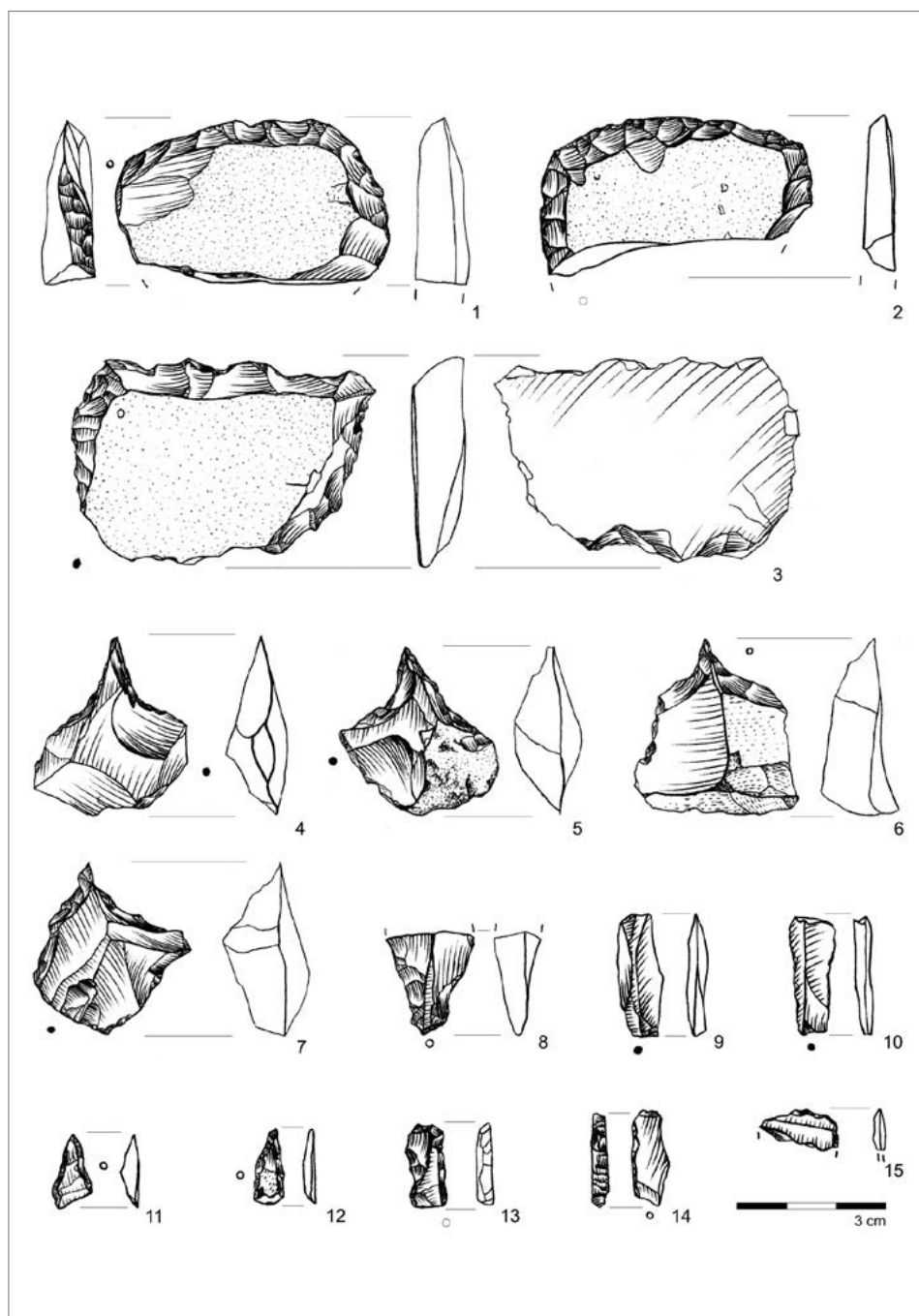


Fig. 13. Faysaliyya. Epipaleolithic, Neolithic and Early Bronze Age chert artifacts: 1–3 – tabular scrapers; 4–7 – flake perforators; 8 – blade point tang; 9, 10 – bladelets, blades of medium size; 11–15 – microliths: backed bladelets or rectangles (HLC Project/drawing and digitizing B. Witkowska)

There is another category of artifacts that could be linked to the Middle Paleolithic. They were mostly discovered in Square A4052 and correspond to the typological characteristics of the Tayac points (Debénath and Dibble 1993) [Fig. 11:5]. It cannot be ruled out, however, that they are older and come from the late phase of the Lower Paleolithic (Shea 2013: 76).

Some of the lithics can be dated with fair conviction to the Epipaleolithic, although their cultural affiliation is difficult to determine beyond doubt. They occurred mainly in the western part of the site, on the surface and in Squares B4212/4314 and B5212. Among them, single-platform bladelet cores, conical, very slender with careful preparation, and pyramidal, stocky, with preparation limited only to the striking platform [Fig. 12] were noted. One should also mention a few fragments of microliths, probably backed bladelets or rectangles, formed with very fine, high, abrupt retouch [Fig. 13:11–15], as well as bladelets [Fig. 13:9,10], whose width does not exceed 1 cm.

The youngest chert artifacts discovered this season are related to the Neolithic and Bronze Ages. They are much less numerous than artifacts in the Paleolithic assemblage and were concentrated in the western part of the site. One can associate with the Neolithic a part of the tang of a blade point [Fig. 13:8], which was found in unit B5212, and perhaps part of not very regular blades of medium size. A dozen or so tabular scrapers made of flat cortical flakes [Fig. 13:1–3], and a group of standardized flake perforators [Fig. 13:4–7] can probably be dated to the Early Bronze Age (Rosen 1997: 68–69, 71–79). However, it must be admitted that the former category of tools

was quite commonly found in Neolithic assemblages (Shea 2013).

4.2 MUNQATA'A

The Munqata'a site yielded this season a total of 554 chipped lithics, of which about half (282 pieces) were collected from the surface; 18 of the surface finds were from the trench area and they should be considered together with the 81 artifacts from loci L1 and L2 of stratum 1. Loci related to earlier stages provided a total of 49 artifacts for stratum 2, 76 for stratum 3, and 66 for stratum 4 (Locus L10).

Locus L10 with its lack of architectural remains (see above) may represent the earliest human activity on site, and the fact that this inventory is not coupled with any pottery finds, in contrast to the assemblage from higher-lying layers, leads to the assumption that it is characteristic of occupation preceding the Pottery Neolithic period, that is, earlier than the mid-7th millennium BC. The artifacts fall into types typical of PPN B or C, or, to use the terminology proposed by John J. Shea (2013), the Middle Neolithic.

First to be discussed are projectile points. One of them, made on a regular blade, of a maximal width of approximately 2 cm, is preserved only in its proximal part [Figs 14:3; 15 center]. It has a narrow tang (not fully preserved) and proximally projecting 'wings' formed by corner-notches, made of semi-abrupt, two-sided retouch. Above, about 7–8 mm from the bottom edge of the 'wings', there is a pair of bilateral, (almost) symmetrical notches that were made with the same retouching. These traits indicate that the specimen is an

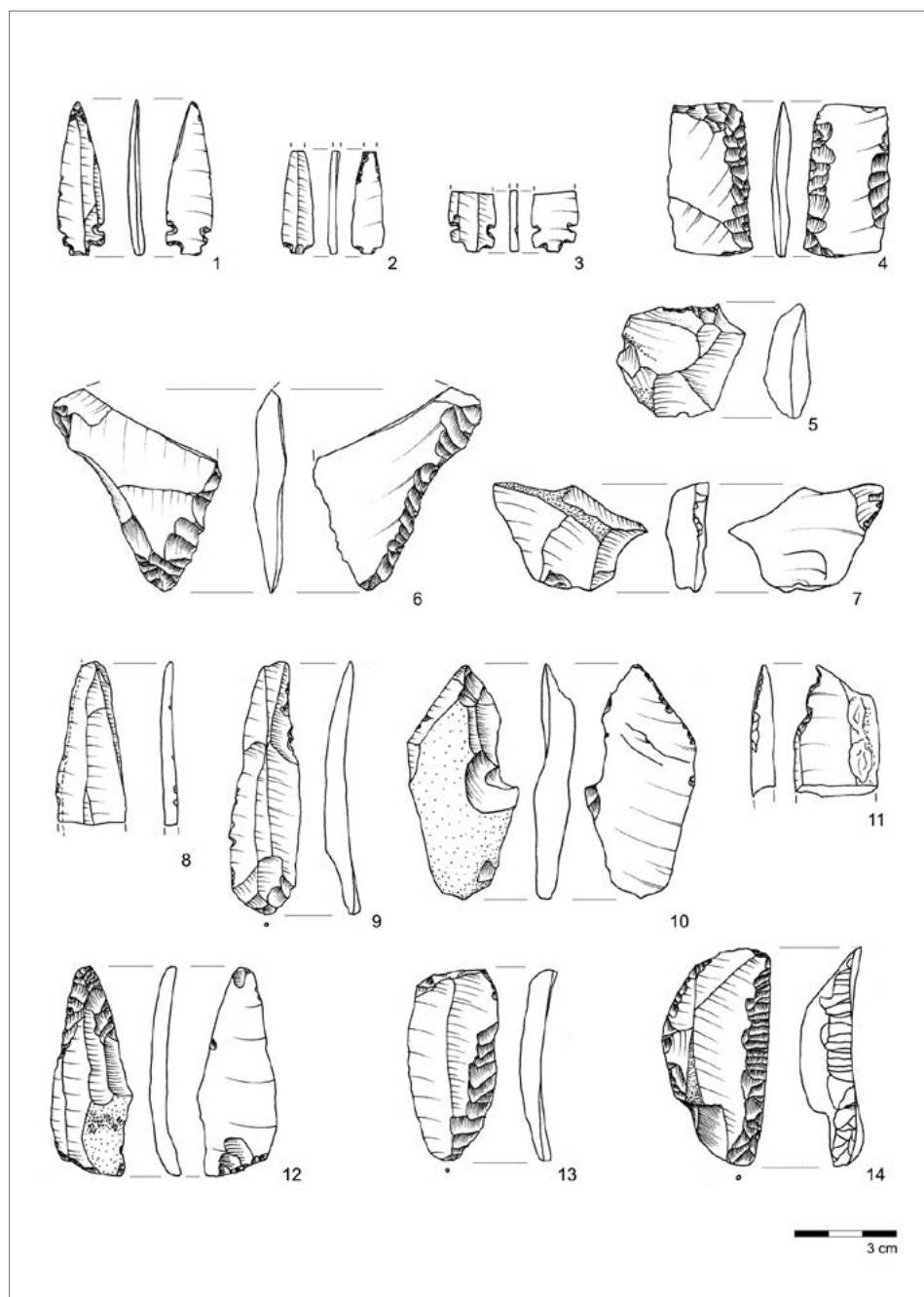


Fig. 14. Munqata'a. Middle Neolithic chert artifacts: 1–3 – Helwan projectile points (1, 3 – Abu Salem points, 2 – Sheikh Hassan point?) (see Fig. 16); 4 – regular blade with invasive retouch (sickle insert); 5 – awl(?); 6, 7, 11 – flakes; 8, 9 – bladelets; 10 – notched tool; 12 – perforator; 13, 14 – knives (HLC Project/drawing and digitizing J. Kościuk and B. Witkowska)

Abu Salem point, which is considered a subtype of Helwan points (Shea 2013: 244, Figs 7.12, 7.27). A complete triangular point with almost identical features was picked up from the surface in the square. It was made on a regular blade, knapped from the single-platform core [Figs 14:1; 15 left]. On the distal tip there is irregular, mainly obverse retouch. This find suggests that Locus L10 must have been exposed to denudation processes somewhere on the site (upper layers included) or/and looting activity.

The second, more complete specimen from L10 was made on a blade of a maximum width of 13 mm [Figs 14:2; 15 right]. It is a projectile point with a narrow tang made by corner notches, which were shaped by semi-abrupt, double-sided retouch. The tang has not been preserved in its entirety. The specimen does not have any other notches, but it is semi-abruptly, inversely retouched in the distal part, along both sides. The said lack of notches on the lateral edges is somewhat unusual for a Middle Neolithic piece and it finds no straight-

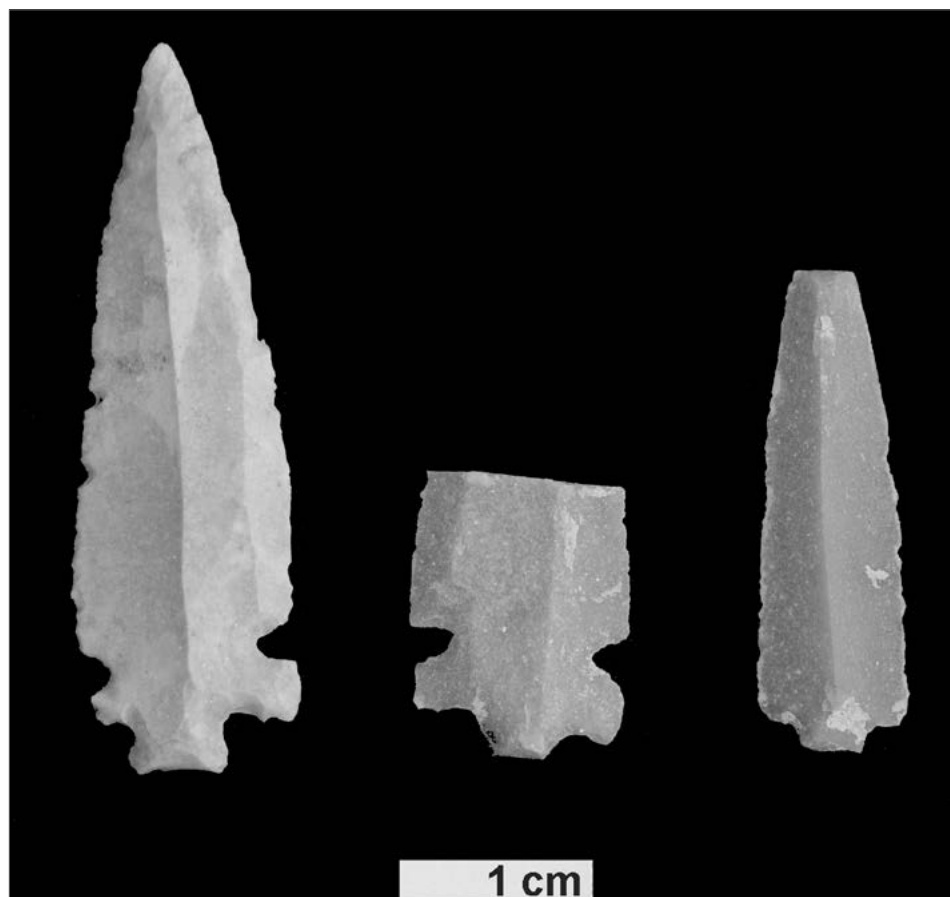


Fig. 15. Munqata'a. Middle Neolithic chert Helwan points (see Fig. 14:1–3) (HLC Project/photo P. Kołodziejczyk)

forward parallels. However, some Helwan points of the Sheikh Hassan type do not have notches either, being characterized by retouching in their distal parts (Shea 2013: Fig. 7.12:d). They are, therefore, the nearest parallel for the Munqata'a piece.

Fragments of regular blades and bladelets, often presumably long and narrow, make for an important component (30 pieces) of the remaining part of the inventory found in stratum 4 (Locus L10). They were obtained from either unidirectional or bidirectional (including bipolar) prismatic blade cores. Generally, they are classified as central blades; they have roughly triangular or trapezoidal cross-sections. About half of them were laterally retouched. Some also have retouches on the proximal edges, forming weakly visible tangs. This may indicate the presence of some elongated points, but a specific type cannot be indicated due to their incompleteness. Nonetheless, the described type of blades corresponds to characteristics that are considered typical of the Middle Neolithic (Shea 2013: 223–228).

The remaining elements of the lithic inventory from Locus L10 are irregular, angular flakes, some with use-related 'retouching'. They give the impression of having been knapped from multiple-platform flake cores. Perhaps they were used as *ad hoc* tools.

Accumulations denoted as loci L5, L6, L7 and the pits L8 and L9 were combined into one stratigraphic complex called stratum 3. The 76 chert artifacts from this complex should obviously be considered as younger than those described above, but some secondary displacement from the earlier stratum to the later one cannot be ruled out entirely. The group consists of not very regular blades and bladelets,

obtained from single-platform cores and irregular flakes. They were obtained mainly from double-platform and multi-platform flake cores. The material is highly fragmented, hence it is difficult to precisely determine the numerical relation of blades/bladelets to flakes. The former, however, remain a minority; 16 specimens can be clearly classified in this category. Approximately one third of all artifacts have retouched edges, but in most cases it seems to be the effect of being used. There may be one typological awl, made on a flake [Fig. 14:5]. In addition, burin negatives appear on two flakes and on two blades. Locus L7 is the only unit to have yielded a more regular prismatic blade, from a single-platform core. It has a lateral cortical surface, as exploitation of the core led to widening of the flake-release surface. One wonders whether this blade may have migrated from the lower layer (Locus L10). Three fragments of more regular bladelets were also found in unit L7 and it should be added that the frequency of blades here is the highest (9 pieces out of 21).

The loci of stratum 3 have all yielded significant quantities (140 pieces) of ceramic fragments associated with the Late Neolithic Jericho IX culture (see below), contributing to the dating of the stratum under consideration and to most of the chert inventory. However, from the chipped lithic perspective, the Jericho IX culture is not well understood. As Shea points out, "our picture of Jericho IX lithic technology is informed mainly by the Jericho excavations and surface collections/test excavations at sites with Jericho IX pottery" (Shea 2013: 283). Thus, for example, it is no wonder that no extensively retouched

projectile points or sickle inserts that are considered determinants of the Late Neolithic have come from this stratum. It is a recognized fact that the further south one moves in the Levant, the fewer such points are found; in units such as Qatifi-an or Besorian, known from Sinai, Negev and southern Jordan, they are extremely rare. One way or another, an increasingly prominent flake-based industry is a Late Neolithic trait, including excavated collections of the Jericho IX culture (Shea 2013: 280–283).

The chronological and cultural affiliation of the chert finds from the next stratum 2, which encompasses loci L3, L12 and L13 (49 pieces), is affected again by pottery of Jericho IX culture (81 pieces), which characterized this horizon (for a discussion of the pottery, see below). As before, the inventory was a mixed one consisting of both blade/bladelet group [Fig. 14:8,9] and a group of not very regular flakes [Fig. 14:6,7,11]. The first one contains at least 13 pieces, which is a slightly higher percentage than in stratum 3; yet none of them has been completely preserved. More importantly, the identified blades (10–12 mm width) and bladelets (5–8 mm width) are more regular, mostly coming from single-platform prismatic blade cores. An arched endscraper was made on one of these blades. Silica gloss is present on the dorsal side of another blade, of a width of about 1–2 mm, along the entire remaining left edge, thus including the specimen in the Neolithic group of sickle inserts on blades (Shea 2013: Fig. 7.18). A third of the flakes have formal retouches on different edges, usually either use-related or *ad hoc*. The latter group probably includes three awls. All things considered, the stratum yielded no

artifacts that are considered to be evident determinants of the Pottery Neolithic, but, somewhat paradoxically, all the specimens found here could potentially be found in inventories of this provenance.

Stratum 1 comprised near-surface sediments, probably non-anthropogenic, associated with local erosion processes. The 81 chipped lithics recorded from the loci identified with this stratum are most probably a secondary mix. This inventory consists of irregular flakes and chunks, and a few not very regular blades. Only one specimen is a more regular bladelet. One of the cortical flakes can be formally classified as a notched tool [Fig. 14:10]. None of the forms from this inventory can be said to be typical of specific archaeological phenomena.

Finds from the surface constitute the largest group. Few specimens apart from the Abu Salem-type projectile point discussed above could be tentatively associated with specific cultural and chronological units. Several specimens with regular, ‘laminar’, invasive retouch on the dorsal face should be mentioned first. The parallel scars of this retouch presumably resulted from pressure-flaking. These specimens can be described as knives [Fig. 14:13,14] or perforators [Fig. 14:12]. The retouch, although it may have originated in the beginning of the Middle Neolithic, is considered a distinctive feature of PPN C. The high frequency of such retouch in the Late Neolithic period, including the Jericho IX culture (Shea 2013: 278, 280, 283), represents a continuation of this trend. Several of the specimens are fragments of regular blades, unifacial or bifacial, with backed or invasive retouches that resemble geometric sickle inserts, although no signs of silica gloss were found. One of

them is characterized by a flat invasive retouch [Fig. 14:4], which may suggest a Late Neolithic provenance (Shea 2013: Table 7.7, Fig. 7.28). However, a much later chronology cannot be ruled out in view of the geometrical outline of the specimen (see Rosen 1997: 55, Figs 3.15, 3.16), extending from the Middle Bronze

until the beginning of the Iron Age (Rosen 1997: Fig. 3.19). The two specimens of small, carefully made borers could in turn have a Neolithic provenance (Shea 2013: Fig. 7.20:k,l). Generally speaking, it seems that the surface material contains components associated with the Neolithic and the Bronze Age.

5 POTTERY

5.1 FAYSALIYYA

Only a handful of sherds was found in Area B of the site at Faysaliyya. Sherds were picked up from the surface and collected from layers (loci L101, L103, L104, L105, L106 and L112) accumulated around the stone structures excavated in Square B4213.

From a chronological point of view, the pottery assemblage can be divided into two separate groups. The first one consists of sherds found in the upper layers, that is, the surface and topsoil. A few small sherds apparently from this group came from the lower strata and their presence there is explained by the phenomenon of bioturbation. The pottery was made from well developed clay and turned on a potter's wheel. The horizon described is connected generally with later periods, most probably the Nabataean/Roman (see Hendrix, Drey, and Storfjell 1997: 227–250), but without a more precise designation for lack of well-dated fragments.

The second group consists of poorly fired, handmade pottery, with remains of coiling visible on various fragments. Surface color ranges from dark brown and red-brown to dark gray, very often

with dark gray sections. The clay was mixed with fine to coarse mineral temper. No traces of surface treatment were observed. The sole diagnostic sherd was a rim fragment of a hole-mouth jar; the remaining sherds probably represent few, at least four, jars of this kind. Such pottery occurred from the Neolithic times onwards, to become a hallmark of the Early Bronze Age. Vessels of this type were used as cooking pots or for storage (Amiran 1969: 55). Although one generic rim is not enough to date the whole assemblage, judging by the technology of production, surface treatment and temper, the pottery is likely to date back to the late prehistoric periods, presumably the Early Bronze Age.

The pottery from the Nabataean/Roman periods may be connected with temporary residence of a population occupied with agricultural work in the valley. The hole-mouth cooking pots from the older group are clear evidence of settlement practices that probably developed at the site during the Early Bronze Age (EBA). The limited number of pottery types is suggestive of temporary occupation (see Saidel 2011), perhaps by a nomadic tribe which used to spend part of the year in

the area in connection with some form of economic or agricultural activities.

5.2 MUNQATA'A

The pottery from the site was collected from the surface and from two stratigraphical units, 2 and 3 (297 pieces), and with the exception of three surface finds, they all represent the same chronological horizon. The three exceptions are Roman-type pottery fragments, probably washed out from elsewhere, most likely from the top of the wadi banks. On the methodological side, the pottery (and other finds) were collected daily, separately from every locus and sifting was limited to places where fragile microlithic chert tools were found.

In stratum 3, pottery was found in layers connected with fire pits (L7, L8, L9) and in the ashy layer covering the area (L6). Pottery from stratum 2 was connected with a stone structure (W11), most probably part of a house or stone fence. It was found on both sides of the wall and there is no chronological difference between the sherds from the hypothetical inside (L13 on the eastern side of the wall, see above) and outside of the building, but it should be noted that the assemblage is relatively small.

The most distinctive features of the pottery from Munqata'a are: poor firing, color ranging from buff orange to reddish, mineral temper of different size and a smoothed surface achieved by burnishing with grass or straw. A large number of the sherds bear distinctive geometric decoration executed over a light-colored slip. No traces of plastic decoration or incisions were observed in the assemblage [Fig. 16A, B].

The quality of production, decoration and surface treatment suggest a rather early origin of the finds. A similar decoration pattern, that is, lines of thin reddish-brown paint over a light background, is known from the EB 1B sites with basketry or Line Group Painted Ware (LGPW) (see Braun 2012: 13–15, Figs 5–6). A closer examination of the painting shows that the surface covered with color was later burnished, which was not typical of EB 1. Beyond doubt, the pottery excavated at Munqata'a belongs to the Pottery Neolithic Period, bearing decoration typical of the Jericho IX horizon (see Garfinkel 1999: 68).

It is too early for statistical analyses considering the small size of the assemblage and it is uncertain as to how well the sample collected may represent the entire site. Most sherds are body fragments with few diagnostic elements to allow for the reconstruction of vessel types. Two main groups are recognizable. The first group consists of wide, large or middle-sized bowls with straight walls and a simple rim. Most of the fragments belonging to this category are painted. In Yosef Garfinkel's terminology, they represent Types C1 (Garfinkel 1999: Fig. 45) and C6 (Garfinkel 1999: Fig. 48). Additionally, the presence of Type C7 (Garfinkel 1999: Fig. 49), that is, hemispherical bowls, was also noted. One such bowl that could be reconstructed was decorated with thick lines starting a little bit below the rim and running diagonally towards the bottom of the vessel [Fig. 16B:1]. The closest parallels to the bowl come from Jericho for example (Kenyon and Holland 1983: Fig. 5:4). Next to bowls with thick lines, there are vari-

ous examples decorated with a series of thin parallel lines. Less frequent is a geometric, triangular decoration, similar to an example from Ghrubba (Mellaart 1956: Fig. 5:89).

The second group comprises decorated and undecorated closed vessels. Fragments belonging to the Jericho IX jars were noted. Other fragments represented necked pithoi, group F4 (see Garfinkel 1999: Fig. 61) and, probably, hole-mouth pithoi, group E4 (see Garfinkel 1999: Fig. 52).

Approximately 20% of all vessels were decorated. The fragmentation of the material excluded in many cases a reconstruction of the patterns. Parallel longitudinal or diagonal lines or wavy patterns

with sharp corners were observed. This decoration is repeated at other Jericho IX sites, except for one fragment with diagonal crossing lines painted in a light shade of reddish brown forming a lozenge pattern with the lozenges, uniquely, filled with dark brown paint [Fig. 16A–B:4].

Undecorated sherds were often burnished with straw or grass. Other examples were left unworked. Traces of a light-colored slip are in evidence on some sherds, but it is not clear whether the whole pot was slipped or the sherd was part of a vessel that had painted decoration on the now lost parts.

The pottery was fired at low temperatures. It is soft and powdery to the touch,

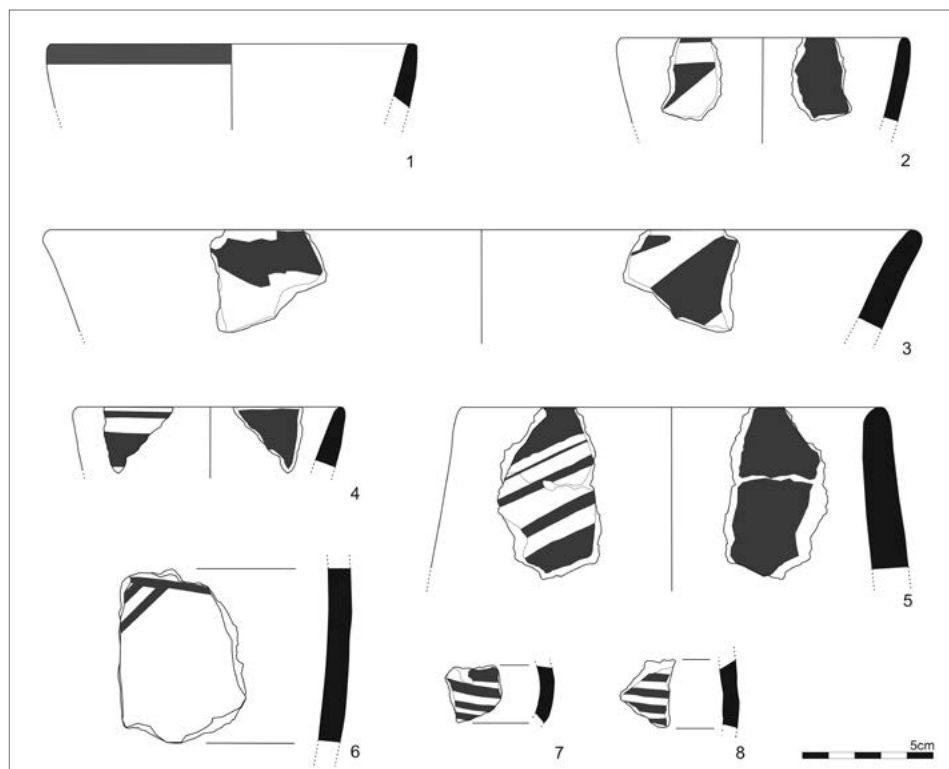


Fig. 16A. Munqata'a. Painted pottery of the Jericho IX Neolithic horizon (HLC Project/drawing A. Świtlicka, J. Ledwoń)

with the slip or decoration oftentimes peeling. In most cases, the section has the same color as the outer and inner faces.

The clays used in production had mineral tempers. Middle-sized grits of raw calcite were observed, featuring fresh breaks and sharp edges. The mineral inclusions in the clay of larger vessels were

of different sizes with larger pieces of calcite among the middle-sized grits.

The pottery from the probe excavated in 2017 at Munqata'a represents the Jericho IX horizon with good parallels at other Jericho sites such as: Jericho (see Kenyon and Holland 1982; 1983), Lod (Van den Brink et al. 2015: 174–177,



Fig. 16B. Munqata'a. Painted pottery of the Jericho IX Neolithic horizon (HLC Project/photo M. Czarnowicz)

Figs 30–31) and Teluliyot Batash (Kaplan 1958). The nearest sites with similar pottery are Khirbet el-Darih (Bossut, Kafafi, and Dollfus 1988) and ‘Dhra (Ben-

nett 1980). Excavations at ‘Dhra in the 1990s uncovered Jericho IX mistakenly dated by the excavators to EB 1 (Kuijt and Mahasneh 1998: Fig. 3).

6 SOCIOLOGICAL STUDIES AND HERITAGE PROTECTION

A sociological study aimed at local community awareness of the archaeological heritage is part of the HLC Project. The Project is also looking at the impact of the archaeological heritage protection and restoration on emerging tourism and infrastructure in the region. Research in the 2017 season was carried out in cooperation with the al-Tafila branch of the Jordanian Department of Antiquities.

Research covered the inhabitants of four towns in southern Jordan: Dana, Gharandal, Buseira and al-Tafila where excavations had already been conducted. This includes archaeological sites, as well as the tourist area of Dana and the largest city in the area, al-Tafila. The research was conducted in Arabic, with translation into English. The sample included 146 men aged 15–70 (73% of the respondents) and 54 women aged 16–60 (27% of the respondents).

The survey questionnaire consisted of three parts, devoted respectively to archaeology, tourism and demography. In the archaeological part of the survey respondents were asked about their interest in the archaeological work con-

ducted in the al-Tafila region and how the local community benefitted from this work. The second part, devoted to tourism, focused on the benefits coming from archaeology in tourism and the related impact on improving living conditions and infrastructure development. In the third, sociological part, demographic data was elicited, including gender, age, education and property status of the respondents.

A preliminary analysis of the results demonstrated a significantly positive attitude toward archaeological excavations in the region and its invaluable role in shaping cultural tourism, which is seen as having the potential to enhance regional economic development to the benefit of local inhabitants. Even so, there is a group of residents expressing dissatisfaction and fears connected with archaeological presence in the region.

The pilot study will be continued under the HLC Project, introducing in the course of time educational and promotional activities in the field of protection and promotion of the local archaeological heritage and the use of these sources to shape new values in the field of cultural tourism.

7 PRELIMINARY CONCLUSIONS

The first excavation season brought interesting information on two sites located in southern Jordan and an assessment of the selected locations for the inference

about the late prehistory and a specially Early Bronze Age period. It also allowed for better planning of subsequent works and defining research needs, like the ne-

cessity of conducting laboratory analysis (OSL and ^{14}C dating), permitting precise dating of poorly preserved archaeological layers on both sites. It is also possible to make the first chronological observations for examined sites.

At Faysaliyya, the two zones with traces of prehistoric occupation that were observed can be interpreted as settlement and farming, judging by the distribution of the artifacts and based on comparison of the archaeological evidence with geological observations. Stone structures consisted of walls, circles and cairns. The huge number of chert tools, smaller amounts of pottery and a stone pendant [Fig. 17] indicate heavy use of the area especially during the Paleolithic and Neolithic periods with some artifacts from the Chalcolithic and Early Bronze Age periods. The horizon of the pastoral



Fig. 17. Faysaliyya. Stone pendant from trench B4213 (HLC Project/photo M. Czarnowicz)

cultures, already recognized by scholars in the nearby Jurf area (see, e.g., Fuji et al. 2017), is visible at the site and may be at this moment roughly linked with the period between Neolithic and Early Bronze Age.

Meriting special note is a carved stone from one of the stone structures at Faysaliyya, which is known from sites dated to the pastoral Neolithic/Chalcolithic cultures (Fuji et al. 2017: 571, 572, 575–576). It was used here in wall construction, probably to protect against water flow. This assumption is based on parallels (e.g., Fuji et al. 2012: 143, Fig. 20) known from the Jarf Basin and several sites located about 100 km to the east of Faysaliyya. They are often described as barrages (flood gates), securing important pastoral areas, or directing water to other areas (Fuji et al. 2012; 2017). The structure may be a harbinger of a system of similar structures at the site, as they are usually known to occur in clusters over an area of considerable size.

Testing of the stone mounds found at the site did not bring any results concerning their date or function. However, similar mounds are present in many places in southern Jordan and wider studies on the phenomenon are necessary.

Relics of a settlement were discovered in the probe dug by the project at the extensive Munqata'a site, which covers most of the valley there. The finds suggest a sequence of Middle and Late Neolithic settlement phases with some indications of a Chalcolithic and Early Bronze Age presence. The huge number of chert tools and the relatively high amount of pottery (also with traces of paint), both from

the excavated probe and the survey zone, reflect intense exploitation in late pre-history, specifically during the Neolithic period. The characteristic pottery finds are probably related to the Pottery Neolithic (PN), which is very commonly represented in this area and can be linked tentatively to the Jericho IX culture, which represents the first stage of farming Neolithic communities in this area. Munqata'a would thus be the southernmost known site of this chronological horizon.

The results of the season also show the need for a model of environmental changes for both sites, focusing primarily on flood activity and erosion processes, as these factors played a significant role not only in the past, when the site was actively used, but also during post-depositional processes. It is also evident that the Project will be useful specifically to curb the illicit digging that has been going on especially in the Munqata'a area.

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