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THE LOWER PALAEOLITHIC ASSEMBLAGE OF HUMMAL

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Introduction

Since 1999 several layers comprising a rich assemblage of faunal and lithic artefacts have been excavated at the bottom of the Hummal well site. The lithic assemblage mainly consists of unretouched flakes, some cores and different pebble tools such as Choppers, Hammerstones and Spheroids. In this article a brief introduction to the lithic assemblage is provided and some details of each artefact category are discussed. It is based on the results of a detailed examination and description of the artefact record, which was accomplished during the excavation in the summer of 2007. The excavation work at the Hummal well site will continue in the future and further data will be accumulated. Additionally, a detailed analysis of the excavated material is planned. Therefore, this article has a preliminary character and intends to provide an initial insight into the Lower Palaeolithic material from Hummal. The Hummal excavation is a joint project of the University of Basel and the Syrian Directorate of Museums and Antiquities, which began in 1997. Two years later, in 1999, a lithic assemblage was discovered in the layers at the bottom of the well, which consists of abundant unmodified flakes and different pebble tools. The lithic inventory is accompanied by a wealth of faunal remains (see tab. 1). The artefact rich layers are located about 14 m below the present day surface. In the stratigraphy of Hummal they are placed below the Yabrudian sequence and the layer with the so-called Acheuleo-Tayacien (Le Tensorer *et al.* 2011). This Lower Palaeolithic sequence includes six geological layers, four of which (Layers 15–18) are being excavated over a large area (figs. 1 and 2).

	Faunal remains	Lithic artefacts	Total	%
Layer 15	114	8	122	5%
Layer 16	310	36	346	15%
Layers 17 and 18	1583	182	1765	79%
Total	2007	226	2233	100%

Table 1 - Composition of the finds in the different archaeological levels (status 2007).

Layers 19 and 23 are only known from a small sounding excavation completed in 2010. Subsequently, a brief description of each layer is provided.

Layer 15 is a dark, nearly black clay and has a thickness of 10 to 15 cm. Only few stone artefacts were found in this layer, the faunal remains are more numerous but heavily crushed and fractured by the weight of the sediments.

The underlying Layer 16 is a package of hard carbonated silt, about 30 cm thick. The density of finds is not very high and a genuine archaeological level is not recognisable.

Layer 17 is about 10 to 15 cm thick and again consists of black clay. It is very similar to Layer 15 but shows a higher density of

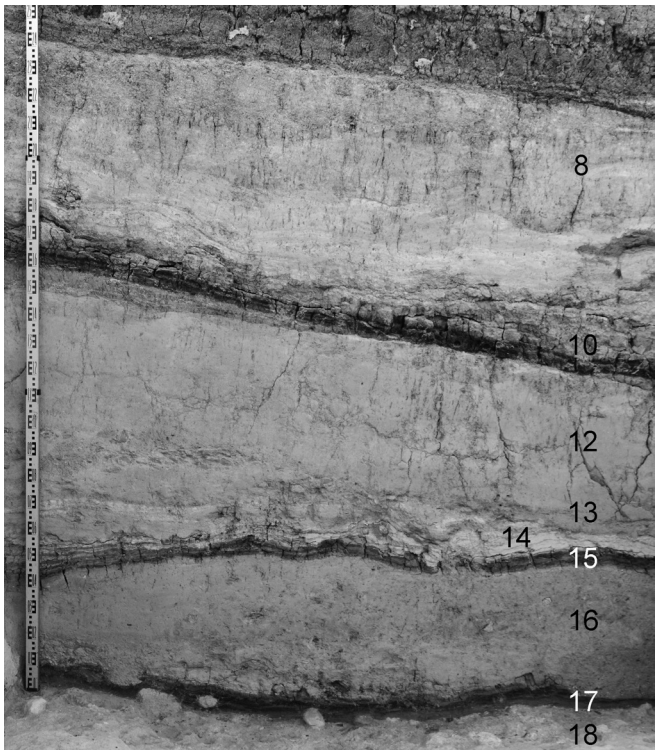

Figure 1 - Stratigraphy of Lower Palaeolithic and Yabrudian deposits in profile 57, layers 9 and 11 are not visible in this section.

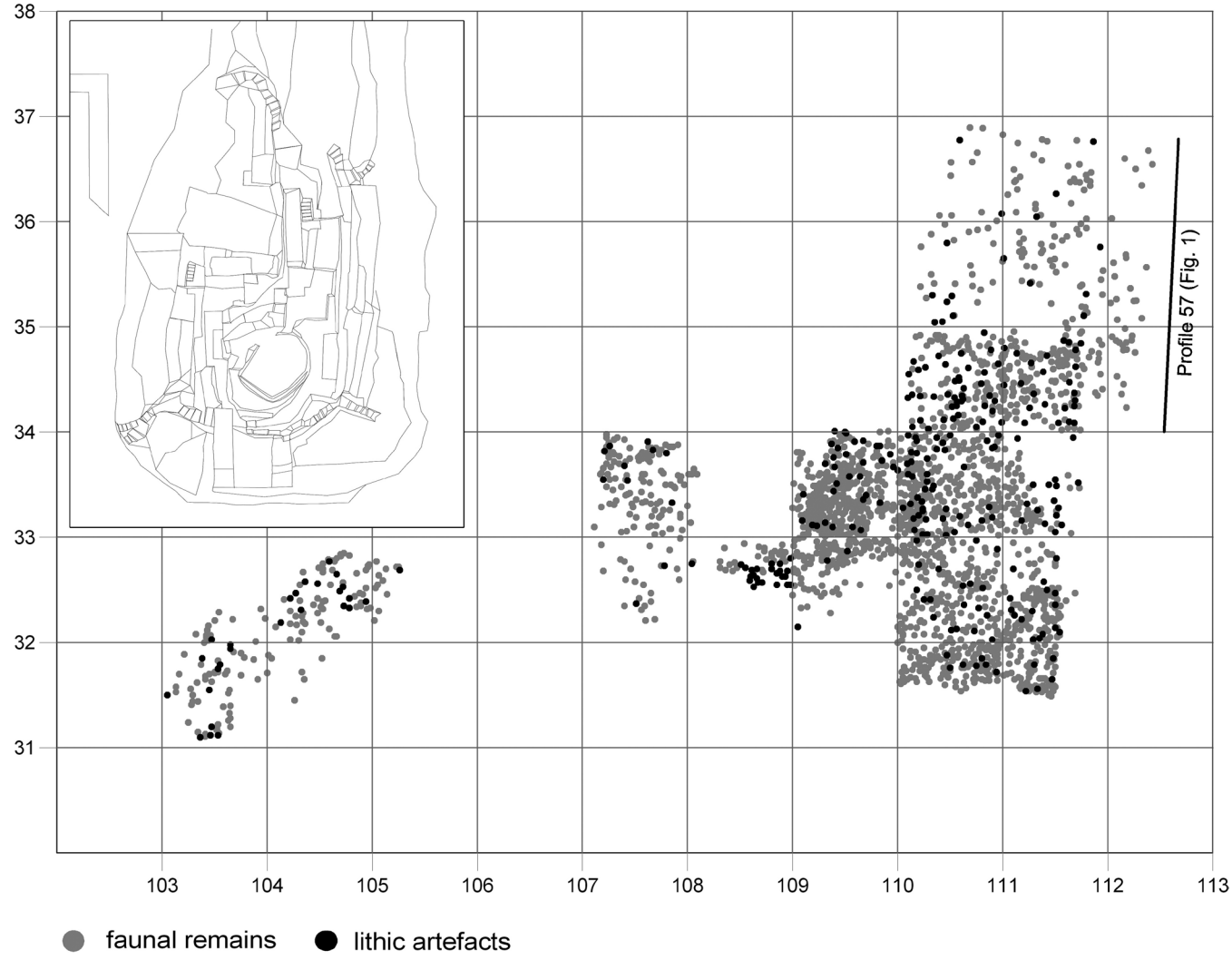

Figure 2 - Horizontal distribution of archaeological finds in the excavated area (layers 15-18).

finds. Numerous crushed and fragmented bones are preserved. Especially notable is the high number of microfaunal remains recorded from this layer.

Layer 18 bears the richest levels of the Lower Palaeolithic sequence (fig. 3). It consists of sandy carbonated silt and its thickness amounts to 25 cm. Two archaeological levels are descernible; one is located on the top of the layer, while the second level is embedded in the middle of the layer. The density of archaeological finds is highest for the whole Lower Palaeolithic sequence. Especially in the upper level where partial animal skeletons, sometimes in anatomical connection, are present together with a rich assemblage of stone tools.

The Lithic Assemblage

A total of 226 lithic artefacts was analysed (tab. 2). More than 80% of these are remains of a flake production. The rest consist of different pebble tools. All lithic artefacts are in good condition; neither physical nor chemical weathering is apparent. This implies, that the artefacts were embedded shortly after their deposition and were not exposed at the surface for any extensive period of time. The artefacts were also not significantly transported after deposition.

Flakes

The lithic assemblage includes 126 unbroken flakes, constituting about half of the total material. In addition, 39 fragmented flakes were excavated. The majority of the flakes are made from Eocene flint, only a few pieces are made from Cretaceous flint. The flakes are generally short and broad. The length-width ratio averages 1.35 (fig. 4). The thickness of the flakes is in the range of 0.2 cm to 4.5 cm. The majority of the striking platforms show no secondary preparation, 60% are plain, further 15% are cortical. Only four pieces have a kind of facetted striking platform. The few facetted objects do not indicate that the modification of the striking platforms was intentional but are rather interpreted as accidental products. The remaining striking platforms are splintered. Cortex remains are found on the dorsal faces of 65% of the flakes (fig. 5). The values for the angle between the striking platform and the ventral face of the flakes are in the range of 90° to 135°, with an average of 114°.

Tools

There are no unequivocally retouched artefacts in the assemblage. The only evidences for a secondary modification of the

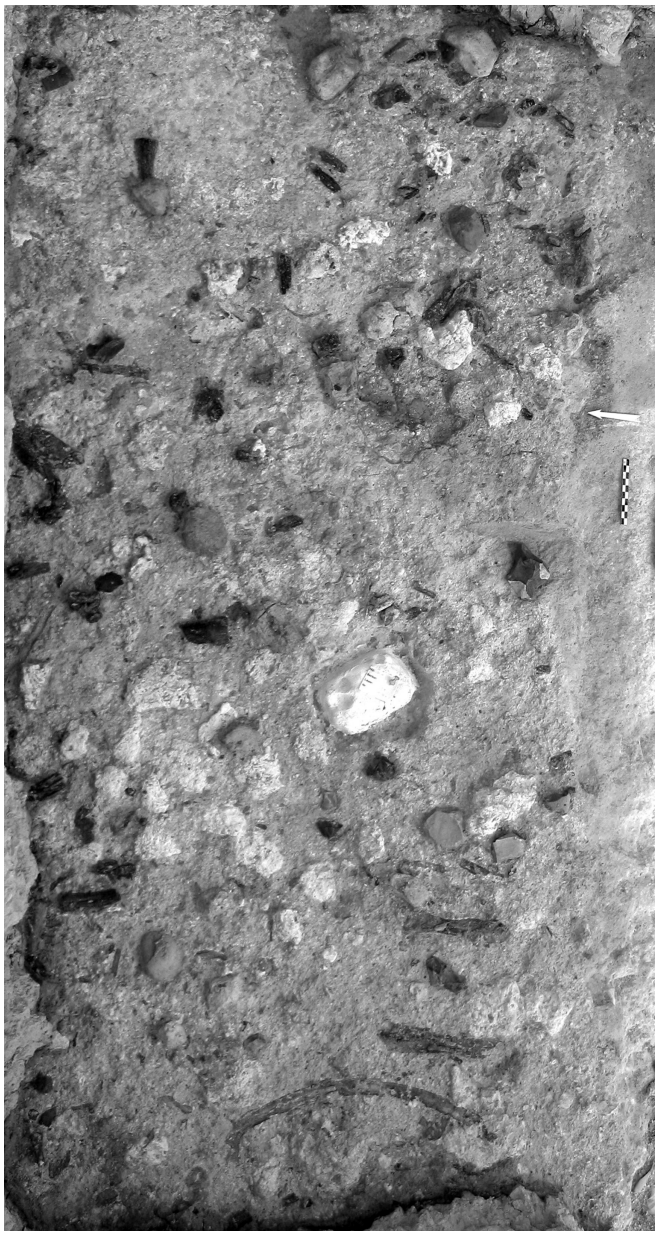

Figure 3 - Archaeological level in layer 18.

	N	%
Flakes	126	56%
Debris and fragments	52	23%
Cores	9	4%
Cores on flake	16	7%
Choppers	8	4%
Sphaeroids	2	1%
Hammerstones	7	3%
Modified cobbles	6	3%
Total	226	100%

Table 2 - The lithic assemblage (status 2007).

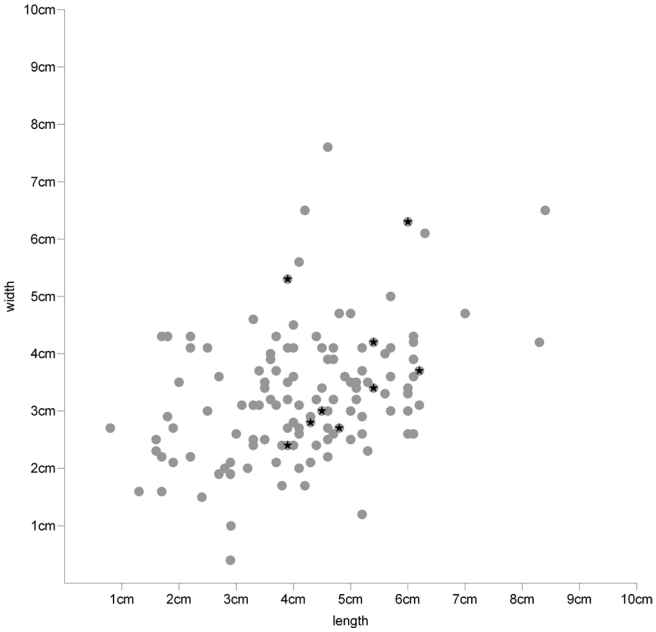

Figure 4 - Length-width-ratio of flakes, the pieces with notches or traces of use are highlighted with black stars.

flake-edges are some isolated notches. The inventory comprises a total of six specimens with one or multiple notches.

Additionally, some samples bear irregular micro-retouch on their edges, which probably resulted from their intensive use. Similar items have been described from different Early Palaeolithic sites in Africa and Europe (de Lumley 2006; de Lumley *et al.*, 2005). Only 13 pieces show such distinctive traces on their edges, a few more have possible traces. The location of the micro-retouch varies from one specimen to another. Some flakes bear traces on one or both sides, giving them a scraper-like appearance. On others they are limited to certain areas such as in the notches or on the edges. The flakes with notches or traces of use show variable dimensions (fig. 4). A specific choice of selected pieces is not evident. A microscopic use-wear analysis of the assemblage of Hummal has so far not been conducted. Therefore, these interpretations are preliminary in nature and have yet to be confirmed by a detailed analysis of the assemblage.

Cores

Of the ten cores recovered from the lithic assemblage, nine are made from Eocene flint and one is made from cretaceous flint. The cores are rather small; a standardised reduction strategy is not recognisable. The cores have two or more faces, which were used as striking platform and as flaking surface. There is no evidence for a preparation of the striking platform and the reduction sequence is simple. After detaching a flake, the remaining scar was reused as striking platform. This reduction strategy is identical to that described for the Clactonian assemblages in Europe (Forestier 1993). The small sizes and the rather high number of scars on the cores suggest that the raw material was reduced in an exhaustive manner. Another kind of core, which is abundant in the assemblage, results from the secondary use of flakes, fragments and debris, as cores. These cores are small and show just a few small scars. Altogether, 15 such specimens were found, which amounts to 6% of the lithic assemblage and constitutes 2/3 of the total number of cores. The flakes produced from these cores were small, as the maximum scar-length

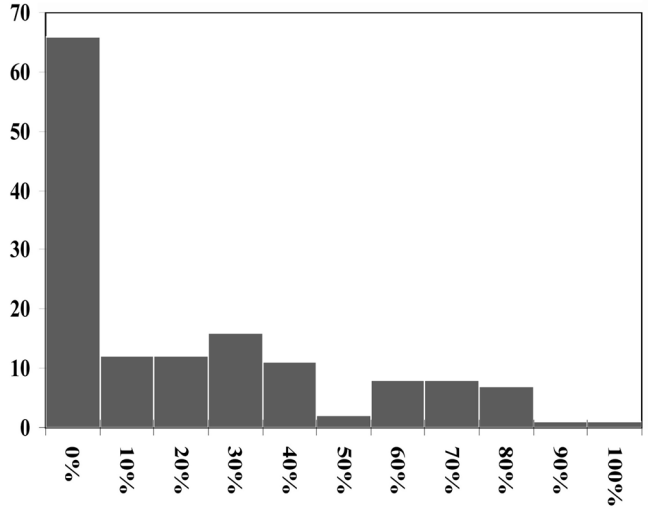

Figure 5 - Percentages of cortex on flakes.

on the cores is 1.5 cm. Several small flakes obtained from the use of flakes as cores are present in the assemblage. They are recognised on account of showing two ventral faces. The reasons for the production of such small flakes are not well understood. However, as the double ventral faced flakes are very sharp, they may be tentatively interpreted as utensils used for cutting purposes.

Pebble Tools

The description of the pebble tools follows Marie Leaky's typology established for the material from the Olduvai Gorge (Leakey 1971). This typology is a helpful tool for describing the different pebble tools and facilitates the comparison of the artefact record to that of other assemblages. The function of certain types is unclear. In many cases it is disputed whether the pebble tools were real tools or just by-products of the flake production (Toth 1985; Sahnouni *et al.* 1997, see also: Hayden 2008)

Choppers

The group of choppers includes all tools that have an artificial straight edge. The edge was formed by chipping either one or a series of flakes from either one or both sides of the pebble. On account of the small number of specimens in the assemblage, they are not grouped in more detail i.e. into choppers and chopping tools. Although some of the Choppers could also be simple cores, they are all grouped together in order to facilitate comparison. Furthermore, the choice of mainly limestone and cretaceous flint for the production of these artefacts indicates that the choppers in Hummal are a discrete tool-type rather than part of the flake production. Some of the Choppers bear different crushing marks on the edges. These are interpreted as a consequence of the use of the edges.

Modified Cobbles

The group of modified cobbles contains all artificially modified pieces that do not fit into another group. Often they are similar to Choppers, but the scars are isolated and do not form a contiguous edge. A purposive treatment of the stone is not recognisable. Probably these objects were primarily cores that were discarded at an early stage of the reduction.

Spheroids

Only two typical spheroids were recovered from the Lower Palaeolithic assemblage at Hummal. Both are made from limestone. One is a facetted object; the other has a smooth and rounded surface, which is covered in percussion marks. Spheroids are typical Lower Palaeolithic tools, which occur frequently but in small numbers. The function of these pieces is unclear, different interpretations e.g. as bola stones, club heads, hammerstones, bone breaking tools or vegetable processors have been suggested (Sahnouni *et al.* 1997 and references therein). Experimental analysis shows that the facetted objects most likely represent remaining cores of an exhaustive flake production in limestone (Sahnouni *et al.* 1997). It must be kept in mind, however, that so far no limestone flakes have been recovered from the Hummal assemblage. The rounded and battered spheroid probably represents an intensively used hammerstone (Schick & Toth 1994).

Hammerstones

Hammerstones comprise the last artefact group. These objects show clear evidence of usage although they are not the result of a purposive production. Mainly limestone was used for hammering, although one flint object and one quartzite cobble also show percussion marks. The hammerstones show areas with concentrated percussion marks, often located on the edges of the cobbles some hammerstones have additional isolated concave scars, which presumably occurred accidentally during their application.

The nature of the material, which was processed with these utensils, remains unclear; a primary employment for flint detaching is probable, however, other uses such as bone or plant processing cannot be excluded. It is conspicuous, that the size and weight of the hammerstones is decidedly higher than that of the cores. This can be considered as evidence against the utilisation of the hammerstones for flint knapping.

Raw Material

As mentioned the most important lithic raw material in the Lower Palaeolithic assemblage in Hummal is the Eocene flint. Limestone and Cretaceous flint are also present and one quartzite pebble was used as a hammerstone. When considering the use of raw material for the production of distinct artefact groups, it is conspicuous, that flakes were produced almost exclusively using Eocene flint. Only four percent of the flakes were made of Cretaceous flint, the other stones were not used for flake production. The raw material is very different from the pebble tools, which are mainly limestone or to a lesser extent Cretaceous flint. The high quality flint from the Eocene deposits was seldom used for making pebble tools.

Information on the provenance of the raw material can be gained from an analysis of the cortex. Nearly half of the ana-

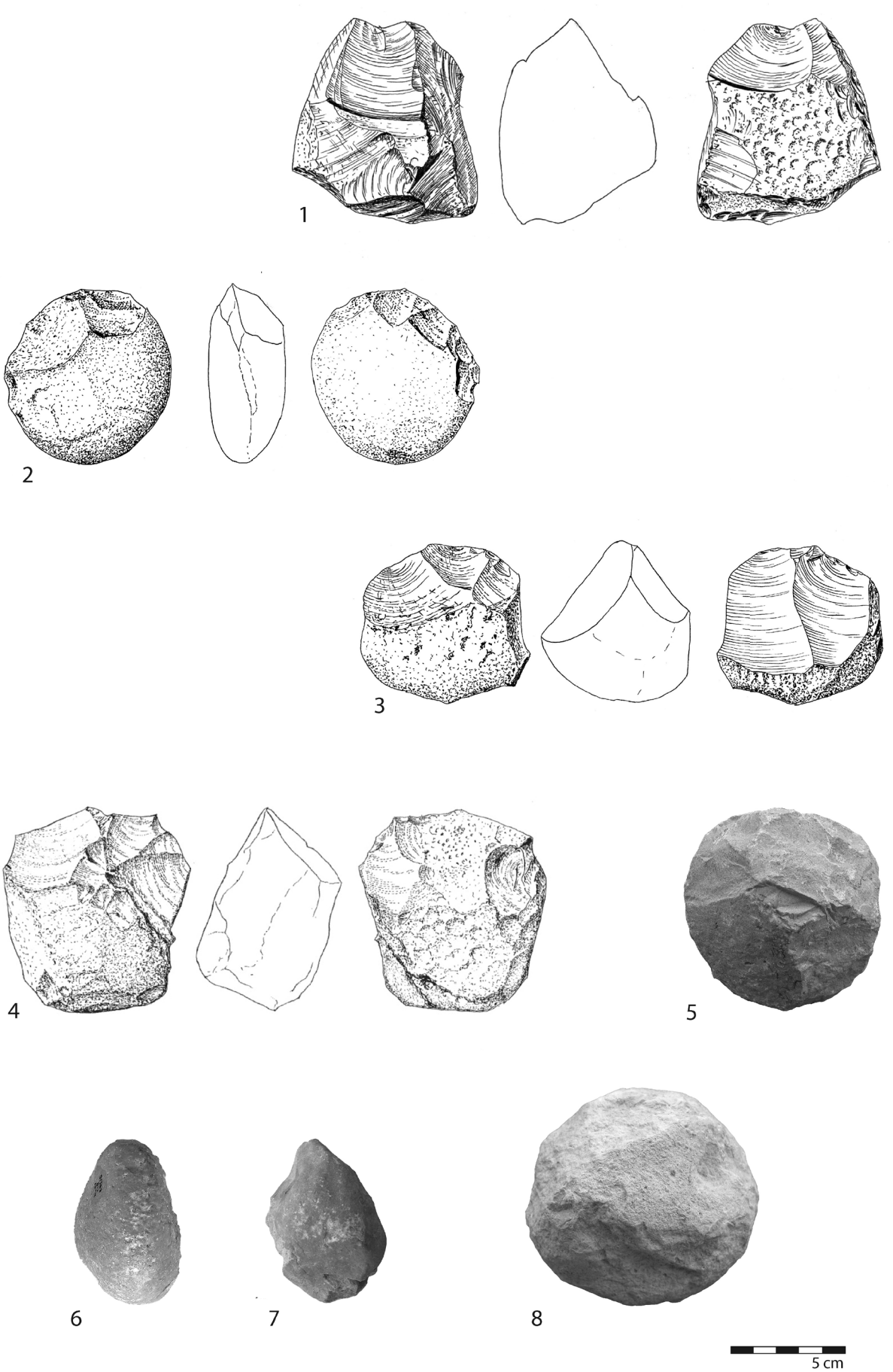

Figure 6 - Pebble tools. 1-4: choppers; 5: facetted sphaeroid: 6-7: hammerstones; 8: sphaeroid (drawings: Jean-Marie le Tensorer, photos Fabio Wegmüller).

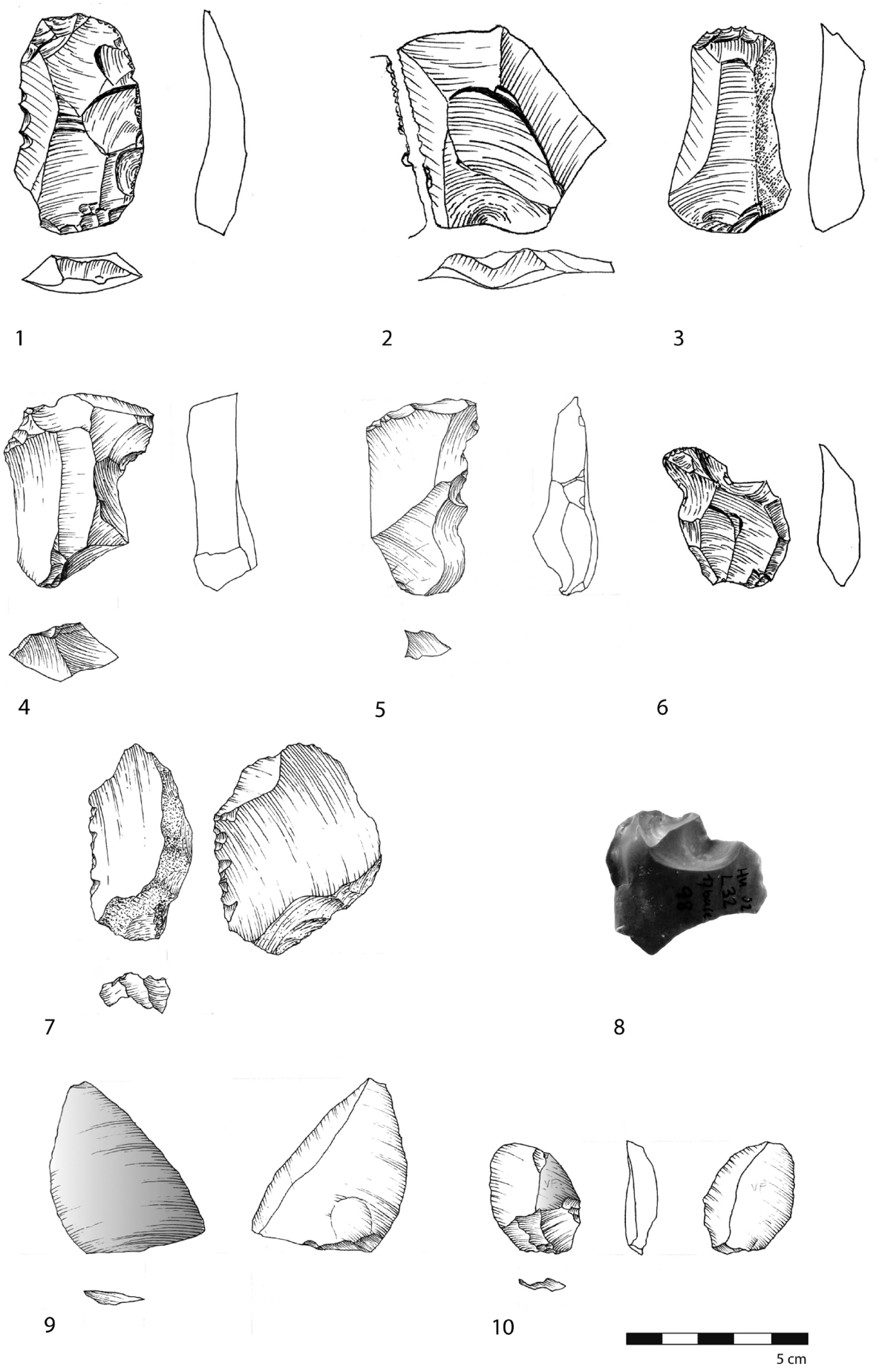

Figure 7 - 1-7: flakes with notches or presumable traces of use; 8: core on flake; 9-10: flakes with two ventral faces (drawings: 1-3 and 6 Jean-Marie Le Tensorer; 4-5, 9-10 Thomas Hauck, photo Fabio Wegmüller).

lysed pieces bear cortex remains on the surface. Independent of the raw material the majority of the cortex is totally abraded and only a neocortex is present. Further pieces have some remaining cortex, which is weathered and abraded.

Especially the flint artefacts are often made of cobbles with a neocortex, which indicates longer transport distances of the raw cobbles preceding their collection by the humans. If we compare this with the percentages of objects with neocortex and weathered cortex from the upper layers in Hummal it is conspicuous, that in all the younger assemblages the number of these pieces is significant lower, e.g. for the Mousterian layers only 20% of the cortex is not fresh. In the Hummalian these numbers are even lower. The high percentage of weathered cortex shows that the humans did not collected their raw material from the outcrops of the flint, but preferentially in secondary deposits. In the region of El Kowm artefacts made of similar raw material were found in the site of El Meirah, where a lithic inventory from the Middle Acheulian was excavated. This site dates to about 700 Ka (Böeda *et al.* 2004) The use of lithic raw material from secondary deposits, in particular from fluvial deposits, close to the site of processing, is a typical feature of the Lower Palaeolithic assemblages of Africa, Europe and the Middle East (Feblot-Augustins 1997; Garcia-Anton Trassierra *et al.* 2002). The reason why the extremely rich flint sources, which are situated less than 15 km away from the site, are only scarcely used, is unclear. One possible explanation is that, at the time of the formation of the Lower Palaeolithic assemblage, the primary outcrops of the flint were largely covered and not accessible. In contrast, it is possible, that the flint sources in secondary position were covered after this period and were no longer exploitable for the humans. Today outcrops of flint in secondary position are almost inexistent and only one outcrop in the Wadi Fataya about 10 km from Hummal is known (Böeda *et al.* 2004). Evidence for a massive change of the landscape due to the deposition of eolian sediments is found at different locations around El Kowm (Pümpin & Jagher 2004)

Conclusions

The lithic assemblage of layers 15 to 18 at Hummal consists predominantly of flakes and several distinctive pebble tools. The absence of bifaces and retouched flakes are distinctive features of the inventory. Based on its stratigraphic position below the Yabrudian and the so-called "Acheuleo-Tayacien" and its archaic appearance this inventory can be classified as Lower Palaeolithic. The studied assemblage compares well to the so-called Oldowan assemblages known from different sites in Africa and Eurasia. The Oldowan was first described in the sites of the Olduvai Gorge in Tanzania where it was divided into three stages (Leakey 1971). In general it describes lithic inventories composed of different Pebble Tools, such as Choppers, Spheroids, Polyhedrons and Hammerstones as well as small flakes obtained from a simple knapping technique.

The lithic inventory of the oldest layers in Hummal shows significant differences when compared to other Lower Palaeolithic sites in the Middle East. Most of these sites belong to the Acheulean, which is characterized by a considerable proportion of bifaces. Sites with no or rare bifaces and a high percentage of pebble tools are rare (Bar-Yosef 1998).

The Hummal site compares well to the important site 'Ubeidyia in southern Israel. There, a similar – although much richer – lithic inventory has been found, dated to a period ranging from 1.1 to 1.4 Ma. In 'Ubeidiya, several thousand stone artefacts, mainly flakes and pebble tools have been unearthed. In addition to the typical tools of the Oldowan assemblage some crude, trihedral bifaces were found, which relate this assemblage to an Early Acheulean stage. It is important to note, that the bifaces are very rare in 'Ubeidiya and are mainly found in layers excavated over large areas (Bar-Yosef & Goren-Inbar 1993).

Another non–Acheulean lithic assemblage is known from Bizaht Ruhama in southern Israel. This site was dated at about 1 Ma. The lithic assemblage is characterised by small tools, flakes and cores. Pebble tools are absent and the percentage of retouched flakes is high. (Zaidner *et al.* 2003) Therefore this assemblage shows clear differences to the Hummal site.

The attribution of the Lower Palaeolithic assemblage of Hummal to a time range similar to that of 'Ubeidiya seems reasonable. However, absolute dates for the oldest layers in Hummal are not yet available. Nevertheless, for the understanding of the Lower Palaeolithic in the Middle East the Hummal inventory is of significant importance. As a stratified site comprising numerous, partially in situ faunal remains and lithic artefacts at different levels, Hummal offers a great potential to contribute crucial results to the research of the oldest human presence in the Levantine Region.

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