Preliminary results of the study of flint industries from the Haditha region, Iraq

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Waldemar Chmielewski and Stefan Karol Kozłowski

1. Introduction

We adduce here the most important preliminary results of the Polish studies of Iraqi sites containing flint inventories. These studies were performed in 1981–1983 around Haditha on the Euphrates river under the aegis of the International Project for the Salvation of Archaeological Monuments. The mission of the Polish Center of Mediterranean Archaelogy of Warsaw University acted under the authority of Dr. Moayed Damerji, director of the State Organization of Antiquities and Heritage, and received outstanding assistance from Dr. Mohammed Bakr, chief of the Haditha Project.

Our studies concentrated mainly on the Masnaa site complex, but selective surveys were also made, both up and down the river, with special attention devoted to the region around Fehimi (fig. 1).

The geological and geomorphological investigations were performed by W. Chmielewski, while S. K. Kozłowski concentrated on the flint materials.

2. Geology and geomorphology

The present report is concerned mainly with finds from the region between 34° 15′ 00″ and 34° 20′ 00″ N. and 42° 15′ 00″ and 42° 20′ 00″ E. (fig. 1).

In this area the Euphrates valley cuts into Miocene limestones and marls rising to 150–200 meters above sea level, thickly or thinly bedded, almost horizontal with a slight tilt in the north-east direction, with no signs of folding or faults, and no flint nodules. The valley is three to twelve kilometers wide. Its depth is 40 meters but in places where the meanders veer towards the upland and strongly undercut it, the valley depth increases by ten or even 20 meters. In the region studied, two such meanders give the valley a characteristic appearance, and the land spurs formed by them provided optimum conditions for examining the sequence of terraces. The spurs also contain an exceptionally dense network of Pleistocene and more recent archaeological sites. We performed a detailed exploration of the spur formed by the westernmost meander, located between the villages of Nihrah, Al Ulya, Aj-Jwaenah, Al Marit, Al Ethera, Al Fat-hah, Al-Dūlāb, Abu Khahān, Al Esgait, As-Swair, Khishshiyyah and Rezkah on the left bank of the river.

The spur is seven kilometers long, measured from north to south, and four kilometers wide. It rises to a maximum of 147.6 meters above sea level. The water level in the river is on the average 37 meters below this point, and in most of the measurements it was assumed that in this region the Euphrates water surface is 110 meters above sea level. The spur was named Masnaa after one of its hills.

In the northern part of the spur there is an extensive dry wadi, the Wadi Al Tell, a dead, dry and pendant section of the Pleistocene river bed of the Euphrates.

The core of the spur is formed by thickly bedded limestone. It is easily visible on the left bank of the river between the villages of Mikrah and Al Ulya; further southwards, up to Aj-Jwaenah, it is seen lying over the sediments of young terraces and beneath old alluvia. The southern and eastern slopes of the spur are covered with alluvial deposits and there are only sporadic outcrops of the limestone rock on the wadi bottoms.

Euphrates alluvia are of two forms: silts or silty sands, and gravels with pebbles. Silts predominate on the lower terraces or form lens several dozen centimeters thick in the gravels and pebbles of the upper terraces. They are grey or light grey in color. The pebbles and gravels are from plutonic and effusive rocks, but the dominant forms are limestone, quartzite and flint, all transported from a distance, in addition to local limestone and even marly varieties.

Six terraces were distinguished on the basis of morphological and geological observations. Their documentation consists of drawn morphological and geological profiles with descriptions, augmented with photographs. The measurements, depending on their precision, were done with measuring tape and a geological compass with a "Meridian" clisimeter. The terraces were numbered from the bottom upwards, taking the present-day flood-plain terrace as the first. Five morphological profiles augmented by geological

sections were done in the field. Since good natural exposures were few in number, we dug out four pits to reveal the deposits at exceptionally important points. We also used the dozen or so exposures done by Iraqi archaeologists studying the settlements and cemeteries, mainly Assyrian, that are so abundant in this region. The results of our studies may be summarized as follows (fig. 2).

Terrace 1: Only the silt series of this terrace is available for observation. The gravel-pebble part lies below the lowest water level of the Euphrates. The silt is dark grey. The riverside edge of the terrace rises on the average 4–4.5 meters above the present river water level. Deposits along the border with terrace 2 rise at most to 7–7.5 meters above the river.

The alluvia of this terrace in Zawyah village and on Bijan island contain Assyrian structures and cultural layers at depths not exceeding four meters. This would suggest that in Upper Holocene climatic conditions accumulation processes dominated and that denudation developed along the sides of the river. Modern settlement is usually confined to the riverside edge of terrace 2, but the most recent villages, erected already after the first dams on the Upper Euphrates were built, extend also to the riverside edge of terrace 1.

Terrace 2: The socle is not revealed in any exposure, either natural or artificial. The riverside edge of the terrace, rising on the average 1.5 meters above the silts of terrace 1, is readily visible everywhere except on the north-western part of the spur, where it was denuded (eroded) by the river. The external edge, observable only to the east of Al Ulya, rises to 126 meters above sea level, i. e. 16 meters above the water surface. In this external part the terrace is built of coarse gravels with a small admixture of pebbles which, towards the river, give way to grey-brown sandy silt. In the southern and eastern part of the spur the pebbles are much more numerous and they are also larger. The abundant Middle Palaeolithic and other artifacts present among them, also in rounded form, suggest that the rock material was transported by the local wadis from the upper terraces to secondary deposits in the river. The sediments are loose to the depth of two meters, although gypsum crystals occur on pebbles and in the sand-gravel layers.

Slightly patinated blades of non-Levalloisian shape were discovered on the surface, or directly below it, next to the riverside edge of this terrace near the villages of Al Marit and Rezkah. The Upper Palaeolithic character of these artifacts is very probable in view of the absence of Neolithic and Chalcolithic sites in this part of the Euphrates valley.

Terrace 3 is confined to both slopes of Wadi Al Tell and to a narrow strip to the east of Al Ulya village. The rock (limestone) socle of this terrace lies between 125 and 127 meters above sea level, i. e. 15–17 meters above the river. The terrace cannot be discerned in the morphology of the area between Al Marit and Abu Khahān on the southern and eastern slopes of the spur. This indicates that when this terrace was formed the course of the Euphrates probably ran from Aj-Jwaenah to Al Ulya and thence north-eastwards to the present-day Rezkah through Wadi Al Tell, the wide valley of which could not have been formed by this wadi.

The thickness of the sediments of terrace 3 does not exceed three meters. They are composed of medium-sized pebbles with a considerable presence of flint pebbles. Fairly numerous but scattered Middle Palaeolithic flint artifacts are present on the surface of the terrace. The alluvia are cemented by gypsum crystals formed between layers, especially when a differentiation of fractions occurred.

Terrace 4 is a very peculiar formation. It is confined to the western part of the meander spur, north-east of Al Ulya village, and is in the form of an NS-oriented elongated hill, 500 meters long and 120 meters wide. This is the hill that bears the local name "Masnaa". Its rock socle is four meters above the river (114 meters above sea level) and the top of alluvial sediments almost 20 meters above it. The hill is built of very large pebbles, up to 35 centimeters in diameter, and the bottom part of the series is a compact conglomerate of pebbles cemented together by a carbonate cement. Towards the top of the sediments the pebble fraction becomes smaller, but the pebbles are still large and well rounded, up to 20 centimeters in diameter. Due to the strong cementation, the western slope of the hill that is being undercut by the river is steep and cut by short (10–20 meters) wadis with a steep gradient.

The eastern slope of the hill was undercut (eroded) and partly buried by alluvia from terrace 3. The border between the two was preserved in the form of a packed (difficult to pierce with a pick) weathering (soil?) level, brown in color and with scattered and poorly developed gypsum crystals. The surface of this weathering level yielded three flakes (quartz, quartzite and flint), all uncharacteristic.

The discovery of an Abbevillian hand-axe, recently washed from the deposits, in one of the wadis in the western part of the hill is more important. The specimen is strongly rounded by water transport. Numerous Levalloisian and other artifacts were found on the surface of the hill but systematic collection and localization of the finds did not reveal any obvious concentrations.

The lithology and fraction of the sediments, their very deep penetration (the socle is a mere four meters above the water surface), considerable cementation and great thickness are all features which readily betray sediments of terrace 4. We suggest calling them the "Masnaa lithologic-stratigraphic series". It was identified near Kifrin village, about 20 kilometers west of the region studied, and it prob-

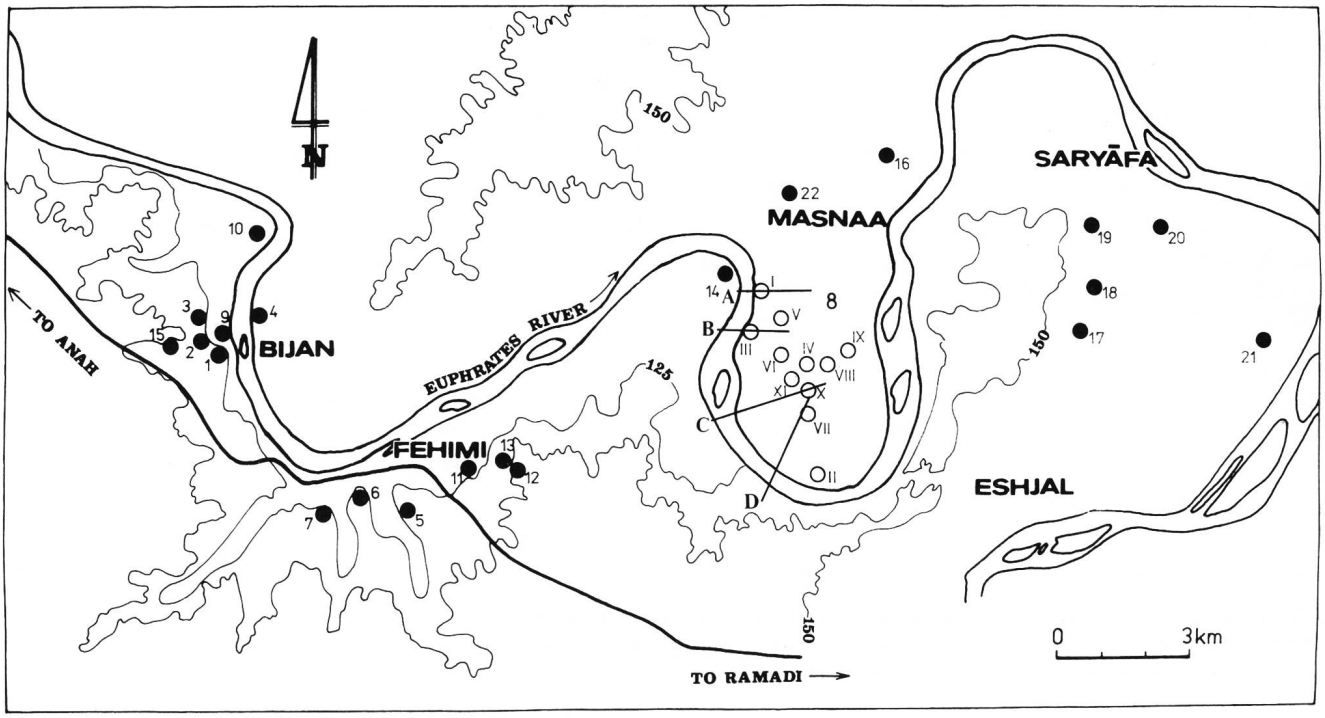

Fig. 1. Haditha, map of the sites with flint inventories
1–4, 9–10, 15: Bijan; 5–7, 11–13: Fehimi; 8: Masnaa (sites I–XI); 14: As-Shommiyyah; 16, 22: As-Swair.

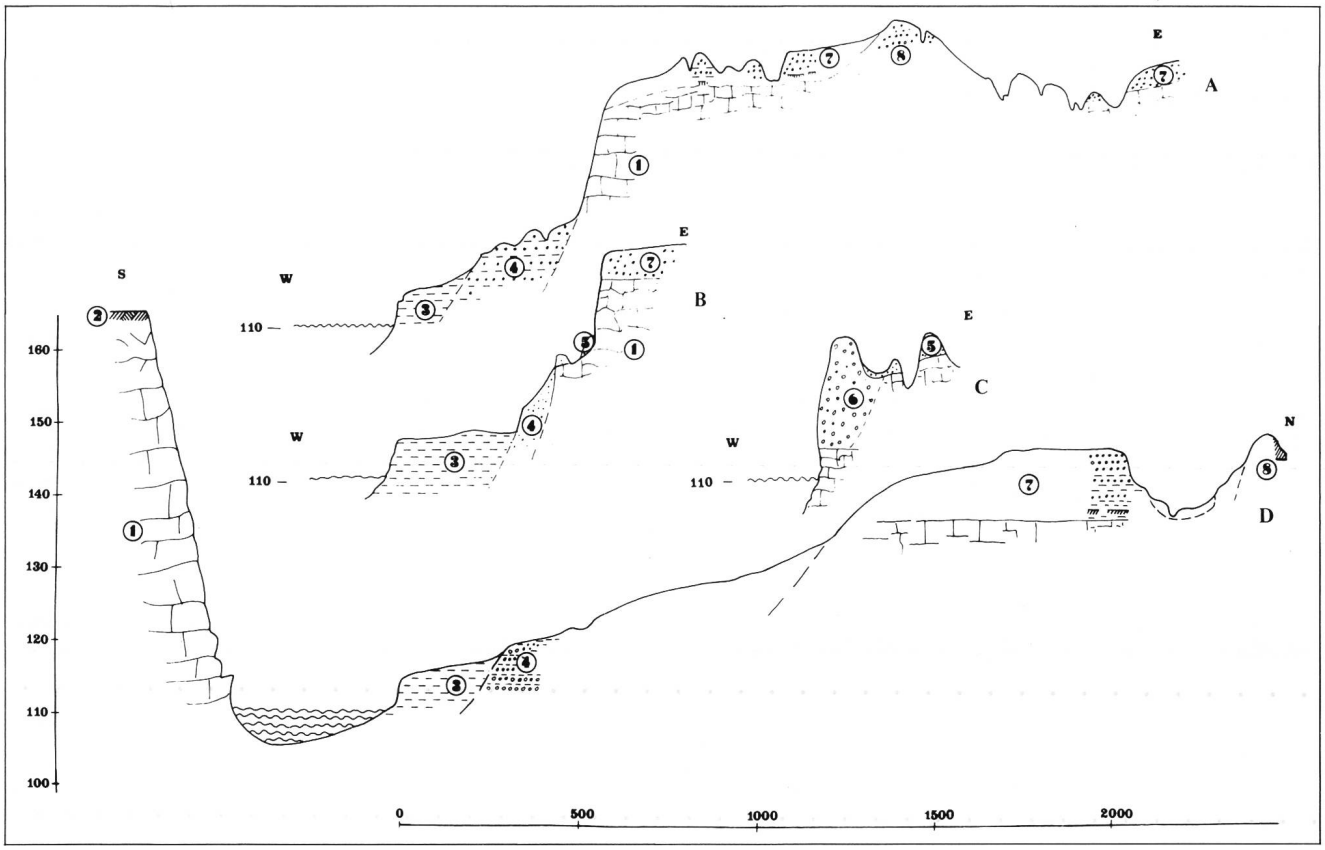

Fig. 2. Masnaa, geomorphological profiles of the Euphrates meander
1: Miocene limestone and marls; 2: Brecciated loam and silt with single fragments of weathered local rocks; 3: 1st silty terrace (floodplaine); 4: 2nd terrace; 5: 3rd terrace; 6: 4th terrace (Masnaa lithostratigraphical unit); 7: 5th terrace; 8: 6th terrace.

ably occurs also on the Babylonian site at Al Uwsiyah excavated by a Japanese mission. At Kifrin and Al Uwsiyah the Masnaa series was covered by sediments of terrace 3.

Terrace 5 occupies the central and northern parts of the spur and forms the most extensive morphological unit, a vast plain which rises to 35 meters above the river (up to 145 meters above sea level). The rock socle supporting the alluvia was discerned at many points in natural exposures on a level about 135 meters above sea level.

The alluvia consist of medium-sized pebbles with gravel and sand. A peculiar feature of these alluvia is the heavy presence of large lens of sandy silt, light grey in color, usually cemented with silica or calcium carbonate, in the base part. Interlayers of this silt are also encountered in the upper part of the alluvia, but these are thinner and cemented mostly by gypsum with well-developed crystals up to six centimeters long. The topmost 40 centimeters of the sediments are less stony (structureless) and the surface is again covered by a pebble pavement. The top of the sediments bears features of the transport surface (pediment). It has on it very abundant but rather scattered flint artifacts, from the Middle Palaeolithic and other periods, in various stages of patination and preservation.

The alluvial sediments are layered, with a fairly distinct downward slope of the layers toward the north-east observed in the south-western part of the spur. The sediments of this terrace are completely removed from Wadi Al Tell but occur as islands to the north of it. This gives rise to the impression that, as in the case of terrace 3, the river did not flow through the south-eastern part of the spur when terrace 5 was being formed.

Terrace 6: Its distinction is somewhat controversial and is poorly documented. The following facts have prompted us to identify it. The surface of terrace 5 is fairly level but above it rise distinctly two small remnants (hills), 2.5 meters high, with fairly steep slopes. The surface of both remnants is covered by pebble mantle. Beneath this is a sandy layer with few stones, almost twice as thick as the analogous layer on terrace 5, compact, with gypsum crystals, turning into a pebble series further down. A very compact brown weathering zone was uncovered at a depth of 40–50 centimeters on a slope near the foot of one of these elevations. The zone is pinched out up the slope and warped down beneath the surface of terrace 5 in the lower part of the slope. The pebbles below and in the weathering zone, the quartzite ones included, were chemically weathered (they crumbled fairly easily), something that is not found in sediments of the other, younger terraces. Hence the conclusion that the two remnants (hills) are strongly denuded fragments of the oldest terrace, the socle of which is so far unrevealed.

Both remnants also have flint artifacts, mainly from the Middle Palaeolithic, on their surface.

The terraces described, with their abundant large, uncracked flint, quartz and quartzite pebbles of good quality, were the only source of raw material for tool production in the area. No outcrops of such materials are to be found in the surrounding desert or in the wadis cutting through it. This was one of the factors favoring settlement in the past.

A geomorphological and archaeological situation similar to the one in Masnaa was observed by the present authors around the other, eastern, huge meander of the Euphrates, on the right bank of river between the villages of Saryafa and Eyshial. We can make only the above general statement since we could not perform any detailed studies of this very promising cluster of archaeological sites and of the alluvial terrace sequence there. It is noteworthy, however – and not only in this region but also on both banks of the Euphrates between Kifrin and Haditha – that no alluvial sediments, or even modest remains thereof, such as a mantle of pebbles transported from far away occurred anywhere above the 150 meter contour line. This justifies the assumption that the Euphrates terrace sequence described above is more or less complete. It is most probable that the terraces date from the Pleistocene, despite the enormous sedimentation gap between the Miocene and the Pleistocene.

Worthy of notice in the area directly beyond the Masnaa and Haditha meanders is the presence of pediment surfaces, which were the object of cursory studies in connection with the rather peculiar "Micro-Levalloisian" artifacts that were found there, either singly or in scattered concentrations. A surface of this kind occurs in the vicinity of Fehimi on both sides of a fairly large wadi of the same name, and also to the west of this wadi all the way up to Al Usiyah village.

The pediment surface on both banks of the wadis is neither an erosional nor an accumulation terrace. Near the Euphrates valley it is pierced by wadis to a depth of up to 20 meters. It is incommensurately wide (three-four kilometers) in comparison to the wadi beds, which vary in width from about a dozen to several score meters. There are no traces of alluvial accumulation on the surface or below it. Between the socle (limestone or marl) and the surface there is a 20 to 25 centimeter yellow-brown series of silty sand with few rock fragments. On the sandy surface there are fragments of local rocks, of various size, with those surfaces exposed to atmosphere weathered, dark grey or grey-brown, and those in contact with the sandy deposit naturally whitish. Gypsum crystals occur in the bottom part. The above features of these sediments and the expanse of this form make it possible to regard it as a pediment-transport surface between the upland edges and the river valley.

This pediment reaches the edge of the valley at the level of terrace 3 of the Euphrates (i. e. 20–25 meters above the river surface). No intertonguing of the two morphological units was observed and neither was the pediment covered by the higher-lying terraces. The most probable explanation is that terrace 3 is contemporaneous with this lowest pediment surface which, however, continues to be active to this day.

It is worth pointing out that an older, higher pediment surface occurs between Haditha and Fehimi but only in the form of remnants surrounded by wadis and the most recent base-levelling. The flat summits of these remnants (for example south of the Masnaa spur, on the left bank of the river) rise to 160–165 meters above sea level (50–55 meters above the river), but halfway between this locality and Fehimi the remnants are as high as 170 meters above sea level. Between the base rocks and the flat surfaces of the remnants there occurs a one-meter-thick deposit series, namely a kind of breccia from weathered fragments of local rocks with random orientation, cemented by brown-colored clay, originally perhaps pseudo-laminated but crushed, with random orientation of internally banded fragments. Immediately beneath the surface the breccia becomes structureless and more sandy. Rock fragments on the surface are blackish and weathered. The sediment is compact, not plastic, and displays features of a very old weathering level.

Another, higher stretch of pediments with remnants can be seen 10–15 kilometers to the south of the just described base-level surface. Unfortunately, we were unable to inspect or study that area. It lies at an altitude of 220–230 meters above sea level and we know only that Wadi Fehimi, in its upper course, cuts through both the higher pediments forming a wide gate.

To correlate the sequence of terraces, events and sediments observed locally near Haditha with some general Pleistocene sequence or chronology would be to make a surmise rather than a scientific hypothesis. A positive result of such a surmise would be to indicate directions for further study. The suppositions and reasonings leading to them may be summarized as follows.

The section of the Euphrates between Fehimi and Haditha lies in the 350 kilometer stretch between Abu Kemal and Hit, two-thirds of the distance from the former and one-third from Hit. In Abu Kemal there is a nickpoint on the longitudinal section of the river, below which the river gradient is up to 30 meters per 100 kilometers. Between Hit and Ramadi the Euphrates enters the Mesopotamian Plain at an altitude of about 55 meters above sea level. Here we have another nickpoint, after which the river gradient decreases to 11 meters per 100 kilometers.

The changes in the river valley development, reflected by the sequence of terraces and their lithology, depend upon many factors. The total volume of water, its transport force and erosive potential, the river gradient and similar phenomena may all depend on uplifting movements or sagging tendencies of the river basin area but may also be due to climatic factors and to the lithology of the area.

No anomalies were observed in the area studied in the shaping of terrace surfaces or socles, and this rules out the action of tectonic factors. However, the recent, almost present-day history of the Mesopotamian Plain points to possible effects of changes in the Persian Gulf shoreline. The poorly researched sea-coast terraces in the Gulf area also support this assumption. The changes of climate in the Pleistocene and the eustatic changes in the World Ocean level are one of the keys to the understanding of the Masnaa terrace sequence.

In his comparison of the levels of Pleistocene sea-coast terraces in the Middle East, K. Butzer distinguished five terraces in the Persian Gulf ranging in altitude from +90 to −2(−3) meters above sea level. If we assume that Iraq was tectonically stable, then in the Lower Pleistocene the Persian Gulf must have extended eastwards beyond Hit, and in those times the erosion base of the Euphrates must have been about 30 meters higher than today; this ought to have greatly reduced the river gradient. On the other hand, the cold climatic periods with the accompanying regressions of the World Ocean must have increased the gradient and favored down-cutting erosion, and hence a deepening of the river bed.

Coming back to our region, it is worth taking another look at the special place occupied in the Masnaa terrace sequence by terrace 4 and the alluvia series forming it. This terrace is the most downcut of all (20 meters from the socle of terrace 5 to the socle of terrace 4), constituting half the thickness of all the terraces combined. This kind of terrain form could have been due to a violent change of the river regime. I believe that the Mindel glaciation was the period in which this happened. The discovery of the Abbevillian hand-axe (rounded specimen) in a secondary deposit appears to confirm this supposition.

Another important fact is the presence of abundant Middle Palaeolithic materials, also in a secondary deposit, in the top of terrace 2 sediments, materials that have been transported from higher-lying terrace levels. This indicates that they are contemporaneous with or (slightly) older than the processes forming the top of terrace 2 alluvia. The most probable time of these processes was the Early Würm.

The surmises formulated above may probably be confirmed in the area around Hit and Ramadi, in the contact zone between the Euphrates alluvia and the sea-coast sedi-

ments and terraces of the Pleistocene littoral of the Persian Gulf. The Tartar depression may also provide interesting archaeological and geological evidence pertaining to the Quaternary, augmented by palaeontology, studies that have not been done in the Haditha region.

3. Methods of archaeological study

As was mentioned above, the lithic artifacts were deposited exclusively, or almost exclusively, on the surface of river terraces or of pediments, forming concentrations of various size and sometimes extending over a considerable area. By all indications, these concentrations do not reflect the original prehistoric arrangement of the artifacts. In view of this, it became something of a problem to obtain possibly homogeneous samples. In this situation we decided to perform surface explorations of selected portions of terrain (1–4 ares), assuming that the artifact series obtained thereby do not have to represent homogeneous assemblages.

These artifact series were then subjected to typological, technological and metrical analyses. Also, the state of preservation of the surface of stone pieces was carefully studied and classified according to a scale we devised with five states, ranging from the quite fresh to the completely rounded. Finally, the geomorphological position of the site was always taken into account.

The analyses showed that almost all the sites explored contained materials of various age which, however, can be divided up fairly accurately into the respective industries.

In what follows we give the first characteristics of a number of the flint industries that were distinguished, together with a tentative periodization of them, the first for the middle Euphrates area. The descriptions are arranged according to the presumed chronological order.

4. Flint industries

4.1 *Lower Palaeolithic elements*

Site Masnaa I: A fragment of an Abbevillian hand-axe (fig. 3.1) in the 5th state of preservation (very strong rounding of the edge and of interscar ridges) and several similarly preserved Clactonian-like flakes were found on the western edge of the site, on a slope of terrace 4, strongly inclined towards the river. The artifacts were probably lying in a secondary position and were dragged to the site by the river current. Their original position could not be determined.

Two chopping tools (fig. 3.2, fig. 4.1) in the 4th state of preservation were discovered in the northern zone of the site, on the surface of terrace 4. The tools are typologically earlier than the Middle Palaeolithic material that is fairly abundant at this spot, and more freshly preserved. The larger specimen resembles the small hand-axe forms.

Site Masnaa II: Gravels of terrace 2 yielded, in a secondary position, in addition to rare (possibly Upper Palaeolithic) pieces, three pointed specimens of the chopper/chopping-tool type (4th and 5th state of preservation; fig. 4.2–3). These finds were accompanied by coarse flake and parablade material and by several primitive cores. Some of the cores and flakes were Clactonian in character, and others Levalloisian (?).

4.2 *Old Levalloisian (?) elements*

Some sites of the Masnaa complex (e. g. site II) yielded isolated specimens of Levalloisian type (flakes, cores) in the 4th and 5th states of preservation. It is possible that they represent an early stage of development of the Mousterian complex, or a late stage of the Acheulian. On the other hand, it is their obviously secondary position (gravels of terrace 2) that may be partly responsible for their "ancient" appearance.

4.3 *Middle Palaeolithic industries (fig. 5–6)*

On the surface of several sites of the Masnaa complex (e. g. I North, I Top, IV, VII, VIIa, XI) there occurred typical Middle Palaeolithic materials, usually covered by a brown or brown-reddish, sometimes liver-colored, patina. The specimens were, as a rule, fairly strongly polished and usually in the 3rd state of preservation. In their relatively original deposition the materials were associated with terraces 4, 5 and 6. In a secondary position they were found on the bottoms of wadis leading down to the river, and even on terrace 2 (cf. the remarks on geology and geomorphology).

Practically all the Middle Palaeolithic sites in the Masnaa area are marked by a fairly abundant presence of cores, flakes and blades, and rather small numbers of retouched and unretouched tools that are usually characteristic of "home" sites. Given this fact, we may consider it highly probable that the Masnaa complex was a site of flint raw material exploitation (cf. the remarks on geology) and of its initial processing rather than a site of permanent settlement of Middle Palaeolithic people. It is also likely that the large number of flint sites in the studied region is due to the fact that the local outcrops provided good raw material which was not all that common in other parts of the Euphrates valley or in the territory pierced by the wadis, which was then probably steppe and is now desert.

The described functional character of the Middle Palaeolithic (and also of the Upper Palaeolithic) inventories

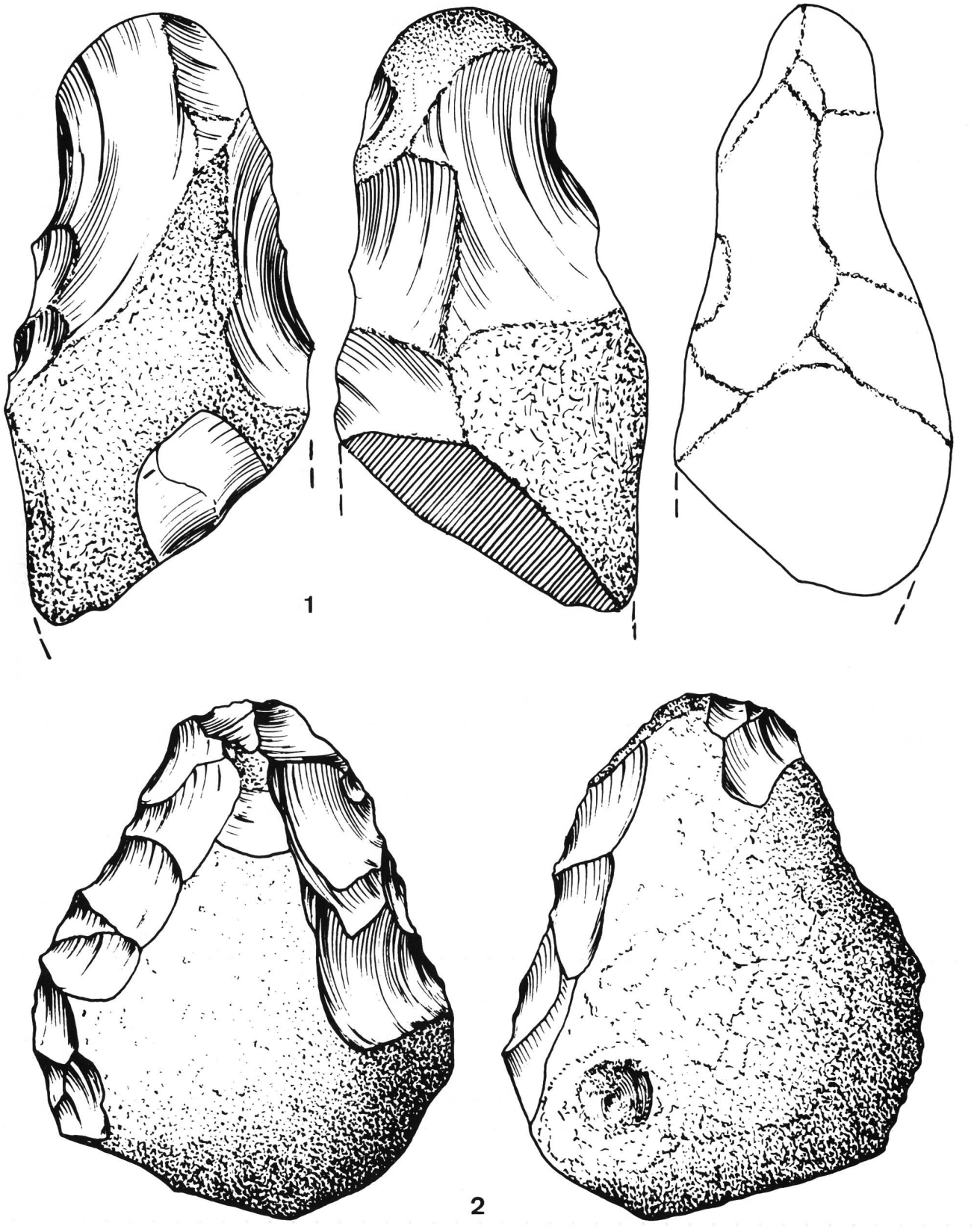

Fig. 3. Masnaa, Lower Palaeolithic
1: Site II; 2: Site I North (scale 1 : 1).

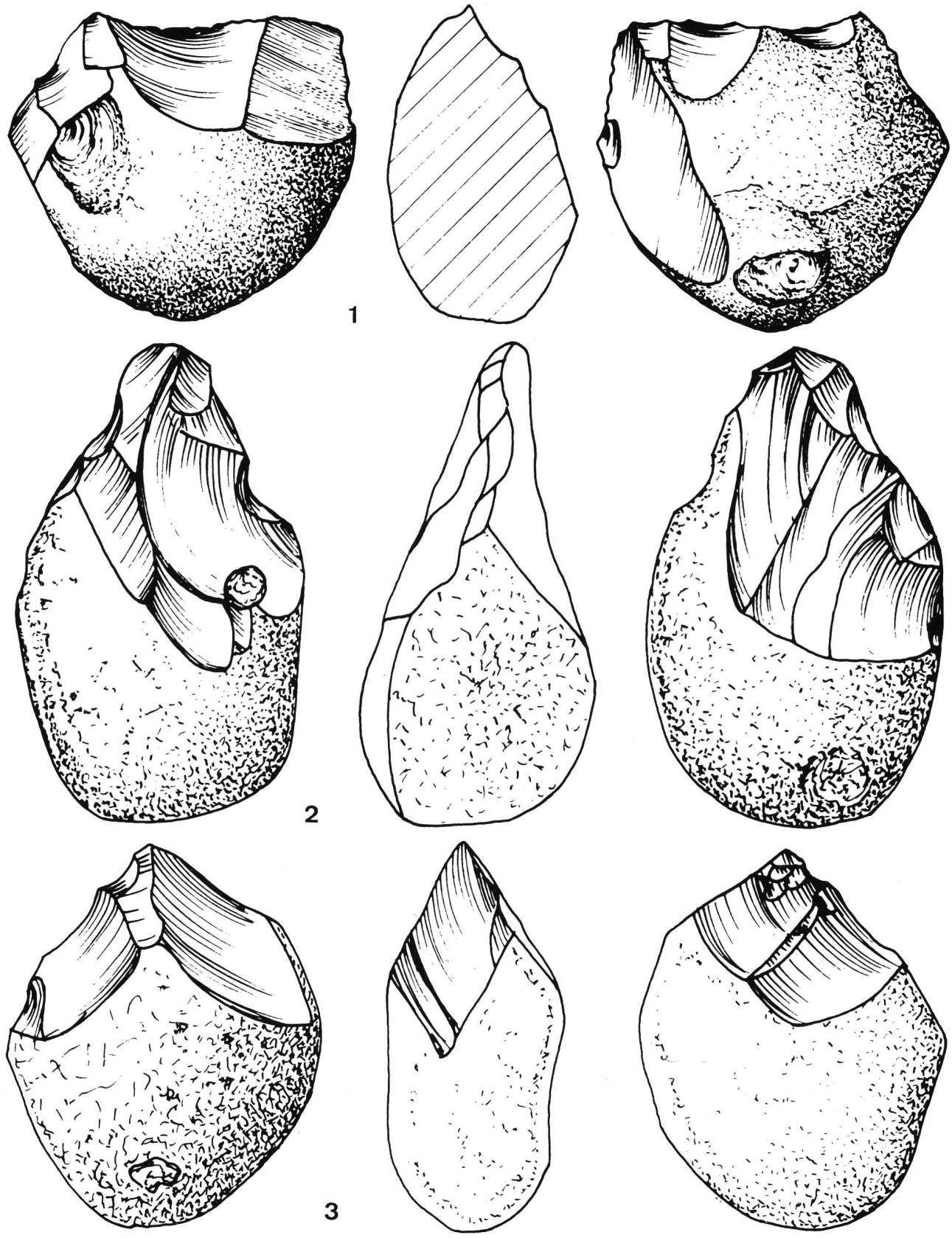

Fig. 4. Masnaa, Lower Palaeolithic
1: Site I North; 2–3: Site II (scale 1 : 1).

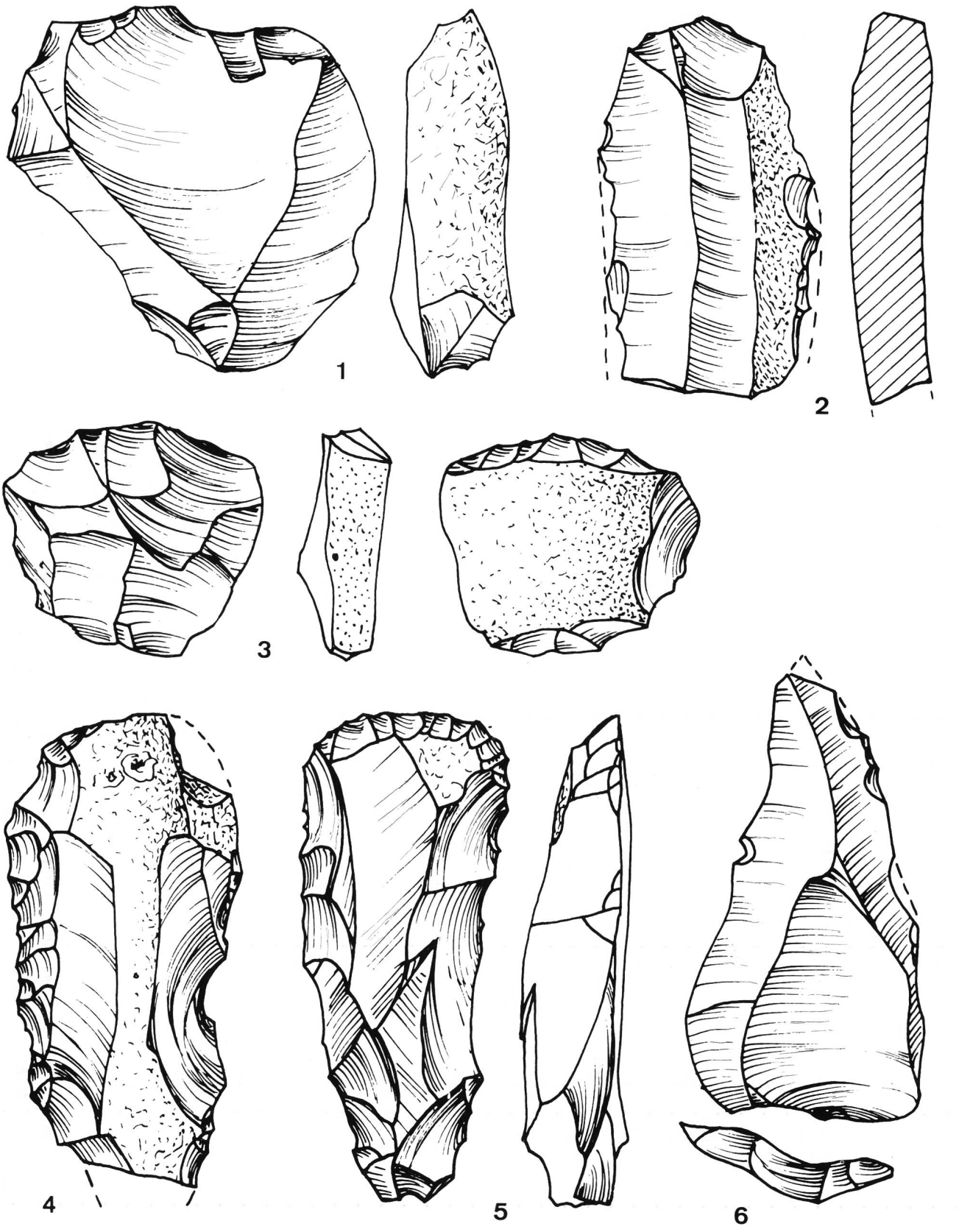

Fig. 5. Masnaa, Moustero-Levalloisian
Sites VII and VIIa (scale 1 : 1).

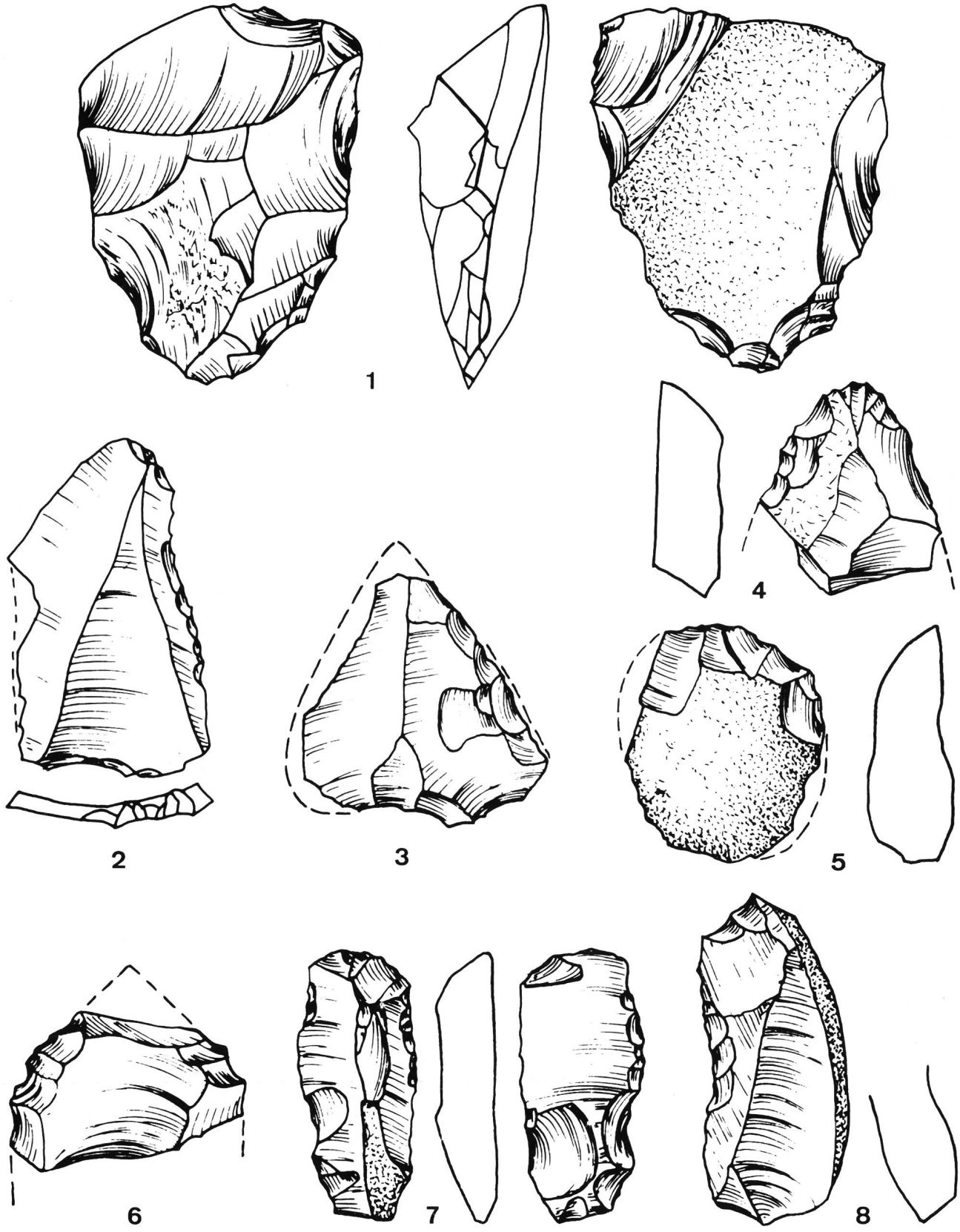

Fig. 6. Masnaa, Moustero-Levalloisian and Mousterian (?)
Sites I North, I Top and IV (scale 1 : 1).

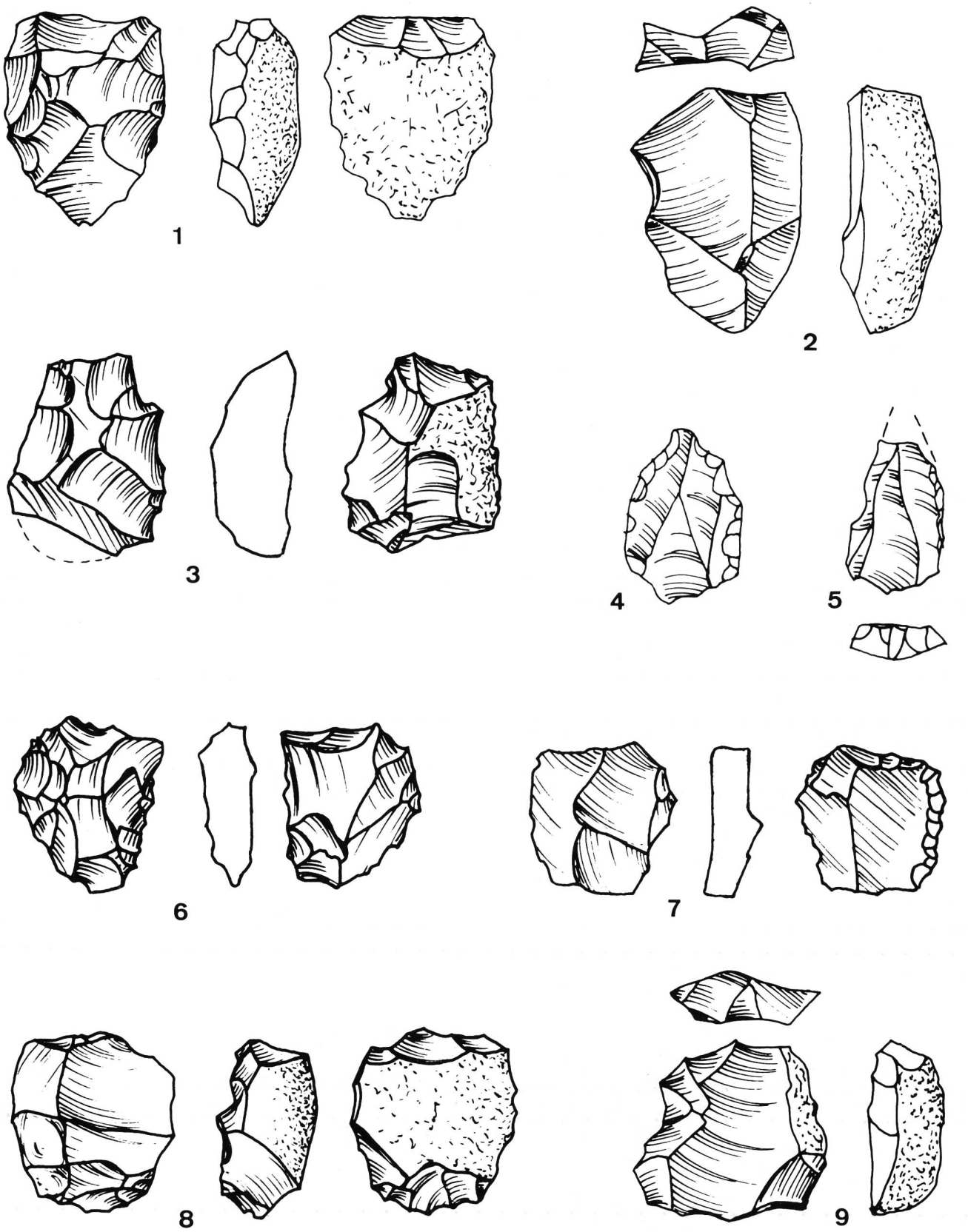

Fig. 7. Fehimi, Micro-Levalloisian
Different sites (scale 1 : 1).

of the Masnaa complex, hinders, of course, a more exact cultural classification of the Middle Palaeolithic finds we have mentioned. The available technological, typological and metrical analyses, still only tentative, nonetheless justify the surmise that the material from Masnaa is differentiated, at least metrically. On the one hand (e.g. on sites VII and VIIa) we have fairly large specimens (mean length of about 8–9 centimeters) and on the other technologically similar but much smaller pieces as, for example, in inventories from sites I North, I Top or IV. However, only further, more detailed analyses will perhaps throw light on the internal differentiation of the inventories. At this stage we can only give a comprehensive characteristic; we refrain from providing numerical data in view of the mixed character of the finds.

Technology: The Middle Palaeolithic sites of the Masnaa complex feature virtually all the major types of Middle Palaeolithic cores. Among the Levalloisian cores we thus have the simple ones for Levalloisian flakes, the subtriangular cores for Levalloisian points, and finally the tablet-like and elongated cores for blades, both the single- and the double-platform ones. The Levalloisian cores were formed on flat cortical pebbles (cores for flakes) or on elongated nodules (for blades), with the striking surface worked, as a rule, laterally or convergently; the back of the core, on the other hand, was often unformed or retouched laterally with single scars. The core platforms are usually faceted or at least partly prepared with several scars, and are sometimes in the shape of "chapeau de gendarme" (on cores for blades especially). The Levalloisian cores were accompanied by cores usually termed Mousterian, mainly in the short tablet-like variety used in the production of flakes, with two opposite platforms and preparation of the sides and the back. Discoidal cores are fairly rare.

Numerous flakes and blades occur together with the cores. Most prominent among them are typical Levalloisian flakes and so-called Levalloisian points (see below); there are also rare knives with natural backs (site Masnaa I North). A separate category comprises blades which differ metrically from site to site. They are usually massive or very massive, cortical or subcortical, often broken. The butts are transverse, often prepared. Uncortical specimens are very rare since they were presumably the final product in the Masnaa workshops and were meant for export. The specimens preserved are very often broken up into pieces; this does not necessarily have to be a result of damage but may be an effect brought about intentionally by the producers.

Tools, as already mentioned, are very few. Among unretouched specimens mention is of course due first of all to the so-called Levalloisian points; the cores for their production are known from the majority of inventories. Points from both the first and the second series occur, although the latter are rather infrequent. The butts are usually prepared and even faceted. The specimens discovered are not among the most appealing, but this is understandable in view of the workshop character of the sites: the better-shaped specimens were presumably taken away. There also occur the so-called knives with natural backs, which are regarded as tools by some archaeologists. Pseudo-Levalloisian points are present in minimal numbers only.

The retouched tools fit excellently in the standard of specimens typical for the Mousterian tradition as broadly understood. Side-scrapers dominate; among them the most numerous are the simple, single and bilateral, specimens; less numerous are the transverse and convergent varieties. Denticulated tools are fairly frequent. On the other hand, there are no Mousterian points or so-called Upper Palaeolithic forms in Masnaa, and the Quina-type retouch is also virtually absent.

In all, the Middle Palaeolithic materials from sites I Top, IV, VII, VIIa and XI from Masnaa conform admirably to the Middle-East standard of the Moustero-Levalloisian culture and may be dated rather confidently to the Early Würm and possibly also to the Eemian interglacial. The materials have very good analogies in other sites of this region, e.g. Ruthba. It is not unlikely, though, that the Middle Palaeolithic material from site Masnaa I North is slightly different in character. The Moustero-Levalloisian forms there were accompanied by asymmetrical knives with bipolar retouch.

4.4 *Upper Palaeolithic elements*

Very few Upper Palaeolithic-type artifacts, and in small quantities, are known from the region studied. Among them we have first of all cores for blades and almost for bladelets, as well as fairly delicate blades, all in the 3rd state of preservation. A small core almost for bladelets was found at site Masnaa IV, larger cores for blades at site II (together with Lower Palaeolithic artifacts); moreover, Upper Palaeolithic elements were discovered near Rezkah. Japanese archaeologists also discovered them at the Rayyash site (oral communication by Dr. Yasuyoshi Okada and Katsuhiko Onuma of Kokushikan University in Tokyo).

The finds from this age are thus few, if not downright rare, and are also of workshop character only. We are unable to qualify them culturally.

4.5 *"Micro-Levalloisian" elements (fig. 7)*

Original materials, mainly in the 3rd state of preservation, based on Middle Palaeolithic technologies (the Levalloisian among others) but differing from the Moustero-Levalloi-

sian materials described above by their very small dimensions (2–3 centimeters), occurred mainly in the vicinity of the Fehimi locality (e.g. sites 5 and 7) on the level 2 pediment. These finds too appear to be of workshop character, since the number of retouched tools is very small, and cores and flakes are the dominant forms. It is possible that these materials, which we have conventionally termed "Micro-Levalloisian", will one day be divided into two varieties (Fehimi 5 and Fehimi 7 separately). Today, however, we must limit ourselves to a joint characteristic confined to a mere mention of small Levalloisian cores (for points), and also of small circular and discoidal cores, single blades or parablades, and of the presence of flakes (Levalloisian included), and of poorly preserved small side-scrapers and denticulated tools, maybe also of small Levalloisian points.

Comparing the state of preservation of the materials described with that of materials which we regard as Upper Palaeolithic, we could justifiably claim that, theoretically, they can be contemporaneous. On the other hand, however, we know that in the Middle East (e.g. in the Nile delta) "Micro-Levalloisian" elements have a Late Upper Palaeolithic metric. In every case, however, the Levalloisian technique elements are accompanied by Upper or Late Upper Palaeolithic blade tools, which, in view of the workshop character of our sites, were not to be found therein.

4.6 *Industry with choppers*

Already in 1981 the site of Masnaa 1 North yielded a voluminous collection of flint artifacts, among which at least two different elements are apparent. On the one hand we have artifacts of the Mousterian tradition (see above) in the 3rd state of preservation, and on the other numerous, fairly large specimens of pebble tools (2nd state of preservation), mainly choppers and chopping tools, denticulated and notched tools and also spheroid-like hammerstones. These artifacts were at first classified as Lower Palaeolithic, but it soon turned out that they are all (except some pieces, cf. chap. 4.1) much more fresh than the Middle Palaeolithic finds. The pebble tool assemblage was also better preserved than the "Micro-Levalloisian" artifacts described above. We must therefore assume that the industry with choppers is fairly young; we cannot date it with any precision, however. In any case, the industry is characterized not only by typically Lower Palaeolithic forms but also by the hard hammerstone technique. It therefore turns out that the morphological and technological criteria can be deceptive when it comes to dating artifacts. Let us add, in parentheses so to say, that specimens very similar to those discussed here are known from, for example, the Chalcolithic (Ubaid culture) site of Tell-El-Saadiya on the Diyala river bank studied by one of us (Kozłowski), and also from the gunlock flint workshops in Masnaa (see below). In both these cases, however, the analogous artifacts are more fresh than the ones from Masnaa 1 North.

Given these facts, we may surmise that the chopper industry from the site of Masnaa 1 North (which, incidentally, is also known from isolated specimens from other sites of the region) is ancient, although we are as yet unable to date it more precisely.

4.7 *Gunlock flint workshops*

Several sites in the Masnaa region, and also in the Fehimi area, yielded various quantities of flint artifacts, usually in the 1st state of preservation. The most complete and pure assemblage of this type occurred at the site of Masnaa-Ulya III. This industry is characterized mainly by the hard hammerstone technique, and by numerous Clactonian-type flakes accompanied by very primitive cube-shaped unprepared cores. Among the fairly numerous tools we have various types of side-scrapers, often on pebbles, abundant denticulated tools, very irregular flake end-scrapers, and small specimens of the chopper and chopping-tool types. This industry presents some similarities to the industry with choppers described above (cf. chap. 4.6), also with the difference that artifacts from the former are much smaller and fresher than specimens of the latter. When we still believed that the chopper industry from Masnaa 1 North is of Lower Palaeolithic origin, it appeared that the industry from site III which we are now discussing was its natural continuation and that, accordingly, it was also Palaeolithic. However, the last season (1983), during which the exploration of site III was finally completed, yielded gunlock flints preserved identically as the remaining artifacts. The age of the entire inventory was thus automatically defined: it simply has to be modern. It now becomes clear why the area was given the name Masnaa, which is Arabic for factory or workshop.

The discovery of gunlock flint workshops itself is, of course, no revelation. What is puzzling, however, is that in this case the gunlock flints and waste from their production are accompanied by fairly numerous retouched tools. It would appear that in modern times the local people continued to use flint as a raw material for the production of tools for everyday use. This observation, if confirmed by more detailed analysis, will be very important for the ethnography of the region in question.

One piece of evidence that would support our hypothesis is a small core for bladelets made of a porcelain electrical insulator found near a ferry crossing next to Bijan island.

5. Conclusions

This publication, as its title states, is only a preliminary report. Already at this stage, however, we can arrive at a number of positive conclusions derived from our exploration of the Euphrates environs, namely:

1. The proposed outline of the sequence of the Euphrates river terraces appears to be well substantiated in its basic points, notwithstanding the need for further verifications and possible modifications.
2. An attempt was made to date the separate terraces, based inter alia on archaeological evidence.
3. A body of archaeological flint evidence, of Palaeolithic and younger metrics, was obtained and this made it possible to cast the first light on the oldest period of the prehistory of this part of Mesopotamia.
4. It was found that virtually all flint sites from the vicinity of Haditha are of decidedly workshop character. This prompts us to advance the hypothesis that for thousands of years this area, and especially the Masnaa complex, provided flint raw material for communities permanently residing outside the area studied.
5. The following chronological and cultural scheme of the flint industries from the Haditha region is tentatively suggested:

History of the River	Age	Industries		
Formation of the 2nd terrace	Modern	Gunlock flint workshop, 1st state of preservation (e.g. Masnaa III, Fehimi 5)		
	Ancient	Chopper/chopping-tool industry, 2nd state of preservation (e.g. Masnaa I North)		
	Late Palaeolithic Upper Palaeolithic	Blade-bladelet industries 3rd state of preservation (e.g. Masnaa IV)	Micro-Levalloisian 3rd state of preservation	Fehimi 7 industry? 2nd–3rd state of preservation
	Middle Palaeolithic	Moustero-Levalloisian (middle-size blades) 3rd state of preservation (e.g. Masnaa IV)	Moustero-Levalloisian (big blades) 3rd state of preservation (e.g. Masnaa VII, VIIa)	Mousterian (?) (bifacially retouched knives) 3rd state of preservation (Masnaa I North)
Top of the 5th terrace	Lower Palaeolithic	Old Levalloisian or Acheulian, 4th–5th state of preservation (Masnaa II)		
		Abbevillian hand-axes and choppers/chopping tools, 4th–5th state of preservation (Masnaa I and II)		

Proof of illustrations

Fig. 1–7: Institute of Archaeology, Warsaw University.

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