

THE LOWER PALAEOLITHIC IN SYRIA

Sultan MUHESEN¹ & Reto JAGHER²

¹Université de Damas and Qatar Museums Authority, smuhesen@qma.org.qa; sultanmuhensen_2@hotmail.com

²Institute for Prehistory and Archaeological Science (IPAS) University of Basel, Switzerland, reto.jagher@unibas.ch

Introduction

Since the 1970s, the archaeology of the Lower Palaeolithic in the Levant has become an amalgam of different approaches adding a plethora of unequal pieces to the overall puzzle. The intention of the present paper is to re-launch the discussion of the Lower Palaeolithic in Syria and adjoining areas beyond traditional concepts. It is not the intention of the authors to criticise different approaches of our colleagues, but we try to overcome some traditional models that are in dire need of revision. Therefore we refrain from extensive quotes as the aim is to launch constructive discussions and not to raise polemics. In this respect bibliographical referencing is limited to the necessary minimum.

For its size, the Levant offers an unrivalled wealth of Palaeolithic sites of all periods. A comparable density and variety of sites is quite unique on a global scale. The geographic setting, within the crossroads of the Old World offers unique possibilities for understanding early human behaviour on a broad database, permitting us to understand cultural variability in a limited space and over a very long time scale. Despite the potential influences of distant settlement areas into the Levant, but also vice versa, specific local traditions can be identified throughout its history. It is beyond this paper to go into the details of influences from outside the Levant and their cultural impact on neighbouring areas. Ideas and technological concepts obviously went back and forth, making the Levant a kind of turntable. It was not the melting pot one could expect, but kept throughout the ages a strong and proper cultural identity.

Traditionally the Levantine Palaeolithic has been perceived in a Eurocentric conception. Since the beginning of Palaeolithic archaeology along the eastern Mediterranean, beginning in the late nineteenth century, Europe was undeniably the centre for prehistoric research where the basic concepts of Old Stone Age archaeology and Quaternary geology were developed. Researchers working in the Levant relied on their European experience to unravel the Levantine Palaeolithic. Many labels and affiliations established at that time still cling to the respective materials today. Qualitative arguments were more important than quantitative evidence. In this manner, statistically ques-

tionable inventories became keystones, as indices of artefact categories permitted comparison and classification. In many cases, indices were computed against basic statistical rules. Also clear numerical inventories are only available for a few selected sites, impeding a reasonable reassessment of the corpus in question. Furthermore the political situation in the second half of the twentieth century restricted scientific co-operation, as international boundaries became a considerable obstacle for research. Exchange was only possible through publications and informal personal contacts. Therefore local schools prevailed on either side of the political divide, going their separate ways. This may explain to a certain extent the partitioned approaches for the Palaeolithic of the Levant.

History of research

Despite a longstanding tradition of Palaeolithic research since the end of the nineteenth century in what was then Ottoman Syria, the first discoveries of Lower Palaeolithic sites within today's boundaries date back to the year 1900 (Morgan 1927). Research on the Lower Palaeolithic resumed in the 1930s (Burkhalter 1933). In the same period, from 1931 to 1933, Alfred Rust conducted his prestigious excavations at Yabrud (Rust 1950) laying an important base for further investigations. Another breakthrough was van Liere's (1961) studies on the Quaternary of Syria, which permitted the discovery and subsequent excavations of the Latamne sites (Modderman 1964; Clark 1966). These efforts were resumed in the mid 1970s by an interdisciplinary team of prehistorians and geomorphologists under the auspices of the French CNRS. The team of F. Hours, L. Copeland, P. Sanlaville, J. Besançon and S. Muhesen established most of what is known today about Lower Palaeolithic sites in Syria. Within a rather short time period, a number of carefully selected regions were investigated: in 1976 the Nahr el Kebir near Lattakia (Sanlaville 1979), in 1977 the Middle Orontes valley (Besançon *et al.* 1993), in 1978 the area around Raqqa on the Euphrates (Copeland 2004), in 1979 the Menbij sector, again on the Euphrates (Copeland 2004) and in 1980 the desert area around El Kowm (Besançon *et al.* 1981). In later years, these survey were completed in 1989 with the area around Tartous on the Mediterranean coast (Besançon *et al.* 1994). In consequence of those screenings, a number of Acheulean sites were

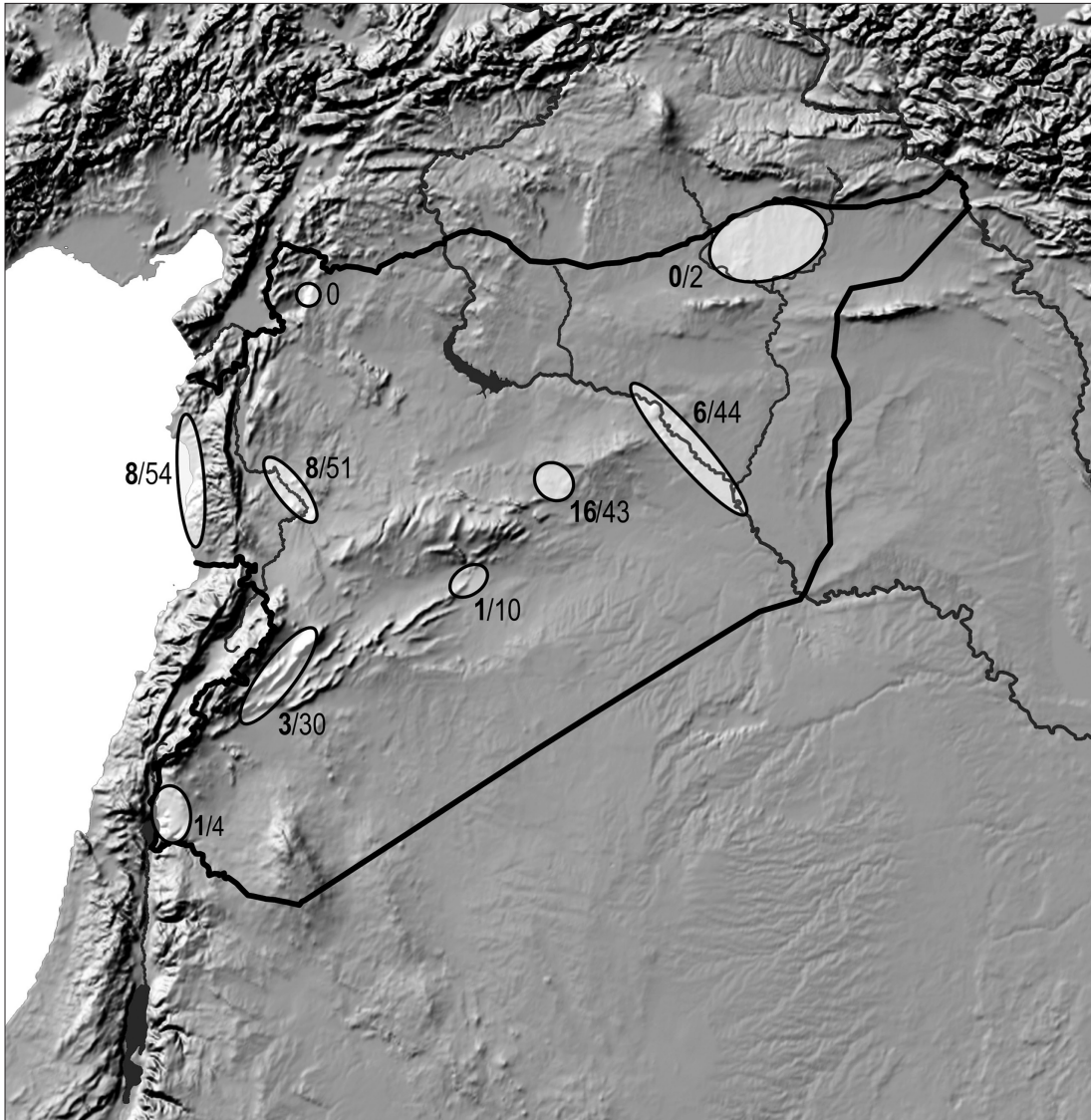


Figure 1 - Map of Syria with location of main Palaeolithic surveys or investigations with a strong focus on that period. Bold numerals stand for the number of sites with hand axes $n > 20$; normal typography indicates the number of sites with hand axes.

excavated: in 1979 and 1981 Gharmachi Ib (Muhesen 1985), from 1989 to 2003 Nadaouiye Aïn Askar (Jagher 2011), from 1996 to 1998 El Meirah (Boëda *et al.* 2004), and soundings were carried out 1989 in Juwal Aïn Zarqa and in 1991 in Qdeir Aïn Ojbeh by J.-M. Le Tensorer and S. Muhesen.

The results of these surveys were published with unequal intervals between field work and publication for different reasons, amongst them, the premature death in 1987 of Francis Hours, the mastermind and moving spirit of this research group. A final summary, reassessing all these results, has never been edited. However, results were included in interim syntheses in expectation of the concluding publications. The current appreciation of the Lower Palaeolithic in Syria has remained a patchwork, without later synthesis or revision. The understanding of the fundamental argumentation through existing publications is ambiguous.

Today, more than a generation later, those results can be seen in a different light. The spirit and background of that time (i.e. the mid 1970s) has to be recalled in order to understand the implications of this research. Geomorphological studies as a

reference for the relative age of the archaeological materials were based on the classical quadrinomial concept of the Pleistocene in the sense of Penck and Brückner (1909). With such an approach, mapping of fluvial terraces was simplified, but had a limited chronological resolution. On the other hand, archaeologists depended at that time on the "short chronology" presuming, the end of the Acheulean to be in the final stages of the "Riss-glaciation" (i.e. Marine Isotope Stage 6) with a model age at that time of around 150,000 years BP (actual models now put the same transition around 350,000 years). Furthermore, in keeping with the mainstream in archaeology, the perception of cultural development depended on a strongly evolutionary conception, going progressively from primitive to elaborate tools and from basic to complex technologies. The fundamental approach was that archaeological materials can be classified in their chronological order along these guidelines. In that spirit, a complex framework of cultural evolution, particularly for the late Acheulean, was devised. With growing experience not only was the relative chronological scheme refined, but also contemporaneous regional groups were defined. In many cases cultural attributions based on limited collections and observa-

tions were substantiated by cross-referencing with other sites. Once labelled, sites remained in the general discussion without questioning their value for further synthesis. Most of all, the system lacked a sound chronological control as all these discoveries were either surface discoveries or represented only one single phase site.

With the excavations at Nadaouiyeh Aïn Askar, the traditional model was seriously challenged. The complex stratigraphy of that site eventually revealed seven distinct Acheulean facies in a definite chronological sequence (Jagher 2011). Against expectations, the most elaborate and standardised hand axes turned out to be the oldest and the expected "progressive artefact associations" were not substantiated at all. Against this evidence the conventional understanding of the Syrian Acheulean needs a profound revision (fig. 2).

Out of Africa and the beginnings of hand axes.

Hand axes are one of the "guide fossils" for the "out of Africa" dispersal of early hominids. In fact the oldest known hand axes appear about 1.6 million years ago in Eastern Africa (e.g. Asfaw *et al.* 1992; Isaac & Isaac 1997; de Lumley & Beyene 2004). However, in almost all of these sites, the hand axe is a very rare instrument. Basically these materials are in a strong tradition with earlier core and flake industries. The very low numbers clearly show that hand axes had a minor meaning for their makers. This is also the case for the early sites in the Levant, such as Ubeidiya and El Kowm (Le Tensorer *et al.* 2011). We may ask, provocatively, but why did hand axes not take a stronger hold in the early African Acheulean for more than half a million years until they became a dominating feature?

In a purely evolutionary concept, one brilliant mind would have been responsible for the invention of this icon of the Lower Palaeolithic. Contrary to biological evolution, in cultural history a multiple origin in the sense of congruent inventions leading to the same solution is possible and no contradiction, but quite the reality. The manipulation of stone material obeys the same universal physical laws, permitting just a limited technological repertoire. In later periods of prehistory, congruent evolutions are generally accepted (e.g. blade technologies, foliated tools and so on). Why could that not happen also in earlier periods? It has to be kept in mind that the invention of the hand axe, a quite generic tool in its basic concept, needed neither particular technical skills nor superior cognitive capacities beyond the possibilities of the time. Basically, hominids already out of Africa were not much duller than their cousins next out of the cradle of humankind. In such an environment a multiple origin of the hand axe is also conceivable.

In fact, the archaeological evidence is undisputable: the oldest stone tools are known from Eastern Africa, from where they spread within a surprisingly short period around the Old World. But is that sufficient to affiliate all further "big inventions" from the area of origin? If so, East Africa should have been at the height of technological invention (at least concerning lithic technologies), a worldwide "leadership" that is not confirmed by the archaeological evidence. Hence a multi-regional approach is as possible as an exclusively African provenance for hand axes. In

conventional chronology		Nadaouiyeh stratigraphy	
Middle Palaeolithic	Levalloiso-Mousterian	Nad-A	Epi-Acheulean
	Hummalian	Levalloiso-Mousterian	Middle Palaeolithic
Acheuleo-Yabroudian	Yabrudian	Hummalian	
Acheuléen final	Nad-A	Yabrudian	
	Nad-C	Nad-T	Levantine Upper Acheulean
	Nad-T	Nad-B	
	Nad-D	Nad-C	
Acheuléen récent évolué	Nad-F	Nad-D	
	Nad-E	Nad-E	
Acheuléen récent	Nad-B	Nad-F	
Acheuléen moyen	Nad-X	Nad-X	Levantine Lower Acheulean

Figure 2 - Confrontation the conventional chronology of the Syrian Upper Acheulean to the sequence present in the Nadaouiyeh stratigraphy.

a purely evolutionary approach, the earliest appearance would designate the origins, but human culture is not submitted to biological laws. Anachronisms and convergent development are both possible and are no contradiction, as human behaviour is complex and unpredictable.

Nomenclature

Lower Palaeolithic: the core and flakes traditions

The concept of the "Lower Palaeolithic", issued from the classical tripartite classification and terminology of the nineteenth century (de Mortillet 1883), however it comprises more than 85% of human history. This modest term combines quite different cultures and traditions in a huge geographic range during an extremely long period. Lithic traditions changed slowly from the original core and flakes concepts. Most of these early technologies kept their archaic aspect over a long time. Despite archaeologists' concepts, changes were neither universal nor synchronous or in a consequent progression. Instead of accurate observations, scholars relay rather on academic concepts adopted by the scientific community. A classical example in this domain for the Lower Palaeolithic is the question of mode 1 and mode 2 (Clark 1969) which is still vigorous today. There is often confusion between biological evolution and cultural history that only share a common time axis. However, culture is not a biological constant, but the product of a multitude of stimuli from nature and human imagination slowing or accelerating cultural change independent of time and space.

The reasoning that cultural development and biological evolution are strongly interconnected is a widespread, but never re-

ally confirmed, concept, with strong ties between hominid taxa and the evolutionary level of stone tools. However, the fossil evidence, including the Levant, is ambiguous. It may support such models: e.g. the Nadaouiyeh hominid shows more anatomical affinities to its East Asian cousins than to its African or European contemporaries (Le Tensorer *et al.* 1997; Jagher *et al.* 1997), however, the material culture is entirely oriented to hand axes, that are nearly completely benign to the biological counterparts. Also the Levantine Neanderthals, contrary to their European brothers, utterly abandoned the hand axe in their cultural repertoire.

In conventional terminology, the Lower Palaeolithic comprises the archaic lithic traditions, i.e. the core and flakes technological complexes in an early stage, and the hand axe civilisation is labelled as Acheulean in a more recent phase. The former are difficult to characterise, especially in small collections, as diagnostic tools are rare. These early archaic industries, distinguished by generic tools and basic technologies, constrict detailed classifications. With the appearance of hand axes, discoveries with this index are called Acheulean. This term, suggesting a shared identity indeed encompasses quite different cultural expressions e.g. the Ubeidiya inventories, the Geshert-Latamne complex or the highly elaborated hand axes from Nadaouiyeh, just to cite a few Levantine examples.

A short digression on the label "Acheulean"

In archaeology, the term "Acheulean" comprises a plethora of meanings, covering a wide range of applications; it can be a purely chronological indication (in a wider or a closer sense) implying a concise time span or not, it can be a technological specification, it may allude to cultural entities in a generic or general definition, it can be only a particular cultural trait such as specific artefact categories (i.e., hand axes), it may hint at the cognitive capacities of their makers, it may allude to a particular population group or be used in a taxonomic sense, or simply as a way of life. In short, it is an all-purpose expression wherever hand axes are involved. The attribute "Acheulean" was even given to post-Acheulean industries evoking Acheulean traditions such as "Acheulo-Yabrudian" or "Mousterio-Acheulean", just as examples from the Levant.

Even if the hand axe is the icon of the Acheulean and to some extent of the Lower Palaeolithic, rarely is the question asked how important they really were to their makers. Instead of clear numbers, frequencies are given in terms such as an "elevated percentage" and so on. But what is the value of such expressions? In a context of few, "some" may be already "a lot". It is somewhat like the question of how many swallows make a summer, as the simple definition, hand axes equal Acheulean, falls short of the reality. With such lax handling, the term loses a good deal of its significance and easily produces misunderstandings, if no specifications or further definitions are given about the particular meaning of the concept.

This disparate situation was already criticised by Paola Villa in 1983: "We use the term 'Acheulean' to cover a too-long and too-little-known phase of human prehistory. It is not a master-key to the past; it is a trap for unpatterned data, old collections, and

stray finds. Like a Mother Goddess, the Acheulean embraces a multitude of orphans. Such a wide label has been useful in the past, expressing a need for synthetic organization of data above fragmented antiquarian interests. It is now an ambiguous generalization which is being used to suggest cultural relationships where only similarities of technological level should be implied" (Villa 1983:23). To this very day, there is little to be added to that statement.

Quantitative versus qualitative approach

In the past, the qualitative typological approach to Palaeolithic cultures was much favoured by archaeologists as the direct comparison between sites was a generally approved method. The quantitative notion was neglected to a large extent, or generally reduced to expressions like "elevated" or "low percentage", but rarely presenting the numeric base. This procedure made it possible to include small samples in a wider discussion without difficulties and permitted one to integrate almost every site into a synthesis.

In this respect, the Nadaouiyeh Ain Askar excavations clearly unveiled the pit-falls of the just qualitative estimation of Acheulean inventories. This site produced hand axes in such numbers that serious statistical analysis became possible (Jagher 2000, 2005). Without going into details here, a number of mathematical and empirical tests was carried out to determine the minimal size for a representative sample. In order to make a sound statement about a hand axe inventory concerning formal aspects (typology, morphometry, technology etc.), and potential comparisons with other sites, about 50 individuals are necessary at least. In cases of a strong heteromorphy or a broader metrical variance this may be considerably higher. As a rule of thumb, with 75 individuals, the chances are fair for a serious assessment of a material as statistical evaluation becomes reproducible within a reasonable range.

Empirical experience revealed that for entities with an exceptionally good standardization of shapes, samples of more than two dozen may give a fair idea in general. This applies to highly elaborated techniques and, on the other hand, for extremely basic execution, i.e. inventories where strict uniformity strikes the eye immediately. Everything else needs a much broader base, such as stated above, to measure the variability.

The rather high number of hand axes necessary for an assessment has to be seen against the background that each hand axe is individually manufactured on a random blank. Hence accurate reproduction is only possible with a limited potential. Currently applied typological classifications and differentiations clearly transgress the feasibilities of the makers. The existing typologies, in fact, are academic concepts, feigning neat classifications that fall short of the intentions of the original makers.

Chronological framework

Indirect observations, such as the Dmanissi discoveries, hint at a long human history in the Levant. The earliest well confirmed human presence in the Levant dates back about 1.6 million years in the site of Ubeidiya in Israel (Belmaker 2006:12).

They belong to an archaic Palaeolithic dominated by a core and flake technology comparable to the Oldowan of eastern Africa. Analogous industries in Syria are known from Hummal and Ain al Fil (Le Tensorer 2009). The presence of hand axes in some of the layers in Ubeidiya (and also in Hummal) earned this site the label "Acheulean". The frequency of hand axes is usually low throughout the Ubeidiya levels, with a few exceptions. The basic aspect of the industry is archaic and clearly dominated by core tools (choppers, spheroids etc.) and retouched flakes. As stated above, the generic designation Acheulean is not helpful. In all, hand axes make up a mere 7% of the shaped tools all over the site (Bar-Yosef & Goren-Inbar 1993). For the Syrian sites of the same period the statistical base impedes further considerations beyond a descriptive level (Wegmüller 2011). The label Oldowan is as inapplicable for the presence of hand axes as is Acheulean for their scarcity. The term Proto-Acheulean better describes the situation. This is consistent with the first hand axe traditions in eastern Africa, where hand axes do only occasionally exceed more than 10% of the shaped tools.

The situation changes clearly with the appearance of the "middle Acheulean" in the conventional terminology. Existing definitions clearly picture this entity in the Levant with its classical sites of Gesher Benot Yaakov and Latamne and associated discoveries. Hand axes and assorted artefacts are the dominant tools in this group, presenting a standardised style of shaping the hand axes which are consistently of respectable size. At least the Gesher cleavers display a strong African influence. How far this applies to the whole group has yet to be demonstrated. In the following, we name this group the Levantine Lower Acheulean (i.e. what is traditionally the Middle Acheulean or Acheuléen moyen) as the historical tripartite system should be abandoned for being unfounded. The chronology of the Levantine Lower Acheulean is subject to discussion. At Gesher it clearly dates around 780 ka (Goren-Inbar *et al.* 2000). Recent palaeontological estimations suggest an even older age for Latamne, possibly around 1 ma (Bar-Yosef & Belmaker 2010). The end of the Levantine Lower Acheulean can tentatively be placed around 600 ka (see below).

Consistently for the classical Acheulean in the Bilad As Sham, the term Levantine Upper Acheulean is proposed. The prefix Levantine is added in order to define clearly the separation from other Acheulean groups. The beginnings of the Levantine Upper Acheulean are subject to speculation. However, a progressive age model for the Nadaouiyeh Ain Askar site suggests an age of about 550 ka for the oldest levels which clearly belong to an "upper Acheulean". Given that age, and the striking conceptual difference from the preceding Levantine Lower Acheulean, the advent of the Levantine Upper Acheulean can be placed around 600 ka. Its end coincides with the advent of the Yabrudian complex about 350 ka ago based on a conservative interpretation of the evidence from Tabun and Qesem cave (Mercier *et al.* 2003, Gopher *et al.* 2010).

The transition to the Yabrudian complex is drastic with profound replacements in the tool set concerning formal and technological aspects. In fact the change to the Yabrudian complex is much more radical than that from the Lower to the Upper Acheulean, which was more a question of style than technological concepts. The enduring presence of hand axes during the

Yabrudian complex must not be regarded as proof of a strict Acheulean origin in the same reasoning as the Proto-Acheulean is not forcibly the direct ancestor of the Lower Acheulean. Their alignment along the timeline suggests a perfect although sketchy succession. But this is only one of several possible explanations and without further arguments one should be careful with premature interpretations.

"Acheulean" sites in Syria

A survey of published data reported the occurrence of an astonishing 238 reputedly Acheulean locations in Syria including in some cases sites with several layers (tab. 1). For 41 places (i.e., 17%), it is only known that hand axes were found, but no precise numbers are given. The vast majority of the remainder consist of just a few hand axes and in general only some sparse other findings, with the bifaces being the only diagnostic object(s). More than half of the claimed Acheulean discoveries produced less than half a dozen hand axes and from 76% of the so called "Acheulean" sites less than one dozen of handaxes were recovered. Observations with one to two dozens of handaxes were made only at 9 places. Only 34 sites with a clear hand axe component, i.e. more than two dozens of bifaces, are present. Half of them have been excavated, the remaining 17 locations are known through surface collections. Complete inventories including precise numbers hand axes, retouched flake and core tools (i.e. choppers, chopping-tools and associated artefacts) are available for 113 sites (i.e. 47%). For the remainder information is incomplete.

The tendency of incomplete data and small numbers of artefacts is representative for the whole Levant, where isolated discoveries of hand axes were readily attributed to the "Acheulean". It has to be noted that nearly all of all these discoveries are surface collections with little information about the taphonomic context of these sites. During surface surveys, hand axes are readily spotted and recognised as such even when badly eroded (Jagher 2011). The associated débitage is rarely given the same attention. Furthermore, surface sites tend to be palimpsests of different occupations. In such a case, hand axes are usually detached from the remainder and attributed to the Acheulean as alleged guide fossils for this period.

Hand axes in the Post-Acheulean cultural entities of the Near East are much less frequent than in the preceding periods. When comparing the total number of hand axes clearly associated with the Acheulean and the ones attributed to the Post-Acheulean from excavated or systematically surveyed sites throughout the Levant, there is a chance of four to one that a hand axe actually is Acheulean. However, it is doubtful if this simple relation can be attributed to isolated discoveries. Isolated discoveries of handaxes, that is sites with less than a dozen handaxes (i.e. 76% of the originally claimed discoveries), have to be considered as minor sites with an indicative value only. Their significance for landscape archaeology has yet to be confirmed.

The Early Palaeolithic in Syria

Early industries discovered within very old Pleistocene formations attributed to the Qm III and Qf IV stages, show quite

site	hand axes	pebble tools	ret. flakes	cores	source
Coast					
Al Aliah 1	●	--	--	--	Conard & Kandel 2006
Al-Bassatin 1	●	--	--	--	Besaçon et al. 1994
Aqarib	●	--	--	--	Besaçon et al. 1994
Ard el-Basa	●	--	--	--	Besaçon et al. 1994
Ard Hamed 4	226	18	55	121	Muhsen 1985
Ar-Roueiss	●	--	--	--	Besaçon et al. 1994
Bano	●	--	--	--	Conard & Kandel 2006
Beit Kamouni	●	--	--	--	Besaçon et al. 1994
Cheikh Daher	●	--	--	--	Besaçon et al. 1994
Dahr el-Fallah	●	--	--	--	Besaçon et al. 1994
Deir el-Hajjar	●	--	--	--	Besaçon et al. 1994
Hosein al-Bahr	●	--	--	--	Besaçon et al. 1994
Huraisun	>2	--	--	--	Tomsky 1982
Jabala	1	--	--	--	Tomsky 1982
Jdeideh	6	0	2	5	Muhsen 1985
Jedeide 2	●	--	--	--	Conard & Kandel 2006
Karm as-Sabi	●	--	--	--	Besaçon et al. 1994
Mouqaa El Hami	50	11	32	--	Muhsen 1985
Nahr al Abrache	●	--	--	--	Besaçon et al. 1994
Nahr al Mudiq	3	--	--	--	Tomsky 1982
Nahr Hraissoun	●	--	--	--	Besaçon et al. 1994
Nahr Ismalié	●	--	--	--	Burkhalter 1933
Nahr Markié	●	--	--	--	Burkhalter 1933
Nahr Merqiye	1	--	--	--	Besaçon et al. 1994
Qalaat Faraoun	1	--	--	--	Besaçon et al. 1994
Qalaat Yahmour	21	--	●	--	Tomsky 1982
Ramit Sagher 1	●	--	--	--	Besaçon et al. 1994
Ramit Sagher 2	●	--	--	--	Besaçon et al. 1994
Sasnyeh	●	--	--	--	Burkhalter 1933
Sauda	●	--	--	--	Tomsky 1982
Simirian	●	--	--	--	Besaçon et al. 1994
Tartus	12	--	--	--	Tomsky 1982
Taryé	●	--	--	--	Burkhalter 1933
Tell Akho	●	--	--	--	Besaçon et al. 1994
Wadi Arab	●	--	--	--	Besaçon et al. 1994
Nahr al Kebir					
Ash Shir / Esh Shir	●	--	--	--	Tomsky 1982
Ayak	1	--	--	--	Tomsky 1982
Bdamyun 1-3	6	--	--	--	Tomsky 1982
Bertzine	51	5	14	50	Sanlaville ed. 1979
Cheikh Mohammed	13	4	1	2	Sanlaville ed. 1979
Dahr El Ayani	10	2	1	3	Sanlaville ed. 1979
Dahr Ouadi Hassane	2	1	1	4	Sanlaville ed. 1979
El Hakimé	1	0	0	1	Sanlaville ed. 1979
Fidio II	3	0	1	2	Sanlaville ed. 1979
Fidio III	25	29	13	83	Sanlaville ed. 1979
Hinnadi	>5	--	--	--	Tomsky 1982
Jabal Jibtaa	64	19	11	45	Sanlaville ed. 1979
Jbarioun Carrière	16	0	12	9	Sanlaville ed. 1979
Jebel Idriss I&II	1	2	0	4	Sanlaville ed. 1979

site	hand axes	pebble tools	ret. flakes	cores	source
Jebel Idriss IIIa	10	9	4	14	Sanlaville ed. 1979
Khéllalé 2	1	1	0	4	Sanlaville ed. 1979
Khéllalé 4	42	8	12	44	Sanlaville ed. 1979
Khéllalé 5	10	1	5	8	Sanlaville ed. 1979
Mchaïfret es Samouk	11	27	14	50	Sanlaville ed. 1979
Nahr El Arab B	14	11	28	41	Sanlaville ed. 1979
Roudo inf.	7	0	3	18	Sanlaville ed. 1979
Roudo sup.	109	19	13	39	Sanlaville ed. 1979
Sinnjuwan	2	--	--	--	Tomsky 1982
Sitt Markho	6	7	0	13	Sanlaville ed. 1979
Snoubar	1	0	0	0	Sanlaville ed. 1979
Souayate inf.	11	2	16	5	Sanlaville ed. 1979
Souayate sup.	20	1	3	11	Sanlaville ed. 1979
Squoubine	1	0	0	1	Sanlaville ed. 1979
Orontes valley					
Acharne Plain	20	41	11	117	Copeland & Hours 1993
Arbain II	4	--	--	--	Tomsky 1982
Arzé	1	1	0	8	Copeland & Hours 1993
Ghab 4a	1	0	4	18	Copeland & Hours 1993
Ghab 5	7	2	3	13	Copeland & Hours 1993
Gharmachi 1b	140	38	86	532	Muhsen 1985
Gharmachi Nord	2	0	2	0	Muhsen 1985
Gharmachi Sud	9	4	0	0	Muhsen 1985
Gharmarchi 1a	5	17	19	36	Copeland & Hours 1993
Halfaya	3	0	0	1	Copeland & Hours 1993
Hama 3	5	2	3	4	Copeland & Hours 1993
Hama 6	1	0	0	0	Copeland & Hours 1993
Hama 7a & 7b	1	2	2	0	Copeland & Hours 1993
Hama Süd-Ost	5	--	--	--	Tomsky 1982
Hanifa	3	3	2	3	Copeland & Hours 1993
Jarniya	●	--	--	--	Tomsky 1982
Jinnata	2	0	1	0	Copeland & Hours 1993
Jisr Ash Shungur	3	--	--	--	Tomsky 1982
Jrabiyyat 1	1	1	2	1	Copeland & Hours 1993
Jrabiyyat 2	11	7	1	18	Copeland & Hours 1993
Jrabiyyat 3	25	7	13	21	Copeland & Hours 1993
Jrabiyyat 4	19	12	12	19	Copeland & Hours 1993
Jrabiyyat 6a	48	7	6	16	Copeland & Hours 1993
Jrabiyyat 6b	62	0	1	5	Copeland & Hours 1993
Kazu	●	--	--	--	Tomsky 1982
Khattab 1	2	0	0	0	Copeland & Hours 1993
Khattab 1-x	5	0	0	0	Copeland & Hours 1993
Latamé, living floor	99	54	136	75	Clark 1966
Latamné Quarries	36	56	27	75	Copeland & Hours 1993
Mahardé 1	6	3	1	13	Copeland & Hours 1993
Mahardé 2	1	5	0	1	Copeland & Hours 1993
Mradiye	1	0	0	0	Copeland & Hours 1993
Nahr El Arab A	●	--	--	--	Copeland & Hours 1993
Nahr Es Sarout	1	3	3	6	Copeland & Hours 1993
Qadiib El Ban 1&2	1	2	3	1	Copeland & Hours 1993
Qanateir	1	0	0	0	Copeland & Hours 1993
Rastan	1	24	3	39	Copeland & Hours 1993

Table 1 - Inventory of hand axe sites in Syria: -- no data; ● presence confirmed but no numbers available.

site	hand axes	pebble tools	ret. flakes	cores	source
Saene Et Tinat	3	1	0	3	Copeland & Hours 1993
Tahun Semaan 1	1	0	2	19	Copeland & Hours 1993
Tahun Semaan 2&3	15	3	0	2	Copeland & Hours 1993
Tahun Seman 2	23	12	27	155	Copeland & Hours 1993
Tahun Seman 3	3	3	0	33	Copeland & Hours 1993
Tell Khasselate 2	1	5	0	4	Copeland & Hours 1993
Tulul Defai	28	3	27	377	Copeland & Hours 1993
Wadi Gharmachi	3	0	0	0	Copeland & Hours 1993
Wadi Gharmachi	6	0	0	0	Copeland & Hours 1993
Wadi Krah	1	1	--	--	Copeland & Hours 1993
Zaitiyé 1	1	24	3	1	Copeland & Hours 1993
Zaitiyé 2	5	1	1	9	Copeland & Hours 1993
Zakat 1	1	2	0	--	Copeland & Hours 1993
Zakat 2	12	4	0	29	Copeland & Hours 1993
Damascus-Nebek area					
Ashrafiya	●	--	--	--	Tomsky 1982
Hami (Barada Tal)	6	--	--	--	Tomsky 1982
Ma'aloula - 01	1	--	--	--	Conard & Kandel 2006
Ma'aloula - 02	1	--	--	--	Conard & Kandel 2006
Ma'aloula - 03	1	--	--	--	Conard & Kandel 2006
Ma'aloula - 04	1	--	--	--	Conard & Kandel 2006
Ma'aloula - 05	1	--	--	--	Conard & Kandel 2006
Ma'aloula - 06	1	--	--	--	Conard & Kandel 2006
Ma'aloula - 07	1	--	--	--	Conard & Kandel 2006
Ma'aloula - 08	1	--	--	--	Conard & Kandel 2006
Ma'aloula - 09	1	--	--	--	Conard & Kandel 2006
Ma'aloula - 10	1	--	--	--	Conard & Kandel 2006
Ma'aloula - 11	1	--	--	--	Conard & Kandel 2006
Ma'aloula - 12	1	--	--	--	Conard & Kandel 2006
Ma'aloula - 13	1	--	--	--	Conard & Kandel 2006
Malula	1	--	--	--	Tomsky 1982
Mazza	2	--	--	--	Tomsky 1982
Nebek	600	--	--	--	Tomsky 1982
Qatana, Wadi Jarkas	●	--	--	--	Tomsky 1982
Ras Al Ain, Sail Al Blat	2	--	--	--	Tomsky 1982
Wadi Skifta I	2	--	--	--	Tomsky 1982
Wadi Skifta I	30	--	--	--	Tomsky 1982
Wadi Skifta II	3	--	--	--	Tomsky 1982
Yabrud K'S. 11	3	--	110	--	Rust 1950
Yabrud K'S. 12	22	--	37	--	Rust 1950
Yabrud K'S. 17	5	--	36	--	Rust 1950
Yabrud K'S. 18	8	--	52	--	Rust 1950
Yabrud K'S. 19	1	--	37	--	Rust 1950
Yabrud K'S. 23	3	--	33	--	Muhesen 1981
Yabrud K'S. 24	4	--	108	--	Muhesen 1981
Palmyra					
Jerf Ajla	7	--	--	--	Tomsky 1982
Locality 41	1	--	--	--	Akazawa 1979
Locality 59	1	--	--	--	Akazawa 1979
Locality 60	33	0	--	6	Akazawa 1979
Locality 63	1	--	--	--	Akazawa 1979
El Kowm					
"Faustkeil" (n° 151)	1	--	--	--	El Kowm records
Ain Beni Ali (n° 8)	5	--	--	--	El Kowm records
Dahr El Asfar (n° 6)	5	--	--	--	El Kowm records
Dahr El Asfar-C (n° 61)	5	--	--	--	El Kowm records
El Kowm site 113	1	--	--	--	El Kowm records
El Kowm site 124	3	--	--	--	El Kowm records
El Kowm site 125	2	--	--	--	El Kowm records
El Kowm site 131	1	--	--	--	El Kowm records
FSK-Dorota (n° 158)	1	--	--	--	El Kowm records
Grande Sebkhah (n° 5)	1	--	--	--	El Kowm records
Houpe (n° 123)	8	--	--	--	El Kowm records
Hummal (n° 7)	8	--	--	--	El Kowm records
Juwai Ain Al Zarqa	101	0	31	38	El Kowm records
Mazraat Osman (n° 37)	5	--	--	--	El Kowm records
Meirah	78	0	0	0	Boëda et al. 2004
Nadaouiye est	8	--	--	--	El Kowm records
Nadaouiye ouest	6	--	--	--	El Kowm records
Nadaouiye A	46	4	18	36	Nadaouiye records
Nadaouiye B1	59	27	11	67	Nadaouiye records
Nadaouiye B2	69	22	6	40	Nadaouiye records
Nadaouiye T	70	12	0	13	Nadaouiye records
Nadaouiye C	147	12	17	1	Nadaouiye records
Nadaouiye D (s.l.)	264	0	6	18	Nadaouiye records
Nadaouiye Da	217	0	16	25	Nadaouiye records
Nadaouiye Db	105	0	9	●	Nadaouiye records
Nadaouiye Dc	233	0	19	●	Nadaouiye records
Nadaouiye Dd	191	0	13	●	Nadaouiye records
Nadaouiye E	227	4	24	6	Nadaouiye records
Nadaouiye F	73	0	2	0	Nadaouiye records
Nadaouiye X	14	--	--	--	Nadaouiye records
Point-H (n° 98)	2	--	--	--	El Kowm records
Point-J (n° 99)	1	--	--	--	El Kowm records
Point-M (n° 100)	1	--	--	--	El Kowm records
Qalta 3 (n° 148)	2	--	--	--	El Kowm records
Qdeir Ain Ojbeh	597	3	48	50	El Kowm records
Qdeir Sud	35	--	--	--	El Kowm records
SW-Tell Abiod (n° 138)	4	--	--	--	El Kowm records
Tell Abiad-B (n° 18)	3	--	--	--	El Kowm records
Wadi Aouiej (n° 104)	4	--	--	--	El Kowm records
Wadi El Faidan (n° 32)	5	--	--	--	El Kowm records
Wadi Fatayah (n° 15)	5	--	--	--	El Kowm records
Wadi Qdeir (n° 21)	4	--	--	--	El Kowm records
Wadi Qdeir C (n° 23)	2	--	--	--	Hours 1986
Euphrates valley					
Abu Jeboya	1	0	0	4	Copeland 2004

Table 1 - (continued): Inventory of hand axe sites in Syria: -- no data; ● presence confirmed but no numbers available.

site	hand axes	pebble tools	ret. flakes	cores	source
Abu Kamal	●	--	--	--	Tomsky 1982
Ain Abou Jema	23	6	0	69	Copeland 2004
Ain Jemaa	23	6	--	--	Muhesen 1981
Ain Tabous	16	6	0	43	Copeland 2004
Ain Tabous	14	6	--	--	Muhesen 1981
Aiyasha	●	--	--	--	Tomsky 1982
Chiné West 1	2	0	54	112	Copeland 2004
Chioukh Faouqani II	1	1	0	1	Copeland 2004
Chioukh Faouqani III	6	0	3	9	Muhesen 1985
Chioukh Faouqani IV	2	3	1	22	Copeland 2004
Chnine	4	34	17	--	Malenfant 1976
Dadate V & VII	2	1	2	4	Copeland 2004
Deir N.1 <i>et al</i>	3	0	--	4	Copeland 2004
Der az Zor	●	--	--	--	Tomsky 1982
Dibsi	●	●	--	--	Tomsky 1982
Hajji Ismail A-C	5	0	3	24	Copeland 2004
Hamadin	20	4	--	--	Muhesen 1981
Hamadine	22	2	1	58	Copeland 2004
Hammam Kebir II	21	2	1	22	Copeland 2004
Helouandji I & II	22	5	6	47	Copeland 2004
Helouandjii	4	0	8	22	Copeland 2004
Maadan 1	5	1	--	20	Copeland 2004
Mahsannli III	7	0	4	0	Copeland 2004
Majra Srir II	6	0	5	10	Copeland 2004
Maskina (Meskene)	1	--	--	--	Tomsky 1982
Raqqa	●	--	--	--	Tomsky 1982
Rhanamate I	9	0	0	1	Copeland 2004
Sabouniyeh inf.	3	0	0	1	Copeland 2004
Sahel	1	0	0	1	Copeland 2004
Sebkha	2	2	0	6	Copeland 2004
Tchakmakli 1	3	0	0	2	Copeland 2004
Tellik III	5	0	0	6	Muhesen 1985
Wadi Abou Chahri 5	1	1	0	1	Copeland 2004
Wadi Abu Chahri 1	4	0	1	3	Copeland 2004
Wadi Abu Chahri 2	1	0	0	4	Copeland 2004
Wadi Abu Chahri 3	8	1	9	69	Copeland 2004
Wadi Rmeili I	7	2	2	13	Muhesen 1985
Wadi Rmeili III	10	2	3	14	Muhesen 1985
Khabour & Sajour valleys					
Al-Rasho	1	--	●	●	Nishiaki 1992
Arab Hassan I	13	11	--	--	Muhesen 1981
Dadat 1	1	6	--	--	Muhesen 1981
Kirbet al-Qadir	1	--	●	●	Nishiaki 1992
Majra Kebir 1	2	3	--	--	Muhesen 1981
Majra Seghir 1	19	14	--	--	Muhesen 1981
Qara Yaqoub I	59	2	10	29	Muhesen 1985
Southern Syria					
Dara	9	--	--	--	Tomsky 1982
Golan	●	--	--	--	Tomsky 1982
Tell Shabab	1	--	--	--	Tomsky 1982
Turunja	●	--	--	--	Tomsky 1982

Table 1 - (continued): Inventory of hand axe sites in Syria: -- no data; ● presence confirmed but no numbers available.

a wide distribution throughout Syria from the Mediterranean coast (Nahr el Kebir), along the Orontes river probably also in the Euphrates valley. Beyond their relative age, dating clearly to the Lower Pleistocene, these discoveries remain difficult to characterise, as the census of artefacts in most cases is low and diagnostic objects are rare. Nearly all these materials elude a precise archaeological appreciation. The differentiation between mode 1 and mode 2 as it has been proposed in the past, is difficult to maintain given the low statistical base of most Syrian sites. However, hand axes made in an archaic style are clearly represented at several of these sites (e.g. Cheikh Mohammed, Sitt Markho, Mahardé 2, Fidio II, Nahr El Kebir). Most of the other sites do no more permit than the conclusion of an undisputable early human presence.

Nevertheless these discoveries demonstrate an early and widespread human occupation. Previously proposed age estimations of these sites have to be handled with care, as these were model ages issued with chronological concepts other than those in use today (i.e. the quadrinomial Quaternary). Also their relative contemporaneity is delicate to establish as the correlation of the Quaternary formations is based on geomorphological observations that are difficult to correlate directly from one river system to the next. Nevertheless, these early sites reflect a widespread human presence during the early Pleistocene at least along the major river systems. The data available for most are too sparse to draw a detailed picture. However, they clearly demonstrate the scientific potential for further investigations.

Recent discoveries in the El Kowm area also revealed significant early settlement activities in the central Syrian Desert Steppe (Le Tensorer *et al.* 2011). The stratified sites of Hummal and Ain al Fil produced substantial materials, permitting a better diagnosis of these industries (Wegmüller 2011). Besides the archaic aspect of the lithics, preliminary datings and palaeontological observations confirm their great antiquity which can be estimated to be as old as Ubeidiya. The geographical settings of these two sites, far from ecologically favoured areas, point clearly to a much more widespread human occupation in the Levant during that time and a much more versatile behaviour than was previously thought.

In addition to a core and flake technology the Hummal site produced a very small number of hand axes featuring a quite progressive style of manufacture for such ancient tools. These hand axes are made in a first-grade flint material, contrary to their rather coarse counterparts from Ubeidiya, In fact, the quality of the raw materials is often underestimated, as industries using poor raw materials easily develop an archaic aspect.

The Acheulean

The Levantine Acheulean is clearly divided into two distinct periods. The quality of manufacture of the hand axes clearly separates the older from the younger phase. Basically both focus on the *façonnage* for making their tools. Retouched flakes are rare in either stage. In fact hand axes are the dominant type among shaped artefacts. In their fundamental essence, the older and younger Acheulean are very similar and share the same concepts despite striking differences in the appearance of their hand axes.

Levantine Lower Acheulean

The Levantine Lower Acheulean (formerly the *Acheuléen moyen*) is the first real hand axe tradition in the Bilad Ash Sham. It is readily recognised even in rather small samples by the style of manufacture of hand axes and their respectable size. Hand axes and associated tools are abundant. An African influence is present in the numerous typical cleavers on huge flakes made of basalt in Gesher Benot Yaakov (alias Gisir Banat Yaqub). Farther north this feature completely disappears from the archaeological evidence. Either this is a chronological phenomenon or due to the available raw materials. In the northern sites hand axes are made exclusively of flint nodules preventing the production of large flakes suitable for making cleavers.

The Levantine Lower Acheulean is quite consistent in its style of manufacturing hand axes all over its distribution area, reaching from Israel into Turkey and from the coast deep into the desert steppes of the interior. From Syria quite a number of sites are known from that period. The characteristic traits of Lower Acheulean hand axes in the past have been overestimated and the status of a number of supposedly Levantine Lower Acheulean sites has to be revised before confirmation.

By their excellent diagnostics Lower Acheulean hand axes can be ascertained even when present in quite small numbers. Against the requirements postulated above, Lower Acheulean sites can be identified with certainty with as few as a dozen hand axes. On that basis, seven sites can be certainly attributed to the Levantine Lower Acheulean (e.g. Latamne [Clark 1966; Copeland *et al.* 1993], Meirah [Boëda *et al.* 2004], Jabal Jibtaa [Copeland & Hours 1979:62], Berzine [Copeland & Hours 1979:65], Khéllalé 4 [Copeland & Hours 1979, 1993] Nad-X [Jagher 2004], with a number of candidates needing further confirmation.

Compared with the subsequent Levantine Upper Acheulean the earlier phase remains poorly known. So far only two sites of the Levantine Lower Acheulean, Latamne and Mheira (El Kowm area), have been excavated in Syria (Moddermann 1964; Clark 1966; Boëda *et al.* 2004).

The concept of regional differentiations proposed for the Levantine Lower Palaeolithic arose from an overestimation of sites with a limited number of artefacts. Wide variations are an inherent phenomenon among small samples and are a natural statistical effect. Human perception values differences more than common traits, a biological constant of our species, to which also scientists are subject. Therefore, traditional concepts based on small numerical evidence have to be considered with care. This goes particularly for the idea of a Lower Acheulean lacking hand axes, which was suggested on the basis of very small collections retrieved in situ from middle Pleistocene fluvial deposits of the Orontes and Euphrates. With less than 52 artefacts retrieved per site, as it is the case for all these claims, a definite statement is difficult.

Levantine Upper Acheulean

The Levantine Upper Acheulean presents a sharp break with the Levantine Lower Acheulean in the manufacture of its hand

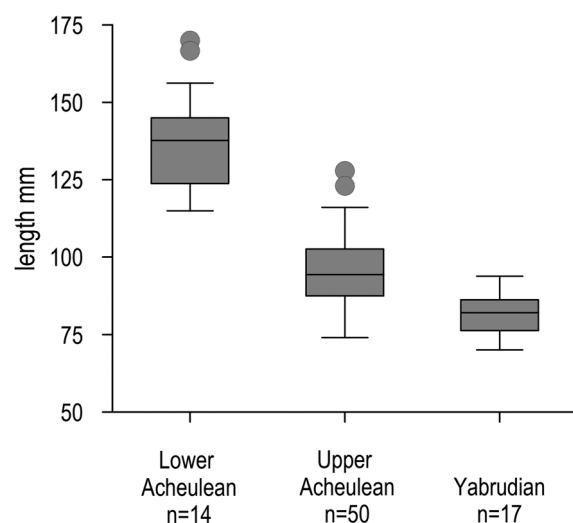


Figure 3 - Variation of mean length of hand axes. Only sites with at least 20 measurements are considered.

axes, which become smaller and much more elaborate. Albeit sizes clearly diminish (fig. 3) and volumes shrink in favour of thin sections, the concept of core tools, including not only classical hand axes but also lesser forms such as *pièces bifaciales Façonnage* is the central theme in these materials, with only an intermittent and unsystematic flake production. Consequently, flake tools are rare. It is striking that in many sites denticulates and notches are the most common flake tools. A personal reassessment of some of these materials showed the presence of natural edge damage to a certain degree. Hence, the published data reflects an overestimation of human activity over natural phenomena.

The same goes for the claims of complex flake technologies (i.e., Levallois). A short reappraisal of the so-called Defaïan sites, known for the apparent coexistence of hand axes and Levallois débitage, clearly revealed a palimpsest situation. The theory of an evolution from hand axe technologies to Levallois débitage cannot be supported with the Syrian evidence. The presence of possible Levallois flakes in Acheulean contexts is rather to be seen in the manufacturing waste of hand axes than in a proper production (Copeland 1995). Until the emergence of the Levallois concept in the Levant as a stable production scheme can be established, one has to wait for the end of the Yabrudian period. Consequently Acheulean hand axes can hardly be a stimulus in the invention of that specific technique. Albeit the surface of a Levallois core and the face of a hand axe present some morphological affinities, the maintenance and exploitation of the volume is submitted to completely different constraints, the most prominent being that hand axes are bifacial tools. Levallois-like flakes in an Acheulean context are a morphological congruence suggesting inheritance where there is none.

Compared with the Lower Acheulean, the subsequent period shows an astonishing proliferation of sites almost by a factor of eight, based on the same scale as for the Lower Acheulean (i.e. a minimal number of a dozen hand axes). With such a rich legacy, stylistic variation becomes clearly discernible among sites of the Upper Acheulean. In an earlier attempt this observation was structured along a typo-chronological conception including

regional divisions, especially in the final stages. Diversification within the late Acheulean is not only present in Syria, but is an inherent trait of the whole Levantine Upper Acheulean. A key site for understanding the noticed variability is Nadaouiyeh Aïn Askar, with seven distinct facies of the Upper Acheulean (Jagher 2011). Changes occurred swiftly in many cases within a surprisingly short period. These mutations concern a multitude of aspects such as the style of manufacture or formal standardisation of hand axes, the repertoire of shapes, the sense of symmetry or the neglect of any of standardisation and the importance of small bifacial tools. All these elements appear and vanish at random along the time axis and defy any logical succession. This could be the key to why previous attempts at a chrono-typological structuring of the Levantine Upper Acheulean have failed. By its nature, the Nadaouiyeh stratigraphy is incomplete, with substantial hiatuses leaving room for imagination. In fact the neighbouring sites of Qdeir Aïn Ojbeh and Juwal Aïn Zarqa elude a clear classification according to the Nadaouiyeh scheme, despite a good geo-chronological control among the three sites and rich assemblages of the former two.

Other Syrian sites of the Upper Acheulean, such as Muqaa El Hami, Qara Yaqub, Jrabiati 6a & 6b, Roudo and Ard Hamed, which withstand a clear attribution to the Nadouiyeh scheme. However, the discoveries of Gharmachi Ib feature a strong affinity with the facies Nadaouiyeh-B (Nad-B). Beyond the Syrian context, the Nadaouiyeh observations are recognisable in Um Qatafa on the West Bank (Neuville 1931, 1951), presenting a close homology between layer E1 to Nad-E, D2 to Nad-D and Da to Nad-B. In Azraq (Jordan), particularly at Aïn Soda, a very similar industry to the facies Nad-D was discovered (Rollefson *et al.* 1997). Both sites share a strong presence of specific cleaver-like hand axes (Azraq cleavers), made with a uni- or bifacial single or multiple tranchet blow on ovate hand axes with a clearly offset base from sub-parallel or slightly convergent sides. Both sites share a keen sense for a refined style in execution and a comparable spectrum of shapes of hand axes. Tranchet-blow cleavers should not be confused with the true (African) cleavers, as they are derived by a secondary modification from true hand axes (Jagher 2011). Comparable tools are rare in the other Levantine Upper Acheulean but are occasionally reported in younger periods (Matskevich 2006).

Despite the heterogeneity of the Levantine Upper Acheulean, these observations show a well established cultural versatility in a time when cultural development was thought to be sluggish and little inspired. In fact the Levantine Upper Acheulean, despite its fixation on the *façonnage* technique and strong preference of hand axes, was a most dynamic culture with a strong evolutionary momentum. The hand axe was indeed a leitmotif, but not the only aspect of that culture with a surprising contrast of tradition and innovation.

The Post-Acheulean – the end of the hand axe era in the Levant

The question of the end of the lower Palaeolithic is somewhat controversial: the issue is whether the Yabrudian is Lower or Middle Palaeolithic. If we consider only the hand axes, there is a certain "Acheulean" element present to some extent. From a

qualitative approach there is no question about that. However, the proportion of hand axes is by far smaller than in the Upper Acheulean. The concept of *façonnage* definitely has a different condition if the quantitative aspect is considered. In fact, the Yabrudian clearly prefers the *débitage* approach to produce the supports for its tools, whereas the *façonnage* is merely an accessory phenomenon clearly of lesser importance than in previous periods.

The change between the Levantine Upper Acheulean and the Yabrudian is profound. Why the Upper Acheulean disappeared after a successful and long lasting proliferation in all regions of the Levant is unclear. Climatic change is probably not the only culprit (in fact there is a marked rise of global temperatures between 340 and 330 ka, at the limit of MIS 10 and 9). However, the Upper Acheulean went through several and severe climate changes during its existence without much effect. Whether the Acheulean just faded away, giving way to new settlers, or if an inherent momentum triggered this change or was an influence from neighbouring populations, is open to debate.

In any case the Yabrudian features few if any common traits with the Upper Acheulean. Hand axes, much less popular than before, are the only potential link. However, they differ in size from the earlier ones and show different forms that are rare or unfamiliar in preceding cultures (fig. 4). The concepts of an "Acheulo-Yabrudian" emanated from the Yabrud excavations, where levels with higher and lower percentages of hand axes are interstratified (Rust 1950; Bordes 1955). Conspicuously layers with the prefix "Acheulo" are the ones that produced only small quantities of artefacts, hence an assessment on a weak statistical base. In fact such short inventories are difficult to estimate, as their composition is rather fortuitous and barely reflects the intentions of their makers. Ultimately the Yabrudian is a less "Acheulean" entity than one may think, it is not the exceptions that make the definitions, but it is the mainstream that counts. In this case it is the abandonment of *façonnage* as the central theme in favour of *débitage* and retouched flakes.

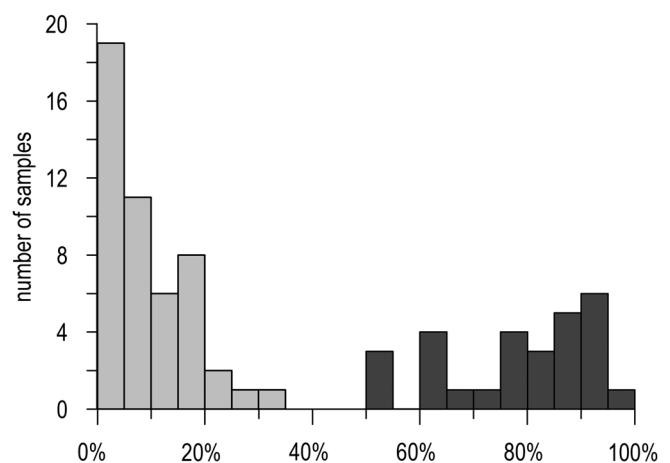


Figure 4 - Proportion of hand axes in relation to retouched flakes, dark grey: Acheulean sites (n=28), light grey: post-Acheulean sites (n=48). Only sites with more than 100 pieces are considered.

The question of the "Tayacian"

While dealing with the Lower Palaeolithic in the Levant inevitable one comes across the "Tayacian". The term "Tayacian" was first introduced into the Levant by Dorothy Garrod during her Tabun excavations (Garrod & Bate 1937). Since its initial definition in the early 1930s (Breuil 1932), its assessment has proved difficult. With the years the "Tayacian" became a kind of receptacle of the same kind as has been outlined in this paper for the Acheulean (see chapter *A short digression on the Label "Acheulean"*), for classifying poorly defined lithic collections devoid of (or poor in) characteristic artefacts combined with a generic débitage. The lack of apparent character is the connective peculiarity of these materials. But is that enough to establish a stringent cultural link between respective sites?

Considering the chronological situation of reportedly "Tayacian" sites in the Levant, the situation remains blurred. At Um Qatafa the "Tayacian" predates a Levantine Upper Acheulean. Recent investigations of the lower part of the Tabun stratigraphy challenge the label "Acheulean" for unit XIV or layer F. In fact the materials from these levels barely differ from those of the Yabrudian (Ronen *et al.* 2011). In any case the Tabun Acheulean is not in accordance with our definitions of the Levantine Upper Acheulean, hence the position of the "Tayacian" has to be reviewed. In Bezez cave the situation is comparable to Tabun with the "Tayacian" predating the Yabrudian. For the Shemsian in Jabrud IV chronological evidence is absent. For the coastal sites of Ras Beirut only geomorphological observations are available, impossible to integrate in an archaeological chronology.

This sobering review clearly demonstrates the disparate situation. In such a case the term "Tayacian" has merely a descriptive value for poorly defined inventories. It is difficult to maintain an independent cultural entity on the base of such inconsistent data.

Conclusions

The Lower Palaeolithic indisputably has a very long and prestigious human history in the Levant. For Syria we are just beginning to get a glimpse of these periods through the ongoing excavations and studies in Hummal and Aïn al Fil, both in the geographic heartlands of the country. The Levantine Lower Acheulean, whose beginnings can be placed around one million years BP, shows in some areas of the Levant a clear African influence (Gesher Benot Yaacov) that is lacking farther north (e.g. Joubb Jenine and Latamne). Geographically the sites of the Levantine Lower Acheulean cover a wide range in Syria, encompassing a large range of biotopes, reflecting the high degree of adaptability of these early hunters and gatherers. It seems probable that the arrival of the Levantine Lower Acheulean reflects a new wave of human immigration into the Eastern Mediterranean region. In any case its lithic culture was clearly different from its contemporaries in Europe. This separation continues all along the subsequent Levantine Upper Acheulean. The change between the Lower and Upper Levantine Acheulean perhaps 600 ka ago is substantial, however, it may be a local

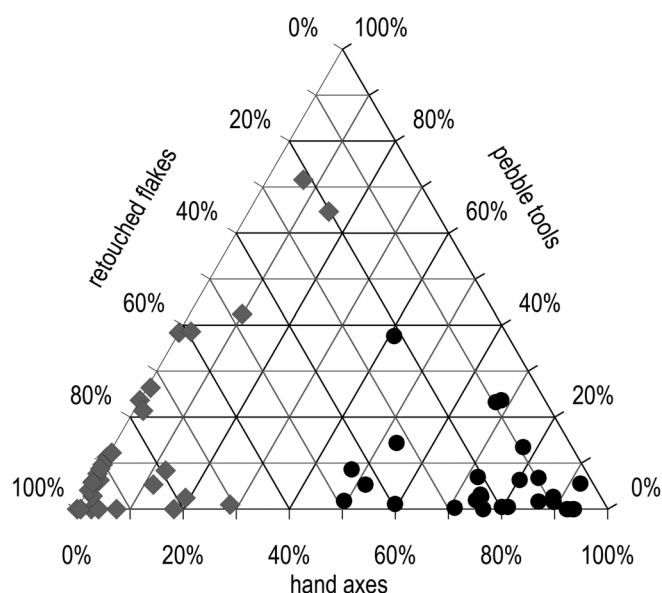


Figure 5 - Comparison of tool sets during MIS 13-11 (i.e. ~530-375 ka) in the Levant (black dots) and Europe (grey diamonds). Only sites with more than 100 tools are respected.

evolution from the regional cultural substratum of the Lower Acheulean. A direct African input is not detectable. To what extent the Levantine Upper Acheulean radiated into the Taurus and Caucasian Mountains, or extended to the south, goes beyond the scope of this paper. Especially the Levantine Upper Acheulean, with its consistently high percentage of hand axes (fig. 5), perfectly matches the stereotype of the Acheulean, being really rich in hand axes, a cliché that scarcely fits European discoveries where hand axe proportions are consistently lower than in the Levant (Jagher 2011). Surprisingly for such a remote period, the Levantine Upper Acheulean culture is extremely versatile, producing a considerable number of distinct chronological facies with a strong persisting cultural identity in the background. The observed changes could happen in quite a short time as data from Nadaouiyeh Aïn Askar suggest. The Levantine Upper Acheulean province is the oldest original cultural entity on the shores of the Eastern Mediterranean. There are no indications of a new human immigration at the beginnings of the Levantine Upper Acheulean that may have evolved locally from the Levantine Lower Acheulean. The end of the Acheulean seems to have come quite fast, for whatever reasons. The subsequent "Yabrudian-Mugharan group" is a clear rupture with the long lasting lithic concepts of the Acheulean. If it was an inherent dynamic, or influence from abroad, or the immigration of new human groups, or if environmental factors played a role, is a matter for debate. In any case, in that time there occurred several profound changes in lithic traditions as débitage replaces façonnage and new technologies with blade production appear (Amudian and Pre-Aurignacian). It is challenging to explain the apparent coexistence of such different traditions within such a small geographic region. Surprisingly in that period the obvious difference between Europe and the Levant disappeared to a large extent. Any mutual exchange remains to be established yet, despite some congruent development (i.e. the Yabrudian-Quina question).

References

- Akazawa T. (1979) - Flint Factory Sites in Palmyra Basin. *The Tokio University Museum, The University of Tokio* 16:159-200.
- Asfaw B., Beyene Y., Suwa G., Walter R. C., White T. D., Wolde Gabriel G., Yemane T. (1992) - The earliest Acheulean from Konso-Gardula. *Nature* 360:732-735.
- Bar-Yosef O. & Goren-Inbar N. (1993) - The Lithic Assemblages of 'Ubeidiya: A Lower Palaeolithic Site in the Jordan Valley. *QEDEM* 34:1-266.
- Bar-Yosef O & Belmaker M (2010) - Early and Middle Pleistocene Faunal and hominins dispersals through Southwestern Asia. *Quaternary Science Reviews* doi:10.1016/j.quascirev.2010.02.016
- Belmaker M. (2006) - *Community Structure through Time: 'Ubeidiya, a Lower Pleistocene Site as a Case Study*. PhD thesis, Hebrew University, 284 p.
- Besançon J. & Sanlaville P. (1993) - La vallée de l'Oronte entre Rastane et Aacharné. In: P. Sanlaville, J. Besançon, L. Copeland, L., S. Muhesen (eds.), *Le Paléolithique de la vallée moyenne de l'Oronte (Syrie)*, BAR International Series 587:13-39.
- Besançon J., Copeland L., Hours F., Muhesen S., Sanlaville P. (1981) Le Paléolithique d'El Kowm. Rapport préliminaire. *Paléorient* 7(1):33-55.
- Besançon J., Copeland L., Muhesen S., Sanlaville P. (1994) - Prospection géomorphologique et préhistorique dans la région de Tartous. *Paléorient* 20(1):5-19.
- Boëda E., Courty M.-A., Fedoroff N., Griggo C., Hedley I. G., Muhesen, S. (2004) - Le site Acheuléen d'El Meirah, Syrie. In: O. Aurenche, M. Le Mière, P. Sanlaville (eds.), *From the River to the Sea. The Palaeolithic and the Neolithic of the Euphrates and the Northern Levant Studies in honour of Lorraine Copeland*. BAR International Series 1263:165-201.
- Bordes F. (1955) - Le Paléolithique inférieur et moyen de Jabrud (Syrie) et la question du Pré-Aurignacien. *L'Anthropologie* 59:486-507.
- Breuil H. (1932) - Les industries à éclats du Paléolithique ancien, le Clactonien. *Préhistoire* 1(2):125-190.
- Burkhalter L. (1933) - Note sur les stations préhistoriques de Gouvernement de Lattaquié. *Bulletin de la Société Préhistoriques Française* 30:582-587.
- Clark D. (1966) - The Middle Acheulian Occupation Site at Latamne Northern Syria. *Annales Archéologiques Arabes Syriennes* 16(2):31-120.
- Conard N., Kandel A.W., Masri M. (2006) - Results of the 2005 TDASP Survey in the Damascus Province, Syria. In: N. Conard (ed.), *Tübingen-Damascus Excavation and Survey Project*, Tübingen, Kerns-Verlag, p. 311-324.
- Copeland L. (1995) - Are Levallois Flakes in the Levantine Acheulean the Result of Bifaces Preparation). In: H. Dibble & O. Bar-Yosef, *The Definition and Interpretation of Levallois Technology*. Wisconsin, Madison p. 171-210.
- Copeland L. (2004) - The Palaeolithic of the Euphrates Valley in Syria. In: O. Aurenche, M. Le Mière, P. Sanlaville (eds.), *From the River to the Sea. The Palaeolithic and the Neolithic of the Euphrates and the Northern Levant Studies in honour of Lorraine Copeland*. BAR International Series 1263:19-114.
- Copeland L. & Hours F. (1979) - Le Paléolithique du Nahr el Kébir. In: P. Sanlaville (ed.), *Quaternaire et Préhistoire du Nahr El Kébir septentrional*. Collection de la Maison de l'Orient méditerranéen 9:31-119.
- Copeland L. & Hours F. (1993) - The Middle Orontes Paleolithic Flint Industries. In: P. Sanlaville, J. Besançon L. Copeland., S. Muhesen (eds.), *Le Paléolithique de la vallée moyenne de l'Oronte (Syrie)*. BAR International Series 587:63-144.
- Garrod D. A. E. & Bate M. A. (1937) - *Excavations at the Wadi El-Mugbara. The Stone Age of Mount Carmel. Vol. 1*. Oxford, Clarendon Press.
- Gopher A., Ayalon A., Bar-Mathews M. Barkai R., Frumkin A. Karkanas A. Shahack-Gross R. (2010) - The Chronology of the late Lower Palaeolithic in the Levant. *Quaternary Geochronology* 5(6):644-656.
- Goren-Inbar N., Feibel C. S., Verosub K. L., Melamed Y., Kislev M. E., Tchernov, E. (2000) - Pleistocene Milestone on the Out-of-Africa Corridor at Gesher Benot Ya'akov, Israel. *Nature* 289:944-947.
- Hours F. (1986) - *La période de l'Homo habilis et de l'Homo erectus en Asie Occidentale*. Unpublished typescript, 33p.
- Isaac G. L., Isaac B. (1997) - *Koobi Fora Research Project. Vol. 5. Plio-Pleistocene Archaeology*. Oxford, Clarendon Press.
- Jagher R. (2000) - *Nadaouiyeh Ain Askar, Entwicklung der Faustkeiltraditionen und der Stratigraphie an einer Quelle in der syrischen Wüstensteppe*. PhD-Dissertation, Basel, Universität Basel.
- Jagher R. (2005) - Nadaouiyeh Ain Askar, Rechenschafts-bericht 2004-2005. *Travaux de la Mission Syro-Suisse d'El Kowm* 10:27-41.
- Jagher R. (2011) - Nadaouiyeh Ain Askar - Acheulean variability in the Central Syrian Desert. In: J.-M. Le Tensorer, R. Jagher, M. Otte, M. (eds.), *The Lower and Middle Palaeolithic in the Middle East and Neighbouring Regions*. Liège, ERAUL 126:209-224.
- Jagher R., Le Tensorer J.-M. Morel P., Muhesen S., Renault-Miskovsky J., Rentzel P., Schmid P. (1997) - Découvertes de restes humains dans les niveaux acheuléens de Nadaouiyeh Ain Askar (El Kowm, Syrie Centrale). *Paléorient* 23(1):87-93.
- Le Tensorer J.-M. (2009) - Le Paléolithique ancien de Syrie et l'importance du Golan comme voie de passage lors de l'expansion des premiers hommes hors d'Afrique. In: A. Abdel Rahman (ed.), *The International Colloquium - History and Antiquities of Al-Golan*. Damascus, Ministry of Culture, p. 37-56.
- Le Tensorer J.-M., Muhesen S., Jagher R., Morel P., Renault-Miskovsky J., Schmid P. (1997) - *Les premiers hommes du désert syrien - fouilles syro-suisse à Nadaouiyeh Ain Askar*. Paris, Editions du Muséum d'Histoire Naturelle.
- Le Tensorer J.-M., von Falkenstein V., Le Tensorer H., Muhesen, S. (2011) - Hummal: a very long Paleolithic sequence in the steppe of central Syria – considerations on Lower Paleolithic and the beginning of Middle Paleolithic. In: J.-M. Le Tensorer, R. Jagher, M. Otte, M. (eds.), *The Lower and Middle Palaeolithic in the Middle East and Neighbouring Regions*. Liège, ERAUL 126:235-248.
- Liere W.J. van (1961) - Observations on the Quaternary of Syria. *Breichten van het Rijksdienst voor het Oudheidkundig Bodemonderzoek* 10-11:7-69.
- De Lumley H. & Beyene Y. (2004) - *Les sites préhistoriques de la région de Fejej, Sud-Omo, Ethiopie, dans leur contexte stratigraphique et paléontologique*. Paris: Editions Recherches sur les Civilisations, 2004.
- Malenfant M. (1976) - L'industrie Acheuléenne de Chnine (Djézireh), République Arabe Syrienne. *Annales d'Archéologie Arabe Syrienne* 26:145-159.
- Matskevich Z. (2006) - Cleavers in the Levantine Late Acheulian: the case of Tabun Cave. In: N. Goren-Inbar & G. Shaon, *Axis Age - Acheulian Tool-making from Quarry to discard*. London & Oakville, Equinox. p. 335-346.

- Mercier N. & Valladas H. (2003) - Reassessment of TL age estimates of burnt flints from the Palaeolithic site of Tabun Cave, Israel. *Journal of Human Evolution* 45:401-409.
- Modderman P.J.R. (1964) - On a Survey of Palaeolithic Sites near Hama. *Annales Archéologiques Arabes Syriennes* 14:52-66.
- Morgan J. de, (1927) - *La Préhistoire orientale. vol. 1-3*. Paris, Geuthner.
- De Mortillet G. (1883) - Le Préhistorique, l'antiquité de l'homme. *Bibliothèque des Sciences Contemporaines* 8.
- Muhsen S. (1981) - The Upper Acheulian in Syria. In: CNRS (ed.), *La Préhistoire du Levant*. Paris, CNRS, p. 187-191.
- Muhsen S. (1985) - *L'Acheuléen Récent Evolué en Syrie*. BAR International Series 248:1-261.
- Neuville R. (1931) - L'Acheuléen supérieur de la grotte d'Oumm-Qatafa (Palestine). *L'Anthropologie* 41:13-51 & 249-263.
- Neuville R. (1951) - Le Paléolithique du Désert de Judée. *Archives de l'Institut de Paléontologie Humaine Mémoire* 24:16-184.
- Nishiaki Y. (1992) - Preliminary results of the Prehistoric Survey in the Khabur Basin, Syria: 1990-1991 Seasons. *Paléorient* 18(1):97-102.
- Penk A. & Brückner E. (1909) - *Die Alpen im Eiszeitalter*. Leipzig, Chr. Herm. Tauchnitz.
- Ronen A., Gisis I., Tchernikov I. (2011) - The Mugharan Tradition Reconsidered. In: Le Tensorer, J.-M., Jagher, R., Otte, M. (eds.), In: J.-M. Le Tensorer, R. Jagher, M. Otte, M. (eds.) *The Lower and Middle Palaeolithic in the Middle East and Neighbouring Regions*. Liège, ERAUL 126:59-66.
- Rollefson G.O., Schnurrenberger D., Quintero L.A., Watson R.P., Low R. (1997) - 'Ain Soda and 'Ain Qasiya: New Late Pleistocene and Early Holocene Sites in the Azraq Shishan Area, Eastern Jordan. *Studies in Early Near Eastern Production, Subsistence and Environment* 4:45-58.
- Rust A. (1950) - *Die Höhlenfunde von Jabrud (Syrien)*. Neumünster, Karl Wachholtz Verlag.
- Sanlaville P. (1979) - *Quaternaire et Préhistoire du Nabr El Kébir septentrional*. Collection de la Maison de l'Orient Méditerranéen 9. (Série Géographique et Préhistorique N° 1).
- Tomsky J. (1982) - Das Altpaläolithikum im Vorderen Orient. *Beibefte zum Tübinger Atlas des vorderen Orients, Reihe B*, 18:1-563.
- Villa P. (1983) - *Terra Amata and the Middle Pleistocene Archaeological Record of Southern France*. University of California Publications in Anthropology 13.
- Wegmüller, F. (2011) The Lower Palaeolithic assemblage of Hummal. In: J.-M. Le Tensorer, R. Jagher & M. Otte, M. (eds.), *The Lower and Middle Palaeolithic in the Middle East and Neighbouring Regions*. Liège, ERAUL 126:271-278.