ARCHAEOLOGY AND THE HOMO SAPIENS SAPIENS PROBLEM IN NORTHERN AFRICA

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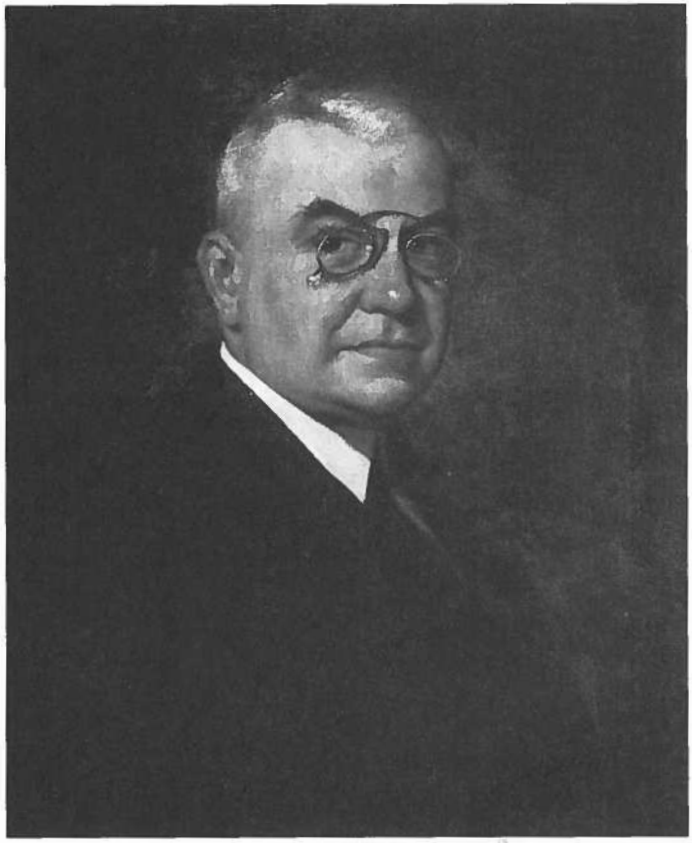

GERRIT HEINRICH KROON
(1868–1945)

EX AFRICA SEMPER ALIQUID NOVUM, but EX ORIENTE LUX. I am aware that I am not the first prehistorian to use these well worn quotations, but they have in fact a clear relevance to what I shall be offering today in the distinguished series of lectures founded in memory of the late Dr. Kroon. Africa has indeed provided us with much that is spectacularly original in the field of human prehistory over the past ten years. In my discussion of North Africa in the Pleistocene I hope to show that the key to some of the problems raised may well be looked for in Asia to the north east. Over the past fifteen years, and the past five years in particular, these areas have been the scene of much active research which is still in progress. As a result some of the suggestions I am about to make may well appear in a different light in the future. I think nevertheless that among the newly acquired facts are some of such intrinsic interest and validity that they already warrant an attempt to combine them into a preliminary synthesis.

The particular problem around which much of my discussion will revolve concerns the emergence and establishment of what human palaeontologists now usually refer to as Homo sapiens sapiens. This is the final feature as we know it of the long perspective of human evolution throughout the Pleistocene, or perhaps more properly human evolution as we can see it today since of course further evolution may well take place in the future, who are we to say? There is however much to suggest that the replacement by H. sapiens sapiens of his immediate predecessor H. sapiens. Neanderthalenses is a crucial turning point in human evolution. For throughout the northern hemisphere from Siberia to the Atlantic this biological event is closely linked to a number of highly significant innovations in human behaviour, of which the archaeological record can tell us much. It is indeed at or almost immediately following the biological change that we get for instance the first valid indications of representational art. Again in many areas there is significant evidence of a surge in human population, and finally we have the

emergence in the material culture of the Upper Palaeolithic lithic equipment essentially comparable to that of modern hunters which replaces the much simpler, less specialised and less standardised equipment of the preceding Middle Palaeolithic. A particular evidential value indeed applies in this connection to the stone artifacts of the Middle and Upper Palaeolithic respectively, since their virtual indestructibility and enormously widespread occurrence enable us to test directly their correlation to the two contrasted human types demonstrated by the much rarer human fossils. This correlation is indeed such that although a few extremely rare and debatable exceptions have been claimed from time to time, in the main we can use the industrial debris with considerable confidence as a first indication of the geographical and stratigraphical distribution of the two human strains at any one time. It is of course the development of radiocarbon dating to which you in Holland have made such a notable distribution, that enables us enormously to expand the usefulness of the cultural data in question.

A study of the emergence of the Upper Palaeolithic and above all its relative dating in different areas of the world is then of very real relevance to the whole problem of the development and spread of Modern man as we know him.

In what follows however it is not my intention to attempt a world wide review of this vast problem fascinating though that would be, but rather by concentrating on the evidence from a particular territory and surrounding regions to throw light on certain historical and conceptual aspects of the problem which may serve as a starting point to a new approach in other areas also.

In concluding my introduction a few leading points need to be made on the present position regarding the antithesis between the human types at issue eg. Neanderthal and sapiens sapiens.

Originally, when the two were first defined as structurally independent forms, a sharp distinction was drawn between them

especially in Western Europe. Of late years however much emphasis has been laid on apparently intermediate forms especially those from the Middle East and Levant, although no such intermediaries have yet been demonstrated in Europe, at any rate during the Last or Würmian Ice Age. As it happens a particularly demonstrative contribution to this very subject has just appeared and I would like to draw attention to it. The author is C. B. Stringer (1974), human palaeontologist at the British Museum Natural History. What Stringer has done in effect is to remeasure the original specimens from many different parts of the world and analyse the data so generated on a multi-variate computerised programme using Mahalanobis D^2 function. The result is certainly the most advanced clustering display obtained so far, and the resulting patterning is substantially different to the view which has been widely accepted in the last few years.

To date Stringer has published some fourteen separate experiments of this kind using up to 25 variables to relate a total of 24 specimens and groups of specimens. For the sake of illustration I have excerpted two of his experiments and display them here simultaneously in diagrammatic form – Figs 1 and 2 to show something of the impact of his advanced analysis on our particular problem that is to say the nature of the contrast between the holotype at Neanderthal and an extremely differentiated modern population of Eskimos. The question is in effect this, do the two populations intermingle in a single effectively unbroken 'swarm' or do they give evidence of discrete clustering? On the face of it the latter would seem to be clearly indicated and hence to bring an important new element to the present discussion. Pursuing this point, as far as Europe is concerned at least the two strains would seem to be significantly distinct, and the import of the industrial correlation Homo sapiens sapiens/Upper Palaeolithic versus Neanderthal/Middle Palaeolithic is thus notably reinforced. With this consideration in mind we may now turn to the detailed discussion of the North African situation.

Perhaps I may begin with a brief mention of my own work and its geographical setting.

It is some 35 years since I first set foot in the desert regions west of Egypt and saw the green hills of Cyrenaica, the Green Mountain or Gebel el Akhdar as the Arabs call it. They call it so for good reason since it is in effect a giant oasis on the long stretch of desolate steppe that separates the Nile Delta from the Atlas massif or Geziret el Maghreb. To the south lies the much greater wastes of the Sahara proper, broken only here and there by a few parched ranges of hills and widely spaced oases. A single narrow 'isthmus' – the Nile Valley – links the Mediterranean, so much a part of the Holarctic zone of the geographers, to the primordial vastnesses of Central and Southern Africa, most probably the original home of Man himself some 2½ million years ago.

Westwards it is true, from time to time, the great barrier of the Sahara was occasionally breached under exceptional conditions in the world's climatic history, permitting a few northern species to penetrate south, and conversely those of the south (including man) to reach the northern refuge that was the Maghreb. But modern research teaches us that such incidents were the exception rather than the rule, and tenuous though it is the Nile is indeed the only permanent line of communication between the two.

East and West however along the northern coast of Africa, although communication under natural conditions would be by no means easy at the present time, we shall see that intercourse by men and animals did in fact take place at not a few times in the prehistoric record, and complete interruption was here of much greater rarity than in the interior to the south.

The following is a brief outline of the history of research throughout the area just described during the latter part of the Upper Pleistocene. It will be convenient to deal with the different regions passing from west to east – Fig. 3. Among the pioneers in this region before the first World War one may begin

with Jacques de Morgan responsible for the discovery and naming of the first industrial variant comparable to the Upper Palaeolithic to be recognised in the Maghreb. Certainly preceramic in technology and containing all the main characters of the European Upper Paleolithic it was regarded at first as the probable contemporary or even progenitor of the latter, until R. Vaufrey pointed out the content of small geometric microliths more consonant with an early Holocene date. A lively debate ensued which continued right up to the publication of the recently published and extensive series of C14 datings which have now settled the question in favour of Vaufrey's view. We can now see that the two variants formerly regarded as successive 'Typical' and 'Upper' – are merely regional and the Upper is if anything the earlier of the two. The whole complex begins no earlier than 8,000 B.C.

At about the same time P. Pallary described a second industrial variant of more or less Upper Palaeolithic appearance but clearly differing from the first in a number of respects, which he named Iberomaurusian. For a long time the relative age of these two remained uncertain even after being found in stratigraphic superposition, but the question has now been convincingly solved by ample 14C readings which prove that the Iberomaurusian is indeed the immediate predecessor but starts at least by 15,000 B.C. and perhaps earlier still. The Iberomaurusian also occupies a much wider area than the Capsian extending from Morocco to the eastern extremity of the Maghreb at least. Abundant remains of a somewhat distinctive variant of Homo sapiens sapiens have been repeatedly found in association with it.

The third variant of Upper Pleistocene age to be established in the Maghreb was a somewhat idiosyncratic variant of Mousterian termed the 'Aterian' by its discoverer M. Reygasse in 1920. Distinguished from the Mousterian by the presence of a number of additional techniques and tool forms it nonetheless clearly belongs in a morphological and technological sense in the same group of industries. To complete the picture the Ate-

rian has now been found in association with human fossils at least as divergent from Homo sapiens sapiens as the European Neanderthaloids and sharing the bulk or their anatomical peculiarities – at Mugharet El 'Aliya for instance near Tangier. Little if any trace of typical Mousterian in the European sense has so far been demonstrated in the Maghreb, although earlier forms of Middle Palaeolithic technological devices can be recognised in the later Acheulian of Morocco.

Passing eastwards from the borders of Tunisia, little is yet known of the human cultures of the Upper Pleistocene for over 1000 kms, until we reach the hills of Cyrenaica (although bare traces of Aterian, possible Mousterian, and undiagnosed blade industries possibly related to the Capsian have been noted at one or two points).

The Gebel el Akhdar itself forms then as I have already said, a somewhat specialised and isolated ecological territory, with substantially higher rainfall (and consequently vegetation density) over an area some 300 by 50 kms. It was here in 1941 that C. T. Petrocchi made known the first palaeolithic site at Hagfet et Tera near Benghazi which was subsequently shown to relate closely to the Iberomaurusian complex of the Maghreb. In 1947 we ourselves identified an entirely new industrial variant at Hagfet ed Dabba, and finally in 1951 obtained the first, and to date the only unbroken palaeolithic sequence for the whole of Northern Africa, at the Haua Fteah. This site was worked for three seasons and finally published in detail in 1967. Since this site will form the starting point of much of what I have to say, I will return later to a detailed outline of results and conclude this brief introduction by referring to the latest episode in the history of North African researches, namely the ongoing campaign in Egypt and Nubia. This was initiated by the rescue operations in connection with the new Aswan Dam in 1961. In 1965 the first publication became available and in 1967 the definitive report on the original campaign. Subsequently however supplementary investigations as far north as the Fayoum Basin and far out into

the Western Desert have continued to amplify the original findings and modify some of the first hypotheses. A major contribution of this nature appeared in 1975 together with new discoveries of comparable material from the Levant (Wendorf 1975).

Such is the background of current and past research against which we may now review the original results at the Haua Fteah in Cyrenaïca and attempt a more general synthesis. The deposits at the Haua Fteah as far as they have been investigated reach a depth of some 13 ms. Sedimentation has continued up to the present time so the following absolute figures can be interpolated starting at the present and working back:

B.C. *Age/to:*	
300	Recent to Helenistic (dated by archaeology)
5,000	Historic (pharaonic) to base of Neolithic (with pottery and stemmed arrowheads) and domestic sheep or goat
8,000	Libyco-Capsian (wild fauna only)
12,500	Iberomaurusian (= Eastern Oranian)
33,000	Late Dabban (high % of burins and end-scrapers)
35,000	Early Dabban (chamfered blades, high % of backed blades)
38,000	cf. Early Dabban (very low statistical samples but certainly upper Palaeolithic in character)
45,000	Levalloiso-Mousterian (late)
47,000 +	Aterian (?)
(50,000 ++)	Levalloiso-Mousterian (early)
(70,000 +)	cf. Pre-Aurignacian
(80,000 ++)	Typical Pre-Aurignacian

(Note: Dates shown in brackets are estimates only in the present connection.)

Both the date and the content of the Neolithic accord well enough with those noted in the Maghreb. What I termed 'Libyco-Capsian' at a time when little up-to-date work had been car-

ried out in hither Asia will certainly need further study in the light of the wealth of Asiatic industries of this date now available. Attention may however be drawn to the close correspondence in date now made clear by the recent analysis of G. Camps (1975). It is not impossible that these late hunting groups were responsible for some of the rock-art sites of which there was an interesting find some years ago in the Gebel el Akhdar itself. It is worth noting that there are indications that some at least of the well known art sites in the Maghreb and southwards into Fezzan, are also pre Neolithic and probably attributable to the Capsian.

Beneath the Libyco-Capsian is the complex of industrial horizons to which I originally gave the name Eastern Oranian. Oranian is a synonym for Iberomaurusian in the Maghreb though one which is clearly falling into dissuetude and I would now revert to the latter name – Iberomaurusian. This complex of finds, and others related to it in the Maghreb, have attracted so much attention in the literature that they merit rather more detailed description. Their most noticeable feature, perhaps not adequately stressed by some writers, is the characteristic technique of 'primary flaking', that is to say the manufacture of the blanks from which tools were subsequently to be manufactured. This resulted in a very curious, flat, cushion-shaped core with facetted striking platforms strongly resembling Mousterian cores except for the markedly rectangular shape and polarised platforms.

This form of core is clearly designed for the manufacture of exceptionally broad flat blades, and indeed in the majority of such assemblages enormous numbers of these received minute trimming or 'backing' turning them into a special category of backed-blade, often termed an 'Ouchtata blade', after a site in Tunisia. Further characteristics are the reciprocally low proportions of other retouched tools such as burins and end-scrapers which normally typify blade assemblages such as for instance the Capsian. Finally there is the virtual absence of geometric microliths (though the Ouchtata bladelets themselves are sometimes small enough to qualify for this term).

Micro-burins on the other hand, apparently the by-product of truncating the tip of a backed-blade to form a point, do occur characteristically in some but not all of these assemblages.

We have seen that what are effectively Iberomaurusian assemblages form the initial expression of the Upper Palaeolithic in the Maghreb. In a number of profiles they form the immediate stratigraphical successor to the Aterian with its clear Mousterian affinities. This raises a problem since available 14C dates leave a considerable time gap between the two. A date in the order of 20,000 B.P. has just been announced from the Iberomaurusian site of Tamar Hat in Algeria and it may be that with the accumulation of further readings we shall eventually close the 10,000 year gap somewhere between this and the latest Aterian at 29,850 ± 190 B.C. But even as things stand it seems clear that the beginning of the Iberomaurusian industry is considerably later in Cyrenaica than in the Maghreb. As to its later internal changes I have recently attempted a statistical analysis of the association of the changes of composition with time against the changes of the Fauna. If a Partial Correlation is calculated holding time, it immediately becomes apparent that many of the changes observed are sustained through time but directly associated with short term changes in the fauna. Thus the ouchtata blades and large backed elements are specifically and strongly associated with the two smaller mammals Gazella and Ammotragus while the small to microlithic backed blades, coupled with burins, endscrapers and various auxilliary tools are exclusively and markedly associated with the two large species Bos and Alcelaphus. Backed-blades (with the peculiar feature of retouch exclusively on the reverse surface) and microlithic gravette points seems to lack any such associations and to show an independent sustained increase with time. There is in fact an approach towards the equipment of the Capsian. At the other end of the scale we have a quite different set of problems posed by the underlying Dabban complex remarkable by its extraordinary time span back to at least 38,000 B.C. This is throughout its duration of a remark-

ably consistent and contrasted character. To begin with the primary technique, this is based on normal prismatic cores entirely comparable to those of the European or Levantine Upper Palaeolithic. Backed-blades never certainly rise above 50% and for long stretches of time do not rise above 10% or 20%. Burins and endscrapers are throughout the dominant forms, and the backed element is furthermore of quite different form – narrow and thick – to that of the later complex. Within the limits of a blade industry it is hard to imagine a greater contrast.

The interface between the Dabban and the underlying Mousterian (associated with remains of Neanderthaloid form) is seen with remarkable definition to occur in the centre or a well defined stratigraphic unit – Layer XXV. Specimens of the two kinds occur within a few centimetres vertical distance of one another.

The order of magnitude of the duration of the complex is sufficiently given by four 14C dates within the span:

GRN 2586	14,120 B.C.	Layer XVII upper portion
GRN 2585	16,670 B.C.	Layer XVII lower portion
W 86	26,550 B.C.	Layer XX/XXI interface
GRN 2550	31,150 B.C.	Layer XX

The nearest reading for the precise stratigraphic interface – 38,000 B.C. – is obtained by measured interpolation between GRN 2550 in Layer XX and the underlying GRN 2564 in Layer XXVIII (Levalloiso-Mousterian) at the sub-layer within Layer XXV where the industrial changeover takes place. This reading can now be cross checked against the same cultural sub-stage within the sequence at the hill site of Ed Dabba itself, some 25 kms away. The sample of lithic material at the base of the Dabban series in the Haua is statistically very small so that it is not possible to decide with what precise point in the Ed Dabba sequence it most clearly correlates. The actual reading at Ed Dabba is antedated by four relatively thick layers. Hence the implied age of the beginning of the Dabban in Cyrenaica is some-

what older than the Haua evidence would suggest at first sight.

The presence both at Ed Dabba and at the Haua of a highly distinctive tool namely the 'chamfered blade' or chanfrein is a point to which I shall return in connection with the comparison with the Levantine sequence.

Underlying the Dabban at the Haua is then a series of typical Levalloiso-Mousterian layers, while at the base is a much older complex certainly of Eemian age which I termed (after A. Rust) the Pre-Aurignacian. It is separated from the overlying Levalloiso-Mousterian by a wide sparsely documented gap. The problems raised by this earliest material of all lie mainly outside the scope of the present discussion, although it may be remarked in passing that, as with the later phases, a remarkable analogy is apparent here also between the succession in the Levant and Cyrenaica (see McBurney 1967, Chap. IV). In fine then the Haua provides us with our only complete sequence within the North African littoral region from the Eemian up to the present. To day it is possible to begin the construction of an overall synthesis, on the basis above all of the 14C readings for adjacent areas.

This brings us to a consideration of the most recent field of research that is to say in the Nile Valley. It is scarcely too much to say that the campaign of research begun under the Abu Simbel rescue operation has now transformed the whole picture of prehistory in NE Africa. The region investigated is situated mainly in the enclave of Sudanese territory projecting north on the region of Wadi Halfa, but a sprinkling of sites also penetrate Egyptian territory and a few have been explored as far north as Aswan and Kom Ombo. In the main however it is a picture of prehistory in the region of the Cataracts of Upper Nile.

It is necessary at the outset to realise that the conditions of discovery in this area are entirely different to those in Cyrenaica or even the Maghreb. Virtually the totality of sites are open sites, that is to say that the living area is not confined in any way by the restrictions of the walls of a shelter or cave.

Nevertheless it must be emphasised also that all the more important finds are in situ in a stratigraphical sense and as laid down by the ancient occupiers. This for instance enables us to appreciate something of the layout and structure of the original settlements. The bulk of the sites lie immediately adjacent to the river or channels running into it, and are contained in terraces, *playas* and the like, clearly related in a geological sense also to the river. This in theory offers interesting possibilities for geological correlation, and indeed some interesting data of this kind was in fact obtained. On the other hand it must also be admitted that the geological sequence is often very involved and difficult to disentangle with certainty. It is often to the fine series of 14C dates that we must turn for confirmation of the sequential picture. A recent addition to the ecological framework within which these finds must be placed, has come from extensive surveys into the desert to the west of the river which have now amplified to an important degree our previously very limited knowledge of the human significance of this vast area (Wendorf and Schild, 1976).

The first archaeological episode on the Nile to come within 14C range and consequently of direct relevance to the Haua sequence is termed the 'Khormusan'. This is basically a rather specialised form of Levalloiso-Mousterian practised by hunting and fishing groups camping along the river and wadi banks in extended settlements or chains of repeated settlements. There are a few elementary bone piercing and scraping tools but the overwhelming bulk of the equipment to survive is in the form of flaked flints and cherts locally occurring material.

Although classifiable unquestionably within the broad Levalloiso-Mousterian taxon, the assemblage does show peculiarities which mark it off from other Middle Palaeolithic occurrences in the area. Some of these are almost certainly of much greater antiquity than used to be supposed to judge from the most recent chronometric readings in Ethiopia to the south – up to 181,000 B.P. based on K/Ar readings. Immediately to the

west of the area explored, in Upper Egypt some 300 kms into the desert, we find Acheulean settlements associated with evidence for climatic amelioration (as noted long ago by Miss Caton-Thompson in Kharga Oasis to the north). This first human penetration is brought to an end by a prolonged climatic episode of intense aridity. This is followed in turn by a return to humidity giving rise to seasonal lakes with lake-side settlements inhabited by big game hunters practising at first typical Levalloiso-Mousterian, and later on Aterian industries. Both are closely comparable to those of Cyrenaica and the Maghreb. 14C dates for these last range from 28,920±1,000 B.C. to *over* 42,750 B.C., while the underlying Mousterian seem to be out of range of 14C datings. Traces of both Aterian and comparable Levalloiso-Mousterian also occur close to the Nile where they appear to predate the Khormusan. The earliest date for the latter so far is *over* 41,490 B.C. (SMU 106) but later positive dates include 20,750±280 B.C. (WSU 203) and even 15,850±500 (SWU 215).

Both geologically and on carbon dating therefore the cardinal point arises that the Khormusan is the latest in time of all the Mousterian expressions so far known in the world. It is worth juxtaposing this remarkable fact with the latest ecological indications. It would seem that the Western Desert at this time was altogether too dry for human or animal occupation. Subsequent to the Aterian just referred to there is eloquent geological evidence of extreme desication and no further evidence of climatic improvement or human occupation before the early Holocene – 7,410±70 B.C. (SMU 200) at Bir Tarfawi (Wendorf *et alia* 1976). It would seem to follow that the Khormusan was practised in a narrow Nilotic corridor isolated by the desert on both sides – in effect an ideal situation for a relict cultural tradition. What the physical type of the manufacturers may have been we cannot tell, but it may be recalled that recent re-examination of the Singa skull from Khartoum by Stringer (Test 6, 13 attributes) places Singa clearly within the Neanderthaloid cluster.

There is thus positive evidence that this strain did in fact live in the area and *may* have been associated with the Mousterian complex of industries in a broad sense.

From a typological point of view the most distinctive features of the Khormusan are the high percentages respectively of Denticulates and Burins. The latter element in particular was normally regarded as an Upper Palaeolithic rather than Mousterian characteristic in Europe or (until recently) in the Levant. One of the first Levalloiso-Mousterian assemblages to show originality in this respect with abnormally high rates of burins and end-scrapers was that identified in the Haua ten years ago in Layer XXXIV and dateable to late Eem or a very early phase of Würm – say very roughly 60,000–65,000 B.P. (McBurney 1967, pp. 109–121). The latest results now show that such assemblages, at any rate in the extreme south of Israel south of the Levantine coastal range, show these features to an extent not previously realised – at Rosh Ein Mor for instance (Crew, H. L. in Marks, A. E. 1976, pp. 75–112 and Munday, F. C. idem, pp. 113–140). Thus despite some originality it would probably be a mistake to stress the peculiarities of the Khormusan to the extent of suggesting a special relationship with the succeeding Upper Palaeolithic in the area. A quite different situation obtains when we consider the clearly contrasted 'Halfan' complex which follows. Both geologically and on the basis of the dates (although it apparently overlaps in time with the Khormusan), on a broad definition it may be said to last substantially later. The interest of the Halfan resides above all in the fact that it bridges the morphological gap between the Levaloisian and the Upper Palaeolithic in a sense that no other known assemblage can be said to do. Ten sites showing the features about to be described in their most typical form have been identified near Wadi Halfa. The technological and typological contrasts between Khormusan and Halfan may be summarised as follows. The first feature that strikes one is the remarkably small overall size of both flakes and finished tools, to the extent that one

may not unreasonably use the term microlithic. A seriation of the 10 available sites to date all from the Wadi Halfa area, reveals a smooth gradient from those in which flakes dominate blades in the proportion of 78%, to those in which the reverse proportion holds that is to say blades form 60%. Correlated variation shows an increase from less than 50% to over 75% of an entirely new type namely backed micro-blades and backed flakes. To anyone familiar with the Iberomaurusian of the Maghreb it is immediately apparent that both categories are essentially analogous to the ubiquitous 'Ouchtata' and related forms of the Maghreb. Although the Halfan pieces are slightly thicker and considerably smaller, their overall shape and arrangement of the retouch is essentially the same. As regards the cores from which they are struck it may be said straight away that they are thicker in proportion and more irregular than in the Maghreb but many are obviously designed for the production of blanks for the same purpose.

More important is the association of these blade cores particularly in the lower levels of the Halfan with true if minute Levallois cores. These often have a tendancy to polarisation giving rise to what the excavators term 'Halfan Flakes'.

Another important distinction between Khormusan and Halfan lies in the composition of the tool inventory. The dominant burins and scrapers of the previous complex although they survive in microlithic form are characteristically of almost negligeable numerical importance. Other differences affecting different aspects of activity are a sharp reduction in settlement size suggestive of small huts or shelters rather than the amorphous scatter associated with the Khormusan; again there is a totally different selection of raw material with concentration on chert to the virtual exclusion of the wide range of materials used in the manufacture of the Khormusan. Neatly made ostrich eggshell beads also make their appearance for the first time in the local succession with the Halfan. The economic basis for the Halfan seems to have been essentially similar to the Khormusan,

that is to say the hunting of large mammals coupled with occasional specialisation towards fishing or fish trapping for *Clarias*. There is no evidence that Halfans penetrated any distance away from the river.

An extremely significant observation as it seems to me is beginning to emerge as we know more of the horizontal or geographical variation of industries at about this time, that is to say mainly from about 17,000 to 15,000 B.C. (and perhaps as late as 13,000). The area explored archaeologically now reaches as far north as Nag Hamadi, or about half way between Halfa and Cairo. Although true Halfan occurrences are reported in these northerly regions it is remarked that the true blade component is noticeably greater – figs 6 and 7.

An interesting feature is the simultaneous occurrence of facetted platforms and the minute punctiform platforms usually associated with the technique of a flaking punch; both are used for the manufacture of true full sized blades. There are also contemporary blade assemblages – the so-called 'non-Levallois Halfan'; a wide spectrum of variation of contemporary or nearly contemporary assemblages in fact has been described some of which have substantial components of typical Ouchtata technique. Some of the dates are quite high especially so for the non-Levallois group up to 21,588 ± 1,518 B.C. (thermoluminecent dating). As Wendorf says, although this may not be reliable it does at least raise the possibility that true macro-blade assemblages in the area *pre-date* those with traces of Levallois technology. One variant in particular termed the Fakhurian yields a maximum date of 16,070 ± 330 B.C. (I4316).

Now if this is indeed the case an interesting alternative may be offered to the widely canvassed hypotheses of wholly independant evolutionary centres operating in complete isolation. We have seen that the survival of a relict Levalloiso-Mousterian in the form of the Khormusan is almost certain in Nubia. A still later survival of some of the same technological traits is obvious in the Halfan, but becomes gradually replaced by more

normal blade elements as we move north, that is to say towards the area where in fact a continuing tradition of blade industry had been established at least 18,000 years before. It is arguable that these facts make sense if, and only if, we are prepared to admit the possibility of a spread of the new technology (however transmitted) from north to south, impinging on what we now positively know to be a survival area of earlier technology. The innumerable and varied expressions in the intervening territories would then owe a substantial part of their inspiration to varying degrees of acculturation. Such a way of looking at regional developments it might be added is in no way inconsistent with the curious, and as far as the Mediterranean is concerned, unique recrudescents of flake technologies still later such as those of the Sebilien in the Kom Ombo region and elsewhere on the Middle Nile.

But before we go deeper into the consideration of such hypotheses it may be well to complete our picture with a review of recent development in the Levantine region. This is an area, as I have said, of at least equal research activity. Once again we shall be concerned with the same two leading aspects of ongoing investigation – increase in the number of stratified finds and cultural detail on the one hand, and 14C dating to form an articulated picture on the other.

When I first published the results from the Haua Fteah just ten years ago I felt bound to attempt some sort of synthesis with the sequence in Israel and the Lebanon as known at that time. In this I was greatly hampered by the lack of detailed descriptions and above all by the almost total lack of 14C dating for the Upper Palaeolithic. Almost the only fully detailed description of Upper Palaeolithic sites that I had at my disposal were Rust's account of Jabrud and the admirable excavation report on Abu Halka by J. Haller. In the course of my researches I was able to study this latter at first hand study owing to the kindness of the Emir Shehab in making available the original collections under his charge at Beyrouth. Since then a number

of important studies and investigations have become available including those of Azoury, Azoury and Hodson, Newcomer and Haller. In the extreme south of the Levantine littoral and in the hinterland we now have a capital series of entirely new data from the excavations of Marks and others from the team of the Southern Methodist University at Dallas. The upshot is to provide at least an outline of the main parameters which I was lacking ten years ago, in addition to several new and wholly unsuspected discoveries.

One of the novelties of the Haua that seemed most intriguing at the time I was publishing it was the nature and dating of the assemblages which I termed 'Dabban'. I divided these into two main phases – Early and Late, and was fortunate in being able to correlate them with the much shorter but also more detailed sequence at Ed Dabba itself. Since the stratigraphical situation at the outset of the Dabban as registered at the Haua was of a kind virtually to preclude a local origin it became at once necessary to look elsewhere for the source of this remarkable pattern of lithic behaviour. It rapidly became clear, and is today even more certain, that it cannot be derived either from the West, or the desert to the south, or Upper Egypt. There remained for all practical purposes the question of an origin in the Levant. There, as I realised, was indeed a very clear and nearly complete parallel in the two basal Layers at Abu Halka in the Northern Lebanon. The difficulty was that in the absence of 14C readings this hypothesis simply could not be submitted to a chronological test. Today we still do not have a direct reading from Abu Halka but the question is effectively solved by what we now know of the succession at Ksar Akil – figs 4 and 5. Not only has the precise parallel to the initial stage at Abu Halka been established, but it is also seen to occur at the very base of the Upper Palaeolithic, immediately over lying the Levalloiso-Mousterian. As Copeland observed in 1975 'there is a distinct break in the typology' at this point, namely as between the top of Ksar 'Akil Layer 26 (with typical and wholly unmodified Levalloiso-

Mousterian) and the blade industry of the immediately overlying Layer 25.

My own analysis carried out on a large randomised sample of the material at Beirut and published in 1967 (pp. 169–173), showed at once that the *morphology* of the blades and flakes combined was precisely that of any evolved blade and burin industry, and fitted completely that of the corresponding level at Dabba.

There remained the question of date, and this can now be effectively solved by the simultaneous depth and age readings at Ksar 'Akil. While I am not yet in possession of the new dates obtained by Tixier in the Upper levels, interpolation between 42,000 B.C. at 16 ms. and 26,800 B.C. at 6 ms. depth gives initial estimates as follows:

Phase A, Base of Layer 25 =	15 ms. =	41,000 B.C.
Phase B, Layer 19 =	13 ms. =	37,000 B.C.
Aurignacian A =	9.5 ms. =	32,000 B.C.
Aurignacian B =	8 ms. =	29,800 B.C.
Aurignacian C =	5 ms. =	25,000 B.C.

This set of estimations will serve to indicate that the order of magnitude of the age of Phase A can hardly be far removed from 41,000 B.C. or some 3,000 years earlier than the corresponding assemblages at the Haua. Although on the basis of Ed Dabba the interface in question may be slightly older than the evidence at the Haua might suggest, it is in any case unlikely to be earlier than Ksar 'Akil A. It is certainly hard to believe that the close proximity in time of these two highly idiosyncratic industries is the pure play of coincidence, nor does the evidence give us the slightest encouragement towards a 'functional' basis for such a coincidence. To be intellectually honest in this instance one must admit that there is a strong *prima facie* case for cultural connection and the link, whatever form it may have taken, is likely to have been from East to West and not vice versa.

One difficulty however must be faced; there are no known

geographically intermediate traces in Palestine. This point has recently been discussed by Copeland (1975 and 1976) who finds that there are nevertheless a variety of shared elements between Ksar 'Akil A and B and some of the early blade assemblages in Israel. In a recent analysis Ronen (1976) indicates his view that gaps occur in the sequence in Israel in at least two loci corresponding to Ksar 'Akil layer 25–21 and 17–15. In short the incomplete nature and uncertain succession in Galilee can hardly be said to provide negative evidence of any moment, at least until the succession is clarified by adequate 14C dating. Perhaps the long awaited description of the material at Rakafet may provide some enlightenment, but even so it would be unwise to assume that every stage will necessarily be represented at every site. In a personal communication to the writer the late Mr. E. S. Higgs quoted the following unconfirmed dates from this site: 16,960±330 B.C. for the Kebaran, 31,869±1,740 B.C. and a second identical reading plus one of 32,600±1,900 B.C. for the Aurignacian.

In conclusion one ought perhaps to draw attention again to the once famous surface site of Champ de Bagasse near Nag Hamadi in Upper Egypt (McBurney 1955). There indeed precise equivalents to the suite of chanfreins and true burins of Ksar 'Akil type occur in abundance. This site has for long been left out of count because of the presence of one or two Predynastic specimens, but this argument is of little value since all surface sites are likely to include a proportion of quite unrelated chance finds, and the possibility that this is a true Dabban find in an immediate position cannot be so easily dismissed.

This brings us to a consideration of the final and in some ways the most important series of recent finds in the Levant with a bearing on the North African problems at issue. They result from a campaign of some years of survey and excavation by A. Marks and associates (of the Southern Methodist University, Dallas) in the Negev area of southern Israel, and in northern Sinai. Although full details of these results have not yet been

made available the preliminary reports are already of major significance.

In the Negev the finds cluster round a small hilly territory on the saddle-back between the Mediterranean and the Rift, represented here by the Wadi el Arabah and the Dead Sea basin. At the present time the sparse vegetation is assigned by botanists to the so-called Irano-Turanian assemblage which fringes the main area of Mediterranean type in the central Judaean hills. In northern Sinai the finds cluster round similar if less marked eminences about half way between the Negev and the Nile Delta. The latter however, have only received very summary presentation so far, so it will be well to concentrate on the former.

The sites are all open sites but fully in place with their original hearths and other features of individual settlements. They occur in terraced deposits in the side of wadis, at present dry valleys. One of the few resources at the present day are herds of Ibex (relatively abundant) and two species of Gazelle coupled with a fair range of small mammals, including two species of hare, some edible reptilia and two species of grouse. Pollen studies have recently been carried out and display a very different picture during the Mousterian occupation in the interval 50,000 to 70,000 B.P. approx. At this time there was a considerable tree cover composed of oak, wild olive, almond, Alleppo pine, pistachio, etc. forming an assemblage comparable to that of northern Israel at the present, or for that matter Cyrenaica. In the Hula Valley bore-hole a similar picture has emerged for the early phase of the Würm equivalent, (Horowitz 1976). A comparable picture of the vegetation accompanying the earlier Upper Palaeolithic emerges from studies at three separate sites. Although during this period the population of wild olive declined, the level of tree pollen as a whole was maintained and appears vastly different to that of today. Dessication first begins to become apparent during the later phases of the Upper Palaeolithic however. A gap in the record for the plant cover occurs between

15,000 and 9,000 B.C., but by the latter date when evidence becomes once more available we find a substantial recovery of tree pollen and other plants as well indicate a return to more genial conditions. These ecological data are not without a bearing on the archaeological record and its interpretation.

The sequence of industries as at present known starts with the Mousterian, well represented at a number of sites. These are now sufficiently numerous to permit a systematic resource analysis which demonstrates the dependence of some of their variable characteristics on such factors as distance from raw material (Munday, F. C. in Marks, A. E. 1976). The variability is in fact considerably greater than appears from the records of the pioneering excavations in the Carmel area, which were all we could use a basis of comparison with the Haua ten years ago. It is now evident that many of these Mousterian industries contain elements in varying quantities which considerably resemble the Upper Palaeolithic, and the same observation has also been made in the Lebanon recently – see for instance Copeland (1975). There is a very considerable variation in the blade component for instance, although always within the framework of other of the Levalloiso-Mousterian technology.

As Copeland points out very pertinently there is however no patterning to suggest that the blade occurrence in the Levant is anywhere correlated to age; on the contrary high lamellar indices are often found amongst the stratigraphically older groups. Parallel to these industrial oscillations there has long been known to be a degree of variability in the human fossils also which has been considerably enhanced by some recent finds. It would now appear that the whole spectrum ranging from Neanderthaloids as highly differentiated as those of Western Europe, to at least one specimen claimed to be of wholly Homo sapiens type – at Qafzeh (Vandermeersch, B. 1966). While it would be interesting to see a rigorous multivariate analysis applied to this and the more dubious specimen reported much earlier from Ksar 'Akil, the fact remains that one of the anatom-

ically intermediate forms – Skhul 5 – does indeed sustain the claims made for it. This is seen in two of Stringers tests concerned quoted here – figs 1 and 2. Hence although the new Negev finds are not particularly remarkable in this respect, taking the Levant as a whole, there is undeniably a significantly greater polymorphism of both the industries and the human fossils of the Levant than has yet been demonstrated elsewhere. The most striking feature of the Negev finds are undoubtedly the age and technology of the industrial phases apparently immediately following the Levalloiso-Mousterian.

At the site of Boker Tachtit the series is quoted as beginning with a horizon dated *more than* 43,540 B.C. with 'a most probable' estimate of 47,000 B.C. A second date of 42,690 ± 3,800 B.C. does not differ significantly.

The character of the assemblage so dated is given as 1,300 artefacts obtained from 10 m^2 of a living floor. The most characteristic products are extremely elongated triangular blades or 'points' with facetted striking platforms. The cores from which these were struck were apparently highly polarised with 'opposed platform'. Taking the industry as a whole it is clearly a true blade industry with a blade component of 55% as opposed to the local Mousterian at Rosh Ein Mor with a blade frequency of no more than 21%. There is a total absence of Levallois cores or flakes but an appreciable number of typical upper Palaeolithic type rejuvenation flakes showing that this device typical of most later Upper Palaeolithic industries, was already being practised. The striking platforms are mainly very small and facetted with some reduction but rarely true 'punctiforms' in F. Bordes sense.

cal evidence of the microtinae is quite unambiguous on this point) and at so nearly the same time, is surely stretching the long arm of coincidence to the point of absurdity. That Ksar 'Akil A should slightly but significantly ante-date the Early Dabban is further an observation of importance. The position with regard to the primary technique at Ksar 'Akil, that is to say the survival of the ancient facetted-platform device typical of the Middle Palaeolithic (together with some other possible traces of survivals in tool forms) is again relevant in that we can now see that a completely evolved blade technique such as we find at Dabba had already emerged by this date in the Negev. We can indeed as already mentioned see the actual process of its emergence from Boker Tachtit 1 to Boker Area A from circa 47,000 to 37,000 B.C. or well within experimental error of the two readings for Dabba.

Transferring our gaze for a moment from these regional issues, it is interesting in the same connection to observe that the first appearance of blade industries in the western highlands of Iran, namely in the form of the Baradostian, also takes place at about 38,000–40,000 B.C. and comprises the same seminal technological devices and tool forms as are shared between the Negev and Cyrenaica. Coincidence? Perhaps, but at least let us frankly admit that there is not the slightest shred of evidence to support an environmental or economic explanation. Farther east still the same cultural change dated at an only slightly later date, can be detected in Afghanistan (Kara Kamar $>$ 32,000 B.C.) and north eastwards far into north Central Asia where it is now known by 32,000 B.C. (Ikhine II) on the Lena in NE Siberia and most recently about 30,000 B.C. in Japan. But the time may well not yet be ripe for a consideration of these much wider issues which transcend the bounds by far of the subject I have set myself in the present discussion, although I have ventured to evoke them in general terms already (McBurney 1975). The same may well be true of the situation in Europe although there I have at least recently made a specific case for a time-cline for the initiation

of the Upper Palaeolithic running from Central Europe to SW France (McBurney 1976b). Unless I am wrong the whole idea of a SW French centre of origin is now for all practical purposes untenable, and the sequence of events in the Balkans although different in detail nevertheless runs most strangely parallel to that we have been discussing in the SE Mediterranean. It may be added that this European picture is consonant with Stringers statistical work on the human remains, as he himself pointed out in the paper already referred to (Stringer 1974).

If I may now attempt to summarize my conclusions they are these – fig. 3:

(1) from the Levant to Morocco the stage immediately preceding the first Upper Palaeolithic is basically similar to the stage occupying the corresponding stratigraphical position in Europe, namely the Mousterian. Minor peculiarities distinguish the regional variant in Palestine which extends as far westwards as the Nile Valley and the Cyrenaican coastal hills. In the Maghreb and the Sahara a different variant, the Aterian, prevails. A well differentiated Neanderthaloid human strain (Gebel Irhoud, El 'Aliiya, Haua Fteah) is associated with both as it is in Europe and Central Asia.

(2) The earliest traces of a strain fully coincident with existing *Homo sapiens sapiens* are associated with a late version of the Levalloiso-Mousterian of the Levant (Qafzeh). It would seem that the population was either polymorphic to a degree not noted elsewhere, or else that a new and divergent genotype was beginning to emerge in the record at or shortly before this time, that is to say roundabout 50,000 B.C. On the basis of the now available chronometric data this state of affairs can now be viewed in two ways. Either the population was in process of quite exceptionally rapid evolutionary transition or, as suggested by A. Thoma, was subject to hybridisation between two already differentiated strains. It should perhaps be borne in mind that such hybridisation is a commonplace at the geographical interface of animal populations other than man.

(3) There is now strong evidence that Upper Palaeolithic-type industries essentially comparable to those which in Europe are exclusively associated with Homo sapiens sapiens, make their earliest appearance in the southern Levant. In particular they appear to be the contemporary of continuing Mousterioid industries in the Lebanon to the North, the Zagros to the East and the whole north African littoral to the west.

(4) Within North Africa the earliest Palaeolithic expression is the Dabban, demonstrably the contemporary of the Aterian to the West and South, and of the Khormusan on the Upper Nile. The sequence on the Lower Nile is not yet known though the presence of the Dabban there is a possibility.

(5) In addition to the dates it is now possible to provide a detailed case for the typological and technological derivation of the Dabban from the Levantine littoral region.

(6) West and south of Cyrenaica the earliest Upper Palaeolithic assumes a generalised Iberomaurusian form. This is a typically African expression completely separated in form from the underlying Aterian in the Maghreb where it begins to be apparent possibly as much as 20,000 years ago. On the Upper Nile the industries of this general type on the contrary emerge gradually from the underlying complex of basically Mousterian form. This gradation is repeated *horizontally*, that is to say geographically, as we pass from south to north to the Middle reaches of the Nile. Here a complex of varied industrial forms can be observed interdigitating at and after this time, but with a general tendancy to greater resemblance to typical Upper Palaeolithic blade industries from south to north. This Egyptian situation is at least as consonant with a model of gradual penetration and concomitant acculturation, as it is to a model of innumerable independant evolutionary centres, since the latter would in no way predict the observed geographical cline.

(7) If the 'bow wave' model of acculturation be found to work for the Nile (and possibly for the Maghreb) it would be worth trying elsewhere, SW Europe for instance or Central Asia.

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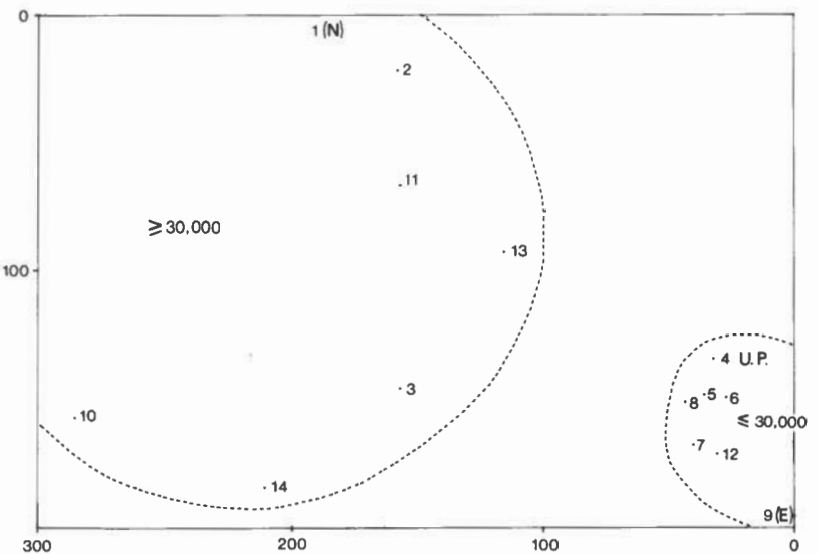
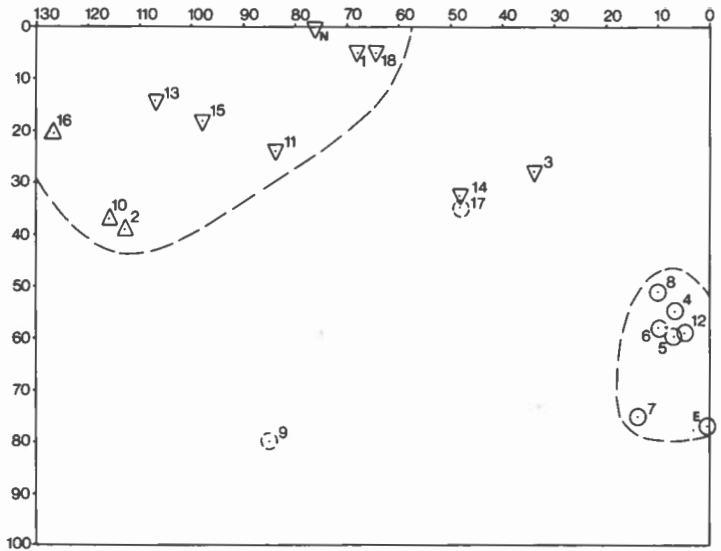


1 (N) Neanderthal
2 Amud
3 Skul
4 Upper Palaeolithic
5 Mesolithic
6 Norse
7 Zulu
8 Tasmanian
9 (E) Eskimo
10 Petralona
11 Irhoud
12 Hottentot
13 Rhodesia
14 Steinheim R.



		N	E
Eskimo		77	–
Neanderthal		–	77
1	Sol	5	68
2	Pek	39	113
3	Sk	34	28
4	U.Pal	55	7
5	Mes	60	7
6	Nor	53	10
7	Zul	75	14
8	Tas	51	10
9	Coh	85	80
10	Pet	37	116
11	Irh	24	84
12	Hot	54	5
13	Rho	17	107
14	Omo	33	48
15	Sin	18	98
16	Stei	20	127
17	Iwo	35	48
18	Me N	5	64

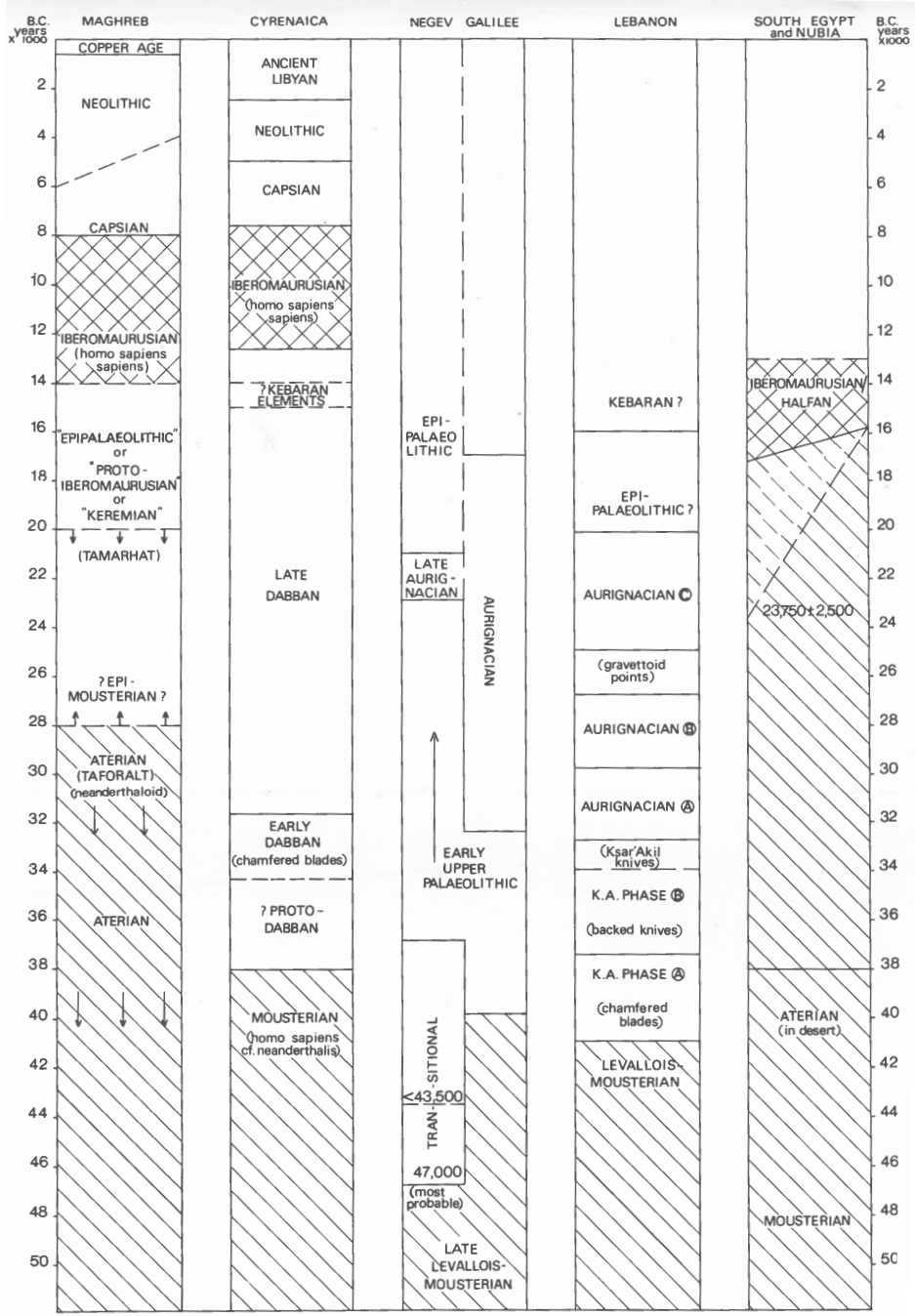
△ Middle Pleistocene - associated pre-Middle Palaeolithic complex

▽ Upper Pleistocene - associated Mousterian

⊙ Upper Pleistocene and modern

◌ ? Holocene

[2]


B.C. years x 1000
MAGHREB
COPPER AGE
NEOLITHIC
CAPSIAN
IBEROMAURUSIAN (homo sapiens sapiens)
"EPIPALAEOLITHIC" or "PROTO-IBEROMAURUSIAN" or "KEREMIAN"
(TAMARHAT)
? EPI-MOUSTERIAN ?
ATERIAN (TAFORALT) (neanderthaloid)
ATERIAN
CYRENAICA
ANCIENT LIBYAN
NEOLITHIC
CAPSIAN
IBEROMAURUSIAN (homo sapiens sapiens)
? KEBARAN ELEMENTS
LATE DABBAN
EARLY DABBAN (chamfered blades)
? PROTO-DABBAN
MOUSTERIAN (homo sapiens cf. neanderthalis)
NEGEV GALILEE
EPI-PALAEOLITHIC
LATE AURIG-NACIAN
AURIGNACIAN
EARLY UPPER PALAEOLITHIC
TRANSITIONAL
<43,500
47,000 (most probable)
LATE LEVALLOIS-MOUSTERIAN
LEBANON
KEBARAN ?
EPI-PALAEOLITHIC ?
AURIGNACIAN C
(gravettoid points)
AURIGNACIAN B
AURIGNACIAN A
(Ksar'Akil knives)
K.A. PHASE B (backed knives)
K.A. PHASE A (chamfered blades)
LEVALLOIS-MOUSTERIAN
SOUTH EGYPT and NUBIA
IBEROMAURUSIAN/HALFAN
23,750±2,500
ATERIAN (in desert)
MOUSTERIAN
B.C. years x1000
2
4
6
8
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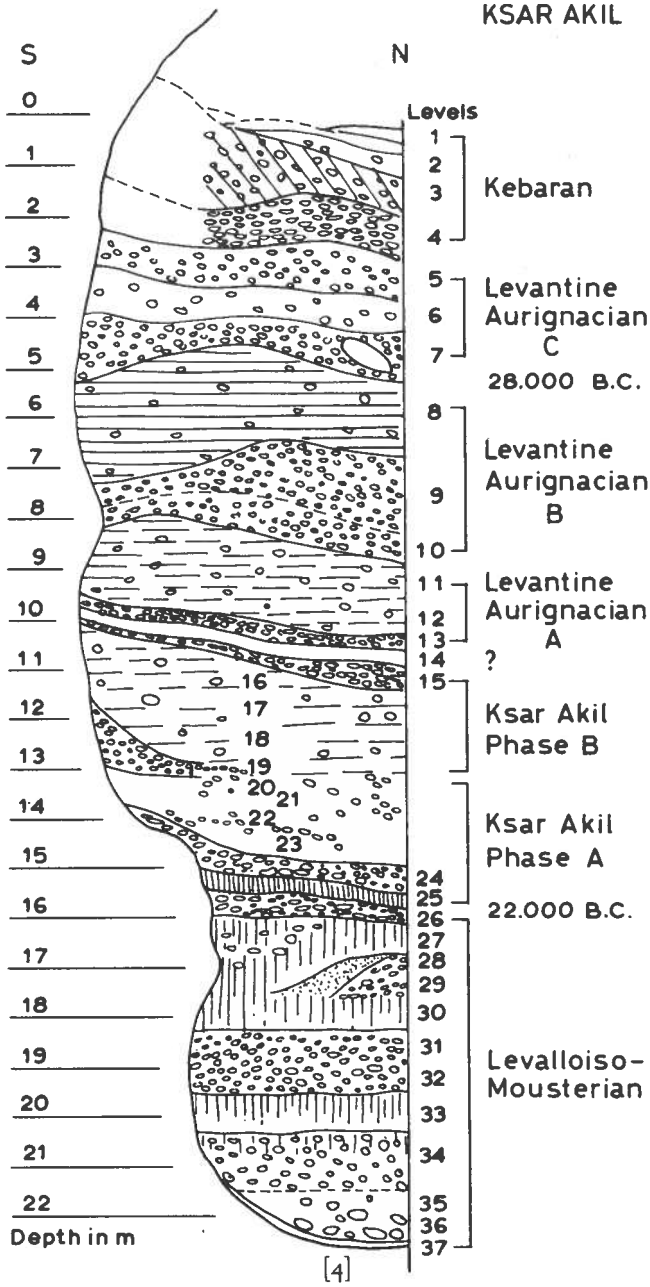
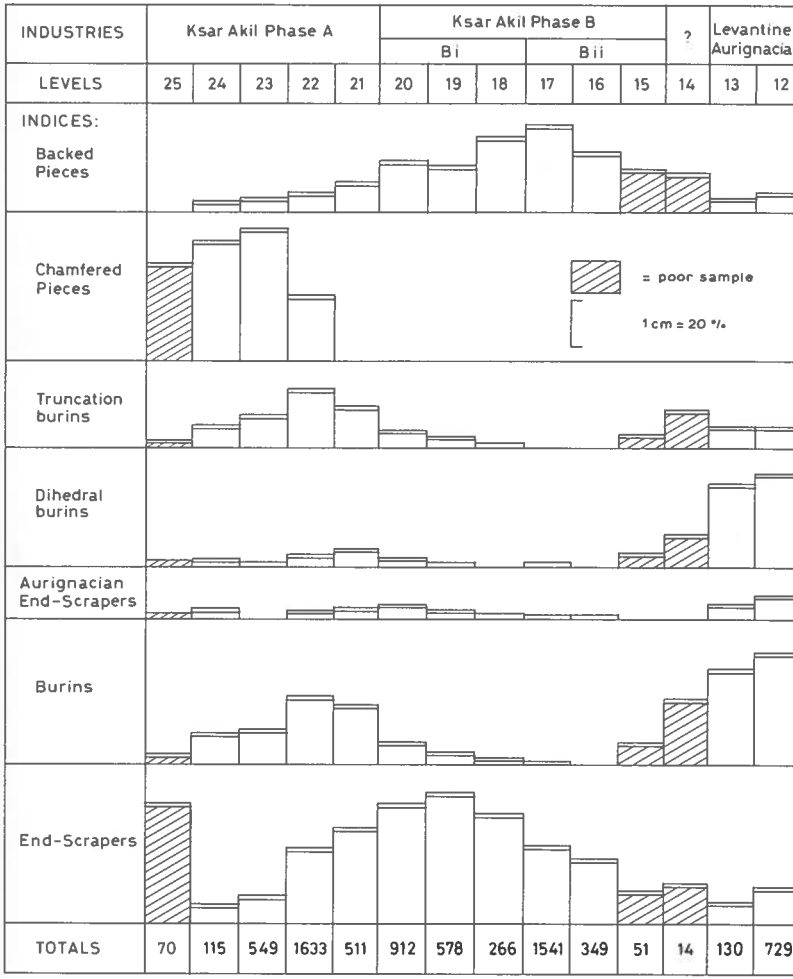
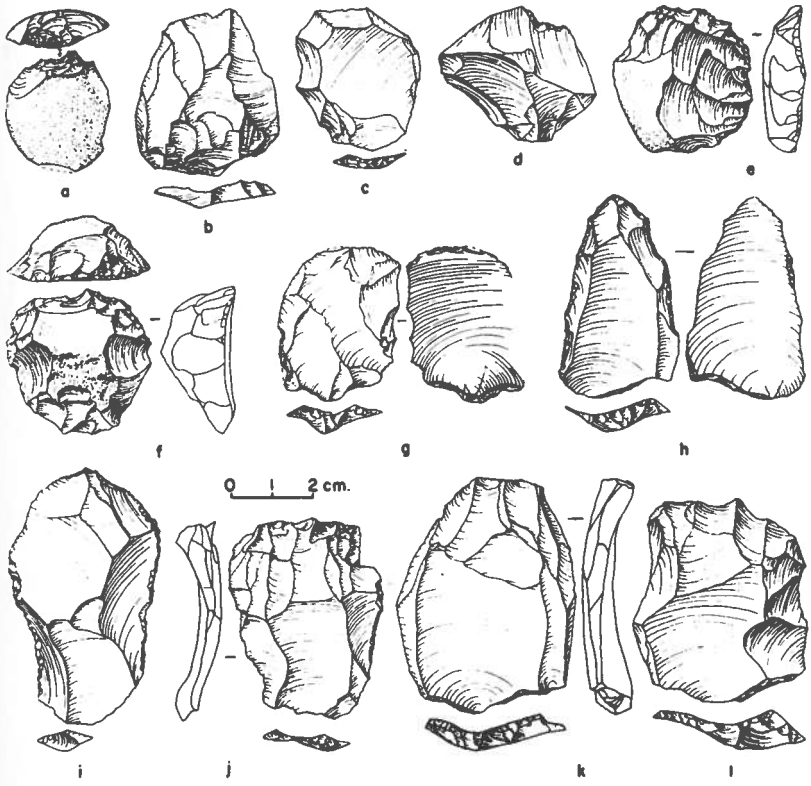

KSAR AKIL
S
N
Levels
Depth in m
Kebaran
Levantine Aurignacian C
28.000 B.C.
Levantine Aurignacian B
Levantine Aurignacian A
?
Ksar Akil Phase B
Ksar Akil Phase A
22.000 B.C.
Levalloiso-Mousterian

[4]


INDUSTRIES
Ksar Akil Phase A
Ksar Akil Phase B
Bi
Bii
?
Levantine Aurignacian
LEVELS
25 24 23 22 21 20 19 18 17 16 15 14 13 12
INDICES:
Backed Pieces
Chamfered Pieces
= poor sample
1 cm = 20 %
Truncation burins
Dihedral burins
Aurignacian End-Scrapers
Burins
End-Scrapers
TOTALS
70 115 549 1633 511 912 578 266 1541 349 51 14 130 729


a
b
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0 1 2 cm.
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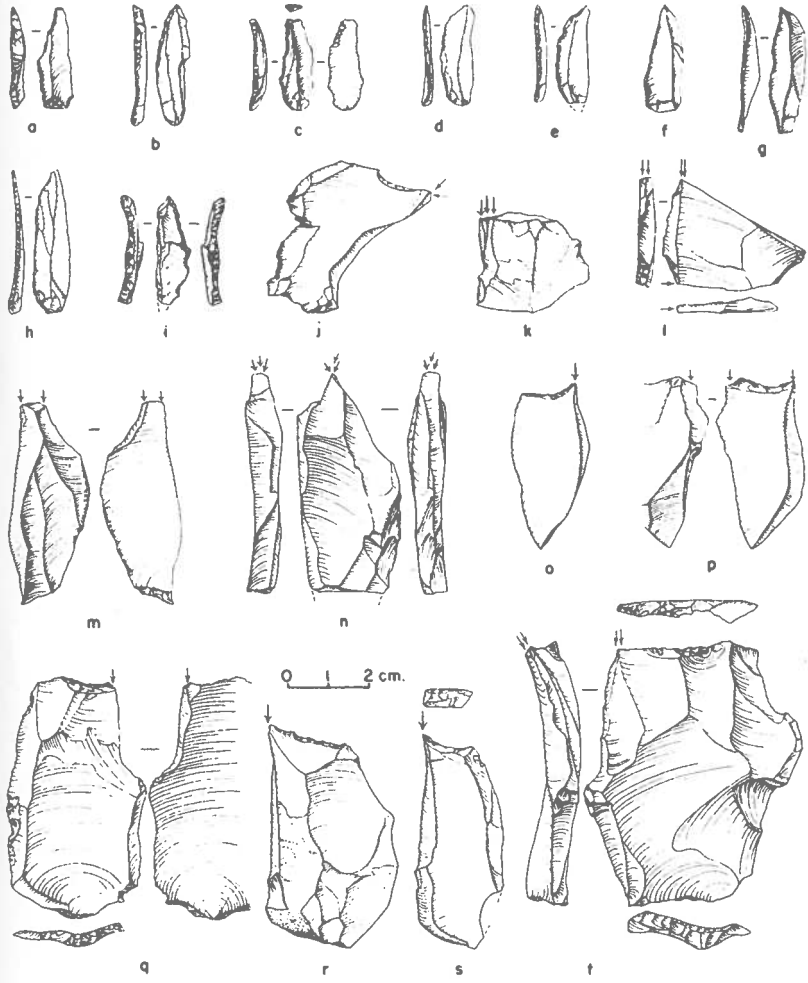
a
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0 1 2 cm.
q
r
s
t