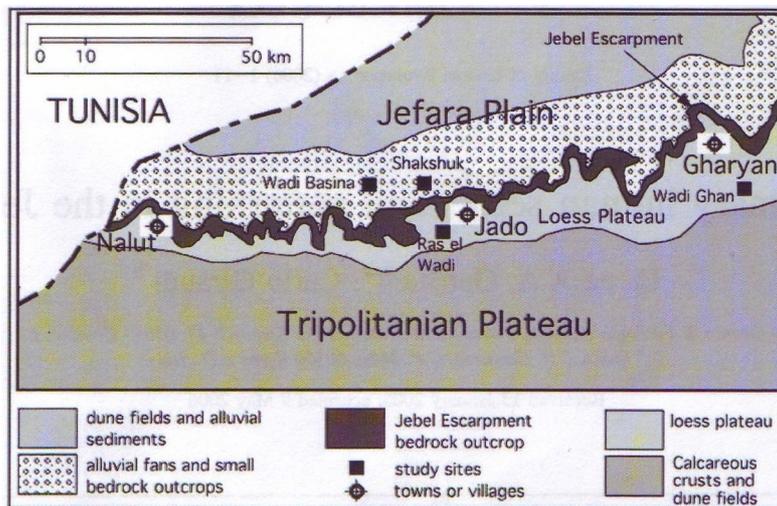
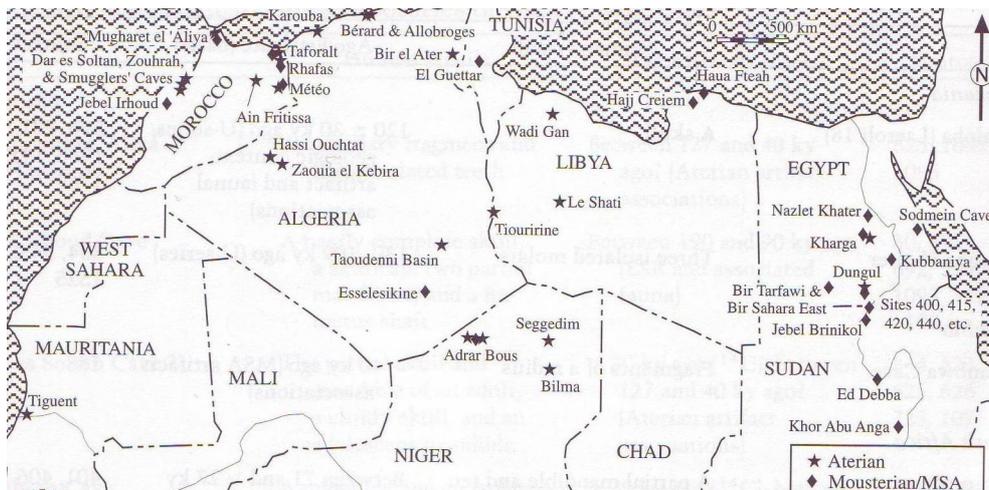


## An overview of the Late Pleistocene technocomplexes in North Africa



Intensive survey and targeted excavations at Jebel Gharbi in north-west Libya (on the highest portion of the Tripolitanian plateau) have refined the geological and archaeological sequences and reconstructions western Maghreb region from the Middle Stone Age to the early Holocene. These excavations have been conducted by the Joint Italian-Libyan Archaeological Mission, founded by Barbara Barich and co-directed by Elena Garcea, and followed on the fieldwork of McBurney and Hey in the early 1950s.

The problems faced by the Mission included:

- The cultural sequence in the western Maghreb region is largely incomplete due to lack of modern investigation in this coastal area and the limited accessible record of human occupation which, during the most arid phase of the last glaciation (20-18 kya), moved to zones later submerged by sea transgression.
- The chronology was assessed by using artifacts to date geological deposits, rather than vice-versa.
- There were disputes about whether the Early Middle Stone Age should instead be termed Mousterian or Middle Palaeolithic.
- The Aterian technocomplex was thought to have existed during a humid phase, dated to between 40-20 kya.

- The term Epipalaeolithic was used instead of the Later Stone Age used in sub-Saharan Africa. Iberomaurusian and Capsian are the two main cultural spheres of the Maghreb Epipalaeolithic.

The Mission's work has resulted in several significant developments in the understanding of the central North African sequence, including the endorsement of early dates in the 60-70kya range for the Aterian, the discovery of blade-based assemblages dated from 30kya, the association of the Epipalaeolithic Iberomaurusian with the onset of moister conditions in the final Pleistocene after 18kya, and intersite variability in Epipalaeolithic assemblages.

Jebel Gharbi is also known as Jebel Nafusah. Due to its position, it forms a geographical connection between the coast and desert: it lies on the boundary of (1) the southern portion of the coastal plain, the Jefara, to the north, and (2) the Tripolitanian Plateau to the south. Its escarpment is 300-350m high. The Mission is reconstructing sedimentary and anthropic sequences and studying their interrelationships using a territorial approach in the Ghan and Ain Zargha wadis. The latter are the the two main water streams, and strategic communication routes in the Jebel Gharbi.

Surveys were undertaken in 1990, 1998, 1999, 2000 and 2003. Landsat images were used for locating new sites and new sites recorded using GPS. The satellite imagery was used to define 6 Landscape Units:

Unit 1: Jefara plain formed by an aeolian sand sheet. Low archaeological potential due to aeolian sand covering a large surface area

Unit 2: Belt of terraces on the north side of the jebel formed by eroded alluvial fans. High archaeological potential with many artifacts visible

Unit 3: Escarpment; steep slopes and deep-cut valleys. Strong erosion, low archaeological potential excluding caves and shelters

Unit 4: Loess plateau. Aeolian cover with only recent archaeological settlements and artifacts found

Unit 5: Calcrete-sand sheet plateau. Restricted potential

Unit 6: Discontinuous, formed by the valley heads, draining both toward the Jefara and southern depressions. Low potential increases in those areas with gullies and artificial cuts

Acheulian artifacts were discovered on terraces in the Wadi Ain Zargha, near Ginnaun. Middle Stone Age and Aterian complexes were found in both wadis, as were Final Pleistocene and Holocene habitations.

Wadi Ghan Valley:

East of Gharyan

Four alluvial terraces at different heights above modern wadi, T1-T4

Lava flows interbedded with alluvial sediments containing rolled early MSA artifacts

Highest terrace was first to be deposited, with MSA artifacts

T2 contains LSA and Iberomaurusian

T3 and T4 contained charcoals dating to 11 110 +/- 40 and 3670 +/- 40 14C BP

Ras el Wadi:

Head of Ain Zargha Valley, west of Jado

Several cultural phases were found on a slope affected by gullying, less than 1km from a spring fed by ground water. Five units were reconstructed:

Q1: oldest and lowest. Alluvial gravelly sand

Q2: overlays Q1, MSA, sealed by Q3

Q3: reddish wind-blown sand

Q4: colluvial silt. Aterian. Capped by Paleosol containing LSA. 30 000 +/- 9 000 BP (U/Th), 27 310 +/- 320 BP (14C)

Q5: 18 020 +/- 190 BP (21 610 - 20 090 cal. BP)

## Q6: capped Q5. Aeolian sand

Sediments with anthropic occupation and rolled artifacts were also located near the village of Shakshuk. Shakshuk is next to a series of perennial water sources coming from the bedrock with a considerable flow, sustaining extensive cultivations of palm trees. The sediments are located at the border between the first and second Landscape Unit (between the Jefara Plain and the alluvial fan belt). There are 3 stratigraphic units of silty sands (aeolian sediments deflated from nearby wadi bed) with embedded artifacts:

E1: Aterian to 43 530 +/- 2 110 BP. Thin bands of charcoal containing LSA artifacts dated to 24 740 +/- 140, 25 500 +/- 400 and 30 870 +/- 200 BP. The archaeological topsoil contained Iberomaurusian, 14C-dated to 16 750 +/- 60 BP (20 140 - 19 510 cal. BP)

E2: silty sand. Vegetation roots dated to 11 620 +/- 70 BP (13 850 - 13 410 cal. BP)

E3: Neolithic artifacts. 6 120 +/- 100 BP (7630 - 7620 cal. BP)

The above data impacts significantly on the question of the timing and origin of the Aterian technocomplex. The traditional view was expressed concisely by Richard Klein on page 407 of his book "The Human Career": "In Africa the contemporaries of the Neanderthals produced artifacts that are very similar to Mousterian ones, and the term Mousterian has been applied directly to some North African assemblages, particularly in the Nile Valley, the Eastern Sahara, Cyrenaica (northern Libya), and the Maghreb (northwestern Africa). Many other North African assemblages have been assigned to the Aterian Industry, named after the site of Bir el Ater in northeastern Algeria. The Aterian is distinguished from the Mousterian primarily by the presence of stemmed or tanged pieces, but this difference is no greater than the difference between European industries assigned to different facies (variants) of the Mousterian, and the separation of the Aterian from the Mousterian owes less to its typology than to the now-abandoned idea that the Aterian post-dated the European Mousterian."

The site of Haua Fteah provided the earliest finite dates for an Aterian occupation at 47 000 +/- 3200 BP. The radiocarbon chronology in coastal Morocco has recently been reconsidered in view of the results from isotope and TL dating, which provided earlier dates for the Aterian in the range of 60 - 80 kya. ESR dating for the Aterian at Mugharet el 'Aliya, Morocco, also indicated ages around the limits of 14C, between 35-60kya. The Jebel Gharbi sequences confirm too that the chronology of the Aterian goes beyond the technical limits of 14C. Further out of reach of 14C dating is the time range of the occupations preceding the Aterian, which produced early MSA lithic technocomplexes. The most humid Pleistocene episode recorded in the geological series has been related to OIS5..

The early MSA was followed by a hyperarid period, OIS4, which could correspond to the discontinuity between the generalised early MSA and Aterian attested to in the Ras el Wadi series. The age suggested for the Aterian at Jebel Gharbi is earlier than 30kya and later than OIS4, possibly in association with OIS3. This is based on geostatigraphic evidence.

The Levallois (Mousterian) technique not recorded at all Aterian sites. Sidescrapers were usually associated with this technique. On the other hand, endscrapers, perforators and becs mostly appeared at the sites where the Levallois technique was abandoned. Notches and denticulates were the most frequent tool class at all sites and tanged tools were common. The proximity of fresh water springs to the Aterian settlement organisation, as recorded at Shakshuk, was noted to be an important factor also in other parts of North Africa, such as eastern Morocco

The new settlement system put in place by Aterian groups in the eastern Maghreb incorporated new territories (mountains, hill slopes and plains), new natural resources (springs), new forms of food

exploitation (lacustrine resources), new skills of food procurement (in higher-return habitats), new settlement organisations (by the aquifers at different altitudes), and new settlement and mobility strategies, connecting the classic Maghreb to the west with eastern and central part of North Africa. This settlement system has been so efficient that it has been maintained until the present day.

A blade-based LSA appears after the Aterian, shown for the first time, and before the Iberomaurusian. The latter is a bladelet technocomplex. The blade technology includes no microliths. There are AMS dates from Shakshuk of ca. 30kya for the early LSA and 16kya for the Iberomaurusian. This confirms that the Aterian can no longer be considered to span 40-20 kya: the stratigraphy showed a thick deposit accumulated after the Aterian and before the onset of the Iberomaurusian.

Jebel Gharbi was intensively occupied in the Final Pleistocene, with blade and bladelet industries Epipalaeolithic in nature. However, the precise cultural framework requires further investigation. Several Epipalaeolithic sites are recorded within the Ain Zargha system which are believed to represent a continuum corresponding to different aspects/episodes of occupation by hunter-gatherer groups in their annual cycle. At Shakshuk, Site SJ-00-56 was located near a permanent spring almost at the mouth of the Wadi Sel in front of the Jefara. It was a hunting campsite with abundant faunal and charcoal remains. A type of equid, probably a wild ass, seemed to dominate the faunal assemblage. The site was dated to 16 750 +/- 60 BP.

The Iberomaurusian (locally called Eastern Oranian) layers at Haua Fteah were placed by McBurney between 15-10 kya. Nevertheless, this chronology could be pushed further back in time including two more dates from Layer XVI, at the Dabban/Orian interface: 18 620 +/- 150 and 16 070 +/- 100 BP. They are in agreement with the 14C datings cited above, from south of Ras el Wadi and from Site SJ-00-56 at Shakshuk, and could date the early Iberomaurusian. At the same time, as early as about 15kya (Cremaschi & di Lernia 1998), there was in the southern regions a climatic amelioration with moister phases. The same groups, whose settlements were along the Libyan coast or immediately below, at Ras el Wadi and at Haua Fteah, gradually moved towards the southern region. All of the species hunted by those groups are depicted in the Tadrart Acacus artworks, including the elephant (recorded in one of the late Oranian layers at Haua Fteah). Moreover, it is worth mentioning that the material culture of the Saharan groups - except for the pottery invented there for the first time - is entirely related to the Iberomaurusian background. Dental morphological evidence has indicated that Iberomaurusian peoples show some degree of affiliation with all later North Africans, including the Shawia Berbers and the Capsians.

The Holocene phases, for which there is currently very little information, require further study. Pottery-users' sites unearthed in the Jefara and in the jebel valleys could be a record of seasonal movements of herders between the plain and the plateau highlands. The remains of temporary campsites, hearths and rock art works that we discovered in the region between Jado and Nalut, could be interpreted accordingly. Both the Haua Fteah and Abiar Miggi caves have yielded ceramics with impressed decorations which can be related to the Neolithic of Capsian Tradition, widespread in the Maghreb starting from about 6500 BP. The study of this ceramic horizon involves also the problem of the ovicaprids importation, and the subsequent Neolithic-type organisation in the western North Africa, whose clarification seems to be of the utmost importance.

### **Summary of the origins of the Aterian**

Current research on the Aterian in Libya opens the door to several re-considerations of the prehistory of the Late Pleistocene, not only in Africa but also in other parts of the world.

The original chronology of a 20-40 kyr-old Aterian should be rejected in light of new radiometric determinations. The age of 40 kyr should be considered as marking the end, rather than the beginning, of the Aterian. Some dates indicate ages as early as 80 kyr, but an even earlier beginning should not be ruled out. Considering the wide geographical extension of the Aterian from the Mediterranean coasts to the southern Sahara and its long span of more than 40 000 years, different Aterian groups exhibiting cultural adaptations and diverse adaptations must have occupied North Africa.

Discussions of the place of origin of the Aterian should not be geographically limited. The early dates for the Aterian from the Central Sahara and the lack of dates later than around 60 kyr call into question the Maghreb as the birthplace of this culture. It permits a consideration of more southern cultures that could have determined or affected some Aterian technological traditions. A likely region to look in this regard is East Africa. Aterian bifacial technology has been compared with the Lupemban of East and Central Africa. The Upper Nile Valley could have been the gateway connecting North and East Africa.

Aterian populations covered a vast territory and probably moved across North Africa slowly. They were forced to abandon the Central Sahara at the onset of a very severe dry spell a little later than 60 kyr. Some groups probably moved northwards to the Maghreb and to eastern ranges such as Jebel Gharbi, where more friendly environmental conditions allowed them to flourish for some 20 000 years more.

These groups, although fully anatomically and cognitively modern, were not seafaring. They did not cross the Strait of Gibraltar or venture to any other maritime destination. They were desert-orientated peoples. Neither cultural exchanges nor influences are attested to in the Aterian or the various European Middle or Upper Palaeolithic cultures that flourished at the time of the Aterian. The Mousterian groups in southern Iberia kept separate from African modern humans. The Aurignacian cultural groups were too far removed from the Aterians, as they were concentrated in northern Spain, north of the Ebro Valley, where they gradually developed their traditions out of the local Mousterian. The Solutreans are only apparently similar to the Aterians: their chronology was much later, their subsistence economy was oriented toward land resources and their technology was derived from the Gravettian, another local complex.

Population migrations did not characterise North African and European relations in the late Late Pleistocene. Diffusion of traditions also did not occur, as local traditions developed separately on the two continents. Ultimately, in light of the revised Aterian chronology, even technological convergence between the bifacial retouch of Aterian tanged tools and Solutrean foliate points is hardly conceivable as this idea is based on outmoded theoretical grounds which use typomorphological comparisons that force analogies between chronologically and behaviourally distinct cultures.