Early Holocene Maghreb prehistory: an evolutionary approach

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Riassunto

Presentiamo in questo articolo una revisione del modello di sviluppo culturale del Maghreb nel corso dell'Olocene antico. Viene adottato un approccio evoluzionistico centrato sul processo di adattamento, piuttosto che un approccio diffusionistico che mette in evidenza i contatti esterni. Per far questo abbiamo stabilito i seguenti punti:
1. Esiste una continuità tra l'Iberomaurusiano e le industrie dell'Olocene antico in Algeria e in Tunisia.
2. Non c'è attualmente prova di una influenza culturale o biologica che provenga da Est.
3. Durante l'Olocene antico, in Algeria e in Tunisia, si svilupparono due tradizioni, entrambe derivate dall'Iberomaurusiano: l'una situata ad Ovest (dintorni di Sétif e regioni occidentali) e l'altra ad Est (parte orientale delle pianure di Constantine e regione di Tébessa-Gafsa).
4. Le variazioni all'interno di ciascuna di queste tradizioni sono probabilmente attribuibili, almeno in parte, a una variabilità legata alla funzione e alle attività piuttosto che all'etnicità.
5. Una differenza nelle fasi di adattamento consente di dividere la tradizione orientale (e forse anche quella occidentale) in due periodi cronologici (Capsiano Antico e Capsiano Recente), che si possono definire sulla base di differenze tecnologiche nella produzione delle lamelle.
I principali argomenti ai quali fa appello la nostra tesi sono i seguenti: 1) l'adattamento ai cambiamenti ambientali tra il Pleistocene recente e l'Olocene antico; 2) le conseguenze di un relativo isolamento geografico su popolazioni che si spostano attraverso un vasto territorio continentale; 3) la comune discendenza, con modificazioni, da gruppi ancestrali tecnologicamente poco divergenti (Iberomaurusiani occidentali e orientali). Presentiamo questo modello a titolo di ipotesi da esaminare, augurandoci che possa stimolare un dibattito e portare a una ricerca mirata a ottenere i tipi di dati (biologici, ambientali, tecnologici-stilistici) necessari per poter valutare sia la sua validità che quella di teorie alternative.

Summary

In this paper we have presented a revised model of cultural development in the early Holocene of the Maghreb using an evolutionary approach which focuses on adaptive processes rather than a diffusionist approach which emphasizes outside contact. In doing so we have argued the following points:
1. There is continuity between the Iberomaurusian and early Holocene industries of Algeria and Tunisia.
2. There is little evidence at present for influence, either cultural or biological, from the east.
3. During the early Holocene in Algeria and Tunisia two traditions developed from the Iberomaurusian; one located in the west (vicinity of Sétif and west) and the other in the east (eastern Constantine Plains and the Tébessa-Gafsa region).
4. Variations within each of these traditions can probably be explained, at least in part, to functional or activity-related variation rather than ethnicity.
5. A phase difference, which divides the Eastern tradition (and possibly the Western tradition) into two chronological periods (Early and Late Capsian), can be defined on the basis of technological differences in bladelet production.
The primary explanatory processes invoked in our argument are: (1) adaptation to Late Pleistocene/Early Holocene environmental change; (2) the effects of relative geographical isolation on populations moving into a large land mass; and (3) descent with modification from slightly divergent (technologically) ancestor populations (western and eastern Iberomaurusian). We present this model as a hypothesis for examination in the hope that it will stimulate debate and lead to research designed to obtain the types of data (biological, environmental, technological/stylistic) needed to evaluate both it and alternate formulations.

Résumé

L'article présente une revision du modèle de développement culturel du Maghreb au cours de l'Holocène ancien. Il utilise une approche evolutionniste centrée sur les processus d'adaptation, au lieu d'une approche diffusionniste mettant l'importance sur les contacts avec l'extérieur. Pour ce faire nous avons établi les points suivants:
1. Il y a continuité entre l'Ibéromaurusien et les industries de l'Holocène ancien en Algérie et en Tunisie.
2. Il n'y a jusqu'ici guère de preuves d'une influence soit culturelle soit biologique, provenant de l'Est.
3. Durant l'Holocène ancien, en Algérie et Tunisie, se développèrent deux traditions, toutes deux dérivées de l'Ibéromaurusien: l'une située à l'Ouest (environs de Sétif et contrées occidentales), l'autre à l'Est (partie orientale des plaines du Constantinois et région de Tébessa-Gafsa).
4. Les variations au sein de chacune de ces traditions sont probablement attribuables, au moins en partie, à une variabilité liée à la fonction ou aux activités plutôt qu'à l'ethnicité.
5. Une différence dans les phases d'adaptation permet de diviser la tradition orientale (et peut-être aussi l'occidentale) en deux périodes chronologiques (Capsien Ancien et Capsien Récent). On peut les définir sur la base de différences technologiques dans la production des lamelles. Les principaux processus explicatifs auxquels fait appel notre argumentation sont les suivants: 1) l'adaptation aux changements de l'environnement entre le Pleistocène récent et l'Holocène ancien; 2) les conséquences d'un relatif isolement géographique pour des populations se déplaçant à travers un vaste territoire continental; et 3) la commune descendance, avec des modifications, à partir de groupes ancestraux peu divergents technologiquement (Ibéromaurusien de l'Ouest et de l'Est). Nous présentons ce modèle à titre d'hypothèse à examiner, espérant qu'il suscitera un débat, et qu'il inspirera des recherches en vue d'obtenir le type de données (biologiques, environnementales, technologiques-stylistiques) aptes à permettre d'apprécier sa validité et celle des thèses contraires.

Introduction

The late Pleistocene and early Holocene prehistory of the Maghreb is documented by a wealth of data. These data are to a large extent the result of the debate earlier this century over the origins of the Aurignacian and the relationship between European and North African prehistoric sequences (Sheppard, 1987, n.d.), especially in view of the ubiquitous nature and visibility of Capsian *escargotières* in eastern Algeria and Tunisia. The development of a sophisticated typological scheme (Tixier, 1963) that facilitates inter-assemblage comparison, has made it possible to develop syntheses which present increasingly refined space/time models and to investigate hypotheses of origins and relationships between industries (Balout, 1955; Camps, 1974). These syntheses have been based primarily on the study of the lithic assemblages and, to a lesser extent, human skeletal material.

Data on and reconstructions of palaeoenvironments, diet, settlement patterns, and intra-site variation are beginning to be published but are still uncommon (Camps-Fabrer, 1975; Grébénart, 1976; Morel, 1974, 1978; Lubell *et al.*, 1975, 1982-83; Roubet, 1979). However, in view of the new data now available, resulting from new excavations and additional radiocarbon dating, it is time to review the traditional explanatory frameworks and the questions they are designed to answer and perhaps suggest some improvements or revisions. This paper follows from our previous publications (Lubell *et al.*, 1984, 1989) and presents for discussion an outline of a revised explanatory framework.

Three questions have dominated the study of the late Pleistocene/ early Holocene prehistory of the Maghreb: (1) What is the origin of the Capsian? (2) What is the relationship between the Capsian and contemporaneous industries to the west and east of its main distribution? (3) What is the meaning of assemblage variation in the Capsian as expressed by the *Typique/Supérieur* dichotomy? Each of these will be examined in turn.

The Origin of the Capsian

The major cultural processes used to explain change in the Maghreb have been diffusion and migration, particularly with regard to the early Holocene change from Iberomaurusian to Capsian. The possibility that these processes may have been important throughout prehistory is not disputed, however, in the change from Iberomaurusian to Capsian local continuity and adaptation were more important. Furthermore, even if the mobility and fluid social relations of hunter-gatherers may have promoted rapid diffusion of technologies over wide areas (Hassan and Gross, 1987), diffusion must be explained in terms of why new ideas were accepted and not solely by noting that diffusion occurred.

The primary evidence used to suggest migration and population replacement or assimilation is that provided by the human skeletal data. Statistical analysis of cranial, facial and dental metric traits have been used to construct typologies (Chamla, 1978, 1980). Chamla argued that the Capsian culture was carried into the Maghreb from the east by «new arrivals belonging to a robust protomediterranean type...» (1978: 397). Our analysis of the available data (Lubell *et al.*, 1984) has suggested that: (a) there is no basis for creating types based on a sample of 68 skulls from 90,000 km² and scattered over 16,000 years, when even within individual samples (e.g. Afalou, Medjez II) there is considerable heterogeneity (viz. Chamla, 1975); (b) Capsian and Iberomaurusian females cannot be discriminated; and (c) the present pattern can be explained by a decrease in male sexual dimorphism from Iberomaurusian to Capsian combined with increasing geographical isolation and reduced gene flow during the Early Holocene. There is no need to call upon migration to explain the available evidence, which can be simply explained in terms of continuity and local development. Unfortunately, the «typological» approach to the study of prehistoric human variability, relying almost exclusively on metrical characteristics that cannot always be ascribed to genetic

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inheritance, continues to be employed by most anthropologists examining skeletal series from the Maghreb and North Africa (e.g. Dutour, 1989). Such an approach glosses over the established fact that intra-population variability may often be greater than inter-population variability.

The other lines of evidence which could be used to argue for the introduction of the Capsian from the East and a major break in continuity from the Iberomaurusian are: (1) chronology, (2) spatial distribution, (3) abrupt technological change, and (4) similarities with industries to the east.

Chronology

There is no evidence for any chronological hiatus between the Capsian and Iberomaurusian. The youngest Iberomaurusian dates (8220 ± 820 BP for El Haouita Terrasse; Estorges *et al.*, 1969: 87) overlap with the oldest Capsian dates (9805 ± 160 B.P. at Aïn Misteheyia; Lubell, 1977: 70). And it has been argued that there was interaction between Iberomaurusian and Capsian groups (e.g. Medzez II; Camps-Fabrer, 1975). We suggest that the Medzez II evidence can be used equally to argue for divergence from Iberomaurusian and not interaction between culturally and biologically different populations.

Spatial distribution

The Iberomaurusian and Capsian are now known to have overlapping spatial distributions. A number of Iberomaurusian sites have been found in late contexts in the interior (Es-Sayar 13,100 ± 250, Amara, 1977; El-Onçor 10,040 ± 190, Heddouche, 1977; El Haouita, Estorges *et al.*, 1969) and two *in situ* hearths exposed in a deep alluvial section of the Wadi Mezeraa southwest of Tébessa have been dated to 11,588 ± 99 BP (SMU 655) and 11,879 ± 286 (SMU 738). Although no diagnostic artifacts were recovered, the conclusion that the hearths represent an occupation (however ephemeral) by people contemporaneous with those to the west cannot be avoided. Although the archaeological record in the interior for the period from 25,000 to 10,000 BP may have been destroyed by erosion it could equally be argued that the seemingly cold and arid interior (Rognon, 1979; 1987) was inhospitable to hunter-gatherers. Although there is some debate over the nature of the early Holocene climate of the Maghreb (Rognon, 1987; vs. Fontes and Gasse, 1989) there seems to be little doubt that climatic conditions, although possibly highly erratic (Lézine and Casanova, 1989; Rognon, 1987: 27), improved to some degree north of the Sahara during the early Holocene. Therefore at the end of the Last Glacial, as sea levels rose and reduced the extent of the coastal plain, populations moved inland to increasingly hospitable areas as Petit-Maire and Dutour (1987: 281) have suggested for the Western Sahara in general. Further systematic and coordinated palaeo-environmental and archaeological research in the Maghreb will be needed to test the validity of this hypothetical correlation between interior settlement and improved conditions.

Technological change

The Capsian industry has traditionally been viewed as an introduced technology and therefore as having little affinity with the Iberomaurusian which it replaced in many areas. If this is so then one would expect to see little continuity between late Iberomaurusian and early Capsian assemblages. Such continuity can be argued (Lubell *et al.*, 1984). Chronological seriation of the various Epipalaeolithic industries suggests a decrease in the number of backed bladelets in the late Iberomaurusian (especially at inland sites) and an increase in the number of geometrics, burins, notches and denticulates. These changes give to the late Iberomaurusian, a general configuration that is increasingly reminiscent of the early Capsian and early Holocene assemblages from the western Maghreb. Late Iberomaurusian geometrics, although few in number, tend to be segments similar to those which dominate early Capsian assemblages. Cluster analysis of these assemblages indicates close similarity between late inland Iberomaurusian (El Haouita Terrasse and Columnata) and early Capsian (R'Fana inférieur, Medjez II Phase I, Koudiat Kifen Lahda B Level 1, Aïn Naga) (Lubell *et al.*, 1984: 173).

Technologically there is little difference between the blade/bladelet technology of the Iberomaurusian and early Capsian; both are based on the use of single platform cores for bladelet production. As will be discussed below, change in the Capsian technology occurred after 8000 BP at which time finely made thin parallel sided bladelets were used in the manufacture of backed bladelets and geometrics. This later industry does look very different from the Iberomaurusian, however, prior to 8000 BP. Capsian geometrics and backed bladelets are made on thicker less standardized blanks (Sheppard, 1987), uni-directional retouch is more common and the general character of the industry is much more like the Iberomaurusian. The one major difference between the late Iberomaurusian and early Capsian is the predominance of blades in the early Capsian of the Tébessa/Gafsa region, however the availability of large flint nodules in that area compared to the more limited resources of the coast and the Constantine plain must be considered to have played a significant role in this divergence.

In sum a very strong case can be made for continuity in lithic traditions from the Iberomaurusian through to the early Capsian and west Algerian assemblages. Additional data on this point is presented in Lubell *et al.* (1984).

Eastern connections

If the Capsian is to be derived from the east then one might expect to see similar assemblages in that region. Ideally, comparison between Maghreb Capsian assemblages and others from the postulated source region should be based on stylistic attributes. Close has conducted such a study for the Iberomaurusian and has suggested limited similarities between the Algerian Iberomaurusian, the Eastern Oranian, the Libyco-Capsian and a number of industries from the Nile valley, most of which date prior to 10,000 BP (Close, 1977: 232-258; Close *et al.*, 1979: 217-232). The most marked «trans-continental» similarity is between the oldest Iberomaurusian assemblage in her sample (Tamar Hat Layer 75) and the Nilotic assemblages, leading Close to suggest the possibility of a common source for both (1977: 252). Close notes a strong continuity between the Libyco-Capsian and Eastern Oranian at Haua Fteah, implying local development, and has suggested closer correspondence between the Libyco-Capsian and Algerian Iberomaurusian than between Libyco-Capsian and the Capsian (1977: 74). Stylistic analysis of the Haua Fteah Libyco-Capsian and Maghreb Capsian conducted by Sheppard has also shown little similarity between the two industries (Sheppard 1987: 234). The only Nilotic assemblages to have been described as similar to the Capsian are the Shamarkian and the Arkinian (Schild *et al.*, 1968). However, both are at best contemporaneous if not younger than the earliest Capsian, making them unlikely candidates for a precursor. Therefore, at present there is no evidence supporting the development or derivation of the Capsian lithic industry from outside of the Maghreb.

In summary the various lines of evidence, used to argue for derivation of the Capsian from the east, in fact suggest the opposite, and simpler conclusion of continuity between the Iberomaurusian and Capsian. In the early Holocene as the Iberomaurusian populations moved inland to take advantage of the improved climatic conditions at the end of the Pleistocene adaptive divergence occurred resulting in inter-regional variability.

The Eastern and Western Traditions

If the argument for local continuity from the late Pleistocene through the early Holocene is made then we must face the problem of explaining the development of a relatively large number of industries which have been defined for the early Holocene (Upper and Typical Capsian, Columnatian, Keremian and Elassolithic). We think it is possible to group the five recognized industries into two major regional traditions: Eastern and Western. The divergence of these two traditions was a result of both relative geographic isolation and a history of development from regional Iberomaurusian populations who had slightly divergent lithic and bone

industries. These earlier differences were amplified by the effects of increased isolation and changes in adaptation in response to new local conditions (Lubell *et al.*, 1984: 177). The transition zone between this east-west continuum was in the western part of the Constantine High Plains, southwest of Constantine. Movement between these zones would also have been constrained by the ranges of the Saharan Atlas, the very arid desert south of the Hodna Basin, and the broken uplands of western Algeria.

The Western Tradition includes the Columnatian, Keremian, and Elassolithic. Although each of these has distinctive characteristics, they also have a number of traits in common. These are: (1) presence of microbladelets and/or very small tools made upon these (Columnata, Cubitus, Koudiat Kifen Lahda, El Hamel, Kef el Kerem, Bou Aichem); (2) geometrics dominated by segments; (3) presence of trapezes with three retouched sides (Columnata, Cubitus, Aïn Cherita, and Kef Dahmouni); (4) presence at many sites of microsegments (Roubet, 1968); (5) presence of oblique bevel-edged bone knives (found also in the Iberomaurusian as noted by Camps-Fabrer, 1966: 62); (6) high frequencies of endscrapers.

The Eastern Tradition includes Typical and Upper Capsian which co-existed in the eastern region. Differences between these industries are primarily found in the frequencies of tool types. Examination of roughly contemporaneous assemblages from geographically restricted areas has shown that there is little stylistic difference between the two industries suggesting activity rather than ethnic distinctions (Sheppard, 1987). The major difference between the Western and Eastern traditions is found in the abundance of geometric forms (primarily triangles prior to 8,000 BP) in the east. Another distinction is found in the abundance of endscrapers in the Keremian versus burins in the Typical Capsian. These edge tools were most likely used in manufacturing tasks, suggesting the hypothesis of similar activity related facies in each region using different tool forms (Lubell *et al.*, 1984: 180-181).

We have argued that the divergence of the Eastern and Western traditions is related to (1) relative geographic isolation, (2) development from distinct Iberomaurusian traditions, and (3) adaptation to local conditions. It is generally agreed that many of the industries grouped in the Western Tradition are related in some way to the Iberomaurusian. Continuity with the Iberomaurusian in the west is shown by the presence of the oblique bevel-edged bone knife in both Western Iberomaurusian (to which it is restricted) and the Western Tradition (cf. Camps-Fabrer, 1966: 62). In the east geometric forms (triangles, scalene backed bladelets) are much more common in the late Iberomaurusian (Balout, 1955: 380) and we have suggested that the importance of geometrics in the Eastern Tradition relates to its history of development from Eastern Iberomaurusian and Iberomaurusian-like industries which began to diverge from the western Iberomaurusian during the late Pleistocene and early Holocene (Lubell *et al.*, 1984: 180).

Technological Change in the Eastern Tradition

Traditionally the Capsian has been divided into Typical and Upper Capsian. As this division reflects important variation in tool frequencies which appear to relate to activity variation (Sheppard, 1987) this distinction should be retained as a facies difference in the Eastern Tradition. In addition we would like to introduce a phase distinction based on a technological change which occurs in the period between 8000 and 7600 BP. Sheppard (1987) has called the earlier phase Lower Capsian and the recent phase Upper Capsian but perhaps to avoid confusion with *Capsien Supérieur* the terms Early and Late Capsian should be used. Based on a metrical analysis of a number of assemblages with long sequences, Sheppard (1987: 60-109) has demonstrated a change in blank production which occurs sometime after 8000 BP and before circa 7600 BP. Bladelets produced after the technological change are thinner, and narrower (mode 10-12 mm) with parallel sides, and are generally much more standardized in form. These blanks are struck from conical cores

which often exhibit a great deal of fine platform facetting and, if the core is not heavily reduced by non-systematic flaking before discard, a fluted (*cannelé*) core face produced by the removal of a series of standardized bladelets. It is possible that this technological change involves the use of a pressure technique (Tixier, 1976).

The effect of this development in blank production is seen in a dramatic improvement in the standardization of geometric and backed bladelet form, an increase in the quantity of trapezes, and the development of elongated scalene triangles (Sheppard, 1987: 186). Once this new technique was developed it appears to have rapidly spread throughout both the Eastern and Western Traditions and we have argued (Lubell *et al.*, 1984:183) that this is responsible for the development of apparent homogeneity across the region as has been noted by Camps (1974: 157). It is possible that this event also occurs during a period of increased aridity when inter-regional contact may have intensified as a result of a widening of social networks by hunter-gatherers attempting to cope with increased environmental stress (Lubell *et al.*, 1984: 184). Examination of this hypothesis using what are apparently «stylistic» attributes (Sheppard 1987: 233) has, however, shown increased inter-site variability at this time. Therefore, although at a technological level there is definite increase in similarity throughout the eastern Maghreb (Tunisia and Algeria), at the stylistic level there is apparently increased social differentiation. At this time it is not possible to state whether this is related to increasing isolation of social units in circumscribed areas of higher resource productivity, or to a development of ethnicity as a means of formalizing inter-areal contacts. The available data are insufficient for a full investigation, but these are certainly hypotheses that warrant further investigation.

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