ENVIRONMENTAL CHANGE AND HUMAN CULTURE
IN THE NILE BASIN AND NORTHERN AFRICA
UNTIL THE SECOND MILLENNIUM B.C.
Poznań 1993
PL ISSN 0866-9244 ISBN 83-900434-1-6

ANDREW B. SMITH

Terminal Palaeolithic industries of Sahara: a discussion of new data

In the recent West African radiocarbon date survey, McIntosh and McIntosh (1986: 420) have stated that the new finds from Temet in Niger: "...directly contradict conclusions drawn by J.D. Clark and A. Smith based on their earlier work in the same area". I would like to discuss these new finds and to place them in context with other work that has been done in North Africa.

Initially the reports by Clark *et al.* (1973) and Smith (1976) were based on work done under the aegis of the British Aïr Mountain Expedition (1970; Hall *et al.* 1971) which had followed the Mission Berliet (Hugot 1962).

Surface collections were made over a large area, mainly around Adrar Bous (20°19'N, 8°57'E), a ring complex outlier of the Aïr Mountains on the edge of the Ténéré, and in Greboun Wadi below Mont Greboun (20°2'N; 8°32'E).

One of the more interesting collections was of a surface scatter on a terrace in Greboun Wadi which yielded an "Upper Palaeolithic" blade and burin assemblage. This comprised blades (notched, backed, truncated) struck from prismatic and double-ended cores, burins, plus a specialized shouldered awl-like tool on a blade commonly referred to as a 'pointe Ounan' (Clark 1971: 456). These Ounanian points amounted to 14.3% of the 84 formal tools in the total collection of 439 pieces of stone, while "geometric microlith forms are not represented" (Clark *et al.* 1973: 270). A similar collection made at the southern end of Adrar Bous at Agorass n'Essoui produced 58 Ounanian points in context which suggested they were discrete from microlithic aggregates of the older diatomites (Clark *et al.* 1973: 270).

Microlithic aggregates on the other hand were found at a number of localities around Adrar Bous (Smith 1976). These microliths, pottery and bone harpoons were in direct association, along with an aquatic fauna of the 710 m lake level at Agorass n'Kiffi which had a *post quem* date of 7,310 ± 120 B.P. (Faure *et al.* 1963) from surface calcium carbonate formation. The highest percentage of formal tools from the three main sites analyzed were from geometric

microliths. These ranged from 32% at the Well Area, to 41.3% at Adrar n'Kiffi and 48.3% at Diatomite 1.

From 1978 the Mission ORSTOM, based in Niamey under the direction of J.-P. Roset has visited the north eastern part of the Aïr and done a number of excavations with very exciting results. These included sites previously collected from by myself around Adrar Bous. I had assumed at one of the sites, Diatomite 1, that the collection I made was on a single deflated land surface. Roset (1983) showed I was wrong by cutting a section into the diatomites where he found "les mêmes éléments sous les dépôts lacustres" (Roset 1983: 138) with the addition of charcoal which gave a date of 9,030 ± 190 B.P. (UW-754) and a number of tool types not represented in the collections I made in 1970, namely Ounanian points.

Roset also excavated at another site, Temet (Roset 1983: 129) close to Mont Greboun, therefore not far from our collection locality in Wadi Greboun. This excavation produced similar results to the Diatomite 1 excavations, with an industry *in situ* at the bottom of diatomite beds, and charcoal which gave a date of 9,550 ± 100 B.P. The industry described by Roset includes a macrolithic blade industry and Ounanian points, geometric microliths, truncated blades, backed microliths, projectile points and pottery. In other words in a single site he has the material culture which we had previously suggested was Upper Palaeolithic, ceramic microlithic and Neolithic, all appearing to come from one horizon described as: "la couche aux vestiges préhistoriques". It is unclear from the description how the upper date of 8,565 ± 100 B.P. relates to the cultural material.

The impression given in the description and from the section (Roset 1983: 129) is that the artefacts were found on an old land surface of colluvial sands and gravels. In addition the bifacially flaked projectile points are said to come from test trenches excavated to the north and east of the main cutting, and some in the collection came from the surface. Roset states that there is some risk of mixing of different materials, but seems to reject this on the basis of the raw materials which are similar in all the sites. No pottery was found, but a potter's 'comb' for decorating sherds was retrieved. This is suggested as being used for an "impression pivotante".

I would suggest that the relationship between all the various artefacts is much more complex than has been stated by the author. While the possibility must still remain that the macro-blade industry which produced the Ounanian points also made geometric microliths, we have to consider the evidence from the Greboun Wadi site, not very far away from the Temet site, that no geometric microliths were found.

That a macro-blade industry precedes geometric microlithic forms is documented at several sites in North Africa. At Taforalt (Roche 1963) geometric microliths are very rare. The lowest level X has no geometrics and they remain at very low levels throughout the sequence which lasts until 11,000 B.P. Similarly at the Haua Fteah the Eastern Oranian of McBurney (1967), levels XVI - XI, has no geometrics, although backed blades are common. In contrast in the suc-

ceeding Libyco-Capsian (levels X - IX) we see the first appearance of geometric microliths. The dynamic of stylistic changes in stone tool frequencies can be seen in McBurney (1967: Fig. VIII: 2) with a decrease in large artefacts to microlithic ones over the period 10,000 to 7,000 B.P.

The dating sequence at Haua Fteah is only approximate, but the radiocarbon dates indicate the Eastern Oranian begins around 14,000 B.P., and the Libyco-Caspian around 10,000 B.P. (McBurney 1967: 193, 123). Thus the beginnings of microlithization at the Haua Fteah is roughly coeval with the dates for microlithic tools from both Temet and Adrar Bous, Diatomite 1.

Thus from these dated sequences we get a reasonable indication of the evolution of tool types from a macro-blade to a geometric microlithic industry over the period 12,000 to 9,000 B.P. Even in assemblages with geometric microliths throughout the sequence these evolutionary trends continue; at Ain Misteheyia Lubell *et al.* (1983) found that the geometrics from the upper level (7,700 - 7,300 B.P.) were three times more frequent than the lower level (9,800 - 7,700 B.P.). This then brings into question the relationship of the Ounanian macro-blade industry seen in Wadi Greboun and the microlithic industries from our collections at Adrar Bous including the surface deposits at Diatomite 1, where the macro-blade component is absent. Roset's suggestion that the Ounanian points and geometric microliths are from the same industry evokes a question on the technology and use of the various tool types. The Ounanian points are made on macro-blades, which can also be the basis of the geometrics. However, geometric fabrication usually comes from a micro-burin technology, as seen in our collections from Adrar Bous (Smith 1976: 196). No micro-burins were included in the macro-blade collections either from Greboun Wadi or Agorass n'essoui (Clark 1976: 77 - 78). If Tixier (1963) and Raimbault (1983) are correct in assuming that the Ounanian point was most probably a hafted tool, rather than an awl, then we would like to know why these should be chosen rather than the geometrics; I would argue that these and the bifacially flaked 'Tenerian' projectile points, are functional equivalents of each other.

The excavations by Roset at Temet have revealed an old erosion land surface on the edge of a depression that at several times in the past was filled with fresh water to form a lake. After 9,500 B.P. this lake must have reached great depth to permit six meters of diatomite deposit to accumulate. This date is consistent with known expansion of many lakes in the southern Sahara: Lake Chad (Servant and Servant 1970; Servant and Servant-Vildary 1980); Mauretanian Adrar (Trompette and Manguin 1972); Taoudenni (Riser *et al.* 1983), *etc.* What we must recognize is that this locality was attractive for human occupation for some considerable period during the Terminal Pleistocene and Early Holocene. Smaller lakes or temporary standing pools would have filled the depression in the period prior to 9,500 B.P. and it is on the edge of these small lakes that the makers of the Ounanian points and 'ceramic microlithic' material would have camped. The fact that the cultural material lies on a land surface of colluvial sands and gravels indicates this is a catchment area with considerable run-off in the past, with the cultural material deposited during a drier episode, since the tools are on the surface and not intermixed with the colluvium.

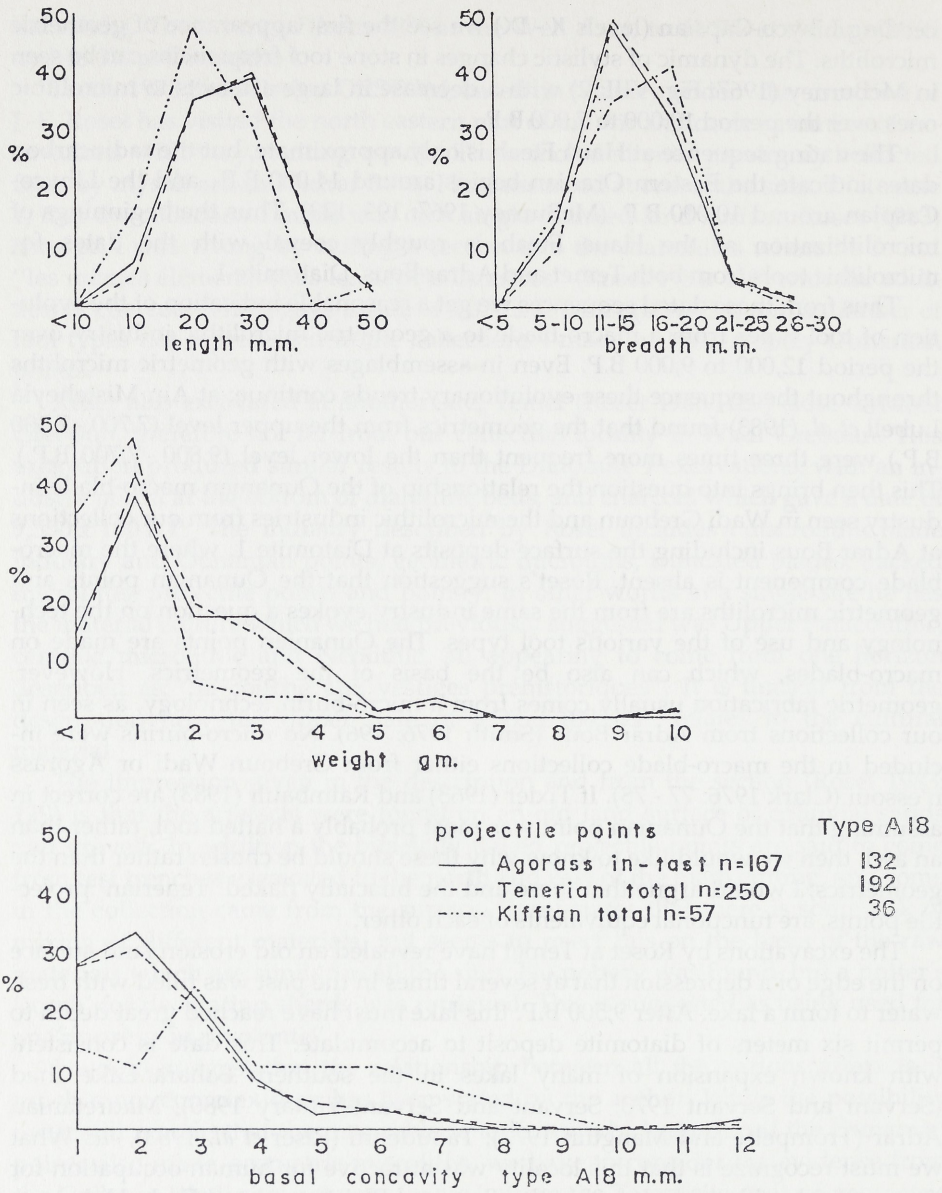

Fig. 1. Projectile points collections around Adrar Bous: analytical comparison.

I would further argue that the period of colluvial deposition would have been a result of what Rognon (1976) calls a transitional period of large seasonal oscillations between 14,000 and 11,000 B.P. Conditions stabilized somewhat after 12,000 B.P. and more surface water was to be found in this region, which would

have made it attractive to the macro-blade makers in the Temet basin. A drying episode followed around 10,000 B.P. (Servant and Servant-Vildary 1980) in which erosion and deflation could have occurred over the next 1000 years. This drier episode would be a period of degradation and would permit deflation to take place allowing a mixture of the two industries, as is probably the case around the Taoudenni Lakes at Foum-el-Alba described by Raimbault (1983) where pottery is also found and a date of 7,450 ± 130 B.P. was achieved from shell associated with Ounanian points at MK 36. Following this dry period there was a massive increase in surface water between 9,000 and 7,500 B.P. which probably deposited the thick diatomite beds at Temet and Diatomite 1, Adrar Bous. The locality at Greboun Wadi where we made our macro-blade collections is today a terrace on the edge of the wadi, indicating deposition and deflation prior to a period of massive run-off, which caused erosion and terrace formation.

An additional clue to the complexity of the stratigraphy lies in the associated bifacial projectile points. These forms, well-documented in Hugot (1957) and from my own work at Adrar Bous (Smith 1980), are from industries with domestic stock. All the types illustrated by Roset (1983: 133) were found among the collections in Agorass in-tast, Adrar Bous.

An analytical comparison was made on projectile points from collections around Adrar Bous. Fig. 1 compares samples from the presumed Neolithic sites in Agorass in-tast with those for the Adrar Bous Neolithic ('Tenerian') sample as a whole. These, in turn, are compared with the points associated with the microlithic tools around Adrar Bous. It can be seen that the Agorass in-tast and Tenerian samples are virtually identical. There is some difference between the Tenerian and ceramic microlithic ('Kiffian') sample, but this is marginal, and could be ascribed to the low numbers of points in the 'Kiffian' collection. Only one crescent was found in a stone-tool assemblage of 1432 formal tools from 18 surface sites around Adrar Bous. This indicates that the Tenerian, as the food producing industry of Adrar Bous has been named, does not include geometric microliths, and strongly suggests that the projectile points from Temet are intrusive, as are, most probably, those I described from Diatomite 1 (Smith 1976). Another key to this is the suggestion that the decorative motif "impression pivotante" is to be found with the 'ceramic-microlithic' industry at Temet. Both my work (Smith 1980) and that of Arkell (1953: Plate 32) has shown that this decoration is associated with food production, and is quite different from the earlier wavy-line and dotted-wavy line ware of the 'ceramic-microlithic' (Arkell 1949: Plate 72, *etc.*). The wide range of projectile points and the rocker-stamped pottery are part of the Tenerian industry.

In conclusion, while my arguments for the appearance of Ounanian points in association with geometric microliths suggesting some mixing of two industries may not be conclusive, the appearance of "Neolithic" projectile points and pottery-decoration tools support this contention. The evidence from excavated sequences elsewhere in North Africa would argue against the mixing of macro-

blade industries and geometric microlithic industries. Although there may well be transitional industries the large numbers of both Ounanian points and microliths would argue against the Temet assemblage being homogeneous. The evidence from Wadi Greboun shows that at least at this location there was no mixture.

References

ARKELL, A.J. 1949. Early Khartoum. Oxford: Oxford University Press.

– 1953. Shaheinab. Oxford: Oxford University Press.

British Aïr Mountain Expedition. 1970. *Science in the Southern Sahara. Expedition Report.*

CLARK, J.D. 1971. An archaeological survey of Northern Aïr and Ténéré. *Geographical Journal* 137 (4): 455 - 457.

– 1976. Epi-palaeolithic aggregates from Greboun Wadi, Aïr and Adrar Bous, North-western Ténéré, Republic of Niger. In: B. Abebe, J. Chavaillon and J.E.G. Sutton (eds.), *Proceedings of the VIIth Panafrican Congress of Prehistory and Quaternary Studies*: 67 - 78. Addis Abeba: Provisional Military Government of Socialist Ethiopia, Ministry of Culture, Sport and Youth Affairs.

CLARK, J.D., M.A.J. WILLIAMS and A.B. SMITH. 1973. The geomorphology and archaeology of Adrar Bous, Central Sahara: a preliminary report. *Quaternaria* 17: 245 - 297.

FAURE, H., E. MANGUIN and R. NYDAL. 1963. Formations lacustres au Quaternaire supérieur du Niger oriental: diatomites et âges absolus. *Bulletin de Bureau de Recherche Géologique et Minière* 3: 41 - 63.

HALL, D.N., M.A.J. WILLIAMS, J.D. CLARK, A. WARREN, P. BRADLEY and P. BEIGHTON. 1971. The British expedition to the Aïr Mountains. *Geographical Journal* 137 (4): 445 - 467.

HUGOT, H.-J. 1957. Essai sur les armatures de pointes de flèches du Sahara. *Libyca* 5: 89 - 236.

– (ed.). 1962. *Missions Berliet Ténéré-Tchad.* Paris: Arts et Métiers Graphiques.

LUBELL, D., A. GAUTIER, E.T. LEVENTHAL, M. THOMPSON, H.P. SCHWARCZ and M. SKINNER. 1983. Prehistoric cultural ecology of Capsian escargotieres. 2: Results of the 1976 excavations in the Telidjene Valley, eastern Algeria. *Libyca* 5.

MCBURNEY, C.B.M. 1967. *The Haua Fteah (Cyrenaica) and the Stone Age of southeastern Mediterranean.* Cambridge: Cambridge University Press.

MCINTOSH, S.K. and R.J. MCINTOSH. 1986. Recent archaeological research and dates from West Africa. *Journal of African History* 27: 413 - 442.

RAIMBAULT, M. 1983. Industrie lithique. In: N. Petit-Maire and J. Riser (eds.), *Sahara ou Sahel? Quaternaire recent du bassin de Taoudenni*: 317 - 341. Marseille: C.N.R.S.

RISER, R., C. HILLAIRE-MARCEL and P. ROGON. 1983. In: N. Petit-Maire and J. Riser (eds.), *Sahara ou Sahel? Quaternaire recent du bassin de Taoudenni*: 65 - 86. Marseille: C.N.R.S.

ROCHE, J. 1963. *L'epipaléolithique marocain.* Paris: Foundation Calouste Gulbenkian.

ROGNON, P. 1976. Essai d'interprétation des variations climatiques au Sahara depuis 40,000 ans. *Revue de Géographie Physique et Géologie Dynamique* 18 (2 - 3): 258 - 282.

ROSET, J.-P. 1983. Nouvelles donnés sur le problème de la néolithisation du Sahara méridional: Aïr et Ténéré au Niger. *Cahiers de l'Office de Recherche Scientifique et Technique Outre-Mer. Série Géologique* 13 (2): 119 - 142.

SERVANT, M. and S. SERVANT-VILDARY. 1970. Les formations lacustres et les diatomées du Quaternaire récent du fond de la cuvette tchadienne. *Revue de Géographie Physique et Géologie Dynamique* 13 (2): 63 - 76.

– 1980. L'environnement quaternaire du bassin du Tchad. In: M.A.J. Williams and H. Faure (eds.), *The Sahara and the Nile. Quaternary environments and prehistoric occupations in northern Africa*: 133 - 162. Rotterdam: A.A. Balkema.

SMITH, A.B. 1976. A microlithic industry from Adrar Bous, Ténéré Desert, Niger. In: B. Abebe, J. Chavaillon and J.E.G. Sutton (eds.), *Proceedings of the VIIth Panafrican Congress of Prehistory and*

Quaternary Studies: 181 - 196. Addis Abeba: Provisional Military Government of Socialist Ethiopia, Ministry of Culture, Sport and Youth Affairs.

– 1980. The Neolithic tradition in the Sahara. In: M.A.J. Williams and H. Faure (eds.), *The Sahara and the Nile. Quaternary environments and prehistoric occupations in northern Africa*: 451 - 465. Rotterdam: A.A. Balkema.

TIXIER, J. 1963. *Typologie de l'Epipaléolithique du Maghreb.* Mémoires du Centre de Recherches Anthropologiques, Préhistoriques et Ethnographiques 2. Paris: Arts et métiers Graphiques.

TROMPETTE, R. and E. MAUGUIN. 1972. Nouvelles observations sur le Quaternaire lacustre de l'extrémité S.E. de l'Adrar de Mauretanie. In: H.-J. Hugot (ed.), *Actes du 6e Congrès Panafricaine de Préhistoire*: 498 - 504. Dakar.