

## CARDIAL DISORDER : ETHNOGRAPHIC AND ARCHAEOLOGICAL COMPARISONS FOR PROBLEMS IN THE EARLY PREHISTORY OF THE WEST MEDITERRANEAN

par J. C. LEWTHWAITE, (\*)

### SUMMARY

Many of the problems with which this colloquium is concerned consist of general theoretical issues clothed in particular local detail. Similarly many of the proposed answers are of a general kind (environmental change, the expansion of a successful adaptation to the limits of its tolerances) which ought logically to be correct in a number of similar situations. By looking at these situations we can better understand the particular issues in the West Mediterranean.

Examples chosen are :

The analogy with the Californian Indian subsistence base of gathered forest produce (acorns, pine nuts) which is an example of ethnographic comparison justified by similarities in environment (Mediterranean climate and vegetation type).

The example of the diffusion of sheep across southern Africa, which occurs in the context of archaeologically similar events (appearance of pottery, intensified marine gathering activity revealed by shell-middens) as does the dispersion of sheep in the West Mediterranean. Most explanatory schemes in the latter area are simple-yet the southern African situation reveals great complexity when non-archaeological material is incorporated into the frame of enquiry.

Finally, the case of the expansion of settlement, domestic animals and the manufacture of ceramics of a distinct type by maritime diffusion through Oceania is considered. Migration on a scale which many archaeologists refuse to accept in Europe took place repeatedly during the expansion of Austronesian-speaking from the Asian mainland, with a Neolithic level of technology.

### RÉSUMÉ

La plupart des problèmes auxquels ce Colloque est confronté concernent généralement des hypothèses théoriques, basées sur des détails locaux particuliers.

Les solutions proposées sont pareillement générales et théoriques (changement de l'environnement, expansion ou adaptation réussie dans certaines limites) et doivent logiquement se retrouver dans un certain nombre de situations identiques. En examinant ces situations nous devrions pouvoir mieux comprendre les problèmes de la Méditerranée Occidentale.

Les exemples choisis envisagent :

- L'analogie de la culture indienne californienne, essentiellement basée sur la cueillette de produits forestiers (glands, pignons) qui fournit une comparaison ethnographique justifiée par une certaine similitude de l'environnement (climat et végétation méditerranéenne type), mais qui se doit d'être affinée.

- L'exemple de la diffusion du mouton à travers l'Afrique du Sud, qui intervient dans un contexte archéologique similaire (apparition de la poterie, intensification de la collecte des coquillages marins), de la même manière que semble s'être produite la diffusion du mouton en Méditerranée occidentale. La plupart des schémas explicatifs sont ici simples alors que la situation de l'Afrique du Sud révèle une plus grande complexité quand on prend en compte les éléments non-archéologiques (ethnies, cultures, langages, etc...).

- Enfin, l'exemple de l'expansion de l'occupation, des animaux domestiques et de la céramique *par voie maritime*, à travers l'Océanie : des migrations, à une échelle que de nombreux archéologues se refusent à envisager en Europe, ont pris place à différentes reprises au cours de l'expansion des populations austronésiennes, originaires du Sud de la Chine, et possédant un niveau néolithique de technologie.

---

(\*) J. G. Lewthwaite. Université de Cambridge - 55. Grove Road, Coombe Dingle - Bristol, BS 9. 2 RS. Angleterre.

## ETHNOGRAPHIC ANALOGIES

Archaeologists cannot avoid an ethnographic approach to the past, since their own culture and upbringing necessarily conditions them to interpret prehistoric data in terms of specific cultural values. Ethnographic analogies tend to be dangerous when not comparative, when not dynamic, and when not relevant to a particular variable.

### a) Californians

Aboriginal California is an obvious and much-used analogy for the prehistoric West Mediterranean (Phillips 1975 : 26, and underlying Clarke 1978) since pre-contact populations inhabited a Mediterranean-type environment. Since the subsistence base, which was the collection of acorns, and on the Great Basin margins, that of pinyon pine nuts, is normally classified as non-agricultural, the tendency to regard historic tribes as models for the mesolithic of the mediterranean is tempting. However, there are grounds for rejecting this approach :

I - Californian and Basin archaeologists have now established that the acorn and pine nut adaptations are recent (largely within this era) and possibly tied to the expansion of a particular ethnic group. Prior to this, in the early postglacial of California, i.e. the Californian "mesolithic" proper, the subsistence base consisted of a broad spectrum of resources, with grains being collected on a larger scale than tree products (Ritter 1970, Gerow, 1974, Aikens 1978 for California ; Bettinger 1976, 1978 for the Great Basin).

II - Recent studies have emphasized the degree to which acorn collection and the fire management of the environment resembled simpler forms of agriculture (e.g. swidden farming) (Ziegler 1968). Indeed the fact that the Californian acorn adaptation withstood the competition of maize farming, whereas the mediterranean mesolithic clearly either accepted or was replaced by cereal farming robs the argument of much of its value (Bean and Lawton 1973, Lewis 1973). The term "equilibrium" is dangerous : clearly while it is interesting to know that historic populations appear to have been in equilibrium with the carrying capacity of the environment (Baumhoff 1963, Gage 1976) this can only suggest, unless prehistory was simply static, that previous populations were living considerably below this level or that the environment had changed, either "naturally" or as a result of human activities such as fire management and selection of favoured species.

III - While there is a dearth of archaeobotanical information on the topic in question, due to the very limited use of froth flotation equipment and the overall lack of attention to the subject, there appears to be little evidence of acorn collection on a "Californian" scale from archaeological sites until the neolithic proper or the chalcolithic and Bronze Ages (cf. Lewthwaite 1982b). Indeed, the Mediterranean quality of the West Mediterranean environment, certainly in terms of vegetation and probably as regards climate, appears to be an anachronism for the period in question (Lewthwaite 1982a, quoting Brochier 1978, and Reille, Triat-Laval and Vernet 1980).

IV - In short, rather than use specific comparisons with static and anachronistic situations, it would be more worthwhile to compare the developmental trends of four sequences : Californian postglacial palaeoecology, Californian postglacial archaeology, West Mediterranean palaeoecology and West Mediterranean postglacial archaeology, in order to detect regularities rather than assume them.

V - One obvious difference between the Californian Indian analogy and that of any West Mediterranean comparison is that the former never undertook pastoralism, particularly that of sheep. On the other hand, the mediterranean zone of the Cape area of South Africa, with its macchia-like "fynbos" vegetation does offer the potential analogy of the Khoikhoi pastoralists (Elphick 1977, Schrire 1980), which are of particular interest to studies of the evolution of transhumance in mediterranean environments (Lewthwaite 1981).

### b) The diffusion of sheep in Southern Africa and the Mediterranean

I - Palaeontological and genetic evidence strongly suggests that true sheep were not present in the early postglacial of the West Mediterranean and that the domestic sheep of the neolithic are derived not from local "mouflon" populations, such as those of modern Corsica (Pfeffer 1967) but from Turkey and Kurdistan (Poplin 1979). The Tyrrhenian mouflons would on the contrary represent little modified feral forms of the earliest wave of sheep, and might provide a better insight into the tolerances and behaviour of the latter, than more highly evolved modern roles. The recent finds from the Vaucluse

(Paccard, Aujard-Catot and Gagnière 1980) do not seem to me to invalidate this argument, since identification is only to the level of ovicaprids. The association of sheep with ceramic assemblages is certainly not to be regarded as proof of local mesolithic domestication, since pastoral sites of any period can be found without ceramics (although not preceramic) and such sheep may in any case be ferals from domestic populations in more obviously "neolithic" contexts (cf. Lewthwaite 1982a).

II - Similarly there is no possibility of local sheep domestication in South Africa. The proto-Khoikhoi, apparently a "Central Bush" population of Botswana, (Elphick 1977 : 3 - 21) appear to have acquired their domestic animals at or a little before the beginning of the present era and to have expanded rapidly over 1,500 km. to reach the Cape proper (Elphick 1977 : Map 1, p. 18). Remains of domesticated sheep are found from the earliest centuries A.D. from coastal and inland sites in South Africa and Namibia (Schweitzer and Scott 1973). The fact that recent Khoikhoi sheep were hairy and fat-tailed points towards and ultimately Near Eastern source, presumably mediated by the "Stone Bowl" pastoral groups of the Kenya highlands. There is no possibility of sheep being introduced by the expanding Bantu horticultural populations through the Congo rain forest from West Africa (David 1979) : indeed, unless the environment has changed markedly, a tsetse-free corridor in East Africa would have been very narrow.

III - The evidence for sheep diffusion and human migrations in Southern Africa is therefore relevant to the neolithisation of the West Mediterranean not only in its final stages, because of the environmental context, but because of theoretical issues which are relevant to each and every archaeological debate on migrations and diffusion.

IV - At the macro-scale, an archaeologist deprived of any other source of information than material remains (i.e. in the position of a west mediterranean archaeologist in the case of sheep and impressed ware groups) would notice, within a very few centuries, in the first half of the 1st millennium A.D. the following events :

- The appearance of relatively permanent agriculture settlements based on an economy of millets (and later, after 1000 A.D., on an increasing pastoral element) making use of generically similar ceramics over wide areas of Eastern and Southern Africa from Lake Victoria to Angola and Natal (Davidson 1977) C 14 dates increasingly suggest an expansion from the Savannahs of the southern Congo basin and ultimately the Cameroons (David 1979). One sub-style, Kwale, appears to be found in coastal contexts from Kenya to Mozambique ; the earliest Natal ware also resembles this (Maggs 1980).

- The appearance of the first ever human population on Madagascar.

- The appearance of domestic sheep (Schweitzer and Scott 1973 ; Schrire 1980), pottery of a pointed-base, coarse variety (Phillipson : fig. 89, p. 255) and fishing weirs (Avery 1975).

V - At the macro-scale, there are obvious similarities to the situation in the West Mediterranean where during the later sixth millenium b.c. (to take a conservative view of the earliest dates, cf. Guilaine 1979) the following phenomena are widely agreed to occur :

- The appearance of agricultural settlements based on an economy of cereals and domestic animals, associated with generically similar ceramics (impressed wares) over wide areas of the Mediterranean littoral.

- The appearance of the first known settlers on Malta, the Tremiti islands, and Sardinia in association with the same ceramics ; of the second known period of settlement on Corsica (Lanfranchi and Weiss 1973) and of an aceramic population on Mallorca (Fernandez Miranda and Waldren 1979). All but the latter appear to have exploited non-local domestic animals such as sheep from the initial settlement, except the latter who from the limited evidence available exploited an endemic species (Fernandez Miranda and Waldren 1979).

- The appearance of domestic sheep in some early contexts where location, artefacts and the total faunal spectrum suggest hunting and gathering activities, such as caves, rock shelters and shell-middens, both on the coast and inland, including sites at some altitude (Grotte de Gazel, Abri Dourgne, Cap Ragnon, Tagus sites - Guilaine 1976). Some sites reveal no associated ceramics (Gramari, Châteauneuf-les-Martigues) others reveal standard impressed wares, still others pointed-base coarse ware of "Ertebølle" type (Roucadour C. - Murray 1970 : 241, Roussot-Larroque 1977). During the same period there is increased evidence for the exploitation of fish, particularly *Chrysophrys aurata*, the Daurade, e.g. at the Cova de l'Espèrit (Abelanet and Charles 1964) but also tunny and swordfish (Courtin 1975).

Arguments that are familiar to all participants at this colloquium discuss the likelihood of various "total" explanations such as an entirely autochthonous or an entirely exogenous origin of these phenomena. Jean Guilaine has recently argued for a "polygenic" theory and for a pastoral "bow-wave"

preceding full agriculture, (Guilaine 1976) while the late David Clarke has presented a case for pre-neolithic experimentation with local species and a pre-neolithic shift to coastal settlement and shellfish gathering (Clarke 1978). All such arguments assume that the explanation is likely to be a relatively simple one.

VI - The Southern African picture presents a cautionary tale. When the evidence of the ethnography, linguistics, oral history and physical anthropology are added to the sources available to the prehistorian the following complications emerge :

- The population of Madagascar, whose obvious extra-insular origins requires navigation, did not arrive from the nearest coast, that of Eastern Africa, but from the other side of the Indian Ocean, most probably from Borneo : the population, prior to recent African immigration consisted of Austronesian (Malagasy) speaking Mongoloids, not Negroids of the Bantu family. The fact that colonization took place at this time is therefore a function of events in Indonesia, and is a pure coincidence.

- The farming population expanding from the Cameroons from the sixth millennium b.c. onward through the Congo basin to the savannah and woodland beyond appear to be the ancestors of the present-day Bantu : the latest synthesis suggests an expansion from the S. Zairean/Angolan/Zambian area south-eastwards and northeastwards to Uganda and Natal. The appearance of the Kwale sub group which runs transverse to the major axes of expansion is presumably explained as a double expansion northward and southward from some point near the lower Zambezi rather than as a coastal neolithic in the sense of a local adaptation.

- The association of "Bantu" farming villages with shellmiddens in Natal reflects the distribution of suitable arable soils and rainfall rather than a coastal adaptation per se (Maggs 1980).

- The domestic sheep of the Cape, Orange River and Namibia sites belong both to Khoikhoi pastoralists expanding from Botswana southwestward in a "pincer" movement (Elphick 1977 : map. 1, p. 18) and, in some cases to Bush (San) hunter-gatherers preying on their flocks : from the moment of contact the division between pastoralists and hunter-gatherers ceased to be one of pure ethnic groups and became one of upward and downward cycles of stock ownership and loss reflecting environmental and political vicissitudes (Elphick 1977 : 23 - 42).

- Thus at least three major racial and linguistic groups are involved : (Khoisanoid/Bush ; Niger-Congo/Bantu ; Austronesian/Oceanic Mongoloid). But the evidence of linguistics (Ehret 1973) suggests that there must have been a fourth linguistic group, that of Central Sudanic speaking pastoralists and millet farmers which no archaeologist has postulated and for which there is no obvious material culture. However, *without* the presence of such a group it is impossible to explain the diffusion of sheep and cattle both to Bantu and Khoikhoi since the terms used by both are loans from some other language and since neither the Congo rain forest nor Botswana are plausible ultimate origins for fat-tailed sheep. Similarly there are grounds for believing that the early Bantu would not have cultivated millets and sorghum but rather squashes and legumes (David 1979, Maggs 1980) and very little evidence of domestic animals in the first wave of expansion which was contemporary to the appearance of sheep to the south-west.

- At the micro-scale of site, level and artefact interpretation, the Cape sites present similar problems to those encountered in the Mediterranean. There is the recurrent problem of explaining sites in which domestic fauna is found in small quantities alongside large numbers of indigeneous, "hunted", animals, in locations on the coast or inland which may have been only seasonally occupied during the period of late Stone Age foraging (Parkington 1972) and in an area of fluctuating grazing opportunities exploited ethnographically through transhumance (Elphick 1977). Clearly between the Cape and the Cévennes (Brisebarre 1978) there is sufficient ethnography to permit hypotheses of a *general nature* to be formulated as to the predepositional and depositional characteristics of pastoralists' artefacts and faunal remains, so that the issue does not have to be endlessly raised afresh. It is reassuring that such ethnographic observations have been used profitably in the case of the earliest sheep in the Aurès in a Capsian neolithic context of the 5th millennium b.c. (Roubet 1980).

- Finally, as in California, there is an opportunity to study the *entire* postglacial sequence of adaptation to changing flora, fauna and above all sea levels, in the Cape (e.g. at Eland's Bay and neighbouring sites - Parkington 1981) in order to separate the specific characteristics of our region from worldwide trends in adaptation of the sort suggested by Binford (1968). In the area of the West Mediterranean itself, there are obvious similarities and contrasts between the development on the northern shores with which we are familiar and that of the Maghreb (Saxon 1978) with which many are not, although the postglacial pattern of the loss of coastal shelves and the changing vegetational scene are strikingly similar (Reille, Triat-Laval and Vernet 1980).

VII - The argument based on genetic evidence for the sheep is now paralleled by research on pigs (Franceschi 1980) : once again the Corsican species appears not to represent an introduced west European wild variety (there is no pre-neolithic evidence for pigs on the islands either) but a derivation from the East Mediterranean.

Ethnographic and comparative archaeological evidence for the early and water borne diffusion of the pig directs attention to another area of special interest to this colloquium, that of the Austronesian expansion from mainland South-East Asia or South China through Oceania, and in particular to the example of the Lapita culture.

### c) S.E.Asian and Oceanic prehistoric migrations

I - Navigation over considerable distances is not a postglacial achievement : by 30,000 b.c. at the latest the ancestors of the Australian aborigines had crossed 80 km. of open water in the process of settling the southern continent (Hallam 1977).

II - Among the many indications of early economic progress in New Guinea, of which the best known is the evidence for agriculture by at least 4,000, perhaps 7,000 b.c. at Kuk swamp is the evidence for pigs which are not native to New Guinea, and which must have been introduced in water craft from the west, by at least 7 - 8,000 b.c. (Golson and Hughes 1976 : 88 - 91).

III - The ultimate origin of the Austronesian peoples of Island S.E. Asia and Oceania, of which the Polynesians are the best known, is almost certainly to be found within China south of the Yangtze, whither the convergent evidence of physical anthropology, linguistics, biogeography and archaeology point. The aboriginal tribes of Taiwan are Austronesians as were many of the peoples known to the expanding Han empire as Yueh (Wiens 1954 ; Eberhard 1968 ; Bayard 1975, 1977).

IV - The Austronesian expansion can be seen, like that of the Bantu, to have consisted of a number of stages, many of which appear to reflect the ecological tolerance or different crop complexes, as the subsistence base and material culture were adapted to successive environmental changes from mainland to high islands and eventually atolls. Among the crops in question are certain yam types, taro roots and bananas ; among the animals pigs, dogs and chickens (Golson and Hughes 1976 : 88 - 91 ; Glover 1980 : 159 - 161).

V - The first phase of expansion took place during the fourth and early third millennium b.c. and consisted of the expansion of horticulturalists with a common ceramic tradition exploiting tree and root crops and quite possibly rice through island south-east Asia including the Philippines and Eastern Indonesia as far as Timor (Bellwood 1976, Glover 1980). Open water crossings of no more than 87 km. were required (Irwin 1980 : 325). The roots of this expansive "amphibious" culture lay in the Yüeh coastal neolithic of S. China, common to N. Vietnam (Meacham 1977 : 424 - 6, esp. Fig. 1). The adaptation to navigation probably involving the invention of the outrigger canoe (Green 1976) and the extensive use of marine resources took place on the S. China coast being archaeologically visible in the form of extensive shell and fish-bone middens which include however evidence for the exploitation of terrestrial resources (such as pigs) and neolithic artefacts (impressed ceramics, ground adzes and pebble tools). The limits reached by the first phase of expansion, which correlate well with linguistic evidence suggest some sort of ecological barriers necessitating re-adaptation successfully breached by at least one segment of proto-Austronesians, that in the areas of the Moluccas and Minahasa which gave rise to the Oceanic group of languages (Bellwood 1976). Such initial phases of migration involved areas with a history of human settlement going back into the Palaeolithic.

VI - The next phase of settlement consisted of the extremely rapid migrations involving open-water crossings of 600 km. (Green 1976) during the second millennium b.c. which carried Austronesians into the Marianas, Bismarks and Solomons as far as Western Polynesia (Davidson 1976, Green 1976, Irwin 1980). In the case of the Bismarks, Solomons and Western Polynesia the colonizing groups can be recognized by characteristic decorated pottery (Lapita). This culture is of great interest to researchers in our area because of the correspondence in levels of archaeologically visible technological competence (a "neolithic" inventory of ceramics, polished stone tools, shell ornaments, voyaging, agriculture, domestic animals - Green 1976 : 71) and in terms of the scale, rapid appearance, and duration of the culture in a maritime context suggesting a tradition of two-way voyaging *maintaining* cultural similarity. Once again, obsidian acts as a convenient "marker" of long distance chains of supply of, or access to, naturally rare, but culturally important items (Green 1976 : 72). However, the ceramics themselves may have been made and exchanged over long distances within and later across ethnic boundaries to non-Austronesians, as in the case of the historic Motu of the Port Moresby area (Green 1974 ; Allen 1977a, b) with implications of obvious archaeological interest in terms of ethnic and cultural alignments !

VII - The later expansion of Polynesians proper and of the Malagasy involve voyaging over distances which are far removed from the context which concerns us, the West Mediterranean. However the later history of the Lapita complex, the reasons for its disappearance in the first millennium b.c. and the complicated ethnic intermingling thereafter - are surely relevant to studies of the decline of the impressed ware culture group as a *geographic unity maintained by navigation* during the period of the later fifth millennium b.c. In neither case can it be said that voyaging as such died out, on the contrary this was maintained or actually developed (cf. Camps 1976) : however, the role of navigation within culture seems to have been different during the "middle neolithic" (Chasséen, Lagozza, Sabadellian, Almerian, Bonu Ighinu, Ozieri, Basien) when, unlike the Pacific example, obsidian exchange actually reached a peak (Phillips 1975 : 100).

VIII - It is of course obvious that South-East Asia and Oceania do not "resemble" the West Mediterranean in most respects and conservatively minded scholars may protest at the comparison. However, the relevant variable of the role of navigation in cultural change is the important theme present, just as the role of environmental adaptation can be examined in different ways in California and the Cape. All parts of the earth's surface and all prehistoric situations are obviously in the final analysis *unique*, but it is by examining the *regularities* that we are likely to reach non-trivial conclusions.

## CONCLUSIONS

The conclusions of this paper, given the paucity of space relevant to the extent of the ground covered necessarily tend towards exhortation rather than a true dénouement.

One of the manifest failings of the New Archaeology of the late sixties and seventies has been its tendency to substitute the discussion of theoretical issues as an end in themselves rather than as the means towards the solution of a problem felt by archaeologists as a whole to be acute. This has tended to alienate most practitioners of the discipline : we are no nearer a general theory of archaeological principles. One approach to bridging the gulf between particularist empiricism and data-free epistemology is simply the comparative approach, starting with a realization that all archaeological issues are linked at the level of global prehistory (graphically depicted by Sherratt and Lewthwaite 1980). By examining the variability among members of a *class* of similar phenomena we are likely to get further than by a monofocal approach to a single example, however painstaking our scholarship.

The corpus of examples at the global level is now readily available (e.g. Sherratt 1980) for such exercises which, thanks to modern dating techniques, need not fall into the errors of nineteenth-century and early twentieth century diffusionist archaeologists and trait-list ethnologists.

As concrete proposals for solutions to the impressed ware problem I therefore suggest :

a) A comparison of areas belonging to the class of "Mediterranean environments" departing not from ethnography but from parallel palaeoecological and palaeoeconomic evolution of landscape and population ;

b) A comparison of areas belonging to the class of the "West Eurasian crop and animal complex" (wheat, barley, legumes, tree crops, sheep, goat, cattle, pig) for regularities in the form and rate of diffusion (seen from a central perspective) and integration or acceptance (seen from a local point of view).

c) A comparison of areas belonging to the class of "maritime expansions" such as the Caribbean, Arctic, and Oceania ;

d) A comparison of areas belonging to the class of "coastal zones affected by the global rise in sea level".

## BIBLIOGRAPHY

- ABELANET J., CHARLES R. 1964 - Un site du Néolithique ancien en Roussillon, la Cova de l'Espèrit. *Cah. Lig. Préh. Arch.* 13, 177-206.
- AIKENS M. 1978 - The Far West. In : *Ancient Native Americans*, ed. J. Jennings, 131-181, San Francisco : Freeman.
- ALLEN J. 1977a - Fishing for Wallabies, In : *The Evolution of Social Systems*, eds. J. Friedman, M. Rowlands, p. 419-455. London. Duckworth.

- ALLEN J. 1977b - Sea Traffic, Trade and Expanding Horizons, In : *Sunda and Sahul*, eds. J. Allen, J. Golson, R. Jones, 387-418 - London : Academic Press.
- EVERY G. 1975 - Discussion on the age and use of tidal fish traps (visvywers). *Sol. Afr. Arch. Bull.* 30, 105-13.
- BAUMHOFF M. 1963 - Ecological Determinants of Aboriginal California Populations. *Un. Col. Publ. Am. Arch. Anth.* 49(2), 155-235, 30 pp.
- BAYARD D. 1975 - North China, South China, South East Asia, or simply "Far East". *Jo Hong Kong. Arch. Soc.* VI, 71-9.
- BAYARD D. 1977 - *Recent Developments in the Prehistory of Mainland Southwest Asia and South China*. Paper presented at 2nd N. Zealand Asian Studies Conference, Christchurch 1977.
- BEAN L., LAWTON H. 1973 - Some Explanations for the Rise of Cultural Complexity in Native California with comments on Proto-Agriculture and Agriculture. *Ballena Press Anth. Papers 1* : V - LVII Ramona : Ballena Press.
- BELLWOOD P. 1976 - Indonesia, the Philippines and Oceanic Prehistory In : Prétirage, *Colloque XXII, IX UISPP Nice 1976 la Préhistoire Océanienne*, ed. J. Garanger, 7-26, CNRS.
- BETTINGER R. 1976 - The Development of Pinyon Exploitation in Central Eastern California. *Jo. Cal. Anth.* 3 (1), 81-95.
- BETTINGER R. 1978 - Alternative adaptive strategies in the Prehistoric Great Basin. *Jo Anth. Res.* 34 (1) : 27-46.
- BINFORD L. 1968 - Post-Pleistocene Adaptations In : *New Perspectives in Archaeology*, eds. L. et S. Binford, 313-341. Chicago : Aldine.
- BRISEBARRE A.M. 1978 - *Bergers des Cévennes*. Paris : Berger-Levrault.
- BROCHIER J.L. 1978 - *Les modifications de l'environnement du Würmien Récent au Post-Glaciaire en Languedoc*. Paris : CNRS.
- CAMPS G. 1976 - La Navigation en France au Néolithique et à l'Age de Bronze. *Archeologia Corsa* 1, 113-130.
- CLARKE D.L. 1978 - *Mesolithic Europe : The Economic Basis*. London : Duckworth.
- COURTIN J. 1975 - A propos de la navigation et de la pêche en mer du Néolithique ancien sur les côtes méditerranéennes françaises. *B.S.P.F.* 72 (5) : 131-132
- DAVID N. 1979 - *Prehistory and Historical Linguistics in Central Africa : Points of Contact* Paper presented at the Conference on Linguistics and Archaeology in African History, UCCA 1979, 28 pp.
- DAVIDSON J. 1976 - The Prehistory of Western Polynesia In : Prétirage, *Colloque XXII, IX UISPP Nice 1976 La Préhistoire Océanienne*, ed. J. Garanger, 27-51 CNRS.
- EBERHARD W. 1968 - *The local cultures of South and East China* (Eng. tr., German orig.) Leiden : E.J. Brill.
- EHRET C. 1973 - Patterns of Bantu and Central Sudanic settlement in Central and Southern Africa (ca. 1000 B.C. - 500 A.D.) *Trans. of J. Hist.* 3, (1-2), 1-71.
- ELPHICK R. 1977 - *Kraal and Castle*. Yale U.P.
- FERNANDEZ-MIRANDA M., WALDREN W. 1979 - Periodificación cultural y cronología absoluta en la prehistoria de Mallorca. *Tra-bajos de Prehistoria* 36, 349-377.
- FRANCESCHI P. 1980 - *Essai de caractérisation génétique du Porc Corse. Aspects cytogénétiques et polymorphisme Biochimique* Thèse de 3e cycle, Université Paris VI.
- GAGE T. 1979 - The competitive Interaction of Man and Deer in Prehistoric California. *Human Ecology* 7 (3) 253-268.
- GEROW B. 1974 - Co-traditions and convergent Trends in Prehistoric California *San Luis Obispo County Arch. Soc. Occ. Pap.* 8.
- GLOVER I. 1980 - Agricultural Origins in East Asia. In *The Cambridge Encyclopaedia of Archaeology*, ed. A. Sherratt, 150-161. Cambridge University Press.
- GOLSON J., HUGHES P. 1976 - The appearance of Plant and Animal Domestication in New Guinea. In : Prétirage, *Colloque XXII, IX UISPP Nice 1976 la Préhistoire Océanienne*, ed. J. Garanger, 88-100 CNRS.
- GREEN R. 1976 - New sites with Lapita Pottery and their Implications for an Understanding of the settlement of the Western Pacific. In : Prétirage, *Colloque XXII, IX UISPP Nice 1976 la Préhistoire Océanienne*, ed. J. Garanger, 55-87, CNRS.
- GUILAINE J. 1976 - *Premiers Bergers et Paysans de l'Occident Méditerranéen*. Paris : Mouton.
- GUILAINE J. 1979 - The Earliest Neolithic in the West Mediterranean : A New Appraisal. *Antiquity* 53, 22-30.
- HALLAM S. 1977 - The relevance of Old World Archaeology to the First Entry of Man into New Worlds : Colonization seen from the Antipodes. *Quaternary Research* 8, 128-148.
- IRWIN. 1980 - The Prehistory of Oceania : Colonization and cultural change. In : *The Cambridge Encyclopaedia of Archaeology* ed. A. Sherratt, 334-342. Cambridge, University Press.
- LANFRANCHI F. de, WEISS M. 1973 - *La civilisation des Corses : Les origines*. Ajaccio : Cyrnos - Méditerranée.

- LEWIS H. 1973 - Patterns of Indian Burning in California : Ecology and Ethnohistory. *Ballena Press Anth. Papers* 1, 1-101. Ramona : Ballena Press.
- LEWTHWAITE J.G. 1981 - Plains Trails from the Hills : Transhumance in Mediterranean Archaeology. In : *Economic Archaeology* eds. A. Sheridan, G. Bailey, 57-66, Oxford : BAR Int. Ser. 96.
- LEWTHWAITE J.G. 1982a - Ambiguous First Impressions : A survey of Recent Work on the Early Neolithic of the West Mediterranean. *Jo. Med. Anth. Arch.* 1 (2).
- LEWTHWAITE J.G. 1982b - Acorns for the Ancestors : the Prehistoric Exploitation of Woodland in the West Mediterranean. In : *Archaeological Aspects of Woodland Ecology*, eds. M. Bell, S. Limbrey, Oxford : BAR.
- MAGGS T. 1980 - The Iron Age Sequence South of the Vaal and Pongola Rivers : some Historical Implications. *Jo. Af. Hist.* 21 (1), 1-15.
- MEACHAM W. 1977 - Continuity and Local Evolution in the Neolithic of South China : A Non Nuclear Approach. *Current Anthropology* 18 (3), 419-440.
- MURRAY J. 1970 - *The First European Agriculture*. Edinburgh, U.P.
- PACCARD M., AUJARD-CATOT R., GAGNIERE S. 1980 - La Grotte de Vauloubeau à Saint-Saturnin-lès-Apt. (Vaucluse) *Gallia Préh.* 23 (1), 209-232.
- PARKINGTON J. 1972 - Seasonal mobility in the Later Stone Age *African Studies* 31, 223-43.
- PARKINGTON J. 1981 - The Effects of Environmental Change on the Scheduling of Visits to Elands Bay Cave, Cape Province, S.A. In : *Pattern of the Past*, eds. I. Hodder, G. Isaac, N. Hammond, 341-359. Cambridge University Press.
- PFEFFER. 1967 - Le mouflon de Corse. *Mammalia* 31, suppl.
- PHILLIPS P. 1975 - *Early Farmers of West Mediterranean Europe*. London : Hutchinson.
- PHILLIPSON D. 1977 - *The later Prehistory of Eastern and Southern Africa*. London : Hutchinson.
- POPLIN F. 1979 - Origine du mouflon de Corse dans une nouvelle perspective paléontologique : par marronnage. *Ann. Génét. Sél. Anim.* 11 (2), 113-143.
- REILLE M., TRIAT-LAVAL H., VERNET J.L. 1980 - Les témoignages des structures actuelles de végétation méditerranéenne durant le passé contemporain de l'action de l'homme. In : *La Mise en Place, l'Evolution et la Caractérisation de la Flore et de la Végétation circumméditerranéenne*. (11 pp.) Montpellier : Fondation Louis Emberger.
- RITTER. 1970 - Northern Sierra Foothill Archaeology : Culture History and Culture Process. *Un. Col. Centre. Arch. Res. Davis. Publ.* 2. 171-184.
- ROUBET C. 1980 - *Economie Pastorale Préagricole en Algérie Orientale*. Paris : CNRS.
- ROUSSOT-LARROQUE J. 1977 - Néolithisation et Néolithique ancien de l'Aquitaine. *B.S.P.F.* 74, 559-582.
- SAXON E. 1978 - Mesolithic coastal economies in the Levant and North Africa. In : *Views of the Past*, ed. L.G. Freeman, 357-361, Hague : Mouton.
- SCHRIRE C. 1980 - An Inquiry into the Evolutionary status and Apparent Identity of San Hunter-Gatherers. *Human Ecology* 8 (1) 19-32-
- SCHWEITZER F., SCOTT K. 1973 - Early occurrence of Domestic Sheep in Sub-Saharan Africa. *Nature* 241, 547.
- SHERRATT A. - *The Cambridge Encyclopaedia of Archaeology* Cambridge University Press.
- SHERRATT A., LEWTHWAITE J. 1980 - Comparative Chronologies, Chronological Atlas In : *The Cambridge Encyclopaedia of Archaeology* ed. A. Sherratt 433-452. Cambridge University Press.
- WIENS H. 1954 - *China's March Towards the Tropics*. Yale : U. Press.
- ZIEGLER A. 1968 - Quasi-agriculture in North Central California and its effects on Aboriginal Social Structure. *Papers Kroeber Anth. Soc.* 38, 52-67.