signs? How do we obtain an anthropology or archaeology of the activity?

How are artifact- and sign-making activities incorporated in our very story about the evolution of the "human mind" or human society? Is the *humanness* of the sign-making activity essential to what we say about it logically (after all, computers and porpoises use signs), historically, or socioculturally?

Without knowing the precise "meaning" of the sign, can we still make useful and pointed statements about the "archaeological" place of apparently representational activity in a society—e.g., about its chronology, frequency, distribution, socioeconomic or other behavioral correlates, and so on?

Since instances of rock art are so widely distributed, with many excellent corpuses, permitting sophisticated surveys and statistical analyses, what can rock art research specifically contribute to the general development of archaeopsychology?

What are the successes/failures and methodological assumptions of particular decipherments?—e.g., Marshack on Paleolithic "calendars" and the "periodic" use/reuse of "symbols," Bednarik on externalization of entoptic (phosphene) phenomena in "digital flutings," Lewis-Williams on a complex iconography of trance experience in southern San rock painting, Davis on emergence of image from nonimage, Leroi-Gourhan and Laming-Emperaire on sexual/social values of Paleolithic motifs in a "figurative system," various readings of narrative and/or mythological-religious depictions?

The First International Congress on Rock Art (to be held in Darwin, Northern Territories, Australia, August 29–September 2, 1988, under the auspices of the Australian Rock Art Research Association/Northern Territory Museum of Arts and Sciences) will include a session on the archaeopsychological interpretation of rock art in which many of the questions raised above will be addressed by an international group of rock art researchers, archaeologists, art historians, anthropologists, psychologists, philosophers, and others. As chair of the symposium, and working with the Executive and Scientific Committees of the Congress (G. Chaloupka and R. Bednarik, co-organizers), I am soliciting ideas, proposals, abstracts or texts, arguments, and comments from the global community. The symposium should be a forum for original, advanced, or pioneering research and theory, centering in part on the very definition of an "archaeopsychology" as such and on its interconnection with other scientific and humanistic disciplines. All of the presentations in the remainder of the congress—the largest of its kind ever held, including regional studies and up-to-date, in-depth reviews of current topics in rock art research—will serve as a source of possible "practical" applications and cultural or historical "examples." No fixed protocols have been established for presentations. However, a special priority will be given to methodological and philosophical analysis, to cross-disciplinary discussion, to new voices and terminologies, and to dialectic, debate, and interpretive pluralism.

Anyone interested in taking part in the symposium at any level—as speaker, discussant, panelist, sceptic, or heckler—is invited to write to the Australian organizers (AURA, P.O. Box 216, Caulfield South 3162, Victoria, Australia) or to write or phone me (312-491-8030). A starting point for a communication could be a reaction to any of the statements or questions above, including the definition of the field and what are bound to be numerous ambiguities, omissions, and infelicities.

The Origins and Dispersal of Modern Humans[1]

PAUL MELLARS
Department of Archaeology, Cambridge University, Downing St., Cambridge CB2 3DZ, England. 18 IX 87

A recent conference held at Cambridge March 22–26, 1987, was devoted to behavioural and biological perspectives on *the origins and dispersal of modern humans.* The meeting was sponsored jointly by the University of Cambridge, the British Museum (Natural History), and the Royal Anthropological Institute and received financial support from a number of organizations including the L. S. B. Leakey Foundation, the Association for Cultural Exchange, the Boise Fund, the British Academy, and the Royal Society. This was not the first meeting to be devoted to the general theme of modern human origins in recent years, but it did bring together an unusually large number of contributors (55 in all) from areas as far afield as South Africa, Nigeria, Australia, New Guinea, Japan, Israel, Eastern Europe, the United States, and Canada. The meeting was organized around precirculated papers so that the greater part of it could be devoted to discussion.

With such a range of different geographical areas, data bases, and theoretical perspectives under consideration, it is hard to do justice to the range of discussions within the scope of a brief review. It is perhaps inevitable that much of the critical debate at the meeting centered on the rapidly accumulating evidence for a primary origin of anatomically modern human forms (i.e., *Homo sapiens sapiens*) in southern Africa. Four of the papers (by Mark Stoneking, Shahin Rouhani, James Wainscoat, and G. Lucotte) dealt with various aspects of recent studies of molecular genetic data and seemed to arrive at a remarkable consensus in suggesting a major dispersal of population from southern Africa, most probably between ca. 50,000 and 200,000 years ago. Clearly, the dating of this dispersal remains crucial. From the genetic data alone it seems difficult to date it with any precision, although future work on the rates of genetic mutation may well provide much finer chronological control. Even so, there is an encouraging convergence with the

recent geochronological evidence for dating the human skeletal material, which suggests that essentially modern anatomical human forms were present at several sites in sub-Saharan Africa (for example, Klasies River Mouth, Border Cave, and Omo) by at least 70–100,000 years ago. The combination of genetic and anatomical data convinced most contributors at the meeting that southern Africa played—not for the first time in human history—a critical role in the evolution of the human species.

The interpretation of the cultural evidence from southern Africa proved rather more controversial. Here, much of the debate centred on the significance and the chronology of the Howieson's Poort industries. John Parkington in particular took on the role of devil's advocate and pleaded for a much more critical review of the evidence for dating these industries beyond the minimum date of ca. 30–45,000 B.P. Scepticism of this sort is of course healthy and perhaps essential in view of the importance of the issues involved. Even so, the bulk of the available evidence (from both radiocarbon dating and geology) does seem to favour a substantially earlier dating for the Howieson's Poort levels, most probably within the range of 60–80,000 B.P. Clearly, we must await the results of other absolute dating methods (particularly thermoluminescence) for a firm answer to this problem. What is most striking to a European prehistorian is the remarkably "Upper Palaeolithic" aspect of the technology reflected in the Howieson's Poort assemblages. The papers by Hilary Deacon and Stanley Ambrose attempted to account for these "advanced" technological features of the Howieson's Poort industries either in terms of increasing economic and social stress on the Middle Stone Age populations caused by deteriorating environmental conditions or in terms of changes in mobility and territorial patterns which allowed access to more distant raw material supplies and other resources. Exactly what relevance these technological and behavioural shifts may have had for the early emergence of fully modern anatomical forms in southern Africa is perhaps one of the most significant—and unresolved—issues in modern human evolution.

Moving beyond southern Africa, it was interesting to see similar debates over chronology emerging as a central issue in the interpretation of the biological and archaeological evidence from the Middle East. No one would question that the well-preserved skeletal remains from the site of Qafzeh in Israel are of essentially modern, *sapiens*, form. The crucial issue here is whether these remains date from as early as 80–90,000 B.P. as studies of the associated microfaunal assemblages have suggested or from closer to 50–60,000 B.P. as is indicated by the most economical interpretation of the archaeological data. It is hardly possible to overestimate the importance of the issue, since an acceptance of the earlier dating for the Qafzeh fossils would inevitably imply some form of broad coexistence of Neanderthal and *sapiens* forms within the Middle East over a period of at least 20–30,000 years. Fortunately, this issue too may be resolved very shortly by application of absolute dating techniques. What is *not* in dispute is that the earliest occurrences of *H. sapiens sapiens* forms in the Middle East (notably at Qafzeh and Skhūl) occur within an essentially Middle Palaeolithic technological context. From this it would seem that if the initial expansion from southern Africa was associated with novel cultural or behavioural adaptations, these adaptations were not reflected in any simple or direct way in the associated lithic technologies.

The evidence from farther east in Asia remains poorly documented, poorly dated, and—at least as regards the archaeological material—rather poorly described. Ironically, the clearest picture at present emerges from Australasia, which must presumably be seen as representing the extreme southeastern limit of hominid dispersal throughout the eastern Asian zone. Papers by Rhys Jones, Sandra Bowdler, Mike Green, and Philip Habgood discussed the current perspectives on both the archaeological and biological data from the ancient continent of Sahul (comprising Australia, New Guinea, and the adjacent islands). Clearly, human populations were present in many parts of Australasia by at least 30–40,000 B.P. and may perhaps have arrived—inevitably through major sea crossings—much earlier than this. Two features of the Australian data are especially striking. First, skeletal remains firmly dated to around 30,000 B.P. are of fully evolved *sapiens* form (most notably at Lake Mungo). Secondly, the associated technological context is essentially of "Middle Palaeolithic" form. In fact, no trace of lithic technology resembling the blade-and-burin pattern of the Eurasian Upper Palaeolithic can be detected in Australasia prior to ca. 5–6,000 B.P. Despite this, there is increasing evidence that relatively sophisticated art was being produced in parts of Australia by at least 20,000 B.P. and that some kind of ritualistic interment of human remains (associated with liberal use of red ochre) was being practised by at least 30,000 B.P. The major controversy in Australia at present hinges on the significance of the remarkably robust (even "archaic") skeletal remains recovered from Kow Swamp and elsewhere. At least some of these remains date from as recently as 10–12,000 B.P. and raise some rather delicate questions as to how this internal variation within the Australian populations should be explained—whether in terms of some form of genetic isolating mechanism within the Australian populations themselves or in terms of recurrent dispersals of populations from Southeast Asia. Evidently there is sufficient material here to keep the fires of debate well kindled in Australia for a good few years to come.

Anyone who believed that the situation in the heavily researched areas of western and central Europe was largely cut-and-dried would no doubt have experienced a rude awakening at the conference. Here, the long-standing divergence between the population-continuity and the population-replacement perspective reemerged with equal if not renewed vigour. Papers by Milford Wolpoff, Fred Smith, Jan Simek, and Geoff Clark argued the

case for a slow, gradual transition from Neanderthal to modern anatomical forms in at least many areas of Europe, associated with an equally gradual transition from Middle to Upper Palaeolithic technology. Most of the contributors present, however, including Bernard Vandermeersch, Chris Stringer, Randall White, Francis Harrold, Janusz Kozłowski, and Philip Allsworth-Jones, were inclined to see a very much sharper break, both demographically and culturally, between the latest Neanderthal and early *sapiens* populations. On the biological side it was argued that the occurrence of apparently typical Neanderthal remains dated to ca. 35,000 B.P. at the site of St. Césaire in western France effectively precludes any hypothesis of a gradual evolution from Neanderthal to *sapiens* populations within western Europe itself, since the earliest occurrences of characteristically "Cro-Magnon" forms can hardly be more than 3–4,000 years younger than the St. Césaire Neanderthal. On the archaeological side it was argued that the period between ca. 35,000 and 32,000 B.P. witnessed a whole spectrum of radical cultural innovations, including a shift from predominantly flake to blade technology, the appearance of many new stone tool forms, the emergence of complex, elaborately shaped bone and antler artefacts, the appearance of personal ornaments and traded objects (especially marine shells), and the emergence of art. In western France, these developments can be seen to coincide with a sharp increase in site numbers, an increase in maximum site size, and the first appearance of highly specialized hunting strategies focussed on the exploitation of reindeer. The association of these features with the "Aurignacian" cultural phenomenon—which is almost certainly intrusive into western Europe—and with the earliest occurrences of Cro-Magnon skeleton forms would appear to argue strongly in favour of a major population replacement in western Europe coinciding with the traditional interface between Neanderthal and *sapiens* populations. And, of course, this is precisely the kind of population replacement which the current interpretations of the genetic data would seem to require.

All of this of course raises the crucial question of exactly how some form of large-scale population replacement of the kind envisaged could have occurred and what kinds of interactions may have taken place between the indigenous and intrusive populations. We have so few data on the social and economic organization of the latest Neanderthal populations in Europe that it is difficult to offer any informed speculations on this point. What does seem clear is that in at least some areas of western Europe (and perhaps many areas of central and eastern Europe) the latest Neanderthal and the earliest *sapiens* populations must have survived in relatively close proximity over a period of at least several centuries (as, for example, the interstratification of Aurignacian and Chatelperronian levels at a number of sites in western France strongly implies). In France, this led to the apparent adoption by the latest Neanderthal populations of at least some features of distinctively Upper Palaeolithic technology—as is reflected, for example, by the occurrence of typical end scrapers, burins, and a range of simple bone tools in the Chatelperronian industries associated (at St. Césaire) with characteristically Neanderthal remains. In this context there would seem to be two sharply contrasting ways of viewing the evidence. Either the late Neanderthal and early *sapiens* populations were adapted to such differing ways of life that there was little direct competition between them for ecological space, resources, or whatever, or significant competition existed but the late Neanderthal groups were able to cope with it over a period of many generations. The latter interpretation might suggest that the Neanderthal populations were in fact far better-equipped in general cultural, technological, and behavioural terms than some recent characterizations of them have been inclined to accept.

Many of the discussions at the conference underscored the difficulties of making clear-cut comparisons of the behavioural capabilities of Neanderthal and modern populations. Exactly what criteria can be used to distinguish reliably between the products of hunting and those of scavenging in faunal assemblages? How reliable are data based on site dimensions, site location, or site numbers for making inferences about past demography, settlement systems, or social organisation? And how far—if at all—can one derive information about mental abilities or linguistic complexity from studies of stone tools or even art? There are clearly fundamental and far-reaching problems here in our ability to interpret the archaeological record in behavioural terms. Worst of all is the danger of applying completely circular arguments which confuse the *expression* of culture with the *capacity* for culture—arguments which tend to assume that because a particular form of cultural or behavioural expression is not reflected in the archaeological record at a particular period the mental (or physical) capacities for it were lacking in the population involved. This is perhaps the ultimate dilemma in studying the earlier phases of human cultural development.

In short, we are now in a position of being able to perceive many of the essential patterns in human cultural and biological development but far less able to offer coherent and convincing explanations for the patterns we observe. Exactly what kind of environmental or behavioural stimuli led to the evolution of biologically modern human forms in southern Africa and their eventual dispersal (apparently) over large areas of the world? What kinds of stimuli were involved in the emergence of new behavioural and cultural patterns that we describe under conventional archaeological labels such as "the Middle-Upper Palaeolithic transition"? And above all, what were the relationships between the simultaneous and inevitably interrelated processes of biological and behavioural change? The Cambridge conference undoubtedly served to bring many of these issues into much sharper focus and to clarify some of the important patterns which we can now discern in both the biological and archaeological data, but it left most of the participants with the feeling that there are still many fundamental—and very exciting—problems to be resolved.