

## TIME AND ARCHAEOLOGY

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As archaeologists continue to question the conceptual basis of their discipline, the need to examine concepts of Time looms large. The papers in this issue have been gathered to provide a small sample of the diversity of viewpoints about time and archaeology. In scope, the papers range from programmatic statements (Bailey, Shanks and Tilley, McGlade) to relatively more narrow case studies (Sinclair, Zimmerman, de Montmollin). In this introduction, each of the editors reviews a selected theme that runs through the issue: firstly, the locus of time concepts [O. de M.] and secondly, the focus of time frameworks [P. C.].

### Locus of Time Concepts

The papers in this issue touch on the conceptualisation of time by several groups -- archaeologists, lay contemporaries affected by archaeological research ("native peoples", peasants), and people who lived in the periods under archaeological or historical study. Thus, different loci of time conceptualisation appear, with a broad contrast between Archaeologists' Time (AT) and Others' Time (OT). Anthropologists will recognise this as yet another manifestation of etic and emic, the classical dichotomy between the Western observer and the traditional "other". The reader can expect to find a useful variety of characterisations of OT and AT in these papers as well as a variety of arguments about how OT and AT stand in complementary or opposed relation to the other. The roots of this diversity must surely lie in the extreme variety of research interests held by archaeologists.

Bailey gives the most wide-ranging attention to AT, focusing on the issue of temporal scale and the advantages of the important concept of "time perspectivism". He proposes that a multiplicity of time scales (i.e. durations) may be selected by archaeologists to make observations which match the needs of the questions asked. A similar interest in archaeologists' selection of time scales appears in McGlade's paper. Here the focus shifts from scales of observation of the archaeological record to scales of "construction" in simulation exercises. Shanks and Tilley have a negative view of AT. They characterise it as an "abstract" capitalist variety of time, inappropriate for dealing with the "substantial" time (OT) of past and present persons dealt with in archaeological research. Sinclair investigates the first appearance of something like "abstract" time among certain social classes in 17th and 18th century England. While focusing on past OT, he is in effect also tracing the origins of a certain variety of AT. De Montmollin attempts to show that certain kinds of abstract "managerialist" AT are not sufficient for understanding prehispanic Mesoamerican society and politics at various social scales. Given this problem, managerialist AT has to be analytically supplemented by more social scale-sensitive varieties of AT and by notions of OT studied ethnohistorically. Zimmerman's discussion of AT concerns attitudes to the past. He highlights a North American

archaeological view of the past -- the urge to "discover" and analyse a Native American past (viewed as extinct and separate from the present).

With its focus on the reburial issue, Zimmerman's paper brings AT and OT together in most concrete form, since the controversy pits two groups with contrasting attitudes to the past against each other. At the cutting edge of archaeological activity, appreciation of these contrasts is an essential first step in dealing with the problem. On political as well as intellectual grounds, Shanks and Tilley argue that (their version of) AT should be supplanted by OT, non-capitalist substantial time -- traditional, circular, etc. Their view of substantial time is exemplified by Native American notions of time and the past described in Zimmerman's study, which stands as a good example of the clash between differing forms of AT and OT. Interestingly, Zimmerman's conclusions do not suggest that AT has necessarily to give way to OT. Sinclair's notion of OT is less monolithic, taking into account different concepts of time held (and used politically) by different social classes in England and the tendency for such concepts to change rapidly. De Montmollin also views OT as more divisible. In Mesoamerica, (emic) calendrical spans of ever-increasing length are associated with groups of increasingly large social span and with individuals of ever more important social standing. McGlade's discussion of OT focuses more narrowly on the individual scale of analysis and the need for archaeologists to build individual intentionality, perceptions and so forth into long term simulation modelling of social trajectories.

What emerges is that both AT and OT are worthy of rigorous attention. Is AT limiting and monolithic (Shanks and Tilley, Zimmerman, Sinclair) or can it be a flexible tool for research (Bailey, McGlade, de Montmollin)? Is OT monolithic (Shanks and Tilley, McGlade, Zimmerman) or does it have interesting internal historical, social, or cultural diversity (Sinclair, de Montmollin)?

### Time Frames and Focus

The definition of any problem in archaeology necessarily involves the definition of a time frame within which that problem is set. This framework has traditionally served as an organising mechanism for relating objects and events. However, it may also determine the way in which the problem is approached.

Bailey argues that the time span considered in interpretation brings different variables and processes into focus. It follows that explanatory principles are not equally appropriate when applied to problems covering time spans of significantly varying length. When principles derived from long-term observations, usually within the archaeological context but often borrowed from other disciplines such as biology and geology, are applied to problems of significantly shorter duration, the explanations are unsatisfactory to analysts with experience in living cultures. Conversely, the extrapolation of principles of causality from ethnographic observation for interpretation of events that involve much longer time spans is equally unsatisfactory.

This effect has become evident in the context of 'longitudinal' ethnographic studies, which involve observation of the subject society over a period of several decades. It has been possible to isolate processes operating over the 'long term' that are not evident within the shorter periods studied by traditional ethnology. Since such distinctions can be discriminated within periods of time that are relatively short in comparison to those often involved in archaeological analysis, it is essential to consider the effect of time perspective. This should not imply a dichotomy of methods or issues relating to short- vs. long-term categories, but a continuous spectrum: explanatory principles must be employed that can be expected to operate over the period that is under consideration. Hence, the problem for the archaeologist becomes one of identifying variables and models appropriate to the time framework being studied. The papers assembled here deal with a number of time frameworks and show the variety of issues to be considered.

Within the context of a specific society, the way in which time is perceived is problematic: time may be measured according to social necessity rather than regulating and defining that necessity. Shanks and Tilley argue for the importance of perceived time intervals as opposed to the abstract chronology generally used in archaeology. They criticise the projection of modern systems of time measurement onto other cultures as a temporal imperialism justifying the status quo.

Sinclair and de Montmollin also discuss this aspect, observing that different concepts of time can be held by different classes within the same society. The argument is illustrated in two quite distinct historically known societies -- prehispanic Mesoamerica and 17th-18th century England. In both, time reckoning and scheduling of activities is seen to vary according to social class. De Montmollin contrasts the effect that these concepts may have on the timing of events with that predicted within abstract 'managerialist' models that have often been used in analysis of Mesoamerican and other complex societies.

The problem of identifying processes appropriate to the time frame in question is addressed by McGlade in the context of computer modelling. This seems to offer the possibility of 'condensing' time in order to explore assumptions about the intervals within which particular processes may be defined. As Bailey notes, behaviour at any point in time represents the intersection of processes that are both defined and operable over varying time spans. McGlade's method seems to offer the possibility of incorporating the effects of interacting processes.

The papers collected here approach the subject of time from many different perspectives. This is entirely appropriate, for many different time frameworks have been considered.

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## BREAKING THE TIME BARRIER

Geoff Bailey

### Temporal Awareness and Temporal Horizons

Awareness of time is one of the fundamental characteristics of the human brain. According to Davis (1981), a capacity for 'separated learning' -- the ability to relate events which are remote in time and space, and to draw consciously on past experience in order to make predictions about the future -- is uniquely human, more so than the capacity for symbolic thought, language or art, all of which can be found in at least rudimentary form in other species. Many animals anticipate the future to a small extent, and some have long memories, but none are capable of relating events separated by a time interval of more than about one minute. The temporal envelope, past and future, within which they live is extremely limited, even for our closest living relatives, the chimpanzees (Davis 1981, 131). In contrast, our own temporal horizon is capable of extending almost indefinitely into past and future.

How far back in our evolution as a species such abilities were present is uncertain. A fully modern capacity for temporal awareness can reasonably be associated with the appearance of anatomically modern humans, at least 100,000 years ago. Gowlett (1984) has argued for mental abilities associated with the earliest tool-making 2 million years ago which imply a temporal horizon -- limited perhaps by our standards but greater by some order of magnitude than that displayed by any other living species. It follows that time concepts should play an important role in archaeological interpretation, in two ways: firstly because people have clearly had varying concepts of time in the past which have influenced their thoughts and activities and hence the nature of the material record left for archaeologists to explore and interpret; secondly because varying time concepts influence our own thinking as archaeologists, often unconsciously, and thus insidiously permeate discussions of archaeological theory and methodology. It is this latter issue which I wish to examine further here.

Archaeologists have devoted little attention to the ways in which time concepts affect their interpretations. Undoubtedly one obstacle is the purely technical one of imperfect dating methods, and the preoccupation with matters of chronology. A recent survey of central government funds in the UK devoted to archaeological research over the period 1979-1984 shows a total expenditure of £7.7 million (excluding rescue archaeology), of which fully one third was devoted to improved dating techniques (Hart Report 1985). Much more work remains to be done, and even simple chronological relationships are often matters of controversy, so that conceptual issues are easily pushed into the