

This is a repository copy of *Time perspectives, palimpsests and the archaeology of time*.

White Rose Research Online URL for this paper:
<http://eprints.whiterose.ac.uk/79691/>

Version: Accepted Version

Article:

Bailey, Geoff orcid.org/0000-0003-2656-830X (2007) Time perspectives, palimpsests and the archaeology of time. *Journal of Anthropological Archaeology*. pp. 198-223. ISSN 0278-4165

<https://doi.org/10.1016/j.jaa.2006.08.002>

Reuse

Items deposited in White Rose Research Online are protected by copyright, with all rights reserved unless indicated otherwise. They may be downloaded and/or printed for private study, or other acts as permitted by national copyright laws. The publisher or other rights holders may allow further reproduction and re-use of the full text version. This is indicated by the licence information on the White Rose Research Online record for the item.

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.

Time Perspectives, Palimpsests and the Archaeology of Time

Geoff Bailey

Department of Archaeology

University of York

The King's Manor

York, YO1 7EP, UK

Email: gb502@york.ac.uk

2006

Published in Journal of Anthropological Archaeology, 2007, Volume 26,

pp. 198–223

[doi:10.1016/j.jaa.2006.08.002](https://doi.org/10.1016/j.jaa.2006.08.002)

Abstract

This paper explores the meaning of time perspectivism, its relationship to other theories of time used in archaeological interpretation, and the ways in which it can be implemented through an analysis of the palimpsest nature of the material world we inhabit. Palimpsests are shown to be a universal phenomenon of the material world, and to form a series of overlapping categories, which vary according to their geographical scale, temporal resolution and completeness of preservation. Archaeological examples are used to show how different types of palimpsest can be analyzed to address different sorts of questions about the time dimension of human experience, and the relationship between different types of processes and different scales of phenomena. Objections to the apparently deterministic and asocial character of time perspectivism, and its apparent neglect of subjective experience and individual action and perception, are dealt with. The line of thinking developed here is used, in its turn, to critique other approaches to the archaeology of time, and conventional understandings of the relationship between past, present and future.

Keywords

Contemporaneity, Durational Present, Epirus, Palimpsest, Time Perspectivism, Time Scale

Introduction

For many archaeologists, time depth is what gives archaeology its distinctiveness as an intellectual discipline. For others, it is the emphasis on the materiality of human existence, once derided as a second-hand method of studying human activities, but now turned into a virtue by the many studies of material culture that emphasize the active role of artifacts and material structures in human action and interaction. These two themes are linked, for it is the durable properties of the material universe that give to human awareness a sense of time extending beyond individual lives and perceptions, and to archaeologists the opportunity for empirical exploration of human activities beyond the reach of personal observation, oral testimony or written records.

The past two decades have witnessed a proliferation and diversification of theoretical discussions about time and its impact on archaeological interpretation, which have served to open up a far-reaching exploration of this link between temporality and the material world (see Bailey 2005, Lucas 2005, for summaries). Discussion has followed several intertwined though often divergent themes, drawing on a wide range of sources of inspiration including the intrinsic properties of archaeological data themselves, and other disciplines such as social anthropology, history, geology, paleontology, philosophy and mathematics.

One theme, which shows many points of convergence with the literature on site formation processes (Schiffer 1976, 1987), and with the concerns of geologists and paleontologists (Behrensmeyer 1982, O'Brien and Lyman 2000), is the examination of the temporal and spatial properties of archaeological data, how we measure these, more or less arbitrarily, and how differences in temporal scale and resolution of archaeological datasets constrain or expand the questions we can investigate empirically about the past (Ebert 1992, Rossignol and Wandsnider 1992, Stahl 1993, Stern 1993, 1994, Zvelebil 1993, Ramenofsky and Steffen 1998, Lock and Molyneaux 2006). The latter theme, following Bailey (1981, 1983, 1987), is sometimes labeled as 'time perspectivism' (Fletcher 1992, Murray 1997, 1999b, Holdaway and Wandsnider 2004, Wandsnider 2004, Hull 2005). Important variants on this theme that draw more heavily on other disciplines to address differences of time scale, but which usually eschew the 'time perspective' label, are the application of ideas drawn from the *Annales* school of history (Bintliff 1991, Knapp 1992), and the use of non-linear dynamic theory (Van der Leeuw and McGlade 1997)

A second and readily comprehensible theme is the examination of the temporal awareness of past peoples, their sense of past and future, how that influenced their behavior, and how it has varied or developed during the course of human history, whether for cultural or neuropsychological reasons (Clark 1992, Murray 1999a, Alcock 2002, Bradley 2002). A closely related theme is the durable properties of the material record as an extra dimension to human awareness and action, through its capacity to symbolize the passage of time or to shape human activities, especially in the form of the built environment such as burial mounds and dwelling structures (Bradley 1991, 1993, Bailey 1993, Fletcher 1995).

Some discussions attempt to integrate elements of all three themes, often with an emphasis on the subjective element in temporal awareness (including our own as archaeologists), and its cultural, political or philosophical referents, drawing on contemporary social theory and philosophy (Shanks and Tilley 1987, Gosden 1994, Thomas 1996, Harding 2005, Lucas 2005).

Throughout this literature there is a basic contrast between the differential temporal patterns of the material world that past people may have consciously recognized and used in their social life and cosmology, and the differential temporal patterns inherent in archaeological deposits that we as archaeologists seek to exploit to say more about the past and our relationship to it¹.

My emphasis in this paper is on the three perceptions that inspired the original definition of time perspectivism: the relatively coarse temporal resolution and palimpsest nature of much of the archaeological record; the possibility that the increased time depth and varied time scales of observation afforded by archaeological data might allow us to perceive phenomena and processes not visible at smaller scales of observation; and the arbitrary nature of the boundary between 'past' and 'present'. I consider more carefully the definition of time perspectivism and its theoretical and operational implications, analyze the concept of 'palimpsest' and define some of its variant properties, examine the sorts of processes that may become visible on longer and coarser time scales, and address the problem of how to reconcile such longer term phenomena with the emphasis on individual action and perception that has dominated much recent archaeological interpretation. For examples, I draw heavily on field data from my own experience, in particular the Klithi project, concerned with a 100,000-year record of activity in the Epirus region of northwest Greece at the scale of archaeological site and region (Figure 1), and at ethnographic and archaeological

scales of observation, and more fully discussed and published elsewhere (Bailey 1997, Bailey et al. 1998, Green et al. 1998, Green 2005). This theme of time perspectivism has been slowest to take root, generated most criticism, and created the most puzzlement and resistance, the reasons for which I touch on later.

Time Perspectivism Defined

As originally stated, time perspectivism is ‘the belief that differing time-scales bring into focus different features of behaviour, requiring different sorts of explanatory principles’ (Bailey 1981, p. 103), or ‘the belief that different time scales bring into focus different sorts of processes, requiring different concepts and different sorts of explanatory variables’ (Bailey 1987, p. 7). Expressed in this way, the emphasis of these formal definitions appears to be on the notion of how processes ‘out there’ operate, independently as it were, of the human observer, but with the added implication that what we observe of those processes depends on our time scale of observation or our time perspective.

Many early objections to time perspectivism tended to reflect the Keynesian dictum that critics of a new idea will tend to ‘fluctuate between a belief that [it is] quite wrong and a belief that [it is] saying nothing new’ (Keynes 1973 [1936], p. xxi). In the ‘quite wrong’ category is the reaction from the post-processual wing of theoretical archaeology, who attempted to dismiss time perspectivism on the grounds that it is simply a cloak for environmental determinism or ecological functionalism, an attempt to justify the emphasis on environmental or economic determinism in the study of the long term and to dismiss social and cognitive variables as short-term ‘noise’, and hence an attack on post-processualism (Moore 1981, Tilley 1981, Shanks and Tilley 1987, Thomas 1996). I have some sympathy with this view to the extent that it derives from a general misunderstanding of the original formulation and in particular a misreading of my 1983 paper, in which I equated the long-term with biological and environmental processes and the short term with social ones (Bailey 1983, p. 180). That statement was a descriptive generalization about previous views, particularly those advocated by palaeoeconomists in the 1970s (e.g. Higgs & Jarman 1975), not a prescriptive advocacy for the future. As Hull (2005) has correctly identified, the intent of the passage in question was to move the debate beyond such simple equivalences rather than to reinforce them. Instead, the initial post-processual reaction simply moved the debate from one extreme, the palaeoeconomic one, to

another extreme, and thus replaced one mono-scalar approach with another, when what was needed was an exploration of differences in scale and the nature of the interactions between them. Time perspectivism does not remove consideration of social factors from the long term at all. Rather it questions the appropriateness of uncritically borrowing theories and concepts from social anthropologists, cultural geographers, historians and sociologists, or indeed ecologists, who work with very different contexts, and with very different scales and types of observation and evidence.

In the ‘nothing new’ category is the response of some of those archaeologists who have found inspiration in the *Annales* school of history. Bintliff (1991), for example, has asserted that time perspectivism is essentially a derivative of the *Annales* program, while other authors (e.g. Harding 2005) have described the *Annales* approach to prehistory as an example of time perspectivism. This oversimplifies the varied intellectual genealogies of these different approaches. There are undoubted points of convergence (cf. Fletcher 1992) but also of considerable divergence, not least in the sources of empirical inspiration and the range of time spans and time scales embraced by these different approaches (see Murray 1997, 1999b)². The *Annales* program is in fact an extremely heterogeneous combination of ideas and approaches (Knapp 1992), and archaeologists who feel most comfortable identifying with it are generally those who work on recent millennia with a time-depth and resolution of data quite similar to historians, inclined to consign phenomena of greater time depth to Braudel’s *longue durée*. Time perspectivism, in contrast, has been inspired by the challenges of working with the much longer time spans of the deeper archaeological past, and with material evidence unaided by other sorts of records. It has also advocated a more critical and flexible stance towards defining where the boundary is to be drawn between event and structure, or between continuity and change, in common with many other archaeological approaches that have grappled with similar issues.

These reactions suggest that there is much that is implicit in the formulation of time perspectivism, and a need for clarification. In particular there is an ambiguity in the use of the term ‘time scale’, which has often been used as short hand to describe one or both of two different concepts. The first refers to a simple question of relative size. Thus a small-scale phenomenon in this sense is one that has limited extent in time, let us say the actions of an individual on a particular day, whereas a large-scale

phenomenon occurs over a longer temporal span, let us say the 100 years war or the diffusion of agriculture. The second concept of scale refers to the resolution of measurement available to describe different phenomena. Thus short-lived phenomena require highly resolved measures of time for their observation and study, while larger and more extensive phenomena require a coarser scale of measurement. Ambiguity can be avoided by using *time span*, longer or shorter, for the former, and *time resolution*, finer or coarser, for the latter, though I shall continue to use time scale when I wish to refer to both meanings simultaneously.

With these clarifications in mind, we can go on to identify four different meanings implied by ‘time perspectivism’:

1. Different phenomena operate over different time spans and at different temporal resolutions, the meaning that is uppermost in the original definitions. This is the *substantive definition* of time perspectivism, a definition in terms of how history is supposed actually to have happened. It is the sense in which other commentators have most often understood the term, but it is also the most difficult meaning to pursue further because it raises the very problematic issue of how if at all different scales of phenomena are supposed to interact
2. Different sorts of phenomena are best studied at different time scales, that is to say using different time spans and different temporal resolutions. Thus, for example, the analysis of small-scale phenomena such as individual agency, inter-personal interactions and perception, which have become such a dominant tendency in recent archaeological interpretation, is better focused on observations of, say, present-day practices or recent historical periods rather than the deeper prehistoric past. The argument here is not that such small-scale phenomena did not exist in the deeper past and have a similar impact on past lives to what we observe in the context of our own, but that these phenomena are much more difficult to investigate in earlier periods because of the poorer resolution, quality and detail of the available data. This definition refers to how various periods of the past appear to us and about the nature of the data available from different periods and how we study them, rather than about how the past really was, in and of itself, or how it was experienced by past people. This is a *methodological definition*, about how we study past phenomena, and how what we can observe of past phenomena is conditioned by our time scale of observation and the data at our disposal. This leads on to considerations about why archaeologists working in different time periods tend to prefer different sorts of

questions with correspondingly different theoretical orientations—or to put it the other way round, why archaeologists with different sorts of theoretical interests tend to gravitate to different periods of ‘the past’.

3. A third meaning of time perspectivism is the distorting effect that differential time perspectives have on our perception and understanding of the world, what we might call the *strict definition* of time perspectivism. We can grasp this third meaning more clearly if we consider how we use the term ‘perspective’ when referring to spatial observations. Spatial perspective actually conveys two distinct notions. The first is that objects become increasingly distorted with increasing distance from the observer’s position in space. They appear to shrink until they literally disappear over the visual horizon. Of course, we refer to this effect as a ‘trick’ of perspective that we need to correct for, and are well aware that if we travel to the distant horizon, objects re-appear and grow back to their normal size, and the horizon recedes again into the far distance.

The second notion is that an awareness of perspective allows us to see more clearly the spatial relationships between different phenomena. Compare for example the way in which the layout of a town might appear from the vantage point of a pedestrian observer, and its appearance in an aerial photograph. The aerial photograph allows us to appreciate the correct spatial relationships between the different parts of the town, indeed to see the town more clearly in relation to its wider geographical setting, in a way that is far more difficult for the ground observer. But, at the same time, the aerial view cannot reveal the details of small-scale relationships apparent on the ground or the experience of a three-dimensional world with buildings and other features of different heights and visibility as viewed by the pedestrian observer.

‘Perspectivism’ in this sense is a double concept, conveying both the negative effect of distortion with increasing distance that needs to be corrected, and the positive effect of putting into their proper relationship different scales of spatial patterning. It is precisely this double aspect that I wished to convey in the original use of ‘time perspectivism’. Phenomena that are more distant in time seem to ‘shrink’ until they disappear over a time horizon that we call a ‘point of origin’, thereby giving us a much distorted conception of historical pattern. Equally, working at larger time scales should enable us to see larger-scale relationships that are obscured at a smaller scale. Those who want to reconstitute small-scale phenomena in the deeper past as they might have been perceived by past individuals are responding to the first aspect

of the definition. Those who want to examine larger scale phenomena are responding to the second.

4. Finally, time perspectivism refers to the way in which our observation of time is conditioned by particular cognitive and symbolic representations of time that are specific to particular cultures, states of brain evolution, forms of social organization, or world views. We could call this the *subjective definition* of time perspectivism, an exploration of the different ways in which different people, both past and present (including archaeologists), have thought about the time dimension and their place within it.

It should be clear that the various ideas exposed by these different definitions overlap to some degree. For example, the subjective aspect of time perspectivism as experienced by past peoples must be part of the substantive record that we attempt to uncover by archaeological study. At the same time the way we view the past as archaeologists falls within the subjective domain. And as we know from our own experience, different conceptions of time can be held simultaneously by different individuals or embodied in different practices and beliefs within a given society. All these definitions pose quite formidable challenges of empirical implementation, and I argue here that an understanding of the palimpsest nature of the material universe is key to meeting that challenge.

Palimpsests and the Structure of the Material World

The term palimpsest has a long usage in archaeology (Holdaway and Wandsnider in press). It is also used more widely as a powerful metaphor in a wide variety of disciplines, for example in the study of the built heritage, in literary and theoretical discourse, in discussions of memory—most famously in Freud’s study of the unconscious, and in the performing arts (McDonagh 1987, Roy 1997, Cryderman 2002, Jones and Shaw 2006). In this literature, the emphasis is on the interplay between erasure and inscription, often with cross reference to archaeological practice, between the text and the material medium through which it is expressed, and how that interplay creates complex layered and multi-temporal entities that disrupt conventional views of temporal sequence.

The dictionary definition of a palimpsest (from the Greek roots *παλιν* meaning ‘again’, and *ψαω*, meaning ‘rub’ or ‘scrape’) is ‘paper, parchment etc., prepared for

writing on and wiping out again, like a slate’, or ‘a monumental brass turned and re-engraved on the reverse side’ (New Oxford Dictionary, 3rd edition, 1967). In common usage, a palimpsest usually refers to a superimposition of successive activities, the material traces of which are partially destroyed or reworked because of the process of superimposition, or ‘the traces of multiple, overlapping activities over variable periods of time and the variable erasing of earlier traces’ (Lucas 2005, p. 37). These definitions reveal a twin aspect to the concept of a palimpsest. In its extreme form a palimpsest involves the total erasure of all information except the most recent. But palimpsests can also involve the accumulation and transformation of successive and partially preserved activities, in such a way that the resulting totality is different from and greater than the sum of the individual constituents.

In archaeology, palimpsests are typically viewed as a handicap, an unfortunate consequence of having to rely on a material record that is incomplete, and one that requires the application of complex techniques to reconstitute the individual episodes of activity, or alternatively a focus on the best preserved and most highly resolved exemplars at the expense of everything else, or the application of theoretical or imaginary narratives that are immune to empirical challenge. An alternative tradition of thought and one made explicit in various papers published in the early 1980s is to turn this limitation of the archaeological record into a virtue. Thus Bailey (1981, p. 110) refers to palimpsests as offering ‘an opportunity to focus on a different scale of behaviour’, Binford (1981, p. 197) to ‘a structured consequence of the operation of a level of organization difficult, if not impossible, for an ethnographer to observe directly’, and Foley (1981, p. 14) to ‘long term trends [that] may be of greater significance to the prehistorian than the understanding of a few short events’. Here the emphasis is as much on the accumulative and transforming properties of palimpsests as on the loss and destruction of evidence.

These preliminary considerations suggest that the notion of palimpsest is a complex one that requires further examination, and I suggest that we can distinguish five categories.

True palimpsests

True palimpsests are palimpsests in the strict sense of the term in which all traces of earlier activity have been removed except for the most recent. Imagine the floor of a Neolithic house that is regularly swept clean of all the various artifacts, materials,

objects and debris that have accumulated there since the last episode of cleaning. We might describe the floor as receiving successive depositions of material, representing different layers of activity, each one of which is wholly or largely removed before the accumulation of the next one. Only the very last layer of artifacts would remain in place immediately before the abandonment or collapse of the house to tell us something about the activities carried out there. This process of cleaning and removal of material is of course exactly what is implied by the distinction between primary and secondary refuse (Schiffer 1976, 1987). Moreover, the fact that secondary refuse appear to be very common in archaeological contexts suggests that true palimpsests, or at any rate partial palimpsests, are likely to be a widespread occurrence.

If the cleaning process was less than complete, some material traces of the earlier episodes might remain in place, for example smaller items more easily trodden into the floor surface or missed by the naked eye or the bristles of the broom — residual primary refuse of behavioral archaeology (Schiffer 1987, p.62). These earlier traces, most probably a biased selection of the original materials deposited in earlier episodes of activity, would thus become incorporated into the final layer. Moreover, that final layer might represent activities quite different from those that produced the earlier layers. The floor area in question might have been used for a period as a general living area, then as a food preparation area or a storage area, and finally as a garbage dump. We would be fooled if we thought that the final layer represented the only activity that took place inside the house. We might also be fooled if we thought that this final layer was representative of how the house was used throughout its full history, since the formation of many archaeological deposits may be the result of ‘successional use’ (Binford 1981, p. 200). Schiffer (1987) describes many such examples, and Rowley-Conwy (1994) provides a graphic illustration of the potential confounding effects that result from such palimpsest effects in relation to the near-perfect preservation and high stratigraphic resolution of house floors at the Nubian site of Qasr Ibrim. The successive demolition of older streets and buildings during urban renewal and their replacement by modern ones represents a modern example of the true palimpsest (cf. Jones and Shaw 2006).

The definition of a *true palimpsest*, then, is a sequence of depositional episodes in which successive layers of activity are superimposed on preceding ones in such a way as to remove all or most of the evidence of the preceding activity. Of course the true palimpsest may appear impossible to distinguish archaeologically from

a single episode, although various other sorts of material traces in the immediate vicinity of the true palimpsest may give us some clues about the likely existence of the earlier layers that were subsequently removed. The sweepings from the house floor may reappear as secondary refuse in adjacent ditches, for example.

Cumulative palimpsests

A cumulative palimpsest is one in which the successive episodes of deposition, or layers of activity, remain superimposed one upon the other without loss of evidence, but are so re-worked and mixed together that it is difficult or impossible to separate them out into their original constituents. This is, I think, the sense in which palimpsest is most commonly used in archaeology. It is also a very common occurrence. Many archaeological deposits are very obvious palimpsests in this sense. The stone tools in a layer of a Palaeolithic cave, for example, usually represent the aggregation of many different episodes of knapping, use and discard that have become compressed into a single layer or surface, and cannot be resolved back into the individual episodes of activity. The same is true of shells in many shell middens. We know that the many millions of shells that make up a sizeable midden must represent a multitude of separate shellgathering episodes, but resolving the mass of shells into these separate episodes except at a very gross level of stratigraphic or chronological resolution is rarely possible. The full range of variability represented by the individual episodes buried within these palimpsests is usually inaccessible and we can only observe the average tendencies represented by the palimpsest as a whole. In similar vein, Stern (1993, p. 215) refers to 'time-averaged accumulations of material remains', which corresponds to the concept of a cumulative palimpsest proposed here, and has further elaborated the implications for the study of early hominid activities and land-use patterns (Stern 1994)

Unlike the true palimpsest, where much of the evidence has been lost but the resolution of the final episode may be very high, the cumulative palimpsest is characterized not so much by loss of material but by loss of resolution. The material traces from all or many of the successive episodes of deposition are still there, including the final one in the sequence, but so mixed together as to blur the patterning peculiar to each individual episode. The mixing process may result from different causes, from churning and displacement of material by repeated human activity and foot traffic on the surface of the accumulating deposit or from low rates of deposition.

But the end result is the same, mixing of materials and blurring of the original pattern. This is not to say that all detail is lost. Apart from the average tendencies still detectable in the sequence as a whole, it is entirely possible that occasional high spots of patterning representing individual episodes may be preserved at random, unaffected by the mixing process.

At the Klithi rockshelter, for example, a typical Palaeolithic cave palimpsest, where loose sediments accumulated quite slowly with considerable vertical and horizontal mixing of materials, we occasionally found conjoined materials still in the original position in which they had been discarded, anatomically adjacent bones, or refitting flakes struck from the same flint nodule (Bailey and Woodward 1997, Wenban-Smith 1997). However, these are isolated occurrences amongst the many hundreds of thousands of stone artifacts and bone fragments, no more than might be expected to have survived by chance in the mixing process, and certainly too small a sample to sustain any useful generalizations about the pattern and integrity of all the individual episodes that make up the palimpsest as a whole.

Similar effects can be found in rock art, for example in some of the classic sites of southwest France, where some rock surfaces and engraved stone slabs have been repeatedly engraved with outlines of animals superimposed on previous engravings. The result is a maze of uninterpretable lines, but with occasional outlines of individual animals, or identifiable heads and limbs, standing out from the background noise (Bahn and Vertut 1988, figures 25 and 93).

The boundary between a true palimpsest and a cumulative palimpsest is not a sharp one and the two types may grade into each other. In fact a great many archaeological palimpsests probably share elements of both, being characterized both by mixing of material of different ages and age-related loss of material resulting from successive episodes of clearance and removal or progressive loss of in situ material by physical and chemical decay. The key trait they share in common is that both result from the repetition of activities and the deposition of material in the same location, or in similar locations with considerable overlap. The key difference is that cumulative palimpsests may acquire a significance that is greater than the sum of the individual constituent episodes, both for the people who used them and for the archaeologists who study them. Consider, for example the large shell mounds that result from the slow incremental deposition over many hundreds of years of thin layers of shells to form major features of the landscape. Such cumulative palimpsests are prominent in

the archaeological record precisely because they are formed by the repeated accumulation of materials in the same place, from which derives their archaeological visibility and relative ease of discovery and analysis, and also their symbolic significance for the people who used them (cf. Luby & Gruber 1999). As Binford (1981, p. 197) puts it ‘the greater the apparent disorganization, the more intense the use of the place in the past’.

Spatial palimpsests

At this point we might be tempted to argue that if the different activities represented in a cumulative palimpsest and their resulting material traces had been carried out in different locations, each episode would have preserved its original pattern intact and we would be able to recover the original pattern of inter-episode variability without loss of resolution. That hope has been a powerful incentive to a reorientation of Palaeolithic excavation and survey strategies away from deeply stratified cave sites to open-air locations—that and the recognition that the stratified sites must represent a tiny fraction of the total material output of Palaeolithic societies (Foley 1981, Bailey et al. 1997). However the hope that spatial segregation might result in greater resolution is almost certainly illusory.

If the individual episodes of shellgathering that make up a large mound, or the individual assemblages of stone tools that make up a layer in a stratified site, had been dispersed across the landscape, many would now be lost to view. They would have been degraded by weathering, chemical attack or other destructive processes, obscured by later overburden of sediments and vegetation, or displaced and disaggregated by soil erosion. Whichever way we look at this distribution of spatially distinct activities, we are still likely to be confronted with loss of material or loss of resolution. In other words we are still dealing with a palimpsest, except that we are dealing with a palimpsest at a larger spatial scale. All that happens when activities become spatially segregated in this way is that they merge into a much larger-scale palimpsest, the sedimentary palimpsest that characterizes the surface of the wider landscape. Some episodes are buried or obscured from view, some are destroyed, some are disturbed, some retain high integrity and resolution of patterning and some are accessible to archaeological discovery and analysis.

Open-air sites like Pincevent (Leroi-Gourhan and Brezillon 1972) in France, the Meer site in Belgium (Cahen et al. 1979), Boker Tachtit in the Negev (Marks

1977), the Dunefields site in the South African Cape (Parkington et al. 1992), or the horse butchery site at Boxgrove (Roberts and Parfitt 1999), have attracted considerable attention and interest in Palaeolithic studies precisely because they appear to represent individual episodes of activity and high resolution events, distinct from the more usual cave palimpsest. Whether or not these sites are truly individual episodes or palimpsests of some sort is open to discussion. But they certainly preserve a higher resolution and integrity of patterning than the typical cave deposit. However, the important point is that these sites are absolutely rare. They are no more common in relation to the generality of Palaeolithic sites in the wider landscape than the occasional pockets of high resolution data that we have noted above as occasionally standing out in the cumulative palimpsest of a cave deposit. In separating out the individual episodes of our palimpsest into a scatter of spatially distinct locations, we have not escaped the palimpsest problem at all. All we have done is translate it to a larger spatial scale, that of the geomorphological palimpsest, a mixture of episodes of soil formation and movement, erosion and sediment accumulation.

The palimpsest nature of these spatially discrete episodes of activity is further reinforced by the problem of chronological correlation. The generality of archaeologically detectable finds, for example stone tools or sherds in the plough-soil or on the ground surface, are often very difficult to date except at a coarse scale. However, many of these sites may well represent precisely the sort of spatially discrete body of data sought after in the attempt to disentangle cumulative palimpsests. Usually, what is gained in spatial resolution is lost in terms of chronological control. Yet the most common type of archaeological find in many regions is open-air surface finds lacking any stratigraphic integrity at all or any means of dating except the crudest, and often disregarded as a consequence. However, they have considerable information potential because of their precise location in space, whatever they may lack in temporal resolution. They thus form an important component of spatial palimpsests.

The lack of dating control highlights another feature of all palimpsests, the problem of contemporaneity. Objects in a layer, or more precisely the deposition of those objects, may be said to be contemporaneous but if the layer is a palimpsest, this can only be true within certain margins of error. True contemporaneity of two or more such events might be said to occur if they are all linked as part of the same sequence of operations. Conjoining flakes from the same stone-tool reduction sequence, and

anatomically adjacent bones from the same animal skeleton, are obvious examples, and it is often the high frequency of such conjoins that identifies high-resolution, short-lived episodes of activity such as those recorded in sites like Meer and Pincevent. But these are absolutely rare both in cumulative palimpsests and spatial palimpsests. Similarly we might refer to two different settlements within the wider landscape as contemporaneous if they were inhabited simultaneously over the same span of months or years. However, methods of dating control and correlation that enable us to achieve such precision with a large sample of sites are as yet unavailable, and may be a physical impossibility.

It is theoretically conceivable that such methods of high-precision correlation might be devised in the future. However, all materials decay, some of course more slowly than others, and the further back in time one goes, the more that is lost. Decay of radioactive isotopes is, of course, the basis for many dating methods, but the radioactive isotopes with short half-lives that give us higher resolution dating also only work over shorter and more recent time spans. Whether cosmogenic or other dating methods based on the accumulation of physical or chemical properties can defy this loss of resolution with the passage of time remains unclear. But it seems likely that the holy grail of a high-resolution dating framework that can be extended to every corner of the archaeological record is an unattainable goal that defies the physical laws on which our universe is based. In archaeological interpretation, the reality is that in order to combine sufficient data together to make a large enough sample for analysis, we inevitably end up aggregating data from temporally distinct episodes of activity. Thus, in comparing different episodes of activity, we have to make certain assumptions about the time depth within which we are willing to accept as ‘contemporaneous’ the various materials to be compared and this is as true of intra-site spatial analysis (Galanidou 1997) as it is of inter-site analysis (Bailey et al. 1997, Papaconstantinou and Vassilopoulou 1997, see also Papagianni 2000). ‘Contemporaneity’ is thus an arbitrary concept with no absolute measure, and the resolution that we can achieve in making chronological correlations depends both on the dating methods at our disposal and the questions we are trying to investigate (Papaconstantinou 1986). This is not a peculiarity or limitation of dealing with archaeological data, but a natural consequence of working with palimpsests and the physical laws of our universe.

I suggest that we call these large-scale distributions *spatial palimpsests*, a variant of the cumulative palimpsest but distinct from it and defined as a mixture of episodes that are spatially segregated but whose temporal relationships have become blurred and difficult to disentangle. As with true palimpsests, the boundary between cumulative and spatial palimpsests is not a sharp one. Both may be characterized by a variety of locations of activity and by different degrees of spatial and temporal integrity. The key difference is rather one of geographical scale.

One other variant of the spatial palimpsest worth noting before we move on is the spatial disaggregation of materials that were once accumulated in the same place. A characteristic example of this phenomenon is the one described earlier in relation to our hypothetical Neolithic house floor, the true palimpsest, where previous layers of material have been cleared away and re-deposited elsewhere. The erosion of soil from a hill slope and its re-deposition in a sedimentary basin is another example of this type of spatial palimpsest. The hope in such circumstances is that the combination of spatially distinct assemblages of material might allow us to reconstitute the sequence of episodes originally carried out in the same place. This hope too may be illusory, because the spatial separation of materials, especially if it results from cleaning and clearance activities in the archaeological context, is almost certain to result in loss of resolution or blurring of patterning and the creation of other sorts of palimpsests. Thus true, cumulative and spatial palimpsests not only form a graded series of types with considerable overlap, but they may be combined as the products of an interlinked series of actions, activities or processes to create a sort of composite of palimpsests at a larger scale—a palimpsest of palimpsests!

Temporal palimpsests

A temporal palimpsest is an assemblage of materials and objects that form part of the same deposit but are of different ages and ‘life’ spans. On first description this sounds like a cumulative palimpsest by another name. However, in the cumulative palimpsest, the association of objects of different ages is really an aggregation due to the effect of mixing together what were originally distinct episodes of activity or deposition. The temporal palimpsest comprises what, from the point of view of a cumulative palimpsest, might be viewed as a single episode, a so-called ‘closed find’ such as a shipwreck, a burial chamber or the room of a house, where all the materials

are found together because they are constituents of the same episode of activity or deposition.

Olivier's (1999) discussion of the Late Hallstatt 'princely' grave of Hochdorf in southern Germany provides an illuminating example. This is one of a number of similar mounds associated with fortified Iron Age hill settlements attributed to the 6th century BC. Inside the chamber was a range of grave goods, including clothing, jewelry, drinking cups, and other fittings and furnishings. As Olivier shows in an elegant analysis, there are a number of different periods in this process of deposition, which have occurred between the lifetime of the objects and their final placement in the grave (Olivier 1999, p. 126). The archaeological funerary assemblage thus represents a series of different 'temporalities' and incorporates the accumulation of a whole series of different events between the death of the man and the final occupation of the monument.

It might be objected that the burial was an event that must have occurred at a single moment in time, but the point of Olivier's analysis is to demonstrate that we cannot know what the date of that event was, except within a very wide temporal envelope of several hundred years (Olivier 2001). This takes us back to the problem of contemporaneity identified above. In contrast to cumulative and spatial palimpsests, where temporal resolution is limited by the mixing process itself and by the available methods of chronological correlation, the temporal palimpsest is the result of deliberate combinations of materials before their entry into the archaeological record, and our inability to date them with greater precision is due more to differences in the age of the various objects themselves, rather than to post-depositional loss of resolution or the imperfection of available dating techniques.

Palimpsests of meaning

A palimpsest of meaning can be defined as the succession of meanings acquired by a particular object in the course of its career trajectory or 'life history'³ as a result of the different uses, contexts of use and associations to which it has been exposed from the original moment of manufacture to its current resting place, whether in the ground, a museum, a textbook, an intellectual discourse, or indeed as an object still in circulation and use. It is distinct from all the other types of palimpsests so far discussed in that it can apply to an individual object, and because it brings us into the domain of subjective time experience. Lucas (2005) provides some good examples of

this effect. Stonehenge, for example, is not only a Neolithic and Bronze Age monument, but an Iron Age one, a Medieval one and a modern one, with different significance for different people in successive periods, and perhaps a different significance for different people within the same society, including, in modern society, archaeologists, heritage managers, Druids, New Age enthusiasts and foreign tourists. Similarly, Olivier (1999, p. 127), in discussing the Hochdorf grave, refers to a stratification of meanings developed throughout the archaeological life of the various objects, some of which are identifiable by physical modifications, including the ongoing significance of these objects as archaeological remains or museum exhibits.

It may be objected that the sequence of different meanings that an object acquires during its journey through time is not strictly a palimpsest, because we can resolve the accumulation of meanings associated with the object into its original component meanings. I think this is highly questionable. Let us take as an example a flint tool that started out as a knife with a sharp cutting edge, and was then converted into a blunt-edged scraping tool, which required the removal by micro-flaking of the original sharp edge. We can identify a change of meaning in this case precisely because the flint flake has undergone physical modification. But the physical modification has itself removed some of the characteristics that would have allowed us to identify the original use of the implement. Modification in this way, by definition, must remove or obscure some part of the evidence by which the earlier meaning could be identified. In this example, the working edge of the flint tool is a good example of a true palimpsest. We can sometimes infer the earlier history of a specific artifact by looking at the flakes removed in the process of modification, or other artifacts that represent earlier stages in this process. That of course is the basis for analyses of technological reduction sequences in the production and modification of stone artifacts (e.g. Dibble 1987). For any given artifact, however, its place in the reduction sequence is, to greater or lesser extent, a matter of inference.

Other changes of meaning not accompanied by such physical modification might be much harder to reconstitute. We can sometimes say something about the meaning of an object by looking at the context in which it was found and its association with other objects. But, of course, the context of discard may be different from the context of use, and almost certainly a palimpsest of some sort. Or it may be part of a votive offering, a burial hoard or a funerary offering, in which case its

significance at the time of deposition may be quite different from its previous meaning.

Thus in trying to identify the meaning of an object, whether we study it in isolation or in the context of other materials, we cannot escape the palimpsest effect, which must of necessity make the task of disentangling the successive meanings difficult if not impossible to achieve with any certainty. Arguably we might be able to disentangle the full history of meanings if we could talk to the individuals who used or owned the object during its career. But that would necessarily limit the age of the objects which could be treated in that way, even if it were possible to track down everyone who might have made use of the object or had some other association with it.

Moments in time

As we have worked through the different sorts of palimpsests, it has become increasingly difficult to identify any situation or location, whether from the archaeological past, or in the contemporary world, whether it is in the built environment of a modern city or an archaeological context, in an institutional building or outdoors, that does not constitute some sort of palimpsest. Even individual objects do not escape the palimpsest phenomenon. What about the simple stone flake removed by a single blow to provide a cutting tool? Surely that represents a single action, a moment in time? But let us consider the matter further. Simple reflection tells us that such a stone artifact from, say, the Palaeolithic period must represent at least three moments in time, the moment when the raw material was first acquired, the moment when it was first shaped into an artifact, and the moment when it was finally thrown away. In fact we must extend this to a fourth moment, the moment when it was recovered by an archaeologist, a fifth moment, when it was illustrated in an archaeological publication or exhibited in a museum case, and all the subsequent moments when it was referred to in the course of discussions such as this, to say nothing of all the previous moments of use and storage between its first manufacture and its eventual disposal. It is, in short, a palimpsest of meanings with a duration that reaches from the very distant past to the present day.

The material world is, of necessity, a composite of objects of differential duration, which represent at the very least either temporal palimpsests or palimpsests of meaning. Material objects are by definition durable. If they did not have such

properties they would not exist, or not in a way that anyone could know about. In fact the notion that a material object can represent a moment in time is self-contradictory. Material objects by definition have duration, a duration that extends from at least as early as the time when they were first created to the current moment of observation or discussion, and indeed will most likely extend far into the future. Moments in time that leave no material traces are unknowable, at least from the archaeological past.

In short, palimpsests are neither exceptions, nor inconveniences, nor oddities that need to be transformed into something else before they can be interpreted and understood. On the contrary, palimpsests are universal, an inherent feature of the material world we inhabit. They are not some distorted or degraded version of a message that needs to be restored to its original state before it can be interpreted. To a large extent they *are* the message. In so far as the palimpsests we study as archaeologists differ from those we encounter in our day-to-day environment, they differ only in their scale and resolution.

Working with palimpsests

How then should we deal with a palimpsest, let us say a cumulative palimpsest at the scale of an individual archaeological ‘site’? In the archaeological context the natural tendency is to try and unravel the palimpsest into its constituent parts. This is a perfectly legitimate strategy if the techniques and materials are available to facilitate it. What is more, we cannot really know what the limits of resolution of any palimpsest are until we try to find out. A variety of techniques including improved methods of dating, taphonomic analyses that attempt to identify the post-depositional histories of different objects, conjoining studies, and many others, can be harnessed to such a strategy. Estevez and Vila (In press) provide a good example of the process of peeling away the individual constituents of shell midden sites in Tierra del Fuego, where, unusually for shell deposits, individual episodes of activity are separated by sterile layers of sediment. We might call this the ‘microscopic tendency’, the tendency to seek understanding by working down through successively smaller scales—ultimately to the small-scale of individual actions, beliefs, and social interactions that we find most familiar in terms of our everyday expectations. However we should not delude ourselves into thinking that by doing this we are disposing of palimpsests and thereby making the data more easily interpretable, or that we will ultimately reach some pristine and irreducible core of meaning or moment in time. What we are doing

is changing the scale and perhaps the form of the palimpsest, and making it amenable to the interrogation of a different set of questions.

If we try to take the process of disentanglement too far, we may end up with individual episodes too small or limited in number to sustain any generalization, as noted earlier, or worse with pseudo-episodes that cannot bear the weight of interpretation put upon them. Sometimes this type of approach may serve to demonstrate the limits of resolution. Holdaway et al. (1998), for example, have applied a detailed program of geomorphological and radiometric dating to surface finds of stone tools in New South Wales and have shown that seemingly 'contemporaneous' sites and materials that one might be tempted to treat as components of a coherent settlement or social system refer, in fact, to quite disparate temporal episodes, with sharp temporal discontinuities and long hiatuses within a time envelope of at least 6000 years. Each temporal episode appears to indicate only one spatial fragment of the original regional pattern with which it was associated, and this is exactly what might be expected of a large-scale spatial palimpsest.

Another strategy is to go the other way, what we might call the 'macroscopic tendency', which seeks understanding by placing phenomena in a widening perspective of large-scale comparison. In this case we accept the palimpsest for what it is as a general tendency, and in effect shrink the palimpsest to a single episode, a single data set, in order to examine it in the wider comparative context of other such data sets. Again, we should not imagine that by shrinking the cumulative palimpsest in this way and expanding our scale of comparison we are removing the palimpsest problem. As should be obvious from earlier discussion, changing the scale of observation in this way is simply to move from a cumulative palimpsest to a spatial palimpsest or from a small-scale spatial palimpsest to a larger-scale one.

Whichever direction we move in, whether along the microscopic or the macroscopic pathway, we are going to be confronted with a palimpsest of some sort. What is different about these different sorts of palimpsests is their spatio-temporal scale and their resolution. No one type of palimpsest is the best, except in relation to some a priori set of expectations. Each is appropriate to the examination of different sorts of questions. Nor can we really find out what the appropriate level of interpretation is until we try to find out.

Time-Scales and Processes

What then are these different sorts of questions and substantive issues that we should be focusing on at different scales of observation? What are the different sorts of processes that are revealed at these different scales? What can we do with large-scale palimpsests, be they cumulative, spatial or temporal? This is perhaps the most difficult aspect of time perspectivism.

An example: the eroded landscapes of Epirus

Consider the eroded hill and mountain slopes in the European countries that border the northern Mediterranean, a phenomenon familiar to archaeologists who conduct survey and excavation in these regions. Such features of course are fairly prominent in the archaeologists' perception of landscape because they are potent factors in variously burying and preserving archaeological material or exposing it to view and perhaps destroying or reburying it in the process. In many areas the effects of erosion are clear to see, sometimes resulting in barren 'badlands' landscapes bare of vegetation, which appear to have lost whatever productive potential for crop agriculture, animal husbandry or arboriculture they might once have had. Much of this erosion can be dated in broad terms to the postglacial period in association with the expansion, establishment and intensification of agricultural practices, and the causes and consequences of this recent erosion, and the extent to which they may be considered as detrimental, are much debated (Van der Leeuw 1998, Purcell and Hordern 2000, Grove and Rackham 2001).

The usual culprit is supposed to be human intervention, the cutting down of trees for timber, the use of deep ploughs or tractors for cultivating fragile hill soils, or the over-grazing of domestic goats, capable of eating almost anything but the toughest thorns, including the plastic bags and labels used in archaeological excavation and the freshly washed underwear of one's field crew left out to dry in the sun. Little wonder that goats are credited with such powers of destruction! We might say that goats (or tractors or tree-fellers) are the cause of erosion. Moreover the progressive impact of erosion has aggravated worries in our conservation-minded era about the loss or irreversible degradation of our capital reserves of soil, and stimulated policies aimed at removing goats, tractors or tree felling from areas at risk, so that the protective cover of shrubs and trees can be allowed to regenerate.

This pattern is especially clear in the Epirus region. Here extensive erosion with tracts of bare hillside is particularly prevalent on the flysch geology, a type of metamorphosed sandstone that produces soils especially susceptible to erosion. But equally spectacular areas of bare ground can be found in limestone country, notably the curious 'red beds', famously associated with Palaeolithic implements, extensive areas of heavily gullied bare soil, as at Kokkinoopilos whose origins and causes of erosion are the source of notorious controversy. Much of this erosion is most probably of postglacial date and has occurred within the past 10,000 years and some of it perhaps very recently.

But if we extend our timescale back to the past 100,000 years of landscape history, as we were required to do by the demands of a Palaeolithic archaeological sequence, or indeed the past 1 million years, it becomes apparent that erosion too has a much longer history. Many of these erosion episodes cannot be dated, but some can be by looking for artifacts or other dateable material in the down-stream sediments produced by the erosion, and it is clear that there is a succession of such episodes extending well back into the Pleistocene (Macklin et al. 1997). During the last glacial period, and almost certainly during earlier climatic cycles too, erosion took place on a massive scale, resulting in the accumulation of huge fans of sediment at the foot of the higher mountains, and the accumulation of thick accumulations of alluvial deposits in river and lake basins. Indeed the scale of erosion quite dwarfs the supposed impact of human intervention in the postglacial period. This erosion of course took place long before the appearance of domestic goats or the invention of tractors and some of it long before the appearance of human communities, and is largely attributed to the impact of cold and dry glacial climates that removed most of the tree cover and further accelerated the breakdown of soil and bedrock through freeze-thaw effects.

On the longest time spans of all, it is apparent that the Epirus landscape has been subjected to progressive tectonic compression and uplift over tens of millions of years, in which offshore sediments created by earlier cycles of erosion have been compacted and uplifted to produce the hard-rock geology we see today. Thus the underlying tectonic instability has made the land surface especially susceptible to disturbance, whether triggered by earthquakes, climatic effects or human intervention (King et al. 1997).

The erosion of the postglacial, far from appearing to be an exceptional effect of recent millennia, turns out to be quite normal in relation to the longer-term history

of the physical landscape, and indeed perhaps less dramatic than in earlier periods. Since erosion has a much longer history than the domestic goat, it becomes hard to pin all the blame on the latter. On the contrary, from this longer-term perspective, it seems more likely that goat husbandry, so far from being the cause of erosion, represents a peculiarly successful adaptation to a degraded landscape that was in existence long before human settlement and cannot be made productive for human benefit in any other way. Whereas on the shorter time scale of the postglacial, it appears that goats cause erosion, on the longer time scale of the Pleistocene the roles of cause and effect appear reversed, such that it would more appropriate to say that erosion 'causes' or, better, 'selects for' goats.

Moreover what applies in the temporal dimension also applies in the spatial dimension too. If we expand the spatial scale of observation we immediately observe that erosion in one place results in the accumulation of sediment somewhere else. The massive Pleistocene fans of sediment that in themselves form low hills at the foot of the more prominent mountain ridges are often the focus of modern village settlements because of their attractive soils and water supplies. In the complex topography of the Epirus landscape, erosion actually has a beneficial effect in bringing together soil that is thinly distributed over hill and mountain slopes, and concentrating it in intermontane basins and lowland river valleys and coastal plains, where it provides some of the most important agricultural land for the modern economy. Thus erosion, which seemed at a local scale to be largely negative, turns out at a larger spatial scale to be positively beneficial. Such observations have serious implications for modern conservation policies (Van der Leeuw 1998, Van der Leeuw and Redman 2002).

The picture becomes even more interesting if we go into the more spectacular badlands landscapes and ask the local people who live there what they think about their eroded hillsides. When we first did this their initial reaction was to look at us as if we had landed from another planet or at the very least were lacking more than a few brain cells, and ask us with that inimitable combination of Greek language and gesture: 'What erosion?' After much further discussion it emerged that the eroded slopes that have such a dramatic impact on visiting archaeologists and geomorphologists were largely unrecognized by the local people because they were of no significance in their day-to-day life. In a pastoral economy largely devoted to sheep and goat husbandry, it mattered little if one part of the landscape degraded, the animals simply moved on (Green 1997, Bailey et al. 1998, Green 2005).

If houses or even whole villages occasionally got damaged or buried by an earthquake-induced landslide, that didn't matter too much either because the agricultural land, which in any case contributed relatively little to the economy, was mostly owned by absentee landlords, by the ruling Ottomans before Greek independence or by the Church. Many of these traditional mountain villages had also been moved on more than one occasion, either because of forcible relocation under the Ottomans, or to more secure locations to avoid raids by tax collectors, bandits or the disruptions occasioned by Civil War and the invasion of foreign armies that followed the end of Ottoman rule. Even today, many villages comprise two settlements, one on the hill and one in the valley below, which are used at different times of year, or by different members of the community in response to the changing seasonal needs of livestock and the ebb and flow of social life. Moreover most of the adult men were absent for years at a time, carrying on commercial activities elsewhere in the Balkans or Turkey, providing income less accessible to Ottoman tax collectors. More recently they have taken well paid jobs in Athens, Munich or New York, returning money to their ageing relatives in the home village, where they build new homes for summer visits and ultimately for their retirement. Both historically and in the modern era the whole way of life of these mountain villages has been organized around different forms of individual and collective mobility, which can be seen as a highly successful response not only to the physical instabilities of a tectonic landscape but to the social and political instabilities for which the Balkans have become such a byword in historical and recent times.

Reflecting on this sequence of encounters and interpretations, it is clear that we have been moving through a series of palimpsests at a succession of different geographical and temporal scales, ranging from the very large scale palimpsests associated with the geological history of the region to the palimpsests of meaning associated with particular parts of the local landscape. The eroded hill slopes that formed the starting point for exposition turn out to be both true palimpsests in a geological sense, parts of wider spatial palimpsests in which eroded soil or sediment have been re-deposited elsewhere on many different time scales, and palimpsests of different meanings associated with different observers. For the people who made their living in such a landscape, these eroded surfaces were of little significance—indeed in a sense invisible, for the visiting geologist a highly visible symptom of underlying geophysical dynamics, and for the visiting archaeologist a magnet for the search and

discovery of prehistoric artifacts exposed by the removal of the sedimentary overburden.

In viewing different scales and types of palimpsests, it is as if we have been uncovering different layers of meaning, referring to different scales and types of activities and processes, and even to different patterns of cause and effect. Insofar as there is a common narrative thread for the human history of the region it is one of what Green (1997) calls interweaving, and what we might call co-evolution, in which changes in the physical landscape, the economic exploitation of it, and the perceptions of it by the people who live there have created a closely interwoven set of mutually adjusted processes that have resulted in structures of great durability and flexibility in an environment otherwise subject to considerable physical, social and political instability.

Relationships between scales and the problem of determinism

The general emphasis of the above discussion has been on ecological relationships resulting from environmental changes, although a social and political element is apparent at the more recent end of the temporal spectrum. That may reflect no more than the fact that environmental processes tend to reveal their full effects only over quite long time spans and are therefore particularly useful for illustrating the influence of the larger-scale in human affairs. Or more simply it may reflect the fact that I have chosen a large-scale geological palimpsest as a starting point for discussion, which necessarily leads interpretation in an environmental and ecological direction. Whether an ecological and environmental approach is a necessary consequence of looking at large-scale palimpsests is another matter, and what longer term social or cognitive patterns and processes might look like through the analysis of large-scale palimpsests requires further exploration.

Some clues as to how to frame such an investigation are suggested by Benjamin (1985), a practicing social anthropologist and ethnographer. In reflecting on the relationship between human values and motives and their environmental consequences, he suggested that on long time scales we need to use different units of cultural analysis, not identifiable socio-political groupings or the decision-making units normally studied on ethnographical time-scales, but 'shadowy organizational themes or clusters of ideas' (Benjamin 1985, p. 223). In his view, there is no

particular reason necessarily to expect a very close fit between human actions and environmental constraints over short time spans:

“...people’s actions are not reactions to some external force but the active constructs of their own individual and collective choices. Human choices could until recently be variously good, bad or indifferent from an adaptive point of view without coming under any marked environmental constraint during the life times of the people who made those choices or during the life times of their known ancestors and descendants. These considerations change, however, if we shift our attention to the much longer time-scales of prehistoric and ethnohistorical anthropology. While “system” and “function” are to my mind quite misleading when applied to ordinary ethnographic field-data, something like these concepts seems... to become more relevant as the time-scale is increased...it is in the long time-spans considered by prehistoric anthropologists that the environmental consequences of, and constraints upon, different ways of life show themselves” (Benjamin 1985, p. 223).

He went on to acknowledge that historical factors, that is ‘unpredictable extra-systemic accidents’ might become more apparent after long periods and the evidence for active choices might actually become clearer on longer time-scales, especially if it could be shown that several more or less equally viable alternative ways of life had persisted for long periods of time.

This would seem to reinforce the point that if we want to look at social phenomena in the longer term, as with any other feature of human existence, we will have to work out our own concepts, problems and tools of investigation, rather than relying on ideas from other disciplines that deal with quite different phenomena, scales of enquiry and methods of observation, and in general much shorter time spans.

One of the most vexed issues in relation to this substantive aspect of time perspectivism is how we are to conceive of the relationships between processes that operate on different time scales. Some of the most successful examples of such analysis are with phenomena or processes that have closely overlapping temporal properties. Hull (2005), for example, has analyzed the interaction between processes occurring within the lifespan of the individual and demographic trends that extend over longer time spans in the 6000-year sequence of eastern California. Cobb (1991) has demonstrated an interaction between relatively short term and cyclical patterns of

trade extending over centuries in the later prehistoric record of Midwestern North America and cumulative increases in agricultural production over several millennia. In discussion of Neolithic and Bronze Age Europe, with a similar range of time spans and time scales, there is an active debate about the definition of event and structure and the nature of their inter-relationship, (Harding 2005), and many more examples have been elaborated by those working within the Annales framework (Bintliff 1991, Knapp 1992).

In many other cases, the temporal gulf between different phenomena may be so wide that we may not be able to imagine any relationship at all, let us say between tectonic plate motions at one extreme, and the decisions of an individual at the other. Does our recognition that different processes may be apparent at different time scales condemn us to accept that there are parallel universes, each varying in its own terms, but between which there is no connection? Do the larger scale phenomena merely set very broad boundary conditions, within which the small-scale variability of the every day can vary widely within its own terms? In what ways and at what points do slow-moving, large scale processes intrude into the world of small-scale events and interactions, and what examples can we find in which the direction of causation goes the other way? Non-linear dynamic theory offers some powerful precedents for how small-scale events can have very large-scale and enduring consequences, and computer simulations can be used to model the interaction of different variables over long time spans, with interesting and often counter-intuitive results (Flannery et al. 1989, Mithen 1997, Van der Leeuw and McGlade 1997, Winder 1997). However, there is as yet little clear guidance as to how far the outcomes of such simulations can be influenced by or evaluated against the empirical record of large-scale palimpsests.

Perhaps the biggest obstacle to investigating questions such as these is the necessary implication that they imply the existence of some processes that are beyond the conscious awareness or control of the individual actors caught up in them. This can quickly turn into the belief that even to accept the possible existence of large-scale processes, whether environmental or social, is to subscribe to a sort of determinism that is an affront and even a threat to our sense of identity and individual free will. If the actions and beliefs of individuals are lost in the palimpsests of the longer term, and all that seems to matter in the long run is the operation of large scale processes with a momentum of their own, this seems to condemn us to the fate of grains of sand swept along by a tidal wave, perhaps with the illusion of independent

will, but ultimately at the mercy of much vaster forces over which we have no control. However, as the student of non-linear dynamics or of geological processes would quickly point out, even grains of sand can in their cumulative effect create new areas of land that ultimately tame and irrevocably change the tidal flow.

If behavior in any given context represents the intersection and interweaving of many different sorts of processes with different sorts of temporal rhythms — operating over different time spans and with different frequencies and amplitudes of variation— perhaps the best place to bring them all within the scope of one enquiry and observe their combined effects in interaction is at the point where they intersect in our own lives in the world which we now inhabit. This is where we can simultaneously observe and integrate long-term processes with small-scale perceptions and individual actions. For example, the idea that tectonic plate motions might have affected individual decisions and choices in the Palaeolithic past, or been affected by them, does indeed seem unlikely, but large-scale tectonic processes certainly affect individual decisions today, most notably those of the geophysicists who study them. And while we cannot yet control plate motions, we are well on the way to predicting some of their more dramatic consequences and identifying where and approximately when the next major earthquakes are likely to occur (Nalbant et al. 1988). We thus live in a world where such seemingly slow, large-scale and almost invisible processes have been made known to us through scientific investigation and brought within our conscious understanding and control of the world that we presently inhabit. Such considerations suggest both a solution to the problem of how to analyze interactions between widely differing scales of activity, that we can best do it in the context of our present-day world, which brings within reach the widest possible range of different scales of activity, and a solution to the problem of determinism, that we cannot be determined by factors of which we have some conscious knowledge, and over which in principle we can exercise some control.

The Past, the Present and the Future

If palimpsests representing variable and differential temporalities are a universal feature of the world we live in, where exactly do we locate the present? And where do we draw the boundary between the ‘present’ and the ‘past’ or for that matter between ‘present’ and ‘future’?

It is part of our conventional understanding of the world, and of our western intellectual inheritance, that the present is what we observe around us and can know about by direct experience. It is what we think we know best, and we use that knowledge to interpret the past, which we believe we can know only indirectly and imperfectly through the experiences and actions of others, or to extrapolate forward into the future, which we believe is unknowable except by inherently unreliable methods of prediction.

In archaeology this conventional view has a further consequence. If we believe that we can know the present better than the past, it follows that we should defer to the authority of the present and to those who study present phenomena. Thus it is that large areas of theoretical thinking in archaeology are introduced by reference to authorities on modern and short-term phenomena, social anthropologists, sociologists, ecologists, biologists, occasionally historians, and philosophers. The results of archaeological investigation are thus often variously evaluated, sanctioned or attacked, not according to how far they correspond to observations of the empirical evidence, but according to judgments about which authority is to be preferred. There is a double logic to this. Because we believe that the present is known or knowable better than the past, we must seek our inspiration in studies of present phenomena and our concepts and theories from authorities on the present. Because the past is knowable only imperfectly and less well than the present, the evidence from the past cannot be relied on to provide an empirical challenge to pre-existing preference or authority. Such logic, of course, only tends to reinforce the opinion of social anthropologists, sociologists, historians and perhaps also philosophers, that archaeology is a derivative discipline that attempts to study with inherently imperfect data the past tense of phenomena that are better studied in the present. Archaeologists who go down this route of enquiry also inevitably end up chastising themselves and their colleagues for always being one step behind the chosen authority discipline.

This view of the world, that we know the present better than the past, is also powerfully reinforced by our common-sense understanding, and it is one that we are very reluctant to abandon because it would call into question our sense of identity, our belief in our autonomy, and our sense of authority over the world in which we live. It is also sanctioned in the world of science by the principle of uniformitarianism, in principle a belief that the past was like the present, but in practice a far more complicated combination of concepts which actually provide us with the tools to

investigate empirically a past that could have been very different from the present (Bailey 1983, pp. 174–80).

But if the world we can know about is a material world whose main characteristic is *duration*, the common-sense understanding of the present must be misleading, or at any rate arbitrary, since materiality reaches forward from the past into the present and extends into the future.

The notion that we know the present better than the past or the future can be examined from another angle. Consider how much knowledge I can really acquire by direct observation of the world around me. At this moment it is confined to what is happening in roughly a 50 m radius around my present location, an impossibly limited knowledge of the world that cannot represent more than an infinitesimally small fraction of the totality of things that are happening elsewhere at this particular moment. Of course I can switch on the television or the computer and learn a little of what is happening in other parts of the world at this same moment from the satellite news channels, but I am doubtful that this would give me anything other than a rather limited view of what is happening in just a few of the world's trouble spots. If I want to know more I can read tomorrow's newspapers or the weekly magazines, but these will be discussing events that happened yesterday or last week or last month, and it is doubtful that one should believe everything one reads in the newspapers. For greater depth I might read books on the history of particular regions, and perhaps even their archaeology. There is a real sense in which we can only acquire a fuller knowledge of what is going on in the present by looking back at it retrospectively from some future vantage point, from which the events of more enduring significance can be disentangled from the background 'noise' and the pattern of relationships more clearly understood in terms of contemporaneous events elsewhere and their various antecedents and consequences (Evans-Pritchard 1961).

The durational present

For the archaeologist, where exactly is the boundary between the past and the present? For social anthropologists the 'ethnographic present' is the past 100 years or so, the period within which observer participation, the main technique of anthropological enquiry, has been practiced, essentially the lifetime of practicing anthropologists and their predecessors, who have left records of their observations. Before that period, evidence amenable to anthropological investigation recedes from view and becomes a

blur, the ‘shadowy organizational themes’ quoted earlier from Benjamin (1985), who also notes that the ‘cultures’ and ‘societies’ studied by anthropologists have rarely been shown to have a time depth of more than about 6 human generations. For many historians and sociologists, this ‘present era’ has a time depth of about 300 years, separated by the Industrial Revolution from what came before, and characterized by detailed documents and bureaucratic records that allow exploration of social and political movements. Palaeolithic archaeologists in more enthusiastic moments have been known to refer to anything after 10,000 years ago as ‘modern’ (and therefore beyond the range of interest), the upper limit being marked by the ‘Neolithic Revolution’, its lower limit marked by the ‘Human Revolution’ 2 million or more years ago. A highly topical field of research during the past decade or so has been the appearance of ‘anatomically modern humans’, a ‘modern’ phenomenon that has a time depth of as much as 100,000 years, and whose appearance is closely associated with a so-called ‘Upper Palaeolithic Revolution’. Structural geologists are inclined to refer to anything within the past 1–3 million years or so as ‘modern’, the superficial overburden of soft sediments that hides the hard rocks that are the objects of real interest.

In all these examples, what counts as ‘past’ or ‘pre’ as in ‘pre-Industrial’ or ‘pre-history’ or ‘pre-Neolithic’ or ‘pre-human’ refers to something considered too early to be of interest or amenable to investigation, and what counts as ‘modern’ or ‘post’, something too recent. It appears that the boundary between present and past is quite arbitrary, determined by the phenomena of interest that are under investigation and the temporal reach of the preferred techniques of observation. In every case the present has duration, but a rather different duration for different observers. We might call this a *durational present*, the envelope of time within which phenomena of interest are accessible to study, and beyond which they appear to recede from view. This envelope may vary from hours to days for the newspaper journalist, weeks to years for the politician, decades to lifetimes for the ethnographer, centuries to millennia for the historian of written documents, and millennia to millions of years for the prehistoric archaeologist. To say that some of these observers deal with ‘the present’ and others with ‘the past’ is an arbitrary exercise difficult to justify on any basis except that of preference or prejudice, and it might be better if we were to eliminate both terms altogether. Even if we find it difficult to eliminate them from everyday usage, they should carry no greater significance than terms like ‘sunrise’

and ‘sunset’, which we continue to use without pre-supposing any belief in a pre-Copernican view of the Universe.

In the same vein, the belief that the edge of a particular temporal envelope represents a sharp boundary marked by some revolution in behavior may be just as illusory as the belief that the visual horizon marks a sharply defined physical boundary on the ground, beyond which lies the abyss. When we approach the point where we thought the visual horizon was located, it has ceased to exist, and in its place we find the earth’s surface continuing beyond much as before. So it may be with temporal horizons defined arbitrarily by particular scales of behavior and techniques of observation. The Neolithic revolution, for example, turns out on closer study to involve complex patterns of variability and continuity that go across the supposed boundary. What appeared at a distance to be a sharp division turns out on closer investigation to be more blurred, one amongst many other such features of variable ‘topography’ spreading out on either side.

What then of the future? Surely we need to retain that concept, because all durational presents end on the same line, albeit a moving line that is constantly advancing forward into the future. Here too, however, the boundary is far less obvious than at first appears. Part of the problem lies in the way we measure time. For a durational present of one year, anything that happens within that time envelope is ‘present’, but for a shorter durational present within that time envelope, let us say of days in duration, most of that longer time envelope, at least initially, will be in the future. What is ‘present’ for one observer is ‘future’ for another, and ‘past’ for yet a third observer.

The problem of definition is more fundamental than that, however, for much of our current activity, and probably of our predecessors far back in time, is informed by beliefs, anticipations and predictions that are already reaching into the future. Much of what will happen tomorrow is already entailed in what is under way today. Many processes, whether social, political, environmental or biological, which are an integral part of our everyday lives, were set in motion at some earlier time and already have a momentum that is destined to carry us further forward into the future in many ways that are predictable with highly probable outcomes, barring some cosmic catastrophe. This is not to suggest that we can predict or know very much about the future. Rather, it is to emphasize how little we really know about the present, and how arbitrary is the distinction between knowledge of the present and knowledge of the

future. Thus our durational presents have variable time horizons ahead of us, ‘in the future’, as well as behind us, ‘in the past’. As we extend our time horizon further back in time and increase our scale of observation, so it is natural to extend it further forward into the future. If we believe that the world began only 6000 years ago, then it is natural to fear that it may end quite soon, perhaps at the turn of the next millennium. A greatly expanded time perspective encourages us to envisage a much longer future, one that will also be affected, perhaps irreversibly, by actions that we take today. If an archaeological perspective has a practical contribution to make, it is that even the most distant future will be affected by what we do today, just as today’s world has been shaped by what came before.

The Archaeology of Time

Are we in a position yet to talk about an all-encompassing ‘archaeology of time’? In one sense the phrase is meaningless, since time is a dimension within which we operate, rather than a separate entity with physical properties amenable to archaeological study. Such a phrase has no more content than ‘the archaeology of space’. The ‘archaeology of place’, on the other hand, has a respectable pedigree, referring to the ways in which past people used and perceived the world around them and what they saw as significant in it. So too does the term ‘spatial archaeology’. The distinction here is between the use of spatial *methods* (the use of Cartesian coordinates, geodetic measurements, Geographical Information Systems, and so on) to provide a frame of reference for ordering and coordinating events in space, and spatial *perception*—how we perceive and experience the spatial dimension, as it were subjectively, how different people experience it differently, and indeed how different conceptions and experiences of space can be simultaneously appreciated by one individual. A similar distinction exists in the time dimension, between dating methods as a means of ordering and coordination of events, what we might call ‘temporal archaeology’, and perceptions of time or ‘the archaeology of time. Moreover, ‘archaeology of time’ has recently been used by Lucas (2005) as the title of a wide ranging survey of time and archaeological theory. Since he also includes a detailed and provocative critique of time perspectivism, his argument merits serious examination.

The central thesis is a distinction between what hecalls ‘chronological’ time and ‘real time’ or ‘narrative’ time. Chronological time according to Lucas is time as measurement, the universal framework of abstract scientific time and the invention of Western capitalism, which emphasizes time as succession, as a unilinear sequence or series of events, and as a universal framework within which these events take place. Lucas argues that this is how we tend to think about temporality when we look at events as a succession of years, or periods or stages, and that this is the dominant idea in archaeological interpretation. As such, it leads to explanations with a similar structure, which emphasize progressive development through evolutionary stages, moving from a more ancient and primitive state to the supposedly advanced and enlightened position of the modern observer, a totalizing grand narrative that legitimates the power of those who promote it. In contrast, real time emphasizes time as duration, time as flow rather than as sequence, which corresponds more closely to time as we experience it subjectively, and can thus result in many different temporalities and different narratives. Time perspectivism, according to Lucas, falls squarely within his conception of chronological time.

However, this contrast between two broadly opposed approaches to time in archaeology is greatly over-simplified and confuses chronology as a frame of reference with chronology as a particular type of temporal interpretation. Archaeologists who use chronological frameworks are not pre-destined to construct linear or progressive types of explanation or ones that necessarily minimize subjective experiences of time, any more than the use of modern maps to travel around a landscape imposes a western scientific conception of space on the people who live in that landscape and their perception of its spatial properties (Green 2005).

Moreover, to equate time perspectivism with this characterization of chronological time is to completely misunderstand its meaning. A time-perspective examination of world prehistory raises objections to the conventional structure of a progressive narrative, which are every bit as fundamental as those identified by Lucas, but from a very different source. First, a time perspective approach leads us to expect that the material record of prehistory on the global scale, as at every other scale of investigation, is a palimpsest, a huge palimpsest that stretches across the whole surface of the earth. Moreover, there are good reasons to suppose that large segments of this palimpsest are true palimpsests, in which much of the previous record has been wiped out, or at any rate cumulative palimpsests in which there has been substantial

age-related loss of material. Thus the apparent growth of detail and complexity as the record of human history unfolds over time might have as much to do with the selective loss of information and resolution as we attempt to move back through the successive layers of this global palimpsest, as it does with any real advances in the complexity of behavior.

Secondly, time perspectivism in the strict sense of the term should make us alert to the potential distortion of perspective that comes with tracing phenomena back in time until they disappear from view over a temporal horizon, creating the illusion of a 'revolutionary' disjuncture. That distortion of time perspective, like its equivalent in the spatial dimension, is bound to make events that are closer in time appear more detailed and more complex than those that are further away. This raises the question of how far the changes that we see as we move forward in time through the narrative of world prehistory are the result of successive increases in the scale and resolution of our powers of observation, rather than to inherent changes in the phenomena themselves. To describe some of the changes in the archaeological record as revolutions may be as misleading as to describe the transition from structural geology to fluvial geomorphology as a revolution in earth history, when all that is happening in that apparent transformation is a shift in the time scale of observation and the scale of the geological palimpsests available for study.

Another feature of time perspectivism that Lucas objects to is the claim that longer time spans require different units of analysis and interpretation. A Palaeolithic burial or the manufacture of a Palaeolithic end scraper is the same scale of event as a modern burial or the production of a gunflint in the historical period. The fact that the latter two examples can be dated to a precise year, while the former only within a time span of hundreds or thousands of years is not relevant to the interpretation, in Lucas's view, and to argue otherwise is to confuse chronological time with real time.

As examples of 'real time' events, i.e. individual episodes of activity, residing in the long time spans of the deep past, he cites the Lower Palaeolithic Boxgrove horse butchery site (and the manufacture of an Acheulean hand axe. However, as discussed earlier, combinations of material residues that can be demonstrated to represent a single episode of activity rather than a palimpsest of unrelated episodes are at best very rare and often wrongly identified as such. The individual hand axe, in contrast, may indeed represent a real time event, but see the earlier discussion on moments in time, and some serious thought has been devoted to exploring the

relationship between the individual actions implied by the manufacture of the individual hand axe and the hundreds of thousands of years of time encompassed by the Acheulean period (Hopkinson and White 2005). However, one cannot get very far in interpreting wider issues in the Palaeolithic period without comparing one hand axe with others, and that immediately raises the problem of establishing the contemporaneity of the activities associated with different artifacts within a deposit and with different deposits in the wider landscape. Lucas sidesteps this issue by concentrating on the biography of a single artifact, in his case the career of a Roman jar from the moment of its manufacture in the 2nd century AD to its current resting place in an archaeological storeroom. I suspect that part of the attraction of studies that focus on the biographies of individual objects is that they do not depend on grappling with the difficulties of contemporaneity.

The stance adopted by Lucas here is common to a very wide range of archaeological interpretation, and is inspired by an understandable wish to restore what is missing, to ‘normalize’ human activities in the remote past by showing that, though they appear from a distance to be simpler and perhaps more ‘primitive’ because so much detail is missing, they are every bit as complex and variable as those that we can observe in our present world. However, this normalization comes at a cost, for we can rarely ‘see’ those real-time events in the archaeological palimpsests available for study, even though we may reasonably suppose that they are there, and to rely on them as interpretive tools risks producing explanations that are immune to empirical challenge or implementation.

A third objection is to the contrast implied in time perspectivism between a multi-temporal past and an essentially one-dimensional event-dominated present. Lucas objects to this on the grounds that the ethnographic present is itself not a one-dimensional entity but is imbued with multitemporality just like the archaeological record. This is a fair point, but the time spans and time scales encountered and recognized as such in archaeological deposits often cover a much wider range than the materials observed in historical and ethnographic contexts.

Time perspectivism also highlights the multitemporality of the material world but from a different point of view, which can best be illustrated by differences of emphasis in the use of the palimpsest concept. Time perspectivism emphasizes the differential duration and history of the various phenomena that make up the contemporary world, as expressed in the concept of a ‘durational present, and thus

highlights the ‘pastness’ of the present’. Lucas in contrast emphasizes the perceptual element, what I have referred to earlier as palimpsests of meaning, but deals scarcely at all with the other types of palimpsest. Hence his emphasis is on the multiple temporalities inherent in our present-day experience of our contemporary world, and thus the ‘presentness’ of the past. This emphasis, however, exposes a potential weakness in the methods used to identify past people’s awareness of time. Following Bradley (2002), he suggests that ‘any aspect of the archaeological record that would seem to indicate some reference to an earlier part of that record might be interpreted in this way’ (Lucas 2005, p. 87). Here, I suspect that there are considerable difficulties of empirical corroboration. Did the Medieval farmers of northern England, for example, who built their houses with stones robbed from Hadrian’s Wall have a greater sense of their Roman ‘pastness’ than their neighbors, or did they treat the Wall as just another quarry? Does a Greek shepherd recognize or care that the mountain on one side of his valley is three million years old, the erosion on the opposite slope 30,000 years old and the field boundaries in the valley bottom 300 years old, or are these features simply ‘there’, part of his present world that he deals with or ignores according to his everyday preoccupations? Archaeological evidence of past societies’ engagement with material culture that was ancient in their time raises similar questions. In the absence of oral testimony or documentary records that might indicate otherwise, it would appear to be very difficult to demonstrate from the archaeological evidence alone that the ‘pastness’ of materials incorporated into their cultural world by prehistoric societies can lead to any reliable inferences about their temporal experiences. We, of course, are aware of the differential time depth of these various features because of our tools of archaeological inquiry, but there is no guarantee that others have the same awareness, or that when archaeologists claim to reveal the subjective experiences of past people, they are doing anything other than imposing their own.

Perhaps the oddest lacuna in Lucas’s exposition is his unwillingness to grapple with the differences of time span and temporal resolution that characterise different parts of the archaeological record, even though he recognizes that they exist. In the case of the Roman jar, we are told that it is associated with a cremation burial that took place in one year, but we don’t know which one within a time span of 40 years. Later, he suggests that ‘...it is pointless to refine the calendrical dating of the Iron Age to anything less than half a century, since the Iron Age characterises larger scale

processes that do not operate on the level of years, but decades or more' (p. 99), and again '...historical documents ...track events at the annual level or less, while most of the data and archaeological interpretation works on very different timescales.' (p. 99–100). Lucas recognizes that there is a problem here but appears unwilling to acknowledge its consequences. Lucas has many interesting things to say about time and temporality, but in the end his arguments lead to the conclusion that anything beyond the experience of the individual is epiphenomenal 'noise', that only individual events and actions are 'real' and worthy of study, and that to suppose otherwise is to seek to impose one's own views on others in an attempt at political domination. That is a pity, because in emphasizing the presentness of the everyday material world as experienced by the individual observer, his approach appears to close off the possibility of contemplating, analyzing or sharing the full richness and deeply layered complexity of a multi-scalar universe as revealed by an archaeological perspective.

Conclusion

The central position of this paper is that the palimpsest records we deal with as archaeologists are so distinctive that we need to develop new tools of observation and new concepts before we can be sure what is there to be interpreted or how to interpret it, or indeed what questions to ask of it. Where shall we find those tools? One widely advocated answer is in the analysis of contemporary formation processes or contemporary social theory. That has undoubtedly provided many useful clues already, and will provide many more, but we should also beware of falling into the trap of assuming that the processes we can observe today are necessarily the right or sufficient ones for studying formations created over much longer time spans and at larger geographical scales. Consider the analogy of map making. On the smallest scale the conventional tools of compass and theodolite that have been found to produce reliable maps in known territory should serve to produce new maps in previously unexplored terrain. If we go onto a much larger scale, let us say that of mapping the constellation within which our solar system is located, a compass and theodolite are useless for the purpose, and we need observational tools like radio telescopes and infrared spectrometry. The latter in their turn are useless for making small-scale terrestrial maps. It is something of this order of difference that faces us when we are attempting to explore the full range of archaeological palimpsests.

There is a genuine paradox here, and a familiar one: we cannot work out what tools we need until we know what sort of phenomena are there in the longer term record to investigate, and we cannot investigate those different phenomena until we have some tools to do it with. And to solve that paradox we will need to work at both simultaneously.

I have emphasized the analysis of palimpsests because I believe that they provide the key to how we should go about investigating the longer-term, larger-scale dimension of the human condition and its relationship to the world of individual lives and perceptions. But the analysis of palimpsests by themselves is only part of the program of investigation that needs to be undertaken. Concurrently we need also to be experimenting with different sort of theories and questions and exploring which ones are most congruent with the various scales and levels of the emerging empirical record. In the metaphysical domain the ultimate goal is to demonstrate that what we call the past is actually part of our durational present, and to use an archaeological perspective to demonstrate that our present world is quite different from the conventional view of it, and cannot be properly understood without the benefit of an archaeological dimension, in which the concepts of past, present and future are shown to be essentially arbitrary—and, of course, open to varying definition according to the time perspective of the observer.

Acknowledgements

This paper originated as a presentation to a session on Time Perspectivism organized by Simon Holdaway and LuAnn Wandsnider at the meeting of the Society for American Archaeology at Milwaukee in 2003. I am grateful to both for their initial invitation and subsequent discussion, to the other participants for their comments, and to Kevin Greene, Nicky Milner, Tim Murray, Laurent Olivier, Anne Ramenofsky, Michael Schiffer and Nick Winder for reading and commenting on earlier versions of this paper.

References

- Alcock, S.E. 2002. *Archaeologies of the Greek Past: Landscape, Monuments and Memories*. Cambridge University Press, Cambridge.
- Bahn, P.G. and Vertut, J. 1988. *Images of the Ice Age*. Windward, Leicester.

- Bailey, D.W. 1993. Chronotypic tension in Bulgarian prehistory: 6500–3500 BC. *World Archaeology* 25, 204–22.
- Bailey, G.N. 1981. Concepts, time-scales and explanations in economic prehistory. In: Sheridan, A. and Bailey, G. (Eds.) *Economic Archaeology*. British Archaeological Reports International Series 9, Oxford, pp. 97–117.
- Bailey, G.N. 1983. Concepts of time in Quaternary prehistory. *Annual Review of Anthropology* 12, 165–92.
- Bailey, G.N. 1987. Breaking the time barrier. *Archaeological Review from Cambridge* 6, 5–20.
- Bailey, G.N. (Ed). 1997. *Klithi: Palaeolithic Settlement and Quaternary Landscapes in Northwest Greece*. 2 vols. McDonald Institute for Archaeological Research, Cambridge.
- Bailey, G.N. 2005. Concepts of time. In: Renfrew C. & Bahn P. (Eds.) *Archaeology: The Key Concepts*. Routledge, London, pp.268–73.
- Bailey, G.N. and Woodward, J. 1997. The Klithi deposits: geology, stratigraphy and chronology. In: Bailey G. N. (Ed.) *Klithi: Palaeolithic Settlement and Quaternary Landscapes in Northwest Greece*. Volume 1: *Klithi Excavations and Intra-site Analysis*. McDonald Institute for Archaeological Research, Cambridge, pp. 61–94.
- Bailey, G. N., Cadbury, T., Galanidou, N. and Kotjabopoulou, E. 1997. Open-air sites and rockshelters: survey strategies and regional site distributions. In: Bailey G. N. (Ed.) *Klithi: Palaeolithic Settlement and Quaternary Landscapes in Northwest Greece*. Volume 2: *Klithi in its Local and Regional Setting*. McDonald Institute for Archaeological Research, Cambridge, pp. 521–37.
- Bailey, G., Ioakim, C., Turner, C., Sanchez-Goñi, M.-F., Sturdy, D. and Webley, D. 1998. Land degradation in Epirus. In: Van der Leeuw S.E. (Ed.) *Understanding the Natural and Anthropogenic Causes of Land Degradation and Desertification in the Mediterranean Basin*. Office for the Official Publications of the European Community, Luxembourg, pp. 71–111.
- Benjamin, G. 1985. In the long term: three themes in Malayan cultural ecology. In: Hutterer, K.L., Rambo, T. and Lovelace G. (Eds.) *Cultural Values and Human Ecology in Southeast Asia*. Michigan Papers on South and Southeast Asia, No. 27, Center for South and Southeast Asian Studies, University of Michigan, Michigan, pp. 219–278.

- Binford, L.R. 1981. Behavioral archaeology and the “Pompeii Premise”. *Journal of Anthropological Research* 37, 195–208.
- Bintliff, J. (Ed.) 1991. *The Annales School and Archaeology*. Leicester University Press, Leicester.
- Bradley, R. 1991. Ritual, time and history. *World Archaeology* 23, 209–19.
- Bradley, R. (Ed.) 1993. *Conceptions of Time and Ancient Society*. *World Archaeology* 25.
- Bradley, R. 2002. *The Past in Prehistoric Societies*. Routledge, London and New York.
- Cahen, D., Keeley, L.H. and Van Noten, F.L. 1979. Stone tools, toolkits, and human behaviour in prehistory. *Current Anthropology* 20, 661–83.
- Clark, G. 1992. *Space, Time and Man*. Cambridge University Press, Cambridge.
- Cobb, C. 1991. Social reproduction and the Long Durée in the Prehistory of the Midcontinental United States. In: Preucel R. (Ed.) *Processual and Postprocessual Archaeologies: Multiple Ways of Knowing the Past*. Southern Illinois University Press, Carbondale IL, pp. 168–82.
- Cryderman, J. 2002. Ghosts in the palimpsest of cultural memory: An archaeology of Faizal Deen’s poetic memoir *Land without Chocolate* (a.k.a. “the art of writing about authors before they are famous”). <<http://social.chass.ncsu.edu/jouvert/v613/cryder.htm>>.
- Dibble, H.L. 1987. The interpretation of Middle Paleolithic scraper technology. *American Antiquity* 52, 109–17.
- Ebert, J. I. 1992. *Distributional Archaeology*. University of Utah Press, Salt Lake City.
- Estévez, J., Vila, A. and the DEVARA Group. In press. Twenty years of ethnoarchaeological research in Tierra del Fuego: Some thoughts for European shell-midden archaeology. In: Milner, N., Craig, O. and Bailey, G. (Eds.). *Shell Middens in Atlantic Europe*. Oxbow, Oxford.
- Evans-Pritchard, E.E. 1961. *Anthropology and History*. Manchester University Press. Reprinted in *Essays in Social Anthropology*, by E.E. Evans-Pritchard. Faber, London, pp. 46–65.
- Flannery, K., Marcus, J. and Reynolds, J. 1989. *Flocks of the Wamani*. Academic Press, New York.

- Fletcher, R. 1992. Time perspectivism, *Annales*, and the potential of archaeology. In: Knapp A.B. (Ed.) *Archaeology, Annales, and Ethnohistory*. Cambridge, Cambridge University Press, pp. 35–49.
- Fletcher, R. 1995. *The Limits of Settlement Growth*. Cambridge University Press, Cambridge.
- Foley, R.A. 1981. A model of regional archaeological structure. *Proceedings of the Prehistoric Society* 47, 1–17.
- Galanidou, N. 1997. The spatial organization of Klithi. In: Bailey, G.N. (Ed.), *Klithi: Palaeolithic Settlement and Quaternary Landscapes in Northwest Greece*. Volume 1: *Klithi Excavations and Intra-site Analysis*. McDonald Institute for Archaeological Research, Cambridge, pp. 275–304.
- Gosden, C. 1994. *Social Being and Time*. Blackwell, Oxford.
- Green, S. F. 1997. Interweaving landscapes: the relevance of ethnographic data on rural groups in Epirus for Palaeolithic research. In: Bailey G.N. (Ed.), *Klithi: Palaeolithic Settlement and Quaternary Landscapes in Northwest Greece*. Volume 2: *Klithi in its Local and Regional Setting*. McDonald Institute for Archaeological Research, Cambridge, pp. 637–54.
- Green, S.F. 2005. *Notes from the Balkans: Locating Marginality and Ambiguity on the Greek-Albanian Border*. Princeton University Press, Princeton, NJ.
- Green, S.F., King, G.C.P. and Nitsiakos, V. 1998. Landscape perception in Epirus in the late 20th century. In: Van der Leeuw S.E. (Ed.) *Understanding the Natural and Anthropogenic Causes of Land Degradation and Desertification in the Mediterranean Basin*. Office for the Official Publications of the European Community, Luxembourg, pp. 329–60.
- Grove, A.T. and Rackham, O. 2001. *The Nature of Mediterranean Europe: An Ecological History*. Yale University Press, New Haven, CT..
- Harding, J. 2005. Rethinking the Great Divide: Long-term structural history and the temporality of event. *Norwegian Archaeological Review* 38 (2), 88–101.
- Higgs, E.S. and Jarman, M.R, 1975. Palaeoeconomy. In: Higgs, E.S. (Ed.) *Palaeoeconomy*. Cambridge University Press, London, pp. 1–7.
- Hodder, I. 1990. *The Domestication of Europe: Structure and Contingency in Neolithic Societies*. Blackwell, Oxford.
- Holdaway, S. and Wandsnider, L. 2003. Temporal scales of archaeological landscapes from the Central Desert of Australia and intermontane North America. In: Lock, G.

- and Molyneaux B. (Eds.) *Confronting Scale in Archaeology*. Plenum, New York, pp. PAGE NOS
- Holdaway, S. and Wandsnider, L. In press. The problem with palimpsests.
- Holdaway, S., Witter, D., Fanning, P., Musgrave, R., Cochrane, G., Doelma, T., Greenwood, S., Pigdon, D. and Reeves, J. 1998. New approaches to open site spatial archaeology in Sturt National Park, New South Wales, Australia. *Archaeology in Oceania* 33, 1–19.
- Hopkinson, T. and White, M. J. 2005. The Acheulean and the handaxe: Structure and agency in the Palaeolithic. In: Gamble C. and Porr M. (Eds.) *The Hominid Individual in Context*. Taylor and Francis, London, pp. 13–28.
- Hordern, P. and Purcell, N. 2000. *The Corrupting Sea: A study of Mediterranean History*. Blackwell, Oxford.
- Hull, K.L. 2005. Process, perception, and practice: time perspectivism in Yosemite native demography. *Journal of Anthropological Archaeology* 24, 354–77.
- Jones, R. and Shaw, B.J. 2006. Palimpsests of progress: erasing the past and rewriting the future in developing societies—case studies of Singapore and Jakarta. *International Journal of Heritage Studies* 12 (2), 122–38.
- Keynes, J.M. 1936. *The General Theory of Employment, Interest and Money*. Macmillan, London
- King, G., Sturdy, D. and Bailey, G.N. 1997. The tectonic background to the Epirus landscape. In: Bailey G.N. (Ed.), *Klithi: Palaeolithic Settlement and Quaternary Landscapes in Northwest Greece. Volume 2: Klithi in its Local and Regional Setting*. McDonald Institute for Archaeological Research, Cambridge, pp. 541–59.
- Knapp, A.B. 1992. Archaeology and *Annales*: time, space, and change. In: Knapp, A.B. (Ed.) *Archaeology, Annales, and Ethnohistory*. Cambridge University Press, Cambridge, pp. 1–21.
- Leroi-Gourhan, A. and Brezillon, M. 1972. *Fouilles de Pincevent: Essai d'Analyse Ethnographique d'un Habitat Magdalénien (La Section 36)*. (VIIème Supplément a Gallia Préhistoire). C.N.R.S., Paris.
- Lock, G. and Molyneaux B. (Eds.) 2003. *Confronting Scale in Archaeology*. Plenum, New York.
- Luby, E.M. and M.F. Gruber 1999. The dead must be fed: symbolic meanings of the shellmounds of the San Francisco Bay area. *Cambridge Archaeological Journal* 9, 95–108.

- Lucas, G. 2005. *The Archaeology of Time*. Routledge, London.
- McDonagh, J. 1987. Writing on the mind: Thomas de Quincey and the importance of the palimpsest in nineteenth century thought. *Prose Studies* 10 (2), 207–24.
- Macklin, M., Lewin, J. and Woodward, J. 1997. Quaternary river sedimentary sequences of the Voïdomatis basin. In: Bailey G.N. (Ed.), *Klithi: Palaeolithic Settlement and Quaternary Landscapes in Northwest Greece: Volume 2: Klithi in its Local and Regional setting*. McDonald Institute for Archaeological Research, Cambridge, pp. 347–60.
- Marks, A.E. 1977. The Upper Palaeolithic sites of Boker Tachtit and Boker: a preliminary report. In: Marks, A.E. (Ed.) *Prehistory and Paleoenvironments in the Central Negev, Israel, Vol. 2: The Avdat/Aqev Area, Part 2 and the Har Harif*. Department of Anthropology, Southern Methodist University, Dallas TX, pp. 61–79.
- Mithen, S. 1997. Simulating mammoth hunting and extinctions: implications for North America. In: Van der Leeuw, S. and McGlade, J. (Eds.) *Time, Process and Structured Transformation in Archaeology*. Routledge, London and New York, pp. 176–215.
- Moore, H. 1981. Bone refuse — possibilities for the future. In: Sheridan A. and Bailey G. (Eds.) *Economic Archaeology*. British Archaeological Reports International Series 96, Oxford, pp. 87–94.
- Murray, T. 1997. Dynamic modelling and new social theory of the mid- to long-term. In: Van der Leeuw, S.E. and McGlade, J. (Eds.) *Time, Process and Structured Transformation in Archaeology*. Routledge, London and New York, pp. 449–63.
- Murray, T. (Ed.). 1999a. *Time and Archaeology*. Routledge, London and New York.
- Murray, T. 1999b. A return to the ‘Pompeii premise’. In: Murray T. (Ed.) *Time and Archaeology*. Routledge, London and New York, pp. 8–27.
- Nalbant, S.S., Hubert, A. and King, G.C.P. 1988. Stress coupling between earthquakes in Northwest Turkey and the North Aegean Sea since 1912. *Journal of Geological Research* 103, 24,469–24,486.
- O’Brien, M.J. and Lyman, R.L. 2000. Chronometry and units in early archaeology and paleontology. *American Antiquity* 66, 691–707.
- Olivier, L. 1999. The Hochdorf ‘princely’ grave and the question of the nature of archaeological funerary assemblages. In: Murray T. (ed.), *Time and Archaeology*. Routledge, London and New York, pp. 109–38.

- Olivier, L. 2001. Temps de l'histoire et temporalités des matériaux archéologiques: à propos de la nature chronologique des vestiges matériels. *Antiquités Nationales* 33, 189–201.
- Papaconstantinou, V. 1986. Le concept de contemporanéité en archéologie préhistorique. *L'Ethnographie* 82, 11–25
- Papaconstantinou, V. and Vassilopoulou, D. 1997. The Middle Palaeolithic industries of Epirus. In: Bailey G.N. (Ed.) *Klithi: Palaeolithic Settlement and Quaternary Landscapes in Northwest Greece: Volume 2: Klithi in its Local and Regional Setting*, McDonald Institute for Archaeological Research, Cambridge, pp. 459–80.
- Papagianni, D. 2000. *Middle Palaeolithic Occupation and Technology in Northwestern Greece: The Evidence from Open-Air Sites*. British Archaeological Reports International Series 882, Oxford.
- Parkington, J., Nilssen, P., Reeler, C. and Henshilwood, C.S. 1992. Making sense of space at Dunefield midden campsite, western Cape, South Africa. *South African Field Archaeology* 1, 63–70.
- Ramenofsky, A. and Steffen, A. (Eds.) 1998. *Unit Issues in Archaeology: Measuring Time, Space and Material*. University of Utah Press, Salt Lake City.
- Roberts, M.B. and Parfitt, S.A. (Eds.) 1999. *Boxgrove: A Middle Pleistocene Hominid Site at Eartham Quarry, Boxgrove, West Sussex*. English Heritage Archaeological Report 17. English Heritage, London.
- Rosignol, J. and Wandsnider, L. (Eds.) 1992. *Space, Time and Archaeological Landscapes*. Plenum, New York.
- Roy, S. 1997. Shobana Jeyasingh and cultural issues. *Dance Theatre Journal* 3 (4), 5.
- Schiffer, M. B. 1976. *Behavioral Archeology*. Academic Press, New York.
- Schiffer, M. B. 1987. *Formation Processes of the Archaeological Record*. University of New Mexico Press, Albuquerque NM.
- Shanks, M. and Tilley, C. 1987. *Social Theory and Archaeology*. Polity Press, Cambridge.
- Stahl, A. 1993. Concepts of time and approaches to analogical reasoning. *American Antiquity* 58 (2), 235–60.
- Stern, N. 1993. The structure of the Lower Pleistocene archaeological record: a case study from the Koobi Fora formation. *Current Anthropology* 34, 201–25.
- Stern, N. 1994. The implication of time-averaging for reconstructing the land-use patterns of early tool-using hominids. *Journal of Human Evolution* 27, 89–105.

- Thomas, J. 1996. *Time, Culture and Identity*. Routledge, London and New York.
- Tilley, C. 1981. Economy and society: what relationship? In: Sheridan A. and Bailey G. (Eds.) *Economic Archaeology*. British Archaeological Reports International Series 96, Oxford, pp. 131–48.
- Van der Leeuw, S.E. (Ed.) *Understanding the Natural and Anthropogenic Causes of Land Degradation and Desertification in the Mediterranean Basin*. Office for the Official Publications of the European Community, Luxembourg.
- Van der Leeuw, S. and McGlade, J. (eds.) 1997. *Time, Process and Structured Transformation in Archaeology*. Routledge, London and New York.
- Van der Leeuw, S. and Redman, C.L. 2002. Placing archaeology at the center of socio-natural studies. *American Antiquity* 67 (4), 597–605.
- Wandsnider, L. 2004. Solving the puzzle of the archaeological labyrinth: time perspectivism in Mediterranean surface archaeology. In: Alcock S.E. and Cherry, J. (Eds.). *Side-by-Side Survey: comparative Regional Studies in the Mediterranean*. Oxbow, Oxford, pp. 49–62.
- Wandsnider, L. and Holdaway, S. In press. The problem with palimpsests. *American Antiquity*
- Wenban-Smith, F.F. 1997. Refitting of lithic artefacts. In: Bailey G.N. (Ed.) *Klithi: Palaeolithic Settlement and Quaternary Landscapes in Northwest Greece: Volume 1: Klithi Excavations and Intra-site Analysis*. McDonald Institute for Archaeological Research, Cambridge, pp. 95–104.
- Winder, N. 1997. Dynamic modelling of an extinct ecosystem: refugia, resilience and the overkill hypothesis in Palaeolithic Epirus. In: Bailey G.N. (Ed.) *Klithi: Palaeolithic Settlement and Quaternary Landscapes in Northwest Greece. Volume 2: Klithi in its Local and Regional Setting*. McDonald Institute for Archaeological Research, Cambridge, pp. 615–36.
- Zvelebil, M. 1993. Concepts of time and ‘presencing’ the Mesolithic. *Archaeological Review from Cambridge* 12 (2), 51–70.

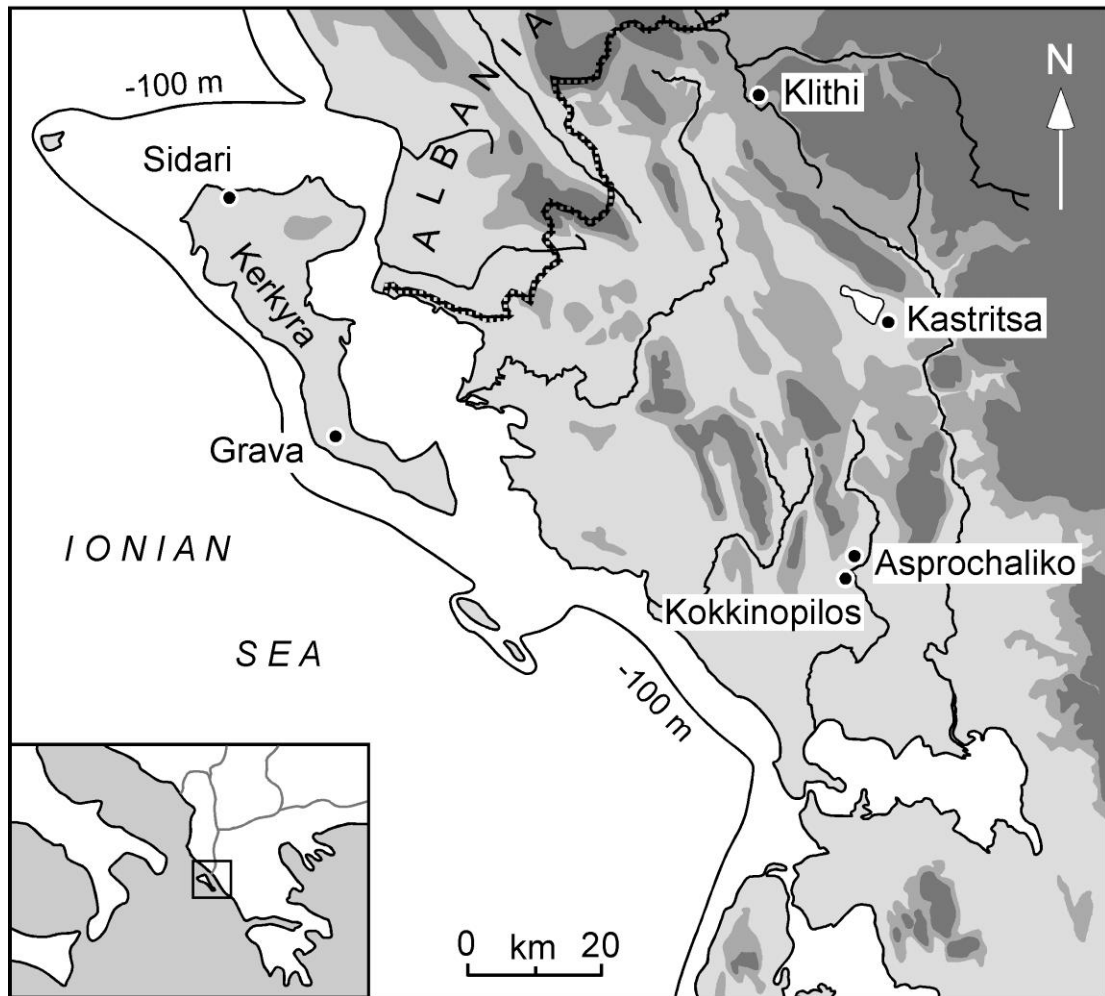


Figure 1. Location map of Epirus, Greece, showing general topography, sites mentioned in the text and other Palaeolithic or Mesolithic sites that have produced excavated and dated material. Relief is shaded at 0–600 m, 600–1000 m and >1000 m. A larger number of Palaeolithic surface finds, not shown, are also scattered throughout the region. All sites, other than isolated occurrences of individual artifacts, are cumulative palimpsests of varying resolution and time depth and in combination represent different episodes in a regional spatial palimpsest incorporating fragments of human activity extending over a time depth of at least 120,000 years. Data from Bailey et al. 1997.

¹ This corresponds to what I have previously described as subjective and objective approaches to time (Bailey 1983), subjective meaning time concepts as experienced by prehistoric people, and objective meaning the temporal concepts as used by archaeologists looking in from the outside. ‘Objective’ here does not mean superior or neutral, nor does it deny that ‘objective’ studies in this sense have their own varying subjectivities. The distinction has given particular problems to those who wish to blur the boundary between the perceiving mind and the perceived object, and I avoid the usage here in the interests of obviating unnecessary misunderstandings

² Harding and Bintliff, like many other influential European commentators (e.g. Bradley 2002, Hodder 1990), have archaeological interests centred on the European Neolithic and Bronze Ages, whereas my own interests cover a longer temporal range and a more diverse geographical one, hence the differences of perspective between us.

³ ‘Life history’ and ‘biography’ are the terms most widely used in this context, but are slightly odd usages for inorganic materials that were never alive in the biological sense.