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Time in Archaeology: An Introduction

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Lifeway reconstruction is listed as one of the objectives of “World Prehistory,” the ubiquitous course taught in universities and colleges the world over (e.g., Fagan 1995:8). It complements well the other subdisciplines of anthropology, at least for beginning anthropology students, offering them a familiar approach to foreign material: if cultural anthropologists study the behavior of present-day (or at least near-to-present-day) peoples, then archaeologists may be expected to deal with peoples’ behavior from the past. Certainly, some archaeologists study the past aided by textual records, and some cultural anthropologists are interested in past historical experience. But this overlap only enhances the perceived integration of approaches. The clear message is that archaeology is about doing the ethnography of the past.

The problem is that our cultural anthropology colleagues have changed the way they do ethnography. The postmodernist critique has laid bare the fictive nature of the objective anthropological experience. Ethnographies tell a story from a particular point of view that is only one of a range of understandings of why things happen. What, then, is the status of the archaeologists’ lifeways reconstruction? To some, particularly the more radical members of the postprocessual archaeology of the 1980s, all archaeological reconstruction was seen as theory dependent and therefore subjective. Lifeway reconstruction, therefore, was held to reflect as much about the society from whence the archaeologist originated as it reflected a reality experienced

by people in the past. And from the late twentieth century, the indigenous voice can be added. No longer do archaeologists have a monopoly on explaining what went on in the past. There are competing views and multiple lifeway reconstructions. As archaeologists, we are being openly challenged to defend the veracity of our reconstructions (e.g., Bender 2002).

The postprocessual critique has been well rehearsed in a variety of monographs and edited essay collections, and we do not intend to add this volume to the stack. Rather, the authors collected herein wish to address the question of meaning in the past from a different tack, one that we develop by taking inspiration from articles written in the early 1980s by Bailey, Binford, and others grouped here under the term *time perspectivism*. As Bailey defines the term in chapter 2, time perspectivism treats all archaeological material records as palimpsests and asserts that there is a relationship between the scale at which such records can be resolved and the types of research questions they can be used to answer.

That different explanations of the past are possible depending on the temporal scale at which past human behavior is viewed is hardly a new point or one that has been cast aside since Bailey and Binford published their seminal papers (e.g., Ramenofsky 1998). Other theoretical approaches such as historical ecology (e.g., Balée 1998) and Annaliste treatments (e.g., Bintliff, ed. 1991; Knapp 1992) have insisted on multiscalar views of the past.

What sets time perspectivism apart from other approaches, however, is the insistence on readings of the archaeological record as a unique historical data set on which to base multiple scales of explanation. It is the rise of formation studies over the last 30 years that has provided the means to view the archaeological record in this way. The authors of this volume seek explanations of the past that conform to our understanding of how the archaeological record was formed while at the same time dealing with deposits as palimpsests and seeking explanations that are scale dependent.

THE ARCHAEOLOGICAL RECORD

If archaeological explanations are to be taken seriously, on a par with, rather than replacing, other kinds of explanations of the past, then we need to be clear how our explanations are derived from the archaeological record. Archaeologists have spent a great deal of effort searching the theoretical literature to learn what drives humans to act the way they do. Much of this searching has ranged across the social sciences, often delving into studies conducted over the short term, using observational scales rarely exceeding the lifetime. To what extent do these studies actually engage the content of the archaeological record?

The need to show that archaeology may be used to study the same types of phenomena as those studied by social scientists when dealing with contemporary peoples seems to have largely overtaken the need to answer this question. As Yoffee and Sherratt (1993) comment, archaeology alone among the social sciences has failed to build its own social theory. The contemporary social theory of other disciplines, first seen as a source for explanatory inspiration, has in some cases become a prescription for how archaeology should be undertaken. Shennan (1989), when retrospectively reviewing the impact of Binford and Binford's *New Perspectives in Archeology* (1968) and Clarke's *Analytical Archaeology* (1968), makes it clear that this charge is not unique to postprocessual archaeology. New Archaeology's initial interest in culture process rapidly gave way to interests in social, ecological, economic, and ideological processes, isolating what to Clarke was unique about archaeology.

To be sure, archaeologists have kept up with and adopted many of the advances in social theory. But in seeking to make archaeology relevant, they have in many instances left the archaeological record behind. Archaeological explanation is often treated as just another form of social explanation, the difficulty of which should immediately be obvious to someone standing in front of a midden, eroding house wall, or deflated hearth. The danger archaeologists face is that in failing to emphasize the archaeological nature of our perspective on the past and our perspective on explanation, archaeology will fast become an irrelevance (van der Leeuw and Redman 2002). Why should indigenous people or anyone else consider our explanations as valid in their own terms, if we couch them in contemporary social theory while failing to convey that the archaeological basis for explanation is quite different from that provided by contemporary "human time" (Stein 1993) observation?

Of course there are exceptions to the blanket criticisms made in the paragraphs above. Some archaeologists have considered the relationship between the formation of the archaeological record and the nature of archaeological explanation. The authors in this volume draw inspiration from a series of essays by Geoff Bailey (1981, 1983, 1987) published in the early 1980s and a series of essays published by Lewis Binford (1977a, 1978a, 1980, 1981a, 1981b, 1982, 1983a) during the same time period. Bailey (2007, this volume [ch. 2]) has provided his own introduction to the genesis of his ideas. Similarly, Murray pursues the intellectual trajectories of time perspectivism in chapter 11, using the term introduced by Bailey. Murray (1999a) has also recently written on Binford and time within the context of the "Pompeii premise" debate with Michael Schiffer.

Despite the lingering interest in time perspectivism by Murray and others, it must be said that both Bailey and Binford ultimately failed to provide programmatic statements that inspired a new body of research, something that Bailey addresses in this volume. What their work lacked was a clear method for implementing the theoretical insights they developed. There are therefore two objectives for this book: to demonstrate that the problems

identified in the early literature have not gone away and to illustrate, through a series of case studies presented in the chapters that follow, a set of methods that can be applied to overcome these problems and thereby reinstate time perspectivism in the agenda of archaeological theoretical discourse.

In this introduction, we review time perspectivism and provide a brief intellectual history of time in archaeology, indicating why we have brought together a group of authors to talk about their ideas for an archaeological concept of time derived from formation studies of the archaeological record. In so doing, we provide an introduction to the chapters that make up this volume, as well as illustrating in a little more depth our reaction to the topic of lifeways with which we opened.

TIME PERSPECTIVISM

Time perspectivism was formulated around the idea that observations made at different temporal scales differentially make different processes apparent. Applied to the archaeological record, time perspectivism provides an alternative to the view that the vagaries of preservation provide for only an incomplete account of past (“human time” [Stein 1993]) behavior (Bailey 2007, this volume). Bailey, Binford, and Foley (1981a, 1981b, 1981c) independently developed variations on this idea at much the same time. It was clear to all three scholars that archaeological deposits in the main represent the remains of repeated events and therefore offer the opportunity of studying processes operating at temporal scales longer than an event (e.g., Bailey 1981; Binford 1981a; Foley 1981a).

But what was less clear was how this observation could be applied to archaeological remains. Both Bailey (1983) and Binford (1977a) were interested in what they termed methodological (or conceptual) uniformitarianism. If stone artifacts or animal carcasses are reduced in nonrandom ways and can be shown to have clear material signatures identifiable over the short term, and if a methodological uniformitarianism based on the observations can be sustained, then archaeological relationships can be interpreted (see also DeBoer and Lathrap 1979). This was clear enough in the late 1970s and 1980s. But while archaeological deposits rep-

resent individual items accumulated at the time of manufacture, construction, and initial use, they are also reflective of the reuse and redeposition of artifacts as well as the reoccupation of places by a variety of peoples for a variety of purposes. Features, for example, show the accumulation of instances of refurbishment, destruction, and reconstruction (M. E. Smith 1989), whereas artifacts may be reduced through wear or resharpening, acquiring traces that reflect their use-life histories (*sensu* Sullivan 1978). The studies that emphasize the significance of these processes for interpreting archaeological materials have largely developed since Bailey’s, Binford’s, and Foley’s seminal essays. These studies have allowed a new generation of archaeologists to develop methods that allow the application of time perspectivist ideas.

Most archaeologists would accept the importance of site and artifact reuse, but although ethnoarchaeological studies are widely directed at investigating the manufacture, use, and abandonment of artifacts and features, when such use-lives are considered at all, they are, rather ironically, often synthesized to construct long-term conditions that show little or no temporal change. The various *strategies*—mobility, technological, settlement, organizational, behavioral—that archaeologists increasingly turn to as explanatory devices (Hegmon 2003; Holdaway and Wandsnider 2006) are typical examples. These strategies invariably take stability over some span of time as a given. The great time depth offered by archaeology is often vaunted (e.g., Hodder 2001, introducing Mithen 2001 and Meskell 2001). Apart from an extension or refinement of the chronometry of human prehistory, however, the outline of significant events in general archaeology has changed little over the decades since the radiocarbon “revolution” (Dunnell 1982). Much explanation continues to be, in Dunnell’s terms, proximate and functional and, therefore, timeless. Despite a wider range of tools with which to assess the palimpsest-like nature of the archaeological record that Bailey and Binford discussed, little progress has been made in understanding how the life histories of the artifacts and features that form such a palimpsest might influence the nature of archaeological inference and therefore the

ultimate goals of an archaeological interpretation of historical processes.

THE TAPHONOMIC METAPHYSIC

Paynter (2002), correctly in our view, argues that, whatever the original goals of the New Archaeology, its application quickly descended into a synchronic, functionalist interpretation of the archaeological record. Nevertheless, there remain several developments in the archaeological literature beginning in the early 1970s that either directly or indirectly addressed the status of the archaeological record as a medium through which to develop historical explanations. We believe that, viewed with the hindsight of history, these studies, though never forming a recognizable alternative to the processual and postprocessual bodies of literature, are sufficiently coherent to be labeled the taphonomic or formational metaphysic and provide a methodological door through which time perspectivism can be approached.

This metaphysic began to cohere, we suggest, with publication of Michael Schiffer's (1972) seminal article on archaeological and systemic context. Here, Schiffer effectively promoted the study of the archaeological record and, with his colleagues, subsequently went on to develop behavioral archaeology (Reid et al. 1975). The behavioral archaeologists extended archaeological research to explain the full breadth of relationships between human behavior and material culture in all times and places (Schiffer 1995:ix). Although Schiffer was criticized for attempting lifeway reconstruction (Binford 1981a), albeit from a perspective that offered a detailed consideration of nonfunctional sources of variation (Murray 1999a), behavioral archaeology emphasized Cartesian time in a way that had few precedents. Cartesian views of time assume that objects have both a position in space and a trajectory through time independent of other objects. Behavioral archaeologists reflected this view by studying artifact life histories and describing the complex ways artifacts moved back and forth from Schiffer's systematic and archaeological contexts through time (e.g., DeBoer 1974). From this came a much better understanding of the temporal prop-

erties of the archaeological record (the way various time-dependent processes are responsible for artifact deposition) and ultimately a much greater understanding of the kinds of questions that may be asked of this record and the kinds of explanations of the human past it supports.

The temporality of deposits formed a key aspect in Clarke's (1973) well-known exposition of the New Archaeology in Britain, a statement picked up by Sullivan (1978, 1995a) in the United States. Equally important was an early essay by Isaac (1972) wherein he suggested that the long time depth represented in the Paleolithic record might require a different type of explanation than the culture histories being written for more recent periods. Binford (1981a), Foley (1981c:8–9), and others followed these leads, arguing that patterns in artifact densities are a product of repetitive behaviors maintained over long time periods reflecting stable configurations of humans, artifacts, and the land surface and emphasizing the taphonomic nature of archaeological deposits through studies of the various ways in which objects accumulate. For Foley (1981b:173), all archaeological deposits are palimpsests that vary only in the scale at which they may be interpreted. His (1981c:180) off-site approach was directed at providing spatial rather than chronological information relating to past behavior, with the aim of understanding long-term land use in relation to resource distribution.

Binford's theoretical interests were directed slightly differently. In the now famous article introducing foragers and collectors, he (1980) related the development of palimpsest deposits with different histories to different types of mobility among hunter-gatherers. Specialized versus generalized palimpsests were discussed with reference to the Mask site (Binford 1978a) as well as Nunamiut seasonal camps (Binford 1978b). In addition, Binford's understanding of the archaeological record is clear from two further concepts. First, he (1978a, 1978b, 1980) discussed the temporal significance of geomorphological processes of archaeological site formation by using the concept of the temporal grain of deposits, the degree to which behavioral events might be resolved within a deposit. Second, he (1981b) introduced the concept of historical

integrity to describe the similarities and differences in the conditions that led to the formation of an archaeological deposit. These studies culminated in what might be described as a landscape perspective using the “rocks with eyes” analogy (Binford 1983a). For Binford (1982, 1983a), archaeological deposits result from the actions of many generations of individuals, all of whom abandoned artifacts and features as epiphenomena of a collective long-term behavioral system in which they were involved, the definition of which forms the goal of archaeology.

Extensions of this landscape perspective by other authors quickly followed, with the introduction of the term *place use histories* to describe the differing sequences of deposition and different geographic locations (Camilli 1983, 1988; Camilli et al. 1988; Sullivan 1992a; Wandsnider 1998). Dewar and McBride (1992) discussed remnant settlement patterns and introduced the concepts of spatial contiguity and temporal continuity to discuss place occupation through time. Kelly (1988), in following these ideas, uniquely included geological criteria such as surface deflation and stability in his attempts to describe depositional history.

It was Stern (1993, 1994a), however, who most clearly articulated the relationship among depositional history, time averaging as described in the geological (paleontological) literature, and observations on time perspectivism offered by Bailey (1981, 1983, 1987; see also Bailey 2007; Murray 1997, 1999a, 2002). For Stern, the archaeological record is to be seen as a time-averaged material sample of the remains of past human activity. Like many paleontological deposits, time-averaged archaeological deposits are formed over prolonged periods of time such that items (artifacts or fossil organisms) found within a single deposit may originate from a variety of different cultural systems (or habitats). In applying these concepts, Stern elaborated on Binford's notion of historical integrity, noting the time-averaged nature of fluvial deposits from Koobi Fora that incorporated materials derived from a variety of landscape features with different temporalities. Because of the temporal complexity of the deposits, Stern argued that many of the high-resolution behavioral, that is, “lifeways,” interpretations of ar-

chaeological deposits with hominid remains and artifacts are inappropriate.

Not only must the temporality of the interpretation be matched to the temporality of the deposit, but time-averaged deposits do not represent an average in time (see de Lange, this volume; Stern, this volume). It is not a question of trying to match a single behavioral scenario to explain the formation of an archaeological deposit. Rather, time-averaged deposits are better thought of as the summation of materials derived from a variety of behaviors and contexts. Thus, lifeway reconstructions cannot be made as though materials derive from an “average” of behavior.

In treating the archaeological record as a time-averaged sample composed of items that do not necessarily share a common depositional history, Stern espoused a view of the archaeological record close to that advocated by geoarchaeologists (as well as some others). DeBoer (1983), for instance, drew a parallel between archaeology and paleontological taphonomic studies, arguing that the complexity of formation processes would disallow an isomorphism between the archaeological and systemic contexts. Stein (1987) proposed that archaeological deposits should be seen as an aggregate of sedimentary particles, each particle having its own particular history. According to this view, the record is an accumulation of separate particle histories, only some of which are the result of a single process. Dunnell (1992) commented favorably on this approach while promoting his evolutionary view of archaeology and drawing a contrast between functional ecological explanations and historical explanations of how things come to be (Dunnell 1980). For Dunnell (1982), materialist approaches to historical causation offer the only hope for a truly evolutionary archaeology. In what he described as a time-like reality, things are always in the process of becoming, and relations between observations are dependent on both time and place. Thus, the goal of evolutionary archaeology continues to be not an understanding of the archaeological record as a series of essentially timeless behavioral scenarios but, rather, to seek cause in the selection of attributes from a pool of continuous variation. For many, whereas the explanatory framework of

evolutionary archaeology seems overly restrictive (but see Shennan 2002), a materialist rather than essentialist metaphysic has much appeal. Ramenofsky (1998), for instance, has discussed the need to match the temporal scale at which a research question is pitched with the data observed at an appropriate scale. She argues that a materialist view is most consistent with such a multiscale approach.

As referenced above, those who follow the Braudelian *Annales* scheme see virtue in searching for conjunctures, the interaction of processes that occur over the short term (involving individuals and events), the medium term (periods spanning socioeconomic and demographic cycles), and the long term (environmental changes [Bintliff 2004]). Smith (1992), in discussing the *Annales* approach, links the Braudel scheme to Butzer's (1982) configuration of ecology and systems theory, thereby overcoming Braudel's static view of the environment. Like Braudel, Smith sees the interaction of processes operating at these different scales as critical for interpreting the past. For Smith, however, the distinction between the essentialist and materialist metaphysic discussed above is something of a red herring. Smith argues that periodization is unavoidable because it is not possible to study continuous change. Therefore Smith feels that chronology poses methodological rather than theoretical problems and is best addressed by refining chronology into as small a set of units as possible, the equivalent of Braudel's short-term events.

On its own the identification of short-scale events in the archaeological record is not problematic. Lucas (2005:48), for instance, argues persuasively that these are manifest in the deposition of single artifacts and burials. But where both Lucas and Smith fail is in their inability to demonstrate how the time-averaged nature of the archaeological record is to be addressed when these events are combined into assemblages. Whereas short-term events may be easily defined, the medium- and long-term patterns are only manifest at the assemblage level, defined according to Stern (1994a, this volume) by the minimum chronological resolution of the deposit as a whole. It is not at all clear how these patterns are formed from the individual events that accumulate to form the assemblage and therefore

how they may be interpreted using conventional social theory. The problem that both Smith and Lucas face is made clear by Blake's (2003) analysis of Byzantine-era reuse of Sicily's prehistoric rock-cut tombs. Rather than giving an explanation for the reuse of these sites based on an attempt by the Byzantine-era people to identify with a prehistoric past (and hence the medium to long term), Blake argues that "this phenomenon of reuse resulted from a fortuitous convergence of the older site's familiar presence and new pan-Mediterranean cultural currents" (2003:218). In this case, documentary evidence is sufficient to demonstrate the absence of a link between the short and medium to long term; however, the situation is not always this clear. The temptation is always to stretch the linkages and construct a narrative account that forges links between temporal scales without sufficiently demonstrating their presence or, indeed, as Blake was able to do, their absence.

ANTHROPOLOGY, ARCHAEOLOGY, AND TIME

Anthropologists are interested in the temporality implied in telling time. "Going slow" does not just mean working less quickly but has a definite social implication as well (Munn 1992). The classic time questions in anthropology refer to the social conceptualization of time (Gell 1992). Recent essays edited by Karlsson (2001) and by Gingrich and colleagues (2002), for instance, discuss a variety of approaches to time. Artelius (2001) considers Viking conceptualizations of time, relating these to Viking resistance to Christianity and its foreign temporal concepts. Damm (2001) comments on the disjuncture between the timeless traditional stories of the Bugakhwe of Botswana and the new, historical stories they now recognize as being necessary to argue claims to land. Schieffelin (2002) provides examples on linguistic usages that deliver temporal signals, and Paynter (2002) investigates time in terms of the various narratives told about a particular place. Bender (2002) discusses landscapes as a multivocal entity associated with different views of the historical past.

A few archaeologists have taken their lead from studies like these and investigated aspects of time

that are specific to certain cultures and worldviews (e.g., chapters in Murray, ed. 1999; see also Lucas 2005 and van Dyke and Alcock 2003 on the archaeology of memory). Bradley (1998, 2005) has developed the archaeology of time in a slightly different direction focusing on monuments. Using a distinction made by Rowlands (1993) between memories in the form of monuments as inscriptions versus memories that are incorporated through the use of monuments (i.e., through practice), he (1998:90) argues that despite the acknowledged imprecision of archaeological chronologies, regularities exist in the archaeological record because societies maintained rituals over long periods of time. More recently Bradley (2005:chapter 7) has developed this idea using Renfrew's (2001) claim that the major change in human society occurred not with the advent of modern humans but with the beginnings of sedentary life. For Bradley, the shift from hunting-gathering to the sedentary exploitation of domestic plants and animals marked a fundamental change in the nature of the archaeological record, one that is manifest both in the nature of ritual practice and in the creation of more temporally stable patterns in the archaeological record compared with the record created by hunter-gatherers.

Whether or not the record of hunter-gatherers is truly different from that of those with a domesticated economy is of course open to debate, but from a time perspectivist position the worry is that the apparent stability and relative ease of interpretation of the record of sedentary peoples are an artifact of the presence of long-lived structures and the temptation to interpret activity in relation to these structures in synchronic terms. In much the same way that the hunt for disjuncture in the *Annales* approach promotes seamless transtemporal narrative (e.g., Bintliff 2004) rather than interrogation of such (à la Blake 2003), it is very tempting to look, for instance, for activity zones within a house structure that has a longevity measured in decades or more. Patterns that appear are, of course, the outcome of palimpsest deposits and therefore little different from the medium-term accumulation of artifacts deposited by hunter-gatherers on a surface. Thus, easily apparent pattern may be as much the result of the presence of interpretable structures as an out-

growth of a change in the nature of ritual behavior. Nevertheless, Bradley's observations help explain why the examples discussed in the chapters here are largely those of hunter-gatherers rather than more sedentary peoples. Because hunter-gatherer groups by and large lack permanent structures, the palimpsest nature of the archaeological record they create is much more apparent and much harder to gloss using synchronic narrative. Therefore, archaeologists, including a number of authors in this volume, have to some degree been forced to look for alternative types of explanation, particularly forms that are less reliant on contemporary social theory.

In a now classic article, Ingold (1993) discussed the relationship between what he termed the "taskscape" and the landscape. The taskscape consists of an interconnected set of tasks, and the landscape is an array of related features. But rather than keep these as separate entities, Ingold argued that with the understanding of the landscape as fundamentally temporal comes the notion that human activities must be seen as nested within "the wider pattern of activity for all animal life, which in turn nests within the pattern of activity for all so-called living things, which nests within the life-process of the world" (1993:164). This is clearly a call for the type of multiscalar explanation advocated by Ramenofsky (1998) and Smith (1992), among others. Such explanation, however, has not so far been informed by the "formational metaphysic" discussed above. Multiscalar, materialist explanation provides a unique archaeological view on human history that is most effective when combined with a sophisticated understanding of the time-averaged nature of the archaeological record and interpretations derived from the last 30 years of formational studies. As Murray (2004) indicates, too often archaeologists have taken the easy "out" and, in the face of a palimpsest record, effectively ignored time and sought a synchronic, functional explanation that denies a historical past.

The problem is not the lack of formation studies; although there are no doubt more such studies that need to be undertaken, the message is clear enough that there exist no simple relationships between the archaeological record and the nature of behavior that created this record. Rather, the

problem lies in the ease with which the message can be dismissed in the search for “higher” social explanation (read “lifeway reconstruction,” even if couched in the guise of, for example, an evolutionary behavioral strategy or the manipulation of agents). Formation studies are often acknowledged as important, but they are used as a way of removing the “noise” from patterns that can then be directly assessed with behavioral or social theory.

Why are archaeologists so disinterested in time, and why have they resisted the implications of the formational metaphysic? Paynter (2002) sources the problem to a processual archaeology that was not concerned with chronology but only with documenting change from one steady state to the next. Dunnell (1980) makes much the same criticism, noting that the historical explanation favored by Binford (1962) at the dawn of the New Archaeology quickly came to be replaced by a synchronic functionalism. Murray (1987, 1993, 1997), however, places the problem much earlier, shortly after the foundation of archaeology as a discipline in the mid-nineteenth century. Here, he argues, the founding fathers of archaeology were faced with the need to develop an explanation for humanity’s past, greatly extended in time. They chose contemporary ethnographic analogy and, with it, essentially timeless synchronic explanation, a temporal scale of interpretation that modern archaeology has been unable to shed. He argues that rather than accept a consensus position on archaeological theory, it is time that archaeologists acknowledge the antiquity of their own explanatory framework and consider a range of alternatives.

Most archaeologists consider studies of the archaeological record to be important but tend to separate these studies into a methodological category, separate from theoretical concerns (e.g., Hegmon 2003). From the earliest days of the New Archaeology, it was not the archaeological record that was thought to limit the types of questions that could be addressed but, rather, the ingenuity of the archaeologist in deriving ways to interpret this record. Thus, though the New Archaeology, and particularly behavioral archaeology, led to a concern with how the record formed, with rare exceptions (e.g., Plog 1973, 1974), the nature of the record was

seen as a methodological rather than a theoretical challenge.

Not everyone views the record in this way. Some archaeologists, particularly geoarchaeologists, like their colleagues in geomorphology, paleontology, and ecology, accept that the nature of deposits, archaeological or otherwise, influences the analytical and therefore interpretative scales at which the past is viewed. The case is most clearly stated among paleontologists, where the long time spans and range of taphonomic processes combine to limit the degree to which fossil deposits may be interpreted as the ancient remnants of biological communities (see de Lange, this volume). Paleontological deposits are time averaged; they combine within a single unit materials that derive from a number of potentially unrelated events. The minimum chronological unit used to interpret these events does not represent the time span of the events themselves but, rather, that of the unit in which they are deposited. In many cases this time span will extend well beyond that typically associated with observations of organisms existing together within an ecosystem. In the same way that paleontologists have questioned the relationship between fossil populations and ecological communities, archaeologists need to ask whether behavioral observations derived from short-term ethnographic observations relate to the long-term and palimpsest nature of most archaeological records.

Numerous authors in this volume deal with deflated records where the question of time averaging is made much more obvious through the lack of stratigraphy in the conventional sense. With buried deposits, it may be easier to maintain the fiction that material from the same layer was deposited at the same time or at least as a result of the same occupation. That this is only very rarely so is increasingly apparent as a result of geoarchaeological studies that critique not only the simple equation of stratigraphic changes with changes in occupation type but even the cultural association of stratigraphy at all (e.g., Stein 2000).

Palimpsests, rather than living floors, characterize the archaeological record of all times and places. If an archaeological deposit results from the activities of many different peoples who undertook

different types of actions that produced artifacts through time, and moreover occupied a location for variable amounts of time, sometimes leaving the place completely, what then do the patterns apparent in the material culture left by these peoples mean in a behavioral sense? As Michael Schiffer (1972) noted so long ago, items found associated were not necessarily used together. This must introduce an element of difficulty into functional assessments, yet this problem has received relatively little discussion (but see Wandsnider 1996).

Some archaeologists undertake a search for living floors, sites where the conditions of burial mean that artifacts were deposited within a relatively short span of time, in the hope of discovering a record where Time's Arrow can be effectively ignored (surely the ultimate irony for an archaeologist). Taken to an extreme, one might imagine a living floor representing such a short span of time that no artifacts were deposited and no structures formed at all, although even such a site, in effect unrecognizable archaeologically, would still not be immune from the influence of Time's Arrow (Bailey 2007). For patterns to appear in the archaeological record artifacts need to accumulate. Therefore the passage of time and the formation of palimpsests as a consequence are the very processes that make the record interpretable. Without the accumulation of palimpsest deposits, too few events will have occurred to form an archaeological record.

Living floors and functionally associated tool kits presuppose artifacts manufactured, used, and discarded as the result of a single event. The artifacts in such scenarios are manufactured to fulfill a single need. Yet such a synchronic view underplays the results of research that indicates that all artifacts are to some degree the products of complex use-life histories (DeBoer 1974; DeBoer and Lathrap 1979). This is most clearly seen when the form of artifacts changes as a result of use. The well-known tool resharpening studies of Middle Paleolithic scrapers, for instance, indicate that certain tool forms, classified on their morphological differences into distinct types, were in fact the result of repeated reworking of the tool edge (Dibble 1984, 1987). Thus, assemblage composition, measured as the proportion of different tool forms, each with

a different life history, reflects not the functional utility of a group of tools used at one particular instant but the outcome of combining many such scenarios through time. The pattern resides in the palimpsest, not in the functional instant.

TIME PERSPECTIVISM AND THIS VOLUME

The chapters in this volume provide a variety of approaches that seek to exploit the palimpsest nature of the archaeological record in its various forms. Bailey's chapter sets the scene by discussing the history of the development of time perspectivism and the nature of palimpsests. Subsequent chapters deal first with palimpsests of artifacts and features found within sites and then with the temporal significance of artifact use-life histories. A series of chapters relates use-life histories to their geoarchaeological situations within a landscape context, and a further series uses the same concepts to consider assemblage formation. Two final chapters deal first with the relationship between ethnoarchaeology and time and, second, provide an overview of time perspectivism in relation to the present volume.

Sullivan, in chapter 3, discusses the types of behavioral information that may be inferred as a result of feature abandonment, but rather than seek an interpretation based on a simple dichotomy between planned and unplanned abandonment, diachronic and synchronic (the equivalent of a living floor) assemblage formation, he accepts that all assemblages take time to form. What may appear to be the simple consequence of different modes of abandonment in his house assemblages becomes, when the assemblages are viewed as accumulations with temporal depth, the result of distinctly different seasonal poses practiced by the people who deposited these assemblages. His investigation relies on the elaboration of the "trace" concept first introduced by Sullivan in 1978.

Shott (ch. 4) picks up on the notion of artifact use-life histories to investigate the temporality of the earliest East African sites. His goal is to resolve a debate that pits a time perspectivist view of assemblage composition against one based on synchronic function. Like Olivier (1999), he is able to resolve the impasse by viewing artifacts and

assemblages not as the static outcome from manufacturing events but, rather, as the accumulation of a series of activities that continuously form and reform the archaeological record. As in Sullivan's piece, significantly different inferences are possible if it is accepted that the archaeological record represents an accumulation of material through time, and explanations are sought that are compatible with this accumulative nature.

Although use-life history may be most apparent in portable artifacts, particularly those manufactured in materials like stone where the reductive nature of the technology means that much of the sequence of reuse episodes is retained on the artifact, it is no less important in the morphology of other artifact forms and materials. Thus, Olivier (1999) is able to show how use-life histories of a variety of artifact forms found as grave goods in Hallstatt burials inform on the complex temporality of a site type once identified as a "closed find," the structural equivalent of a living floor. Despite the burials superficially appearing to be the outcome of a burial event, Olivier is able to show that the temporality of the site is reflected in the different histories of grave goods, some from distant sources, some from much more restricted geographic locations. Even the structure itself shows a history of use beyond manufacture for a single event. Evidently, the burial chamber was opened at a later time, with material added and perhaps some removed. The elegance of Olivier's analysis comes from interpreting the sites not as the result of temporally discrete events but, rather, as the outcome of a series of actions undertaken through time.

This alternative reading of the temporality of material things forms the basis for three of the chapters in this volume that turn the problem posed by surface archaeological sites on its head. The living floor ideal is rejected, and the "problem" posed by the conflation of artifacts from multiple events is turned into an advantage. All three chapters exploit the life histories of artifact types as a way of drawing inferences about the temporality of the record, albeit from widely differing geographic locations and therefore different technologies.

Wandsnider (ch. 5) uses a variety of portable artifact types as well as structures and geoarchaeo-

logical approaches to the time periods over which deposits were formed to assess the temporality of occupation across the Wyoming Basin of intermontane North America. Not all sites represent the same temporality; some are the product of quite short occupation duration and limited reuse of features, whereas other locations saw more intense reuse over longer periods. If the impact of the period over which surfaces were available to accumulate material is brought into the mix, it is possible to assess the span of time during which occupation occurred and the degree to which features were reutilized. Developing instruments that permit analysis of the formational complexity of palimpsests offers a landscape archaeology that is not based on analogies drawn from a synchronic settlement pattern and not based solely in timeless system time (departing from Ebert 1992).

Relying on geographic information system manipulations, Dooley (ch. 6) proposes a battery of such instruments to help assess the temporality of medium- and long-term occupation in the northern North American Great Plains. He is well aware that the chronological resolution of his surface assemblage is not fine enough to put forward conventional synchronic behavioral interpretations, so he has modified his goal to document instead long-term landscape evolution as a way of addressing how the humanly created environment attracted or deflected past occupation.

Holdaway, Fanning, and Rhodes (ch. 7) first discuss the temporality of the landscape, noting that in western New South Wales, Australia, land surfaces, and therefore the archaeological record they preserve, may differ considerably in age. A "dots on maps" approach to the identification of settlement patterns, wherein all sites and assemblages are treated as part of a coherent whole, is not applicable. Rather, like Wandsnider (ch. 5), they suggest that assemblage formation must be assessed in relation to the geomorphological history of the surfaces on which the deposits are found. Artifact assemblages in turn are not the functional remains of moments in time but reflect time accumulations over the time periods during which sedimentary deposits formed. Assemblage comparison shows patterns produced by varying temporal histories of

deposition that are not interpretable using conventional functional sets of inferences.

Three further chapters use geoarchaeological concepts combined with considerations of time averaging to look at various aspects of assemblage formation. Stern in chapter 8 makes a detailed case for an alternative form of analysis to one based on the definition of a set of sequential, stratigraphically defined assemblages at different sites. Based on a careful geoarchaeological analysis of the formation of sediments in Pleistocene caves from Tasmania, she argues for the definition of the equivalent of the minimum archaeological stratigraphic unit used in the analysis of a paleolandscape (Stern 1993). The crucial question for analysis then becomes the differences in assemblage composition that accrue as a result of different rates and durations of accumulation, rather than interpretations based on assumptions about the functional equivalence of activities conducted at different sites.

De Lange (ch. 9) reviews the results of Bailey's Klithi research considering the nature of inferences that are drawn from lithic and faunal materials. Her critique centers on the relationship between the temporality of deposits containing artifact and faunal assemblages and the temporality implied by the types of analyses performed. At Klithi, a mismatch is apparent in the time-averaged nature of the deposits versus short-term explanations framed in terms of lithic reduction sequences and prey selection options. De Lange's solution is to suggest that archaeologists follow more closely the approach adopted by paleobiologists, where the time-averaged nature of the record is used as the basis for picking which analytical techniques are selected and therefore what forms of inference can be made.

One of the outcomes of an essentially synchronic view of the archaeological record is that we also tend to look for causation in synchronic terms, yet at any moment, action is a product of processes beginning in the past and continuing into the future (Bailey 2007). This is as true for ethnography as it is for archaeology, a point emphasized by Arnold in chapter 10. Ethnoarchaeological descriptions should not be seen as timeless vignettes but, rather, as having as much relevance to the study of change as archaeological data. As Arnold

states, both ethnographers and archaeologists effectively view their data at one particular time, the intersection of the observer and the observed, and processes that affect these data have operated, and will continue to operate, both before and after this point in time. Ethnoarchaeologists are particularly well suited to study some types of change—Arnold discusses supplanting/supplementing and intensification/extensification—when the temporality of the observations can be matched to the temporality of the explanation.

A final chapter in the volume, by Tim Murray, provides an epilogue extending the background to the previous essays by identifying some of the questions that remain to be answered as well as the themes that are central to all of the chapters. Murray is interested in the relationships among time, the empirical, and the theoretical in archaeology. He argues that despite the range of what at face value appear to be fundamentally different theoretical approaches to contemporary archaeology, nearly all maintain the archaeology as anthropology metaphysic. Time perspectivism emanating from Bailey's 1980s essays has clearly failed to spark the archaeological imagination and promulgate an alternative to mainstream archaeological theory. Murray searches for reasons why time perspectivism should hold such a peripheral status in relation to the disciplinary cultural norms.

CONCLUSION

Perhaps it is not so surprising that archaeology, the discipline that above all others should be concerned with time, is in effect so unconcerned with anything to do with time except chronometry. Despite much discussion about the need to consider long-scale temporal processes, as the chapters in this volume illustrate, taking time seriously and thinking about the archaeological record are not straightforward issues. Interpreting what happened in the past as a reflection of familiar scales of behavior is the easy out. Such explanations seem so much clearer because they are easy to comprehend, but in many cases, probably the majority, these explanations fail because they lack a connection between the temporal scale at which the record can be analyzed and the temporal scale implicit in the

explanation. That this is no trivial failure is underlined by the virtual ubiquity of palimpsests, in all their various forms, in the archaeological record. Archaeologists may be able to address a wide range of research questions, but not all these questions will be applicable to the entire archaeological record. In addition, the types of explanations gener-

ated will in many cases depart from those familiar examples based on short-term lifeways. There are two ways to react to this situation: a retreat into conventional archaeological explanation or, as authors attempt here, the development of alternate ways to describe an archaeologically based past.