

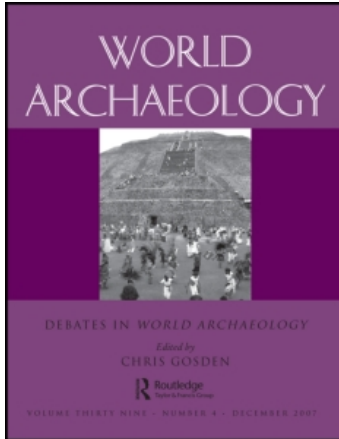
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Caves, palimpsests and dwelling spaces: examples from the Upper Palaeolithic of south-east Europe

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Caves, palimpsests and dwelling spaces: examples from the Upper Palaeolithic of south-east Europe

Geoff Bailey and Nena Galanidou

Abstract

Deposits in caves and rock-shelters typically occur in the form of low-resolution palimpsests or time-averaged deposits, resulting from the superimposition of repeated and variable episodes of occupation, low rates of sedimentation and mixing by natural and anthropogenic processes. Despite the development of an impressive array of analytical techniques to disentangle these palimpsests into their constituent episodes of occupation, high resolution chronologies and detailed snapshots of activity areas and spatial organization have proved elusive. Here we suggest that, rather than seeing palimpsests as a problem, we take them as they are, as mixtures of materials that may have been actively recognized as such by the prehistoric occupants and deliberately enhanced, providing both physical resources that could be recycled for subsequent use and material cues for a sense of time and place. We illustrate this approach through a comparison of the spatial and material structure of four Upper Palaeolithic cave deposits in Southeast Europe, focusing on hearths and hearth-related distributions of material as clues to the active role of palimpsests in determining the use histories of different places.

Keywords

Caves; memory; palimpsest; rock-shelters; time-averaging; Upper Palaeolithic.

Introduction

The past four decades have witnessed a proliferation and refinement of archaeological techniques aimed at producing data from Palaeolithic excavations with improved chronological and spatial resolution. Dissection of deposits into finer stratigraphic units, piece plotting of artefacts and other materials, refitting of conjoinable stones and bones, quantitative analyses of spatial patterns, taphonomic analyses of differential decay and destruction and micromorphological analyses of sediment formation have all been recruited in the hope of providing a richer insight into patterns of change and variability in

the prehistoric past (Cziesla et al. 1990; Hietala 1984; Kroll and Price 1991; Leroi-Gourhan and Brezillon 1966, 1972; Simek 1984; Simek and Larick 1983; Villa 1982; Whallon 1984; Yvorra 2003). Much of this work has been applied to greatest effect to open-air sites, such as Pincevent (Leroi-Gourhan and Brezillon 1972), Etiolles (Pigeot 1984, 1987), Verberie (Audouze et al. 1984), Monruz (Bullinger et al. 2006; Plumettaz 2007), Meer (Cahen et al. 1979), the Dunefields midden (Parkington et al. 1992) and Boxgrove (Roberts and Parfitt 1999), where spatial differentiation of deposits and activities and rapid burial seemingly offer a better opportunity to recover snapshots of past activities and insights into social organization and the details of everyday life.

Cave and rock-shelter deposits pose a severe problem in this regard because repeated use of the same surface within a confined area over centuries and millennia, coupled with low rates of sedimentation, has usually resulted in palimpsest deposits with inherently low spatial and chronological resolution. Mixing, disturbance and removal of material, and time-averaging of many different episodes of activity, typically frustrate attempts to produce high-resolution chronologies or to discern spatial clusters of different activities. The archaeological data from such deposits are usually viewed at best as an indicator of generalized long-term trends or average tendencies, and remain inherently intractable or ambiguous with respect to the sorts of interpretations that archaeologists usually want to apply to such material (de Lange 2008). This is in part due to the nature of the archaeological data at our disposal, but it may also be due to unrealistic expectations derived from ethnographic preconceptions incapable of encompassing the full range of possible behaviour patterns practised in prehistory (e.g. Kolen 1999).

In this paper we examine more closely the concept of 'palimpsest' and how the differing properties of palimpsests can be analysed to provide information about the use of dwelling sites. In particular, we address the question of how the past use-history of an archaeological site influences its subsequent use and how we can investigate that phenomenon in relation to the prehistoric use of caves and rock-shelters. We show that palimpsest deposits may be attractive dwelling places, integral to the social and cultural dynamics of long-term occupation, providing resources that can be recycled from one episode of prehistoric occupation to another and material cues to the development of a sense of time and place, defined as the attachment of significance to a particular location because of experience, tradition and memory (Tuan 1979). Our paper thus addresses the twin issues identified in discussions of time in archaeology: the temporal structure of the archaeological record, and how that affects our archaeological expectations and interpretations of past phenomena, and time as it might have been experienced by past people and expressed in their behaviour (Bailey 2007, 2008; Binford 1981, 1982; Dewar and McBride 1992; Holdaway and Wandsnider 2008a; Lucas 2004; Murray 1997; Wandsnider 1992). At one level this paper is an exercise in the latter, a contribution to a study of the 'past in the prehistoric past' (Bradley 2002; Bradley and Williams 1998) – how past people made use of materials and artefacts created at an earlier date and how this contributed to their own sense of time. At another level it is an exploration of the temporal structure of archaeological cave deposits, intended to examine what sorts of interpretations are appropriate to low resolution palimpsests, and how far such deposits can provide an empirically grounded basis for inferring significant aspects of past behaviour not accessible from other sorts of archaeological evidence.

Time, palimpsests and time-averaged deposits

Time is a notoriously elusive concept, and the archaeologist seeking inspiration in a vast literature can quickly become lost in philosophical abstractions and diversion from the archaeological task at hand. Nevertheless time has certain measurable properties in the archaeological domain, which it is our particular responsibility to examine and explicate. One such property is duration, most clearly apparent in the tendency of material things, artefacts, monuments and physical places to persist for long periods, extending through lifetimes, generations and often many centuries and millennia. Indeed without a durable material record, there would be no possibility of empirically delving into past worlds and no discipline of archaeology. This point may seem so obvious that it is easily taken for granted and scarcely seems worth remarking on. But the concept of duration acquires analytical leverage from two additional features. One is the differential durability and visibility of different material phenomena. The other, more significant, is that these properties of duration are not simply a by-product of past human activities and the physical properties of different materials that provide a convenient vehicle for archaeological investigation; they must also have intruded into the lives of past people and been incorporated into daily life to a varying extent and in various ways, whether through conscious awareness of their durable properties and earlier history or not.

A second property is the date of an object or past event, and here we enter a more interesting arena of debate, concerning the accuracy of dating methods and the chronological resolution of artefact assemblages and stratigraphic sequences. The uncertainties surrounding the accuracy or reliability of archaeological dating methods are well known. But the circumstances of artefact deposition and accumulation introduce additional uncertainties. If material culture is durable, then a particular artefact may have many different dates, for example the date when it was first made, the date when it was subsequently modified, the date when it was finally discarded at the end of its use life and the date when it was excavated by an archaeologist. A more troubling feature is that many artefacts cannot be dated with the precision we would like, not simply because they have a history that extended over many 'events', or because our physical dating methods are not adequate to the task, but because the circumstances in which they are deposited and accumulated lead to an inherent blurring of chronological and spatial resolution, regardless of any other factors.

Artefacts are almost always found in what are variously referred to as palimpsests or time-averaged deposits, representing mixing of material from different time periods and episodes of activity that cannot easily be disaggregated into their individual components. Palimpsests have long been recognized in the archaeological literature, and have usually been regarded as an inconvenient problem to be avoided or surmounted (Holdaway and Wandsnider 2008b). One strategy for dealing with them is to ignore the potential biases inherent in them and to continue to take the evidence at face value as if it reflects identifiable episodes of activity. Others have sought to deal with palimpsests by using them as an opportunity to examine broader trends of behaviour and a different level of organization not visible at an ethnographic scale of observation (notably Binford 1981). Yet a third strategy, encouraged by the greater variety of analytical and scientific techniques now available, is to try to untangle the palimpsest and reconstitute the

individual episodes of activity that are hidden within it (Carr 1987). The position we adopt here is that palimpsests are an inherent property of many archaeological deposits, especially those in caves and rock-shelters, that it is rarely if ever possible to untangle them into their constituent episodes and that they may be actively created and provide advantage for the people who used them.

We define a palimpsest as 'a superimposition of successive activities, the material traces of which are partially destroyed or reworked because of the process of superimposition' (Bailey 2007: 203), and note that this may occur at different scales, ranging from the individual artefact with its history of modification and changes of use and meaning to the accumulation of a living surface in an archaeological site or the distribution of sites and materials in their wider landscape setting. Moreover, there are reasons to suppose that palimpsests are not confined to studies of the prehistoric past or to particularly problematic deposits of low resolution such as cave deposits, but are a universal phenomenon, and that no feature of the material world escapes their imprint (Bailey 2007; Olivier 2000).

The concept of time-averaging originates in the palaeontological literature and refers to a deposit in which the rate of accumulation of fossils is faster than the rate of accumulation of the sediment that buries or preserves them, or more specifically to stratigraphic units that represent extended periods of time and mixing of organisms from different habitats (Behrensmeyer 1982; Walker and Bambach 1971). Although it refers to natural phenomena, time-averaging clearly has application to archaeological deposits (Stern 1993, 1994), and like the concept of palimpsest draws attention to the processes of mixing and differential removal or destruction that result from repeated episodes of activity and deposition in the same location. Certainly palimpsests are time-averaged deposits, but it is important to emphasize that a time-averaged deposit does not necessarily reflect an average of all the various episodes of cultural or natural behaviour represented within it. It is only the dates of the different episodes of activity that are averaged, and even in this respect the term 'average' may give a misleading impression of some sort of central tendency of the various processes represented in the deposit (De Lange 2008).

The temporality of cave use

Caves are of particular interest in this context, exemplifying in an extreme form two features that suggest at first sight that they are at best unrepresentative of past behaviour and at worst entirely misleading. First, caves and rock-shelters are fixed places in the landscape, which are relatively easy for archaeologists to locate from a knowledge of the geology and topography of a region. They have acted as a magnet for Palaeolithic investigations because of their relative ease of discovery and their tendency to accumulate and protect a sedimentary infill that preserves deep, stratified sequences of archaeological and palaeontological material. That characteristic in its turn has determined the traditional emphasis of excavation strategy on deep trenches, vertical stratigraphy and geochronological control. However, the shift of archaeological interest in recent decades to geographical and spatial questions and interpretations of social and economic behaviour has increasingly raised questions about the nature of caves as dwelling places.

Their physical prominence and ease of discovery has given rise to the suspicion that these sites may be quite unrepresentative of wider settlement behaviour and land use, and that their prominence is due solely to factors of differential visibility and preservation. The fact that they often seem to contain very large quantities of artefacts may reflect no more than the repetition over many millennia of brief and intermittent visits, each one of which was perhaps a mere fragment of the full range of activities carried out elsewhere.

Second, they usually provide confined living spaces, such that successive use over long periods, even by small groups of people, results in a classic palimpsest of low resolution. As techniques of excavation have become more refined, so it has become increasingly obvious that cave deposits are inherently liable to mixing and disturbance both by human activities and by episodic natural processes of sediment accumulation, modification and erosion. Refitting studies, for example, have shown that flakes struck from the same nodule may occur in different layers of sediment, which according to conventional stratigraphic interpretation ought to refer to different periods of time separated by centuries or even millennia. As archaeological research strategies have shifted to spatial analysis at the intra-site scale, so it has become clear that different layers or lenses of cave sediment rarely if ever preserve snapshots of activities as they were carried out during any one episode of occupation, and that 'contemporaneity' when applied to such deposits may refer to a time envelope that encloses many hundreds of years (Bailey and Woodward 1997; Papaconstantinou 1986.). Thus, cave and rock-shelter deposits suffer from relative coarseness of resolution in both the temporal and the spatial dimension, and seem poorly suited to the search for spatial and behavioural patterning, which has become a popular target of archaeological investigation in recent decades as a source of potential evidence about the finer details of everyday life, social organization and ritual.

However, both these apparent limitations also afford the possibility of unusual insights into a different aspect of past behaviour. What makes a cave a focus of attention for the archaeologist would also have been true for people in the prehistoric past. Caves and rock-shelters are often associated with distinctive topography such as dramatic cliffs or conical-shaped hills that make them prominent features in the landscape, features that have remained in place, more or less visible and accessible to many generations of people, and with a long history of varying significance for different people at different times. Many have lasted much longer than any man-made monument and might be viewed as 'natural' monuments with similar qualities of durability, symbolism and power of attraction that we associate with monumental architecture. Caves afforded not only natural shelter and protection as transitory camp-sites or longer-term settlements, but also opportunities for storage of materials and equipment, locations of burial and other forms of materially productive social encounters such as rock engraving and painting (Galanidou 2000a). As for disturbance of deposits, what is lost in terms of fine resolution is compensated for by the possibility that the mixing process itself, involving the intrusion of past materials into the present, may provide both material cues to the remembrance of the past history of the cave for the people who occupy it and a cumulative store of materials available for re-use in everyday subsistence. In fact, the mixing of materials from different periods of time that seems at first sight to be so inconvenient for the modern archaeologist may be the very feature that is of most significance in archaeological interpretation. Moreover the process of modern archaeological excavation can itself be viewed as part of the ongoing history of

the cave, just the most recent episode in the attachment of significance to this particular feature in the landscape, and a continuation of earlier modifications that included excavations of various sorts such as digging of pits for caching, human burial or clearance of unwanted debris, insertion of stake holes, exhumation and re-use of materials, and removal or repositioning of stones and boulders.

We are thus presented with something of a paradox. Archaeological sites and deposits that are rapidly buried and often sought after for their excellent preservation and detail of evidence, fine chronological resolution and perhaps even for that elusive goal of a 'moment in time', by definition can tell us only about short-term episodes of activity, and must disappear from view relatively quickly, recoverable only to their successors through intangible memories, and to the archaeologist through chance exposure or deep excavation. Conversely, archaeological sites and deposits that remain exposed on the surface for longer periods of time may suffer from re-use, superimposition, degradation and low chronological resolution, but their visibility as persistent surface phenomena increases the likelihood that they were revisited and re-used on many successive occasions, thus providing the archaeologist with a more accessible insight into the past, including the attitudes of past peoples to their own history and sense of identity.

Many archaeologists who have surveyed cave sites can attest to the fact that floors are quite often cluttered with surface evidence of more or less recent occupations, for example remains of hearths, bits of artificial walling, concentrations of rubble, pieces of wood and corrugated iron in various state of decay, plastic bags and fragments of clothing, and older remains such as potsherds or stone tools. Similarly in the past, caves were rarely encountered as 'empty' places upon which particular traditions of dwelling practice were imposed. They were instead often composite entities that incorporated material remains of previous activity into the physical condition of the site, and these in their turn constrained and enabled subsequent re-occupation,

It is not simply that the physical features of a palimpsest become part of the fabric of the site encountered by subsequent occupants. There is the added point that palimpsests may be actively created and maintained as a source of materials to facilitate ongoing and future activities. Brody (1981: 4–5), for example, in discussing the villages used by hunters and fishers in British Columbia, refers to the jumble of paraphernalia lying in front of people's houses, a 'blur of stuff' that actually comprises a store of materials purposefully left lying around to be used or re-used at some later date. Sillitoe and Hardy (2003: 560) identify a similar attitude to storing and discarding stone tools by the Wola horticulturists of highland Papua New Guinea. In Australia, indigenous people often placed artefacts at random around their camp-sites in order to facilitate future recovery and re-use (Hayden 1979), and Peterson (1968) describes how women would leave behind pestles and mortars at a campsite, one for each woman, so that they would be available for use on their return. A similar strategy of managing and recycling resources can be seen in the Nukak hunter-gatherers of the Colombian Amazon (Politis 1996, 2007), who discard remains of edible plant food on the camp-site floor. After the rainy season these develop into small patches of growing plants, a resource to rely on during future seasonal visits to the area. The Melpa people of New Guinea show similar evidence of anticipating future needs in their use of caves. When they first arrive at a cave they kindle a fire, and the last thing they do before leaving is to stockpile some firewood for the next arrivals at some later date

(Gorecki 1991). The Batu of Southeast Asia use caves as living sites and make them more comfortable with screens and platforms made of leaves and bamboo associated with particular areas within the cave and particular individuals, who can identify their personal space when returning to the site at a later time (Moser 1999).

Some of this behaviour represents an intentional anticipation of future needs, and archaeological data from prehistoric deposits are notoriously mute with respect to the intentions of past people. But we do not need to suppose that prehistoric palimpsests were deliberately created with a conscious eye to the future to appreciate that the growing accumulation of materials would have provided attractions for subsequent re-use and re-occupation, perhaps in time encouraging conscious recognition of the palimpsest effect and deliberate addition to the cumulative store of materials. Such effects are especially apparent in rapidly growing deposits such as shell mounds, where the shells represent relatively rapid accumulations of discarded materials, which then attract re-use in an almost automatic process of self-selection because they offer dry surfaces in an otherwise wet landscape, or a rich soil matrix in which the remains of edible plants and shrubs rapidly re-grow to provide new food supplies (Bailey 1977; Bailey et al. 1994; Cribb 1996; Peterson 1973). In time the material consequences of what began as an unconscious process may come to be recognized and actively encouraged. Moreover, the slow incremental growth of the accumulating surface may in time produce impressive physical features in the wider landscape that acquire additional social and symbolic significance as places of ritual, memory and myth (Hiscock and Faulkner 2006; Morrison 2003).

How are we to identify these sorts of features in Palaeolithic caves and rock-shelters? The answer must depend on the extent to which such patterns are expressed in the form of durable remains, and the extent to which these remains persisted as visible traces between episodes of occupation given the rate of sedimentation in any given context. Previous traces of use still visible on the surface might lead to replication of similar patterns in subsequent occupation, with refuse zones maintained as refuse zones, knapping areas re-used to exploit earlier debris as raw material for the production of new tools, and the remains of former fireplaces re-used for lighting a new fire. In this case, we might expect to see a high degree of redundancy over time in the spatial structure of the site, either because the material remains triggered the memory of previous occupations and the maintenance of previous patterns as part of an ongoing social tradition, or because they provided material conditions that enhanced and reinforced the attractions of particular locations on the cave floor for particular activities. Of course pre-existing remains might have an opposite effect: the remains of a fireplace, for example, might lead to avoidance of that particular spot because someone else had used it on a previous occasion. Also, occupation of the site might occur so intermittently and with periods of abandonment between each occupation so long that the material traces of previous activity were no longer visible or had lapsed out of social memory. Purely functional factors that might tether particular activities to a particular spot, for example the most sheltered spot for making a fire, also have to be factored into the assessment. In our analysis of Palaeolithic examples, therefore, we pay particular attention to hearths, hearth-related distributions and their relationship to the physical features of the cave, rates of sediment accumulation and re-occupation, and the volume and intensity of human activity, insofar as these can be estimated from available radiocarbon dates, stratigraphic clues and the evidence of

discarded artefacts and animal bones. We focus on the overall structure and trajectory of spatial patterning and the extent to which it shows evidence of long-term continuity or patterns of discontinuity.

Palaeolithic records

We select four examples from south-east Europe, representing a variety of time periods, geographical locations and industrial traditions (Fig. 1). All the sites we discuss were excavated over relatively large floor areas capable of highlighting spatial variation within the limits of the cave or rock-shelter, albeit with somewhat varying methods of excavation and expectations. We first examine Klithi (Bailey 1997a) and Badanj (Whallon 1989, 1999), since the excavation strategy at both sites was explicitly informed by spatial

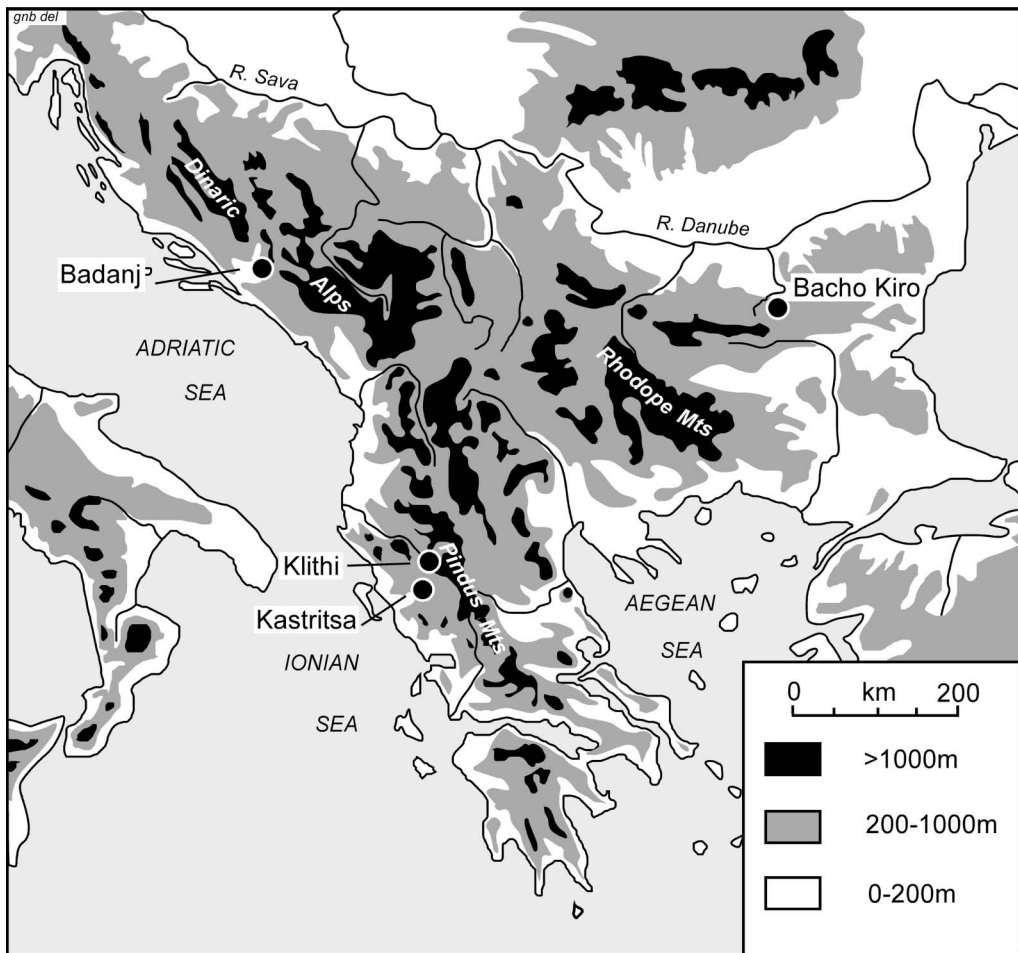


Figure 1 Map of south-east Europe, showing location of sites mentioned in the text (drawn by G. Bailey).

questions. The two rock-shelters were also occupied over closely overlapping periods of time during the final stages of the Upper Palaeolithic and the environmental changes associated with late glacial climatic amelioration, and show striking similarities in physical size and orientation, and in the structure of their deposits. Kastritsa (Bailey et al. 1983; Galanidou 1997a; Higgs et al. 1967) is geographically close to Klithi, and was occupied at a somewhat earlier period, though possibly overlapping with Klithi, but has a very different pattern of spatial structure, and one showing more similarities with the Bacho Kiro cave, where the main bulk of the evidence relates to an early period of the Upper Palaeolithic (Ginter and Kozłowski 1982; Kozłowski 1999).

Klithi

Klithi is a spacious south-facing rock-shelter on the right bank of the Voidomatis River in north-west Greece. It was visited by Late Pleistocene hunter-gatherers as they expanded their range during the Late Glacial period into the rocky landscapes of the Upper Vikos Gorge to capture ibex and chamois. The bulk of the archaeological evidence derives from a sequence of 3500 radiocarbon years, with bracketing dates of *c.* 16.5 and 13 ka (all dates in this form refer to uncalibrated radiocarbon dates BP), followed by traces of occupations at *c.* 12.3 ka and 10.4 ka (Bailey 1997a; Figs 2 and 3; Table 1). Throughout these periods Klithi was a highly specialized site used for a limited range of activities, focused mainly on the capture and processing of ibex and chamois (Gamble 1997; Roubet 1997) and the deposits exhibit remarkable uniformity in artefact and faunal content over time and in spatio-temporal patterning (Galanidou 1997b; Winder 1997).

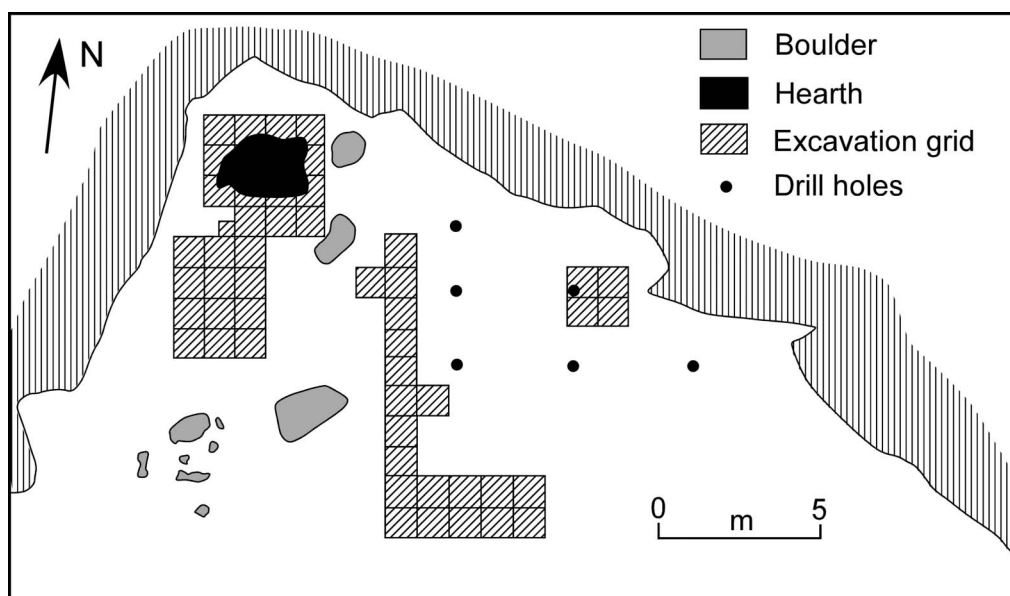


Figure 2 Plan of the Klithi rockshelter, showing excavation grid and main hearth feature (drawn by G. Bailey after Bailey 1997b).

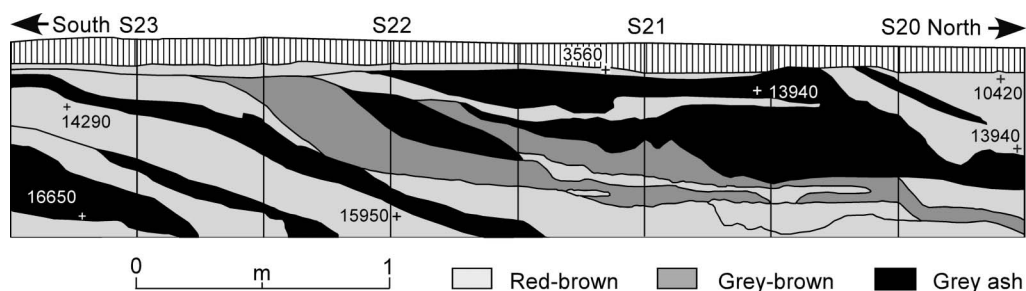


Figure 3 Section through the hearth deposits at Klithi (drawn by G. Bailey after Bailey and Woodward 1997).

The deposits are relatively loose and unconsolidated scree sediments, with relatively small clasts and high proportions of finer sediment, and a single major hearth area at the back of the shelter representing a complex stratigraphy of superimposed open hearths in use throughout the span of human presence on the site and placed in the most protected area near the back wall of the shelter (Bailey and Woodward 1997). This hearth complex appears to occupy a depression in the shelter floor, which slopes towards the back of the shelter, a topography most probably created by a cone of scree and sediment with its apex close to the edge of the roof overhang at the mouth of the shelter. Refitting studies demonstrate considerable separation of refitted flint artefacts both vertically across stratigraphic layers and in the horizontal dimension (Wenban-Smith 1997).

Spatial patterning is observable in relation to three zones: the major hearth feature and its immediate surroundings, which was the most intensively used zone with high densities of small artefacts and burnt materials; the central area of the shelter, with an overall mixture of all categories of artefacts and faunal material and the occasional occurrence of localized concentrations of knapped debris and bone artefacts; and the top of the talus slope at the southern edge of the rock-shelter floor, where primary stages of reduction sequences, knapping debris, large stone artefacts and small bone-fragments are present (Galanidou 1999).

This zonation represents a persistent behavioural pattern of a minimally furnished camp with low investment in site maintenance, the discard of larger materials on the talus and the deposition of smaller and less visible items around a single hearth area. Some part of this pattern could arguably be attributed to factors of differential preservation, the larger items surviving preferentially in areas exposed to more highly destructive agencies as on the exposed talus. But this is unlikely to be the whole story, given the presence of small bone fragments on the talus and the absence of larger lithics in the best preserved deposits in the inner part of the shelter. It is also possible that additional hearths occurred in other areas of the shelter, but sample drilling in areas not exposed by the excavation trenches has failed to produce any evidence of ashy deposits or culturally modified sediments elsewhere (Bailey and Woodward 1997). We therefore take this patterning to be a genuine expression of site use, the most outstanding features being the persistent use of a single hearth complex as the main focus of activity throughout the sequence, and very little evidence for the structured deposition of refuse into different categories of material, apart from some limited size sorting, with the Klithi inhabitants happy to re-occupy what would have been a visible palimpsest of materials and abandoned fireplaces from previous occupations.

Table 1 Selected radiometric dates from rockshelter sites

Site	Lab No	Layer	Material	Date	
Klithi	OxA-2970	2030	charred bone	14,290 ± 140	
	OxA-2971	2036	charred bone	16,650 ± 190	
	OxA-2352	2030	charcoal	15,950 ± 120	
	OxA-3941	2005	charred bone	13,940 ± 110	
	OxA-542	2002	charred bone	10,420 ± 150	
	OxA-2834	2002	charred bone	13,940 ± 130	
Badanj	OxA-2197	Level 6	charred bone	12,380 ± 110	
	OxA-2196	Level 13	charred bone	13,200 ± 150	
Kastritsa old series	I-1960	Y2, Stratum 1	bone	13,400 ± 210	
	I-2465	Y15, Stratum 5	charcoal	19,900 ± 370	
	I-2466	Y20, Stratum 7	charcoal	20,800 ± 810	
	I-2467	Y21, Stratum 9	charcoal	21,800 ± 470	
	I-2468	Y21, Stratum 9	charcoal	20,200 ± 480	
	Kastritsa new series	B-143304	Y2, Stratum 1	charcoal	15,930 ± 130
B-143301		Y7, Stratum 3	charcoal	19,360 ± 160	
B-1543302		Y11, Stratum 3	charcoal	19,660 ± 160	
B-132437		Y12, Stratum 5	charcoal	20,000 ± 80	
B-131047		Y13, Stratum 5	charcoal	21,350 ± 80	
B-143307		Y14, Stratum 5	charcoal	20,590 ± 70	
B-143305		Y16, Stratum 7	charcoal	22,230 ± 210	
B-143303		Y21, Stratum 9	charcoal	23,840 ± 240	
B-131046		Y24, Stratum 9	charcoal	23,880 ± 100	
Bacho Kiro		Ly-1102	Base 6a	bone	29,159 ± 950
		OxA-3181	Base 7	charcoal	32,200 ± 780
	GrN-7569	Lower part of 6b	bone	32,700 ± 300	
	OxA-3182	Base 6b/boundary with 8	charcoal	33,300 ± 820	
	OxA-3183	11, level I	charcoal	37,650 ± 1450	
	OxA-3212	11, level I, boundary with 10	bone	34,800 ± 1150	
	OxA-3213	11, level III	bone	38,500 ± 1750	
	GrN-7545	11, level IV	charcoal	>43,000	
	OxA-3184	11a	bone	33,750 ± 850	
	GrN-7570	13	bone	>47,000	

Sources: Klithi (Gowlett et al. 1997); Badanj (Whallon 1999); Kastritsa old series (Bailey et al. 1983); Kastritsa new series (Galanidou and Tzedakis 2001); Bacho Kiro (Kozłowski 1999).

Badanj

Badanj, like Klithi, is a south-facing rock-shelter in a prominent position overlooking the adjacent Bregava River valley, and has a similar floor area, *c.* 200m² of fairly level surface (Fig. 4). Distinctive layers of sediment were identified in a deposit less than 1m thick, with a minimum time span of *c.* 800 radiocarbon years from *c.* 13.2 ka to 12.4 ka and probably later, judging from the section (Fig. 5; Whallon 1999: fig. 31.2). Towards the back wall of the shelter

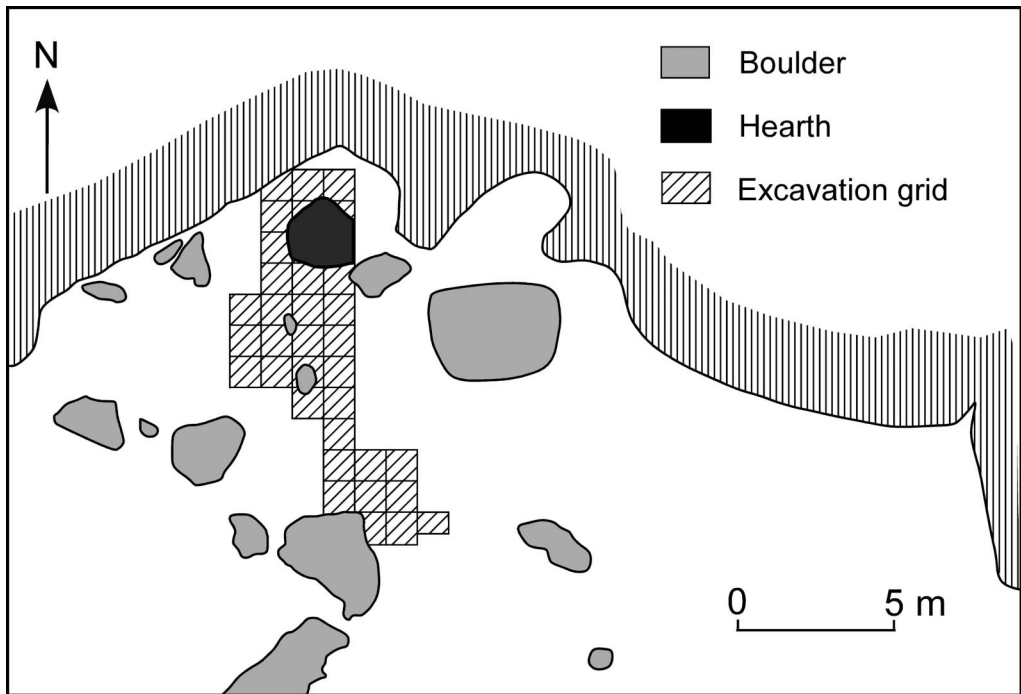


Figure 4 Plan of the Badanj rockshelter (drawn by G. Bailey after Whallon 1989).

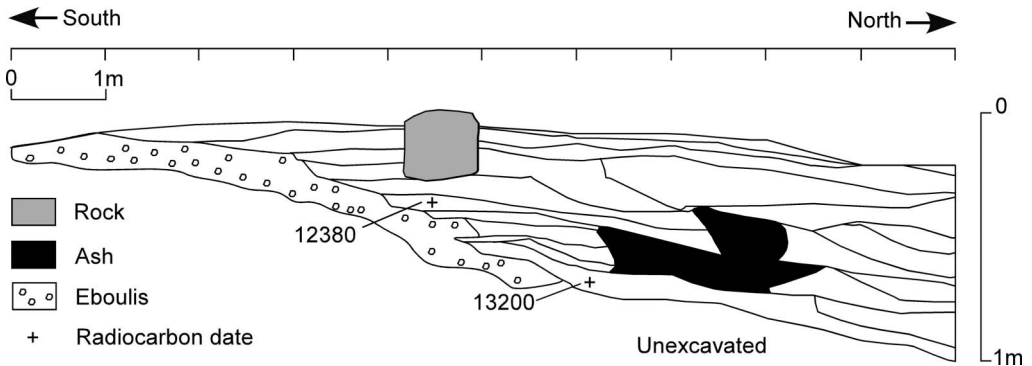


Figure 5 Section through the hearth deposits at Badanj (drawn by G. Bailey after Whallon 1999).

the deposits comprised superimposed layers of burned sediment and ash with high densities of finds, filling a bowl-shaped depression, and evidence of considerable vertical movement and mixing of material. Whallon describes this as an area of constant rebuilding of a large hearth throughout the total span of occupation. Isolated pits containing ash and large snail shells were found in the uppermost levels towards the rear of the shelter.

Unlike Klithi, Badanj exhibits both industrial and faunal diversity through time, with two major types of stone-tool assemblages, and some evidence for differential concentration of specific artefact types in the front or rear of the shelter at different

time periods, although this temporal change is discernible only in a relatively limited number of areas and layers because of the high levels of mixing, especially in the hearth area (Whallon 1999: 333). The changes through time probably reflect the later date of the Badanj sequence and more marked environmental changes at the end of the late glacial, compared to Klithi, where the bulk of the assemblages date before *c.* 13 ka. At Badanj the earlier industry is quite similar to Klithi with a preponderance of straight-edge backed bladelets and endscrapers, while the later industry contains backed bladelets with curved edges, thumbnail scrapers and geometric microliths, artefact types that are largely absent from the Klithi assemblages, but common elsewhere at time periods equivalent to or later than the Badanj deposits.

The spatial differentiation of artefact types, however, suggests either a higher-resolution deposit, with higher rates of sediment accumulation affording less opportunity for time-averaging, horizontal displacement and blurring of patterning, or a more structured use of space for different sorts of activities. Some support for the first hypothesis comes from the available radiocarbon dates, which indicate average rates of sedimentation at Klithi ranging from 0.038 to 0.067cm per radiocarbon year (Bailey and Woodward 1997: table 4.1), compared to a rate of 0.094cm per radiocarbon year at Badanj (Whallon 1999: fig. 31.2). With regard to the second hypothesis, the differential distributions refer mainly to concentrations of backed bladelets and small awls at the front of the shelter and thumbnail scrapers and flakes of various sizes towards the rear. This recalls the evidence at Klithi for occasional concentrations of worked bone including needles and finely incised bone ornaments near the front of the occupied area (Galanidou 1997b, 1997c). Such spatial variations are consistent with a preference for good conditions of daylight to carry out tasks in the manufacture or application of artefacts requiring fine hand and eye coordination, whereas other sorts of artefacts may have been used for tasks better carried out close to the warmth of the fireplace.

However that may be, the two sites show a close resemblance in the presence of a single major hearth feature near the back wall of the shelter that was repeatedly used and re-used throughout the duration of the occupation sequence, and in the generally random mixture of materials around the hearth and in the areas further away from it, and an absence of evidence for organized structuring of the space in terms of differential spatial concentrations of different materials. Apart from weak evidence of size-sorting and differential distribution of specific artefact types, there are no marked concentrations in different areas of specific anatomical parts of butchered animals or knapping by-products. In so far as there is evidence for a structured ordering of space, it is on the larger scale of the site as whole, with a single hearth area as the persistent focus of activities, despite the opportunities in both rock-shelters for the placement of hearths in other parts of the shelter floor, or in more subtle ways that have left no material traces. In both sites the successive occupants created and re-created a palimpsest of materials and maintained a remarkable uniformity of patterning that is archaeologically discernible despite the low resolution and time-averaged nature of the deposit, and perhaps because of these features. This pattern persisted either because of the continuing visibility of the hearth area as a natural focus of activity, or because of a continuously maintained social tradition that attached significance to this ordering of space, or perhaps because of both factors operating together, the material presence of previous activities and the memory of previous ways of doing things serving to reinforce each other.

Kastritsa

Kastritsa is a narrow, north-west-facing, limestone cleft on the shore of Lake Pamvotis, offering a relatively limited floor area for shelter (Fig. 6). Human use of the site commenced before or around 23.9 ka and continued until about 15.9 ka and possibly as late as 13.4 ka, though this latter date should be treated with much caution (Table 1; Galanidou and Tzedakis 2001). Unlike Klithi, Kastritsa is located in more open terrain

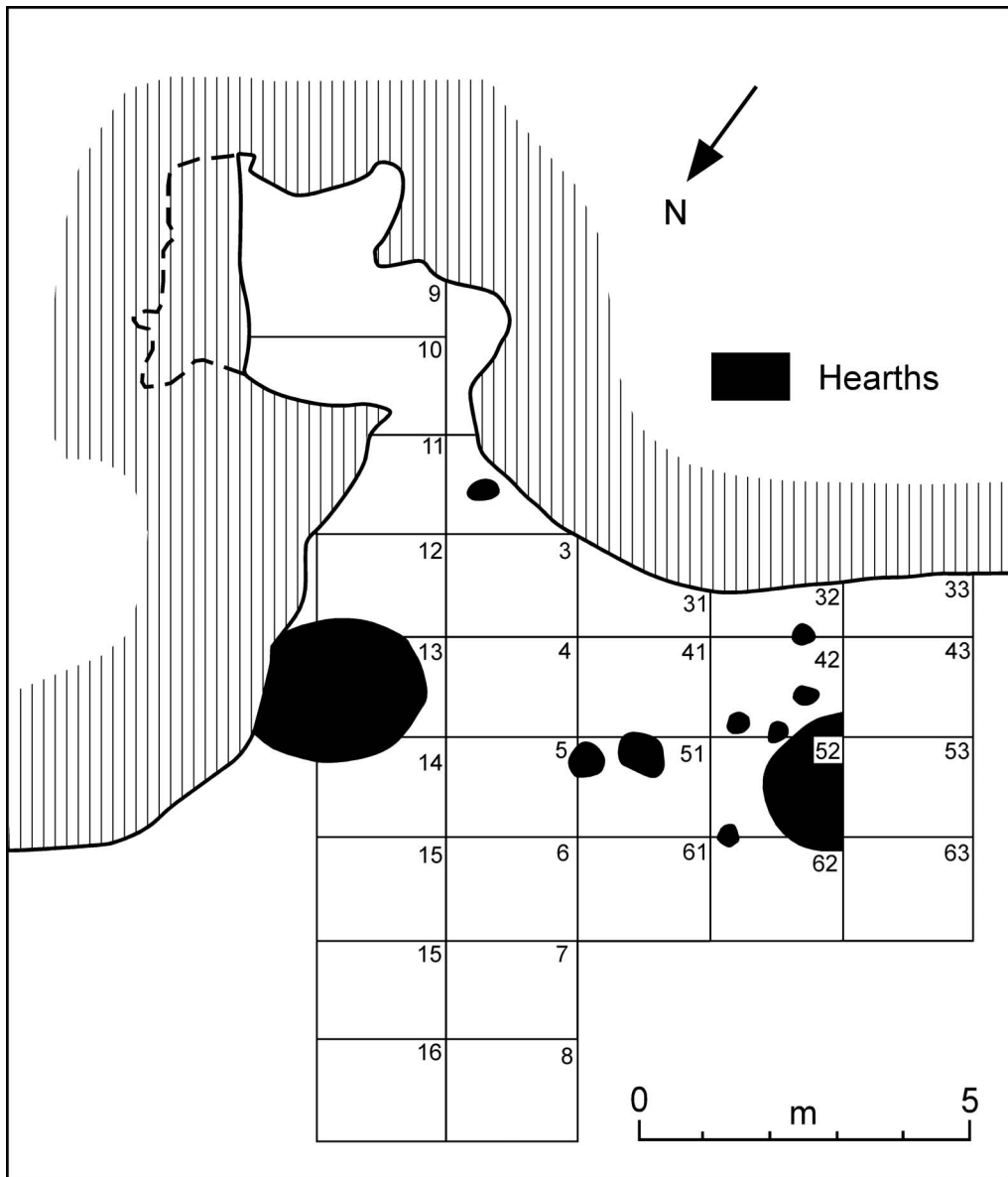


Figure 6 Plan of the Kastritsa cave; numbers refer to the grid of rectangles (drawn by G. Bailey after Bailey et al. 1983).

with access to a wider range of animal habitats, and both the faunal and stone-tool assemblages show greater diversity of materials including a wider range of animal species, technologies, tool types and lithic raw materials. Some of this variability may simply be due to the greater time depth of occupation at the site, extending up to at least 8000 radiocarbon years, and the wider range of environmental changes over that period, but it is also consistent with the potentials of the location, suggesting both a wider range of activities and a larger catchment from which resources of different kinds were brought into the site. The deposits are compacted screes, cemented in places, and interspersed with discrete clay- and ash-rich layers and rock-falls (Fig. 7). To judge from artefact refitting (Galanidou 2000b), and average rates of sedimentation that range between 0.083 and 0.093cm per year (Bailey and Woodward 1997: table 4.1; Galanidou and Tzedakis 2001), Kastritsa appears to be a relatively high-resolution deposit, although average rates of sedimentation are no higher than at Badanj, and are considerably lower in some layers.

In marked contrast to the other two sites, there is no single hearth area acting as the main focus of activities, but rather a number of smaller hearth areas, placed quite close to each other, but generally forming discrete or partially overlapping features, with no discernible hearth-related concentrations of artefacts or faunal materials but rather a general overlapping and mixing of distributions. These features are best seen in layers 15 and 16 (Fig. 8), but they are also replicated in layer 12, higher up in the sequence, where a hearth area was located further to the west (Figs 6 and 7) in association with some stake-holes suggesting a circular arrangement some 2m in diameter (Galanidou 1997a: fig. 26.3)

Layer 15 varies in thickness from *c.* 30cm to *c.* 60cm and has a time depth that ranges between *c.* 1200 and 1600 radiocarbon years (Table 1), giving rates of accumulation of 0.049 to 0.036cm per radiocarbon year, equivalent to the lowest rates at Klithi, while layer 16 is a thinner lens of deposit no more than 10cm thick. Both open and stone-lined hearths

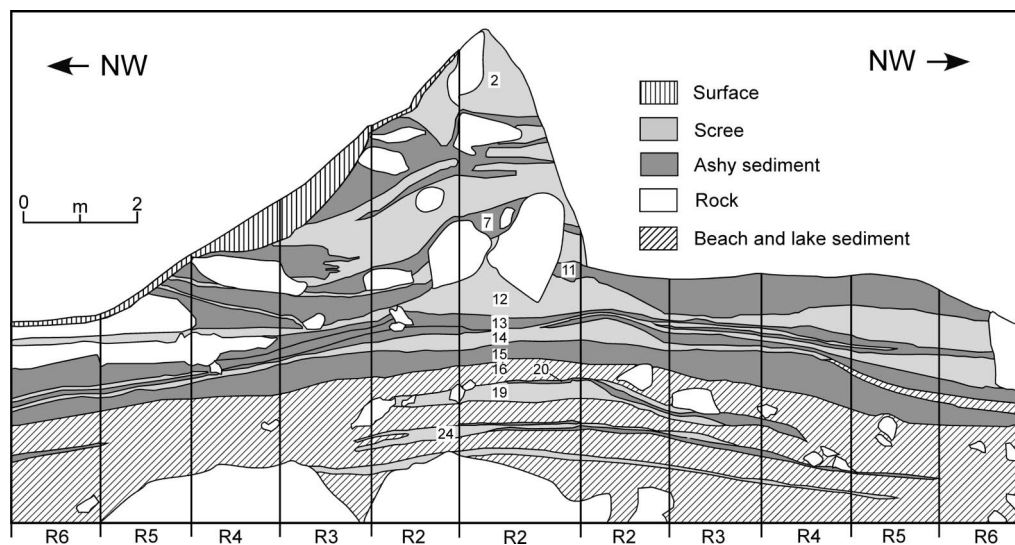


Figure 7 Section of the Kastritsa deposits (drawn by G. Bailey after Bailey et al. 1983; Galanidou 1997a). The section comprises the rear wall of Rectangle 2, and the facing side walls of Rectangles 2 to 6.

are present in layer 15, with the stone-lined hearths confined to the eastern part and the open hearths more widely distributed, while only small, open hearths are present in the underlying layer 16 (Fig. 8). Layer 15 is almost certainly a palimpsest and the individual hearths may well have been re-used on more than one occasion, but throughout the period during which layers 16 and 15 were accumulating, each group of hearths was placed in a different location without reference to the earlier ones. Given the low rates of sediment accumulation, this can hardly have been due to lack of visibility of the earlier remains. One way of explaining this pattern is to suppose that the site was used less frequently than Klithi or Badanj, with longer periods of abandonment between major episodes of occupation, during which the continuity of tradition with respect to the significance of place and the memory of previous occupants was lost. The generally lower

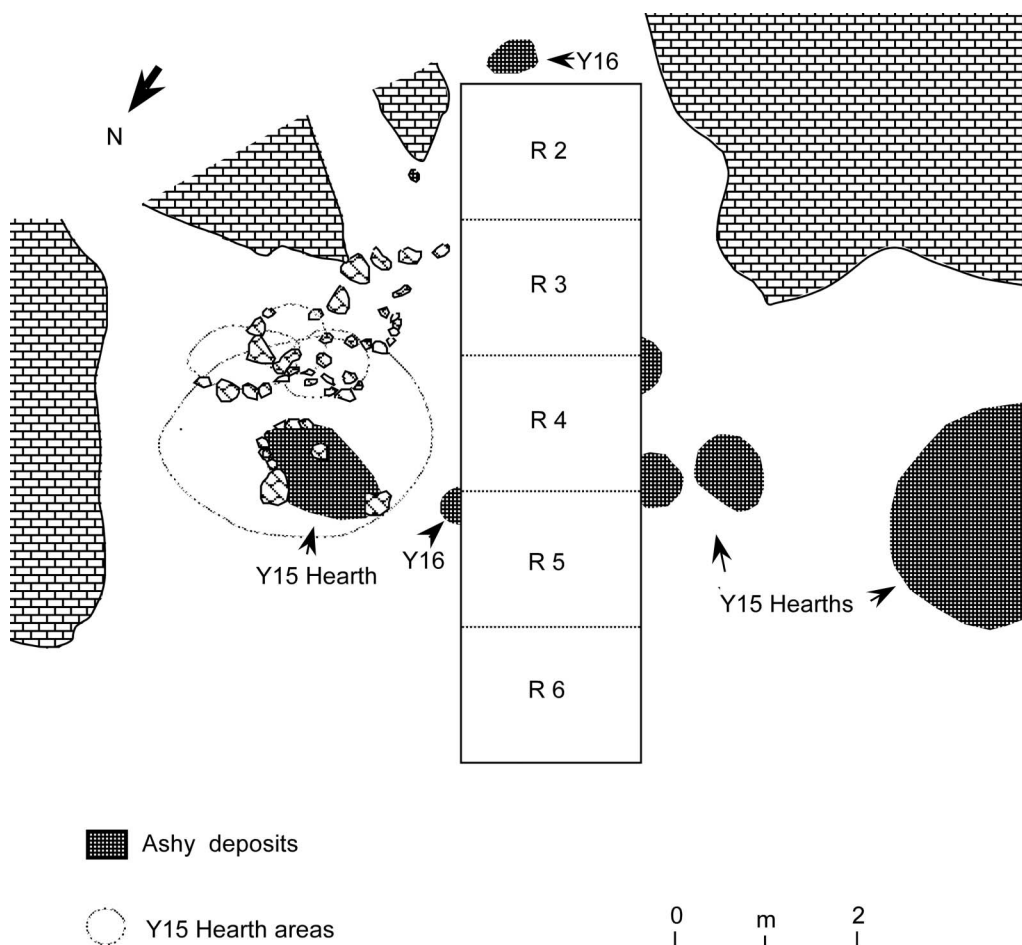


Figure 8 Distribution of hearth features at Kastritsa in layers 15 and 16 (drawn by G. Bailey after Galanidou 1997a). The central trench comprising Rectangles 2 to 6 is the trench shown in section in Figure 7.

densities of artefactual and faunal material are consistent with this hypothesis, although the nature of the available records does not allow more precise quantification.

Another possibility is that the different hearth areas were associated with two or more different groups of people, who may have overlapped or alternated in their use of the cave during each major episode of occupation, but who either did not attribute significance to the same locations as the other group or who deliberately avoided areas that had been used by strangers. Yet another possible hypothesis is a purely functional one, that the configuration of the rock-shelter wall and the topography of the cave mouth offered no one spot that was obviously more sheltered than any other. Certainly the opening of the shelter mouth is much smaller than at Klithi or Badanj, and the total area covered by the distribution of the different hearths is scarcely bigger than the single complex of hearths at the other sites. Either we have a much higher resolution of individual hearth events at Kastritsa because of differences in time-averaging of the deposits, which seems unlikely given the relatively low rates of sediment accumulation, or evidence of much less frequent and short-lived occupation of the site, perhaps by smaller groups of people, which is consistent with its rather more limited possibilities of shelter and generally unfavourable north-west-facing aspect. Whichever of these hypotheses is correct, it is clear that Kastritsa has a very different use history and long-term trajectory of occupation from the other sites, and seemingly a much weaker sense of place in the traditions of the people who used it, or at any rate a more short-lived tradition of use and perceived significance.

Bacho Kiro

Finally, we turn to the Early Upper Palaeolithic deposit at Bacho Kiro cave. Unlike the three previous examples this is a large karstic formation consisting of many corridors and chambers. To judge from the archaeological deposits human occupation took place not far from the entrance to the cave (Fig. 9). It was originally excavated in 1938 by Dorothy Garrod, who first established the presence of an Aurignacian industry in the Balkan Peninsula, and the site was more fully and extensively investigated in a series of field seasons in the 1970s aimed at addressing issues of spatial organization (Ginter and Kozłowski 1982; Kozłowski 1999). Layer 11 is 30–5cm thick and almost horizontal, extending to an area of approx 40m² with clay sediments containing limestone rubble, and further subdivided into four levels (I–IV) (Fig. 10). This deposit is rich in finds of artefacts but most probably with a very low rate of accumulation. The radiocarbon dates are close to the radiocarbon limit with large standard deviations, so that the precision of any estimate of rates is likely to be very uncertain. If we take the mean dates as given, they suggest a time span which may range from as little as 800 to as much as 3700 radiocarbon years, equivalent to rates of accumulation ranging from 0.038–0.008cm per radiocarbon year, certainly at the lower end of the range of figures for the other sites, and perhaps very much lower, reflecting the lower rate of sediment deposition in an enclosed cave environment compared to the other sites, where the cliffs and slopes surrounding the shelter opening provided larger quantities of eroded material. Kozłowski (1999: 102) suggests that layer 11 may have accumulated over a period of as much as 5000 years and that it certainly represents formation over a very long period under conditions of limited sediment accumulation.

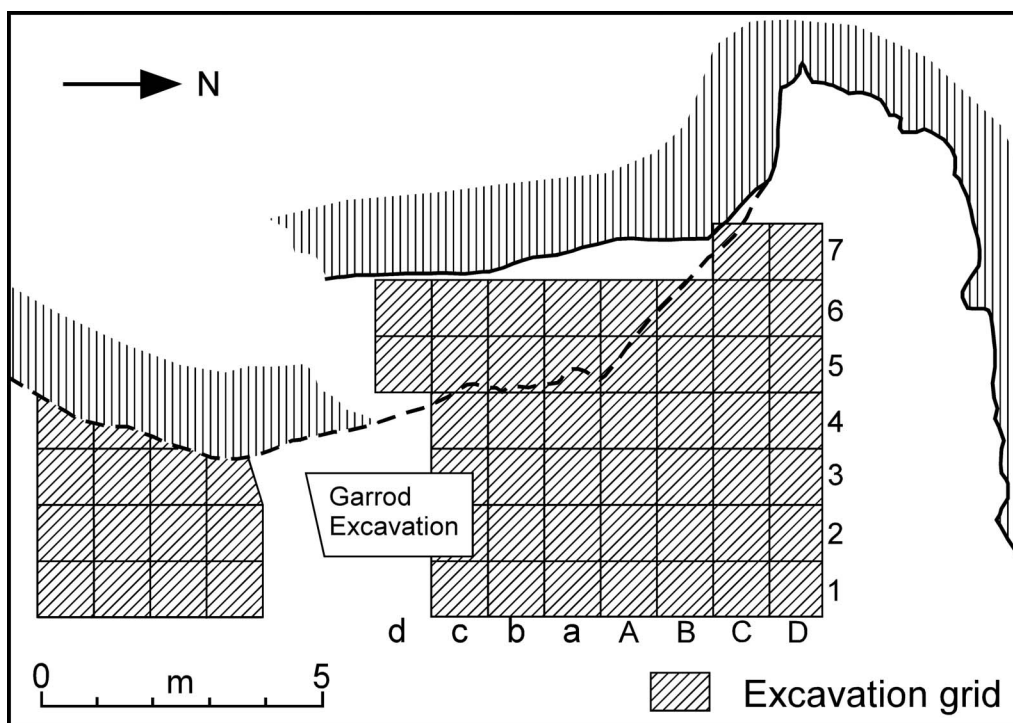


Figure 9 Plan of Bacho Kiro Cave (drawn by G. Bailey after Ginter and Kozłowski 1982).

The careful identification of the different stratigraphic units and their associated materials shows that the spatial extension of each level within layer 11 gradually shifted from the cave entrance towards the inner chamber, and that each level was associated with a series of discrete hearths with little overlap (Fig. 11). The lowermost level (IV) yielded a lens-shaped hearth near the entrance to the cave. Immediately above it, level III had two open hearths, one partly overlapping with the earlier hearth and another situated less than 3m away further inside the cave and near the wall. In level II four hearths were identified, one at the entrance close to the cave wall and three open hearth clusters arranged together in a triangle in the cave interior and enclosing a concentration of charred bone, ash, charcoal, burnt stone and a limestone slab. Level I yielded three small hearths situated less than 1m apart from each other and arranged in line in front of a further feature which may have been another hearth. Two of these hearths are stone-lined, and there is another large hearth in this unit associated with burnt limestone slabs.

It is clear that, as in all the other sites, the occupation and distribution of material was structured around hearths. However, as at Kastritsa so here, we seem to have a combination of a palimpsest with mixing of material and time-averaging in the vertical dimension, but quite a clear separation and segregation of hearth features in the horizontal dimension. Given the low rates of sedimentation and the evidence that the cave was also occupied by cave bear and hyena, it seems likely that this site too was used episodically and perhaps for quite short-lived episodes of occupation, notwithstanding the apparent density of cultural material, which might be explained by the very low rates of sediment

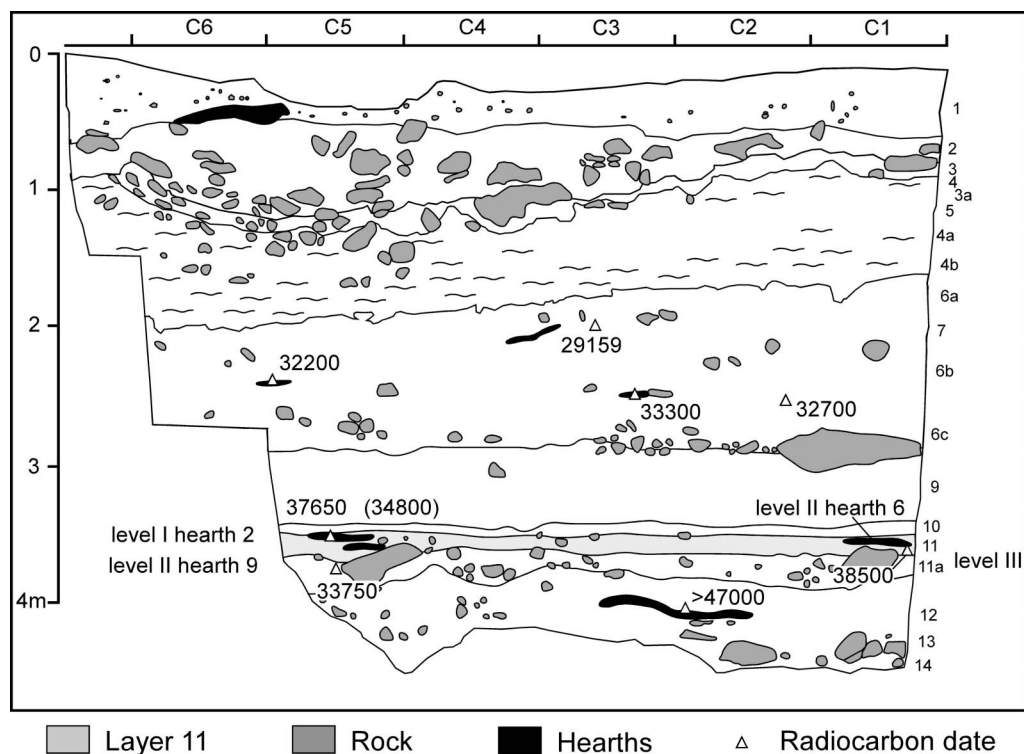


Figure 10 Section of the Bacho Kiro deposits (drawn by G. Bailey after Ginter and Kozłowski 1982). The earliest date for Layer 11 is Grn-7545, >43,000, from level IV at the base of the layer, but this deposit is not visible on this section.

accumulation and the formation of palimpsests of material representing many episodes of artefact discard over very long periods of time.

Discussion

Two issues emerge from this comparative analysis. The first has to do with the long-term trajectory of site-use and resulting spatial structure. At Klithi and Badanĵ, the successive occupants of the sites materially transformed their surroundings by re-using the same features and facilities as their predecessors so as to reproduce forms of spatial organization that were familiar to them, especially with regard to the re-use of a single major hearth complex that persisted in use over many centuries, and in the case of Klithi for more than three millennia. In contrast, Kastritsa and Bacho Kiro show no such enduring attachment to a single hearth complex, but rather a series of smaller and more sharply defined individual hearths or hearth complexes located in different parts of the cave at different periods of its history. In seeking to explain these differences, several hypotheses can be proposed.

The first possibility that we should deal with is that the differences in the layout of hearths are more apparent than real and reflect the effects of differential time-averaging in

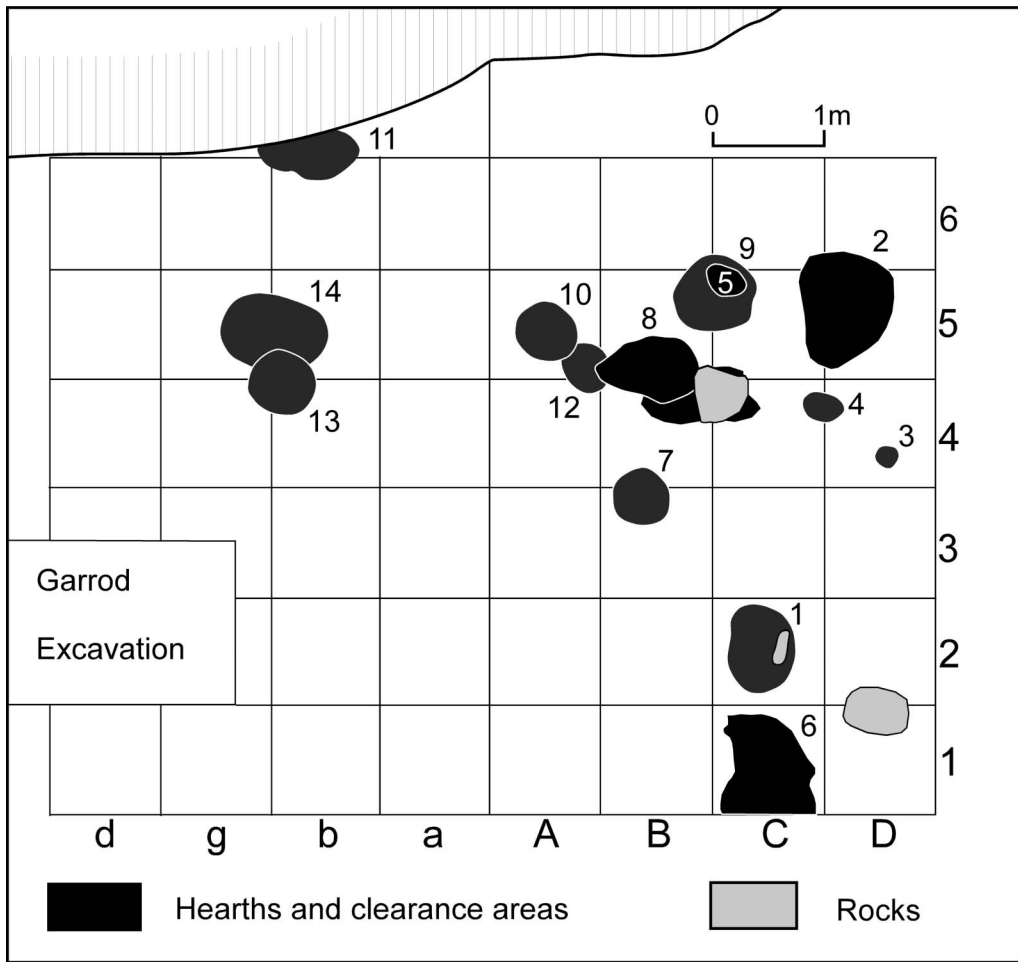


Figure 11 Distribution of hearths at Bacho Kiro (drawn by G. Bailey after Ginter and Kozlowski 1982).

different deposits. However, the available data do not support such an interpretation. For we would expect the greatest blurring and mixing of features such as hearths to occur in the sites with the lowest average rates of sediment accumulation, whereas we see the reverse pattern, with greater resolution and sharpness of preservation of these features at Kastritsa and Bacho Kiro. The main hypothesis to account for this is that, despite the relatively low rates of sediment accumulation at these sites, the rate of use of the sites by the human occupants was lower still, with shorter and more intermittent occupations involving smaller numbers of people, separated by longer time intervals of abandonment. The quality of data available in terms of densities of artefacts and animal bones and rates of accumulation is not good enough or available with sufficient consistency or comparability between all the sites discussed here to provide a rigorous test of this hypothesis, but such data could in principle be obtained. This emphasizes the importance, when assessing the effects of time-averaging, of having good, independent measures of

what are two quite separate processes: the rate of sediment accumulation and the rate and intensity of human activity as reflected in the rate of accumulation of cultural materials.

Another possibility is that Klithi and Badanj were more attractive places for persistent human occupation than Kastritsa and Bacho Kiro simply because of their south-facing aspect, tall overhangs, spacious floor area and commanding prospect over the adjacent valley, all features that would have maximized the possibilities of shelter, warmth and sense of protection, and encouraged more frequent and persistent use.

Yet a third possibility is that Klithi and Badanj were used more frequently or continuously and perhaps by larger numbers of people because of their chronological position in the late glacial, a period of climatic amelioration and improved resource productivity, supporting a more stable and continuous pattern of settlement within the wider landscape setting than at earlier periods. Some support for the greater frequency of use of these sites might be found in the large quantities of artefacts and animal bones recovered and their relatively high rates of accumulation compared to the other two sites. On the other hand, assessment of animal habitats, densities and potential resource productivity suggest that the region at large within which the Kastritsa cave is located was capable of supporting larger populations than at Klithi (Sturdy et al. 1997). If that is correct, the implication must be that other more attractive dwelling places existed within the Kastritsa territory for which we currently have no evidence. In any case, whether the varying pattern of site use from our limited sample reflects a broader chronological trend over the wider Balkan region as a whole or simply geographical variation between different locations is impossible to test properly in the absence of earlier occupation deposits at Klithi and Badanj. Klithi has a long sequence of earlier deposits but they appear to lack any evidence of human occupation, because the area was too inhospitable and inaccessible during the colder periods of the glacial maximum, while at Badanj excavations do not yet appear to have reached the base of the sequence. Whatever the balance of factors that attracted occupation to these sites, they seem to have facilitated more continuous and enduring traditions of dwelling and the maintenance of a stronger and more persistent sense of place than was the case at Kastritsa and Bacho Kiro.

The second issue has to do with the nature of palimpsests and their attractions and significance for the people who used and created them. All the deposits we have examined are palimpsests of some sort, although of varying resolution. We cannot say with any confidence how many individual episodes of occupation contributed to the various palimpsests in each site, and no amount of careful excavation is likely to improve on this. But we have shown that it is possible to identify differential resolution and patterning of palimpsests in different locations and combine that evidence with other sources of information to say something about the nature of dwelling in those different places.

As Leroi-Gourhan, one of the pioneers of spatial analysis and interpretation of archaeological sites, put it more than forty years ago, the organization of space is not simply the arrangement of a technical commodity that secures the necessities of survival. Rather it is the symbolic expression of a universal human need for an environment that provides fixed points of reference to order what is otherwise an unstructured surrounding universe (Leroi-Gourhan 1965: 150). Throughout the period of the Upper Palaeolithic discussed here, hearths were the fixed points around which life was structured. They were the means through which space was tamed and domesticated. Through repetition of use of

the same fixed points, the otherwise empty or hostile space was transformed into one endowed with memory and meaning. Moreover, if, as Gamble (2007) has recently suggested, *bricolage* (following Lévi-Strauss 1962) – the *ad hoc* combination of whatever materials are to hand rather than the ordered arrangement of elements according to some mental template – is the appropriate metaphor for everyday material projects in the prehistoric past, then the natural habitat of a *bricoleur* is a palimpsest, and palimpsests are what we should expect to find as the source of inspiration and material consequence of *bricolage*. It follows that palimpsests should also be the focus of archaeological analysis if we are to uncover something of how the world was perceived and created by people in the past.

The variety of analytical techniques that have been devised in recent decades to analyse deposits from archaeological excavations can rarely, if ever, as was once hoped for, recreate the spatial arrangement of activity areas as they might have been formed during an episode of occupation frozen in time. Such expectations not only ignore the time-averaged nature of most archaeological deposits. They fundamentally misconceive the nature of human dwelling and the material origins of the human sense of time and place. Instead of viewing palimpsest deposits as a problem, to be ignored or somehow unpacked into their indivisible constituent components, we have proposed here that palimpsests should be accepted for what they are and analysed, as it were from the ground up, rather than top-down according to pre-existing theories and conventions that may be quite unrealistic or inappropriate. The spatial distributions of artefacts and features in archaeological deposits are not purely spatial in their patterning, or spatio-temporal distributions in which the time variable can be held constant. Nor are stratigraphic sequences temporal distributions in which the spatial variable can be ignored. Rather both are distributions in which spatial and temporal variables are inextricably bound together in the formation of the deposit. What we have shown here is that spatio-temporal analysis, especially in relation to hearths and other site features, can be used to build up a pattern of intra-site and inter-site similarities and differences in overall site structure and trajectories through time, and that the resulting patterns can be interpreted in the light of additional information to throw light on variable patterns of site-use and dwelling. The classic techniques of spatial analysis, refitting, geochronology, sediment micromorphology and taphonomic analysis can still be recruited in pursuit of this new goal, and indeed form an essential set of tools for the purpose, together with additional observations about the use, physical setting and wider context of the sites where such deposits have accumulated. What is now needed is an application of these techniques over a wider range of comparative examples, in order to test the hypotheses outlined in this paper and to stimulate new ones.

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