Chapter 1

Caves in context: an introduction

Knut Andreas Bergsvik and Robin Skeates

Caves and context

The premise for this volume is that the archaeology of caves in Europe needs to be more consciously and comprehensively studied 'in context', for the benefit of both speleology and archaeology. This 'necessity of adopting a contextual approach to the study of the human use of caves' was first emphasized in the 1990s (Tolan-Smith and Bonsall 1997, 218; c.f. Skeates 1994), but still needs reiterating today. One problem is that cave studies are so well established as a specialized field of research that it is now possible to investigate caves in relative isolation, including as a sub-discipline of archaeology (e.g. Inskeep 1979; CAPRA 1999–2007; Gunn 2004). Another problem is that cave archaeology is now dominated by scientific data collection and analysis, to the detriment of interpretative approaches to their social and cultural significance. As a consequence, archaeological cave studies can be accused of a loss of meaning and relevance to the social sciences in general and to archaeology in particular, especially in contrast to their dynamic development in the mid-nineteenth century, when they were entangled in some key scholarly debates. In this volume, then, we hope to demonstrate, through a diversity of European archaeological approaches and examples, that cave studies, whist necessarily focussed, can also be of significance to wider, contemporary, archaeological research agendas, particularly when a contextual approach is adopted.

Meanings and the search for them lie at the heart of scholarly uses of the term 'context'. In general, 'context' is used to refer to the ambience, arena, background, circumstances, conditions, environment, framework, habitus, relations, situation, or surroundings that determine or clarify the meaning of a thing. And so, for linguists, 'context' refers to the 'parts [of a text] that precede or follow a passage and fix its meaning' (*OED*); hence when that passage is taken 'out of context' it can be misleading; while for 'contextualist' philosophers, attributions of knowledge are determined by the specific

contexts in which they occur. In field archaeology, 'context' refers to any discrete stratigraphic unit identified and recorded during the excavation of an archaeological site, such as a layer or a pit – whose stratigraphic relationships over space and time are of fundamental importance to reconstructing the historical development of that site (e.g. Harris 1979; Drewett 1999, 107). By contrast, in theory-led post-processual (or interpretative) archaeology, this idea of context is extended to refer to the whole web of associations of a particular material thing or practice being studied, with the goal of 'contextual archaeology' being the weaving together of a rich interpretative network of associations and contrasts within which to situate that past thing or practice's particular, 'context-dependent', meanings (e.g. Butzer 1982; Hodder 1986, 118–146; 1987; Barrett 1987; Conkey 1997; Barrowclough and Malone 2007). This takes us back to the Latin root of the term 'contextual', meaning woven together, closely connected, or continuous; but the approach is also informed by Clifford Geertz's (1973) ethnographic method of 'thick description', in which both a human behaviour and its context are explained, so as to make the behaviour meaningful to an outsider.

Not all of the contributors to this volume use the concept of context in a theoretically explicit manner. Nevertheless, together, they do help to define at least six contextual dimensions of relevance to cave archaeology. First, there is the 'architectural' context of cave and rockshelter structures, their natural and cultural formation processes (or 'speleogenesis'), and their typological relation to other architectural forms (such as megalithic tombs), all of which frame and add significance to the various human activities carried out in and around them, which in turn affect the culturally diverse values and names ascribed to caves. Second, the caves themselves may offer exceptionally good contexts in terms of detailed stratigraphic resolution and their sometimes favourable conditions for preservation of organic material. Third, there is the spatial context of caves, both as architectural spaces and as meaningful places in the landscape, connected to (or maginalized from) other landforms, resources, and patterns of human behaviour. Fourth, there is the temporal context of the human use of caves, including the history of their occupation, transformation, and remembrance (or forgetting) both seasonally and over the long-term of centuries and millennia. Fifth, there is the (overlapping) socio-economic context of caves: the meaningful place of caves within wider cosmologies, ritual actions, economic strategies, social practices, power relations, identities, and memories. And, sixth, there is the scholarly context of cave archaeology, in relation to the dynamic history of science and of archaeology.

Approaches to cave archaeology in Europe

The history of cave archaeology in Europe can be traced in some regions back to the first half of the nineteenth century, when a few prominent scientists began to explore caves and their deposits as part of broader geological, palaeontological, and antiquarian research agendas, including the great debate over the antiquity of humankind (e.g. Daniel 1981, 48–55; Grayson 1983; Simek 2004; Trigger 2006, 138–156; Ahronson and Charles-Edwards 2010; Prijatelj 2010). Caves soon came to be regarded as significant archaeological resources, valued in particular for the common stratification of their deposits which facilitated the relative chronological ordering of faunal remains and cultural material, and for their often protected and non-acid sedimentary environments which ensured the relatively good preservation of inorganic and organic materials – values which have endured to this day. Over the years, a wide range of professionals and enthusiasts have made archaeological discoveries in hundreds of caves across Europe. In Sardinia, for example, over 100 cave excavations have been undertaken since 1873, not only by the state-funded staff of archaeological superintendencies and university departments, but also by members of regional speleological societies and by local archaeology enthusiasts (Skeates – this volume). In Norway, priests and other educated men excavated caves and published the results during the latter part of the nineteenth century until the enterprise was taken over by professional archaeologists in 1907 (Bergsvik 2005; Bergsvik and Storvik – this volume). Sometimes, discoveries of caves have been accidental. But, since the mid 1990s, systematic archaeological field surveys – some specifically focussed on caves – have added significantly to our contextual understanding of the place of archaeological caves in present-day and ancient landscapes (e.g. Bicho *et al*.; Bonsall *et al*. – this volume; Holderness *et al*. 2006). Cave studies are, consequently, now seeing a resurgence in various parts of Europe, particularly as part of larger multi-disciplinary studies of natural and cultural landscapes.

Over this long history, a diversity of theoretical and methodological approaches to cave archaeology has developed, in part related to wider traditions of archaeological research associated with different periods and regions of study (c.f. Watson 2001; Kornfeld *et al*. 2007). In this volume, we acknowledge and accept this diversity, whilst also promoting a contextual approach. Indeed, to deny this diversity would be to misrepresent the scholarly context within which cave archaeology is practiced in Europe today.

In terms of theory, the big three paradigms of archaeological thought – commonly labelled as ‘culture-historical’ (or ‘traditional’), ‘processual’ (or ‘cognitive-processual’), and

'postprocessual' or 'interpretive' (e.g. Shanks and Hodder 1995) – all remain very much alive in interpretations of cave archaeology in Europe. For example, Manko's approach to caves and their deposits is fundamentally culture-historical, being characterised by an interest in the 'when' and 'where' of past cultures, based on the identification of distinctive assemblages of material remains and their attribution to individual archaeological cultures. Manko consequently argues – based upon detailed categorizations and comparisons of cave stratigraphies, stone artefact types, and faunal remains – that Skalisty rockshelter in the Crimean mountains was used in the Final Palaeolithic primarily as a long-term base camp by hunters using a forest-based economic strategy and the Shankobien lithic industry (whose origins he traces to the Eastern Mediterranean and Middle East), but that short visits were also made to the site – contemporaneously – by hunters belonging to a different cultural tradition (but with similar origins) using a different (steppe-based) economic strategy and a different (Taubodrakian) lithic industry. By contrast, Manem's approach to caves might be described as cognitive-processual, being characterised both by a critique of traditional archaeology and by a rigorous use of scientific and experimental method to reveal something about how people thought and acted in the past. Reacting against traditional interpretations of French Bronze Age caves as dwelling places (as opposed to places of ritual deposition), Manem consequently sets out to distinguish domestic from ritual uses of caves with reference to the different 'operational chains' (*chaînes opératoires*) implicit in the manufacturing of pottery deposited at different types of cave sites. He identifies a restricted number of operational chains (1–5) in pottery made through homogeneous domestic production at Bronze Age sites around the English Channel, in contrast to a greater diversity of technical know-how characteristic of pottery produced and used at meeting places with a ritual function, such as the Bronze Age burial cave of Duffaits in the Charente, where 16 operational chains were identified in the pottery. Another example of a cognitive-processual approach is provided by Ordoño, who used a detailed geographical analysis to investigate changes in human territorial behaviour between the Middle and Upper Palaeolithic in Cantabrian Iberia.

By contrast again, other contributors to this volume adopt – at least in part – a more interpretive approach to caves, characterised by a critical recognition that methodological and personal biases inevitably affect archaeological research and by an interest in the perceptions and experiences of past people. So, Bjerck, for example, questions the impact of flash photography on cave archaeology: arguing that it foregrounds things never observed in dark and inaccessible caves by people in the past. He also provides a consciously subjective

phenomenological description of his personal experience of entering, being in, and exiting caves containing Bronze Age paintings in North Norway. Mlekuž likewise explores how the properties 'afforded' by different caves and rockshelters (such as shelter, protection, enclosure, and passage to the underworld) were perceived, experienced, and acted upon by people whilst routinely performing practical tasks in and around these sites in the landscape.

The research methods used today in European cave archaeology are also varied. In addition to the widespread adaptation of well-established speleological and above-ground archaeological field techniques to the prospection, excavation, and recording of caves, archaeologists have incorporated many other approaches in their research designs, both before and after excavation. For example, Ordoño undertook a site location analysis where he recorded factors such as cave orientation, altitude, distance to water sources, and accessible biotopes. Gradoli and Meaden drew upon studies of place-names, folklore, and local traditions to locate caves and rockshelters of archaeological significance in the territory of Seulo in central Sardinia; while Buhagiar found it essential to combine the skills of the archaeologist and of the documentary historian to understand the human uses of caves in Malta during the later Middle Ages. Post-excavation research on the archaeological deposits of Barakaevskaya cave in the north-west Caucasus has also been multi-disciplinary: involving radiocarbon dating, use-wear analysis, physical anthropology, archaeozoology, geomorphology, sedimentology, and palynology to obtain new and detailed scientific information on the chronology, palaeoecology, and palaeoeconomy of the Neanderthal/Mousterian occupation of this site (Levkovskaya *et al*. – this volume). Several of the authors have also done extensive work on museum archives and collections in order to compile regional overviews of cave research (Bergsvik and Storvik; Orschiedt; Skeates; Weiss-Krejci – this volume).

The contextual approach of archaeology has the potential to unite these various methods and theories, particularly in the case of works of synthesis that aim to summarize and interpret knowledge about the archaeology of caves. For example, Bonsall, Pickard and Ritchie explicitly place their analysis of long-term changes in cave forms, deposits, and human uses in the area of Oban Bay in western Scotland in the context of wider geomorphological processes (such as sea level changes and talus formation) and cultural processes (such as the transition to agriculture and monument building); while Skeates outlines the contextual web of relations within which occupied caves in Sardinia were situated over the course of prehistory, particularly in relation to wider landscapes, lifeways, and beliefs. Indeed, all of the chapters in this volume contribute to the much-needed

contextualization of caves, ranging from: studies of single caves or rockshelters occupied over various timescales (Arias and Ontañón; Bicho *et al*.; Levkovskaya *et al*.; Manko); to studies of single site types (painted caves, burial caves, and cave-settlements) in particular regions and periods (Buhagiar; Bjerck; Orschiedt; Weiss-Krejci); to studies of different caves in a single archaeological culture (Bergsvik and Storvik; Manem); to syntheses of long-term human uses of caves in particular regions (Bonsall *et al*.; Gradoli and Meanden; Haug; Ordoño; Skeates).

We also want to emphasize the variable conditions for establishing a contextual relationship between the use of caves and the utilisation of other landscapes. For some regions and periods treated in this volume, data from caves and rockshelters are the most important sources of knowledge, either because geological or human processes have destroyed much of the archaeological evidence at open-air locations, or because surveys and excavations have focussed on these sites. According to Ordoño, 88 per cent of the known Palaeolithic sites in Cantabria are caves and rockshelters. Similarly, Mlekuž notes that the archaeological record of the karst region of North-East Italy and Western Slovenia almost exclusively consists of such sites. In other regions, such as western Norway, the situation is the other way around. Here, open-air sites predominate heavily over the number of caves and rockshelters, partly as a result of open-air sites being much more systematically and intensively surveyed than cave sites (Bergsvik and Storvik – this volume).

The thematic scope of this volume

Although not encyclopaedic in intention, the chapters in this volume do cover a wide range of geographical regions, cultural periods, and interpretive themes relating to current research on the archaeology of caves in Europe. Four major regions of Europe are used as the basis for ordering the chapters: the British Isles and Scandinavia (Bergsvik and Storvik; Bjerck; Bonsall *et al*.; Haug); Iberia and France (Arias and Ontañón; Bicho *et al*.; Manem; Ordoño; Weiss-Krejci); the Central Mediterranean (Buhagiar; Gradoli and Meaden; Mlekuž; Skeates); and Central and Eastern Europe (Levkovskaya *et al*.; Manko; Orschiedt). The majority of Europe's major archaeological periods are also covered: the Lower Palaeolithic (Arias and Ontañón); the Middle Palaeolithic (Levkovskaya *et al*.; Ordoño; Orschiedt); the Upper Palaeolithic (Arias and Ontañón; Bicho *et al*.; Bonsall *et al*.; Orschiedt; Skeates); the Mesolithic (Arias and Ontañón; Bergsvik and Storvik; Bonsall *et al*.; Haug; Manko; Mlekuž; Orschiedt; Skeates); the Neolithic and Copper Age (Arias and Ontañón; Bonsall *et al*.;

Mlekuž; Orschiedt; Skeates; Weiss-Krejci); the Bronze Age (Arias and Ontañón; Bjerck; Bonsall *et al*.; Haug; Manem; Orschiedt; Skeates); the Iron Age (Bonsall *et al*.; Haug; Orschiedt; Skeates); the Roman period (Haug; Orschiedt); and the Medieval period (Arias and Ontañón; Buhagiar; Haug). But it is the themes explored by the contributors to this volume that are of greatest significance to current archaeological discourse: seven of which stand out in particular.

The first theme conerns the diversity of cave forms. The generic term 'cave', defined by Bonsall, Pickard and Ritchie, following White and Culver (2005, 81), as, 'any natural opening or cavity in bedrock large enough for a human to enter', usefully emphasizes the cultural significance of caves – aspects that may relate to dwelling or other activities which require people to enter a cave and stay for some time, but masks the variety of caves found throughout Europe – which is something archaeologists in general have tended to overlook, particularly in contrast to speleologists (e.g. Garasic 1991). In practice, it is quite difficult for archaeologists to categorize the diversity of cave forms, particularly without specialist advice, but a number of contributors to this volume do, at least, highlight a number of contrasts. Morphological contrasts, for example, encourage a basic distinction between 'caves', defined as 'generally having an opening that is deeper than it is wide', as opposed to 'rockshelters', with openings 'wider than they are deep' (Weiss-Krejci – this volume, quoting Weaver 2008, 6). More sophisticated consideration of the mode of formation of caves also leads to distinctions between structures such as karstic caves (resulting from the dissolution of limestone and similar carbonate rocks by weakly acidic groundwater, in some cases combined with the erosive action of subterranean streams), fissure caves (created by mechanical widening of fissures in bedrock), sea caves (formed primarily by wave action exploiting zones of weakness in sea cliffs), and boulder caves (created where boulders have piled up as a result of ice transport or rock-falls, typically on mountain slopes or at the bases of cliffs) (e.g. Bonsall *et al*. – this volume). Human modifications of caves add to this diversity and blur the boundaries between 'natural' and 'artificial' caves. A good example is provided by Buhagiar's descriptions of cave-settlements in late Medieval Malta: spatially extended and partitioned by the addition of artificial terraces, walls, and roofs to two or more adjoining natural caves; and camouflaged within the limestone countryside of the islands. A key question for archaeologists, then, concerns what members of past cultures made of the diversity of caves in the process of ordering the landscapes and societies that they inhabited and belonged to. As Weiss-Krejci asks, with regard to the use of large caves, rockshelters, avens (i.e. caves with vertical entrances), and rock fissures for human burials in Neolithic and

Copper Age Iberia, 'did the prehistoric people perceive these natural landscape features as different types of natural place and bury different categories of people in them?'

The second theme in this volume relates to the landscape context of archaeological caves, analysed on various spatial scales (c.f. Bradley 2000, 19–32; Barnatt and Edmonds 2002). An important point highlighted by Bonsall, Pickard and Ritchie is that we must take into account the long-term dynamics of the landscapes within which archaeological caves are situated. For example, they note that the sea caves around Oban Bay only became available for human utilization during the marine regression of the Early Holocene or Mesolithic (when the sea level reached a low point), and that the increasing constriction of cave entrances by talus accumulation during and after the Mid-Holocene in western Scotland contributed to a change in cave use from 'economic' to 'funerary'. On this local scale, the proximity of chosen cave sites to key subsistence resources – such as perennial water sources, good fishing rivers, hunting areas, pastures, and farmland – would also have been of significance to cave dwellers (Buhagiar; Haug – this volume). And, on a regional scale, we should take into consideration the dynamic distribution patterns of occupied caves, which can be explained, at least in part, in the context of wider strategies of settlement and subsistence. For example, in western Norway, Mesolithic rockshelters are concentrated in coastal areas, while relatively few are situated in the fjords and on the mountain plateaux. This may be explained by the strong focus on marine resources in this period (Bergsvik and Storvik – this volume). In Cantabria, the shift from a more dispersed use of caves located along the valleys of both principal rivers and tributary rivers in the Middle Palaeolithic to a more restricted use of caves mainly located along principal river valleys in the Early Upper Palaeolithic might be interpreted as reflecting the pursuit of a more specialised settlement and subsistence strategy by the first modern human groups in the region (Ordoño – this volume). And, in Sardinia, the significant concentration and growth in the human use of caves in the agriculturally marginal province of Carbonia-Iglesias in south-west Sardinia during the Copper Age – adjacent to the Campidano settlement heartland of the contemporary Monte Claro culture – might be understood in terms of a territorial expansion of herder-hunter groups belonging to the Monte Claro culture (Skeates – this volume).

These observations overlap well with the third key theme in this volume: the connectivity of cave occupants and their cave-based activities and materials. As Mlekuž puts it, a cave used by people – including the people and material things brought into it – becomes connected in a contextual web of relations, flows, and paths, particularly through the activities performed by people as they move across the landscape. This line of thought is

echoed, for example, in Bicho, Cascalheira and Marreiros' chapter, which identifies the stylistic and social connections maintained between a regional Upper Palaeolithic group whose members periodically aggregated at the Vale Boi rockshelter on the Atlantic coast of Portugal and contemporary communities based on the Spanish Mediterranean coast. The movement of raw and processed materials into and, sometimes, out of caves throughout prehistory is also noted in various chapters. During the Palaeolithic, resources such as hard stones (used to produce tools) and game animals (processed for meat, bone marrow, and skins) were carried to cave sites from habitats extending from the immediate environs of caves to sources situated over 100 km away (Bicho *et al*.; Levkovskaya *et al*.; Ordoño – this volume). In the Mesolithic, large quantities of seashells and other materials were transported to some coastal and inland caves, where, after processing and consumption, their remains accumulated over many years to form 'middens' (Arias and Ontañón; Bonsall *et al*.; Mlekuž – this volume). And, particularly in later prehistoric periods, increasing qualities of human remains were deposited and re-deposited in caves through primary and secondary burial rites involving the veneration and movement of human bodies and bones in, out of, and even between caves and other places in the landscape (Mlekuž; Skeates; Weiss-Krejci – this volume).

This emphasis on deposition links to our fourth theme, which concerns the precise taphonomic processes – both natural and cultural – that have led to the formation (and disturbance) of cave sediments. At the Vale Boi rockshelter, for example, in the slope area, careful recording of the orientation, size, and fragmentation of artefacts, bones, and shells, enabled the identification of a contrast between a lower area, with deposits affected by natural erosion processes (which led to the orientation of artefacts and bones generally following the trend of the slope, the size-sorting of lithic artefacts, and a relative rarity and fragmentation bones), and an upper area, containing undisturbed Upper Palaeolithic cultural deposits (characterised by artefacts oriented in all directions, the possibility of refitting bone tools and shells, and the survival of piles of limpet shells nested inside each other) (Bicho *et al*. – this volume). And, at La Garma A in Spain, it has been suggested that, during the Upper Palaeolithic, the steady accumulation of sediments in the cave led to a reduction in the inhabitable surface area, and that, for the Mesolithic, the presence of cultural deposits in the cave represents the accumulation of waste produced by activities located immediately outside (as opposed to inside) the cave (Arias and Ontañón – this volume). In some caves, such processes have led to the substantial accumulation of deposits. At Podmol pri Kastelcu in

Istria, for example, more than 8 m of deposits have accumulated since the Early Neolithic (Mlekuž – this volume).

A large and important fifth theme in this volume concerns the diverse human uses of caves. Essentially, four different categories of cave use can be identified: as shelters linked to economic activities; as dwelling places; as human burial places; and as places for the performance of other rituals (c.f. Bonsall and Tolan-Smith 1997). However, it is important to take into account the significant variability that has occurred within these categories of use, particularly over space and time.

Caves have often been occupied as convenient shelters linked to a variety of – sometimes specialized and seasonal – economic activities. For example, the Vale Boi rockshelter, strategically situated not far from the Atlantic coast, near to the entrance to a narrow gorge leading to a freshwater lagoon, appears to have been used in the Gravettian both as a base for the daily gathering and consumption of shellfish from the tidal sea shore and as a site for the extraction and rendering of bone grease from red deer and equids, which are thought to have been hunted in the surrounding area during the spring and summer (Bicho *et al*. – this volume). Other caves, particularly in the Trieste karst, but also in regions such as Sardinia, Norway, France, and Scotland, were arguably used by mobile herders in later periods as stock pens, characterised archaeologically by evidence of the culling, processing, and consumption of sheep and goats, and by the cyclical clearing and burning of animal dung (Bonsall *et al*.; Manem; Mlekuž; Haug, Skeates – this volume; c.f. Angelucci *et al*. 2009). However, the traditional idea that such sites reflect the wider existence of nomadic pastoralist societies, particularly during the European Bronze Age, is open to question (e.g. Manem – this volume; Miracle and Forenbaher 2005, 276). During and after the Middle Ages, the economic use of caves diversified even further across Europe, to include functions such as blacksmiths' workshops, boat houses, agricultural stores, animal-driven mills, and apiaries (Buhagiar; Haug – this volume).

Caves have also been occupied widely as dwelling places, characterised by varying degrees of modification, domesticity, and permanence, and also by phases of abandonment (c.f. Jacobsen 1981). For example, in the Middle Palaeolithic, Barakaevskaya cave was occupied as a base-camp by Neanderthal/Mousterian populations, but with differences in settlement intensity and mobility linked – at least in part – to oscillating climatic phases (Levkovskaya *et al*. – this volume). In the Upper Palaeolithic, an extensive and intensive Magdalenian occupation floor was formed in the entrance area of the Lower Gallery at La Garma, located near to the valley floor (Arias and Ontañón – this volume). It included at least

one tent structure, 2.5 to 3 m in diameter, ringed by boulders and containing a trampled floor. In western Norway, however, caves and rockshelters seem to have been used as long-term residential sites only to a minimal degree. Such sites were first of all situated in the open landscape, while the caves were used for shorter occupations (Bergsvik and Storvik – this volume). In later prehistory, notably in Sardinia, large caves were increasingly abandoned as long-term dwelling places, as open settlement sites were established more widely across the landscape (Skeates – this volume). But elsewhere, some large caves, such as Roucadour cave in the Lot region of France or Għar il-Kbir in Malta, continued to be used and structurally elaborated as dwelling places by troglodytic communities, linked to the agricultural exploitation of the adjacent countryside (Buhagiar; Manem – this volume). As dwelling contexts, then, caves have framed both everyday practices and cultural ideals, and their long-term transformation.

Burial caves represent another category of cave use characterised by diversity: in this case, a wide range of often complex mortuary practices, deposits, and meanings contextually tied to particular cultures and communities, some of which also maintained other kinds of burial places and practices. Indeed, almost every example mentioned in this volume seems somewhat unique, ranging: from the Mesolithic burial of an individual in an oak bark coffin in El Truchiro at La Garma (Arias and Ontañón); to the early Neolithic deposition of heavily selected human bones in Junfernhöhle at Tiefenellern in Bavaria (Orschiedt); to the presence of Mesolithic disarticulated bones at residential sites in western Norway (Bergsvik and Storvik); to the Neolithic deposition of around 338 individuals of all age groups at the rockshelter of San Juan ante Portam Latinam in the upper Ebro valley in Spain (Weiss-Krejci); to the Bronze Age secondary burial of skulls, long bones, and vertebrae under a pile of stones and below a spring at Su Cannisoni rockshelter in Sardinia (Skeates); to the Medieval disposal of the bodies of at least five young men, and the crushing of their skulls, in the Lower Gallery at La Garma (Arias and Ontañón), in a marginal place and rite perhaps reserved for what Weiss-Krejci describes as ‘deviant social personae’. However, similarities can also be noted, particularly between some of the later prehistoric burial cave forms and practices and contemporary megalithic burial monuments and rites in various parts of Europe. For example, in Neolithic western Scotland, coastal caves might have been perceived as equivalent to the chambered tombs and passage cairns constructed by communities living further inland (Bonsall *et al*. – this volume); and, in Neolithic Westphalia, the Blätterhöhle might have been selected as a collective burial place due to the resemblance of its narrow entrance to that of a megalithic tomb (Orschiedt – this volume). Certainly, a blurring of

traditional archaeological distinctions between natural and artificial monuments is called for, but the precise nature of the relationships between traditions of cave burial and of megalithic burial in Europe is a matter of enduring debate (e.g. Evans 1959, 88–92; Green 1989, 75; Barnatt and Edmonds 2002; Laporte *et al*. 2002, 75–77; Gili *et al*. 2006; Dowd 2008; Skeates 2010, 160–161; Weiss-Krejci – this volume).

Selected caves, often with distinct physical features, have also been ascribed a symbolic significance as places of natural wonder, as secret-sacred sites, and as ritual boundaries, and have consequently been used as venues for the performance of other kinds of rituals. The vulva- and womb-like appearance of some cave entrances and passages is certainly striking, as in the case of a fissure cave in North Norway known locally as Bølakointa, meaning 'the Bøla cunt' (Bjerck – this volume; c.f. Gimbutas 1999, 60; Gradoli and Meaden – this volume), although whether or not such caves were also used for rites of regeneration dedicated to an Earth Mother goddess remains more doubtful. Other caves used as sacred places were often marked by visually expressive material remains deposited in less accessible, liminal, and other-worldly areas of their underground systems. For example, in the Lower Gallery of La Garma, situated 130 m in from the cave entrance, a range of remarkable Magdalenian cultural features have been recorded (Arias and Ontañón – this volume). These include: painted signs in a relatively hard-to-reach space; artistic engravings (some zoomorphic) on a low ceiling; drystone walls (and speletherms) delimiting a series of small spaces; floor deposits containing a large quantity of ornaments and other portable art objects, and a relative scarcity of stone and bone artefacts; and faunal remains with an unusually high proportion of horse bones, a modified horse skull, a modified lion bone, and two nearly completed skeletons of shelduck. These features tie in with the well-known corpus of European Upper Palaeolithic cave art (e.g. Ucko and Rosenfeld 1967; Sieveking 1979; Leroi-Gourhan 1982; Bahn and Vertut 1999; Lewis-Williams 2002; Pettitt *et al*. 2007), but must also be understood in the context of local cultural practices. In later periods, certain caves continued to be used for rituals, which took old and new forms. For example, in the deepest part of Grutta I de Longu Fresu in Sardinia, small-scale Middle Neolithic rituals involved the installation of a group of anthropomorphic paintings, a circular drystone structure, secondary deposits of human bones, and a single greenstone axe head, all close to a natural spring (Gradoli and Meaden; Skeates – this volume). Bronze Age cave paintings are also known along the coast of North Norway (Bjerck – this volume). The majority comprises 'stickmen' painted in red, but representations of zoomorphic figures and of a hand is also known, as well as a few geometric motifs. These images were typically placed in inaccessible spaces, visible

to only a few people, perhaps during the course of controlled ritual activities and experiences involving social transformation and communication with supernatural chthonic forces. And in late Medieval Malta, some urban and rural rock-cut churches and oratories were decorated with murals (Buhagiar – this volume). Sacred spaces and symbols such as these are likely to have acquired multiple meanings through repeated ritual practice, including the recital of myths and legends featuring human ancestors, animals, and powerful spirits, and mediated appeals to these supernatural forces (Arias and Ontañón; Bjerck; Bonsall *et al*.; Gradoli and Meaden; Haug; Mlekuž; Weiss-Krejci – this volume). As sacralised places and as ritual boundaries, then, cave contexts have offered creative materials and opportunities to imagine, express, and mediate a wide range of ideas about human relations and identities.

The sixth theme in this volume concerns the embodied, sensory, and psychological, human experiences of cave environments, particularly those of otherworldly cave environments chosen for ritual performances. The sense of sight is commonly mentioned with reference to cave environments. On the one hand, rockshelters and cave entrances can often serve as landmarks and vantage-points: being seen from afar, and affording extensive views. But, on the other hand, contrasts of light, including gradations from daylight, to twilight, to darkness, are also characteristic features of cave interiors that often restrict the sense of sight, including views of the outside world and the visibility of people and other things contained within caves (Bjerck; Bonsall *et al*.; Haug; Mlekuž; Weiss-Krejci – this volume). Other senses can also be heightened or deprived in cave environments, with cramped spaces, humidity, coolness, mouldy smells, special sound effects, or silence affecting the way people feel, even to the extent of inducing spatial and temporal disorientation and fear – feelings that can be exploited during the course of controlled ritual performances and communicating (Arias and Ontañón; Bjerck; Mlekuž– this volume; c.f. Roe 2000; Lewis-Williams 2002, 214–227; Whitehouse 2001; Skeates 2007). From these observations, it is clear that caves offer a significant potential to be reconsidered in terms of human experiences of their powerful multi-sensory environments: sensed, appropriated, and modified during the course of dwelling, visiting, working, performing, and thinking.

A seventh theme is the way caves and particularly cave dwellers have been perceived in the archaeological history of cave research. During the late nineteenth and early twentieth centuries, the people who had occupied the caves were generally described as primitive and backwards – a notion which was closely connected to contemporary ideas of social evolution. In popular culture these thoughts have endured until this day; ‘caveman’ is still a derogatory term in many European languages. These ideas probably also relate to the fact that many of

the more recent cave dwellers were groups or individuals with a low social status, such as travellers and thieves. An important part of these early interpretative frameworks was that the cave dwellers were cannibals. Human skeletons and particularly disarticulated bones found in caves were related to cannibalism, often without closer investigations of the bones themselves (see for example Reuch 1877; Fürst 1910). As Orschiedt (this volume) points out, this alternative has even been chosen recently by scholars in Germany and Poland working with Stone Age and Bronze Age human remains from caves, while other possibilities have been ignored. However, Orschiedt's detailed examinations of these bones show that cut marks and scraping on the bones were probably the results of complex funerary rituals which did not necessarily include the consumption of human flesh. This example demonstrates that archaeologists dealing with caves and rockshelters continuously have to consider deeply rooted preconceptions about how prehistoric cave dwellers behaved, not only among the general public, but also among fellow scholars.

Future research directions in European cave archaeology

This volume provides a representative snap-shot of current research on caves and rockshelters in European archaeology. But it also offers some hints for the future. Certainly, we advocate the continued production of contextualizing regional syntheses of archaeological caves and their associated ancient landscapes, to help us better understand the varied place of caves in human history. And, within these, we recommend that scholars attempt to move beyond the traditional distinction between 'economic' (or 'domestic') and 'ritual' uses of caves, to a more inclusive and sophisticated consideration of caves and their sheltered contents as culturally valued practical and symbolic resources, even though, in some cases, we must acknowledge spatial distinctions between different activities. For example, in the Lower Gallery of La Garma, 'the distribution of Magdalenian floors and paintings at this site challenges the notion that areas with cave art and habitation areas were segregated spatially', although at the same site an inaccessible gallery area was identified with nothing but painted signs (Arias and Ontañón – this volume). We also look forward to the production of new data derived from the application of established and new techniques of archaeological science to caves, including the continued replacement of relative with absolute dating to resolve multiple questions of chronology. We encourage new, interdisciplinary, research to be undertaken on the recent (historic) human uses and significance of caves in Europe. And we hope for the development of more rigorous experimental work on human experiences of cave

environments, as a contribution to the wider intellectual turn towards the senses in the social sciences (c.f. Hamilton *et al*. 2006). Caves and rockshelters continue to be significant and meaningful archaeological resources and we hope that this volume will serve as a stepping stone for their further study within wider archaeological agendas.

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