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CHAPTER 1

Ritual and Religion: Bioarchaeological Perspectives

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Michel Tournier, in his novel ‘Friday, or, the Other Island’ (*Vendredi ou les Limbes du Pacifique*, 1967), rewrites the history of Robinson Crusoe. Tournier’s Robinson, after a long phase of exhausting loneliness in an island in the Pacific ‘losing’ himself, constructs an hourglass to control the time. He then enters into a strict regime of activities, such as producing grain and legislating, the latter in front of a lectern while dressed in the best clothes rescued from the shipwreck. All these activities occurred daily until one day he realises that he can get out of his strict schedule of ceremonies by stopping the hourglass, stopping the time, and indulge into dedicating all the time to his inner self and to his reconciliation with the island. The rituals imposed by this Robinson were the backbone, the structure framing his new life on a deserted island, much needed to regain human qualities as he knew them. Whereas food sustained the physical individual, these rituals served to sustain his social being. In the absence of other people and a society to live in, Tournier’s Robinson Crusoe at some point felt the need to recreate the norms that he knew, the norms upon which society, as he knew, was based.

It is how this Robinson Crusoe experienced his reintroduction into what he understood as social life that perhaps best exemplifies how rituals can be viewed: as a performance, a repetitive and formal activity. So far numerous definitions have been attempted to explain the term ‘ritual’, a divisive and heavily loaded term in archaeological research, bound up with notions of sacredness, symbolism, ceremony and the unexplained. Ritual in archaeology has long been informally defined almost by process of elimination, in opposition to the profane, mundane, optimal or economic. Research has increasingly challenged these dichotomies and there is a common recognition that pursuing a division between sacred and profane is erroneous (see Bremmer 1996 and Bradley 2005 for a brief history of this).

In strict terminology, ritual pertains to the performance of rites, which are prescribed acts or observances in a religious or other solemn ceremony (ritual, adj./n., Oxford English Dictionary). However, the term has frequently been used to mean a habitual or customary activity and is thus as likely to refer to practices in daily routines. It should be noted, however, that many researchers distinguish between custom and ritual by maintaining that the latter is concerned with the supernatural and involves a public aspect (e.g. Groot 2008, 99, and references therein). Regardless of the definition, rituals can be seen as projections of what a social unit, no matter how small or big, considers important, its beliefs, moral and behavioural systems within specific cultural and temporal contexts. Even in the case of the 'habitual' and 'customary' definition of rituals, these refer to established actions and procedures that have been accepted as important or simply socially approved to allow for their repetitive function at a personal or social level. Rituals, therefore, may be considered as the materialisation of a form of group values, which result from a series of negotiations that bridge potentially conflicting interests and new realities, and can be experienced and interpreted differently by each participating agent. Consequently rituals are complex and multifarious in their rationale and manifestation, depending on the specific context and historicity of a given social group, and do not thus sit neatly within a single definition.

A more practical approach to the subject has been teasing out the attributes of ritual as implied in the plurality of its attempted definitions. Bell's (2009) list of six such basic characteristics, described as 'neither exclusive nor definitive' (Bell 2009, 138) is currently still the most comprehensive attempt: 1) formalism; 2) traditionalism that includes the element of repetition either implicitly or explicitly; 3) invariance, which describes a disciplined set of actions imbued with precision and control. Here the elements of repetition, physical control and often spatiality are key; 4) rule-governance; 5) sacral symbolism, which is not related necessarily only to the supernatural but also to other activities and objects that may express certain values, feelings and ideals linked to 'a greater, higher, or more universalized reality' (Bell 2009, 159) of not necessarily religious nature; and 6) performance.

Rituals can, thus, take many forms, underpinning the ideological structure of societies. It is also generally accepted that rituals are not exclusively associated with religion but, as Verhoeven (2011, 124) aptly stresses, they can be placed at any point within a continuum that has at its two extremes the holy and the quotidian. Bell's (2009) seminal work offers another list of the most prominent types of rituals underpinning most classifications, which include the rites of passage or 'life-cycle' rites; calendrical and commemorative rites; rites of exchange and communion; rites of affliction; feasting, fasting and festivals; and political rites. It is interesting to note that, as Bell acknowledges (2009, 94), these forms of rituals are 'usually associated

with clearly defined religious traditions'. Indeed, religion is still the most common framework under which ritual is studied in archaeology, perhaps not surprisingly, as it provides a much easier conceptualisation of rituals and an explicit context of interpretation. This may also partly relate to the universalization of the dichotomy between the sacred and profane, following the western modern thought, that has often been imposed in archaeological research, resulting in the identification of rituals with religion. Religion also has a somewhat fluid meaning, but can be loosely defined as a particular system of faith and/or worship relating to a collection of beliefs, cultural systems and actions, or world views that are often imbued with narratives, symbols, and sacred histories.

A comprehensive history of the archaeological research on ritual and religion has been provided by Insoll (2004), while several books and papers discuss the various approaches to these subjects and the current developments in their study (e.g. Barrowclough and Malone 2007; Bell 2009; Insoll 2011; Kyriakidis 2007; Pauketat 2013; Swenson 2015). The aim of this volume is to specifically explore the positioning of bioarchaeological studies in regards to rituals and religion. In this introductory paper we provide an overview of current trends and highlight selected avenues in which bioarchaeology can contribute to the field. Bioarchaeological research in this volume refers to studies that utilise organic remains or palaeoenvironmental data to address archaeological questions. Human osteology has been deliberately excluded from its scope to bring the wider spectrum of the sub-disciplines of environmental archaeology to the forefront. These have traditionally been marginalised in research on worldviews, belief and social systems as understood through rituals and religions. In this context this book is filling a significant gap by demonstrating the great potential of these lines of evidence, which are necessary but not always taken into account in archaeological interpretation.

The bioarchaeology of ritual and religion

Bioarchaeology has to some extent followed the general trend of archaeological research regarding definitions and priorities in work on ritual. The majority of studies has indeed focused on funerary contexts and religious or sacred spaces, areas linked with death, the afterlife and specific deities. The volume of studies and the depth and variety of interpretations offered, however, has generally been limited. This results from the archaeological landscape in which these sub-disciplines developed throughout much of the twentieth century. Bioarchaeological research was rarely integrated, with specialist reports all too often sitting in isolation. Findings were even less frequently embedded in social theory or combined with multiple lines of enquiry. The sub-disciplines of what is usually referred to as environmental archaeology long found themselves entrenched in formulaic modes of analysis designed to address a

prescribed suite of questions surrounding diet, subsistence economy, environment and site formation processes. Recent decades have seen a gradual trajectory of change coupled with new theoretical frameworks and advancement in bioarchaeological methods. Methodological advancements mean that plant and animal husbandry, food processing, mobility, diet, depositional treatment and on-site activities can all be reconstructed to a higher resolution than has previously been possible. Consequently, the potential for the identification of marked patterns of practice, framing (*sensu* Verhoeven 2002) and activities beyond subsistence has never been better and there is now widespread recognition of the under-exploited potential of bioarchaeological research for investigating ritual and religion.

New theoretical approaches have stressed the importance of precise social practices, rather than the identification of atypical archaeological signatures (with only meta-level interpretation), incorporating research on a wider spectrum of past activities and intangible issues (see Handelman 2006; Morris 2011). Attempts of new definitions of bioarchaeology, moving on from ‘environmental’ archaeologies to ‘social’ palaeoethnobotany, zooarchaeology and so on (e.g. Morehart and Morell-Hart 2015; Russell 2012; Overton and Hamilakis 2013), gradually sketch the new paradigms towards which the discipline is moving. The aim of these new directions is to bridge the gap between what has been known as ‘specialist’ work and current theoretical advances in archaeology, with a direct impact of how ritual and religion is perceived and studied. In this context, an important shift in the examination of bioarchaeological remains in rituals is the extension of the analytical framework to include a consideration of the living organisms and not only their ultimate point of ritual deposition or death.

Morris (2011, 2012, Chapter 9 this volume), for instance, has put forward a biographical approach to the study of animal burials, which shifts the emphasis from the final deposition to the events and the range of transformations that animals undergo during their lifetime (and prior to burial). The point of deposition may be haphazard and of no cultural relevance at all, yet it is almost always that which receives most attention. In other words, it is the full life and post-life history of the animal that needs to be considered through a detailed understanding of taphonomic formation processes to achieve meaningful interpretations of the rituals involved. This is no easy process and a wide range of demographic, taphonomic and contextual variables need to be considered. However, Morris (2011, 172–3) has demonstrated the potential for improved interpretative resolution of Associated Bone Groups (ABGs) by employing this approach on deposits from various sites in the UK and establishing the varied trajectories of life, death and deposition that animals underwent. Sykes (2014), drawing on anthropological and historical evidence, similarly proposes the introduction of more varied interpretations of how living animals could shape daily

life in which religion and rituals are an integrated part. She suggests that in moving beyond strictly religious contexts and the compartmentalisation of the sacred and profane that is typical of western societies, the study of animals can shed light on the dynamics of past societies to a much greater extent (ibid., 131). For instance, rituals involving linking humans and animals in key stages of their life cycle, such as birth, as observed in the anthropological record, can help inform on the range of interactions and enhance the interpretative potential of archaeological deposits (ibid.).

Ethnoarchaeological work also has an important role to play in this process (Broderick 2012). Similarly, a biographical approach in the study of plants has been suggested as an important interpretative framework, taking into account the rich histories of plants to better understand their role in rituals (Morehart and Morell-Hart 2015).

Whilst these new approaches and interpretative considerations are of great value, archaeologists must recognise the inevitability of an imbalance in interpretation towards the final material signature. The richness of information that is preserved in the act of deposition often outweighs the resolution of information on other aspects of the deposit's biography. The opportunity to reconstruct deposition in detail must be maximised, but every effort must be made to redress the interpretative imbalance by drawing on a comprehensive suite of data (pertaining to the deposit, its context and associations) to understand other aspects of an organism's life and post-life trajectory. The current trend away from understanding final deposition towards reconstructing the animal's life, however, misses a major part of the deposit's biography: the period between death and deposition. An increased focus on taphonomy has great potential to address this and has been successfully used to reconstruct social practices at a variety of scales (e.g. Madgwick 2008, 2010, 2016; Magnell 2012, 2013; Morris 2011, Chapter 9 this volume; Mulville *et al.* 2012; Orton 2012; Randall 2010). This is particularly important in studies on bone, as bones are robust enough to generally survive in abundance, but also soft and malleable to the degree that they can be altered by a range of processes, thereby taking an imprint of their post-life trajectory (Madgwick and Mulville 2012). This important stage is a focus for Jonuks and Rannamäe (Chapter 12, this volume).

The need for moving beyond the dichotomies of nature *versus* culture and by implication beyond distinctions between, for instance, sacred and profane, and the symbolic and the practical, is stressed by Overton and Hamilakis (2013) in their manifesto for social zooarchaeology. They propose that rather than as an opposing approach to economic and ecological, social zooarchaeology should be seen as a non-anthropocentric framework in which the agency of animals 'both in life and in death' is recognised in co-shaping past practices and decision-making (ibid.). As such, animals in ritual (and other) contexts cannot be seen as mere identity markers,

representing or symbolising certain ideas, but they need to be understood through their interactions with people that result in a range of sensorial (ibid.), and we would add, emotional, responses. The agency of plants through their employment in rituals, actively transforming, creating and reinforcing meaning has been also identified as an important future research direction (Morehart and Morell-Hart 2015). Such an approach has the potential to bring to the forefront new and alternative, theoretically informed (re)interpretations of bioarchaeological assemblages that could open new windows into how we understand the past. In practice the first step in this direction is taking into account and disentangling the formation processes that have led to the creation of an assemblage and its contextual examination that allows consideration of the cultural setting.

These methodological and theoretical changes mean that bioarchaeologists can be at the very centre of new and novel approaches to complex archaeological questions. Yet, it is rare that bioarchaeological work is fully integrated into synthetic studies of rituals. It is often the case that archaeologists turn to bioarchaeological evidence only if other types of material culture are absent, for instance, from burials, considering this by implication as a ‘secondary’ type of offering. To make matters worse, in many areas the lack of an integrated programme for the controlled collection of bioarchaeological remains means that, often, good contextual information is lacking, or that such types of material are still not regularly recovered. The implication of this is the existence of only a partial record of what is available in certain areas, preventing the emergence of a ‘bigger picture’. Examples of this include the rarity of bioarchaeological assemblages from historical periods in Greece, and the relatively sparse studies from the Mediterranean in general. This is largely due to a greater focus on impressive architecture and other material culture remains and the lack of legislation that recognises the need for the collection of all available evidence during archaeological excavation. Silvestri *et al.* (Chapter 10) in this volume highlight this problem in the case of the limited faunal remains recovered and recorded from Middle Bronze Age caves in Central Italy and the meagre information available on assemblages and contexts. Bringing together zooarchaeological and archaeobotanical data recovered in a controlled manner from three new sites Silvestri *et al.* showcase from one hand the value of these lines of evidence towards more holistic approaches to rituals and the use of caves, and on the other hand, the need to interpret bioarchaeological remains considering their overall archaeological context.

Most bioarchaeological work on rituals has intended to reconstruct certain activities and has more rarely focused on in-depth interpretations and the meaning of such activities. In the following sections we discuss various ways in which bioarchaeological evidence can be approached to reconstruct and understand ritualised activity. While doing so, we have deliberately avoided a discussion on *how*

to identify ritual practices as ritual in all its guises is far too multifarious to impose a blueprint for identification. The objective of this introduction is rather to offer some context for the development of bioarchaeological research on ritual and religion and to explore how it can provide insights into past worldviews, beliefs, lived experiences, social relations, transformations, historical changes, and power dynamics. The following sections explore this through case studies, including those presented in this volume. This by no means aims to be exhaustive, but rather to provide a flavour of trends in bioarchaeological research relating to ritual and religion, using case studies and approaches that we consider significant. Studies are loosely clustered under some of the principal themes that underpin these trends: sacred and special contexts, sensory experience and performance, and power, status and social relations. These categories are essentially convenient impositions and much of the research straddles these thematic boundaries.

Sacred and special contexts

The longest tradition of research on the bioarchaeology of ritual and religion focuses on burials or contexts of an overtly sacred or religious nature, such as temples and shrines. At a first level of interpretation, bioarchaeological remains from such contexts have often been explained as the leftovers of meals or offerings, including sacrifices. In order, however, to go one step further and tease out their meaning, it is important to understand the relation of these remains to their broader context (e.g. material culture, landscape, depositional environment and so on).

Archaeological work on plant remains across different contexts has evidenced specific associations with ritual settings and, for historical periods, it has been crucial in clarifying the range of plant offerings, providing far more detail than is afforded in written sources. The study of large-scale distributions of plants, for instance, has identified dates (*Phoenix dactylifera*) and pine (*Pinus pinea*) as having, although not exclusively, strong ritual associations during the Roman period (e.g. Bakels and Jacomet 2003; Bouby and Marinval 2004; Kislev 1988; Livarda 2011). Analysis of the date and pine distribution in a range of contexts and site types across the northwestern Roman provinces (Livarda 2008, 2013) and of the latter in Roman Britain (Lodwick 2015) has indicated their circulation and trade not only as foods, but also as perishable material culture, integral in certain rituals. Dates, despite their good preservation potential, were found to be relatively rare and largely associated with burials, selected ceremonial activities and mystic cults, including that of Isis (Livarda 2013). The import of this new goddess to the Roman world was thought to have been coupled with the import of a plant native to her country of origin (Egypt), which acquired new significance in these settings. When encountered in burials, dates' value potentially as a symbol of resurrection and the afterlife has further been interpreted as

indicative of changing worldviews forming within new religions and socio-political contexts in the provinces (ibid.). In the case of pine, its distribution in Roman Britain was examined using detailed taphonomic and contextual criteria, enabling the identification of its ritual use even in contexts that have no such clear connection (Lodwick 2015). Across the northwestern provinces pine nut appears more often in temples/shrines than in burials, suggesting a different role compared to date (Livarda 2008). In addition, the combustible and aromatic properties of pine, potentially also used as incense, seem to have played an important part in its selection for certain rituals (e.g. Bird 2004; see also below). The burning of pinewood (*Pinus* spp.), possibly as torches, in a fashion similar to modern-day candles has also been suggested in the case of ritual ceremonies by the ancient lowland Maya (Morehart *et al.* 2005).

Strong, although again not exclusive, associations with specific ritual settings have been identified for a range of other plants and also animals across time and space. Examples include cacao (*Theobroma cacao*) in pre-Columbian Mesoamerica (e.g. Prufer and Hurst 2007), the cockerel (*Gallus gallus*) in Roman Mithraic temples (Lentacker *et al.* 2004), goats (*Capra aegagrus hircus*) at the Roman shrine of Uley, Gloucestershire, UK (Levitan 1993) and fallow deer (*Dama dama*) at temples of Artemis and Diana (Miller *et al.* 2016). There are also many examples of certain animal species having been preferentially selected for deposition in burial contexts, including horses (*Equus caballus*) at Anglo-Saxon Spong Hill, Norfolk, UK (Crabtree 1995) and in Viking Iceland (Leifsson 2012) and horses and dogs (*Canis lupus familiaris*) in Iron Age ‘special’ deposits at Danebury, Hampshire, UK (Grant 1984). In some cases specific elements are targeted for deposition, such as the mass of cattle (*Bos taurus*) skulls at Bronze Age Irthlingborough, UK (Davis and Payne 1993) and the sheep (*Ovis aries*) humeri in Iron Age Arras burials in East Yorkshire, UK (Stead 1991).

In the Meso-American case cited above, cacao has been traditionally seen as an elite item, used also as a currency, but more thorough research combining archaeological, documentary, iconographic, epigraphic and ethnographic evidence has indicated its use in a range of rites of passage and the initiation of shamans (Prufer and Hurst 2007). In the case of the cockerel in Roman Mithraic temples, an investigation of a feasting deposit at the 3rd century AD temple of Mithras at Tienen, Belgium, identified a large quantity of domestic fowl (*Gallus gallus*), which were thought to be mostly male (Lentacker *et al.* 2004). Similar patterns were identified across other *Mithraea*, providing new insights into this poorly understood and secretive cult (ibid.). Mithras has been predominantly depicted killing a bull and in connection with various other animals but not the cockerel. He has, however, been associated with the Invincible Sun, which is in turn interpreted linked to the role of

the cockerel as the announcer of the rising sun (ibid.). Taking into account data obtained from the age of slaughter of other domestic mammals consumed during the feasting event at Tienen, Lentacker *et al.* (2004) were able to further determine the timing of the banquet as taking place in June or July and suggested the summer solstice, the longest day of the year, as the possible day of celebration, allowing a much more detailed appreciation of the cult's rituals.

An excellent example that can serve to highlight the importance of contextualisation and integration of bioarchaeological evidence is also the case of Mayan dedicatory caches. These are normally found within the construction fill of Preclassic and Classic Mayan buildings and their symbolic function is debated (Bozarth and Guderjan 2004). They contain materials such as mineral stones, tools and shells, although organic survival in general is rare (ibid.). Bozarth and Guderjan (2004) conducted biosilicate (opal phytoliths, sponge spicules, algal statospores, and diatoms) residue analysis on nine typical Mayan caches at Blue Creek, Belize, each comprising two ceramic vessels placed one on top of the other and inverted in a 'lip-to-lip' manner. The results indicated the presence of maize (*Zea mays*), squash (*Cucurbita*), palm fruits, agave (*Agave*), and heliconia (*Heliconia*), representing food, bags and possibly wrappings, as well as marine sponges in most caches (ibid.). Combining these results with other finds, Bozarth and Guderjan (2004) were able to show that each cache contained important elements of the land and the sea, which they suggested to represent the Primordial Sea and the First Mountain of the Mayan mythology. Taking into account the domed lid shape of the caches themselves that could have represented the sky, it was hypothesised that each cache reflected the Mayan Cosmos of Creation, and was potentially used for its re-enactment. The authors also pointed out that all social strata shared the rituals involving the caches, as these were associated to varied social contexts. Therefore, the caches seem to be a kind of a bundle that linked people with the cosmos, each of which had a collection of material culture that could have embodied distinct relations, histories, identities and so on (see Pauketat 2013, 43–58). It is rare that this sort of data are recovered, yet this study demonstrates their potential for shedding light into the way cosmological beliefs and practices can be entwined.

Many of the plants that were used in the caches at Blue Creek were commonly used in Mayan foodways and this is something that has often been observed in ritual contexts. In this volume the work of Caracuta and Fiorentino (Chapter 5) on Roman cemeteries in Apulia, Iborra (Chapter 8) on Iron Age Iberian settlements, and Picornell *et al.* (Chapter 11) on the Son Ferrer prehistoric ceremonial and funerary staggered turriform in Mallorca offer such examples of locally available animal and plant resources incorporated into ritual activities. Best and Mulville (Chapter 13) also discuss the geographical and cultural specificity of avian-human relations in life and

how these extended to death ritual. In these studies it is evident that ritual practice is often structured using materials and principles from various spheres of activity and the principal change in these instances is the actual or perceived context. Quantities of produce necessary for the survival and function of a group, the most prized cuts of meat, the most succulent fruits, or perhaps the most esteemed or, in some way special, individuals, can be incorporated into a specifically created context. This may be one way that can legitimise the transformation of common lifeways into ritualised activities that would in turn feed back into a group's social and cosmological system. Therefore, what could be construed as part of the 'everyday' becomes entwined or reproduced in 'ritual' or religious contexts, which further emphasises the problems arising from the universal imposition of a dichotomy between the sacred and profane. This also highlights the need to understand societies as a whole to appreciate how rituals were entangled in specific social meshworks (following Ingold 2011). Swenson (2015, 339) cautions that, for instance, '*changes in the spatial organization of household ritual or burials may have had little to do with shifts in power relations or major alterations in religious worldviews*'. He argues that ritualised behaviour can only provide a means to interpret these aspects of society if fully contextualised within the spectrum of activities in a given cultural context (ibid.). Contextualised approaches to bioarchaeological assemblages that also integrate these with other lines of evidence (archaeological, historical, etc.) are thus essential. The clues to the meaning and the positioning of rituals in social settings may also partly lie in disentangling and deciphering the distinct experiences that structured or dictated ritualised activities, and this is discussed in the following section.

Sensory experiences and performance

A shift in focus to sensory elements has been proposed as a more fruitful research avenue to understand past human experience including that of religious and ritual settings (Hamilakis 2011, 2013). In this regard, the mnemonic properties of sensory stimuli are considered to play a key role in imbuing ritual activities with meaning (ibid.). The multi-sensory properties of various plants, animals and their by-products are often the reason for their use in ritual activities. These sensory stimuli can be integral components of the performative and experiential aspects of ritual, which in turn enhance the potency of rituals as vehicles of meaning, whatever their specific role. Bioarchaeological and palaeoenvironmental analyses are well suited to contribute to a better understanding of such sensory experiences and performances, although in practice sensory attributes are rarely considered and even more rarely inform interpretations.

Several papers in this volume provide evidence for sensory elements, useful for the reconstruction of a range of past experiences. In combining pollen and

charcoal data, Picornell *et al.* (Chapter 11) offer a new dimension to the funerary rituals observed at the Late Iron Age necropolis of Son Ferrer, Mallorca. The authors identified the cultural significance of mastic (*Pistacia lentiscus*), and its selective collection and use in a closed funerary space together with pine, rosemary (*Rosmarinus officinalis*) and other members of the mint family (Lamiaceae). All these have resinous and/or aromatic properties that would have ameliorated and masked the odour of decaying corpses with specific smells and their burning would also have provided light. Similarly, to disguise the smell and temporarily delay the body's decay, a variety of natural and gum resins were employed as offerings and for the treatment of the corpse in the Roman period as identified through chemical analyses (Brettell *et al.*, Chapter 4). Acquiring such resinous substances that often involved their long-distance transport was not only for practical purposes, but also as a mark of status, and for enhancing experience and engendering memories of the ceremonies (ibid.). Other sensory effects can be established by identifying the use of flowers, for example through pollen analysis. In the case of Son Ferrer, a variety of wild plants with small and colourful flowers of similar shape were deposited as part of the funerary process (Picornell *et al.*, Chapter 11). In another funerary context on the Balearic Islands, at Bronze Age Cova des Pas on Minorca, detailed micro-contextualisation of pollen indicated the use of different types of plants and flower bouquets at each stage of the corpse's treatment. These practices showed no gender or age distinctions, yet a single adult woman was afforded a different rite, suggesting a particular role in the community (Riera *et al.*, Chapter 3). Several other studies have shown the importance of flowers in burials, such as the case of the dropwort (*Oenathe*) offerings of the Scottish Bronze Age (Clarke 1999; Tipping 1994). In another context, multidisciplinary work at the Roman sanctuary at Kempraten, Switzerland, lead to the identification of a sacred grove, offering a different dimension in the conceptualisation of the experience of the sanctuary landscape (Koch *et al.* Chapter 6). A quite different sensory effect resulted from animal processing at Iron Age High Pasture Cave, Scotland (McKenzie, Chapter 2). Micromorphological analysis provided detailed insights into the use of space and revealed a set of ritualised activities that possibly involved the killing, defleshing, dismemberment and bloodletting of animals near the cave entrance (ibid.). In these instances, the animal blood and flesh would have been evocative components of the ritual performance, central to creating codified emotions and associations in the participants.

The most obvious focus of bioarchaeological research on the senses is on food and taste, yet this has received surprisingly little attention. Food is consumed as part of a wide range of ceremonies, celebrations and other ritualised activities (see e.g.

section on feasting below). Therefore, the selection of food items, the preparation methods, consumption and deposition manners, are all important factors in unravelling these activities, while the examination of tastes can provide another angle to interpretations. Taste in this context is defined following Livarda (2017) as ‘the culturally specific and socially subjective experience of flavour’ rather than as simply the chemical sense (gustation). In this framework, flavour refers to the sensation resulting from the combination of different attributes of food (gustatory, olfactory, tactile and thermal) and is influenced by other somatosensual stimuli, such as the visual and auditory (ibid. and references therein). An examination, thus, of past tastes in ritual consumption is key to appreciating how this sensory experience was understood and enmeshed in different contexts. It is not only food, however, but also drinks and other intoxicants and hallucinogenic drugs that are often part of ritualised and religious activities, contributing to a range of sensory experiences. Substances that alter the mood or consciousness can engender intense experiences that can be interpreted within cosmological schemes and as gateways to the supernatural (Sherratt 1991, 51-2) as well as impact social structures and relations. A range of psychoactive plants have been identified in a variety of periods and areas as part of rituals or shamanistic practices, including hemp (*Cannabis* sp.), opium poppy (*Papaver somniferum* L.), blue water lily (*Nymphaea nouchali* Burm. f. var. *caerulea* (Sav.) Verdc.) and mandrake (*Mandragora officinarum* L.), by combining archaeobotanical with various other lines of evidence (see Merlin 2003 for a comprehensive review). Few studies, however, have explored their sensory contribution within specific ritualised contexts. Hamilakis (1998) was the first to discuss this from an archaeological perspective, suggesting that food and alcohol consumption were significant components of mortuary feasting in Bronze Age Crete, acting as embodied mnemonic devices. He argued that the combination of the acute emotions resulting from a charged context, such as that of burial and death, and those from food and drink would enhance the experience and support the processes of remembering and forgetting in relation to death that would in turn actively contribute to the renegotiation of the power dynamics and social relations within the community. Collard (2012), exploring the consumption of alcohol and opium in Cypriote Bronze Age mortuary rituals, added that these were also important for the individual in suppressing, if temporarily, memories of the deceased, thus, reducing grief and allowing the easier transition to social life.

Animal sacrifice represents another powerful arena in which performance and sensory experience come to the fore. Sacrifice is a relatively common theme in bioarchaeology, particularly relating to classical periods. However, zooarchaeological study has all too often been entrenched in traditional approaches focusing on

economy through species, age and element representation. These data have nonetheless often led to insightful interpretations surrounding symbolic selection (e.g. Forstenpointer 2003; MacKinnon 2010, 2013). Element (body part) side, for instance, usually seen as principally useful for purposes of quantification, has only rarely been investigated in terms of symbolic selection in prehistoric deposits outside of funerary contexts. Examples include the selection of the right side in certain pig elements in deposits at Neolithic West Kennet Palisade Enclosures, Wiltshire, UK (Edwards and Horne 1997) and of right fore-limb elements of pigs in Iron Age feasting deposits at Llanmaes, Vale of Glamorgan, UK (Madgwick and Mulville 2015a). Studies on sacrifice have also often benefited from integration with historical, epigraphic and iconographic evidence and consequently the reconstruction of social practices, rather than meta-level descriptions of sacrifice, have often been possible (e.g. Chenal-Velarde and Studer 2003; Ekroth 2013; Popkin 2013; Trantalidou 2013). However, in spite of more novel pathways to interpretation, sensory and performative elements of sacrifice have invariably been neglected. This represents a profitable future avenue for research.

The ritual use of plants, animals and their products are also linked to experiences of magic, medicine and healing – three closely connected concepts in many past societies – even though this can be more difficult to identify archaeologically. Russell (2012, 392–394) suggested that in the case of animals this is likely due to the fact that researchers do not look for this evidence, while Sykes (2014, 131) also pointed out that animal-based medicines involved a destruction process, for instance pulverisation, that would leave no trace. Nevertheless, although rare there are instances that allow the plausible inference of such practices. Van der Veen and Morales (2014), for instance, discuss the use of spices recovered from the port of Quseir al-Qadim as medicines in the Roman and medieval world. Ciaraldi (2000) interpreted an assemblage of reptiles, amphibians, opium poppy and other plants that were recovered at the bottom of a storage vat at the 1st century Roman Villa Vesuvio, near Pompeii, as potential residues of a medical concoction. Karg *et al.* (2014) found two chewing-gum like objects that were made of a mixture of birch tar and plant oil, and three uncharred cloves of wild garlic (*Allium* sp.) in an amulet box discovered in a female grave at the Late Roman Iron Age site of Vellensby, Denmark. Comparing this with other amulet boxes in graves across Europe, they identified that all derive from wealthy female graves of the same period and contained a variety of materials, which were interpreted as possibly employed for their healing properties. In addition, Miller and Sykes (2016) present possible evidence for the use of fallow deer antlers in medicine in Roman Britain, with some specimens having had the edges of palmate surfaces removed by blades, potentially for use in potions. In the Andes, at the Inca site of Lo Demás, a naturally mummified whole guinea pig (*Cavia porcellus*)

was found sacrificed with a slit stomach longitudinally, possibly for divining future events or illnesses in accordance with ethnohistorical evidence (Sandweiss and Wing 1997).

Bone and shell pendants are other examples of animal parts that have often been linked to magic and healing. Such artefacts have been widely found across the world and an examination of their origin (the type of animal from which they derive), properties and biography can shed light into their symbolic value but also their social role. Jonuks and Rannamäe (Chapter 12) in this volume provide an intriguing, critical overview of animal tooth pendants from Estonia, covering a wide timespan from the Mesolithic to the end of the medieval period. They explore the complex relationship between people, animals and worldviews, considering, but also moving beyond interpretations of magic. Several examples of animal-derived pharmacopeia and magic are also discussed by Russell (2012) and Sykes (2014), highlighting once again their complex interactions with people. The control of products with perceived magical or healing properties or the knowledge of their use has an important role in affirming status and power relations, a theme expanded in the next section.

Power, status and social relations

Bioarchaeological remains play an important role in examining aspects of status, power relations, identity, and social change in past societies. Arenas of consumption represent important fora for the negotiation, expression and legitimation of power-relations, both within and between different groups. Food, drink, adornment and various other forms of perishable material culture can also be used to challenge established power structures. Ritualised and religious contexts offer frameworks where these relations can be played out, and their study thus allows insights into such past dynamics. A selection of key areas in this research direction is outlined here.

In certain instances ritual and ceremonial contexts can be treated as ‘focal nodes of social networks’ (Kyriakidis 2007, 2), an examination of which can shed light on the workings of a society. Examples of papers in this volume that touch upon this subject include the study of the Archaic Sanctuary of Apollo at ancient Zone, Thrace, Greece (Veropoulidou and Nikolaidou, Chapter 7) and of the Gallo-Roman sanctuary of Kempraten, Switzerland (Koch *et al.*, Chapter 6). Animal bone and molluscs recovered and examined from the sanctuary of Apollo at the Greek colony of Zone demonstrated a great variety of terrestrial and marine foods and votive offerings present in the sanctuary (Veropoulidou and Nikolaidou, Chapter 7). The particular selection of these items suggested the interweaving of traditions and beliefs of people from different backgrounds across the Aegean and a mixing of local and colonial ideas and practices, crystallised in ritualised practice at the sanctuary (*ibid.*). In adopting a multidisciplinary approach Koch *et al.* (Chapter 6) succeeded in

reconstructing not only a complex range of activities, but also the ritual landscape at the sanctuary at Kempraten, where the cult of Magna Mater appears to have been practised. Similarly to Archaic Zone, an amalgamation of practices was identified fusing local and regional traditions, and allowing new insights into the plurality of Roman religion (ibid.).

One important area for the investigation of power relations and identity through consumption practices are monastic contexts. Here, bioarchaeological research has provided a critical counterpoint to historical narratives, stressing the gap between actual practice and projected image. According to St Benedict's rule for instance, monastic diet had to be regulated and meat was not to be eaten, except in special occasions and circumstances, such as by the ill. Bioarchaeological work, however, has provided a more nuanced view of food consumption practice, identifying variations and transformations in relation to monastic dietary regimes and shedding light on the dynamic nature of these institutions and their changing role within society. For example, archaeobotanical data from the Late Antique monasteries of Kom el-Nana, Epiphanius and Phoebammon in Egypt are in stark contrast to the bland and frugal diet indicated by texts (Harlow and Smith 2001). A range of garden crops were identified in these monasteries that would render the everyday diet more variable and nutritious, which in turn has ramifications for how the dynamics of these institutions are understood. Erynck's (2004) work, which compared zooarchaeological evidence of consumption patterns between monks, peasants and the nobility across medieval and post-medieval Belgium, is also noteworthy. Patterns were interpreted according to differences in religious ideology, land ownership and land access rights. In this case, the archaeological data showed that meat was generally less common in monastic diet, but when present it differed to that consumed by the nobility, reflecting the specific position of each group within society. While the elite had access to wild game and pork, the monks would instead consume beef, mutton and fish in an attempt to maintain a distinction to the former group (ibid.).

Food rules and the adherence to or ignorance of taboos has long been an important topic in studies of power relations and social change in anthropology (e.g. Douglas 1966; Tambiah 1969) and has become increasingly valued in bioarchaeological research. A classic example that has been widely researched is the avoidance of fish by Neolithic farmers in Britain, as demonstrated by zooarchaeological and stable isotope research (Richards and Schulting 2006; Thomas 2003). However, as methods advance, more nuanced interpretations are achieved, with sporadic marine food consumption evidenced in times of hardship through incremental isotope analysis (Montgomery *et al.* 2013). Other key studies include research on horse consumption in medieval England that has demonstrated that horses were consumed in spite of a religious taboo (Poole 2013; Serjeantson 2000) and the

avoidance of pork as a cultural marker in the southern Levant (e.g. Hesse 1990; Sapir-Hen *et al.* 2015).

Feasting is one of the most common ritualised practices that provides a focal point for intra- and inter-community social interaction. There remains no consensus on what constitutes a feast (see Dietler and Hayden 2001; Jones 2007), nor how to identify feasting archaeologically (see Dietler and Hayden 2001; Kansa and Campbell 2004; McCormick 2009; Miracle 2002; Twiss 2008). In spite of this, numerous researchers have discussed the wide-ranging social role of feasting, particularly in terms of the negotiation, legitimisation and consolidation of power relations, the organisation of production and distribution and the mobilisation of labour. As Hastorf (2008) states, feasts condense sociality and contain a political edge. Feasting research has a much longer history in anthropology (Hayden and Villeneuve 2011), but recent years have seen a proliferation of archaeological studies on the topic, far too many to recount here. Feasting research in archaeology has generally been hindered by the frequent inability to identify discrete events and to access certain performative patterns of practice that remain beyond archaeological recovery. The use of a broad suite of scientific techniques and greater contextualisation and integration with ethnographic and historical research has been central to countering this problem and advancing feasting studies in archaeology.

A major focus of this development has been striving to reconstruct production, preparation, consumption, performance and deposition in greater detail. For example, the application of isotope analysis has demonstrated the role feasting played in supporting long distance inter-community networks in Late Neolithic Britain, with feast drawing people and animals from afar (Viner *et al.* 2010). The application of specific theoretical frameworks combined with network analysis has also proved fruitful in characterising 'communities of consumption' sustained by feasting in the pre-Hispanic American southwest (Mills 2016). New statistical approaches to bone taphonomy have provided improved resolution on the frequency and scale of feasting events at an intra- and inter-site level in Early Iron Age Britain (Madgwick 2016; Madgwick and Mulville 2015b). Zooarchaeological analysis has revealed socially circumscribed practices in the age, species and parts of animals consumed in a variety of contexts (Hamilakis and Harris 2011; Kansa and Campbell 2004; Madgwick and Mulville 2015a; McCormick 2002; Whitley and Madgwick *in press*). Similarly, lipid residue analysis has established prescribed locations within the site of Durrington Walls for the consumption of certain products in Late Neolithic Britain (Craig *et al.* 2015). In addition, detailed contextualisation and integration of evidence has enhanced the detail with which feasts can be reconstructed and has convincingly separated domestic and feasting deposits at Neolithic Çatalhöyük in Anatolia (Twiss 2012). Combining evidence from historical sources and epigraphy has also provided a

more nuanced understanding of the role of feasting in expressing and reinforcing new identities in Archaic Greece (e.g. Brisart 2015; Huber and Méniel 2015).

Ethnographic research is also of great value and Hayden (Chapter 14) draws on this to explore feasting and power from a novel perspective – the phenomenon of secret societies. Multidisciplinary approaches to feasting have indeed shown particularly strong potential in illuminating socio-political processes. Examples include the examination of feasting in Viking Age Iceland that was linked to changes in the chiefly economy and the production of barley (*Hordeum vulgare*) as a political choice (Zori *et al.* 2013), and the identification of feasting in Neolithic Makriyalos, Greece, which was interpreted as a regional gathering where social hierarchies were consolidated (Pappa *et al.* 2004).

These studies have demonstrated that novel and multi-factorial approaches are of great value in providing higher resolution information on how feasts played out in practice. Moving beyond single dataset analyses can thus provide a richness of evidence that extends well beyond traditional interpretations. Explorations of wider social and cultural issues that are reified through or embedded in feasting are increasingly common. The role of feasting in maintaining power structures has been argued in wide-ranging contexts from Neolithic Mesopotamia (Emberling 2016) to Archaic Greece (Blok *et al.* in press). There are many more recent examples in which feasting is explored primarily from a socio-cultural perspective, with economy and subsistence being supplementary themes. Feasting studies have matured considerably in recent years and the gulf between research in anthropology and archaeology has narrowed markedly. There is still a long way to go, but this trajectory is sure to continue as greater inter-disciplinarity and methodological advancement means feasting practices can be reconstructed with ever greater resolution.

Concluding remarks

This paper set the scene of the volume by providing context for the development of bioarchaeological research on ritual and religion. It offers an overview of selected key themes, contexts and approaches that have dominated studies. It also highlights constraints that have hindered the progress of research, identifies specific weaknesses and profitable future directions. Bioarchaeological research on ritual and religion arguably lags behind many other sub-disciplines of archaeology. Great progress has been made nevertheless and bioarchaeological research on these themes is no longer in its infancy. It is perhaps best described as in its adolescence, yet to reach full maturity, but progressing rapidly, exploring new themes and employing and combining new approaches.

This volume showcases a range of new research from the traditional to the novel, from the macroscopic to the molecular. Some studies explore well-trodden

paths in ritual studies and others go well beyond the beaten track. Several other volumes address these themes from a bioarchaeological perspective. Ryan and Crabtree (1995) showcased papers on the symbolic role of animals in a book that was ahead of its time. Miracle and Milner (2002) presented a collection of papers on the social context of food consumption and more recently Hastorf (2016) published a thought-provoking monograph on the social archaeology of food. The volume by Jones-O'Day *et al.* (2004), though just zooarchaeological, represented a step change in the breadth of studies thematically, chronologically and geographically that had ritual and religion as a focus. Campana *et al.* (2010) show further advancement on the topics of colonialism, complexity and transformation. More recently zooarchaeological volumes have had a more defined focus including Pluskowski (2012) on ritual animal killing and Ekroth and Wallensten (2013) on animals in an ancient Greek context. In addition, Sykes (2014) and Russell (2012) have both produced excellent monographs on social aspects of faunal studies, including sections on ritual. The papers by Palmer and van der Veen (2002) and Morehart and Morell-Hart (2015) focusing on plants in archaeology are very good examples of reviews of social approaches to these data, including ritual aspects.

These volumes and papers have been instrumental in advancing the discipline. However, they have all been confined largely to single sub-disciplines, generally zooarchaeology, or to specific themes, such as the social context of food. This volume, therefore, fills an important gap by bringing together and showcasing a cross-section of new research from across the sub-disciplines of bioarchaeology, some of which rarely focus on these themes. The scope is intentionally broad and by drawing together this spectrum of research in one volume, it is hoped that it might act as a springboard for more interdisciplinary studies in the future. Ultimately, this volume endeavours to highlight the significance of bioarchaeological data in interpretations of ritual contexts, and to contribute to the paradigm shift towards more holistic interpretation of past lifeways, embracing a comprehensive range of past experiences, worldviews and social approaches.

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