

Future Directions for the Archaeology of Cremation

Jessica I. Cerezo-Román and Howard Williams

Cerezo-Román, J. I. & Williams, H. 2014. Future directions for the archaeology of cremation, in I. Kuijt, C. P. Quinn and G. Cooney (eds) *Transformation by Fire: The Archaeology of Cremation in Cultural Context*, Tucson: University of Arizona Press, pp. 240-55.

Introduction: Toward an Archaeology of Cremation

This chapter represents the results of, and responses to, discussion, dialogue and deliberation before, during, and after the workshop entitled “Fire and the Body” held from November 16-20, 2011, at the Amerind Foundation, Dragoon, Arizona. Created after these events, their influence runs deeper than simply the points in the text where we cite selected authors’ contributions appearing in this volume.

‘Cremation’ is a complex set of funerary procedures in which the burning of the body is but one element. In effect, the term is short-hand for various fiery ritual technologies in which the dead are mourned, transformed, and commemorated. Archaeologists have identified cremation practices in very different prehistoric and historic societies, operating within very different and changing social, religious, political, economic and environmental conditions from early prehistory to the present day. Cremation, therefore, is a significant aspect of living and dying in the human past for many periods of human history across the globe.

Against this background, identifying a narrow set of questions for future archaeological research that are applicable worldwide may seem challenging, if not impossible. Even in recent years, cremation has been approached by archaeologists working with overlapping, but very discrete, theoretical perspectives that broadly share social and interpretative approaches, including the archaeology of ideology and power, human and material agency, the senses and

aesthetics, social identity and personhood, religion and cosmology, and social memory and the body, to name but a few. The archaeology of cremation is therefore a broad topic with many vested research interests in its future direction. Moreover, given the variability and changing deployment of cremation practices alongside other disposal methods, we accept that the most appropriate research questions are those sensitive to period- and region-specific research agendas, both responsive to the quality and character of the archaeological data under scrutiny and the interests and identities of local communities.

While accepting these caveats, we suggest that it remains legitimate to ask the big question: whether the study of cremation from a global perspective? Building on an argument made by one of us elsewhere for a wide theoretical and methodological scope for ‘the archaeology of cremation’ (Williams 2008), this short text isolates research themes crucial for broadening and deepening the archaeological study of cremation across the globe. A holistic and integrated ‘archaeology of cremation’ must regard cremated human remains as more than data, but as mnemonic and emotive ‘object’ substances – once-humans and future-ancestors– that were affective on those handling and experiencing them (see also Sørensen 2009; Williams 2004). Animals as well as humans might be important agents and contributing identities to past cremation practices (e.g. Williams 2005a). Furthermore, this approach promotes a consideration of the complex ways in which material culture is involved in multi-staged cremation practices. Cremation may focus on burning a cadaver (or cadavers), but it also includes the production, gathering, circulating, wrapping and containing, fuelling, igniting, burning, transforming, fragmenting, consuming, selecting and depositing of artifacts, materials and substances (Williams 2005b, 2007). Equally, past cremation involved diverse mortuary contexts and spaces (including settlements, pyres and graves) through which the cadaver and mourners moved and

engaged. Hence, cremation was distinctive from other mortuary procedures and opened up different possibilities for the storage, distribution, transportation, and placing of the dead. The possibilities of storage for cremated remains are innumerable, such as baskets, pouches, ceramic containers, and scatters throughout the landscape, just to mention a few (e.g. Cooney 1992; McKinley 1994; Rebay-Salisbury 2010; Willey and Scott 1999). Likewise, the range of architectures and monuments (including those above and below ground, under the floors of houses, and ephemeral structures built for the funeral or those intended as lasting memorials to the dead) involved in different stages of the cremation process merit contextual interpretation (e.g. Potter, et al. 2011; Williams 2004). The pyres can be very ephemeral structures and may leave little archaeological evidence. Nonetheless, they can provide valuable information about the performance and complexity of burning the body and require further analytical consideration (Nilsson Stutz and Kuijt, this volume). Finally, cemeteries located within inhabited landscapes (including topography, vegetation, natural resources, settlements and worked environments) can vary considerably and provide rich avenues for further research in their own right (e.g. Wickholm 2008).

Therefore, the archaeology of cremation involves the study of mortuary process, variability, contexts and spaces through the investigation of a variety of material cultures, architectures and monuments on different scales. The study of cremation spans from the investigation of the complexity of the individual grave to the analysis of the cemetery, and the study of the location and distribution of mortuary practices across past landscapes. Inspired by the discussions and debates raised by this book's chapters, we propose six avenues for future research in the archaeology of cremation.

Integrating Science and Theory in Cremation Research

Our first key issue concerns how we integrate science and theory in studying cremation. Most scientific publications of cremated remains focus on evaluating methods and techniques to study cremated remains and/or have been fairly descriptive. In addition, as Agarwal and Glencross (2011) mention, utilization of state-of-the-art analytical methods from archaeological science to analyze material culture and cremated remains may well be considered groundbreaking, but this kind of research has been criticized as lacking in the analytical and population-based focus of physical anthropology (e.g. Armelagos and Van Gerven 2003; Hens and Godde 2008). Still, these types of studies have been instrumental in advancing the scientific arsenal of methods available and opening up new areas of inquiry and avenues for answering complex and broader research questions.

In a practical sense, research projects need to employ bioarchaeologists/oste archaeologists specialized in human skeletal remains and to integrate into their research designs the participation of a range of potential scientific specialists (see Buikstra 1977). Closer cooperation and sustained research relationships between osteologists, material culture specialists and mortuary archaeologists throughout interpretative research programs are essential to bridge science and theory. Indeed, the integration of, and dialogue with, bioarchaeologists by archaeologists has been long been advocated (Buikstra 1977, 1991). An early American example in cremation research is the pioneering work by Jane Buikstra and Lynne Goldstein on the Perrins Ledge Crematory located in Woods Creek Valley, Illinois (Buikstra and Goldstein 1973). In this work cremated remains and the archaeological contexts where they were found were analyzed to provide in-depth understanding of the individuals buried in those contexts and the mortuary rituals performed at the crematory. McKinley and

Bond's (1994) work on early Anglo-Saxon cremation practices is a classic British example of achieving integration between scientific analysis and archaeological interpretation. Following these examples, numerous studies are beginning to integrate bioarchaeology with the archaeological analysis of mortuary contexts within both academic and public compliance-driven (or development-led) excavations (Fitzpatrick 1997; Gramsch 2007; MacGregor 2008; Ubelaker and Rife 2009). Despite these developments, this ideal situation has been less commonly applied for cremation than other mortuary data.

Specific attention to scientific methods that directly inform the quality of the excavated evidence also is required. We will not discuss into detailed excavation and recovery strategies of human remains as there are considered in depth by many publications on excavations, documentation and recovery techniques of burials, including brief description of cremated and burned human remains (e.g., Bass 1987; Hester et al. 2007; McKinley and Roberts 1993; Morse et al., 1983; Roberts 2009; Ubelaker 1999). However, we feel that it is important to mention a few points for consideration in future research on cremations. In order to interpret thermal alteration of human remains, material culture and archaeological features it is imperative to have a clear understanding of what fire is, fire dynamics, combustion, and how the fire physically alters human tissue and material culture (Fairgrieve 2008).

Excavation and recovery strategies should take into consideration budget, time constraints, available personnel and, if a descendant community exists, consultation with these communities. The *in situ* field observations, and accurate writing and visual documentation also are essential in any archaeological excavation particularly for cremated deposits. Cremation contexts are very complex, usually involving many small bones and fragmented objects. Experienced bioarchaeologists, osteoarchaeologists or archaeologists that have extensive

familiarity with human osteology should ideally excavate these types of deposits due to this complexity.

Descriptions of the features and stratigraphy should be documented in detail and this should include both plan and profile maps, and accurate measurements and narratives. Detailed descriptions of architectural features, pyre residues, evidence of thermal alteration and fire damage observed in pits and structure(s) are also essential. Type and degree of post-depositional disturbances should also be documented in detail. Soil samples should be taken and specific sample locations should be documented. All fill removed from the feature should be sieved through different size meshes (e.g., $\frac{1}{4}$ and $\frac{1}{8}$) to maximize recovery.

Location and *in situ* anatomical position documentation of the burned human remains is very important. Burned remains are fragile and often will crumble as they are lifted from the soil, so care must be taken in the excavation and handling. Recording this information will allow for reconstructing the position of the body (e.g., Harving et al. 2013), understanding how the fragments were deposited, and inferring other ancient posthumous treatments and practices. The exact locations of all objects and substances, including material culture, charcoal, plants remains/residues, and animal remains should be documented and the remains recovered. If objects and animal remains are discovered, their orientation within the deposits (e.g., straight, upside down, laying in this right side) also should be documented. If objects and/or animal remains are deposited within a structure, the relationship of the remains within the structure should be described (e.g., the remains were placed under the roof, the remains were found throughout the fill, under the floor, etc.). However, if the deposits cannot be excavated in a detailed manner in the field sometimes this can be done in the laboratory after removal of the

deposit as a block or contained entity. For example, laboratory excavation of cinerary urns has long been practiced for small numbers of contexts (e.g. McKinley 1994). However, the potential for the regular investigation of cremation burials in this manner is illustrated by Gramsch's (2007) discussion of the Late Bronze Age cremation cemetery of Cottbus (Brandenburg, Germany) where the urns were repeatedly found to contain cremated remains of all body-parts and in anatomical order – the feet collected and placed in the urn first, the skull bones last. Careful excavation and analysis consequently revealed an aspect of the mortuary ritual otherwise overlooked and the importance of 'anthropomorphy' in post-cremation rituals (Gramsch 2007:10; see also Rebay-Salisbury 2010; Williams 2007). Likewise, recent work has foregrounded the importance of combining the excavation of cremation remains with computer tomography and radiography, for not only revealing artifacts and burial practices otherwise overlooked but also to challenge ritual interpretations based on retrieved bone-weights (Harvig and Lynnerup 2011; Minozzi, et al. 2010). The large-scale and systematic use of these techniques in the excavation of burial populations has considerable potential.

Once the cremated remains have been retrieved from the archaeological site, scientific investigations have enhanced the information yielded by cremated material. Some researchers have explored various types of biological information reconstructed from cremated remains such as age, sex, skeletal elements, pathologies, and nonmetric traits (e.g. Birkby 1976; Fink 1989), while others have successfully employed techniques such as DNA analysis of organic components (Brown, et al. 1995; Lutz, et al. 1996). More frequently, past research explored thermal alterations and posthumous treatment of the body, while some explored the color of bone alterations derived from fire exposure (e.g. Buikstra and Swegle 1989; Gejvall 1969; Shipman, et al. 1984; Ubelaker 1978; van Vark 1975). Lengthy debate surrounded distinctions between

different fracture types caused by fire when bodies are burned with flesh, defleshed or dry, as well as distinguishing mechanical from fire-induced fractures (e.g. Bohnert, et al. 2002; Gonçalves, et al. 2011; Herman and Bennett 1999; Symes, et al. 2008; Walker, et al. 2008). Previous research also has examined population differences in bone weights of cremated remains (e.g. Bass and Jantz 2004; McKinley and Bond 2001; Sonek 1992; Trotter and Hixon 1974), and degree of fragmentation has been examined, mainly to determine pyre technology or burial disturbance (McKinley 1989). However, further research needs to explore social variables that might cause differential burning rituals affecting cremated remains within specific sites and societies. In addition the intersections between differential burial treatments, biological information, gender, and social age require further work (Brück, this volume). It is important as well to consider all the materials found in the burial deposit as a whole rather than as individual parts.

The study of materials employed in the cremation process is a further avenue where scientific analysis benefits archaeological interpretation: recent work has proven the use of seaweed in Bronze Age cremation practices in Orkney, moreover speculating that its inclusion was more than a fuel. The creation of ‘cramp’ – a glassy substance made up of sand, seaweed, and human bone – may have been a desired product of the cremation process linked to culturally-specific understandings of burning the dead (Photo-Jones, et al. 2007).

While many scientific publications focusing on cremated remains have been very descriptive or primarily evaluations of particular methods and techniques used to analyze cremated remains and pyre technology, there are notable exceptions. The work by Schurr and Cook (this volume) on the study of diet through stable carbon and nitrogen isotopes is an example of the integration of scientific analysis using archaeometric techniques and

archaeological interpretation at the intra site level. This approach shows great potential for better understanding different consumption practices between and within populations.

We consider that there is a need to replicate existing studies and past practices within different settings. There is significant knowledge to be gained from experimental replication of past funerary practices to determine the condition of remains prior to burning, pyre technology and burial disturbance. Replication of past practices would also allow for a better understanding of formation processes and posthumous treatments of bodies in a more precise way. The bioarchaeologist should have in-depth knowledge of the heat alterations of human remains. They should also use standard protocols and explicit methods to allow easy replication of their findings as well as comparison between samples and sites. Study of the disposition of the burned remains also provides multiple avenues of research. The remains could be buried in place or redeposited into one or multiple deposits, or scattered. If redeposited into multiple pits/token burials, determining how and why the remains were divided and distributed throughout the landscape as well as how many individuals are represented will be a research challenge. A close dialogue between bioarchaeologists and archaeologists at all stages of research will have sustained benefits in these researches (Buikstra 1977; McKinley and Roberts 1993) and is necessary to avoid potential misinterpretation of the archaeological assemblage.

Osteologists, however, do not have perpetual control over use of their data – once published it should be usable by all. This means that there is a strong onus of responsibility for mortuary archaeologists as well, even if not trained as osteologists, to understand the potentials and pitfalls of archaeological data. Without this, misleading and potentially incautious interpretations can be reached. There also is a need to explore more cohesively the relational networks between the material objects present in cremation funerary deposits and their

relationships with the dead and living. Different archaeometric techniques (e.g. isotope analysis, optical and electron microscopy, chemistry, among others) have been used to examine provenance, production, distribution, and use of objects. Application of these techniques and critical evaluation of the resulting data, through collaboration with archaeological scientists, would allow for a better understanding of the life histories and agencies of objects, as well as different intersecting characteristics and attributes of the objects with the living and dead. These types of studies can focus on how objects actively become part of social practices within mortuary rituals. Interdisciplinary and collaborative research between specialists and researchers facilitate moving beyond descriptive analysis and/or use of unfounded theories to a more analytical, creative and solid theoretical discussion. Such approaches are a necessary stepping-stone to correctly reconstructing past practices and subsequently developing the ‘archaeology of cremation’.

Cremation in Theory and History

Understanding the fragmentary traces of past cremation funerary practices should be grounded in the archaeological record’s complexity and variability. This is both helped and hindered by application of analogies from accounts of cremation practices in the recent past recorded by ethnographers and/or historians (Beck 2005; Cerezo-Román, this volume; McKinley 1994; Rakita and Buikstra 2005). Further critical appraisals of the merits of ethnographic and historic analogy are required, concerning not only the use of analogy, but also the reliability and biases inherent in the source material (e.g. Tonkin 1992; Vansina 1985). Descendant communities may be living very differently and could have very different beliefs and world views from their ancestors. Nevertheless, their histories provide a source of insights and foils in

the process of theory-building, including considerations of the technology, materiality, and social and religious contexts for cremation as well as providing accounts of rituals that may not leave any archaeological traces (e.g. Mason 2000; Wylie 1985). Ethnographic and historic accounts of mortuary practices also present several limitations due to the emotive, and the simultaneously private and public nature, of mortuary events. Funeral rituals were usually performed within different spheres of social space and interactions. Throughout the ritual, they may have varied between private and public spaces and only part of the funerary rituals may not be accessible for documentation by the ethnographer or witness. The multiplicities of meaning in these types of practices or the variation of these events through space and time usually were not captured by the accounts. Subsequent mourning practices outside the funeral itself may have escaped attention. The lack of historic accounts of some practices could portray the funerary rituals as a single or just a few events and this ignores the flow of time from hours to years in which practices took place. Nonetheless, descriptions of mortuary rituals provide analogs of different types of social funerary practices and provide a comparison points for interpreting archaeological traces, such as thermal alterations observed in skeletal remains (e.g. Beck 2005; Cerezo-Román, this volume). In particular, the ethnography of cremation should be explored in greater detail, particularly when investigating the diversity in how material cultures are deployed and cremains are collected, stored, circulated and deposited (Williams 2000).

Therefore, ethnographic and historic records can be used as a source of inspiration for the creation of theories for the specific period and culture being studied and provide insights into culturally-specific values and attitudes toward cremated human remains. Conversely, direct and uncritically-evaluated ethnographic analogs should be avoided. Developing a more theorized ethnography of cremation followed by its critical and cautious application to archaeological

contexts requires us to adopt new perspectives. In particular, we need to move away from the invaluable but well-trodden paths of certain Old World ethnographers of cremation ceremonies (e.g. from the Ganges valley, Nepal and Bali) to also explore the ethnographies and historic documents from elsewhere across the globe, including Siberia, the American Northwest Coast, the American Southwest, Central and South America, and also from Southeast Asia. This is all the more challenging because it involves dealing with accounts written by early ethnographers whose intellectual and socio-political context may have long fallen from favor. In addition, for the ethnography of cremations, we can explore insights and analogies gained from practices in industrialized nations such as Japan, the United Kingdom and the Scandinavian countries, where cremation is the dominant disposal method today. Furthermore, specifically-designed ethnoarchaeological studies and sustained experimental archaeological programs investigating cremation in the contemporary world are notable in their absence and highlight the potential for more work (for exceptions see Downes 1999; Oestigaard 2005).

Further research is required to explore the historical process that has led to the adoption of cremation, its use alongside other disposal methods, and its cessation linked to religious, ideological and socio-economic transformations. Concerning the adoption of cremation, the role of cremation in migrant communities, in strategies of colonization and resistance in defining identities, and the use of cremation to mark social and cultural distinctions within communities needs to be explored in further detail to provide insights into the motives for the rise or fall of cremation in past societies. Furthermore, how the process of citation of these practices starts and changes with innovations through time should be evaluated. It is important as well to explore the relationship of these practices with social memory – how occasional uses of cremation can have

enduring influences – particularly in areas where cremations are not the normative mode of burial.

Where cremation is regularly practiced, the agents involved in organizing cremation can be complex and diverse, in turn affecting how cremation operates and the destinations of cremains. In modern societies, cremated remains from animals as well as human are disposed of in different and creative ways such as jewelry, urns, scattering in the landscape. The character and decision-making of disposing of the remains might be dictated by state or federal laws but also could depend on practical decision making such as economic, easy transportation as well as emotional, religious and afterworld belief systems, among others. Exploring the factors affecting the choice to, and how to, cremate and dispose of ashes will be key questions for future work in which socio-economic and ideological causation will undoubtedly be entwined. Likewise, the spread of Hindu and Buddhist cremation practices and eschatology in Asia may provide insights into comparable processes in the past. Comparative work on the cessation of cremation in the Americas, India, Australia, Siberia, and the Northwest Coast might provide insights into the how and why cremation declines, providing insightful parallels into the end of cremation in past societies. For example in the Southwest archaeological and historical evidence suggests that in the past among the Zuni cremation was practiced on a regular basis, but once the Spanish missionaries entered the area this practice decreased (e.g. Howell 1994; Riley 1975). In contrast, archaeological evidence shows that cremation was already falling from favour before the historically attested conversion of the Anglo-Saxon kingdoms (Williams, this volume). Evaluating variation of disposition of these remains could provide insights on different practices and/or motivations for the different types of redeposition of cremated remains found in past societies.

Cremation as *Rite de Passage*

Since the work of Hertz (1960) and van Gennep (1960), cremation is regularly interpreted as a ritual transition, not an event of burning a corpse. In particular, numerous studies have sought to explore how cremation operated as a technology of remembrance: a chain of commemorative operations not a single technique. As well as commemorating the dead, this sequence of acts and processes aimed to reproduce concepts of the person and cosmos by taking the survivors, the cadaver and concepts of the soul on a parallel journey (e.g. Williams 2005a). This approach has done much to theorize cremation beyond an index of particular social attributes and its misunderstanding as ‘low status’ or ‘destruction’. Moreover, it foregrounds the selective and commemorative deployment of material cultures, architectures and landscapes in the process of transforming the cadaver into cremated remains and their subsequent deposition (see also Jones 2003). It also foregrounds cremation as a ritual process that not only makes and remakes the identities of the deceased, but those of the living as well (Cerezo-Román, this volume; Jones 2003). Another value of this approach is the attention to the materialities of cremation – the many kinds of materials drawn into the cremation process and, at different stages, served to transform the dead. For instance, Williams’ work has explored the role of cosmetic and toilet implements and combs (some of them miniature items) and amulets as mnemonic catalysts in early medieval cremation practices. These were not items of great value or necessarily objects with ‘biographies’ themselves, their miniature or diminutive form and their association with hair management made them appropriate for symbolizing and constituting the regeneration and reconstitution of the body in post-cremation rituals (Williams 2007). More recently, Williams propose that a range of other artifact types operated in comparable fashions at certain times and places within early medieval Europe (Williams 2013).

Further work is required to explore the active roles of materials and substances in transforming the dead physically and conceptually in cremation processes (see Williams 2013). Attention should be paid to the notion that funerary cremation rituals usually are a series of practices and a dynamic process that includes much more than just burning the body. Fire produces a change in the body and objects that are placed with the deceased but the entire funeral ritual could be the means of transition, particularly if consisting of several stages spread over time. The act of burning the body might sit at one or more stages in this ritual transition. New research is also needed to explore the interrelationship between different objects as well as with the dead and the living within and between graves and cemeteries. Likewise, it is necessary to investigate the point in time when objects enter cremation rituals, their ultimate disposition, and their relationship(s) to the transitional identities of the dead and living. The objects found in cremations could be part of the funerary ritual, possessions of the deceased, or belongings of the mourners, to mention a few possibilities. We should identify if and where objects reflect intersecting identities of the individuals and mourners, and their social networks of (Barrett 1990, 1994; Chapman 2000; Gillespie 2011; Joyce 2001). Gillespie (2011) suggests that this can be done by looking at characteristics of the burial which can be seen as components of individual and multidimensional networks of reference. The networks become historical artifacts referenced by people in the community and by doing this the practice with the objects acquired value and significance. People may have emulated these practices in a similar way but their social subjectivity is formed or transformed. This could be evaluated by having good chronological control, biological data of the individual such as age and sex, and through examining burials as referential chains, or citation of prior actions.

It is also important to examine the relationship between parts and wholes of not only cremated human remains but also objects deposited in the burial and/or related to the mortuary rituals (e.g. Chapman 2000; Larsson and Nilsson Stutz, this volume; Rebay-Salisbury 2010). Rebay-Salisbury's (2010) work focusing on Early and Late Bronze Age central Europe suggests that although cremation can be seen as a process of fragmentation, it does not necessarily destroy the sense of a body entity. Rebay-Salisbury based her interpretation in the post-burning treatment of the remains, which attempted to reconstitute the fragments as a whole body by using the cinerary urn as a container for the bodily remains and creating a new form of corporeality (Chapman 2000; Rebay-Salisbury 2010). Likewise, the creation of "body-objects" or "inalienable possessions" that could serve as a means to reinforce existing social networks through their distribution may work in this way as well (see Cerezo-Román, this volume; Brück 2004, 2006).

However, there is a danger of recreating normative explanations for cremation from this perspective without adequately considering mortuary variability – a regression to pre-processual archaeologies of cremation. Equally pernicious is the danger of equating the mortuary process precisely with the perception of the person per se, as well as only one aspect of the individual's and/or mourner's identity. This is a potential regression to a simplistic and heavily-critiqued equation of mortuary investment with social status as advocated in the early days of the New Archaeology (for further discussion see Goldstein 2001). While the fragmentation and circulation of cremated remains might relate to concepts of personhood through strategies of remembering and forgetting, these practices need not be indexically linked to the ontological, social and cosmological status of the deceased (for other views see Fowler 2004; Wickholm and Raninen 2006). Hence, the reading of both individuality and 'dividuality' from the treatment of

cremated remains should be cautiously considered. In this regard, the use of cremation in modernity challenges the idea that the fragmentation of the person is a sign of dividual personhood: emotional and social bonds and memories with the dead individual are clearly played out through the transformation of the cadaver and its scattering or disposal, sometimes in multiple locations, while the individuality and individual choices of the deceased are celebrated. Future work is needed to problematize personhood and memory in the treatment of cremated remains and question the transhistorical constructions of personhood applied to past cremating societies. Studies might also explore and develop more sophisticated and contextual analyses of the transformations involved in cremation and how they may be utilized in the construction of ideals of the person in life and death. In addition, it is important to explore how this transformative process may be utilized in the construction of ideals of the society, social networks, and cosmology.

Cremation as Technology

A key issue for the archaeology of cremation is how the burning of the body drew technological knowledge, metaphors, symbolic significance, and social power from its similarities and associations with other fiery and elemental technologies. This is an issue raised by a number of contributors and requires further consideration (Brück, this volume; Goldstein and Meyers, this volume; Thomas, personal communication; Williams, this volume). One characteristic of the cremation ritual is that it could be seen as a spectacle; it is unique in its own sense but could be correlated to other performances that used fire to transform different types of material. Cremation rituals are performances that appeal to the senses of the ones that performed the ritual, participants and spectators. The fire transformed the body, when the body is burning it generated

odors, produced heat, was visually striking and probably the burning process also could be heard. Similar to the body which is transformed by the fire to cremated bone fragments, smiths transformed ores into metal. The link between smelting and working metals and cremation is one avenue that has received some consideration (e.g. Gansum 2004; Goldhahn and Oestigaard 2008). However, other fiery technologies may have been regarded as analogous to cremation, including pottery production, food processing and cooking (Back Danielsson 2007; Oestigaard 1999; Brück, this volume; Larsson and Nilsson Stutz, this volume; Williams, this volume). In addition, posthumous treatment of grinding the remains could be correlated with food grinding and notions of fertility, transformation and renewal. The social practice of incorporating human cremated remains into the production of pottery as part of temper could also be explored in more detail. Further work is also needed to explore the relationship between glass production and the fiery transformative aspects of cremation rituals. Likewise, research might explore relationships between cremation rituals, burned cache deposits and burned structures within and between sites (Cerezo-Román, this volume; Mills and Murray 2008). Mills and Murray (2008) make an important point in suggesting that ritually burned objects and structures were treated like human cremations.

Indeed, it is not just fiery technologies that could have been connected to cremation; materials and processes perceived as luminous, heat-producing or regenerative may have been equally significant in certain contexts. For instance, the association of stones that spark or glow, such as lead minerals (Hawley 1947), and materials used to start fires (flints, fire steels, etc.) may have particular connections with cremation in certain past societies, as much as the process and products of fiery technologies. Materials such as quartz crystal debris in the past could have been used as a metaphor for cremated human remains (Lindgren 2008). Resin and incense burned in

rituals could also be related to journeys of the soul in the cremation fire. We could expand the analyses to explore other performances that also used fire as part of their rituals such as fire ceremonies documented among the Aztecs. Heat-producing technologies in which fire plays only a limited role, such as the fermentation of beer (Larsson, personal communication; see also Williams, this volume) or the sun-baking of clay. Likewise, the metaphorical association of cinerary urns with ‘homes’, ‘granaries’ or ‘bodies’ might have been more significant than the link create both bodies and pots (e.g. Bradley 2002). In short, further work is needed to differentiate superficial similarities from established and practiced metaphors deployed to conceptualize the cremated dead in past societies.

We need as well to problematize the relationship between agency of people, animals and things participating in cremation ceremonies and being placed in the burial with the cremated remains. Cremation not only transformed the human body, but in some instances animals, substances and materials were transformed into heat, light, smoke and burned matter (Williams 2004). Objects, animals and things could have agency and their life histories are relevant. Mills and Ferguson (2008:339) remind us that “rather than seeing people as primary and materials as secondary” they could be viewed as operating within a range of interactions, and in some cases have the same “primary status as do people”. They suggest that this “requires a fundamental rethinking of the dichotomy between humans and nonhumans” (Mills and Ferguson 2008: 340). In early Anglo-Saxon England, the under-representation in cremation graves of iron artifacts regularly found with contemporary inhumation graves –buckles, knives and weapon blades – suggests recycling motivated by economy but perhaps also the desire to disassociate the dead from items – or the components of artifacts – that failed to be affected by the heat of the pyre (Williams 2005b). In other instances, several societies burned the property and gifts for the

deceased and from mourners as part of mourning rituals for various reasons, and these relationships should be explored further.

Cremation Variability

How and why were cremation practices variable in the same chronological and geographical areas? Here our search for simple mono-causal explanations is likely to fail. Still, the need to explore the variability of cremation within and between cemeteries, as well as within and between sites, is a priority for research. A number of contributions to this book address how we should consider multiple disposal methods as the norm and their relativity should be the focus of investigation to reveal how they operated as relational commemorative strategies within and between communities (e.g. Larsson and Nilsson Stutz, this volume; Williams, this volume). In instances where we find cremation avidly avoided or universally adopted, we should explore what powerful social, economic, ideological or religious mechanisms created this coherence and sustained such traditions over time but also the precise contexts within which these traditions are performed and remembered within specific contexts within commemorative traditions (Cerezo-Román, this volume). Likewise, the ‘micro-archaeology’ of diversity in cremation practices within particular communities deserves considerable attention (e.g. Gramsch 2007; see also Cerezo-Román, this volume; Cooney, this volume). The role of cremation within the multistage funerary process may include temporary inhumation burials or the circulation and/or differential treatment of body parts where only some bones are cremated. The social motivation for variable forms of cremation within a community or between communities should be explored in more depth. The innovations, variations and adoptions of new cremation practices through time also can be explored in groups where cremation was widely adopted. Furthermore, the different

triggers that caused changes as well as correlations with other social changes within a group need attention.

Of crucial importance here is to explore instances where cremation is infrequent: such instances throw into sharp relief the interpretation of non-cremation practices in the same communities but also allow us to consider the power of cremation to mark social and religious distinctions (Goldstein and Meyers, this volume; Larsson and Nilsson Stutz, this volume; Schurr, this volume). Yet cremation can be socially efficacious even when it is reserved for a tiny minority or is rarely practiced. Furthermore, equal attention should be given to explore what were the intersecting identities, relational networks as well as interconnections between ideology and power of these selected individuals in relation to the rest of the society. Cerezo-Román, expanding on ideas proposed by McGuire (1992), found that among the Southern Arizona Hohokam from the Preclassic Period (AD 600-1200) infants and possibly kinless adult individuals were not cremated. It was interpreted that infants probably were not ‘full persons’ and that the unburned adults likely lacked the same social networks as other adults in the community. The social basis for cremation variability also should be evaluated, such as the frequently found differential treatment between children and adults (Cooney, this volume). In seventh-century England, cremation was waning, yet its use for the social elite in elaborate ceremonies ending in barrow-burial, projected wealth, status but also a famed memory over the landscape as a statement of territorial claims and ideological defiance (Williams 1999). Future research should give equal attention to communities that reserve cremation for exceptional circumstances (e.g. Larsson and Nilsson Stutz, this volume). Such instances reveal the technological complications and ambivalent corporeal experiences of cremation. Indeed, early cremations in the American Midwest indicate a poorly instigated technology, although it is

unclear if the degree of burning of remains was intentional or not (Schurr, personal communication). In historic times Native American groups in the American Southwest, such as the O'odham, only cremated individuals that died in violent encounters such as war and interpersonal conflict to eliminate the enemy's magic and polluted body (Hanlon 1972:106; Underhill 1939:190). Another example include some Pueblo groups, such as the Zuni of New Mexico, which maintained cemeteries at Hawikku and Kechiba:wa where cremated burials were concentrated only in a few areas within each cemetery (see Howell 1994). It was likely that, among the Zuni, the practice of cremation was brought by migrants from Point of Pines and other areas south of the Mogollon Rim, where cremation was much more common (Mills personal communication). Likewise, from late medieval and post-medieval Europe where cremation is a last resort to destroy revenant corpses, there are numerous accounts of botched conflagrations (Barber 1988).

A connected issue for further research concerns how similar and relational cremation was with other disposal methods (Larsson and Nilsson Stutz, this volume; Williams, this volume). Often, the contrast between disposal methods becomes exaggerated by the contrasting end-results of (say) inhumation and cremation burials; connecting metaphors and themes can be obscured. It is possible that in many societies that clear lines between different mortuary practices did not exist or were perceived in the same way as we may perceive them today. These assumptions should be evaluated against the archaeological record. Yet in other historical contexts, we are dealing with a clear contrast perceived between cremation and inhumation deployed to mark and maintain different social, political, economic and religious distinctions.

The Archaeology of Modern Cremation

Our final proposition is that the archaeology of cremation – as for mortuary archaeology – itself, should have no false period-boundaries and therefore should be extended and researched into the ‘contemporary past’. This would allow the archaeological investigation of cremation to fully encompass the rise of cremation since the 19th century as an industrial, capitalist (and elsewhere, communist), way of death. Modern furnace cremation is all too-often misrepresented as the antithesis of traditional open-air cremation (e.g. Williams 2004; and contributions to this volume). Instead, we contend that the experience and ambivalence toward modern cremation is instead a crucial factor influencing academic interpretations of cremation in archaeological research deserving of further scrutiny. Furthermore, modern cremation is a legitimate subject of archaeological scrutiny in its own right. Here there is overlap with heritage conservation, as some of the early and great 19th and 20th century crematoria and their landscape cemeteries now have protected heritage status. There is also overlap with the study of the history of archaeology: as archaeologists and archaeology often have provided legitimacy for advocates of cremation and inspiration for cremation’s material cultures, memorials, monuments and landscapes (Back Danielsson 2011). The deposit type, ephemeralia, memorials, architectures and landscapes of the cremated dead are a field ripe for future study from an archaeological perspective (Hockey, et al. 2007; Prendergast, et al. 2006; Sørensen 2009; Williams 2011a, b). Studying cremation in the recent and contemporary pasts affords particular ethical and political challenges, including rights of respect and sensitivity to survivors and the dead. However, we propose that this in and of itself should not prevent archaeologists from conducting non-invasive research in collaboration with individuals, communities and organizations in which the traces, monuments and landscapes of modern cremation are found.

The archaeology of cremation should explore crematoria but also the many other locales where cremains are buried and scattered, revealing the complex religious and secular associations and uses of cremated dead in the recent and contemporary past. The archaeological examination of both modern cremations in the recent and contemporary past *and* traditional open-air cremation practices in the more distant past may provide cross-fertilization of theories and ideas to the benefit of the study of both. Indeed, we suggest that all of the previously-identified areas of future research will be enhanced by crossing this chronological and intellectual divide hitherto maintained between cremations past and present.

Conclusion

In this paper, we have asked the big question: whether the study of cremation from a global perspective? To answer this question we isolate some broad and overlapping research directions of relevance to archaeologist working with very different data and within contrasting intellectual and methodological traditions across the globe. As Williams (2008) proposed, the ‘archaeology of cremation’ extends far beyond the examination of burned human and animal bone. It regards cremated human remains as mnemonic and emotive ‘object’ substances that were affective on those involved in handling and experiencing them. This approach considered the complexity of the entire mortuary ritual from the beginning to the end as well as the people, objects, things, spaces and time associated with them. We argue for the development and refinement of methods as well as the creation and development of theories that are situated in a cross-disciplinary dialogue. This dialogue should start from the research design, and continue to fieldwork, analysis, publication and exhibitions. Their adoption could broaden our understanding of cremation in the past and present in new and innovative ways. These themes could be elaborated,

adopted and modified to period- and region-specific research agendas, and they should be responsive to the specific archaeological data under study and the interests of local communities.

Bibliography

- Agarwal, S. C. and B. A. Glencross. 2011. Building a Social Bioarchaeology. In *Social Bioarchaeology*, edited by S. C. Agarwal and B. A. Glencross, pp. 1-11. Wiley-Blackwell, United Kingdom.
- Armelagos, G. J. and D. P. Van Gerven. 2003. A Century of Skeletal Biology and Paleopathology: Contrasts, Contradictions, and Conflicts. *American Anthropologist* 105(1):51-62.
- Back Danielsson, I.-M.
2007. *Masking Moments: The Transitions of Bodies and Beings in Late Iron Age Scandinavia*. University of Stockholm, Stockholm.
2011. Presenting the Past: On Archaeologists and their Influence on Modern Burial Practices. *Mortality* 16(2):98-112.
- Barber, P. 1988. *Vampires, Burial and Death: Folklore and Reality*. Yale University Press, London.
- Barrett, J. C.
1990. The Monumentality of Death: The Character of Early Bronze Age Mortuary Mounds in Southern Britain. *World Archaeology* 22:179-189.
1994. *Fragments from Antiquity: An Archaeology of Social Life in Britain, 2900-1200 B. C.* Blackwell, Oxford, UK.
- Bass, William M. 1987. *Human Osteology, a Laboratory and Field Manual*. 3 ed. Vol. 2, Special Publication. Missouri: Missouri Archaeological Society, Columbia.

- Bass, W. M. and R. L. Jantz.2004.Cremation Weights in East Tennessee. *Journal of Forensic Sciences* 49(5):901-904.
- Beck, L. A.2005.Secondary Burial Practices in Hohokam Cremations. In *Interacting with the Dead: Perspectives on Mortuary Archaeology for the New Millennium*, edited by G. F. M. Rakita, J. E. Buikstra, L. A. Beck and S. R. Williams, pp. 150-154. University Press of Florida, Gainesville, Florida.
- Birkby, W. H.1976.Cremated Human Remains. In *The Hohokam: Desert Farmers and Craftsmen: Excavations at Snaketown, 1964-1965*, edited by E. W. Haury, pp. 380-384. University of Arizona Press, Tucson.
- Bohnert, M., U. Schmidt, M. Grobe Perdekamp and S. Pollack.2002.Diagnosis of a Captive-Bolt Injury in a Skull Extremely Destroyed by Fire. *Forensic Science International* 127:192-197.
- Bradley, R.2002.Death and the regeneration of life: a new interpretation of house urns in Northern Europe. *Antiquity* 76 (292): 372-77.
- Brown, K. A., K. O'Donoghue and T. A. Brown.1995.DNA in Cremated Bones from an Early Bronze Age Cemetery Cairn. *International Journal of Osteoarchaeology* 5:181-187.
- Brück, J.
 2004. Material Metaphors: The Relational Construction of Identity in Early Bronze Age Burials in Ireland and Britain. *Journal of Social Archaeology* 4(3):307-333.
 2006.Death, Exchange and Reproduction in the British Bronze Age. *European Journal of Archaeology* 9(1):73-101.
- Buikstra, J. E.

1977. *Biocultural Dimensions of Archaeological Study: A Regional Perspective*. In *Biocultural Adaptation in Prehistoric America*, edited by R. L. Blakely, 67-84, general editor. The University of Georgia Press, Athens.
1991. *Out of the Appendix and Into the Dirt: Comments on Thirteen Years of Bioarchaeological Research*. In *What Mean These Bones?*, edited by M. L. Powell, P. S. Bridges and A. M. Wagner Mills, pp. 172-220. The University of Alabama Press, Tuscaloosa, Alabama.
- Buikstra, J. E. and L. Goldstein. 1973. *The Perrins Ledge Crematory: Analysis and Interpretation of a Complex Crematory Site*. Illinois State Museum Report of Investigation No. 28 8. Illinois Valley Archaeological Program Research Papers, Springfield, IL.
- Buikstra, J. E. and M. Swegle. 1989. *Bone Modification Due to Burning: Experimental Evidence*. In *Bone Modification*, edited by R. Bonnichsen and M. Sorg, pp. 247-258. Center for the Study of First Americans Institute of Quaternary Studies. University of Maine, Orono, Maine.
- Chapman, J. 2000. *Fragmentation in Archaeology: People, Places and Broken Objects in the Prehistory of South-Eastern Europe*. Routledge, London.
- Cooney, G. 1992. *Body Politics and Grave Messages: Irish Neolithic Mortuary Practices*. In *Vessels for the Ancestors : Assays on the Neolithic of Britain and Ireland in Honour of Audrey Henshall*, edited by N. M. Sharples, A. Sheridan and A. S. Henshall, pp. 128-142. Edinburgh University Press, Edinburgh.
- Downes, J. 1999. *Cremation: A Spectacle and A Journey*. In *The Loved Body's Corruption; Archaeological Contributions to the Study of Human Mortality*, pp. 19-29. Cruithne, Press, Glasgow, Great Britain.

- Fairgrieve, Scott L. 2008. *Forensic Cremation: Recovery and Analysis*. Boca Raton: CRC Press Taylor and Francis Group.
- Fink, M. T. 1989. The Cremated Human Remains from Los Morteros. In *The 1979-1983 Testing at Los Morteros (AZ AA:12:57 ASM), A Large Hohokam Village Site in the Tucson Basin*, edited by R. C. Lange and W. L. Deaver, pp. 277-284. Archaeological Series 177. Archaeology Section Research Division Arizona State Museum The University of Arizona, Tucson, Arizona.
- Fitzpatrick, A. 1997. *Archaeological Excavations on the Route of the A27 Westhampnett Bypass, West Sussex, 1992*. Wessex Archaeology Report No. 12, Salisbury.
- Fowler, C. 2004. *The Archaeology of Personhood: An Anthropological Approach*. Themes in Archaeology. Routledge, London.
- Gansum, T. 2004. Role the Bones – from Iron to Steel. *Norwegian Archaeological Review* 37(1):41-57.
- Gejvall, N.-G. 1969. Cremations. In *Science in Archaeology: A Survey of Process and Research*, edited by D. R. Brothwell and E. Higgs, pp. 379-389. Second ed. Thames and Hudson, London.
- Gillespie, S. D. 2011. Inside and Outside: Residential Burial at Formative Period Chalcatzingo, Mexico. In *Residential Burial: A Multiregional Exploration*, edited by R. L. Adams and S. M. King. Archaeological Papers of the American Anthropological Association, Number 20, Hoboken, N. J.
- Goldhahn, J. and T. Oestiggard. 2008. Smith and death – cremations in furnaces in Bronze and Iron Age Scandinavia. In *Facets of Archaeology: Essays in Honor of Lotte Hedeager on*

- her 60th Birthday*, edited by K. Childis, L. J. and C. Prescott, pp. 215-242. OAS 10. Oslo Academic Press, Oslo.
- Goldstein, L. 2001. Ancient Southwest Mortuary Practices: Perspectives from Outside the Southwest. In *Ancient Burial Practices in the American Southwest: Archaeology, Physical Anthropology, and Native American Perspectives*, edited by D. R. Mitchell and J. L. Brunson-Hadley, pp. 249-256. University of New Mexico Press, Albuquerque, New Mexico.
- Gonçalves, D., T. J. U. Thompson and E. Cunha. 2011. Implications of Heat-Induced Changes in Bone on the Interpretation of Funerary. *Journal of Archaeological Science* 38:1308-1313.
- Gramsch, A. 2007. A Microarchaeological Approach to the Social Significance of Late Bronze Age Burial Practices: Age and Gender at the Lusatian Urnfield of Cottbus Alvensleben-Kaserne (Germany). In *Encounters/Materialities/Confrontations: Archaeologies of Social Space and Interaction*, edited by P. Cornell & F. Fahlander, pp. 86-103. Cambridge; Cambridge Scholars Press.
- Hanlon, C. J. 1972. Papago Funeral Customs. *Kiva* 37(2):104-113.
- Harvig, L., J. Kveiborg, and N. Lynnerup. 2013. "Death in Flames: Human Remains from a Domestic House Fire from Early Iron Age, Denmark." *International Journal of Osteoarchaeology*. DOI: 10.1002/oa.2335
- Harvig, L. & Lynnerup, N. 2011. Computed tomography and computed radiography of Late Bronze Age Cremation Urns from Denmark: An Interdisciplinary Attempt to Develop Methods Applied to Bioarchaeological Cremation Research. *Archaeometry* DOI: 10.1111/j.1475-4754.2011.00629.x

- Hawley, F. G. 1947. The Used of Lead Mineral by the Hohokam in Cremation Ceremonials. *Southwestern Journal of Anthropology* 3(1):69-77.
- Hens, S. M. and K. Godde. 2008. Brief Communication: Skeletal Biology Past and Present: Are We Moving in the Right Direction? *American Journal of Physical Anthropology* 137(2):234-239.
- Herman, N. P. and J. L. Bennett. 1999. The Differentiation of Traumatic and Heat-Related Fracture in Burned Bone *Journal of Forensic Science* 44(3):461-469.
- Hertz, R. 1960. *Death and the Right Hand: A Contribution to the Study of the Collective Representation of Death*. Translated by R. Needham and C. Needham. Free Press, Glencoe, Illinois.
- Hester, Thomas R., Harry J. Shafer, and Kenneth L. Feber. 1997. *Field Methods in Archaeology*. Seventh ed. Mountain View, California: Mayfield Publishing Company. Hockey, J., L. Kellaheer and D. Prendergast. 2007. Of Grief and Well-being: Competing Conceptions of Restorative Ritualization. *Anthropology & Medicine* 14(1):1-14.
- Howell, T. L. 1994. Leadership at the Ancestral Zuni Village of Hawikku. PhD Dissertation, Arizona State University, Tempe.
- Jones, A. 2003. Technologies of Remembrance. In *Archaeologies of Remembrance: Death and Memory in Past Societies*, edited by H. William, pp. 65-88. Kluwer/Plenum, New York.
- Joyce, R. A. 2001. Burying the Dead at Tlatilco: Social Memory and Social Identities. In *Social Memory, Identity, and Death: Anthropological Perspectives on Mortuary Rituals*, edited by M. S. Chesson, pp. 12-26. vol. No. 10. American Anthropological Association, Arlington, Virginia.
- Lindgren, C. 2008. Stones and Bones: The Myth of Ymer and Mortuary Practices with an

- Example from the Migration Period in Upland, Central Sweden. In *The Materiality of Death Bodies, Burials, Beliefs*, edited by F. Fahlander and T. Oestigaard, pp. 155-160. British Archaeological Reports International Series 1768, Oxford, England.
- Lutz, S., H. J. Weisser, J. Heizmann and S. Pollak.1996.MtDNA as a Tool for Identification of Human Remains. *International Journal of Legal Medicine* 109:205-209.
- McGuire, R. H.1992. *Death, Society and Ideology in a Hohokam Community*. Investigations in American Archaeology. Westview Press, Boulder, San Francisco, and Oxford.
- MacGregor, G.2008. Elemental Bodies: The Nature of Transformative Practices During the Late Third and Second Millennium BC in Scotland. *World Archaeology* 40(2):268-280.
- Mason, R. J.2000.Archaeology and Native North American Oral Traditions. *American Antiquity* 65(2):239-272.
- McKinley, J. I.
1989.Cremations: Expectations, Methodologies and Realities. In *Burial Archaeology: Current Research, Methods and Developments*, edited by C. A. Roberts, F. Lee and J. L. Bintliff, pp. 65-79. British Archaeological Reports, British Series 211. British Archaeological Reports, Oxford, England.
1994.*The Anglo-Saxon Cemetery at Spong Hill, North Elmham. Part VII: The Cremations*. East Anglian Archaeology 69, Dereham.
- McKinley, J. I. and J. M. Bond.2001.Cremated Bone. In *Handbook of Archaeological Sciences*, edited by D. R. Brothwell and A. M. Pollard, pp. 281-292. John Wiley & Sons, LTD, Chichester.

- McKinley, J. I. and C. Roberts.1993.*Excavation and Post-Excavation Treatment of Cremated and Inhumed Human Remains*.Institute of Field Archaeologists Technical Paper No. 13, London.
- Mills, B. J. and T. J. Ferguson.2008.Animate Objects: Shell Trumpets and Ritual Networks in the Greater Southwest. *Journal Archaeological Method and Theory* 15:338-361.
- Mills, B. J. and W. Field Murray. 2008.Identity Communities and Material Practices: Logics of Ritual Deposition in the U.S. Southwest.*Proceedings of the World Archaeological Congress*. University College Dublin in Ireland.
- Minozzi, S., Giuffra, V., Bagnoli, J., Paribeni, E., Guistini, D., Caramella, D. and Fornaciari, G.2010.An investigation of Etruscan cremations by Computed Tomography (CT).*Antiquity* 84: 195-201.
- Morse, D., J. Duncan, and J. Stoutamire.1983. *Handbook of Forensic Archaeology and Anthropology*. Tallahassee, FL: Rose Printing.
- Oestigaard, T.
1999. Cremations as Transformations: When the Dual Cultural Hypothesis was Cremated and Carried Away in Urns, *European Journal of Archaeology* 2(3): 345-64.
2005. *Death and Life-Giving Waters: Cremation, Caste, and Cosmogony in Karmic Traditions*1353. British Archaeological Reports International Series.
- Photo-Jones, E., Ballin Smith, B., Hall, A.J. and Jones, R.E.2007. On the Intent to Make Cramp: An Interpretation of Vitreous Seaweed Cremation ‘Waste’ from Prehistoric Burial Sites in Orkney, Scotland, *Oxford Journal of Archaeology* 26(1): 1-23.

- Potter, B. A., J. D. Irish, J. D. Reuther, C. Gelvin-Reymiller and V. T. Holliday. 2011. A Terminal Pleistocene Child Cremation and Residential Structure from Eastern Beringia. *Science* 331(6020):1058-1062.
- Rakita, G. F. M. and J. E. Buikstra. 2005. Corrupting Flesh: Reexamining Hert'z Perspective on Mummification and Cremation. In *Interacting with the Dead: Perspectives on Mortuary Archaeology for the New Millennium*, edited by G. F. M. Rakita, J. E. Buikstra, L. A. Beck and S. R. Williams, pp. 97-106. University Press of Florida, Gainesville, Florida.
- Rebay-Salisbury, K. 2010. Cremations: Fragmented Bodies in the Bronze and Iron Ages. In *Body Parts and Bodies Whole: Changing Relations and Meanings*, edited by K. Rebay-Salisbury, M. L. S. Sørensen and J. Hughes, pp. 64-71. Oxbow Books, Oxford.
- Riley, C. L. 1975. The Road to Hawikuh: Trade and Trade Routes to Cibola-Zuni During Late Prehistoric and Early Historic Times. *The Kiva* 41(2):137-159.
- Roberts, Charlotte A. 2009. *Human Remains in Archaeology: A Handbook*. York: Council for British Archaeology.
- Schurr, M. R., R. G. Hayes and D. C. Cook. 2008. Thermally Induced Changes in the Stable Carbon and Nitrogen Isotope Ratios of Charred Bones. In *The Analysis of Burned Human Remains*, edited by C. W. Schmidt and S. A. Symes, pp. 95-108. Elsevier, Amsterdam.
- Shipman, P., G. Foster and M. Schoeninger. 1984. Burnt Bones and Teeth: An Experimental Study of Color, Morphology, Crystal Structure and Shrinkage. *Journal of Archaeological Science* 11:307-325.
- Sonek, A. 1992. The Weight(s) of Cremated Remains. *Proceedings of the 44th Annual Meeting of the American Academy of Forensic Sciences*. New Orleans.

- Sørensen, T. F. 2009. The Presence of the Dead: Cemeteries, Cremation and the Staging of Non-Places. *Journal of Social Archaeology* 9:110-135.
- Symes, S. A., C. W. Rainwater, E. N. Chapman, D. R. Gipson and A. L. Piper. 2008. Patterned Thermal Destruction of Human Remains in a Forensic Setting. In *The Analysis of Burned Human Remains*, edited by C. W. Schmidt and S. A. Symes, pp. 15-54. Elsevier, Amsterdam.
- Tonkin, E. 1992. *Narrating Our Pasts The Social Construction of Oral History*. Cambridge Studies in Oral and Literate Culture. Cambridge University Press, Cambridge.
- Trotter, M. and B. B. Hixon. 1974. Sequential Changes in Weight, Density, and Percentage Ash Weight of Human Skeletons from An Early Fetal Period through Old Age. *Anatomical Record* 179:1-18.
- Ubelaker, D. H. 1999. *Human Skeletal Remains: Excavation, Analysis, Interpretation*. Third ed. Manuals on Archaeology. Smithsonian Institution, Taraxacum, Washington.
- Ubelaker, D.H. and Rife, J.L. 2009. Skeletal Analysis and Mortuary Practice in an Early Roman Chamber Tomb at Kenchreai, Greece, *International Journal of Osteoarchaeology* 21(1): 1-18.
- Underhill, R. 1939. *Social Organization of the Papago Indian*. Columbia University Press, New York.
- Van Gennep, A. 1960. *The Rites of Passage*. Routledge and Kegan Paul, London.
- van Vark, G. N. 1975. The Investigation of Human Cremated Skeletal Material by Multivariable Statistical Methods, II. Measures. *Ossa* 2:47-68.
- Vansina, J. 1985. *Oral Tradition as History*. The University of Wisconsin Press, Madison.

- Walker, P. L., K. W. P. Miller and R. Richman.2008.Time, Temperature and Oxygen Availability: An Experimental Study of the Effects of Environmental Conditions on the Color and Organic Content of Cremated Bone. In *The Analysis of Burned Human Remains*, edited by C. W. Schmidt and S. A. Symes, pp. 129-135. Elsevier, Amsterdam.
- Walker, W. H.2008.Practice and Nonhuman Social Actors: The Afterlife Histories of Witches and Dogs in the American Southwest. In *Memory Work: Archaeologies of Material Practices*, edited by B. J. Mills and W. H. Walker. School of Advanced Research Press, Santa Fe.
- Wickholm, A.2008. Reuse in the Finnish Cremation Cemeteries Under Level Ground – Examples of Collective Memory. In *Materiality of Death: Bodies, Burials, Beliefs*, edited by F. Fahlander and T. Oestiggard, pp. 89-97. British Archaeological Reports International Series 1768, Oxford.
- Wickholm, A. and S. Raninen.2006.The Broken People: Deconstruction of Personhood in Iron Age Finland. *Estonian Journal of Archaeology* 10(2):150-166.
- Willey, P. and D. D. Scott.1999.Clinkers on the Little Bighorn Battlefield: In Situ Investigations of Scattered Recent Cremains. In *Forensic Osteological Analysis: A Book of Case Studies* edited by S. I. Fairgrieve, pp. 129-140. Charles C. Thomas, Springfield, Illinois.
- Williams, H.
1999.Placing the Dead: Investigating the Location of Wealthy Barrow Burials in Seventh Century England. In *Grave Matters: Eight Studies of Burial Data from the first millennium AD from Crimea, Scandinavia and England*, edited by M. Rundkvist, pp. 57-86. British Archaeological Reports International Series 781, Oxford.

2000. *'The Burnt Germans of the Age of Iron': An Analysis of Early Anglo-Saxon Cremation Practices*, University of Reading, Reading.
2004. Death Warmed Up: The Agency of Bodies and Bones in Early Anglo-Saxon Cremation Rites. *Journal of Material Culture* 9(3):263-291.
- 2005a. Animals, Ashes & Ancestors. In *Beyond Skin and Bones? New Perspectives on Human-Animal Relations in the Historical Past*, edited by A. Pluskowski, pp. 19-40. British Archaeological Reports International Series 1410, Oxford.
- 2005b. Keeping the Dead at Arm's Length Memory, Weaponry and Early Medieval Mortuary Technologies. *Journal of Social Archaeology* 5(2):253-275.
2007. Transforming body and soul: toilet implements in early Anglo-Saxon graves. In *Early Medieval Mortuary Practices: Anglo-Saxon Studies in Archaeology & History* 14, edited by S. Semple & H. Williams, pp. 66-91. Oxford: Oxbow.
2008. Towards an Archaeology of Cremation. In *The Analysis of Burned Human Remains*, edited by C. W. Schmidt and S. Symes, pp. 239-269. Academic Press, London.
- 2011a. Ashes to Asses: An Archaeological Perspective on Death and Donkeys. *Journal of Material Culture* 16(2):219-239.
- 2011b. Cremation & Present Pasts: A Contemporary Archaeology of Swedish Memory Groves. *Mortality* 16(2):113-130.
2013. Death, Memory and Material Culture: Catalytic Commemoration and the Cremated Dead. In *The Oxford Handbook of the Archaeology of Death and Burial*, edited by S. Tarlow and L. Nilsson Stutz. Pp. 195-208. Oxford University Press, Oxford.
- Wylie, A. 1985. The Reaction Against Analogy. *Advances in Archaeological Method and Theory* 8:63-111.

