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Introduction

There was considerable variation in mortuary practices during the Neolithic in mainland Britain (*c*.4000–2500 BC) which included inhumation burial in flat graves, round and long mounds, cairns, caves and cists, the disposal of partial skeletons, fleshed body parts or excarnated bones, the disposal of deceased individuals in rivers, bogs and other watery contexts, and the burial of cremated human remains in isolated pits, non-monumental cemeteries and within circular monuments. Some of these funerary and mortuary traditions overlap chronologically and geographically while others may be restricted to a specific region or to a short (or long!) burial phase (Cooney, 2014: 191). Even at Stonehenge, the burial traditions consisted of cremation deposits from the very first stage of its construction *c*.3000 cal BC, and then repeated short episodes of inhumation and excarnation rites which spanned millennia. It is clear that irrespective of the type of funerary or mortuary practice, specific individuals were deliberately selected for specific rites at specific locations. The selected dead, whether their status was ascribed or achieved, were chosen by their communities for particular mortuary and funerary rites yet they only represent a small proportion of the total number of deceased individuals from Neolithic Britain.

The aim of this research, which formed the majority of my PhD thesis, is to explore cremation as a deliberate and distinct funerary rite, consistently associated with circular monuments (or, at least, monuments with a progressive evolution towards a circular design) which took hold in the Middle Neolithic (*c*.3500–3000 BC) and became more widespread during the Late Neolithic (*c*.3000–2500 BC). Studies of stratigraphic sequences will show that cremation deposits were added at different times within the sequences of each monument, thus this study will also determine how this form of burial practice evolved, and what other mortuary practices were employed alongside it during the late 4th and early 3rd millennia BC. Demographic attributes will also be examined, along with the type of deposition and the burial organisation of cremation cemeteries in order to examine the nature of mortuary rites, social organisation, and population demography. The processes behind the selection of certain individuals for cremation (*e.g.*, only females or only adults) and the frequent deposition of token burials will also be investigated to discern differences in demographic profiles between a variety of circular enclosures (*i.e.*, henges, stone circles and timber circles) and between monumental and non-monumental contexts. Differences in the cremation process such as efficiency of the cremation, pyre technology, bone selection for burial, containment of the bones, and methods of burying the remains will also be examined since they varied throughout the Middle to Late Neolithic period. The data gathered will form the basis for a new understanding the burial practices within cremation cemeteries.

1.1. Research context and constraints

Cremated human remains have consistently been recovered in the archaeological record of Neolithic Britain. Yet, surprisingly there is very little recognition of cremation as a separate rite within the academic literature despite considerable amount of archaeological data. This is partly due to the unfounded belief that cremated remains represent low status/deviant burials in which little information can be gained by their study, but also due to the lack of systematic osteological analysis and the lack of standardised methodologies and terminologies within reports and publications. While there is no legal requirement in England to make commercial archaeology reports accessible to the public, they all convey varying degrees of information such as the nature of the deposition, its association with other features and artefacts, soil conditions, pyre technology and demographic attributes. These 'grey literature' reports often only provide basic information rather than in-depth studies or analyses, which may call into question the experience and qualifications of the specialist(s). In fact, osteology is often presented as a 'secondary' component in reports (even in cemetery excavations!) in that monuments, pottery, lithics, or other archaeological features (such as pits, post holes and houses) are the primary focus. As a consequence, many archaeological reports had to be discounted throughout my research due to lack of information or availability, but it has also meant that comparing cremation deposits between sites at local and regional levels was problematic as potential similarities could not be discerned.

The geographical focus of this research is on archaeological sites from mainland Britain, including the Isle of Anglesey, as it conforms to natural oceanic borders. Cremation sites from the other British Isles are not featured, mostly due to a lack of radiocarbon dating, but they are identified as an area for future research. Other sites, such as those found within Europe and Ireland, are briefly considered in regard to the spread of cremation from the Mesolithic to the Early Neolithic as it arrived into Britain. It is acknowledged that by focusing on cremation trends across a wide geographical context, this book will apply broad statements despite significant variations within traditions of mortuary practice. Inevitably, this will gloss over any local and/or regional differences which may be present in the archaeological record, but it is hoped that this study will provide the foundation on which further cremation trends can be perused within smaller geographical constraints, and to also examine the contemporaneity of practicing both cremation and inhumation at differing monuments.

There are other limitations to this research which will be discussed further throughout this book; however it is important to introduce some of the constraints here. The process of cremation eradicates many of the features needed to make osteological assessments. Indeed, as Roberts and Cox stated in their book on the history of health and disease in Britain, 'cremated material was not considered, not because it is not worth studying but because the amount of data on disease potentially retrievable from this type of funerary context is much less than from inhumed material…' (2003; 27). The study of cremated remains, therefore, is often passed over if comparable unburnt skeletal assemblages are available. This has meant that a large portion of the cremated Neolithic population has not featured in any comparative studies or discussions regarding, for example, prehistoric health and disease. Additionally, this has also meant that due to the lack of research in cremation studies, methodologies deriving from unburnt skeletons are used when analysing cremated bones. These techniques do not consider the changes to bones during the cremation process (*e.g.,* shrinkage, warping, eradication of features) which in turn affects measurements and comparative observations. As Jackie McKinley recently said "…analysing cremated bones is not something that can be taught; you must get a *feel* for the bones which only comes with practice" (*pers. comm*). Therefore, analyses of cremated bones are largely subjective and directly corresponds to the competency of the osteologist.

Another limitation is that only a tiny proportion of the Neolithic population has been excavated leading many scholars to ask, 'where is the dead?'. While cremation and inhumation appear to be the preferred rites, it nevertheless only accounts for about 1% of the expected population. Thus, the majority of the dead were disposed of in some archaeologically invisible manor, such as disposal in waterways or through excarnation or cremation scattering. This means that when discussing inhumation or cremation as being the "dominant funerary rite", it is in reference to the archaeologically *visible* rites and not those rites which clearly account for 99% of the missing Neolithic population. Differential preservation within certain geographical areas with acidic soil has also meant that unburnt bone has disappeared, and this may help explain some of the 'missing dead' as soil conditions in Scotland and Wales favour the survival of cremated bone over unburnt bone (Jay and Scarre, 2017). In many instances, it is difficult to even ascertain if unburnt bone was present in a seemingly 'empty' pit or grave. It is therefore important to consider soil acidity when examining preferential deposition of cremated bone since potential inhumation burials may not have survived thus creating a potential bias in terms of the geographical distribution of funerary rites.

1.2. Recent advances in cremation studies

In the past few years, five large volumes of work have been published dedicated to cremations studies: *Transformation by Fire: the archaeology of cremation in cultural context* (Kuijt *et al*., 2014); *The Archaeology of Cremation* (Thompson, 2015); *The Analysis of Burned Human Remains* (Schmidt and Symes, 2015); *Cremation, Corpses and Cannibalism* (Kaliff and Oestigaard, 2017); and *Cremation and the Archaeology of Death* (Cerezo-Román *et al*., 2017). In addition, two recent research projects, CRUMBEL (Cremations, Urns and Mobility: ancient population dynamics in Belgium) and LUMIERE (Landscape Use and Mobility In Europe) have accelerated advances in cremation studies. Both projects are refining geochemical analyses on cremated bones (*e.g.,* infrared and x-ray fluorescence, carbon, oxygen and strontium stable isotopes) as well as revisiting osteological methodologies (*e.g.,* Veselka *et al.,* 2021). These academic advances in cremation studies, particularly in the analysis of stable isotopes and in microstructural heat-induced changes, have made it possible to consider alternative avenues for scientific and archaeological study. The brief discussion in this section is aimed at highlighting some of these advances and how their application can augment not only this study, but also any re-analysis of cremated human remains from archaeological sites.

When bone is exposed to high temperatures, chemical and structural changes result in evaporation, organic degradation, and transformation of bone minerals within the matrix (*e.g.,* Symes *et al.,* 2015). Other significant changes to the bones result in discolouration, shrinkage, warping, fracturing and fragmentation. While studies have not been able to specify exact temperatures or exposure times for causing these mechanical and chemical changes, temperature ranges based on colouration have been developed as an indicator of the maximum temperature ranges reached during cremation (Shipman *et al.,* 1984; Thompson, 2004). However, differential burning is common, with variable colouring, shrinkage, warping and fracturing all exhibited on a single element or across a body. This variability is what is known as burn patterning and, while it has long been a subject of debate, recent advances from the study of homicide cases have led to the systemic mapping of burn trauma and to the identification of typical signatures distinguishing perimortem and post-mortem fire damage (Symes *et al*., 2015). Here, the timing of the defects (*e.g*., trauma or thermal fractures) in relation to the moment of death relies on whether the bone was fresh, dry, or degraded prior to cremation. Interpretation of a burnt body thus relies on an understanding of the biomechanics of burnt bone, as well as on an understanding of body position and tissue-shielding in bone, and of colour changes (*ibid.*). The adoption of these three forms of classification is particularly important for future studies because re-examination of archaeological bone would enable a broader understanding of funerary rites. Tissue shielding can enable the recreation of limb placement and body position (supine, prone, flexed, crouched) on the pyre, while the process signatures of bone fracturing during perimortem or post-mortem intervals can indicate previously missed evidence of perimortem trauma.

Furthering our understanding of heat-induced changes to cremated bones are studies examining changes in crystallinity (*e.g*., Thompson, 2015). The composition of a bone is a combination of nanocrystalline apatite minerals and fibrous proteins. During cremation the hydroxyapatite crystals increase in size while simultaneously reducing porosity by dehydrating the lattice carbonate and water from the bone (McKinley, 2000b; Thompson, 2015). Crystal growth increases linearly, though it suddenly doubles in size at 400°C and plateaus around 800°C (Etok *et al.,* 2007). While crystallinity studies are on-going to refine its techniques and applications, using a crystallinity index has the potential to provide information regarding the context in which a bone/skeleton has been deposited, to measure the different temperatures (rather than relying on colour changes) and burning conditions of cremated bones, to distinguish between archaeological and modern bone material, and to use as a means of determining species. All of these, used in combination, should have positive implications for the interpretation (or re-interpretation) of funerary and mortuary rites of cremated human remains in the archaeological record.

Computed Tomography (CT) scanning has proved useful in recent years for different types of archaeological and osteological analyses (Lynnerup *et al.,* 1997; Lynnerup, 2010; Harvig *et al*., 2011, Willis *et al*., 2016). It has been used to measure the angle of the canal in the internal auditory meatus of the petrous bone which can determine the biological sex of that individual (see Chapter 5 for further discussion). CT scanning has also been applied to intact cremation urns to examine the quantity and organisation of burnt bones *in situ.* This is especially useful if the integrity of the urn would not survive having its contents removed or if destructive analysis of the urn's contents were not permitted. The new generation of CT scanning is called multi-detector computerized tomography (MDCT) and provides very clear scans which can be manipulated and orientated to see the contents contained within the urn, slice by slice (Cavalli *et al*., 2015). MDCT also has the potential to reveal information regarding pyre temperatures as preliminary results have shown a correlation between the temperature and the X-ray density of the cremated bone (Fernandez Castillo *et al.,* 2013; Gonçalves, 2011). This correlation could also be potentially expanded to reveal information in instances where, for example, defleshing of the corpse was conducted prior to its cremation (Cavalli *et al*., 2015; McKinley, 2015a).

While the study of cremations has entered into mainstream academic research, there are limitations. The first is that both the forensic and archaeological fields seem to be playing catch-up with each other: forensic scientists firmly state that anthropologists should employ traditional archaeological methods of excavation and part-excavation while archaeologists are expected to employ microscopic biomolecular approaches to osteological analysis. Secondly, these advancements require specialist equipment and money to administer and utilise these new methods, thus the probability of these advances entering soon into mainstream archaeology may be rather limited.

1.3. Brief overview of the cremation process in archaeology

Cremation, as a method for the disposing the dead, is a poorly understood mortuary rite in prehistory, including during the British Middle to Late Neolithic, despite frequent recovery of burnt bones from archaeological sites. Inference on pyre construction, temperature, length of burning time and pyre collapse in prehistory often draws upon documentary sources, pictorial representations of historic cremations, scientific experiments, and anthropological observations of living cultures (for examples, see Dubois and Beauchamp, 1943; Wahl and Wahl, 1983; Pautreau, 1994; Downes, 1999; Toynbee, 1996; Holck 1986; McKinley, 1994). According to academic research, the basic structure of a pyre appears to have remained relatively constant throughout history: a rectangular structure formed from criss-crossing layers of timbers interfiled with dry brush (McKinley, 1994; 2000a; McKinley and Bond, 2001) (Figure 1.1). Its construction would have normally taken place either on a flat surface or over a 5–7cm shallow depression/pit in order to provide an under-pyre draught for air circulation (Hiatt, 1969; McKinley and Bond, 2001).

There is no direct evidence of how pyres were constructed in the Neolithic, as former pyre sites rarely survive in the archaeological record. The efficiency of cremation, and indeed its burning duration, would be affected by the quantity of wood used to build the pyre. The minimum

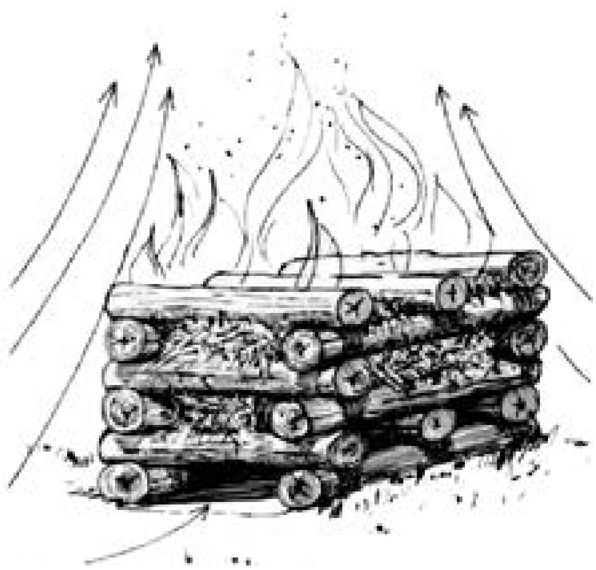

Figure 1.1. Reconstruction of a cremation pyre (after McKinley, 1994: 80, fig. 19, reproduced with permission from Norfolk County Council).

energy used in a pyre is roughly equivalent to 146kg of wood, but up to 500kg of fuel would often be necessary to efficiently cremate a deceased individual (Holck, 1986; McKinley, 1994; Toynbee, 1996). Data from ancient and modern cremations indicate that the quantity of wood may vary as it was often used as an indicator of the deceased's wealth or status (*ibid.*). During the Neolithic, forests were being cleared for agricultural purposes, and an array of wood would have been readily available for pyre construction. Archaeologically recovered charred wood from pyre debris generally contains more than one type of wood, meaning that multiple taxa were often used for pyre construction (Gale, 1997; Campbell, 2007).

The corpse would probably have been placed on top of the pyre, and any additional wood, grave goods, food or drinks could be added to the fire at any time throughout the cremation process. In the archaeological record, burnt and charred animal remains are frequently found intermixed with Neolithic cremated bones, and are interpreted as representing sacrifices, offerings or leftovers of a feast thrown into the burning pyre. Unburnt animal bones have also been recovered intermixed with cremated bones, again signalling deliberate offerings or accidental inclusions. Burnt and charred plant remains such as tubers, roots and rhizomes have also been noted in a few cremation deposits (Jones, 1978; Robinson, 1988; Campbell, 2007). Again, these are interpreted as the remains of offerings or as kindling used in the pyre. However, grave goods and pyre goods (*e.g.,* arrowheads, flint weapons, pottery and beads) which could potentially have accompanied cremated remains are uncommon in the Neolithic.

As the pyre continued to burn down, it would have slowly collapsed in on itself with little outward spread. Hot bones are very brittle, and it has been recorded that some cultures deliberately fragment the cremated bones while hot so as to fit them into urns (McKinley, 2000b); however, if left to cool naturally, the bones will generally retain the same position they were in when initially placed on the pyre. The temperature of the pyre would require tending over several hours to stay above 600°C in order to sufficiently cremate the body (McKinley, 2004). Modern cremation pyres take as little as three hours to complete; however, Pointek (1976) has documented 7–8 hours in experimental pyres, while Wahl (1982) has recorded 7–10 hours. If a corpse has retained any soft tissue after its initial firing, then the remains could be raked into a pile and re-fired until only cremated bones are left (McKinley, 1994).

After the cremated bones have cooled, they are almost always collected from the pyre debris for deposition elsewhere. This could also include pyre-sweeping in which all the bones and debris are swept up together for later deposition. While crematoria supposedly existed underneath some long barrows in Yorkshire (though now interpreted as burnt mortuary structures [Vyner, 1984; 1986]), it is rare to find pyre sites in Neolithic Britain and even rarer to find evidence for pyre re-use. The intense heat of the pyre would affect only the first few millimetres of the soil underneath and, over time, this soil will have eroded away unless the site was buried immediately after it was used. Time, temperature, weather and the amount of oxygen required for the cremation are key variables which affect the efficiency of the cremation process and, in turn, the efficiency of cremating a corpse. If any of those variables are negatively affected, then this would result in the bones being charred or inefficiently cremated rather than fully cremated.

1.4. Brief overview of radiocarbon dating cremated human remains

Within the last decade, successful radiocarbon dating of cremated human bones from archaeological contexts has been achieved (*e.g.*, De Mulder *et al*., 2007; 2009; Lanting *et al*., 2001; Olsen *et al*., 2011; 2013; Snoeck *et al*., 2014) proving consistent in repeated laboratory inter-comparison tests (Naysmith *et al*., 2007). This has meant that the dating of prehistoric burnt bones no longer relies on associated artefacts. Instead, dating cremated bones from old archaeological sites has allowed a significant percentage to be shifted out of the Bronze Age (where they were placed by inference or by association) and into the Neolithic.

Reliable radiocarbon dates from cremated bones are achieved when human remains are exposed to pyre temperatures over 600°C (Lanting *et al*., 2001) allowing for recrystallization of their bone apatite crystals. This recrystallization produces larger and more densely packed hydroxyapatite crystals and protects the burnt bones from external influences such as fluctuating weather temperatures and soil conditions after final deposition. Indeed, cremated bone is generally well-preserved in archaeological contexts and, in many instances, recovered in areas where unburnt bone does not survive within the buried environment. Cremated bone can thus be recovered and dated from a wider range of subsoils than unburnt human bone.

However, during cremation these morphological and mineralogical changes also result in the loss of structural carbon. Laboratory studies have suggested that radiocarbon dating results from cremated bones actually reflect the *atmosphere* of the cremation fire rather than the bone itself (*e.g.*, Hüls *et al*., 2010; Van Strydonck *et al*., 2011; Olsen *et al*., 2013). The 'old wood effect', as it is commonly known, is created by the exchange of carbon between the cremating bones and old heart-wood being used during the cremation process. It is expected that radiocarbon dating cremated bone is the equivalent of dating the wood used in the pyre; however, cremated bone may also potentially result in returned dates which are too high/older (Hüls *et al*., 2010; Olsen *et al*., 2013; Snoeck *et* al., 2014). In some situations, large age offsets could also be affected if peat or coal was added as a fuel source, or if marine plants or animals (and hence marine carbon reservoir effects) were burned within the pyre (O'Donnell, 2016). However, charcoal from British Neolithic cremation deposits indicate that the most common woods used in pyres was primarily oak, followed by hazel/alder (see Chapter 8). A method to determine if there is a large age offset can be achieved by assessing the carbon isotope values ($\delta^{13}C$) in cremated bone (Snoeck *et al*., 2014). Since $\delta^{13}C$ values decrease during carbon exchange, the most depleted $\delta^{13}C$ values indicate the highest degree of carbon exchange and thus the most likely to be affected by older wood. It was outside the scope of my initial research to determine if there are any large age offsets from the radiocarbon dates of cremated bones. There are also difficulties in obtaining the $\delta^{13}C$ values associated with returned dates as they are rarely published. Thus, I have treated all radiocarbon dates as *termini post quos* (the earliest time the event may have happened) rather than the actual date of the event.

All radiocarbon dates used within this volume have been calculated with IntCal 13 calibration curve of Reimer *et al.,* (2009; 2013) using OxCal v4.3 programme (Bronk Ramsey, 2009). Details of the algorithms used in OxCal are available from the online manual (http://c14.arch.ox.ac.uk/). The correlation between the OxCal model and data is determined by the A_{model} with values higher than 60 indicative of good agreement (Bronk Ramsey, 1995). The resulting model provides 'posterior density estimates' which are expressed in calendar years and presented in *italics* as probability ranges (format recommended by Mook, 1986). The modelled posterior density estimates are not absolute and may change if further data becomes available. The calibrated date ranges cited throughout the book are those for 95% confidence (two sigma). For the few instances where sites have not been radiocarbon dated, then a date by artefact association is tentatively used but clearly noted.

1.5. Brief overview of analysing strontium isotopes in cremated bone

Our understanding of early prehistory is being revolutionised by other recent advances in archaeological sciences, primarily in genetic (*e.g.,* Brace *et* al., 2019) and isotopic research (*e.g.,* Snoeck *et al*., 2015; 2016a; 2016b; 2017). While it is not yet possible to conduct aDNA analysis on cremated human bones, there are now three reliable methods to measure strontium isotope levels from: a) cremated tooth roots (Hoppe *et al*., 2003) which form during different stages of childhood but rarely survive in cremation deposits; b) cremated petrous bones (Veselka *et al*., 2020) from the inner portion of the ear which form during gestation and infancy; and c) cremated long bones (Snoeck *et al*., 2015) which, through continuous bone remodelling, provide isotopic values relating to the last 10–15 years of an individual's life. These new advances mean that for the first time, cremated individuals can feature in research regarding mobility, residence and/or migration using strontium isotope analysis.

Strontium isotopes ($^{87}Sr/^{86}Sr$) within the landscape vary according to bedrock and composition of minerals and are absorbed into plants and thence into animals. Upon consuming plants and animals, strontium isotopes are absorbed into people's teeth as they formed during childhood, and into their bones as they continuously remodel throughout their lives. These isotope values can be analysed to broadly infer the geographical location of the food sources (Figure 1.2) and hence, the scale of mobility during the formation of the analysed tissues.

I was involved in one of the first research projects to successfully analyse strontium isotopes in cremations in order to investigate mobility using the cremated remains from Stonehenge (Snoeck *et al*., 2018; the results are also discussed in Chapter 6). Strontium isotope analysis is not yet commercially available in the UK and, consequently, the majority of cremated remains discussed throughout this book have not been analysed for strontium isotopes. However, I discuss analysing cremated bones for strontium isotopes as an area for future investigation in Chapter 10.

1.6. Terminology

The terminology for describing burial spaces, mortuary practices, cemeteries and cremation is interchangeably used within the literature despite some notable differences between terms. There is no single standardized vocabulary which can be used to label and describe the social processes and archaeological manifestations resulting from these terms. And perhaps there should not be: the descriptions for complex terminologies are continuously evolving with new scientific contributions, re-interpretations, and continued dialogues between specialists and their multiple fields. To adopt a widespread standardization would limit and constrain this evolutionary process and hinder our development of archaeological understanding of past societies. However, for the purposes of this book, it is considered important to establish a few definitions for the commonly used terminology. It is not meant as a strict typology, but rather as a method with which to describe the range of mortuary practices found not only across Neolithic Britain, but also the range of mortuary practices found at each site.

The terminology for 'mortuary' and 'funerary' must first be addressed: **mortuary** relates to the processing and preparation space (*e.g.,* excarnation platform, cremation pyre) or as a storage place where dead bodies are kept (*e.g.*, long barrow or portal dolmen). **Funerary** is the actual event of burying or burning the dead and may also reflect the location where bodies are buried, deposited, disposed of, and/or commemorated. Both 'mortuary' and 'funerary' have their own rites and rituals which would have been observed from the moment of death (and sometimes even before death) until eventual burial and remembrance. This '***chaîne opératoire'***, as it is known, consists of a variety of different chronological and geographical sequences that dead bodies went through (Appleby, 2013; Mauss,

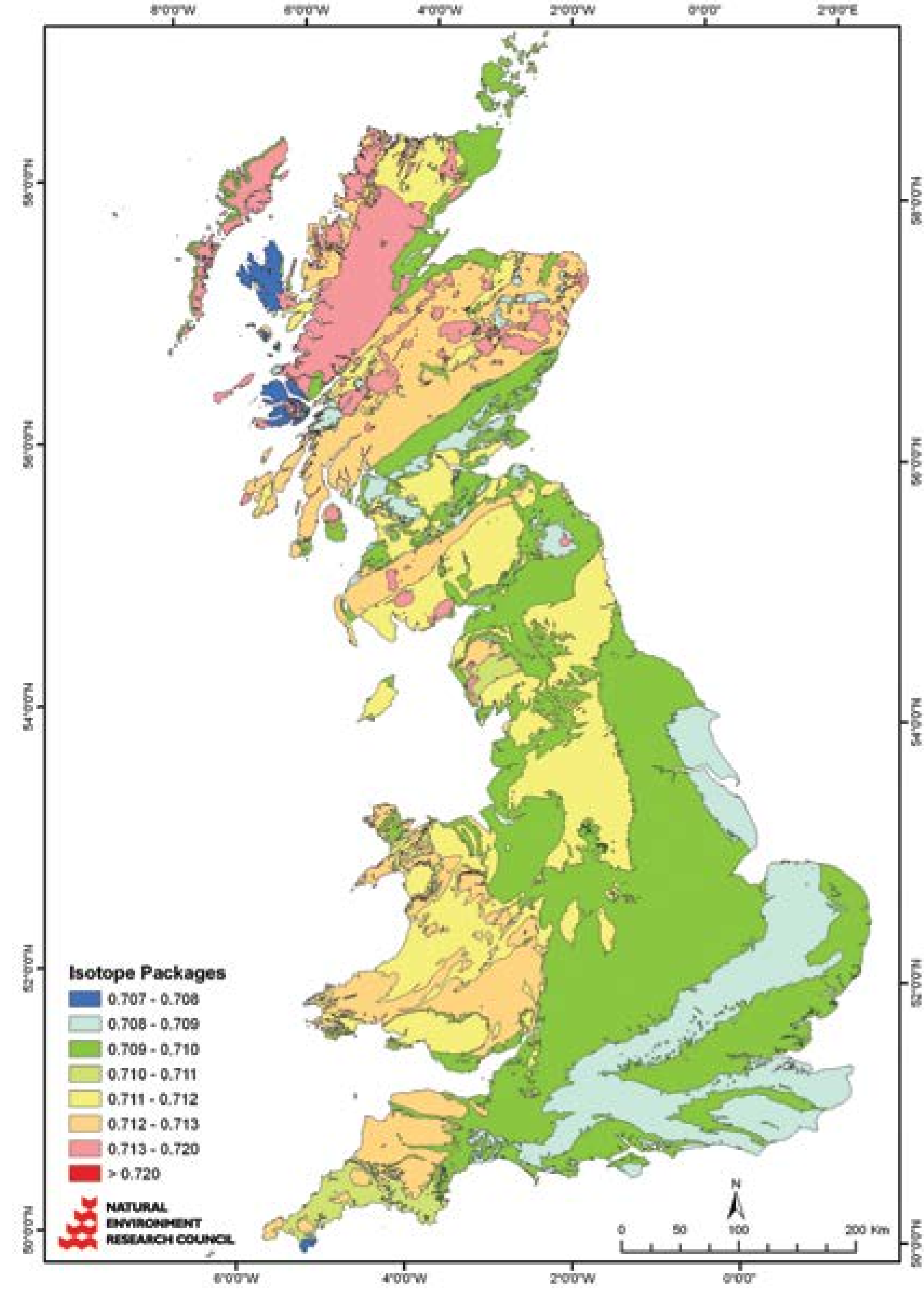

Figure 1.2. The $^{87}Sr/^{86}Sr$ biosphere map of Britain (after Evans *et al*., 2010: 2, fig. 1b; reproduced under Open Government Licence; contains British Geological Survey materials ©UKRI 2021 and contains OS data ©Crown copyright 2021).

1950; Turner, 1969). The *chaîne opératoire* is also used to discuss variations in cultural ideals regarding a society's interaction with corpses, thus revealing wide variations in the different treatments of the dead within Neolithic society (Figures 1.3 and 1.4).

Broadly speaking, there are three main mortuary events that a Neolithic non-burned corpse could be put through. The first event is the pre-burial treatment in which the deceased body is either buried immediately, is deliberately manipulated, or is allowed to decompose prior to further

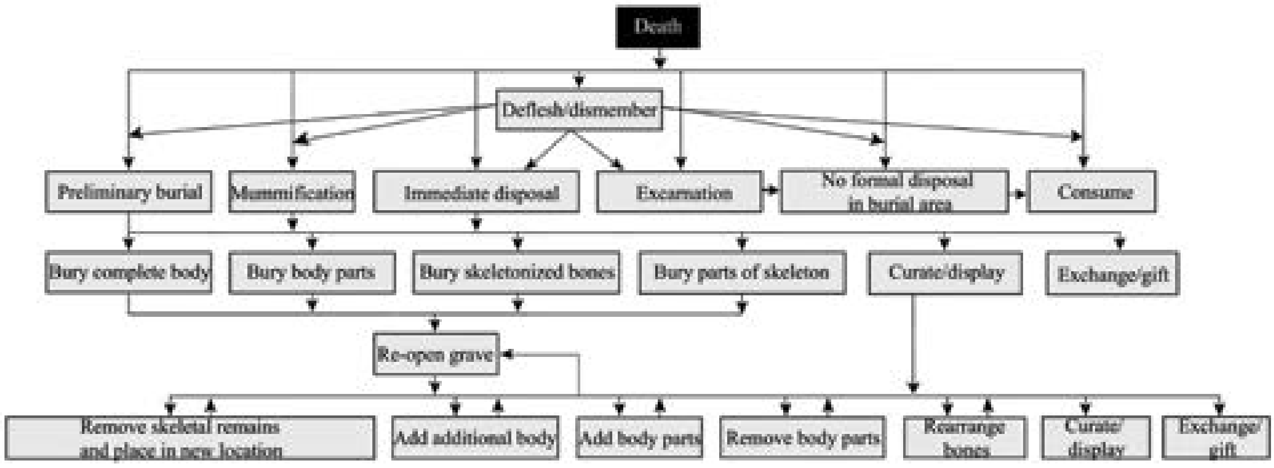

Figure 1.3. The Neolithic *chaîne opératoire* for mortuary practices where the body has *not* been cremated (adapted after Appleby, 2013: 87, fig.1). This chart illustrates the different possibilities for treating the dead and reveals just how common handling corpses was, and how interactive people would have been in order to appropriately inter/dispose of their dead.

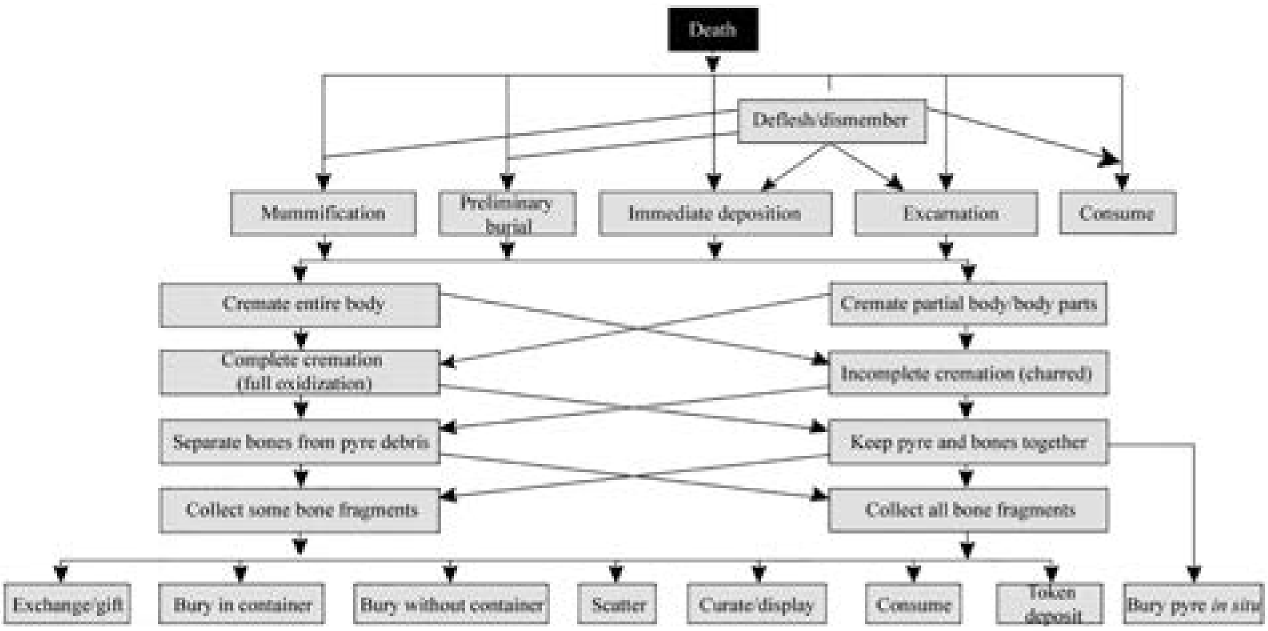

Figure 1.4. The *chaîne opératoire* for cremated bones (adapted after Appleby, 2013: 89, fig. 2). Some of the processes are similar to those associated with the mortuary events of unburnt bones; however, there was a vast array of variations to choose from for their final mortuary event.

handling (Appleby, 2013). These pre-burial treatments include mummification, excarnation, consumption, and dismemberment. The second mortuary event is the actual burial of either the whole corpse, parts of the corpse, some skeletal bones, or the entire skeleton. Another option could be to display the remains (fleshed, defleshed or skeletonized) prior to formal burial. A complete Neolithic body is usually buried in a flexed or contracted position, while the burial of wholly or partially disarticulated skeletal parts after excarnation is also a common occurrence in the Neolithic. The third event is the post-burial treatment, including body manipulation after burial. Graves and tombs might be re-opened at a later stage after burial to either inter one or more additional individuals, re-arrange the decomposed skeleton, or take parts of the skeleton away before closing the grave again. This final mortuary event could have re-occurred many times throughout the death cycle of that deceased individual until the remains were finally laid to rest or the tomb permanently sealed.

Cremation is the actual act of transforming a corpse by burning it on a pyre, while **cremated bones** derive from the end process of a cremation. This is a tricky term to use as often the literature uses terms such as 'cremation cemeteries' or areas with 'cremation deposits'. In fact, this could not be case or else there would still be archaeologically excavated cemeteries full of actively burning pyres (McKinley, 1997a)! As there is currently no other useful alternative, 'cremation cemetery' and 'cremation deposit' will be employed throughout for the purposes of this book despite the obvious terminological errors.

As with inhumed bones, cremated remains also have a *chaîne opératoire* for the rites and rituals of mortuary and funerary practices (Figure 1.4). It is a useful visual description of the different Neolithic variations to which burnt bones were subjected and, being smaller fragments than inhumed bones, could be moved easily throughout the landscape. Cremation was conducted through three main mortuary events: the first was the pre-cremation phase, which was exactly the same as the pre-burial treatment for unburnt bodies. However, there can be some difficulty in assessing the interval between the moment of death and when the cremation took place. While it is possible to distinguish between 'dry/old' and 'fresh/green' bones used in the cremation process, traces of excarnation or mummification are not as visible on cremated bones as they would be on unburnt bones (Appleby, 2013). Any evidence for micro-bacterial attacks to the bone collagen during the stages of decomposition would be mostly eradicated during cremation. The second phase of the mortuary event was the act of cremation. This process varied as it was dependant on the deliberate choices made by that particular Neolithic community, meaning that the number of individuals placed on the pyre could vary, the entire body or separate body parts were burnt, and/or the length of burning time and the temperature of the pyre could fluctuate. The rites which followed during this secondary phase affect the quantity and quality of cremated bones after the cremation process was finished. The third mortuary phase was the post-cremation process when decisions were made about the collection of some or all of the burnt bones, the inclusion or exclusion of **pyre debris** (that is, the remnants of the burnt pyre), and how or where the cremated bones were deposited or used afterwards. This phase varies significantly in that remains from a single individual could be used in numerous different ways. Some of these include ***in situ* cremation** whereby the cremated bones are left on the pyre and not formally deposited elsewhere. Complete *in situ* cremation burials have not yet been recovered from the British Neolithic; however, fragments of burnt bones (deliberately or accidently) left at pyre sites are known. Cremated bones could also be exchanged or gifted to help strengthen kinship ties, to prove lineage, bolster leadership claims and rights, or to circulate throughout the landscape. **Token deposits** are another common Neolithic rite in which a small proportion of the cremated bones is deposited in a specific location. The remaining bones could be deposited elsewhere, curated/stored, or used in other rites. This term is used loosely in the archaeological literature to define a deposit containing less than *c.*200–250g of cremated bones. However, it is not appropriate to use this term to compare/contrast deposits containing, for example, 5g of cremated bone versus deposits containing 230g of bone. Thus, I present two sub-definitions for 'token deposition' (see Chapter 9) which take into consideration the quantity of cremated bones and to define their symbolic representation.

Usually, the primary function of Neolithic **cemeteries** was to provide exclusive multiple and/or collective burial spaces for the dead regardless of their location within the landscape, mode of burial or associated monument. These were sacred spaces where funerary rites and rituals could be performed and the spaces where physical boundaries (*e.g.*, wooden posts or earthen banks) separated the dead from the living. Many Neolithic burial places, especially cemeteries within monuments, were reused over a period of time through the constant addition, removal and/or re-arrangement of human remains. This reuse of mortuary space and its associated passage of time would not only have changed the nature and meaning of these sites, but it might also have led to a loss of sacredness as grief, remembrance and kinship links faded (Dunk and Rugg, 1994; Rugg, 2000). Cemeteries were spaces for **multiple burials/deposits** whether through numerous interments within a single event or as successive burials over a period of time. Each cemetery contained many variations including the number of graves, the different types of depositions, and the number of bodies; however, there must be at least two graves (or at least two individuals) to constitute a cemetery (Figure 1.5). A **single burial/deposit**, also referred to as an **isolated burial/deposit**, is a single grave containing one individual. It is considered here to be an isolated funerary event and falls outside the parameters which define a cemetery. Single burials often seem randomly placed within the environment, with very little evidence connecting them to a specific event, community, feature, or monument.

Other terms relating to cemetery activity include **primary burials/deposits** which refers to the initial deposition of human remains left in perpetuity within a grave, pit, or monument. **Secondary burials/deposits** refer to when previously deposited cremated/inhumed bones were exhumed and reused, re-organised, or reburied elsewhere. **Insertion burials/deposits** (also known as satellite deposits) are deposits of burnt and/or unburnt bones which were inserted into pre-existing monuments/grave. These burials often encircle the original occupant(s) and are often, but not always, associated with a later funerary phase of

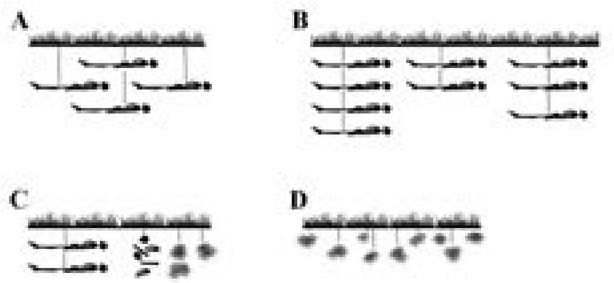

Figure 1.5. Examples of different types of cemeteries: a) single event burials; b) successive burials; c) mixed deposition burials; and d) cremation burials (Figure by C. Willis).

the site. An example of this is the insertion of Early Bronze Age cremations into Neolithic round mounds.

Commemoration within both monumental and non-monumental cemeteries are understood here as communal events which drew on 'collective engagements' with the past (Casey, 1987: 216–18, 235–6). It is a way to 'overcome the effects of anonymity and spatio-temporal distance' (*ibid.*: 218) by bringing the past into the present through re-use of sites even if the original events or deceased being commemorated have long been forgotten. Many Neolithic sites were extensively and repeatedly reworked implying that commemoration was tied to a specific location (*e.g.,* henges) and that links to the past were important despite the use of these sites changing through time. There is also a distinction between **memory** and commemoration. As it will be highlighted further in this book, it is clear that at some Neolithic sites the exact place of burial and the individuals buried there were remembered despite long periods of time passing since initial deposition. This implies a continued connection with the past and a robust oral re-telling of histories handed down through generations of people.