

# Bones and the body politic?

## A diachronic analysis of structured deposition in the Neolithic–Early Iron Age Aegean

### Abstract

The meanings of the terms “ritual” and “sacrifice” are discussed as a basis for considering whether and how animal bones might be recognized as remnants of ritual behaviour or sacrifice. These methodological issues are explored “in practice”, taking structured deposits of burnt bones from the Mycenaean “Palace of Nestor” at Pylos as a case study. The paper then places this and other apparent examples of Mycenaean animal sacrifice in a wider context, by examining zooarchaeological evidence for anatomically selective manipulation and for deliberate or “structured” deposition of animal bones from the Neolithic to Early Iron Age in the Aegean. It is argued that anatomically selective treatment and structured deposition of bones increase through time and that these tendencies are matched by changes in the treatment of human remains, in the form and deposition of ceramics associated with commensality, and in architectural organization of space. These trends reflect not only increasing elaboration of material culture but also increasing qualitative, spatial and temporal differentiation of social life. Although the precise form and meaning of Mycenaean sacrificial ritual may be difficult to discern, its material traces mirror and probably helped to promote radical social change during the Aegean Bronze Age.

### Definitions: “ritual” and “sacrifice”

As a prelude to any attempt at using “zooarchaeological evidence as a source for Greek ritual practice”, it is necessary to consider the methodological potential and problems of inferring ritual practice from bones and this in turn requires prior clarification of the meaning of the terms “ritual” and “sacrifice”.

The *Oxford English Dictionary* assigns three overlapping meanings to “ritual”:

- 1) a religious or solemn ceremony involving a series of actions performed according to a set order;
- 2) a set order of performing such a ceremony;
- 3) a series of actions habitually and invariably followed by someone.

The focus of this conference, and indeed most archaeological discussion of the term, is limited to the first and second of these, but the third meaning implicitly recognizes that “ritual” permeates even aspects of daily life that are devoid of solemn religious ceremony. This broader definition has important implications for the archaeological recognition of ritual practice.<sup>1</sup> Rappaport similarly emphasizes the standardized nature of “ritual” as “the performance of more or less invariant sequences of formal acts and utterances”.<sup>2</sup> Ritual is again a core (though not exclusive) component of “religion [that] denotes the domain of the Holy, the constituents of which include the sacred, the numinous, the occult and the divine, and also ritual, the form of action in which those constituents are generated”.<sup>3</sup> Whereas invariant and formal acts and utterances play a secondary role to more flexible behaviour on an everyday basis, they increasingly dominate ceremonies of greater solemnity.<sup>4</sup> Inflexibility thus marks out solemn ceremony by inverting everyday behaviour, a principle often repeated in the spatial or temporal segregation of solemn ceremonies, in rituals of purification or abstinence, in changes of

### Acknowledgments

For the opportunity to study, and in some cases to cite unpublished data from, the following faunal assemblages, we thank: Assiros Toumba: Ken Wardle; Dendra: Evangelia Pappi; Dimini: Giorgos Hourmouziadis; Faia Petra: Magda Valla; Knossos: John Evans, Sinclair Hood, Carl Knappett, Colin MacDonald, Nico Momigliano, David Wilson; Makriyalos: Maria Pappa; Mikrothives: Vaso Adrimi-Sismani; Mitrou: Aleydis Van de Moortel and Eleni Zahou; Myrtos-Pyrgos: Gerald Cadogan; Nemea-Tsoungiza: Jim Wright; Proskynas: Eleni Zahou; Pylos: Sharon Stocker and Jack Davis; Theologos: Haido Koukouli-Chryssanthaki. Areti Hondrogianni-Metoki, Giorgos Kazantzis, Kostas Kotsakis, Dimitra Mylona, Katerina Trantalidou, Sevi Triantaphyllou, Vaso Tzevelekidi and Duska Urem-Kotsou kindly provided publications or unpublished data cited here.

<sup>1</sup> E.g., Hill 1994.

<sup>2</sup> Rappaport 1999, 24.

<sup>3</sup> Rappaport 1999, 23.

<sup>4</sup> Rappaport 1999, 34–35.

dress, and in exaggerations or distortions of mundane acts.<sup>5</sup> Some anthropologists have further argued, echoing common usage in the English language, that “ritual” refers to acts of a symbolic rather than practical nature—“in which the relationship between means and ends is not intrinsic” (i.e., not explicable in terms of modern western science).<sup>6</sup>

*The Oxford English Dictionary* defines “sacrifice” as:

- 1) the practice or an act of killing an animal or person or surrendering a possession as an offering to a deity;
- 2) an animal, person, or object offered in this way;
- 3) an act of giving up something one values for the sake of something that is of greater importance.

In the cultural context of early historical Greece, sacrifice is normally taken to mean the killing of an animal<sup>7</sup> and it is of course this sense of the term that justifies the strong representation of zooarchaeologists in this volume. Again, however, the third meaning (giving up something valued) may have important implications for (zoo)archaeological recognition of sacrifice.

Early Greek animal sacrifice was highly ritualized, with great emphasis on performance of its constituent steps in the appropriate (time-honoured) sequence and manner.<sup>8</sup> Sacrifice re-affirmed the covenant between men and gods, re-enacted the distinction between men (eaters of cooked meat) and animals (eaters of raw flesh) and symbolized the order of civilized society.<sup>9</sup> We return below to these broader values that were intrinsic to sacrifice in early historic Greece.

## Methodological considerations

On the principle that rituals involve a relatively invariant sequence of acts,<sup>10</sup> faunal remains may suggest ritual activity if they exhibit more or less standardized selection of animal types, butchery practices or disposal practices. Although the distinction between symbolically and practically inspired behaviour is contentious, the case for regarding regularities in faunal composition as shaped by ritual is clearly weakened if these could equally be the result of post-depositional taphonomic distortion<sup>11</sup> or of pre-depositional anatomical constraints on butchery procedure. Fortunately, the skeletal structure of different animals, and the ways in which this re-

<sup>5</sup> Rappaport 1999, 50.

<sup>6</sup> Rappaport 1999, 47–48; Goody 1961, 159.

<sup>7</sup> E.g., Burkert 1983.

<sup>8</sup> Durand 1989a; 1989b.

<sup>9</sup> Detienne 1989; Vernant 1989.

<sup>10</sup> Also Renfrew 1985, 14.

<sup>11</sup> E.g., Wilson 1992; Gamble 1985.

sponds to taphonomic processes or lends itself to butchery, is much more predictable than is the case with most artefacts,<sup>12</sup> facilitating the identification of behaviour that may be attributed to cultural or symbolic rather than practical reasoning or taphonomic processes. A particularly clear example of this principle, arguably the osteological equivalent of celestial alignments in architecture, is the left:right symmetry of vertebrate skeletons, as a result of which consistent overrepresentation of bones from one side of the body can confidently be attributed to symbolically-driven behaviour.

In early historic Greece, as in contemporary Jewish and Muslim culinary practice, the slaughter of domestic animals for consumption was a strongly ritualized rather than merely practical act.<sup>13</sup> The same may well be true for the preceding Neolithic, Bronze Age and Early Iron Age, given the dramatic nature of slaughter, its obvious similarities with violent homicide, and the probability that meat was not a major or regular component of human diet.<sup>14</sup> It follows that zooarchaeologists may be investigating not *whether*, but *how*—or *how ostentatiously*—the slaughter, consumption and discard of animals was ritualized. Of course, the potential for such analysis depends greatly on discard patterns: recognition of a solemn ceremony involving the highly standardized slaughter of ten animals of identical species, sex and age will be easy if their carcasses were buried rapidly (hence protected from taphonomic distortion) and apart from more mundane refuse, but perhaps impossible if their remains were exposed to scavenging dogs and weathering and then scattered widely among other refuse. Here we must hope, not unreasonably, that infrequent ceremonies of great social or religious import are more likely to be segregated in time and space, and more likely to be followed by deliberate disposal of debris, than more frequent events of limited significance. Likewise, it is reasonable to hope that more significant ceremonies will tend to be marked by choice of animals or carcass processing methods that are absent or scarce from more mundane depositional contexts.

With rapid deposition and good contextual resolution, therefore, bones offer considerable potential for the recognition of ritualized or ceremonial slaughter and consumption of animals. Recognition of such episodes as representing “sacrifice” (as opposed to, say, feasting) is more challenging. One could counter such caution with the argument that all episodes of slaughter were sacrificial, but this should be demonstrated rather than assumed, especially for the Neolithic–Early Iron Age, when relevant textual evidence is lacking.

<sup>12</sup> Binford 1978; 1981; Brain 1981; Lyman 1994.

<sup>13</sup> Detienne 1999, 8.

<sup>14</sup> E.g., Triantaphyllou 2001; Papathanasiou 2003; Halstead 2007, 26–27.

Contextual associations (for example, in a sanctuary or next to an altar) ostensibly strengthen the case for a sacrificial interpretation, but at the risk of circular argument regarding both the identification of particular structures and the spatial location of particular rituals.<sup>15</sup> More positively, consideration of the age and sex of slaughtered animals (in the context of local patterns of animal husbandry) and analysis of carcass treatment offer scope for the recognition of “sacrifice”, in the broad sense of giving up something valued, and this might be accepted as evidence in favour of sacrifice (*sensu stricto*) rather than feasting, although the modern Greek guideline on festive catering (“if it is not too much, it will not be enough”) underlines the need for caution.

## A case study: burnt bone “sacrifice”(?) at the Late Bronze Age “Palace of Nestor”, Pylos

A large assemblage of animal bones from the Late Bronze Age “Palace of Nestor” is fairly typical of faunal debris from Bronze Age settlements in Greece, comprising remains of all parts of the body of a range of species, ages, and sexes of primarily domestic animals (with sheep and pigs heavily outnumbering cattle and goats). Traces of knife marks show that carcasses had been skinned, dismembered and filleted (stripped of meat) and most of the larger limb bones, especially of cattle, had then been deliberately broken open, presumably to extract their marrow. Much of the bone had been lightly heated to facilitate marrow extraction, but very little was heavily burnt. Some of the bone was buried rapidly enough for some articulating joints to be found together, but some had been exposed long enough to be gnawed by dogs.<sup>16</sup> Against this background of a *typically heterogeneous* faunal assemblage, a handful of groups of bone clearly differed in composition, to the extent that the excavators stored them separately. These groups were composed almost entirely of heavily burnt bones from three parts of the skeleton (mandible, humerus and femur) of just cattle and deer. The effects of burning and of resulting recent breakage (in excavation and/or storage) have largely obscured the age and sex of the animals represented, but the best preserved group seems to include several large (presumably male) adult cattle, in marked contrast to the rest of the faunal assemblage in which most adults were smaller females. Butchery marks again confirm dismembering and filleting of these bones, but there is no

trace of marrow extraction; bones were apparently deposited intact.<sup>17</sup> Four of these groups of burnt bones were buried on the northwest periphery of the palace, while a fifth was found on the floor near a main entrance, perhaps awaiting final burial;<sup>18</sup> in each case, careful deposition of the group of burnt bones minimized mixing with other bone refuse and facilitated recognition of their other distinctive characteristics.

These five groups bear all the hallmarks of important ritual activity: taxonomic and anatomical composition, butchery marks and depositional history reveal the repeated execution of a largely uniform sequence of selective slaughter, selective carcass treatment and careful disposal. The selection of particular body parts from cattle (perhaps male) and deer, their wholesale burning without extraction of marrow, and their separate disposal all mark a sharp contrast with the rest of the faunal assemblage, arguably identifying these groups as the remains of infrequent rituals of high importance. Significantly, the particular set of anatomical parts selected cannot be accounted for by any plausible taphonomic process, nor is it a likely outcome of carcass processing involving the separation of “high-utility” from “low-utility” parts.<sup>19</sup> Separate disposal further suggests that these rituals were indeed segregated in time and/or space, while finds associated with the unburied group on the floor near the entrance to the palace can plausibly be read as evidence of some form of performance.<sup>20</sup> Perhaps significantly,<sup>21</sup> both the latter group, placed (temporarily?) on the floor near the entrance, and those buried on the edge of the palace were found in what might be classified as *liminal* locations.

These bone groups bear such striking similarity to zooarchaeological remains and written or iconographic representations of early historic burnt sacrifice of selected defleshed body parts, that it is hard to avoid interpretation in terms of sacrifice, but this again risks circular argument.<sup>22</sup> The spatial contexts of discovery of these groups fit at least as well with feasting as with sacrifice,<sup>23</sup> but the unusually wasteful burning (involving sacrifice—in the sense of giving up—of marrow) of an arbitrary recurrent set of body parts is at least suggestive of the offering of part of the carcass to non-human consumers (followed, presumably, by feasting on the remainder of the carcass—below). If this suggestion of burnt sacrifice is accepted, it contributes to an emerging picture of *variable* Mycenaean sacrificial practice, based on the scarce available zooarchaeological evidence from Pylos, from Ayios Kon-

<sup>17</sup> Isaakidou *et al.* 2002; Halstead & Isaakidou 2004.

<sup>18</sup> Stocker & Davis 2004, 60, fig. 1.

<sup>19</sup> E.g., Binford 1978; O’Connor 1993; *contra* Whittaker 2008, 187.

<sup>20</sup> Stocker & Davis 2004.

<sup>21</sup> Cf. van Gennep 1960; Renfrew 1985, 16–17.

<sup>22</sup> Cf. Renfrew 1985, 3.

<sup>23</sup> E.g., Bendall 2004; Bennet & Davis 1999.

<sup>15</sup> Cf. Bergquist 1988; Whittaker 2008, 183.

<sup>16</sup> Halstead & Isaakidou in preparation.

stantinos on Methana,<sup>24</sup> from Mycenae<sup>25</sup> and perhaps from Kalapodi.<sup>26</sup> The bone groups from Pylos are also of interest because they extend the history of burnt bone sacrifice in the Aegean back to the Late Bronze Age, arguably weakening the case for regarding early historical burnt bone sacrifice as an introduction from the East Mediterranean.<sup>27</sup> There is still a lengthy hiatus, however, between the Late Bronze Age and Archaic–Classical examples of this practice, so claims of continuity would perhaps be premature. Anyway, as Christian adoption of earlier rites and festivals illustrates, continuity of ritual practice need not indicate continuity in beliefs.<sup>28</sup>

The remainder of this presentation leaves aside the issue of (dis)continuity in sacrificial practice and the difficult methodological problems of distinguishing sacrifice or religious liturgy from other forms of ritualized ceremony. Instead, we attempt to place the ritual activity represented by the Pylos burnt bone groups in a broader chronological and thematic context.

## Late Bronze Age animal sacrifice in diachronic perspective: anatomical manipulation and structured deposition in the Aegean, 7th–2nd millennium BC

In recent years, publications (many by other contributors to this volume) of faunal assemblages from Archaic and Classical sanctuary contexts in Greece, Cyprus and western Turkey have routinely presented evidence for the selective deposition and/or selective treatment (notably by burning) of particular body parts of animals. Selective anatomical treatment in such contexts is also well known from literary<sup>29</sup> and iconographic<sup>30</sup> sources, while discrete disposal of sanctuary refuse has long been known archaeologically in the case of dumps of votive artefacts. Such contexts are less common, or at least more ambiguous, from the Bronze Age, but there is recurrent evidence of both anatomically selective manipulation and deliberate or “structured” deposition of animal bone. Both practices are evident in the Ayios Konstantinos sanctuary and in the burnt bone groups from Pylos, and more or less elaborately structured deposits have been encountered in most of

<sup>24</sup> Hamilakis & Konsolaki 2004.

<sup>25</sup> Albarella in preparation.

<sup>26</sup> Stanzel 1991.

<sup>27</sup> Bergquist 1988; 1993.

<sup>28</sup> E.g., Hamilakis & Konsolaki 2004, 144.

<sup>29</sup> E.g., Hom. *Od.* 3.447–463.

<sup>30</sup> E.g., van Straten 1995.

the Bronze Age and Final Neolithic settlement assemblages from Greece examined by the present authors:

- ♦ Knossos, Crete: a Middle Bronze Age (MB) group of articulating vertebrae of sheep/goat in a deposit also containing miniature vessels;<sup>31</sup> articulating carcass parts of pig, goat and cattle from a Late Bronze Age (LB) pit;<sup>32</sup> articulating parts of a horse and two young dogs from the LB “Unexplored Mansion”;<sup>33</sup> and young dog skeletons from Final Neolithic (FN) deposits;<sup>34</sup>
- ♦ Nemea-Tsoungiza, Peloponnese: LB selective deposition of cattle heads and feet associated with “shrine” dumps;<sup>35</sup> Early Bronze Age (EB) part-skeletons of infant piglets;<sup>36</sup>
- ♦ Mitrou, Central Greece: a partly articulated young pig associated with LB architecture;<sup>37</sup> and thigh bones (femurs) of several infant and young piglets found within a LB krater;<sup>38</sup>
- ♦ Proskunas, Central Greece: EB “burials” of individual butchered and consumed cattle;<sup>39</sup>
- ♦ Mikrothives, Thessaly: FN–EB “burials” of part-carcasses of single butchered and consumed cattle;<sup>40</sup>
- ♦ Assiros Toumba, Central Macedonia: LB articulated limbs in postholes, probably representing offerings or commemorated consumption events associated with house construction.<sup>41</sup>

Similar finds are reported from several other settlement assemblages studied by colleagues:

- ♦ Chamalevri, Crete: anatomically selective deposition of butchered pig carcasses in LB pits;<sup>42</sup>
- ♦ Chania, Crete: the skeleton of a dog and butchered skeletons or part-skeletons of several pigs, cattle, sheep, goats and fallow deer on a pyre in a courtyard and on the floors of adjacent rooms in the LB Splantzia “sacred area”;<sup>43</sup>

<sup>31</sup> Isaakidou in preparation, in MacDonald & Knappett in preparation.

<sup>32</sup> Isaakidou 2004.

<sup>33</sup> Bedwin 1984.

<sup>34</sup> Triantaphyllou 2008, 144; Isaakidou in preparation.

<sup>35</sup> Dabney *et al.* 2004.

<sup>36</sup> Halstead 2011a.

<sup>37</sup> Vitale 2008, 236.

<sup>38</sup> Van de Moortel 2009, 362.

<sup>39</sup> Zahou 2009, 169–170; Halstead & Isaakidou unpublished report.

<sup>40</sup> Adrymi-Sismani 2007; Halstead & Isaakidou in preparation.

<sup>41</sup> Halstead in preparation.

<sup>42</sup> Mylona 1999a.

<sup>43</sup> Mylona 1999b.

- Thronos-Kephala, Crete: butchered parts of a single cow, a cattle skull and a pair of goat horns in three LB pits with rapidly accumulated fills;<sup>44</sup>
- Tiryns, Peloponnese: one part- and one near-complete LB skeleton of young pigs;<sup>45</sup>
- Pevkakia, Thessaly: seven right femurs of young pigs from an LB house; FN part-skeletons of three young cattle and of one adult and one young pig;<sup>46</sup>
- Kastanas, Central Macedonia: of Early Iron Age (EIA) date, a nearly complete articulated puppy deposited in a house and the head of a little owl (*Athene noctua*) placed in a miniature jug.<sup>47</sup>

In addition, structured depositions of whole or part-carcasses of animals are not uncommon in Bronze Age mortuary contexts. At Myrtos-Pyrgos on Crete, late EB–early LB depositions in the “House Tomb” include an infant piglet, articulating feet of dog and goat and forelimb of sheep, and a group of goat horncores.<sup>48</sup> In MB–LB central and southern Greece, dogs<sup>49</sup> and horses,<sup>50</sup> and also other domesticates,<sup>51</sup> were buried intact or butchered in graves, while remains of donkeys at Dendra probably represent secondary reburial from similar depositions.<sup>52</sup> At LB Faia Petra in Central Macedonia, a series of LB tombs with evidence of secondary funerary manipulation of human remains was accompanied by structured depositions of individual animals (two subadult sheep and a young cow) that had been butchered prior to burial.<sup>53</sup> Skulls of both domestic and wild animals were occasionally deposited in LB graves in the Peloponnese<sup>54</sup> and both a bovine skull and a butchered horse were buried in a LB tomb at Archanes on Crete.<sup>55</sup> Anatomical selection in a funerary context is also known at EIA Theologos on Thasos, where right femurs of cattle and horse were deposited in graves.<sup>56</sup> Even more strikingly, the same body part, of cattle and sheep/goats, respectively, was used to manufacture “palettes” and pigment tubes

(and in the former case inspired stone skeuomorphs) deposited in Early Cycladic graves.<sup>57</sup>

This list of examples of structured depositions of animal bones makes no pretence at being complete and quantified assessment of the frequency of such behaviour is difficult: even where such depositions took place and survived post-depositional destruction or disturbance, they might be overlooked if the bones were presented to the zooarchaeologist either piecemeal or mixed with material from other contexts; and analysts doubtless differ in the strength of the evidence for structured deposition that they consider worthy of comment. Nonetheless, it is clear that some form of structured deposition, involving the deliberate burial of individual animals (intact or butchered), the more or less separate disposal of bones from particular stages of carcass processing, or the manipulation of particular body parts, was widespread on Final Neolithic and Bronze Age settlements and in Bronze Age funerary contexts.

To some extent, these observations can be paralleled in EN–LN contexts from Greece. Horses and donkeys are not securely attested from the Neolithic, but dogs, though often butchered like other animals, were sometimes buried or at least discarded intact: for example, at LN Dimini in Thessaly<sup>58</sup> and LN Makriyalos in Central Macedonia.<sup>59</sup> In the latter region, at LN Promachon-Topolnica, concentrations of horned cattle skulls indicate selective display of this body part, while two house models suggest that—as in Turkey and the Balkans—such skulls adorned the facades of buildings.<sup>60</sup> Horns of cattle and goats likewise appeared to have been placed deliberately in the circuit ditches and some pits at LN Makriyalos<sup>61</sup> and animal crania were selectively deposited in a MN circuit ditch at Paliambela-Kolindrou. Neolithic bone tools from some sites exhibit some fairly consistent selection of body parts, such as sheep/goat distal tibia for manufacture of spatulae<sup>62</sup> and sheep/goat distal metatarsal for awls.<sup>63</sup> Both bones seem well suited, morphologically, to the end product, but occasional use of other bones for these tools and of these bones for other tools, and regional differences (within the Aegean and further afield) in such use of raw materials, suggests that cultural as well as practical reasoning played a part in selection of raw materials. Similarly, selective avoidance of bones of large wild animals, in favour of those of domesticates and small game, as raw materials for bone tools at LN Makri-

<sup>44</sup> D’Agata 2001; Mylona in preparation.

<sup>45</sup> Von den Driesch & Boessneck 1990, 102.

<sup>46</sup> Jordan 1975, 33–34 and 87–88.

<sup>47</sup> Becker 1986, 88 and 219.

<sup>48</sup> Isaakidou in preparation.

<sup>49</sup> Hamilakis 1996; Trantalidou 2006, 100–101, Tables 3–4.

<sup>50</sup> E.g., Boessneck & von den Driesch 1984; Protonotariou-Deilaki 1990.

<sup>51</sup> E.g., Demakopoulou 1990, 121, fig. 21.

<sup>52</sup> Pappi & Isaakidou in press.

<sup>53</sup> Valla 2007; Valla *et al.* 2013.

<sup>54</sup> E.g., Trantalidou 2006, 100, table 3.

<sup>55</sup> Sakellarakis & Sakellaraki 1997, 263–265.

<sup>56</sup> Halstead & Jones 1992.

<sup>57</sup> Isaakidou in preparation.

<sup>58</sup> Halstead 1992, 34, Table 1b.

<sup>59</sup> Pappa *et al.* 2004, 21.

<sup>60</sup> Koukouli-Chryssanthaki *et al.* 2007; Trantalidou & Gkioni 2008.

<sup>61</sup> E.g., Pappa 2008, 150–151, 242, 253 and 266.

<sup>62</sup> E.g., Skotini Cave, Tharounia: Stratouli 1993, 500–506, figs. 1 and 3–5.

<sup>63</sup> E.g., Skotini Cave, Tharounia: Stratouli 1993, 508–517, figs. 10–15.

yalos contrasts sharply with the picture from some Bronze Age sites in the same region and may plausibly be attributed to cultural rather than practical reasons.<sup>64</sup>

Unsurprisingly, therefore, there is evidence that animal carcasses and body parts carried symbolic significance in the Early to Late Neolithic, as in the Final Neolithic, Bronze Age and later periods. The LN flat-extended site of Toumba Kremastis-Koiladas in Western Macedonia has yielded a series of ditches and pits with an exceptional wealth of evidence for structured deposition of artefacts, architectural fragments, human and animal remains.<sup>65</sup> With the notable exceptions of Toumba Kremastis-Koiladas and of dog depositions at a few other sites, however, bone groups that can be attributed to a single animal or to a restricted range of body parts seem strikingly less commonplace than in the Final Neolithic and Bronze Age. As has already been noted, quantification of such observations is extremely difficult, but comparison with methods of disposal of human remains presents a very similar picture and, arguably, lends credibility to the distinction claimed here.<sup>66</sup> Whereas inhumation, whether singly or in groups, seems to be the normal form of burial through the Bronze Age,<sup>67</sup> it is becoming increasingly clear that individual inhumations or cremations are the exception in the Neolithic and that most human bodies were not only subjected to secondary manipulation (also common in the Bronze Age) but were routinely scattered, as if to emphasize collective over more individual identity. At LN Makriyalos, scattered human bone fragments were almost ubiquitous among the faunal remains, but this ubiquity was by no means the result only of unintended post-depositional mixing, as human remains were not found in the massive dump of “feasting” debris in Pit 212 which has alone yielded more animal bone than most sites in the prehistoric Aegean.<sup>68</sup> Restorable pots<sup>69</sup> and more or less intact dog skeletons imply that the fill of Pit 212 accumulated rapidly, but almost no paired or articulating bones were noted and anatomical selection (as in other contexts at Makriyalos) was limited to some possible under-representation of foot bones; the latter could imply that primary butchery and skinning were sometimes separated temporally and/or spatially from further carcass processing and consumption, but foot bones may simply have been left attached to the hide (as is common today). Otherwise, Pit 212 represents meat consumption on a scale perhaps unmatched in the later Bronze Age palaces, but largely lacking the concluding

<sup>64</sup> Isaakidou 2003.

<sup>65</sup> Hondrogianni-Metoki 2001; Triantaphyllou in preparation; Tzevelakidi 2012.

<sup>66</sup> Cullen 1999; Talalay 2002; Triantaphyllou 1999; 2008.

<sup>67</sup> Nakou 1995; Cavanagh & Mee 1998.

<sup>68</sup> Triantaphyllou 1999; Pappa *et al.* 2004.

<sup>69</sup> Urem-Kotsou 2006.

structured deposition so typical of later periods. The ceramics from Pit 212 tell a similar story: consumption took place on a massive scale and included some apparently high-value beverages,<sup>70</sup> but the standardization of cooking and especially serving vessels signalled equality and cohesion rather than the overt status distinctions encoded in later palatial tableware.<sup>71</sup> Likewise, whereas Bronze Age serving vessels for liquids tend to have more or less elaborate spouts that emphasize the asymmetry of the relationship between server and served,<sup>72</sup> jugs from Makriyalos and other LN sites lacked spouts.<sup>73</sup> Finally, just as anatomical composition of faunal material suggests little spatial/temporal segregation of successive stages of carcass processing, Neolithic ceramic assemblages largely lack the obvious “cooking wares” that are readily identifiable in the Bronze Age; indeed some vessels apparently used for cooking at Makriyalos would typologically be categorized as tableware.<sup>74</sup>

## Neolithic–Bronze Age structured deposition and the body politic

That Neolithic material culture is far less overtly inegalitarian than that of the Bronze Age is neither a novel nor a surprising statement, though it must be stressed that the overtly egalitarian façade of the Neolithic probably concealed active social competition—not least, probably, in provision of carcasses for commensal consumption. Perhaps less widely appreciated is that this contrast is paralleled in the contrasting ways in which food and drink were prepared for consumption in the Neolithic and Bronze Age. In the Neolithic, the lack of distinctive cooking ware played down the distinction between preparation and consumption of food and the more mixed or homogenous nature of faunal deposits arguably reflects the same thing. In the Bronze Age, tableware and cooking ware tend to be more readily distinguishable and primary butchery is often marked off from subsequent carcass processing by removal not only of the hide and feet, as in the Neolithic, but also of the symbolically charged head with the highly edible tongue, brain and eyes. As with the use of spouted pouring vessels, the separation of primary from secondary butchery and of cooking from consumption served to distinguish not only between stages in the commensal *chaîne opératoire* but also, potentially, between different sets of participants. The

<sup>70</sup> Urem-Kotsou *et al.* 2002; Urem-Kotsou & Kotsakis in press.

<sup>71</sup> Pappa *et al.* 2004; Urem-Kotsou & Kotsakis 2007.

<sup>72</sup> E.g., Day & Wilson 2004; Catapoti 2011.

<sup>73</sup> Urem-Kotsou 2006.

<sup>74</sup> Urem-Kotsou 2006.

point may be illustrated by the events represented by the burnt bone groups at LB Pylos. For practical reasons, very few persons can have participated in (as opposed to witnessed) the slaughter and butchery of these cattle and the small cache of miniature cups found with the bone group located at the entrance to the elite core of the palace perhaps indicates that no more than twenty or so persons took part in these stages.<sup>75</sup> On the other hand, the amount of meat made available by the numbers of cattle apparently killed in at least the largest episode could have fed hundreds or even thousands of diners.<sup>76</sup> The pantries of the palace also suggest provision for hospitality to hundreds of persons, with guests of varying status entertained in different parts of the palace,<sup>77</sup> so that palatial banqueting performed and reaffirmed the social structure and social relationships of the Pylian polity.

Against this background, the Bronze Age penchant for structured deposition served both to add a further formal stage—that of discard—to the commensal cycle and, by this act of closure, to emphasize individual episodes of commensality.<sup>78</sup> The sheer volume of ceramic and faunal debris in the “feasting” dumps at Makriyalos, in Pits 212 and 214, must surely represent cycles rather than individual episodes of feasting, a suggestion supported by indications that domestic animals in Pit 212 were probably slaughtered over a period of months.<sup>79</sup> Whether or not the fills of Pits 212 and 214 were intended to serve a memorial function (above-ground dumps would arguably have been more eye-catching), the contrast between LN Makriyalos and palatial banqueting at LB Knossos or Pylos is one between quantitative and qualitative display.<sup>80</sup>

Bronze Age structured deposition of animal (part-)carcasses may thus be seen as part of a broader and all-pervasive tendency to differentiate social life—temporally, spatially and qualitatively. First, artefacts too were commonly subject to structured deposition in the later Bronze Age<sup>81</sup> and Early Iron Age.<sup>82</sup> Secondly, the same diachronic trend is arguably apparent in architecture. Neolithic “houses”, whether or not representing “households”, were usually single-roomed structures or perhaps groups of rooms with independent points of access.<sup>83</sup> Neolithic settlements were thus designed to facilitate three levels of social distinction: outside the settlement; inside the settlement, but outdoors; and indoors. The divi-

sion of some LN settlements into “residential wards” added a fourth level.<sup>84</sup> A few LN buildings, such as the central *megaron* at Dimini or Sesklo added the potential for graded access from an open porch to an outer then an inner room<sup>85</sup> and multi-room buildings with potentially graded access became increasingly common and increasingly elaborate through the Bronze Age, especially in southern Greece.<sup>86</sup> Lastly, such spatial segregation and specialization is replicated on a landscape scale, with the later Bronze Age appearance of “peak sanctuaries” at some remove from settlement sites and—of course—characterized by structured deposition of distinctive types of artefacts.<sup>87</sup>

## Conclusion

Animal bones offer exceptional potential for the investigation of collective ritual activity for four quite different reasons. First, in small-scale societies where carcass processing is not concealed from public view, the preliminary act of slaughter that inevitably preceded meat consumption was probably imbued with intense emotion and some sense of ritual danger.<sup>88</sup> Secondly, in ancient Greece, the probable infrequency of meat consumption and the fact that most slaughtered animals were inconveniently large for individual or household consumption favoured an important *social* role for meat consumption. Thirdly, because the anatomical structure of vertebrate skeletons and the anatomical distribution of edible matter (as opposed to the cultural value assigned to different portions)<sup>89</sup> are very predictable, as are the effects of taphonomic processes, the potential for detecting human manipulation of carcasses according to cultural or symbolic codes is fairly high. Fourthly, the human (and, by extension, non-human) body often serves as a metaphor for the body politic.<sup>90</sup>

Zooarchaeological identification of some ritual activity as *sacrificial* is more challenging. In the case of Classical sanctuaries, written and iconographic evidence from the same cultural context matches zooarchaeological evidence sufficiently closely that the latter can be identified as remains of sacrifice, allowing elucidation of further details of the rituals. In the case of LB Mycenaean Greece, identification of faunal

<sup>75</sup> Stocker & Davis 2004.

<sup>76</sup> Halstead & Isaakidou 2004.

<sup>77</sup> Bendall 2004; Whitelaw 2001a.

<sup>78</sup> Cf. Hamilakis 2008, 15–17.

<sup>79</sup> Pappa *et al.* 2004; Halstead 2005; Urem-Kotsou 2006.

<sup>80</sup> Killen 1994; Wright 1996; 2004; Isaakidou 2007.

<sup>81</sup> E.g., Boulotis 1982; Carter 2004; Driessen *et al.* 2008; Hatzaki 2009.

<sup>82</sup> E.g., Wells 1988.

<sup>83</sup> E.g., Kotsakis 2006.

<sup>84</sup> Hourmouziadis 1979.

<sup>85</sup> Theocharis 1973.

<sup>86</sup> Peperaki 2004; Whitelaw 2001b; Maran 2006; Panagiotopoulos 2006; Thaler 2002; 2006; Wright 2006.

<sup>87</sup> E.g., Peatfield 1992.

<sup>88</sup> Cf. Douglas 1966.

<sup>89</sup> E.g., Sahlins 1976.

<sup>90</sup> Hamilakis *et al.* 2002.

material as results of sacrifice largely rests on contextual association at Ayios Konstantinos (Methana) and Mycenaean and on striking similarity with later practice at Pylos. All three identifications are plausible, but not unassailable and should certainly not raise false hopes as to what can be inferred in less privileged contexts. Anyway, sacrifice, even in a religious sense, carries a range of specific meanings,<sup>91</sup> which are not easily disentangled from material remains alone. Conversely, as Hamilakis and Konsolaki note, the social and political significance of these rituals may be more easily inferred: the large-scale and relatively public ceremonies at Pylos contrast with the small-scale and relatively private rituals celebrated within the sanctuary of Ayios Konstantinos, providing some sense of the varying forms and contexts of ritual activity within Mycenaean society.<sup>92</sup>

Here, we have attempted to pursue a similar approach diachronically, arguing that the wealth of zooarchaeological evidence for ritual treatment and structured deposition of animal remains from the Bronze Age Aegean marks a sharp contrast with that from much of the Neolithic. This contrast is echoed in the treatment and disposal of human remains, in architecture and in portable material culture. Much of the architectural, mortuary and material cultural record of the Greek Neolithic can be read in terms of a tension between domestic and collective solidarity, probably heightened by active social competition, but overall collective solidarity is emphasized and social asymmetries are played down.<sup>93</sup> Bronze Age social life was subject to far more material prompts: from forms of dress that distinguished individuals of contrasting rank; from tableware that drew similar distinctions and also highlighted the asymmetry between host and guest; from elaborate demarcations of space and time that controlled access to different aspects of social life. Bronze Age evidence for ritualized treatment and structured deposition of animal remains thus mirrors fundamental and long-term changes in human society in the Aegean.

VALASIA ISAAKIDOU & PAUL HALSTEAD

Department of Archaeology  
University of Sheffield  
Northgate House, West St.  
Sheffield S1 4ET, UK

v.isaakidou@shef.ac.uk  
p.halstead@shef.ac.uk

<sup>91</sup> Hamilakis & Konsolaki 2004, 144–145.

<sup>92</sup> Hamilakis & Konsolaki 2004, 145–147.

<sup>93</sup> Kotsakis 1999; 2006; Tomkins 2004; 2007; Nanoglou 2008; Halstead 2006; 2011b.

## Bibliography

- Adrymi-Sismani, V. 2007. ‘Le site chalcolithique de Micro-thèbes au carrefour du monde égéen et des Balkans du Nord’, in *Between the Aegean and Baltic Seas: Prehistory across borders. Proceedings of the International Conference, Bronze and Early Iron Age interconnections and contemporary developments between the Aegean and the regions of the Balkan peninsula, Central and Northern Europe: University of Zagreb, 11–14 April 2005* (Aegaeum, 27), eds. I. Galanaki, H. Tomas, Y. Galanakis & R. Laffineur, Liège, 73–79.
- Becker, C. 1986. *Kastanas: die Tierknochenfunde*, Berlin.
- Bedwin, O. 1984. ‘Appendix 2: The animal bones’, in M.R. Popham, *The Minoan unexplored mansion at Knossos* (BSA supplementary volume, 17), London, 307–308.
- Bendall, L. 2004. ‘Fit for a king? Hierarchy, exclusion, aspiration and desire in the social structure of Mycenaean banqueting’, in *Food, cuisine and society in prehistoric Greece* (Sheffield studies in Aegean archaeology, 5), eds. P. Halstead & J.C. Barrett, Oxford, 105–135.
- Bennet, J. & J. Davis 1999. ‘Making Mycenaeans: warfare, territorial expansion, and representations of the other in the Pylian kingdom’, in *Polemos: le contexte guerrier en Égée à l’Âge du Bronze* (Aegaeum, 19), ed. R. Laffineur, Liège, 105–120.
- Bergquist, B. 1988. ‘The archaeology of sacrifice: Minoan–Mycenaean versus Greek’, in *Early Greek cult practice. Proceedings of the Fifth International Symposium at the Swedish Institute at Athens, 26–29 June, 1986* (ActaAth-4°, 38), eds. R. Hägg, N. Marinatos & G.C. Nordquist, Stockholm, 21–34.
- Bergquist, B. 1993. ‘Bronze Age sacrificial koine in the eastern Mediterranean? A study of animal sacrifice in the ancient Near East’, in *Ritual and sacrifice in the Ancient Near East. Proceedings of the International Conference organized by the Katholieke Universiteit Leuven from the 17th to the 20th of April 1991* (Orientalia Lovaniensia analecta, 55), ed. J. Quaegebeur, Leuven, 11–43.
- Binford, L.R. 1978. *Nunamiut ethnoarchaeology*, New York.
- Binford, L.R. 1981. *Bones: Ancient men and modern myths*, New York.

- Boessneck, J. & A. von den Driesch 1984. 'Die zoologische Dokumentation der Reste von vier Pferden und einem Hund aus einem mykenischen Schachtgrab in Kokla bei Argos (Peloponnes)', *Spixiana* 7, 327–333.
- Boulotis, C. 1982. 'Ein Gründungsdepositum im Minoischen Palast von Kato Zakros – Minoisch-Mykenische Bauopfer', *ArchKorrBl* 12, 153–166.
- Brain, C.K. 1981. *The hunters or the hunted?*, Chicago.
- Burkert, W. 1983. *Homo necans: The anthropology of ancient Greek sacrificial ritual and myth*, Berkeley.
- Carter, T. 2004. 'Transformative processes in liminal spaces: craft as ritual action in the Throne Room area', in *Knossos: City, palace, state. Proceedings of the conference in Herakleion organised by the British School at Athens and the 23rd Ephoreia of Prehistoric and Classical antiquities of Herakleion, in November 2000, for the centenary of Sir Arthur Evans's excavations at Knossos* (BSA studies, 12), eds. G. Cadogan, E. Hatzaki & A. Vasilakis, London, 273–282.
- Catapoti, D. 2011. 'Rise to the occasion: an insight into the "politics of drinking" at the prepalatial settlement of Myrtos-Phournou Koryfi, south Crete', in *Proceedings of the 10th International Creto-logical Congress, Chania, Crete, 2006, A*, Chania, 101–114.
- Cavanagh, W.G. & C.B. Mee 1998. *A private place: Death in prehistoric Greece* (SIMA, 125), Jonsered.
- Cullen, T. 1999. 'Scattered human bones at Franchthi cave, Greece: remnants of ritual or refuse?', in *MELETEMATA. Studies presented to Malcolm H. Wiener as he enters his 65th year* (Aegaeum, 20), eds. P. Betancourt, V. Karageorghis, R. Laffineur & W.-D. Niemeier, Liège, 165–171.
- Dabney, M., P. Halstead & P. Thomas 2004. 'Late Mycenaean feasting on Tsoungiza at ancient Nemea', in *The Mycenaean feast (= Hesperia 73:2)*, ed. J.C. Wright, Princeton, 77–95.
- D'Agata, A.L. 2001. 'Ritual and rubbish in Dark Age Crete: the settlement of Thronos/Kephala (ancient Sybrita) and the pre-Classical roots of a Greek city', *Aegean archaeology* 4, 47–59.
- Day, P.M. & D.E. Wilson 2004. 'Ceramic change and the practice of eating and drinking in Early Bronze Age Crete', in *Food, cuisine and society in prehis-*  
*toric Greece* (Sheffield studies in Aegean archaeology, 5), eds. P. Halstead & J.C. Barrett, Oxford, 45–62.
- Demakopoulou, K. 1990. 'The burial ritual in the tholos tomb at Kokla, Argolis', in *Celebrations of death and divinity in the Bronze Age Argolid. Proceedings of the Sixth International Symposium at the Swedish Institute at Athens, 11–13 June, 1988* (ActaAth-4°, 40), eds. R. Hägg & G.C. Nordquist, Stockholm, 113–123.
- Detienne, M. 1989. 'Culinary practices and the spirit of sacrifice', in *The cuisine of sacrifice among the Greeks*, eds. M. Detienne & J.-P. Vernant, Chicago, 1–20.
- Douglas, M. 1966. *Purity and danger: An analysis of concepts of pollution and taboo*, London.
- von den Driesch, A. & J. Boessneck 1990. 'Die Tierreste von der mykenischen Burg Tiryns bei Nafplion/Peloponnes', in *Tiryns: Forschungen und Berichte* Bd. 11, ed. U. Jantzen, Mainz am Rhein, 87–164.
- Driessen, J., A. Farnoux & C. Langohr 2008. 'Favissae. Feasting pits in LM III', in *DAIS: The Aegean feast. Proceedings of the 12th International Aegean Conference: 12e Rencontre égéenne internationale, University of Melbourne, Centre for Classics and archaeology, 25–29 March 2008* (Aegaeum, 29), eds. L.A. Hitchcock, R. Laffineur & J. Crowley, Liège, 197–206.
- Durand, J.-L. 1989a. 'Greek animals: towards a topology of edible bodies', in *The cuisine of sacrifice among the Greeks*, eds. M. Detienne & J.-P. Vernant, Chicago, 87–118.
- Durand, J.-L. 1989b. 'Ritual as instrumentality', in *The cuisine of sacrifice among the Greeks*, eds. M. Detienne & J.-P. Vernant, Chicago, 119–128.
- Gamble, C. 1985. 'Formation processes and the animal bones from the sanctuary at Phylakopi', in C. Renfrew, *The archaeology of cult: The sanctuary at Phylakopi* (BSA supplementary volume, 18), London, 479–483.
- van Gennep, A. 1960. *The rites of passage*, Chicago.
- Goody, J. 1961. 'Religion and ritual: the definitional problem', *British Journal of Sociology* 12, 142–164.
- Halstead, P. 1992. 'Dimini and the "DMP": faunal remains and animal exploitation in Late Neolithic Thessaly', *BSA* 87, 29–59.

- Halstead, P. 2005. 'Resettling the Neolithic: faunal evidence for seasons of consumption and residence at Neolithic sites in Greece', in *(Un)settling the Neolithic*, eds. D. Bailey, A. Whittle & V. Cummings, Oxford, 38–50.
- Halstead, P. 2006. *What's ours is mine? Village and household in early farming society in Greece*, Amsterdam.
- Halstead, P. 2007. 'Carcasses and commensality: investigating the social context of meat consumption in Neolithic and Early Bronze Age Greece', in *Cooking up the past: Food and culinary practices in the Neolithic and Bronze Age Aegean*, eds. C. Mee & J. Renard, Oxford, 25–48.
- Halstead, P. 2011a. 'The faunal remains', in D. Pullen, *Nemea Valley Archaeological Project I: The Early Bronze Age village on Tsoungiza hill*, Princeton, 741–803.
- Halstead, P. 2011b. 'Farming, material culture and ideology: repackaging the Neolithic of Greece (and Europe)', in *The dynamics of neolithisation in Europe: studies in honour of Andrew Sherratt*, eds. A. Hadjikoumis, E.N. Robinson & S. Viner, Oxford, 131–151.
- Halstead, P. & V. Isaakidou 2004. 'Faunal evidence for feasting: burnt offerings from the Palace of Nestor at Pylos', in *Food, cuisine and society in prehistoric Greece* (Sheffield studies in Aegean archaeology, 5), eds. P. Halstead & J.C. Barrett, Oxford, 136–154.
- Halstead, P. & G. Jones 1992. 'Animal bones and burial customs in Early Iron Age Thasos: the faunal remains from the cemeteries of Kastri settlement', in *Πρωτοϊστορική Θάσος. Τα νεκροταφεία των οικισμών Καστρί*, ed. H. Koukouli-Khrisanthaki, Athens, 753–755.
- Hamilakis, Y. 1996. 'A footnote on the archaeology of power: animal bones from a Mycenaean chamber tomb at Galatas, NE Peloponnese', *BSA* 91, 153–166.
- Hamilakis, Y. 2008. 'Time, performance, and the production of a mnemonic record: from feasting to an archaeology of eating and drinking', in *DAIS: The Aegean feast. Proceedings of the 12th International Aegean Conference: 12e Rencontre égéenne internationale, University of Melbourne, Centre for Classics and Archaeology, 25–29 March 2008* (Aegaeum, 29), eds. L.A. Hitchcock, R. Laffineur & J. Crowley, Liège, 3–20.
- Hamilakis, Y. & E. Konsolaki 2004. 'Pigs for the gods: burnt animal sacrifices as embodied rituals at a Mycenaean sanctuary', *OJA* 23, 135–151.
- Hamilakis, Y., M. Pluciennik & S. Tarlow 2002. 'Introduction: thinking through the body', in *Thinking through the body: Archaeologies of corporeality*, eds. Y. Hamilakis, M. Pluciennik & S. Tarlow, New York, 1–21.
- Hatzaki, E. 2009. 'Structured deposition as ritual action at Knossos', in *Archaeologies of cult: Essays on ritual and cult in Crete in honor of Geraldine C. Gesell* (Hesperia supplement, 42), eds. A.L. D'Agata & A. Van de Moortel, Princeton, 19–30.
- Hill, J.D. 1994. 'Why we should not take the data from Iron Age settlements for granted: recent studies of intra-settlement patterning', in *The Iron Age in Wessex: Recent work*, eds. A.P. Fitzpatrick & E.L. Morris, Salisbury, 4–8.
- Hondrogianni-Metoki, A. 2001. 'Εγνατία Οδός, ανασκαφή στην προϊστορική θέση "Τούμπα Κρεμαστής Κοιλάδας", Νόμου Κοζάνης', *Το αρχαιολογικό εργο στη Μακεδονία και Θράκη* 13, 399–413.
- Hourmouziadis, G. 1979. *Το νεολιθικό Διμήνι. Προσπάθεια για μια νέα προσέγγιση των νεολιθικού υλικού*, Volos.
- Isaakidou, V. 2003. 'Worked and utilised bone and antler: practical and cultural rationales for the selection of raw materials', in *Zooarchaeology in Greece: Recent advances* (BSA studies, 9), eds. E. Kotjabopoulou, Y. Hamilakis, P. Halstead, C. Gamble & P. Elefanti, London, 233–238.
- Isaakidou, V. 2004. *Bones from the labyrinth: Faunal evidence for the management and consumption of animals at Neolithic and Bronze Age Knossos, Crete*, PhD dissertation, Institute of Archaeology, UCL, London.
- Isaakidou, V. 2007. 'Cooking in the labyrinth: exploring "cuisine" at Bronze Age Knossos', in *Cooking up the past: Food and culinary practices in the Neolithic and Bronze Age Aegean*, eds. C. Mee & J. Renard, Oxford, 5–24.
- Isaakidou, V., P. Halstead, J. Davis & S. Stocker 2002. 'Burnt animal sacrifice at the Mycenaean "Palace of Nestor", Pylos', *Antiquity* 76, 86–92.
- Jordan, B. 1975. *Tierknochenfunde aus der Magula Pevkakia in Thessalien*, PhD dissertation, University of Munich, München.

- Killen, J.T. 1994. 'Thebes sealings, Knossos tablets and Mycenaean state banquets', *BICS* 39, 67–84.
- Kotsakis, K. 1999. 'What tells can tell: social space and settlement in the Greek Neolithic', in *Neolithic society in Greece* (Sheffield studies in Aegean archaeology, 2), ed. P. Halstead, Sheffield, 66–76.
- Kotsakis, K. 2006. 'Settlement of discord: Sesklo and the emerging household', in *Homage to Milutin Garašanin*, eds. N. Tasic & C. Grozdanov, Beograd, 207–220.
- Koukouli-Chryssanthaki, Ch., H. Todorova, I. Aslanis, I. Vajsov & M. Valla 2007. 'Promachon-Topolnica: a Greek-Bulgarian archaeological project', in *The Struma/Strymon river valley in prehistory*, eds. H. Todorova, M. Stefanovich & G. Ivanov, Sofia, 43–78.
- Lyman, R.L. 1994. *Vertebrate taphonomy*, Cambridge.
- Maran, J. 2006. 'Mycenaean citadels as performative space', in *Constructing power – architecture, ideology and social practice* (Geschichte: Forschung und Wissenschaft, 19), eds. J. Maran, C. Juwig, H. Schwengel & U. Thaler, Hamburg, 75–91.
- van de Moortel, A. 2009. 'The Late Helladic IIIC–Protogeometric transition at Mitrou, East Locris', in *Late Helladic III C chronology and synchronisms* vol. 3. *LH III C Late and the transition to the Early Iron Age. Proceedings of the international workshop held at the Austrian Academy of Sciences at Vienna, February 23rd and 24th, 2007* (Veröffentlichungen der mykenischen Kommission, 30), eds. S. Deger-Jalkotzy & A. Bächle, Wien, 360–366.
- Mylona, D. 1999a. 'The bones of suckling animals', in *Minoans and Mycenaeans: Flavours of their time*, eds. Y. Tzedakis & H. Martlew, Athens, 64–67.
- Mylona, D. 1999b. 'Excavation at Splantzia – sacred area', in *Minoans and Mycenaeans: Flavours of their time*, eds. Y. Tzedakis & H. Martlew, Athens, 106.
- Nakou, G. 1995. 'The cutting edge: a new look at early Aegean metallurgy', *JMA* 8, 1–32.
- Nanoglou, S. 2008. 'Building biographies and households: aspects of community life in Neolithic northern Greece', *Journal of Social Archaeology* 8, 139–160.
- O'Connor, T.P. 1993. 'Process and terminology in mammal carcass reduction', *International Journal of Osteoarchaeology* 3, 63–67.
- Panagiotopoulos, D. 2006. 'Der minoische "Hof" als Kulisse zeremonieller Handlung', in *Constructing power – architecture, ideology and social practice* (Geschichte: Forschung und Wissenschaft, 19), eds. J. Maran, C. Juwig, H. Schwengel & U. Thaler, Hamburg, 31–48.
- Papathanasiou, A. 2003. 'Stable isotope analysis in Neolithic Greece and possible implications on human health', *International Journal of Osteoarchaeology* 13, 314–324.
- Pappa, M. 2008. *Οργάνωση των χώρων και οικιστικά στοιχεία στους νεολιθικούς οικισμούς της Κεντρικής Μακεδονίας. Δ.Ε.Θ.-Θέρμη-Μαχρύγιαλος*, diss., Aristotle University of Thessaloniki, Thessaloniki.
- Pappa, M., P. Halstead, K. Kotsakis & D. Urem-Kotsou 2004. 'Evidence for large-scale feasting at Late Neolithic Makriyalos, N Greece', in *Food, cuisine and society in prehistoric Greece* (Sheffield studies in Aegean archaeology, 5), eds. P. Halstead & J.C. Barrett, Oxford, 16–44.
- Pappi, E. & V. Isaakidou forthcoming. 'On the significance of equids in the Late Bronze Age Aegean: insights from the cemetery of Dendra', in *Mycenaeans up to date: The archaeology of the NE Peloponnese – current concepts and new directions* (ActaAth-4°), eds. A.-L. Schallin & I. Tournavitou, Stockholm.
- Peatfield, A. 1992. 'Rural ritual in Bronze Age Crete: the peak sanctuary at Atsipadhes', *CAJ* 2, 59–87.
- Peperaki, O. 2004. 'The House of the Tiles at Lerna: dimensions of "social complexity"', in *The emergence of civilisation revisited* (Sheffield studies in Aegean archaeology, 6), eds. J.C. Barrett & P. Halstead, Oxford, 214–231.
- Protonotariou-Deilaki, E. (with S. Payne) 1990. 'The tumuli of Mycenae and Dendra', in *Celebrations of death and divinity in the Bronze Age Argolid. Proceedings of the Sixth International Symposium at the Swedish Institute at Athens, 11–13 June, 1988* (ActaAth-4°, 40), eds. R. Hägg & G.C. Nordquist, Stockholm, 85–106.
- Rappaport, R.A. 1999. *Ritual and religion in the making of humanity*, Cambridge.
- Renfrew, C. 1985. *The archaeology of cult: The sanctuary at Phylakopi* (BSA supplementary volume, 18) London.

- Sahlins, M. 1976. *Culture and practical reason*, Chicago.
- Sakellarakis Y. & E. Sakellaraki 1997. *Αρχάνες: Μία νέα ματιά στή μνωνική Κρήτη*, Ammos.
- Stanzel, M. 1991. *Die Tierreste aus dem Artemis-/Apollon-Heiligtum bei Kalapodi in Böötien/Griechenland*, PhD dissertation, University of Munich, München.
- Stocker, S.R. & J.L. Davis 2004. 'Animal sacrifice, archives, and feasting at the Palace of Nestor', in *The Mycenaean feast (=Hesperia 73:2)*, ed. J.C. Wright, Princeton, 59–75.
- van Straten, F. 1994. *Hierà kalá: Images of animal sacrifice in Archaic and Classical Greece* (Religions in the Graeco-Roman world, 127), Leiden.
- Stratouli, G. 1993. 'Οστέινα εργαλεία από την εργαλειοθήκη του παραγωγού της Νεότερης Νεολιθικής. Υλικό από το σπήλαιο Σκοτεινή Θαρρούνιων Ευβοίας', in *Σκοτεινή Θαρρούνιων. Το σπήλαιο, ο οικισμός και το νεκροταφείο*, ed. A. Sampson, Athens, 496–526.
- Talalay, L.E. 2002. 'Heady business: skulls, heads, and decapitation in Neolithic Anatolia and Greece', *JMA* 17, 139–163.
- Thaler, U. 2002. 'Open door policies? A spatial analysis of Neopalatial domestic architecture with special reference to the Minoan "villa"', in *SOMA 2001 – Symposium on Mediterranean archaeology* (BAR-IS, 1040), eds. G. Muskett, A. Koltsida & M. Georgiadis, Oxford 2002, 112–122.
- Thaler, U. 2006. 'Constructing and reconstructing power: the palace of Pylos', in *Constructing power – architecture, ideology and social practice* (Geschichte: Forschung und Wissenschaft, 19), eds. J. Maran, C. Juwig, H. Schwengel & U. Thaler, Hamburg, 93–116.
- Theocharis, D.R. 1973. *Neolithic Greece*, Athens.
- Tomkins, P. 2004. 'Filling in the "neolithic background": social life and social transformation in the Aegean before the Bronze Age', in *The emergence of civilisation revisited* (Sheffield studies in Aegean archaeology, 6), eds. J.C. Barrett & P. Halstead, Oxford, 38–63.
- Tomkins, P. 2007. 'Communality and competition. The social life of food and containers at Aceramic and Early Neolithic Knossos, Crete', in *Cooking up the past: Food and culinary practices in the Neolithic*
- and Bronze Age Aegean, eds. C. Mee & J. Renard, Oxford, 174–199.
- Trantalidou, K. 2006. 'Companions from the oldest times. Dogs in ancient Greek literature, iconography and osteological testimony', in *Dogs and people in social, working, economic or symbolic interaction. Proceedings of the 9th conference of the International Council of Archaeozoology, Durham, August 2002*, eds. L.M. Snyder & E.A. Moore, Oxford, 96–120.
- Trantalidou, K. & G. Gkioni 2008. "Προμαχών-Τοπολνία. Τα βούκρανα του μεγάλου υπόσκαφου χώρου: ζωολογικός προσδιορισμός και πολιτισμικά παράλληλα από την ανατολική Μεσόγειο", *Τὸ Αρχαιολογικό Έργο στη Μαχεδόνια και Θράκη* 20, 217–228.
- Triantaphyllou, S. 1999. 'Prehistoric Makriyalos: a story from the fragments', in *Neolithic society in Greece* (Sheffield studies in Aegean archaeology, 2), ed. P. Halstead, Sheffield, 128–135.
- Triantaphyllou, S. 2001. *A bioarchaeological approach to prehistoric cemetery populations from Central and Western Greek Macedonia* (BAR-IS, 976), Oxford.
- Triantaphyllou, S. 2008. 'Living with the dead: a re-consideration of mortuary practices in the Greek Neolithic', in *Escaping the labyrinth: The Cretan Neolithic in context* (Sheffield studies in Aegean archaeology, 8), eds. V. Isaakidou & P. Tomkins, Oxford, 136–154.
- Tzevelekidi, V. 2012. *Dressing for dinner: Butchery and bone deposition at Late Neolithic Toumba Kremastis-Koiladas, Northern Greece*, Oxford.
- Urem-Kotsou, D. 2006. *Νεολιθική κεραμική των Μαχρύγιαλον: Διατροφικές συνήθειες και οι κοινωνικές διαστάσεις της κεραμικής*, PhD dissertation, Aristotle University of Thessaloniki, Thessaloniki.
- Urem-Kotsou, D. & K. Kotsakis 2007. 'Pottery, cuisine and community in the Neolithic of north Greece', in *Cooking up the past: Food and culinary practices in the Neolithic and Bronze Age Aegean*, eds. C. Mee & J. Renard, Oxford, 225–246.
- Urem-Kotsou, D. & K. Kotsakis in press. 'Cups of conversation: drinking sets in social context in Late Neolithic northern Greece', in *Wine confessions: Production, trade and social significance of wine*

- in ancient Greece and Cyprus*, eds. E. Margariti, J. Renfrew & M. Jones, Princeton.
- Urem-Kotsou, D., B. Stern, C. Heron & K. Kotsakis 2002. ‘Birch bark tar at Neolithic Makriyalos, Greece’, *Antiquity* 76, 962–967.
- Valla, M. 2007. ‘A Late Bronze Age cemetery in Faia Petra, east of the middle Strymon valley’, in *The Struma/Strymon river valley in prehistory*, eds. H. Todorova, M. Stefanovich & G. Ivanov, Sofia, 359–372.
- Valla, M., S. Triantaphyllou, P. Halstead & V. Isaakidou 2013. ‘Handling of death at the end of the Late Bronze Age: the case of Faia Petra, 13th c. BC, eastern Macedonia, Greece’, in *Cremation burials in the region between the Middle Danube and the Aegean 1300–750 B.C.*, eds. M. Lochner & F. Rupenstein, Wien, 224–241.
- Vernant, J.-P. 1989. ‘At man’s table: Hesiod’s foundation myth of sacrifice’, in *The cuisine of sacrifice among the Greeks*, eds. M. Detienne & J.-P. Vernant, Chicago, 21–86.
- Vitale, S. 2008. ‘Ritual drinking and eating at LH IIIA2 Early Mitrou, east Locris. Evidence for Mycenaean feasting activities?’, in *DAIS: The Aegean feast. Proceedings of the 12th International Aegean Conference: 12e Rencontre égéenne internationale, University of Melbourne, Centre for Classics and Archaeology, 25–29 March 2008* (Aegaeum, 29), eds. L.A. Hitchcock, R. Laffineur & J. Crowley, Liège, 229–238.
- Wells, B. 1988. ‘Early Greek building sacrifices’, in *Early Greek cult practice. Proceedings of the Fifth International Symposium at the Swedish Institute at Athens, 26–29 June, 1986* (ActaAth-4°, 38), eds. R. Hägg, N. Marinatos & G.C. Nordquist, Stockholm, 259–266.
- Whitelaw, T. 2001a. ‘Reading between the tablets: assessing Mycenaean palatial involvement in ceramic production and consumption’, in *Economy and politics in the Mycenaean palace states. Proceedings of a conference held on 1–3 July 1999 in the Faculty of Classics, Cambridge* (Cambridge Philological Society, supplementary volume, 27), eds. S. Voutsaki & J. Killen, Cambridge, 51–79.
- Whitelaw, T. 2001b. ‘From sites to communities: defining the human dimensions of Minoan urbanism’, in *Urbanism in the Aegean Bronze Age* (Sheffield studies in Aegean archaeology, 4), ed. K. Branigan, London, 15–37.
- Whittaker, H. 2006–2007 (pr. 2008). ‘Burnt animal sacrifice in Mycenaean cult, a review of the evidence’, *OpAth* 31–32, 183–190.
- Wilson, B. 1992. ‘Considerations for the identification of ritual deposits of animal bones in Iron Age pits’, *International Journal of Osteoarchaeology* 2, 341–349.
- Wright, J.C. 1996. ‘Empty cups and empty jugs: the social role of wine in Minoan and Mycenaean societies’, in *The origins and history of wine* (Food and nutrition in history and anthropology, 11), eds. P.E. McGovern, S.J. Fleming & S.H. Katz, Amsterdam, 287–309.
- Wright, J.C. 2004. ‘Mycenaean drinking services and standards of etiquette’, in *Food, cuisine and society in prehistoric Greece* (Sheffield studies in Aegean archaeology, 5), eds. P. Halstead & J.C. Barrett, Oxford, 90–104.
- Wright, J.C. 2006. ‘The social production of space and the architectural reproduction of society in the Bronze Age Aegean during the 2nd millennium B.C.E.’, in *Constructing power – architecture, ideology and social practice* (Geschichte: Forschung und Wissenschaft, 19), eds. J. Maran, C. Juwig, H. Schwengel & U. Thaler, Hamburg, 49–74.
- Zahou, E. 2009. *Ο Πρωτοελλαδικός οικισμός του Προσκυνά: Η οργάνωση του χώρου, η παραγωγή και η κατανάλωση της κεραμικής*, PhD dissertation, Aristotle University of Thessaloniki, Thessaloniki.

