

## What we would like the bones to tell us: a sacrificial wish list

### Abstract\*

Animal bones comprise the only category of evidence for Greek cult which is constantly significantly increasing. The use of ever more sophisticated excavation methods demonstrates the importance of zooarchaeological material for the study of Greek religion and how such material can throw light on texts, inscriptions and images, as the animal bones constitute remains of actual ritual actions and not mere descriptions or representations of these actions. This paper outlines some areas where the zooarchaeological evidence may be of particular pertinence, for example, in elucidating the complex and idiosyncratic religious terminology of shares of sacrificial victims mentioned in sacred laws and sacrificial calendars, or in providing a context for a better understanding of the representations of animal parts on Attic vases. The role of meat within ancient Greek society, the choice of sacrificial victims and the handling of “non-sacrificable” animals such as game, dogs and equids within Greek cult can also be clarified by comparisons with the animal remains.

At a conference organized by the Swedish Institute at Athens more than two decades ago, a scholar presented a paper dealing with the distinctions between Bronze Age and Iron Age sacrificial practices. Animal bones formed an important part of the argument. The discussion that followed primarily concerned the animal bone evidence and how it may contribute to our understanding of ritual contexts. The scholar giving the paper urged excavators to publish any animal remains in much greater detail and to give specifics such as species, conditions and find contexts, so that the zooarchaeological evidence could be used as a basis for a better understanding of Greek cult. The discussion was closed, somewhat abruptly, by the laconic comment by one of the other participants, also a well-known scholar of Greek religion. He said: “Let us not get lost in technicalities”.<sup>1</sup>

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<sup>1</sup> The paper in question was delivered by Birgitta Bergquist (1988). For the comments on the (limited) value of animal bones by Bernard Dietrich, see Bergquist 1988, 34 (discussion).

To look at animal bones in great detail when studying Greek religion, is that to get lost in technicalities? And, if that is the case, is it necessarily a bad thing? One wonders what the ancient Greeks themselves would have thought. Bones *were* fundamental to animal sacrifice and to Greek religion. They lie at the centre of the action when Prometheus tricks Zeus at Mekone in the myth of how animal sacrifice came to be instituted, as told by Hesiod in the *Theogony*.<sup>2</sup> Prometheus hides the bare bones of the slaughtered ox in the glistening, obviously appetizing fat, and it is the sight of these bones instead of the meat which causes Zeus’ anger. He banishes men from the tables of the gods and orders them in future to burn the white bones on the altars, as a reminder of this event. The handling of the animal bones marks the separation of gods and men.<sup>3</sup>

Also in real, practised cult, such bones formed the core of the ritual. At a regular Greek, animal sacrifice, a *thysia*, the communication with the gods was enabled by the burning of bones on the altar: the thighbones, the *meria* or *meroi* in Greek, and the *osphys*, which consisted of the sacrum, which is the back part of the pelvis, and the caudal vertebrae.<sup>4</sup> The smoke from the burning bones rose to the sky and made it possible for the gods to profit from the sacrifice. But the animal remains recovered in Greek sanctuaries do not only constitute evidence for the interaction between immortals and mortals, they also provide us with information about the actions of the people present at the sanctuaries, on their choices, habits and behaviour, what they ate, how they prepared their food and what their tastes were. The prominent presence of animal bones in Greek sanctuaries has recently been highlighted by a Hellenistic inscription stating *Μὴ ἐποστεύειν ἐν*

<sup>2</sup> Hes. *Theog.* 535–557. For the interpretation, see Vernant 1989.

<sup>3</sup> See Rudhardt 1970 for this event as the origin of the institution of *thysia* sacrifice.

<sup>4</sup> On the *meria* and *osphys*, see van Straten 1995, 118–141; Ekroth 2009, for the zooarchaeological remains.

τῶι ἱερῶι—“Don’t throw bones in the sanctuary!”<sup>5</sup> Apparently there could be so many bones around that this had to be regulated.

Greek religion has been thoroughly explored for more than a century. Starting from philology, then epigraphy, scholarship has gradually ventured into iconography and archaeology. However, there is still so much we do not know, partly since the sources do not tell us, partly since they apparently did not wish to tell us. The texts, inscriptions, vases and reliefs constitute choices of how to represent Greek sacrifices and they are not necessarily evidence for *wie es eigentlich gewesen war*. Archaeology, and especially zooarchaeology, can offer us a diverse perspective. Still, few studies have attempted to discuss Greek sacrificial ritual and zooarchaeological evidence in a more comprehensive manner.<sup>6</sup> This is certainly due to the fact that the information able to be derived from the bones has only recently been acknowledged, even though Paul Stengel, the scholar who initiated the study of Greek sacrificial ritual, in fact remarked at the beginning of the 20th century on the zooarchaeological material from a sanctuary.<sup>7</sup>

The reasons for focusing on the zooarchaeological evidence as a source for Greek ritual practices are several. First, the quantity of bone material is growing. Zooarchaeology definitely provides a constantly increasing category of evidence for Greek sacrificial ritual. It is not likely that a new *lex sacra* as complex and rich as the one from Selinous, or a vase painting as detailed as the Ricci hydria, will surface in the next few years, though of course it is possible.<sup>8</sup> A good set of animal bones, on the other hand, will certainly be available from the next excavation of a Greek cult place, as long as the proper methods are used: sieving and flotation followed by publication in great detail by experts. Secondly, the bones provide us with direct evidence of the cultic activity at a specific site, thus bringing to light local ritual practices. Thirdly, zooarchaeology may reveal facets of Greek cult practice, which are rarely or never found in written and icono-

graphical sources.<sup>9</sup> One may say that the texts and the images present us with the picture that the Greeks wanted to convey, while the animal remains will tell us what they actually did, whether or not they wanted us to know about it.

The correlation between the zooarchaeological material and other kinds of evidence is therefore of fundamental importance. What can animal bones reveal that we do not find in the texts, inscriptions and images? To what extent can the information from these bones confirm, complement or contradict what we learn from our other sources? In order to illustrate the potential of the zooarchaeological evidence for the study of Greek sacrificial ritual, some examples of the empirical and methodological importance of bones for our understanding of the written and iconographical sources will be given.

## Inscriptions

Let us begin with the epigraphical evidence, the sacred laws and sacrificial calendars, which form a treasure trove for anyone interested in Greek sacrifice. The inscriptions offer us a plethora of expressions indicating how the animals sacrificed to the gods were to be divided and distributed.<sup>10</sup> Much of this terminology is pure Greek to us, so to speak, when it comes to understanding to which parts of the animal each term refers. The vocabulary is frequently rare and sometimes unique, and the explanations offered by the scholiasts and grammarians of late antiquity often leave a lot to be desired. Here the zooarchaeological evidence becomes highly interesting.

Two examples will illustrate this situation. A regulation for a cult of Dionysos from Miletos, dated to ca 275 BC, lists the prerequisites that the priestess will receive at sacrifices to the god. Mentioned here are *splanchna*, i.e. edible intestines grilled at the altar, as well as a kidney, entrails, the tongue, the so-called “sacred share” and the σκέλος εἰς κοτυληθόνα ἐκτετμημένον.<sup>11</sup>

<sup>5</sup> REG 112, 2009, 395, no. 23, from a sanctuary of Artemis in the territory of Alyzia, Aetolia. I owe this reference to Robert Parker.

<sup>6</sup> For recent surveys of zooarchaeological evidence from Greek sanctuaries see Hägg 1998; Kotjabopoulou *et al.* 2003; Leguilloux 2004; Reese 2005; MacKinnon 2007a, 490–491; MacKinnon 2007b, 17–19; Ekroth forthcoming.

<sup>7</sup> Stengel 1910, 200, concerning the sanctuary of Aphrodite at Kotilos at Bassai, the bones being said to derive from smaller species among which were hares.

<sup>8</sup> For the Selinous *lex sacra*, see Jameson, Jordan & Kotansky 1993. On the Ricci hydria, see van Straten 1995, 222, V154, pl. 122.

<sup>9</sup> As examples can be mentioned the Classical and Early Hellenistic “Pyre deposits” of pottery and burnt animal bones near the Athenian Agora (Camp 1999, 278–280; Camp 2003, 247–249; Jordan & Rotroff 1999) and the enormous funerary sacrifice of more than 50 animals excavated at the foot of the staircase at the entrance to the tomb chamber of the Maussolleion at Halikarnassos, dated to around 350 BC (Jeppesen, Højlund & Aaris-Sørensen 1981; Højlund 1983).

<sup>10</sup> On the terminology of sections of meat in the epigraphical evidence, see Le Guen-Pollet 1991; *NGSL*, *passim*; Lupu 2003; Ackermann 2007; Dimitrova 2008; Scullion 2009.

<sup>11</sup> *LSA* 48, line 16–18. For the last expression, see also *LSA* 52 B, line 6–7, a decree concerning the sale of a priesthood of Asklepios, Miletos, 1st century AD.

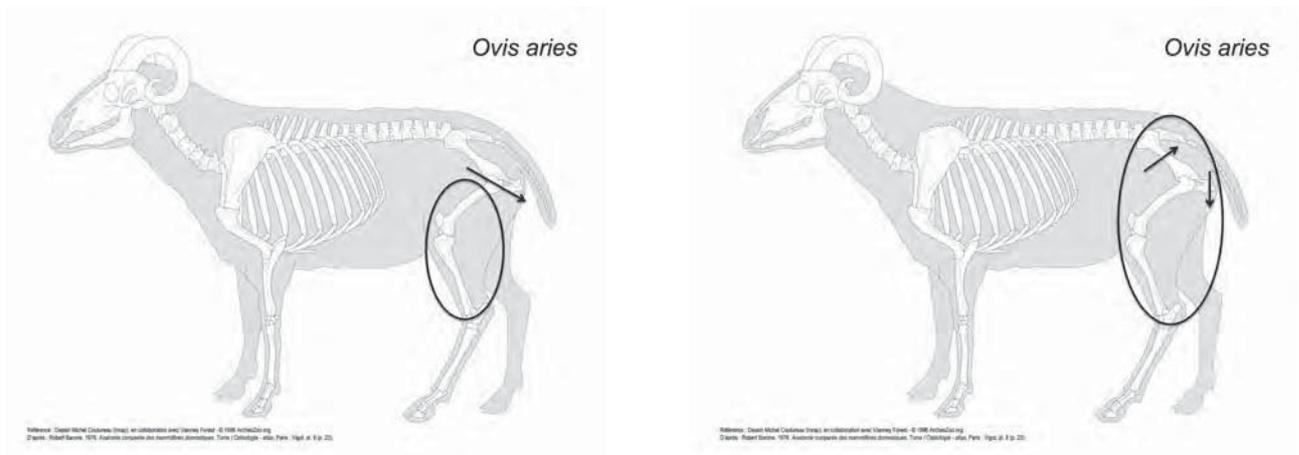


Fig. 1a & 1b. Butchering patterns that are suggested to correspond to the terms *skelos* and *skelos eis kotyledona ektetmemenon*, respectively. Drawing from Archéozoo ([www.archezoo.org](http://www.archezoo.org)).

The precise meaning of these various parts has been the subject of much debate, as is the case in most texts that regulate priestly shares. Let us focus only on the *skelos eis kotyledona ektetmemenon*. What would this part consist of? *Skelos* is the term for the hind leg and this section of the sacrificial victim was frequently given to the priest.<sup>12</sup> The precision of this leg as *eis kotyledona ektetmemenon* suggests that in this case the leg is something else than just a regular *skelos* or hind leg.<sup>13</sup> *Kotyledon* means a cup-shaped hollow, in particular the acetabulum, the socket of the hip where the head of the thighbone joins the pelvis. The verb *ektemnein*, “to cut out”, would indicate that the hind leg was separated from the trunk at the pelvis-femur joint, which is standard practice in butchering in most cultures, including our own. However, as this is the most obvious way to separate the hind leg from the body, why was it necessary to define it so extensively in this case? What is the distinction between the *skelos eis kotyledona ektetmemenon* and an ordinary *skelos*?

If we look at the zooarchaeological evidence, it is obvious that the hind legs of the sacrificial victims were not separated from the body in the same manner at every sanctuary, though standard practice seems to have been to remove the hind leg at the hip joint. Such variations in butchering methods may help us understand what is meant in the inscription. Sometimes the femur was carefully cut from the pelvis with a knife, while in other instances it was roughly freed with a cleaver

resulting in the head of the femur being chopped off.<sup>14</sup> In some deposits the pelvis has been cut through at its narrow point (the *corpus ossis ilium*) as well as where the two halves of the pelvis grow together (the *symphysis pelvis*).<sup>15</sup> In the last case, the hind leg would be removed from the body with a part of the pelvis still fastened to the thighbone, a way of butchering which results in a large section of meat from the lower back and the rump of the animal being attached to the hind leg (Fig. 1). Such a leg would contain substantially more meat than a simple *skelos*, presumably being a hind leg cut off at the pelvis-femur joint. This particular kind of division may be specifically what is intended by the expression *skelos eis kotyledona ektetmemenon*, corresponding to an unusually substantial choice cut of meat. The butchering visible in the bone material may thus offer a clarification of the terminology of the sacred law or at least give us a suggestion of how to understand it.

There are numerous sacrificial terms that will hopefully one day be elucidated by the animal bone evidence. The ideal situation would of course be a match between bones and inscriptions from the same site, but even if we do not have a direct correspondence between geography and chronology, the bones can give us a chance to pass beyond the laconic enu-

<sup>12</sup> See Le Guen-Pollet 1991, 17–18; Ekroth 2008, 265; Tsoukala 2009, 6–10.

<sup>13</sup> Le Guen-Pollet 1991, 17, suggests that the leg had been cut off at the knee.

<sup>14</sup> At Eretria and Miletos, the thighbones had been freed with a knife, see Studer & Chenal-Velarde 2003, 178; Peters & von den Driesch 1992, 124; cf. Reese & Ruscillo 2000, 459. At Samos and at the sanctuary of Apollo Hylates on Cyprus, a cleaver was used, see Boessneck & von den Driesch 1988, 7; Davis 1996, 181, and sometimes the acetabulum was broken, see Boessneck & von den Driesch 1988, 6. The patella could also be left attached to the femur, see Studer & Chenal-Velarde 2003, 175–178; Peters & von den Driesch 1996, 181.

<sup>15</sup> This is the case at the huge funerary sacrifice at the Maussolleion at Halikarnassos, see Højlund & Aaris-Sørensen 1981, 68–71.



Fig. 2a & 2b. Attic red-figure cup, Kimbell Art Museum AP 2000.02, Forth Worth, Texas, Douris, ca 480 BC. © Kimbell Art Museum, Forth Worth, Texas.



meration of parts to be given to the priests and the fanciful explanations provided by the *Suda* and other lexicographical sources.

My second epigraphical example concerns the famous *lex sacra* from Selinous, dating to ca 450 BC. Among the many sacrifices outlined in this document there is one to Zeus Meilichios.<sup>16</sup> At this ritual, which seems to be an ordinary *thysia* where the animal, a ram, was eaten, there was also to be a *theoxenia* ceremony, that is, a feasting of the god with a table

with food to which the divinity was invited as the guest of honour.<sup>17</sup> At the end of this ritual, a hind leg of the ram and meat offerings from the table were to be burnt, as well as the bones, *ta ostea*.

Which bones are referred to here and why are they burnt? Bones are hardly ever mentioned in the religious inscriptions so the textual evidence is of little help. The *osteae* are unlikely to be the thighbones and the tail usually burnt on the altar as the god's portion, as the burning of these particular bones

<sup>16</sup> Jameson, Jordan & Kotansky 1993, 14–15, lines A 18–20.

<sup>17</sup> For the *theoxenia* element, see Jameson, Jordan & Kotansky 1993, 67–70; Jameson 1994, 43–45; cf. Gill 1974.

seems to have been such a standard practice that it did not have to be spelled out.<sup>18</sup> The bones rather represent a deliberate increase of the share of the victim burnt for the god, who would not only receive the standard thighbones and tails, but also an entire hind leg with the meat and the defleshed bones, an action which presumably must have had a particular function within the ritual. If we turn to the zooarchaeological evidence, however, possible parallels to such an extended burning of bones can be found in sanctuaries. At Isthmia, parts from the entire skeleton apart from the forelegs were burnt on the long altar for Poseidon.<sup>19</sup> At Kommos on Crete, the burnt thighbones from Altar U were supplemented with fragments of ribs, skulls, vertebrae and forelegs.<sup>20</sup> The zooarchaeological evidence suggests that the *ostea* in the Selinous inscription are not a unique and isolated feature.

Why more bones were burnt at Selinous, Isthmia and Kommos is a complex issue, best explained by the ritual context. At Selinous a *theoxenia* ceremony takes place and the *thysia* sacrifice was enhanced by a table with meat, thereby giving the god more. The inclusion of bones in this ritual, and the fact that they were to be burnt at the end of the ceremony, may have been an additional way of increasing the gifts for the gods. The Selinous inscription and the zooarchaeological assemblages from the altars at Isthmia and Kommos, being composed of a variety of burnt bones, may reflect a previously unrecognized manner of performing *theoxenia*, where the god was given not only meat, but also bones.<sup>21</sup>

## Images

Bones did not particularly catch the imagination of Greek artists. Mythological representations contain a few remarkable instances. A Corinthian vase shows Herakles and He-sione confronting the Monster of Troy, here depicted as a huge white skull with prominent teeth, perhaps inspired by the finding of a large mammal fossil.<sup>22</sup> There is also a most interesting red-figure calyx-krater showing Herakles saving

his fiancée from being married off to a centaur.<sup>23</sup> When Herakles enters the room, the centaur is so startled that his right hand lashes out and the large bone he holds flies away, hitting a servant on the head, causing him to bleed. Below the tail of the centaur, the bone is seen falling to the ground, a unique element in Athenian vase painting. Another explicit depiction of bones protruding from flesh is found in another mythological scene, the gruesome tearing apart of Pentheus by his mother and the Theban women (*Fig. 2*).<sup>24</sup> Seen here are the femora sticking out of the thighs and the tibiae from the lower legs, and even some ribs from the thorax.

If we turn to iconography linked to religion, a few more bones are found. A famous Classical stele from Thespiai depicts a boar's skull and mandible as well as a bovine skull (*Fig. 3*).<sup>25</sup> Altars and buildings, from the Hellenistic period onwards, also bear representations of bucrania.<sup>26</sup> There are also depictions of animal skulls in sacrificial scenes on vase paintings, including bucrania lying on altars.<sup>27</sup> The bones most frequently rendered on the vase paintings are those forming the



*Fig. 3. Thebes, Archaeological Museum 154. Stele from Thespiai, 4th–3rd century BC. Photo: museum.*

<sup>18</sup> Occasional examples of bones mentioned in sacred laws and sacrificial calendars, see the fragmentary cult regulation for Herakles, from Miletos, ca 500 BC, see *LSA* 42, line B 2. Possibly the *meroi* in the regulation of the deme Phrearrhioi (ca 300–250 BC) also concern the divine share to be burnt (*NGSL*, no. 3, lines 16–17 with commentary; Lupu 2003, 73–74), but they may also be part of the priestly perquisites, see Ekroth 2013. For the bones usually burnt at a *thysia*, see Ekroth 2009.

<sup>19</sup> Gebhard & Reese 2005, 126, 128, 144 and 149–152, Table 1.

<sup>20</sup> Reese & Ruscillo 2000, 441, Table 6.2 and pls. 6.3 and 6.4.

<sup>21</sup> This issue is discussed in more detail in Ekroth forthcoming.

<sup>22</sup> Boston, Museum of Fine Arts 63.420, ca 560–540 BC. For the appealing explanation of the skull as a fossil, see Mayor 2001, 157–165 and fig. 4.1.

<sup>23</sup> A large fragment of the vase has been in the Louvre (G 345) since 1863, while the rest was sold on the Swiss market in 2000, see *CVA, Paris, Louvre* 3, III I d, pl. 8: 1 & 4, 9: 1 & 4; Cahn 2000, 28, no. 74.

<sup>24</sup> Shown on an Attic red-figure kylix by Douris, ca 480 BC now in the Kimbell Art Museum (AP 2000.02), Forth Worth, Texas, see Buitron-Oliver 1995, pl. 73, no. 121; *LIMC* VII (1994), s.v. Pentheus, no. 43, pl. 259 (J. Bazant & G. Berger-Doer).

<sup>25</sup> van Straten 1995, R57, fig. 78, dedicated to Zeus Karaios by a group of *syssitoi*, dinner club companions.

<sup>26</sup> For altars with bucrania, see Yavis 1949, 148–152; Fraser 1977, 16–17 and 27–28; Berges 1986, 42–45, 80–81, 91 and 103–104. Buildings: Umholtz 2008. See also Börker 1975.

<sup>27</sup> Beazley 1939, 35. For skulls on altars, see an Attic red-figure oinochoe in Kiel, Antikensammlung Kunsthalle B 55, ca 425–400 BC, van Straten 1995, V382, fig. 168; perhaps also a votive relief in Dresden, Skulpturensammlung Albertinum ZV 1190, ca 350–300 BC, Tagalidou 1993, 233, no. 33, pl. 14. The display of bucrania in sanctuaries is indicated by epigraphical evidence, see Blinkenberg 1941, 179–180, lines C 103, 110–111 and 114.



Fig. 4. Attic red-figure bell-krater, London, British Museum E 494, Painter of London, 450–425 BC. Photo: © Trustees of the British Museum.

tail of the victim, the *osphys*, which is usually shown burning and curving in the fire on the altar, the ultimate sign of *hierakala*, the benevolent divine acceptance of the sacrifice (Fig. 4).<sup>28</sup> Interestingly, practical experiments have shown that these representations correspond closely to the behaviour of real tails of cows, sheep or pigs, when placed in a fire (Fig. 5).<sup>29</sup>

There are no representations of the bones to be burnt for the gods being cut out from the meat, though a black-figure



Fig. 5. Real sheep's and pig's tails burning on coal fire. Photo: author.

<sup>28</sup> *Osphys* on the altar: van Straten 1995, 118–121; van Straten 1988, 61–66; Gebauer 2002, 352–443; Ekroth 2009, 132–134. A handful of representations show Iris carrying the *osphys*, see Gebauer 2002, 443 and Bv 73–Bv 77; *LIMC* V (1990), s.v. Iris, nos. 110, 111, 113 and 115 (A. Kossatz-Deissmann).

<sup>29</sup> For the curving of the tail as shown by practical experiments, see Jameson 1983, 60–61 and fig. 3; Ekroth 2009, 149 and fig. 7.

oinochoe in Boston, showing sacrificial butchering, has been suggested as rendering the head of the thighbone and the trochanter major (also part of the proximal end of the femur) by two small white dots of paint, thus depicting the act about to happen (Fig. 6).<sup>30</sup> The thighbones, *meria*, wrapped in fat, are iconographically elusive, but may also be depicted, if we are to follow Gerhard Forstenpointner's ingenious interpretation of a red-figure bell-krater in the Louvre, where a bearded man is placing an amorphous bundle on a burning altar.<sup>31</sup>



Fig. 6. Attic black-figure oinochoe, Boston, Museum of Fine Arts 99.527, Class of Vatican G 47, 500–475 BC. Photo: © 2010 Museum of Fine Art, Boston.

<sup>30</sup> Boston, Museum of Fine Arts 99.527, ca 500–475 BC, van Straten 1995, V213, fig. 157; Durand 1989, 101.

<sup>31</sup> Forstenpointner 2003. Paris, Louvre G 496, 425–400 BC, van Straten 1995, V200, fig. 152. See Forstenpointner *et al.* in this volume, 237, fig. 5.



Fig. 7. Attic red-figure bell-krater, Frankfurt β 413, Hephaistos Painter, 450–440 BC. Photo: © Archäologisches Museum Frankfurt.

A vase in Frankfurt could also be interpreted as showing such a parcel of fat and bones being placed in the fire (Fig. 7), while a fragment in the British Museum constitutes a third case, where the bundle is shown behind the curving tail (Fig. 4).<sup>32</sup>

Of great interest in relation to zooarchaeology are the many Attic vases showing hind legs of animals, presumably cattle or sheep, being carried, received or given away.<sup>33</sup> Some of these legs occur in scenes where sacrificial activity takes place and considering that the importance of the hind leg as a priestly perquisite is made clear by the inscriptions, it seems safe to assume that all such representations of legs are to be connected with sacrifice in some sense (cf. Fig. 6).<sup>34</sup> These legs demonstrate some interesting features (Fig. 8). First of all, they have a very limp appearance, most likely indicating that the thighbones have been removed in order to be burnt

on the altar, constituting a further indication that the legs derive from sacrificed animals. The result of this action is a floppy leg, the *gigot mou* in Jean-Louis Durand's term, and the legs on the vases are in fact very similar to real de-boned hind legs of sheep.<sup>35</sup>

Secondly, the hoof is always depicted as clearly visible. Hoofs are also represented as being chewed on by dogs lying under tables in banqueting scenes, where people are eating and drinking (Fig. 9), as well as in a number of other motifs where dogs can be found.<sup>36</sup> The presence of hoofs still attached in the representation of hind legs and the cut-off hoofs in banqueting scenes is surprising, as it is usually taken for granted that the lower parts of the legs including the hoofs were removed at the initial division of the animal at butchering. This assumption is supported by most animal



Fig. 8. Attic red-figure kylix, Munich, Staatliche Antikensammlungen 2674, Makron, 500–475 BC. Photo: Staatliche Antikensammlungen und Glyptothek München, Renate Kübling.

<sup>32</sup> Frankfurt VF b 413, ca 450–440 BC, van Straten 1995, V178, fig. 126; London, British Museum E 494, ca 450–425 BC, van Straten 1995, V367, fig. 124.

<sup>33</sup> For an overview of the evidence, see Durand 1984; Tsoukala 2009.

<sup>34</sup> For example, London, British Museum B 362, van Straten 1995, V160, fig. 123; Rome, Villa Giulia, Gebauer 2002, S 3a, fig. 137; Florence, Museo Archeologico 15189, Gebauer 2002, Z 5, fig. 167. For the link between the legs and sacrifice, see further Durand 1984; Gebauer 2002, 332–337; Tsoukala 2009.

<sup>35</sup> Durand 1984, 32.

<sup>36</sup> Dogs under the table: red-figure fragment by Makron in a private collection in Paris, see Kunisch 1997, pl. 100.304; black-figure cup, München, Antikensammlungen 2082, *CVA, München* 13, pl. 27, 1–2 (Deutschland, pl. 3887). Dog next to singing man on a platform: black-figure pelike, Otago Museum, Dunedin 48.226, *CVA, New Zealand* 1, pl. 17, 1–4 (New Zealand, pl. 17); among youths taming bulls: black-figure hydria, Berlin, Antikensammlung F1900, Schnapp 1977, 265, fig. 224.

bone assemblages from Greek cult sites, apart from the sanctuary of Apollo Hylates at Kourion on Cyprus, where entire legs seem to have been burnt.<sup>37</sup> Possibly the vase scenes indicate that the hind legs of sacrificial animals, from which the thighbones were removed and burnt, were given a different treatment from the other legs of a sacrificial victim, as the hoof was left in place. If that was the case, the hoof gnawed by the dogs may be a sign that the meat consumed by the banqueters in these vase paintings was not any kind of food but had a particular and prestigious origin, being hind legs of sacrificial animals.<sup>38</sup>

## The role of meat: sacred, secular or something else?

After these specific cases, let us move on to questions of a more methodological nature. One of the major issues of Greek religion and the role of animal sacrifice within ancient Greek society is whether all meat was linked to religion and therefore sacred in some sense, and if all killings of animals were perceived as animal sacrifices.

There is a certain degree of hesitation among modern scholars to accept that all meat was linked to the sacred sphere in ancient Greece.<sup>39</sup> This reluctance is both due to influence from Christian attitudes to sacrifice and meat, and to the fact that slaughter and meat consumption in our modern societies is a predominantly secular issue. Scholars have also pointed to contexts in which the Greeks seem to have killed animals and eaten their meat that cannot be linked to sacrifice, such as hunts. Furthermore, mention in the literary sources of the consumption of animals which we tend not to consider fit for sacrifice, or even from animals that had died from natural causes, have further been used as an argument for all meat not being sacred. What is often forgotten is the fact that our interpretation of the ancient evidence depends on how we define animal sacrifice. What is a sacrifice?

To answer this question lies outside the scope of this short paper, but when it comes to animal species, the zooarchaeological material from Greek sanctuaries provides us with a different picture from that of the texts and the images, and this should lead us to reconsider our notions. If we look at the bones, it seems that there was a distinction between the species actually sacrificed at the altar and from which certain parts were burnt for the gods, that is, a *thysia* ritual, and the species that were eaten at the meals that took place in the sanctuaries.<sup>40</sup> Cattle, sheep and goats were sacrificed at the altar, had select bones burnt and were finally eaten. Pigs were also eaten, but these animals are rarely found among the burnt thighbones and tails from the altar deposits.<sup>41</sup> If burnt pigs appear, they are usually piglets and they have been burnt whole, though entire unburnt piglets were also deposited.<sup>42</sup> Within the consumption debris from sanctuaries we find cattle, sheep, goats and pigs, but also equids, dogs and a variety of wild animals.<sup>43</sup> It thus seems clear that not all of the meat eaten within a sanctuary came from animals killed at the altar, having their *meria* and *osphys* burnt for the gods. This situation can lead us to diversify our understanding of sacrifice, ritual slaughter and meat consumption, which to a large extent is based on the information in the written and iconographical sources.

The zooarchaeological evidence from sanctuaries suggests that the handling of animals and the consumption of their meat were more complex activities than our rudimentary categories “sacred” and “secular”, or sacrifice and simple slaughter, will allow for. I have suggested elsewhere that it may be useful to distinguish between *sacrificial* and *sacred* meat.<sup>44</sup> Sacrificial meat can be defined as coming from the animals killed at the altar, by which communication with the divine was established. Sacred meat would be the rest of the meat consumed in the sanctuary, which came from animals killed there in a ritually less elaborate manner or even brought to the sanctuary already slaughtered.<sup>45</sup> Such a perspective may better allow us to comprehend the variety in species that the Greeks killed and ate.

<sup>37</sup> For the lack of lower legs and feet in the dinner deposits from sanctuaries, see Gardeisen 1996, 807; Vila 2000, 201; Boessneck & von den Driesch 1988, 4, Table 2; Leguilloux 2000, 346, for the 4th century BC altar of Zeus/Jovis at Poseidonia where less than 1% of bone assemblage from the ca 50 slaughtered cattle consisted of feet and lower legs. Sanctuary of Apollo Hylates, Kourion: Davis 1996; Davis 2008, 66, Table 2; pers. comm. D. Reese.

<sup>38</sup> An Early Classical red-figure cup in the Hermitage (B.4509) shows a woman with an *obelos* next to a large basin over which a de-boned hind leg with the hoof still attached is suspended. In her right hand, the woman holds what looks like a cut-off hoof, see *CVA, St. Petersburg, Hermitage* 5, pl. 21, 1 (Russia, pl. 560); Gebauer 2002, Z 17, fig. 179.

<sup>39</sup> For the discussion, see Berthiaume 1982; Ekroth 2007, 251–255; Parker 2010.

<sup>40</sup> Ekroth 2007; Ekroth 2009.

<sup>41</sup> Ekroth 2009, 136–137.

<sup>42</sup> For burnt piglet remains, see Ruscillo 1993, 209; Bookidis & Stroud 1997, 98. Unburnt piglets, see Forstenpointner 2001, 68.

<sup>43</sup> Ekroth 2007, 263–266.

<sup>44</sup> Ekroth 2007, esp. 269.

<sup>45</sup> See also the discussion by Scullion, this volume.



*Fig. 9. Madrid, Museo Arqueológico Nacional 10916 (L65), Attic black-figure amphora, Leagros Group. Photo: museum.*

## Game, dogs and other neglected species

Modern research has often drawn a strict line between the domesticated and the wild when it comes to the handling of animals within the religious sphere of the ancient Greeks.<sup>46</sup> Hunting is a field where there still is a large disagreement as to the role and contribution of this activity to the sacrificial system and the meat consumption of the Greeks. Traditionally hunting has been placed outside the frame of animal sacrifice, since the victims will not be brought alive to the altar, nor will they come there peacefully and willingly. However, the tranquil, agreeing victim has been demonstrated to be a modern construct more than an ancient reality, and this opens up the field for the uses of game within the sacrificial rituals.<sup>47</sup>

Animal bones indicate the presence of game in sanctuaries.<sup>48</sup> These animals are not found among the altar debris but in the remains of meals, although at Kalapodi, no *sacra* were recovered from bones of the red deer, fallow deer, roe deer and wild boars, suggesting that these animals may have been given the same ritual treatment as the domesticated species.<sup>49</sup> There are occasional representations of deer as sacrificial victims, while stone altars can bear representations of bucrania of deer.<sup>50</sup> Xenophon states that a hunt was part of the festival in the cult of Artemis at Skyllous (*Anab.* 5.3.37). The Archaic bronze plaques from Kato Syme Viannou on Crete show youths carrying wild animals, entire ones or parts of them, presumably to be sacrificed, or rather dedicated, in a sanctuary.<sup>51</sup> Even if deer, wild goats and boars were not frequently killed at the altar, they may still have been an essential component of the ritual, used as offerings of meat, raw or cooked, as they are present among the zooarchaeological material recovered in Greek sanctuaries. The role and function of such animals within Greek cult will hopefully be elucidated by

the animal bone evidence in the future. Greek sacrificial ritual apparently was much more than *thysia* sacrifice of cattle, sheep and goats.

Another animal for which zooarchaeology may give important insights is the dog. Literary sources record dog sacrifices to Hekate and Enyalios, where the animals were halved and then burnt or thrown away in order to purify and propitiate, thus not involving any consumption.<sup>52</sup> On the other hand, dog meat was recommended in the Hippocratic corpus as a suitable kind of food for the sick and weak, in order to speed up their recovery.<sup>53</sup> Dogs are found among the dinner debris in some sanctuaries, for example at the *Aire sacrificielle* at Eretria and the sanctuary of Poseidon at Isthmia, though not among the burnt material from the altars.<sup>54</sup> What are we to make of these butchered dogs recovered with the bones of cattle, sheep, goats and pigs? Was the dog only a marginal animal, eaten in worst-case scenarios or by the sick or the poor? Or could the odd dog be used to supplement the meat distributed at a sacrifice in addition to the meat from the actual sacrificial victim?

A small group of vases depicting dogs can serve as an illustration of the complexity of this issue. A red-figure lekythos in Athens showing a woman holding a dog and a sacrificial basket, a *kanoun*, next to three torches, is usually considered to depict a non-alimentary sacrifice to Hekate, where the dog is being deposited whole into a pit (*Fig. 10*).<sup>55</sup> On a recently published Boeotian vase we see a child dressed in a priestly garb holding knife, extending his hand to a small dog, a representation suggested to refer to a purificatory dog sacrifice in a kourtophobic context (*Fig. 11*).<sup>56</sup> Is this an allusion to an actual ritual or is it perhaps meant as a joke? Finally, there is a lekythos in Rome (*Fig. 12*), showing a woman standing next to a column giving a dog a piece of meat.<sup>57</sup> Who is this woman and where is she? This scene could be interpreted as a cosy feeding of the family pet at home but it may also represent the nourishing of an animal in a sanctuary, either a sacred one, as known from Epidauros and Piraeus, or a dog that would later be sacrificed.<sup>58</sup> Hopefully the zooarchaeological

<sup>46</sup> Stengel 1910, 197–201; Durand & Schnapp 1989; Detienne 1989, 5, 8 and 37–38; Schnapp 1997, 246–247 and 265. For a highly interesting discussion of deer as sacrificial victims, see Larson forthcoming.

<sup>47</sup> Georgoudi 2005; Naiden 2007.

<sup>48</sup> For evidence for game, see Ekroth 2007, 257–258 and 263–264; Larson forthcoming.

<sup>49</sup> Stanzel 1991, 162.

<sup>50</sup> For possible representations of deer sacrifice, see a votive relief from Aigina, Athens, National Archaeological Museum 1950, late 5th century BC, *ThesCRA* I, 15, no. 91, and a red-figure cup in Rome, Villa Giulia, no number, ca 510–500 BC, Gilotta 1995, pl. 19:a–b; Gebauer 2002, S 3a, fig. 137. For the relation between hunting and sacrifice within iconography, see also Durand & Schnapp 1989; Schnapp 1997, 246–247 and 265. For stags' heads on altars, see Berges 1986, 51–52; Fraser 1977, pls. 43c, 71c, 73d and 86a, dated to the Hellenistic-Early Roman periods.

<sup>51</sup> Lembessi 1985, 128–136, for example, A 9, A 10, A 37, A 47, A 50, A 56, pls. 3, 6, 22, 29, 30, 32, 47–50.

<sup>52</sup> Theophr. *Char.* 16.13; Zaganiaris 1975, 323–328; Ekroth 2007, 265.

<sup>53</sup> Ekroth 2007, 265; Roy 2007, 347–348.

<sup>54</sup> Eretria: Studer & Chenal-Velarde 2003, 180. Of the 119 identified bones, 9% are canine. Isthmia: Gebhard & Reese 2005, 140. See also Ekroth 2007, 258–259. For the evidence of dog remains in Greek settlement contexts and burials, see Trantalidou 2006.

<sup>55</sup> Athens, National Archaeological Museum 1695, ca 440–430 BC; van Straten 1974, 179, fig. 30.

<sup>56</sup> Athens, National Archaeological Museum 12591, ca 420 BC; Avronidaki 2008, 9–14.

<sup>57</sup> Rome, Academia dei Lincei 2478, ca 470–460 BC.

<sup>58</sup> On sacred dogs, see Gourevitch 1968, 275; *LS* 21 A, line 9, regulation from Piraeus of cult of Asklepios and associated deities, 4th century BC.



Fig. 10 (left). Athenian red-figure lekythos, Athens, National Archaeological Museum 1695, ca 440–430 BC. Photo: National Archaeological Museum, Athens, © Hellenic Ministry of Culture and Tourism/Archaeological Receipts Fund.

Fig. 11 (below). Boeotian red-figure skyphos, Athens, National Archaeological Museum 12591, Painter of the Dancing Pan, ca 420 BC. Photo: National Archaeological Museum, Athens, © Hellenic Ministry of Culture and Tourism/Archaeological Receipts Fund.



Fig. 12. Athenian red-figure lekythos, Rome, Academia dei Lincei 2478, 470–460 BC. Photo: Academia dei Lincei, Rome.

evidence can refine our somewhat crude conception of the role of dogs within the Greek religious and alimentary systems.<sup>59</sup>

<sup>59</sup> Two other groups of animals often given very scant treatment are birds and fish, since they are hardly ever mentioned in the texts or inscriptions or depicted on vases or reliefs, and rarely recovered in the zooarchaeological evidence unless meticulous excavation methods are observed. For a striking exception, see the 2nd century BC deposit recovered in the sanctuary of Poseidon at Kalareia, Poros containing 18 different species of fish: Mylona 2008, 92–96.

## Practicalities and perspectives

The animal bones show us a reality, which is both richer and more complex than that suggested by the other sources. The increasingly sophisticated archaeological excavation methods, sieving, flotation and examination of the zooarchaeological material by highly skilled specialists, reveal new aspects of Greek religion. The animal remains may disclose or explain a range of practical considerations to us. Let us consider the issue of fire and burning, a central component of Greek sacrifice. How did one accomplish a holocaust, that is, a complete annihilation of the animal victim by fire? Were the animals killed and then put whole onto the pyre, or were they first bled and then flayed and opened up and emptied of intestines? Were they sectioned and then burnt? Practical experiments with the burning of animals in order to understand human cremation practices have revealed interesting results concerning the complexity of the accomplishment of such actions.<sup>60</sup>

And what about the thighbones burnt for the gods, the *meroi* so frequently mentioned in Homer? Did they consist only of white, clean bones, as in Hesiod, or could they also be entire hind legs, with meat and all, as recently suggested by Guy Berthiaume?<sup>61</sup> Can the animal bones reveal if they were put into the fire with the meat still attached to them or if they had first been freed of meat? Is it possible to distinguish if a bone was covered with meat or wrapped in fat before burning?<sup>62</sup> In this area of enquiry also, some experimentation would be very valuable.<sup>63</sup>

There are also a number of methodological issues. How burnt do the bones have to be for them to be interpreted as a *thysia*? Is the degree of burning the most essential feature for the identification of such a ritual or is the selection of body parts to be considered the important criterion? How do we identify other kinds of sacrificial rituals among the burnt bones, such as the partial burning of the victim, so-called

*moirocausts*? To what extent may deposits of unburnt bones be taken as evidence for actual sacrifices and not just consumption debris? How are we to characterize the throwing of bones into the fire after the meat had been eaten, simply as a way to dispose of the detritus or a ritual treatment of these bones?

The bones also open up perspectives for comparisons where our other sources leave us more or less in the dark. Where does this Greek obsession with burning animal bones for the gods come from? The closest parallels to Greek sacrificial practices in the written evidence are the Israelite rituals outlined in Leviticus in the *Old Testament*, but here there is no mention of treating the bones in the same manner as the Greeks did, although tails were burnt.<sup>64</sup> A Hittite text mentions an unusual ritual where the cut-off forelegs of a sheep were freed of meat and wrapped in fat, though there seems to be no burning involved.<sup>65</sup> To what extent the Greeks were influenced by such ritual practices of their neighbours, close by or more distant, is an open question. The relation between Mycenaean sacrificial rituals and later Iron Age practices is also of primary interest, as recently published zooarchaeological evidence from Pylos and Methana has shown that burnt animal sacrifice was practised in the Late Bronze Age, though not in the same way as in later periods.<sup>66</sup>

These are only some of the issues that need to be considered, and if not treated here, they will hopefully be the topic of discussion elsewhere in the future. What I have outlined above is very closely linked to my own perspective and interests when working on Greek sacrificial ritual, but this is of course far from the only one. Therefore the question also should be turned around: what is the sacrificial wish list of the zooarchaeologists? What is important empirically, methodologically and practically? Are the questions raised by the scholars working on texts, inscriptions, images and archaeological remains the right ones to pose? After all, different kinds of evidence speak of different kinds of realities.

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<sup>60</sup> Sigvallius 1994, 15–32. Only one holocaust is zooarchaeologically demonstrated so far, at the Palaimonion at Isthmia, dating from the Roman period, see Gebhard & Reese 2005, 126, 132–133, 137–139 and 152.

<sup>61</sup> Berthiaume 2005.

<sup>62</sup> On the conflicting responses to these questions, van Straten 1995, 131 with n. 50.

<sup>63</sup> Recent experiments have demonstrated that fresh bones stripped of meat in fact burn better than dry ones, contrary to what is often assumed by scholars, see Théry-Parisot *et al.* 2005, 51–57. This result is of great interest for the understanding of the importance of thighbones in Greek sacrificial ritual.

<sup>64</sup> Leviticus 3:9, 7:3–4, 8:25, 9:18–20, cf. Exodus 29:22; see also Hultgård 1987; Milgrom 1991, 205–213; Ekroth 2009, 146–149; Scullion 2009.

<sup>65</sup> Haas 1994, 657. I am grateful for Alice Mouton for further clarifying this passage to me.

<sup>66</sup> On the evidence for bones being burnt as part of sacrificial rituals in the Late Bronze Age, see Isaakidou *et al.* 2002, 86–92; Halstead & Isaakidou 2004, 136–54; Hamilakis & Konsolaki 2004.

## Abbreviations

- LS* F. Sokolowski, *Lois sacrées des cités grecques* (École française d'Athènes. Travaux et mémoires, 18), Paris 1969.
- LSA* F. Sokolowski, *Lois sacrées de l'Asie Mineure* (École française d'Athènes. Travaux et mémoires, 9), Paris 1955.
- NGSL* E. Lupu, *Greek sacred law. A collection of new documents* (Religions of the Graeco-Roman world, 152), Leiden 2005.
- ThesCRA* *Thesaurus cultus et rituum antiquorum* I–V, Los Angeles 2004–2005.

## Bibliography

- Ackermann, D. 2007. 'Rémunération des prêtres et déroulement des cultes dans un dème de l'Attique. Le règlement religieux d'Aixônè', *EtCl* 75, 111–136.
- Avronidaki, Ch. 2008. 'Boeotian red-figure imagery on two new vases by the Painter of the Dancing Pan', *AntK* 51, 8–22.
- Beazley, J.D. 1939. 'Excavations at Al Mina, Sueidia (continued)', *JHS* 59, 1–44.
- Berges, D. 1986. *Hellenistische Rundaltäre Kleinasiens*, Freiburg.
- 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.
- Berthiaume, G. 1982. *Les rôles du μάγειρος. Étude sur la boucherie, la cuisine et le sacrifice dans la Grèce ancienne* (Mnemosyne supplement, 70), Leiden.
- Berthiaume, G. 2005. 'L'aile ou les *méria*. Sur la nourriture des dieux grecs', in *La cuisine et l'autel. Les sacrifices en questions dans les sociétés de la Méditerranée ancienne* (Bibliothèque de l'École des hautes études sciences religieuses, 124), eds. S. Georgoudi, R. Koch Piettre & F. Schmidt, Paris, 241–251.
- Blinkenberg, Ch. 1941. *Lindos. Fouilles de l'acropole 1902–1914* II. *Inscriptions* vol. 2, Berlin & København.
- Boessneck, J. & A. von den Driesch 1988. *Knochenabfall von Opfermahlen und Weihgaben aus dem Heraion von Samos (7. Jh. v. Chr.)*, München.
- Bookidis, N. & R. Stroud 1997. *Corinth XVIII:3. The sanctuary of Demeter and Kore. Topography and architecture*, Princeton.
- Börker, Ch. 1975. 'Bukranion and bukephalion', *AA*, 244–250.
- Buitron-Oliver, D. 1995. *Douris: A master painter of Athenian red figure vases* (Kerameus, 9), Mainz.
- Cahn, J.-D. 2000. *Kunstwerke der Antike: Privatsammlungen und anderer Besitz; griechische, etruskische, römisch und ägäische Kunstwerke*, Basel.
- Camp, J. McK. 1999. 'Excavations in the Athenian Agora 1996 and 1997', *Hesperia* 68, 255–283.
- Camp, J. McK. 2003. 'Excavations in the Athenian Agora: 1998–2001', *Hesperia* 72, 241–280.
- Davis, S.J.M. 1996. 'Animal sacrifices', in *The sanctuary of Apollo Hylates at Kourion: Excavations in the Archaic precinct* (SIMA, 109), ed. D. Buitron-Oliver, Jonsered, 181–182.
- Davis, S.J.M. 2008. "'Thou shalt take of the ram ... the right thigh; for it is a ram of consecration ..." some zooarchaeological examples of body-part preferences', in *Uomini, piante e animali nella dimensione del sacro* (Beni archeologici – Conoscenza e tecnologia, quaderno 6), eds. F. D'Andria, J. De Grossi Mazzorin & G. Fiorentino, Bari, 63–70.
- 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 & London, 1–20.
- Dimitrova, N. 2008. 'Priestly prerogatives and *hiera moira*', in *Μικρός ιερομνήμων. Μελέτες εις μνήμην Michael H. Jameson*, eds. A. Matthaïou & I. Polinskaya, Athens, 251–257.
- Durand, J.-L. 1984. 'Le faire et le dire. Vers une anthropologie des gestes iconiques', *History and anthropology* 1, 29–48.
- Durand, J.-L. 1989. 'Greek animals: Toward a topology of edible bodies', in *The cuisine of sacrifice among the Greeks*, eds. M. Detienne & J.-P. Vernant, Chicago & London, 87–118.

- Durand J.-L. & A. Schnapp 1989. 'Sacrificial slaughter and initiatory hunt', in *A city of images. Iconography and society in ancient Greece*, Princeton, 53–70.
- Ekroth, G. 2007. 'Meat in ancient Greece: Sacrificial, sacred or secular?', *Food & history* 5:1, 249–272.
- Ekroth, G. 2009. 'Thighs or tails? The osteological evidence as a source for Greek ritual norms', in *La norme en matière religieuse dans la Grèce ancienne. Actes du XIe colloque du CIERGA (Rennes, septembre 2007)* (Kernos supplément, 21), ed. P. Brulé, Liège, 125–151.
- Ekroth, G. 2013. 'Forelegs in Greek cult', in *Perspectives on ancient Greece. Papers presented in celebration of the 60th anniversary of the Swedish Institute at Athens* (ActaAth-8°, 22), ed. A.-L. Schallin, Stockholm, 113–134.
- Ekroth, G. forthcoming. 'Bare bones: Osteology and Greek sacrificial ritual', in *Animal sacrifice in the ancient world*, eds. S. Hitch & I. Rutherford, Cambridge University Press.
- Felsch, R.C.S. 2001. 'Opferhandlungen des Alltagslebens im Heiligtum der Artemis Elaphebolos von Hyampolis in den Phasen SH III C – Spätgeometrisch', in *Potnia. Deities and religion in the Aegean Bronze Age. Proceedings of the 8th International Aegean Conference, Göteborg, Göteborg University, 12–15 April 2000* (Aegaeum, 22), eds. R. Laffineur & R. Hägg, Liège & Austin, 193–199.
- Forstenpointner, G. 2001. 'Demeter im Artemision? – Archäologische Überlegungen zu den Schweineknöchelfunden aus dem Artemision', in *Der Kosmos der Artemis von Ephesos* (Österreichisches Archäologisches Institut. Sonderschriften, 37), ed. U. Muss, Wien, 49–71.
- Forstenpointner, G. 2003. 'Promethean legacy: Investigations into the ritual procedure of "Olympian" sacrifice', in *Zooarchaeology in Greece: Recent advances* (BSA studies, 9), eds. E. Kotjabopoulou et al., Athens, 203–213.
- Fraser, P. 1977. *Rhodian funerary monuments*, Oxford.
- Gardeisen, A. 1996. 'Sacrifices d'animaux à l'Hérakleion de Thasos', *BCH* 120, 799–820.
- Gebauer, J. 2002. *Pompe und Thysia. Attische Tieropferdarstellungen auf schwarz- und rotfigurigen Vasen* (Eikon, 7), Münster.
- Gebhard, E.R. & D.S. Reese 2005. 'Sacrifices for Poseidon and Melikertes-Palaimon at Isthmia', in *Greek sacrificial ritual, Olympian and chthonian. Proceedings of the Sixth International Seminar on ancient Greek cult, organized by the Department of Classical Archaeology and Ancient History, Göteborg University, 25–27 April 1997* (ActaAth-8°, 18), eds. R. Hägg & B. Alroth, Stockholm, 125–154.
- Georgoudi, S. 2005. "L'occultation de la violence" dans le sacrifice grec: données anciennes, discours modernes', in *La cuisine et l'autel. Les sacrifices en questions dans les sociétés de la Méditerranée ancienne* (Bibliothèque de l'École des hautes études sciences religieuses, 124), eds. S. Georgoudi, R. Koch Piettre & F. Schmidt, Paris, 115–147.
- Gill, D. 1974. 'Trapezomata: A neglected aspect of Greek sacrifice', *HTbR* 67, 117–137.
- Hägg, R. 1998. 'Osteology and Greek sacrificial practice', in *Ancient Greek cult practice from the archaeological evidence. Proceedings of the Fourth International Seminar on ancient Greek cult, organized by the Swedish Institute at Athens, 22–24 October 1993* (ActaAth-8°, 15), ed. R. Hägg, Stockholm, 49–56.
- 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.
- Hamilakis, Y. & E. Konsolaki 2004. 'Pigs for the gods: Burnt animal sacrifices as embodied rituals at Mycenaean sanctuaries', *OJA* 23, 135–151.
- Højlund, F. 1983. 'The Maussolleion sacrifice', *AJA* 87, 145–152.
- Hultgård, A. 1987. 'The burnt-offering in early Jewish religion', in *Gifts to the gods. Proceedings of the Uppsala symposium 1985* (Boreas, 15), eds. T. Linders & G. Nordquist, Uppsala, 83–91.
- Isaakidou, V., P. Halstead, J. Davis & S. Stocker 2002. 'Burnt animal sacrifice at the Mycenaean "Palace of Nestor", Pylos', *Antiquity* 76, 86–92.
- Jameson, M.H. 1986. 'Sophocles, *Antigone* 1005–1022: an illustration', in *Greek tragedy and its legacy. Essays presented to D.J. Conacher*, eds. M. Cropp, E. Fantham & S.E. Scully, Calgary, 59–65.

- Jameson, M.H. 1994. 'Theoxenia', in *Ancient Greek cult practice from the epigraphical evidence. Proceedings of the Second International Seminar on ancient Greek cult, organized by the Swedish Institute at Athens, 22–24 November 1991* (ActaAth-8°, 13), ed. R. Hägg, Stockholm, 35–57.
- Jameson, M.H., D.R. Jordan & R.D. Kotansky 1993. *A lex sacra from Selinous* (GRBS monographs, 11), Durham.
- Jeppesen, K., F. Højlund & K. Aaris-Sørensen 1981. *The Maussolleion at Halikarnassos* Vol. 1. *The sacrificial deposit* (Jutland archaeological society publications, 15:1), København.
- Jordan, D.R. & S.I. Rotroff 1999. 'A curse in a chytridion: A contribution to the study of Athenian pyres', *Hesperia* 68, 147–154.
- Kotjabopoulou, E., Y. Hamilakis, P. Halstead, C. Gamble & P. Elefanti, eds. 2003. *Zooarchaeology in Greece: Recent advances* (BSA studies, 9), Athens.
- Kunisch, N. 1997. *Makron* (Kerameus, 11), Mainz am Rhein.
- Larson, J. forthcoming. 'Venison for Artemis? The problem of deer sacrifice', in *Animal sacrifice in the ancient world*, eds. S. Hitch & I. Rutherford, Cambridge University Press.
- Leguilloux, M. 2000. 'L'hécatombe de l'ekklesiasterion de Poseidonia: le témoignage de la faune', in *Rites et espaces en pays celtes et méditerranéen. Étude comparée à partir du sanctuaire d'Acy Romance (Ardenne, France)* (CÉFR, 276), ed. S. Verger, Roma, 341–351.
- Leguilloux, M. 2004. 'Bibliographie archéozoologique', in *Thesaurus cultus et rituum antiquorum (Thes-CRA)* I, 64.
- Lembessi, A. 1985. *Τὸ ἱερόν τοῦ Ἑρμῆ καὶ τῆς Ἀφροδίτης στὴ Σύμη Βιάννου* I.1. *Χάλκινα κρητικά τορευμάτα* (Βιβλιοθήκη τῆς ἐν Αθῆναις Αρχαιολογικῆς Ἐταιρείας, 102) Athens.
- Le Guen-Pollet, B. 1991. 'Espace sacrificiel et corps des bêtes immolées. Remarques sur le vocabulaire désignant la part du prêtre dans la Grèce antique, de l'époque classique à l'époque impériale', in *L'espace sacrificiel dans les civilisations méditerranéennes de l'antiquité. Actes du colloque tenu à la Maison de l'Orient, Lyon, 4–7 juin 1988* (Publications de la bibliothèque Salomon-Reinach, 5), eds. R. Étienne & M.-Th. Le Dinahet, Paris, 12–23.
- Lupu, E. 2003. 'Μασχαλσίματα: A note on SEG XXXV 113', in *Lettered Attica. A day of Attic epigraphy. Proceedings of the Athens symposium 8 March 2000 with a memoir by Johannes Kirchner* (Publications of the Canadian Archaeological Institute at Athens, 3), eds. D. Jordan & J. Traill, Athens, 69–77.
- MacKinnon, M. 2007a. 'Osteological research in Classical archaeology', *AJA* 111, 490–491.
- MacKinnon, M. 2007b. 'Osteological research in Classical archaeology: Extended bibliography', *AJA* 111, 17–19 (online).
- Mayor, A. 2001. *The first fossil hunters. Paleontology in Greek and Roman times*, Princeton & Oxford.
- Milgrom, J. 1991. *Leviticus 1–16. A new translation with introduction and commentary* (The Anchor Bible), New York.
- Mylona, D. 2008. *Fish-eating in Greece from the fifth century BC to the seventh century AD. A story of impoverished fishermen or luxurious fish banquets?* (BAR-IS, 1754), Oxford.
- Naiden, F. 2007. 'The fallacy of the willing victim', *JHS* 127, 61–73.
- Parker, R. 2010. 'Eating unsacrificed meat', in *Paysage et religion en Grèce antique. Mélanges offerts à Madeleine Jost* (Travaux de la Maison René-Ginouès, 10), eds. P. Carlier & Ch. Lerouge-Cohen, Paris, 137–145.
- Reese, D.S. 2005. 'Faunal remains from Greek sanctuaries: A survey', in *Greek sacrificial ritual, Olympian and chthonian. Proceedings of the Sixth International Seminar on ancient Greek cult, organized by the Department of Classical Archaeology and Ancient History, Göteborg University, 25–27 April 1997* (ActaAth-8°, 18), eds. R. Hägg & B. Alroth, Stockholm, 121–123.
- Reese, D.S. & D. Ruscillo 2000. 'The mammal remains', in *Kommos IV. The Greek sanctuary* Part 1, eds. J.W. Shaw & M.C. Shaw, Princeton & Oxford, 416–495.
- Roy, J. 2007. 'The consumption of dog-meat in Classical Greece', in *Cooking up the past. Food and culinary practices in the Neolithic and Bronze Age Aegean*, eds. C. Mee & J. Renard, Oxford, 342–353.
- Rudhardt, J. 1970. 'Les mythes grecs relatifs à l'instauration du sacrifice: les rôles corrélatifs de Prométhée et de son fils Deucalion', *MusHel* 27, 1–15.

- Ruscillo, D. 1993. 'Faunal remains from the Acropolis site, Mytilene', *EchCl* 12, 201–210.
- Schnapp, A. 1997. *Le chasseur et la cité. Chasse et érotique en Grèce ancienne*, Paris.
- Scullion, S. 2009. 'Sacrificial norms, Greek and Semitic: holocausts and hides in a sacred law from Aixone', in *La norme en matière religieuse dans la Grèce ancienne. Actes du XIe colloque du CIERGA (Rennes, septembre 2007)* (Kernos supplément, 21), ed. P. Brulé, Liège, 153–169.
- Sigvallius, B. 1994. *Funeral pyres. Iron Age cremation in North Spånga* (Theses and papers in osteology, 1), Stockholm.
- Stanzel, M. 1991. *Die Tierreste aus dem Artemis-/Apollon-Heiligtum bei Kalapodi in Bötien/Griechenland*, München.
- Stengel, P. 1910. *Opferbräuche der Griechen*, Leipzig & Berlin.
- van Straten, F.T. 1974. 'Did the Greeks kneel before their gods?', *BABesch* 49, 159–189.
- van Straten, F.T. 1988. 'The god's portion in Greek sacrificial representations: Is the tail doing nicely?', 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, 51–68.
- van Straten, F.T. 1995. *Hiera kalá. Images of animal sacrifice in Archaic and Classical Greece* (Religions in the Graeco-Roman world, 127), Leiden.
- Studer, J. & I. Chenal-Velarde, 2003. 'La part des dieux et celle des hommes: offrandes d'animaux et restes culinaires dans L'Aire sacrificielle nord', in S. Huber, *Erètria XIV. L'Aire sacrificielle au nord de Sanctuaire d'Apollon Daphnéphoros*, Basel, 175–185.
- Tagalidou, E. 1993. *Weihbreilefs an Herakles aus klassischer Zeit* (SIMA-PB, 99), Jonsered.
- Théry-Parisot, I., S. Costamagno, J.P. Brugal, P. Fosse & R. Guilbert 1997. 'The use of bone as fuel during the Palaeolithic, experimental study of bone combustible properties', in *The zooarchaeology of fats, oils, milk and dairying. Proceedings of the 9th Conference of the International Council of Archaeozoology, Durham, August 2002*, Oxford, 50–59.
- Trantalidou, K. 2006. 'Companions from the oldest time: 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.
- Tsoukala, V. 2009. 'Honorary shares of sacrificial meat in Attic vase painting: Visual signs of distinction and civic identity', *Hesperia* 78, 1–40.
- Umholtz, G. 2008. 'Architectural ornament fit for a queen. Feminine piety and early Hellenistic boukrania', in *Love for Lydia. A Sardis anniversary volume presented to Crawford H. Greenewalt, Jr* (Archaeological exploration of Sardis. Report, 4), ed. N.D. Cahill, Cambridge, MA & London, 99–110.
- 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 & London, 21–86.
- Vila, E. 2000. 'Bone remains from sacrificial places: The temples of Athena Alea at Tegea and of Asea on Agios Elias (the Peloponnese, Greece)', in *Archaeozoology of the Near East IVB. Proceedings of the Fourth International Symposium on the archaeozoology of southwestern Asia and adjacent areas*, eds. M. Mashkour et al., Groningen, 197–205.
- Yavis, C.G. 1949. *Greek altars. Origins and typology*, St. Louis.
- Zaganiaris, N.J. 1975. 'Sacrifices de chiens dans l'antiquité classique', *Platon* 27, 322–329.