Animal limbs in funerary contexts in southern Portugal and the question of segmentation

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ABSTRACT
During the past decade, many archaeological interventions in southern Portugal have revealed a different panorama funerary practices dating from the 4th to the 2nd millennium BC. Besides the architectural specificities, contexts revealing associations of animal and human remains are multiplying. So far the available data reveal a preference for the deposition of domestic animals, on one hand; and for the deposition of animal parts rather than complete animals, on the other. The majority of the archaeological contexts under study revealed a preference for the deposition of articulated paws, isolated limb bones or even articulated animal parts, where the limbs are always present. The traditional explanations for such occurrences of animals in tombs are that they are the product of rituals of commensality. According to the anatomical representations and other contextual characteristics (e.g. direct associations of some animal bones with specific human bones, taphonomic history of the faunal collections), another interpretation is proposed. This approach is strongly guided by a new framework based on the understanding of Human/Animal relationships, where a bone or an anatomical part can be representative of a specific animal.

KEY WORDS
Recent Prehistory, funerary practices, animal bones, anatomical representation, Human/Animal relationship, Southern Portugal.

RÉSUMÉ

Membres d´animaux en contexte funéraire dans le sud du Portugal et le problème de la segmentation.

Les fouilles récentes, menées au cours des dix dernières années dans le sud du Portugal ont complètement renouvelé la connaissance des pratiques funéraires des 4e au 2e millénaires avant J.-C. Au delà des particularités architecturales, les contextes funéraires marqués par l'association de restes humains et d'ossements animaux se sont multipliés. Les données disponibles à ce jour sont marquées par des dépôts constitués préférentiellement de restes d'animaux domestiques et plus particulièrement de parties de squelettes, d'éléments d'extrémités, d'os longs isolés voire de membres complets. Les explications traditionnellement avancées qui rapportent ces vestiges à des reliefs culinaires ne sont pas satisfaisantes. La prise en compte de la sélection anatomique et des données relatives aux contextes de découverte (position des restes de faune en association directe avec des ossements humains, caractéristiques taphonomiques…) permet d'avancer l'hypothèse que ces ossements ou ces segments de squelettes peuvent être considérés comme représentatifs d'animaux complets et significatifs d'un système de représentation d'un tout par sa partie.

MOTS CLÉS
Préhistoire récente, pratiques funéraires, os d'animaux, représentation anatomique, relation Homme/Animal, Sud du Portugal.

INTRODUCTION

Until recently, funerary practices from the 4th to the 2nd millennium BC in southern Portugal were restricted to Megalithism and geographically limited to the northern part of the Alentejo and Algarve regions. During the last decade, this scenario has changed, due mainly to field surveys undertaken in the lower Alentejo. The funerary manifestations of the Alentejo hinterland are a much more complex phenomenon: proliferation of funerary monuments with different architectural solutions ranging from dug out structures (e.g. pits and *hypogea*) to *tholoi* (Valera in press) (Fig. 1).

At the same time as this increase in relevant data and the formulation of a new research agenda, particular attention has been paid to the role of animals in funerary rituals. Although the associations of animal bones are well known from the 4th to 2nd millennium BC in Portugal, the poor preservation of the assemblages, or the lack of contextual information in the oldest investigations, always discouraged research in this domain. Thus, the role of the animal in the human management of death during recent prehistory[1] has always been overlooked.

Due to epistemological reorientations and the huge increase in data, the specific associations of human/animal remains require new approaches, guided by a new perspective of this relationship. Within this framework, the deposition of animal limbs in funerary contexts assumes particular significance during the considered period. This paper addresses this specific aspect of ritual in a theoretical perspective that considers the ontological problem of bodies and the human/animal relationship. To deal with this problem we assume a status differentiation between animal bones used as raw material and animal bones representative of the animal or part of the animal, and focus on the latter.

ARCHAEOLOGICAL DATA: FAUNAL DEPOSITS IN HUMAN FUNERARY CONTEXTS

Late Neolithic (2nd half of the 4th millennium BC) (Fig. 2)

The *hypogea* of Sobreira de Cima and Outeiro Alto 2 are two of the most ancient funerary contexts with studied faunal remains in the territory under analysis, and both have tombs dated from the Late Neolithic.

1. Recent prehistory in Portuguese territory is commonly accepted to be from the 2nd half of 6th millennium to the beginning of the 1st millennium BC.

The site of Sobreira de Cima (Valera 2009) is composed of at least five *hypogea* excavated during a rescue intervention. Three of them were half destroyed, but tombs1 and 5 were well preserved and composed by an underground crypt and a lateral access pit. Tomb 1 was untouched since it was last closed. The human individuals were found in anatomical connection and deposited on the chamber floor. Several ossuaries were also identified accrued on one side of the crypt. The votive artefacts were organized in two sets, one in each side of the chamber entrance, establishing a "mirror effect". The assemblages were composed by lithic geometrics, hand axes and adzes, blades and bladelets, one quartz bladelet core, a bone picker, one millstone fragment and several ivory bracelets.

Tomb 5 presented a funerary chamber similar to Tomb 1, but the chamber entrance was closed by a partially fractured amphibolite slab which had fallen into the interior of the chamber, where one last individual deposit and a set of ossuaries were placed. Similarly to Tomb 1, the votive artefacts were located on both sides of the entrance, without obvious connections to any particular individual, and deposited to form a "mirror effect". The assemblages were composed of lithic geometrics, hand axes, blades, a millstone fragment and bone pickers. Once again pottery was totally absent. The radiocarbon dating points to the use of these monuments during the second half of the 4th millennium (Valera *et al.* 2008).

The only faunal remains recovered correspond to *Ovis* and *Capra* and were present in tombs 1 and 5. Seven phalanges were scattered in the Tomb 1 chamber: one identified as *Capra hircus* and the rest as *Ovis*/*Capra*. In Tomb 5, fifty-seven phalanges were found covering anterior and posterior first, second and third phalanges; of these, twenty two were identified as *Capra hircus* and one as *Ovis aries*. These phalanges presented a particular organization inside Tomb 5, as they were in direct spatial association with an accumulation of human phalanges inside the ossuary at the back of the chamber. All sets of phalanges were present and no cut marks were identified. They were in total disconnection, even the unfused epiphysis and diaphysis of the subadult's phalanges. These data, along with weathering marks on bone surfaces, suggest that the faunal osteological elements were selected and actually incorporated in the ossuary (without soft tissues

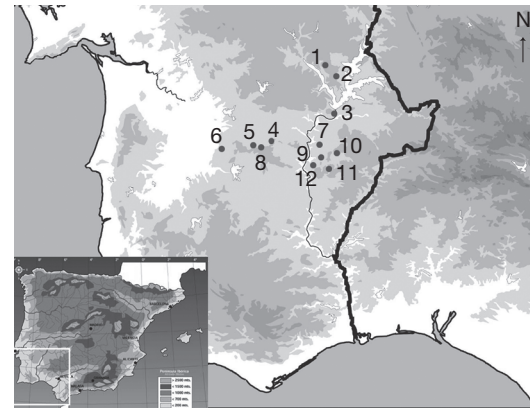

Fig. 1. — Sites referred in the text: **1**, H. St. Margarida; **2**, Perdigões; **3**, Sobreira de Cima; **4**, Monte das Covas 3; **5**, Horta do Jacinto; **6**, Cardim 6 (Porto Torrão); **7**, Ribeira de S. Domingos; **8**, Bela Vista 4; **9**, Outeiro Alto 2; **10**, Belmeque; **11**, Torre Velha 3; **12**, Montinhos 6.

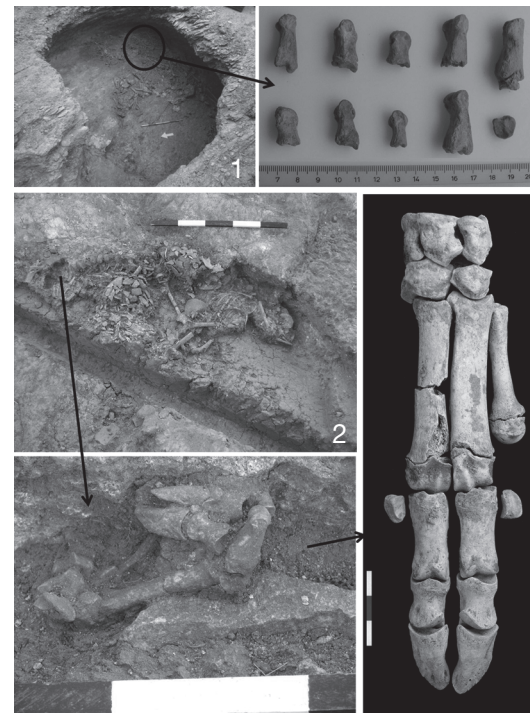

Fig. 2. – Late Neolithic contexts: **1**, *Ovis*/*Capra* phalanges from hypogeum 5 of Sobreira de Cima; **2**, *Sus* sp. paw from pit grave of Perdigões.

Fig. 3. – Chalcolithic contexts: **1**, Carnivore limb from Tomb 1 of Perdigões necropolis; **2**, Dear stalk from Tomb 2 of Perdigões necropolis; **3**, Dog cranium from pit grave of Monte das Covas 3; **4**, Partial sheep/goat skeleton from Cardim 6 tholos.

or as dry bones) and intentionally associated with the human phalanges.

The maturity state of the entire set of phalanges from both tombs demonstrates the exclusive existence of juvenile animals.

Outeiro Alto 2 is a polynuclear site on which a Chalcolithic ditched enclosure and two necropolis areas from the Late Neolithic and Bronze Age were identified. The structures dating from the Late Neolithic are three *hypogea* with small circular crypts with an entrance made by a lateral access pit, and a possible individual burial. The architectural solution and the votive assemblage are very similar to the contemporaneous site of Sobreira de Cima. Inside one of the *hypogeum,* isolated sheep/goat phalanges were recovered (Valera in press; Valera & Filipe 2010), showing a similar ritual procedure. However, these have not yet been studied.

Also dating from the Late Neolithic, two pit graves were excavated inside the enclosed complex of Perdigões (Valera & Godinho 2009): pit 11 presented anatomically connected parts of three human skeletons, and pit 7 contained partially connected parts of one human individual. In both pits, no votive assemblages were found except for the presence of one juvenile suid paw in each context, and a *C.* cf. *edule* shell in pit 11. Pit 7 presented articulated metatarsals and phalanges, and pit 11 contained articulated carpals, metacarpals and phalanges. In both cases, these assemblages were on the left side (Moreno-Garcia & Cabaço 2009). These two pits belonged to a cluster of four intersecting, chronologically related pits., Thus, pit 7 was the first to be opened, followed by pit 11, which was affected by the opening of other two pits (Valera 2008a). This aspect, along with the possibility of the *post mortem* removal of human remains (Godinho 2008), explains the fact that some of the suid paw bones are missing (such as lateral phalanges and metapodia) and implies that the faunal remains were no longer in their original position.

Chalcolithic (Fig. 3)

At the enclosure complex of Perdigões, specifically in the area of the necropolis, two *tholoi* (tombs 1 and 2) dating from the 3rd millennium were excavated. The structures are composed by circular underground chambers, bounded by schist slabs and a small orthostatic corridor with an atrium also lined with schist slabs. The cover was not preserved and so far the available data revealed exclusively secondary human inhumations. The votive artefacts are abundant: pottery, lithic arrow heads and blades, necklace beads, idols and a large number of ivory artefacts (Valera *et al.* 2007; Valera & Godinho 2009). Animal bones were collected commingled with the human remains (in addition to horse and deer idol-phalanges) (Cabaço 2009; 2012).

The list of species is quite diversified: *Equus* sp. (equid), *Cervus elaphus* (red deer), *Bos taurus* (domestic cattle), *Ovis/Capra* (sheep/goat), *Sus* sp. (suid) *Oryctolagus cuniculus* (rabbit), *Lepus* sp. (hare), *Vulpes vulpes* (fox), *Canis* sp. (canid), *Meles meles* (badger) and *Felis silvestris* (wild cat). A few bird and reptiles bones were also collected. In both tombs, rabbit is the dominant species but its relationship to the ritual

must be carefully assessed because of its burrowing behavior. In fact the analysis of the anatomical representation points to the existence of complete rabbit skeletons, from new-borns to adults, with no evidence of anthropic manipulation, thereby suggesting natural accumulation, which may have been contemporaneous with tomb use. However, rabbits were also important to these communities, as demonstrated by the presence of small rabbit figurines in exotic raw materials, with suspension perforations. As this is a funerary context, and a quite symbolic one, we cannot rule out the possibility that some rabbit remains were actually part of the funerary ritual.

As for fox remains, some bones were dispersed throughout the various stratigraphic units. Nevertheless, in the middle of the stones sealing the chamber, a limb in anatomical connection was found in a context suggesting intentional deposition. In addition, there were other carnivores inside Tomb 2, namely badger, canid and wild cat, each represented by two unconnected limb bones.

The most represented paw bones are equid and red deer phalanges. Although most of them are decorated, these elements should not be seen as real animal representations, but rather as a depiction of their attributed anthropomorphic iconographic significance. They are common ideographic elements of Chalcolithic funerary assemblages in Iberia.

At Ribeira de S. Domingos 1, an excavated circular pit presented several human deposits: complete skeletons and skeletal parts in anatomical connection. On the top of the human deposits, under a partial drop of the pit's wall, the hind limbs in anatomical connection of a carnivore skeleton were found. Just some centimetres above, a set of other bones compatible with the same individual were scattered in a small area. A fragment of a millstone and some pottery were also added to the context (Miguel 2010).

In Herdade de Sta Margarida, in the megalithic passage grave with chamber *tumulus* (Gonçalves 2003), dating from the second half of the 3rd millennium BC, two *Canis familiaris* hind limbs were recovered. The paws, left and right, were in anatomical connection and associated with the human deposits; three canid teeth were also recovered (Moreno-Garcia 2003). The rest of the votive assemblages were characterized by pottery, schist plaques, necklace beads, blades and bladelets, flint arrows and flakes and bone artefacts.

Monte Cardim 6 is a *tholos* located at the southern limit of one of the biggest ditched enclosures known in southern Portugal: Porto Torrão. Some contemporaneous funerary sites, located not very far from the ditched enclosure, can be interpreted as part of the complex, just like some other cases in the southwest region of Iberia (Valera 2010a). Monte do Cardim 6 is one of these cases. Structurally, the monument was half underground, characterized by a circular chamber, a corridor, an atrium and a false vault cover. The base levels contained primary and secondary human inhumations. The votive assemblage is of Chalcolithic age with lithic arrows, blades, fragmented pottery, including Bell Beaked pottery (Valera *et al.*, in press).

A partial articulated juvenile sheep/goat skeleton was identified, composed of the cranium, the first cervical vertebrae, including the axis, a few rib fragments, a right humerus and radius. Three complete *Ovis/Capra* first phalanges were recovered in the same layer. In other layers, some dispersed and isolated fragments of unidentifiable species were also collected.

At Monte das Covas 3, the prehistoric occupation is characterized by dug out structures, three of which were funerary: two *hypogea* and one pit. The pit was the only context with associated faunal remains. The structure revealed several different phases as a collective human burial ground, with at least 16 human individuals. The faunal remains were in the same level as the human burials with anatomical connections. The remains are a partial canid skeleton composed of the cranium, mandible and some vertebrae, all in anatomical connection, a carpus and metacarpus in anatomical position from an un-specified species (most probably a carnivore compatible with canid) and a herbivore mandible (Miguel & Brazuna 2008; Miguel & Godinho 2009).

Finally, at Bela Vista 4, a large circular pit was identified and may have been an atrium for a small lateral crypt, where a single human inhumation was recorded with some uncharacteristic pottery shards. The first layer inside the pit contained a stone alignment and faunal mandibles. This layer was separated from another layer containing two juvenile carnivore

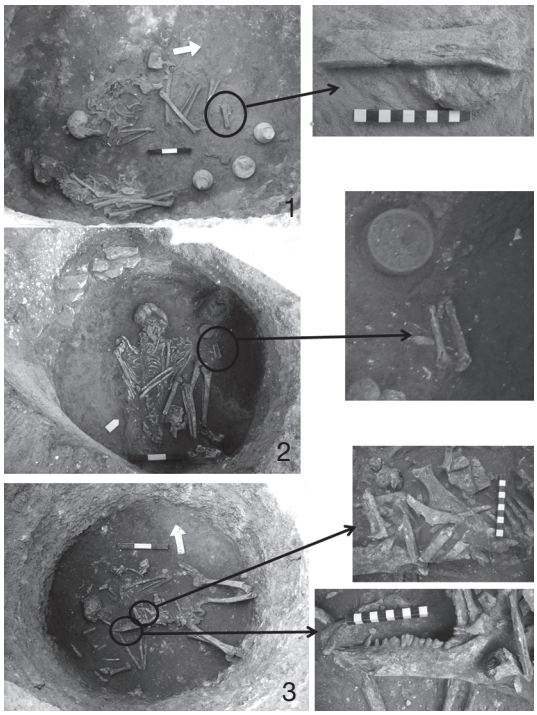

Fig. 4. – Bronze Age contexts: **1**, **2**, Faunal remains in Outeiro Alto 2 hypogea; **3**, Faunal remains scattered over individual with no chronology attributed at Outeiro Alto 2.

limbs (not yet identified) and some other scattered faunal bones, by a level with no other archaeological material. The associated material (pottery shards and loom weights) points to a Chalcolithic chronology. The structure was later affected by the construction of three small *hypogea* dating from Bronze Age (Tiago do Pereiro, personal communication).

Bronze Age (Fig. 4)

Horta do Jacinto is a 2nd millennium BC site composed of two pits, one of which contained a human juvenile inhumation and a nearly complete suid skeleton. This specific pit revealed a particular infilling suggesting an internal organization in layers: a stone deposit sealing the structure; the deposition of a human body in the middle; below this, a nearly complete suid skeleton, separated from the human skeleton by sediment and a horizontal stone level built at the base of the structure (Baptista *et al.* 2012). The animal skeleton belongs to a sub-adult and was in a poor state of preservation: the ulnae and radius were missing, as well some spongy bones, like the vertebrae and ribs, probably due to the extreme alkalinity of the sediment.

Montinhos 6 is an archaeological site composed of 130 pits, seven of which contained funerary deposits, and fourteen *hypogea*, dated from the 2nd millennium. The *hypogea* presented atriums leading to one or two circular crypts, where the human bodies were deposited. Some of these funerary contexts presented individual burials, others contained collective inhumations with five individuals at the most, of both gender, adults and sub-adults. The votive assemblage is composed mainly of pottery and metal artefacts (Baptista & Gomes 2011; Baptista & Rodrigues 2010; Costa 2013).

Only six *hypogea* revealed faunal associations: one case with a partial *Oryctolagus cuniculus* skeleton, three with *Bos taurus* left radiuses, ulnae and carpals and two cases with right *Ovis/Capra* radiuses and ulnae. In all cases the faunal remains were in anatomical connection (Costa 2013; Costa & Baptista in press).

Despite the fact that Torre Velha 3 contains funerary structures dated to Chalcolithic times, only those dated to the Bronze Age revealed funerary associations with faunal remains. These structures are *hypogea,* excavated in the local bedrock and are similar to Montinhos 6 and Outeiro Alto 2. There are primary inhumations inside the crypts; which are isolated in some cases and associated with ossuaries in others. The votive assemblage was diversified, with pottery and metal artefacts, mainly copper, necklace beads, as well as faunal remains. In a few cases, faunal remains were the only votive offerings, and in other cases artefacts without animal remains accompanied the inhumations. Radiocarbon dating points to the use of these funerary structures during the second quarter and the middle of the 2nd millennium BC (Alves *et al.* 2010).

Out of twenty five excavated *hypogea,* ten revealed faunal remains. In one case an *Ovis aries* radius was identified, whereas the others revealed *Bos taurus* radius and ulna deposits. In five cases, radiuses and ulnae were accompanied by carpals, suggesting anatomical articulation. The faunal remains belong mostly to the left side and only in two cases were from the right side. The preservation state did not

TABLE 1. — Synthesis of the available data.

Site	Architecture type	Chronological integration	Species	Skeleton representation
H. Sta Margarida	Dolmen	Chalcolithic	*Canis familiaris*	Articulated hind limb, left and right
Perdigões	Tomb ½	3rd millenium BC	*Cervus elaphus, Bos* sp., *Ovis/Capra, Lagomorpha, Vulpes vulpes*	Disarticulated bones, mostly from limbs* (*Vulpes vulpes* and *O. cunniclus* are the only anatomical connections)
Perdigões	Pits	Chalcolithic	*Sus* sp.	Articulated fore and hind limb
Sobreira de Cima	Hypogeum	Late Neolithic	*Ovis aries* and *Capra hircus*	Isolated phalanges and worked bone
Monte das Covas 3	Pits	Late Chalcolithic/ Bronze Age	*Canis* sp.	Articulated cranial, axial and front limb
Horta do Jacinto	Pits	Bronze Age	*Sus* sp.	Nearly complete skeleton
Monte Cardim 6	Tholos	Chalcolithic	*Ovis/Capra*	Articulated skull, cervical vertebrae and fore limb of *Ovis/Capra*.
Outeiro Alto 2	Hypogeum	Late Neolithic	Middle size species	Isolated falanges
Outeiro Alto 2	Pits and Hypogea	Bronze Age	Large sized mammals	Radius and ulnae diaphisys
Torre Velha 3	Hypogea	Bronge Age	*Bos taurus, Ovis aries*	Radius, ulnae and carpals left front
Montinhos 6	Hypogea	Bronze Age	*Bos taurus* *Ovis/Capra*	Radius, ulnae and carpals
Belmeque	Hypogeum	Bronze Age	*Bos taurus*	Two left isolated radius and ulnae.
Ribª de S. Domingos 1	Pit	Chalcolithic	Carnivore ?	Articulated hind limb
Bela Vista 4	Hypogeum ?	Chalcolithic	Carnivore	Articulated hind limbs

allow for the observation of cut marks. In cases where fusing states were observed, both adults and sub-adults were detected (Alves *et al.* 2010).

Alongside the Late Neolithic and Chalcolithic contexts, Outeiro Alto 2 also revealed *hypogea* and pits with funerary deposits dated to the 2nd millennium BC. The set of *hypogea* is typologically very similar to those described at other Bronze Age sites, characterized by quadrangular or rectangular atriums and a circular crypt, defining an anthropomorphic plan. Inside the crypts of the anthropomorphic tombs, there was one primary human inhumation (in one case also with an ossuary), accompanied by votive artefacts, mainly pottery and metal artefacts (Valera & Filipe 2010). Five of them revealed badly preserved *Bos taurus* radius and ulna deposits, associated with the votive artefacts. In general, these contexts suggest the same general practices as those observed in the previously described sites (Costa & Cabaço 2012).

Finally, Belmeque tomb is a similar *hypogeum* with the entrance closed by a schist slab. In the crypt there were two adult human individuals without crania. The votive set is composed of pottery and metal artefacts. The radiocarbon dating points to the middle of the 2nd millennium BC. Inside the crypt, associated with the two human skeletons, there were two radiuses and two ulnae identified as domestic cattle (Soares 1994).

Still without chronological determination (possible Bronze Age)

Again in Outeiro Alto 2, in the area of the Bronze Age *hypogea*, one pit revealed a particular ritual with the human skeleton in the ventral decubitus position with isolated animal bones deposited in the dorsal region of the human skeleton. No other materials were associated. The bones are some cranial bones, including the right mandible, and limb bones like scapulae, humeri and some carpal, from young suids, and fragments of humeri from bovids, along with ribs and other non identifiable animal bones (Costa & Cabaço 2012) (Table 1)

TABLE 2. — Chronological significance of the anatomic parts and species associations.

Anatomical parts	Late Neolithic	Chalcolithic	Bronze Age	Not dated
Articulated cranium, cervical vertebrae and fore limb – *Canis* sp.		X		
Articulated cranium, cervical vertebrae and fore limb – *Ovis/Capra*		X		
Articulated limb extremity – *Sus* sp.	X			
Articulated limb extremity – *Canis familiaris*		X		
Articulated complete limb - *Canis familiaris*		X		
Articulated limbs – Carnivore		X		
Isolated radius and ulnae – *Bos taurus*			X	
Isolated radius and ulnae – *Ovis aries*			X	
Isolated phalanges – *Ovis aries* and *Capra hircus*	X			
Nearly complete skeleton – *Sus* sp.			X	
Partial skeleton – *Oryctolagus cuniculus*			X	
Disarticulated bones – several *taxa*		X		X

DISCUSSION

In the 12 sites cited here, there are up to 56 human funerary contexts with associated faunal remains. Chronologically, 42 of them (75%) correspond to the Bronze Age, 8 (14.3%) to the Chalcolithic, five (8.9%) to the Late Neolithic and one (1.8%) to an undetermined recent prehistoric period. Therefore, this kind of practice seems to be more frequent during the Bronze Age. But if we consider the number of sites instead of the number of contexts (which is justified by the fact that the areas and the number of structures excavated in the different sites are quite diverse), the picture changes. Five sites belong to the Bronze Age, seven to the Chalcolithic and three to the Late Neolithic (some sites present more than one chronological period). Taking this into account, it seems that depositing faunal remains in human funerary contexts was practiced during almost all recent prehistory in southern Portugal. However, some differences and specificities emerge throughout this time span.

Looking globally at this set of funerary contexts and the nature of the faunal remains present, five different categories of circumstances can be considered:

– Limbs or parts of limb deposits in anatomical connection, in some cases with several other scattered faunal bones;

– Dry phalange deposits, corresponding to a unique taxon (*Ovis/Capra)*, without any other faunal remains;

– Connections of anatomical parts where limbs, skull and vertebrae are present.

– Deposition of an entire animal;

– Deposition of scattered faunal bones.

The first situation is the most common, with 46 contexts (82%), of which 41 correspond to the Bronze Age, three to the Chalcolithic and two to the Late Neolithic. The second category only occurs during the Late Neolithic, in three *hypogea* (two from Sobreira de Cima and one from Outeiro Alto). The third is present in three Chalcolithic contexts, possibly from the late Chalcolithic. The fourth corresponds to a unique situation in a Bronze Age pit and the fifth is present in three contexts: a *hypogeum* and a *tholos* type tomb from the Chalcolithic, and the pit without determined chronology from Outeiro Alto (in the area where the Bronze Age *hypogea* are).

First of all, we observe a preference for the deposition of paws, parts of limbs or isolated limb bones. The deposition of whole animals or substantial parts of the skeleton is rare and dispersed faunal remains are no more frequent. This practice appears to be widespread throughout the recent prehistory of southern Portugal, although some chronological differences are visible (Table 2).

In terms of species, the presence of *Sus* sp. and sheep/goats is widespread during the Late Neolithic whereas during the Chalcolithic sheep/goats, *Canis* sp. and unclassified carnivores (possibly dogs) are common. During the Bronze Age there is a clear preference for *Bos* sp., with the occasional presence of *Ovis*/*Capra* or suids. This suggests that the type of animal deposited in human funerary contexts depended on certain factors that changed through time. This seems to most obvious in the Late Neolithic, when the introduction of dry juvenile sheep/goat phalanges in the funerary crypts of *hypogea*, in one case clearly associated with a group of human phalanges, is common. This ritual procedure has not been identified at other periods (Table 3).

TABLE 3. — Original positions of the faunal remains.

	Articulated	Disarticulated
Canis sp./*Canis familiaris*	X	
Vulpes vulpes	X	X
Meles meles		X
Felis silvestris		X
Unknown carnivore	X	
Bos taurus		X
Ovis/Capra	X	X
Sus sp.	X	X
Cervus elaphus		X
Oryctolagus cuniculus	X	X

Generally speaking, besides ceremonial differences, there was a marked preference for limbs and limb bones. It is thus relevant to ask how this practice should be interpreted?

Usually, the presence of faunal remains in human funerary contexts is considered to be part of the votive assemblages, representing the offering of food for the afterlife (Aranda Jiménez & Esquível Guerrero 2006; 2007) or remains from funerary ritual feasting. According to modern economic rationality, the preference for paws could be explained by the fact that they present less flesh and are, therefore, easier to dispose in funerary contexts than other animal parts with higher feeding value for the living.

Although this argument has to be considered, it is somewhat limited and fails to explain many of the contextual circumstances and assumed ideological factors.

It cannot explain the rituality involving animal and human phalanges observed during the Late Neolithic at Sobreira de Cima and Outeiro Alto 2. The spatial association of animal limb bones with specific parts of the human skeleton (mostly human hands and feet), strongly suggests specific symbolism of unknown meaning, but which is probably very different from the traditional relationship between humans and animals assumed by commensality theories.

In the same way, these theories are not very consistent with the presence of animal paws that were probably not eaten, such as dog. In fact, the discussion surrounding the human consumption of dogs is an open debate. Although it has been advanced for several areas in Europe during recent prehistory, the evidence for dog eating is quite scarce before the Bronze Age in Iberia (Sanchis & Sarrión 2004; Arbogast *et al.* 2005), and in Portugal they have been totally absent up until now. On the other hand, since the Mesolithic we have evidence of the careful burial of dogs, either in isolated burials or associated with humans, and of possible sacrifices, with the segmentation of dog bodies and the deposition of certain parts (such as skulls with the first vertebrae and paws), presenting quite similar treatment to that of some human bodies (Detry & Cardoso 2010; Valera *et al.* 2010). In some sites, where several complete dogs are deposited, such as Polideportivo de Martos (south of Spain), the context is considered as a foundation ritual (Cámara Serrano *et al.* 2008). In other sites, sacrificial practices are related to the social role and status of the dog in human communities, such as Camino de las Yeseras, Madrid (Liesau *et al.* 2008). In fact, the present evidence of dog funerary treatment clearly suggests that dog eating is not a systematic practice. Thus, the interpretation of the presence of dog paws or crania in human funerary contexts during the Chalcolithic as "meat offerings" is too simplistic (to say the least).

However, the traditional approach also fails to explain the preferences for some animals at given periods, the specific choice of a particular side limb, or the rarity of parts of or complete wild animal deposits in funerary contexts. This is the case, for instance, where phalanges of deer and horse are

present, used as idols. In other words, it seems that we must look for answers in another theoretical framework.

Three convergent paths can be followed in the attempt to develop different approaches and advance alternative (or complementary) explanations and interpretations: a) the large scale tendency for structured deposits in dug out structures where humans and animals tend to share contexts and treatment; b) the ontological status and relations between humans and animals during the Neolithic; c) the importance of segmentation as a structural social practice.

The last decade has shown that in southern Portugal, as in many other European regions, the Late Neolithic and Chalcolithic funerary practices are quite diversified and are not be restricted to Megalithism. On the other hand, inhumation, secondary deposits, body manipulation and segmentation, cremation and scattered deposits of human bones are documented practices. These practices are strictly related to sites with dug out structures (pits and ditches), where the deposition of human remains is part of a generalized custom, also accompanied by animal remains and specific items of material culture, such as broken pottery and millstones. The association of several items with no particular status differentiation attached to any of them is also clear, especially in ditches, a context largely excluded from this paper but which should in fact be considered. Animal and human remains participate in "depositional episodes of larger scale" (Márquez Romero 2006) and of meaningful cosmological purpose. "Formal" funerary contexts are not totally alien to these practices. On the contrary, they can be seen as an expression of them. We should thus bear this in mind when appraising the presence of animal remains in human graves.

Secondly, the deposition of animals or parts of animals cannot be separated from the role and status of the animal in life and in death, before or after deposition. Animals do not share the same general social roles and status, not even in a modern scientific world view. In societies where animistic cosmology must have framed the organization of the world and the social roles of each entity, we would expect animals to have quite different status, with different parts attributed to global cosmology according to the species, gender and age, that go far beyond the simple economic value. Moreover, the same animal or species may have played several social roles during a trajectory that reunites life, death and the after life, and the deposition episode may just relate to part of that complexity of roles (see Olsen 2000, about the social role of dogs). Consequently, we should bear in mind the possibilities of ontological parities between animal species and humans (typical of totemic social organizations, for instance) that could help to interpret practices related to human and animal deposits, what is present, how it is present and what is missing. Because of these particular ontological frameworks, archaeology should pay as much attention to animal remains as to human remains in archaeological surveys (Olsen 2000): orientation, position, represented body parts, condition of those parts, individual attributes (e.g. age, gender, size, pathologies) and contextual associations. Only then will it be possible to detect patterns that give us insights into their world view that are not restricted to simple economics.

In this context, the abundance of limbs or parts of limbs, stresses the importance of segmentation, also present in practices involving human bodies, certain categories of artefacts and even communities, appropriately called segmentary societies. Segmentation seems to be a social strategy of significant importance to societies in recent prehistory (Valera 2010b).

The problem of segmentation is related to the problem of the relation between the part and the whole, and to the different value attributed to the degrees of physical integrity developed in different theoretical frameworks. As J. Chapman (Chapman 2000; Chapman & Gaydarska 2007) argued for the artefact fragments, we consider that the part and the whole may assume the same symbolic role (through ontological parity). In other words, the parts, by participating in the essence of the whole, play the social role of maintaining connections between people or between people and places or events. The presence of a body part does not necessarily mean that post depositional activities disordered the original context. Conversely, we must consider the possibility of intentional segmentation and that

the body part was thus deposited without the rest of the carcass or skeleton. However, because of the principle of psychological participation, that part (a fragment of a pot, a paw of an animal) may be evocative of bonds between people and events. For instance, to a ceremony involving the burial, to previous events that were important to the group, or to future events or maintaining bonds to the social role and power of an object or animal.

As argued elsewhere (Valera 2008b), this is a cognitive mechanism whereby the psychological principle of participation works by evoking the essential properties of the whole with a part, establishing a homology between them. This is the sacred water principle, where each segment represents the whole body of Christ and not a part of it. Segmentation is a structural process, where the need for segmentation and sharing and redistributing essences plays an important role in renewing and perpetuating the social and cosmological order (Fowler 2004).

In this context, the fragment of a body acquires a very different social potential and challenges our perception of the relations between the part and the whole, and to our concept of unity. To us, those relations conform to Cartesian geometry, that establishes dichotomies between complete/incomplete; whole/part; orientated/disorientated, valuing and attributing meaning to the first and insignificance to the second. This would not be the most appropriate theoretical framework to deal with other mental schemes, based on different categories and world views. Fragments should not be devalued, for they have the potential to establish and maintain bonds, assuming relevant social roles.

Just like objects, bodies (human or animal) may be segmented and distributed, maintaining links (this is the principle of the relic). The argument in favour of the similar treatment of human and certain animal bodies (Márquez Romero 2006; Gray Jones 2009) or other categories of objects is gaining ground. This also relates to identifying and investigating forms of contextual relations beyond the traditional perception of a burial with gifts. Funerary contexts, although usually perceived as closed contexts, are in fact essentially open and part of a network of relations where segmentation may have played a central role in establishing and maintaining those bonds.

Why was there a preference for certain parts of limbs? It was definitively not a question of meat.

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