discussion article

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A manifesto for a social zooarchaeology. Swans and other beings in the Mesolithic

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Abstract

Recent, non-anthropocentric explorations of the interaction between human and non-human animals have resulted in many groundbreaking studies. In this 'animal turn', zooarchaeology, which deals with and has access to the material traces of animals that existed alongside humans over the last 2.5 million years, could occupy a privileged and influential position. Despite some encouraging efforts, however, zooarchaeology's ability to contribute to these discussions is heavily limited by the subdiscipline's firm footing within anthropocentric ontologies and reductionist epistemologies. This paper outlines a framework for a new social zooarchaeology that moves beyond the paradigm and discourse of 'subsistence' and of representationist and dichotomous thinking, which have treated non-human animals merely and often exclusively as nutritional or symbolic resources for the benefit of humans. Building on alternative zoontologies which reinstate the position of non-human animals as sentient and autonomous agents, this framework foregrounds the intercorporeal, sensuous and affective engagements through which humans and non-human animals are mutually constituted. These ideas are illustrated with two case studies focusing on human–whooper swan interactions in the Danish Later Mesolithic, based on the faunal assemblage from the site of Aggersund in North Jutland, and the whooper swan remains found associated with the Grave 8 at Vedbæk.

Keywords

animal studies; archaeology; anthropocentrism; zoontology; Mesolithic

Introduction

In 2010 the Italian film director Michelangelo Frammartino released his evocative and critically acclaimed work *Le Quatro Volte*, set in rural Calabria and seemingly taking place in the present, but actually in a rather unspecified temporal universe. Drawing on ideas by the 6th-century B.C. philosopher Pythagoras, especially on his notions of the transmigration of 'souls' through four different existential states (human, animal, plant, mineral), the director

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portrays the last days in the life of a goat herder. Or so it seems from our anthropocentric perspective. For it is not clear in the film if the herder is the one who is in fact 'looking after' the goats, or whether it is the goats (and his dog) who are keeping an eye on the elderly and evidently sick herder. The morning he dies, the whole herd, with the help of the dog, breaks out of the pen and climbs up the stairs to his bedroom to keep vigil during his last moments.

Frammartino is not, of course, the only cultural producer to have explored human–animal relationships from a non-anthropocentric standpoint. To offer just another example, Franz Kafka, in his 1917 monologue *A Report to an Academy* (*Ein Bericht für eine Akademie*), posits the ape Red Peter in front of a scientific conference. The subject of his presentation is his metamorphosis from a captive animal in West Africa to an almost-human being, who decided to mimic humans when he realized that his choices were either 'the zoological garden or the music hall'. The essence of humanity here is portrayed as a matter of mimetic performance (the story features prominently in J.M. Coetzee's novel *Elizabeth Costello*; see also Weil 2010).

This article is also an inquiry on the interface between humans and other animal beings, through zooarchaeological means. More specifically, we wish to show that zooarchaeology is a particularly appropriate field for such an inquiry, provided that it realizes its potential, and severs its links from anthropocentric ontologies; reductionist epistemologies; and the associated, often problematic, methodological assumptions. We start by outlining our framework for a transformed social zooarchaeology, before we proceed to illustrate this framework with two case studies that deal with the interactions between swans and humans in the Danish Later Mesolithic: the whooper swan faunal assemblage from the Ertebølle site of Aggersund in North Jutland, and the whooper swan remains found associated with a human burial from the site of Vedbæk.

What is social zooarchaeology?

Zooarchaeology is a rich and dynamic subdiscipline with its own organizations, working groups, conferences and specialist journals, and one that has produced an enormous quantity of specialized knowledge and information. It occupies a privileged position in that it has access to the material traces of animals that came into contact with humans over the last 2.5 million years, and possesses a large and increasingly sophisticated array of methodologies to study them; as such, it is in a unique position to illuminate the rich and diverse story of the engagement of humans with other animals. Yet this potential has only been realized to a limited extent, as the findings and ideas generated through zooarchaeology rarely enter mainstream archaeological discussion. Furthermore, there is little overlap between theoretical concerns of many archaeologists and those of many, if not most, zooarchaeologists. While there is, increasingly, much diverse and innovative work being carried out within zooarchaeology, some of the recent debates on personhood, materiality, agency, the human body, corporeality, the senses and embodied memory have had limited impact within the subfield. Moreover, while there has been some groundbreaking work

on interspecies interaction in disciplines such as philosophy, anthropology, sociology, feminist studies, human geography, animal studies and science studies (e.g. Derrida 2008; Haraway 2003; 2008; Knight 2005; MacFarland and Hediger 2009a; Whatmore 2002; Wolfe 2003; and works discussed below), a development which has been called the animal turn (e.g. Weil 2010), zooarchaeology has largely failed to engage in a dialogue with it, gain inspiration from it, fertilize it with its unique data and information, and challenge and critique it. Zooarchaeology seems to be equally absent from the contemporary public debates on animal rights, on the ethics of eating meat, on cloning and genetic engineering, and on pets and their social roles.

The reasons for the phenomenon are many and diverse, and are to do as much as with history and epistemology (such as zooarchaeology's reliance on and ancestral links with zoology, and with certain versions of ecology and economics), as with the nature of the recent archaeological debate, which often involved a rather indiscriminate rejection on the part of archaeological theorists of scientific approaches in archaeology. Our intention here is not to analyse the historical trajectory and the causes of this phenomenon, worthwhile as such an exercise may be, but rather to discuss the possibilities and the challenges of another zooarchaeology, which we choose to call social zooarchaeology. We are of the conviction that a transformed social zooarchaeology which can occupy a central place within archaeological discourse is needed, and that an intense and sustained debate on its formation and development must commence.

Zooarchaeology as zoontology: beyond anthropocentrism While the limitations of conventional zooarchaeological approaches which focus on subsistence and 'economy' (narrowly defined) have been extensively critiqued by a growing number of zooarchaeologists and others, a reconfigured social zooarchaeology is yet to emerge. A common response to the critique of these 'economic' approaches and a common path chosen by many of the critics themselves is to focus on 'ritual' and 'symbolic' explanations, or at least acknowledge their role and importance (e.g. more recently Russell 2012, an exhaustive and valuable study). Another response is to add to the research agenda of zooarchaeology aspects such as social status, gender, ethnicity and so on (cf deFrance 2009), in addition to the conventional ones of environment, subsistence and technology.

Neither of the two responses, however, constitutes a social zooarchaeology as we define it here, nor do they offer a way out of the established ontologies and epistemologies. While such studies have at times produced valuable insights, more often than not they are trapped within dichotomous thinking, and more specifically within the pervasive nature–culture divide and its various reincarnations: economic versus symbolic, mundane versus ritual, staple versus luxury, high-status versus low-status, to name but a few. In such social zooarchaeologies, the 'social' usually refers to the ways in which animal remains are used to elucidate explicitly human–human social relations. Moreover, most of the time, their logic is representational (e.g. certain animals or practices stand for, symbolize or represent some sort of identity signifier). This representational logic is problematic not only because it obscures

the diversity, the physicality and the embodied and sensory dimensions of engagement between humans and other animals, but, more importantly, because it assumes and implies a deeply entrenched anthropocentrism, and a passivity on the part of non-human animals. Specific animal species are portrayed as symbolic/totemic entities *for the benefit of humans*. As such, these approaches do not really differ that much from subsistence and narrowly economic approaches: animals are classified as *resources* to be *used*, be they of 'economic' or symbolic nature.

Our own version of social zooarchaeology breaks with anthropocentricity, be it that of functionalism or that of interpretative, structuralist or postprocessual approaches. Recent theoretical approaches in archaeology have focused on the agency of things and artefacts, yet it is curious that while we are prepared to grant agentic qualities to non-sentient beings, we have mostly failed to do the same for sentient, living beings; that is, non-human animals. Following Haraway (e.g. 2008, 42 and *passim*; also 2003) and others we advocate that the history of the engagement between human and non-human animals is one of co-shaping, and of 'mutual becomings' (cf. Birke, Bryld and Lykke 2004, 174; see also Argent 2010; Armstrong Oma 2007; 2010). While this engagement is often asymmetrical, non-human animals have the power and ability to elicit responses from people, including emotive responses, and engage in communicative relationships. The anthropocentric discourse in Western thinking has not only been a biased one, but also one that has performed a colonial act of homogenization upon non-human animals. The very term 'animal', denoting the entities of 'nature' that, unlike plants or minerals, possess 'breath' or 'soul', not only is embedded into a dichotomous nature–culture discourse, but also obscures the huge diversity of non-human animal species (cf. McFarland and Hediger 2009b, 10, discussing ideas of Derrida). One of the detrimental effects of this homogenization is that it prevents us from studying each species in its own right, and approaching each interspecies engagement in its distinctiveness and specificity. The implications for zooarchaeological methods of classification and analysis are obvious here (cf. Ingold 2011, 165–75). In this social zooarchaeology, the recognition that animals are not just an 'economic' resource is not enough; instead it is vital that we acknowledge that animals are agentic entities that engage in human–non-human social relationships.

A way of bypassing anthropocentrism and the nature–culture divide of Western thinking is to embark on alternative ontologies (or zoontologies – cf. Wolfe 2003). A theme that has proved fruitful in developing these alternative zoontologies is hunting, especially in 'farming' societies. Here, the interspecies engagement often recognizes the agency of non-human animals, and the performative, agonistic or even erotic interspecies interaction that takes place between 'hunter' and 'prey' (cf. Hamilakis 2003; Marvin 2003; Sykes 2007a; 2007b; 2010). In 'Mycenaean' (Late Bronze Age, mainland) Greece, for example, hunting wild boar, deer and, perhaps in rare but highly important occasions with mythical significance, lions, was, at least for the elites, an arena for the production and reaffirmation of gender and other social roles, but also a rich medium for the perception and negotiation of time, space and (human and animal) otherness. The confrontation with rare and

fierce animals in particular would have rendered hunting episodes intimate and interpersonal, and not simply interspecies, encounters. Interestingly, the iconographic and material memorialization of the practice (in wall paintings, seals and sealings, and in objects such as the boar tusk helmet) seem to have been more important than the actual practice itself. The boar tusk helmet in particular, headgear that was made of many half-tusks arranged in rows, was not so much a protective device as a material mnemonic of several real or imagined successful hunts, embodying at the same time a spatio-temporal heroic geography: the hunting trips ventured, the places traversed, the successful confrontations with fierce animals (Hamilakis 2003). In another context, later medieval England, the engagement with fallow deer was not a matter of narrowly defined economics but rather embodied, in a sensorial way and through the emotional interaction between humans and the living fallow deer, understandings of time, landscape and identity (Sykes 2007a).

Another promising set of ideas is the one that has become known as Amerindian perspectivism, after the work of Vivieros de Castro (1998; Latour 2009), who carried out ethnographic fieldwork in Amazonian South America (see also Kohn 2007) but whose proposed ontology has been shown to be relevant in other contexts, such as the Siberian Yukaghir (Willerslev 2004; 2007). More specifically, Vivieros de Castro has shown that in Amerindian cosmologies the category of the person is neither bounded nor limited to humans; instead it can include non-human animals and other sentient beings, such as spirits. In Western contexts we often assume a unity of nature and a diversity of culture where all animals are seen as basically the same, yet humans, having 'culture', are internally diverse. By contrast, in Amerindian societies the opposite is true: humans, other animals, and even non-animate beings all possess a soul, and are therefore understood as intrinsically the same, differing from each other simply on how their spirit is bodily expressed. This is the phenomenon that Vivieros de Castro calls spiritual unity and corporeal diversity, presenting not a unified nature, but what he terms 'multi-naturalism'. Willerslev (2007), who carried out work amongst Siberian Yukaghir hunters and who acknowledges his debt to Vivieros de Castro, has identified the same ontological and cosmological principles in operation, and adds that these principles are bodily and sensorially expressed: the Yukaghir mimic other animals, imitate the sound or attempt to acquire their smell, often as part of hunting strategies. Hunting here is not a subsistence strategy, not even a shamanistic affair, but an interpersonal engagement between similar animate beings, or even an erotic encounter between the 'hunter' and the 'hunted'. But there is a danger, however, that these humans who engage in mimetic practices will become altogether something different: they will become the animals that they imitate, they will become transformed not only in body but also in spirit. By the same token, other animals can also be humans, as they share a spirit, and the 'hunted' animal which has been transformed into food may turn out to be a human.

Kohn (2007), inspired by Amerindian perspectivism but wishing to take it further, contends that a different conception of interspecies engagement is not simply a matter of alternative ontologies, but also of alternative epistemologies, in the sense that we have to recognize in non-human animals

the ability of 'knowing' and of representing other species, including humans. Among the Upper Amazonian Runa with whom he worked, humans engage with dogs as if they were persons who could dream and even predict their own death, whereas humans themselves could become jaguars, especially when they encountered one in the forest: humans must not look away but rather return the gaze of the jaguar. In his own words, by 'returning the gaze of jaguars, the Runa deny felines the possibility of treating them as prey and they, thus, maintain ontological parity with them as predators' (Kohn 2007, 15). These ethnographically derived insights evoke and resemble Derrida's philosophical thoughts, when he is confronted by the gaze of his cat, which forces him to admit that it 'has its point of view regarding me' (2008, 11).

These studies should not be read as an attempt to resurrect some sort of pan-animal spiritualism, or as a simplistic and grossly generalized imposition of contextually specific ethnographic evidence upon global, anthropological and archaeological diversity. Their potential lies in the heuristic opportunity they afford us to bypass the nature–culture divide, to reimagine concepts of human and animal selfhood, and re-examine their assumed stability and permanence. They also allow for a hybridic understanding of humanity and animality as corporeal, contingent and transient stages, rather than as bounded, permanent, essentialist conditions. Archaeological studies inspired by this ethnographic work have already shown how promising such alternative conceptions of ontology can be. For example, Conneller (2004) has reinterpreted the red deer animal 'masks' from Mesolithic Star Carr in northern England as artefacts that possessed agency, and allowed humans to engage in bodily transformations – becoming, that is, corporeally deer. Paula Jones (2009), in re-examining some of the earliest remains of felines closely associated with humans in Neolithic Cyprus, as well as a stone figurine with human/feline features from Shillourokambos, raises the possibility of hybridic 'cat people', beings who wished to incorporate, in a mimetic manner, feline features in their subjectivity, and perhaps acquire some of the feline abilities, especially in hunting.

Many conventional zooarchaeological approaches conceive of the live animal as simply a walking larder, a provider of secondary products, rather than as an agency-bearing being. A shift, thus, of emphasis to the live animal as an autonomous being with its own agency and even its known perspective on other species is long overdue. But even in the treatment of dead animals by humans, and more specifically in the use of animals as food, conventional zooarchaeological approaches have been largely problematic. For a start, it is rarely acknowledged by such approaches that the position of animals within distinctive zoontologies and the interspecific relationships developed between human and non-human animals while they are alive would have had a serious impact on how animals were treated after their death, both in the arena of consumption and in the deposition and treatment of the remnants. Moreover, the linguistic homogeneity denoted by the term 'animal' is also transferred in the arena of consumption, where meat is often treated by zooarchaeologists and others on the basis of nutritional or calorific equivalence. Discussions of food taboos and totemic/symbolic relationships are clear exceptions to this; however, they are mostly approached through

a binarist and simplistic structuralist/representational lens. Feasting has become a focus of late, and while much work produced within this theme is interesting and worthwhile, more often than not it is seen as a power mechanism within cultural-evolutionist narratives, and is juxtaposed, in a binary manner, to 'routine' daily consumption, deemed more or less functional in nature. Our proposed social zooarchaeology sees instead the arena of consumption as a key moment in interspecies engagement, and recognizes the embodied, incorporating character of eating and its sensory and mnemonic dimensions (cf. Hamilakis 2002; 2008; 2014; 2011; Hamilakis and Harris 2011; Hamilakis and Konsolaki 2004). In consuming meat, but also other animal substances, humans continue the embodied engagement with animals, and at the same time they recall sensorially previous moments in that engagement, be it that of hunting, or of tending and raising animals.

To recap so far, social zooarchaeology avoids anthropocentrism; begins from a zoontology of species co-shaping; reinstates the agency of animals, both in life and in death; and appreciates the embodied and sensory nature of interspecies interaction. Such social zooarchaeology can also revisit 'economic' questions from a more productive angle. For a start, it will recognize that much of the discussion to date has been in fact not on the economy – that is, on relationships of entitlement, access and inequality – but on economizing – that is, on formalist and rather mechanist allocation and management of narrowly defined 'resources', an approach which obscures the socially embedded and corporeally embodied nature of the economy. Furthermore, the tackling of such economic questions within a social zooarchaeological framework will be based on individual species-to-species or even (and more pertinently), person-to-person (animal, human or other) engagement, rather than on homogenizing, 'human–animal' relationships. It will also accept that even in contexts where humans have treated animals as 'resources' to be exploited, such a relationship cannot be disentangled from the effect of the bodily, sensuous, and often emotive encounters between humans and other species, and the agentic power of each species to shape the other species' life and world: as living bodies, and as body substances and parts which are incorporated through eating; hoarded, valued and preserved as mnemonic remnants; or transformed into circulating, powerful objects, be they bone tools, trophies or animal masks. Finally, it should have become evident from the above, that the 'social' in our version of social zoorchaeology does not declare some sort of exceptionalist status or a dichotomous separation that sets this approach apart from ecological, economic or other zooarchaeologies. It denotes instead an inclusive, non-anthropocentric framework, where sociality conveys interspecies engagement, an engagement that is mediated, of course, by the totality of the material world and its agency. In the following section, we will show how this framework can help us reinterpret a specific archaeological context in the Danish Mesolithic.

Human–whooper swan interaction at Aggersund

Movement, occupation and rhythm The site of Aggersund is located in North Jutland, Denmark, on the north shore of the Limfjord (figure 1)

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Figure 1 Map of Denmark indicating the location of sites discussed in text. (Colour online)

and was excavated in 1975, revealing an oval pit containing flint, animal bone and crushed shells (Andersen 1978, 50), dated to between 4501 and 4052 B.C., falling within the later Mesolithic Ertebølle period. Initial analysis of the faunal material by Ulrik Møhl in 1978 suggested that the site was occupied during the winter months for the specific exploitation of whooper swans (*Cygnus cygnus*) (Møhl 1978, 57). This interpretation, however, was embedded within the paradigm of subsistence and economizing, with its deeply engrained dichotomies between nature and culture, and between humans and animals. The original framework of analysis focused on the relative value and utility of the faunal remains in terms of the nutrients they provided, characterizing the site as a 'special-purpose camp for hunting swans' (Møhl 1978, 72–73) due, in part, to the high relative frequency of swan remains in comparison with other species recovered, thus explicitly correlating importance with calories and material yield. In the present study, we move away from an interpretation of the assemblage based on the passive conception of animals as neutral raw materials, employing instead a non-anthropocentric theoretical framework in exploring the interspecies engagements and relationships between humans and whooper swans that underpinned the treatment of swan remains at Aggersund.

Whilst the reanalysis of this assemblage was undertaken as an exercise in a novel framework of social zooarchaeology, as outlined above, this is not to say that entirely new methods had to be created. Although most analytical zooarchaeological methods currently in use are implemented within

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a framework that considers animals as static facts, figures and economic worth, the same procedures (with some possible alterations) can be deployed as part of an alternative, or complementary, framework, leading to different interpretations, and allowing current zooarchaeology to realize its full potential. As such, the methods used for identification, ageing, sexing and quantification of species remain close to those used in the original report, although full advantage was taken of the advances made in the interceding 30 or so years. The only major methodological change was in recording the anatomical element representation in the assemblage, as this information is used directly to calculate the minimum number of individuals present within an assemblage, a key concern for social zooarchaeological studies that aim to consider individual agents. Previous methods assigned zones to each skeletal element (Cohen and Serjeantson 1996; Dobney and Reiley 1988; Serjeantson 1996) and permitted a more accurate estimation of the minimum number of elements by establishing the total based on the most frequent zone, as opposed to a simple aggregation of all the fragments of an element, which would wildly inflate the figure. The zones suggested by all the methods were, to a greater or lesser degree, arbitrary 'areas', the limits of which are difficult to visualize on a fragment; this increases human subjectivity in the recording stage, and has the potential to distort the results. For this study, a new method was created, using distinct and easily recognizable landmarks on the bones (Overton 2010), the same features that zooarchaeologists use to identify the skeletal element itself, as opposed to more subjective 'areas'. Much of the recording, however, can be recognized as adhering to standard practices; all specimens, where possible, were identified as to species, element and side, using the reference collection present at the University of Copenhagen Zoology Museum, supplemented by additional identification manuals for avian (Bacher 1967; Cohen and Serjeantson 1996) and mammalian species (Hillson 1992; Schmid 1972). Ageing of larger mammalian species, specifically red deer and wild boar, was done using dental development and wear, according to methods set out by Brown and Chapman (1991) for red deer, and Grant (1982) and Bull and Payne (1982) for wild boar. Sexing of whooper swan remains was achieved through metric data, taken according to von den Driesch (1976), used in conjunction with comparative data, as set out by Bacher (1967).

Whilst whooper swans were the most numerous species (table 1), the presence of a number of mammalian species indicates that the site of Aggersund was used primarily, but not exclusively, for the hunting of whooper swans. Analysis of dental eruption stages and dental wear of wild boar (*Sus scrofa*) (table 2) suggests that the site was occupied during the winter months, a conclusion corroborated by the presence of whooper swans, a winter visitor to north-western Europe, and a conclusion that agrees with the original analysis (Møhl 1978). Further conclusions concerning the tasks carried out there are limited by the small size of the assemblage and the poor preservation, resulting in a heavily biased skeletal-element representation that lacks smaller or more fragile elements such as phalanges or scapulae, and shows higher numbers of more robust elements such as molars and limb bones. The very low numbers of wild boar humeri, radii and ulnae, however – all robust elements expected to survive more readily – suggest

Table 1 Number of identified specimens and corresponding minimum number of individuals per species.

	Number of identified specimens	Minimum number of individuals
Whooper swan (*Cygnus cygnus*)	218	9
Red deer (*Cervus elaphus*)	97	2
Roe deer (*Capreolus capreolus*)	4	1
Wild boar (*Sus scrofa*)	83	4
Fox (*Vulpes vulpes*)	10	2
Pine marten (*Martes martes*)	23	2
Total	435	20

Table 2 Dental eruption and wear data for wild boar. Scores according to Grant (1982), estimated ages from Bull and Payne (1982). Key: dp4: deciduous 4th premolar; P4: permanent 4th premolar; M1–M3: permanent first to third molars.

Specimen	dp4	P4	M1	M2	M3	Age
210				b		19–23 months
211			a			7–11 months
213	e					7–11 months
214			b			7–11 months
215				a		7–11 months
216			f			19–23 months
229			e			19–23 months
230				b		19–23 months
231					a	19–23 months
246		e				19–23 months
248				h		31–35 months
249					f	31–35 months
258			b			7–11 months

that carcasses were butchered on-site, and the more transportable and meat-bearing elements were taken elsewhere.

Furthermore, the presence of cut marks on the distal parts of the limb bones of fox and pine marten indicates skinning for fur (Richter 2005). Whilst earlier analysis by Møhl also acknowledged the presence of terrestrial mammal 'resources', he still suggested Aggersund to be a 'special-purpose camp for hunting swans' (1978, 72–73).

The skeletal-element representation of whooper swans (table 3) broadly echoes that of the mammalian assemblages; larger or more robust elements such as the coracoid or humerus have survived more readily than the smaller or more fragile elements, such as the phalanges or pelvis. Table 3 also serves

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Table 3 Number of identified specimens (NISP) and minimum number of elements (MNE) of whooper swan.

		MNE	
Element	NISP	*Left*	*Right*
Cervical vertebra	21	20	
Carpometacarpus	13	–	2
Coracoid	12	9	2
Femur	4	1	1
Prox. phalanx (foot)	1	1	
Furcular	2	2	
Humerus	113	3	4
Long-bone fragment	9	–	
Pelvis	7		
Skull	2	1	
Synsacrum	2	2	
Thoracic vertebra	3	2	
Tibiotarsus	10	3	3
Tarsometatarsus	9	3	2
Ulna	1	1 (unsided)	
Vertebra fragment	9	–	
Total	223	61	

to show the dangers of quantifying skeletal-element frequency by the number of identified specimens (NISP) alone; although 113 fragments of humerus were identified, they only represented seven whole elements, a discrepancy caused by the propensity for the humerus to fragment heavily due to its pneumatized construction (Higgins 1999, 1453). One pattern that is of note is the very low numbers of ulna, and the complete lack of radius, two of the most robust elements in the skeleton (Hanson 1991, 305). Indeed, this pattern strongly contradicts the widespread pattern in avian assemblages, as highlighted by Bovy (2010, 965), of wing elements outnumbering axial elements. The skeletal-element representation, therefore, cannot be explained purely in terms of preservation and recovery bias; the skeletal elements present, from across the skeleton, suggest that whole swans were brought to the site to be processed before the osseous remains were deposited. The conspicuous absence of the more robust distal wing elements, however, suggests that as part of carcass processing, the distal wings were detached and removed from the site.

This reanalysis suggests that humans occupied Aggersund at a specific time of the year that facilitated the hunting of whooper swans, which was accompanied by a variety of other tasks, including the hunting of larger game and smaller, fur-bearing mammalian species, a conclusion that agrees broadly with those derived by Møhl (1978). The conclusion that Aggersund was a

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'special-purpose camp for hunting swans' (Møhl 1978, 72–73), however, suggests that the killing of the mammalian species was on a random, ad hoc basis; this is not supported by the number of individuals present in the assemblage. Whilst humans travelled to Aggersund to coincide with the presence of swans, the relative significance of other tasks performed there should not be underestimated.

The intention of this case study is to explore human understandings of and relationships with whooper swans, not based on assumed Mesolithic ontological ascriptions, but by considering the processes by which humans came to know swans. Traditional narratives of human interaction with animals in the past, therefore, namely those commencing with the act of killing, the point when they are supposed to cease to be natural animals and become culturally meaningful objects, are unsuitable. Such understandings, more often than not, rely on assumptions deriving from modern, formalist economics, as mentioned above. Instead, our approach requires an exploration of how humans and swans may have sensorially experienced each other from the time of first sight, or first recognized sound, and how this may have produced an understanding that would underpin any actions that followed.

Whooper swans are a migratory and habitual species, travelling between the same winter and summer sites (Brazil 2003). As such, humans at Aggersund would have experienced them arriving repeatedly at the same time each year, and would have timed their own movements to the site to correspond with the arrival or the winter presence of the swans. As whooper swans summer in Iceland and the Russian tundra, Mesolithic humans would only have come into contact with them in the winter months. For the Mesolithic humans, the swans' arrival and their subsequent departure may have elicited parallels between the seasonal movements of the swans and those undertaken by themselves, both of which resulted in the occupation of Aggersund.

Swan behaviour would not, however, have been conceived of simply as a mirror or emulation of human action; nor do we wish to suggest that any human understanding was born simply from a seemingly detached observation. To occupy the small, specialized coastal site of Aggersund, a larger, more perennial site would be left (Price 1983, 768); humans travelled across the landscape, new flints were knapped, activities were undertaken and other species were hunted. The action of these material preparations for the arrival of the swans continually referenced humans' understanding that the swans, located in an unknown elsewhere at that time, were consciously undertaking their own journey towards Aggersund. Indeed, would these movements and preparations have occurred at all unless Mesolithic humans believed that these swans possessed the agency to determine their own movements to the site? Whilst modern studies using radio transmitters show whooper swan migration as a direct route from summer and winter grounds (WWT 2008), thus differing greatly from understood patterns of human mobility in the Mesolithic, there is no way Mesolithic humans would have known this. In exploring how Mesolithic humans understood these swans, the archaeologist is required to examine how appropriate modern knowledge

is; by experiencing a species arriving and departing Aggersund in a similar manner to themselves, it is reasonable to consider Mesolithic humans regarding swan mobility and their own as fundamentally similar. However, whilst the acknowledgement that the swans were undertaking their own journeys presented an intrinsic similarity between the habitual movements of humans and swans, the details of the swans' actions, the places they visited, the spaces they used and the activities they undertook were unknown to humans, defining them as specific to the swans. Humans at Aggersund, therefore, would have experienced whooper swans simultaneously as similar to and different from themselves, engaging in processes of seasonal movement broadly analogous to human mobility, but manifest in ways specific to the swans.

In travelling to Aggersund, whilst humans intended to hunt and kill swans, the swans did not simply arrive to be killed; through the process of hunting swans at Aggersund, humans would have experienced the swans bound up in their own intentional activities. Whooper swans have distinctive diurnal feeding rhythms, moving from their roosts on the water to terrestrial feeding grounds during the day, and to marine resources when tidal restrictions permit (Brazil 2003, 244). The tempo of these daily feeding rhythms constantly changes as swans adapt to changing lengths of day, temperature and weather (Brazil 2003, 262–74). In hunting any species, humans have to engage in specific and different rhythms (Hamilakis 2003, 240). To follow and hunt the swans, humans would have to leave their own habitual rhythms to become wrapped up in those of the swan, engaging with the environment in a manner distinctively different from their own, travelling at times particular to the swans and taken to places not usually visited. By hunting the swans, humans would have experienced the environment in different and distinctive ways, engaging in patterns of practice across the landscape dictated by the activities of the swans. However, this is not to suggest that humans and swans existed in separate spheres; marine mussels (*Mytilus edulis*), sweet grass (*Glyceria fluitans*) and reed species (*Phragmites* sp.), are all known foodstuffs for whooper swans (Brazil 2003, Appendix 3) and have been identified as human dietary materials on Danish Ertebølle sites (Møhl 1978, 65; Kubiak-Martens 1999, 118). Whilst the tempo and rhythms of the swans may have differed from those of humans, thus eliciting alternative human perspectives of the environment, some places and substances consumed were common to both, linking swan and human actions to the same, shared environment.

Through their experiences of the swans, and of their environment as they travelled to Aggersund and engaged in hunting the swans, humans would have understood them as bound up in their own practices, undertaking movements to places known and unknown, gathering similar and different materials at tempos simultaneously similar to but distinct from their own. The connectedness of human and swan actions, and at the same time the specific manner in which they were performed, understood by humans as resultant from the individual agencies of the swans and their distinctive bodily configuration, would have elicited amongst humans a sense of 'otherness'. As neither a natural or inert being, nor a mirror of human behaviour, swans

were an 'other', living through their own existence, akin to humans, but in their own distinctive way, for their own reasons.

Whooper swans as individuals In exploring the 'otherness' of whooper swans as a species, there is a danger of implicitly suggesting homogeneity, in which all swans, whilst understood as having agency, were considered intrinsically the same. There are, however, many ways in which humans would have experienced differences between individuals within a flock. Whooper swans arrive at winter sites in tight family groups, consisting of an adult mating pair and the offspring from that summer, also accompanied by non-breeding adults (Brazil 2003, 82), all of which are identified in modern studies by unique numerical leg-rings. This knowledge of familial interrelation would presumably be beyond the possibilities of Mesolithic humans at Aggersund; the range of differing ages and sexes, however, would have presented a number of identifiable differences that would have indicated to humans that the flock was not a homogeneous unit. Although whooper swans are not clearly sexually dimorphic, they do differ in subtle ways: the male has a noticeably longer, more slender neck than the female (Brazil 2003, 80), whilst the juveniles, generally smaller with ash-grey plumage and pink and black bills, are easily distinguished from the adults, which are white with black and yellow bills (Wilmore 1974, 103). Males and females also differ in their call; the male produces both shriller and lower notes in specific calls (Wilmore 1974, 96; Brazil 2003, 98), whilst the juveniles, without a fully formed windpipe, have high-pitched, wavering voices (Wilmore 1974, 103). These differences have been recorded in modern flocks, and it would be a mistake to automatically assume that they can be transferred by way of formal analogy to the material from Aggersund. Zooarchaeology, however, can trace these differences through the study of faunal assemblages; metrical analysis of long bones illustrated the highly likely presence of both male and female adults in the Aggersund collection, suggesting that these interindividual differences were present within the individuals at Aggersund (Overton 2010). The smaller size, broken voice and murky plumage may have more clearly marked juveniles out as still developing. These differences would have acted as indicators that the flock was not a generic mass. Furthermore, each swan has the potential to be recognized as an individual. The bill of the whooper swan is yellow and black, and manifests itself in four general forms: the 'pennyface', 'darky', 'black-based yellowneb' and 'yellow-based yellowneb'; each individual's bill, however, whilst fitting into one of these groups, is subtly unique, although modern ornithologists require high-powered optics to record these details. Nevertheless, the presence of four different pattern forms would at least make the observer aware of inherent differences between individuals. Moreover, flocks are usually predominantly one type; modern Danish flocks are 74 per cent 'black-based yellownebs' (Brazil 2003, 87), which would make individuals with the other three bill types far more distinctive. Whether Mesolithic humans at Aggersund could identify and recognize every single individual by their bill pattern is questionable. The real issue, however, is not whether they were able to or not; it is whether they believed they could. The differences between sexes and ages, and the

presence of varying bill patterns, would continually elicit the understanding that the flock was made up of a number of individuals, further reinforced by the presence of single recognizable, known individuals.

It is not just physical bodily attributes of specific swans, however, that conveys a sense of individuality, nor that a flock could only be seen as a group of separate individuals. By occupying Aggersund and engaging in the practice of hunting the swans, humans would see interactions between swans within the flock. The most enigmatic feature of their communication would be their call, a loud and distinctive emanation that has been likened to a bugle, a trombone or even silver bells (Young 2008, 21). However, whooper swans do not have one single call, but a whole vocabulary. Pairs often engage in duets (Wilmore 1974, 96), whilst others use quieter calls as contact notes, locating other individuals in their close family (Brazil 2003, 82) before the presence of danger is announced by a loud 'kwock'. Once again we do not consider human understanding of swans in the Mesolithic to have been the same as that of modern studies. What would have been experienced by Mesolithic humans, however, is swans conversing, engaging with one another through verbal utterances that, if between humans, we would not hesitate to describe as 'language'. Moreover, calls are combined with physical gestures; the pre-flight calls are associated with head bobbing and wing flapping, which is echoed by other individuals before the group take flight (Brazil 2003, 288). In other instances individuals will display aggressive behaviour at one another, holding their wings open with end sections shaking violently; or couples, meeting on land, greet each other effusively, their breasts swelling together and their wings open, beating together, in a whirl of reciprocatory pleasure (Wilmore 1974, 97). Would this assemblage of vocal utterances and bodily acts seem that foreign in comparison to the mechanics of intra-group communication that humans experienced themselves using? Whilst similar to human methods, however, the 'language', the movements and the meanings were all specific to whooper swans. As such, humans would experience these performances as similar to their own, but also private, as intentional actions directed not at humans, but at other swans. Moreover, while these interactions reinforce the individuality of each swan, the whole flock would have been using a similar 'vocabulary' of vocal and bodily gestures, binding the swans together within a wider social group, a feature similar to humans, but manifest and mediated in forms specific to the swans.

At Aggersund, Mesolithic humans would have experienced whooper swans as active agents undertaking their own intentional seasonal and daily movements within a shared environment and landscape, bound up within a tightly knit social group, using verbal and non-verbal means to communicate, in a manner simultaneously both similar and different to themselves. Moreover, humans would not have just observed from a distance the inherent abilities or features of swans; understanding was developed through material engagements and sensorial interactions, as they engaged in different rhythms, travelled to new places and experienced performances and acts that elicited a perception of swans as parallel social actors, existing alongside humans and sharing the same environment. Furthermore, experiences of specific individuals' behaviour, activities and practices would continually develop

human understanding, adding to a growing biography of human experiences which considered swans as persons, not 'like persons', but individuals in their own right who acted independently, with their own reasons, constantly negotiating their personhood. These human perceptions and understandings of swans would have shaped future human–swan interactions once individuals were hunted, killed, consumed and deposited.

Killing, consuming and depositing swans as meaningful, continuing interactions The majority of zooarchaeological studies of faunal remains simply take the killing of the animals present in the assemblage for granted, as an action with no meaning other than as a means to an end, i.e. the procurement of meat and other animal 'resources'. If, however, humans did not conceive of animals as material and calorific resources, but as sentient and social individuals, then their capture and killing requires a different conceptualization.

The mechanics involved in the hunting and capture of swans in the Mesolithic is of some debate; it has been suggested that they were approached in boats whilst the birds were roosting on open water, and simply taken (Mannermaa 2008a, 70). Modern studies of whooper swans, however, suggest that it would probably not be possible to approach without detection, upon which the birds would easily evade capture, either through flight or diving (Brazil 2003, 97). More plausible is the use of arrows to take the birds on the wing (Clark 1948, 117; Mannermaa 2008a, 70), and most likely is the combination of projectiles to disable the individual, before using nets to allow it to be approached and dispatched (Verhart 1988; Wilmore 1974, 107).

Whilst direct evidence for hunting strategy is scant, the discovery of the tip of a flint point embedded within a humerus of a whooper swan at Vedbæk (Noe-Nygaard 1974, 236) suggests that projectiles certainly played some part. However, a bone artefact within the assemblage may offer another clue; figure 2 shows what would normally be described as a swan 'bone point', eliciting connotations of projectiles and weapons. However, a discrepancy between the high amounts of wear and polish on the point compared to the seemingly 'unfinished' rough distal end suggests that this was a tool created and used for another purpose. The interpretation suggested here (cf. Overton 2010) is that of a netting needle, used to construct and repair nets, requiring a point to weave within the holes of the netting, resulting in the surface lustre that we witness today. Therefore this would suggest that the swans may have been captured with nets, prior to dispatch, possibly by projectile point, a method that has been identified within the Russian Early Mesolithic (Zhilin and Karhu 2002, 114). Furthermore, as extremely messy eaters, whooper swans attract numerous species of duck that feed on aquatic vegetative material otherwise out of their reach (Brazil 2003, 258). Therefore, if the swans were netted on water, one would expect to find some remains of the ducks that were also caught; the lack of any such wildfowl would suggest that the swans were captured on land, where terrestrial feeding grounds may have facilitated ambush from closer proximity.

However, this process would not be as serene as described; whooper swans use their wings to batter any attackers (Wilmore 1974, 98), and are

Figure 2 'Bone point' from Aggersund, made from the humerus of whooper swan, scale size 5 cm. (Colour online)

easily capable of breaking human limbs (Young 2008, 19), whilst their spiny tongue, serrated bill and strong jaw muscles (Brazil 2003, 241) are, from the authors' personal experience, formidable weapons resulting in blood being drawn and painful effects. Furthermore, when swans die, their lungs will collapse, emitting a 'feeble, flute-like and strangely melancholy' call (Wilmore 1974, 107), distinct from any other they produce. The capture and killing of a swan, understood not as a resource but as a sentient social agent, would be an emotive and theatrical event (cf. Hamilakis 2008, 10), a

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very specific, sensorial and affective experience: the clamorous and terrified movements of a stricken swan or the cacophonous and tremulous swirl of sound emitted by desperate swans as they were trapped, would have made the occasion distinctive, poignant and memorable. One of us has argued that the close proximity and continuous contact of humans and domestic animals in prehistory would make their killing by humans a highly charged, emotional drama (Hamilakis 2008, 7–8). Although the relationships between humans and swans at Aggersund are not born out of the cohabitation that is afforded in societies living with domestic animals, human understanding of the swans as individual, possibly even recognized, social actors would have transformed the killing into a highly significant event. Prior to killing, humans may have believed they recognized specific individuals from previous engagements, possibly even from different years; with this memory comes an acknowledgement that they are, like humans, individual and sentient beings, adding considerable weight to the process of killing them. Moreover, these experiences would have contributed to the developing biographies of these known individual swans, created through past engagements.

Once killed, the swans at Aggersund were butchered; analysis of the osseous remains revealed cut marks on the coracoid, furcular and tibiotarsus, which conform to a pattern that has been suggested by Laroulandie (2001) to be evidence of 'filleting' in avian assemblages, to remove meat from the bones, as opposed to disarticulating the carcass. Furthermore, none of the specimens exhibited evidence of burning, supporting the suggestion that the carcasses were 'filleted' to remove the meat prior to cooking. The removal of meat from the bones may be further supported by a number of long-bone specimens that lacked one or both ends and exhibited irregular, ragged edges and associated longitudinal cracks, which may be evidence of marrow extraction, a process that presumably necessitated the removal of surrounding meat before the bone was fractured to remove the marrow. Any conclusions with regard to carcass processing and treatment must remain, however, tentative: the small size of the assemblage and the difficulty in observing butchery marks and fracture patters due to poor preservation make firm conclusions impossible.

There were, however, some additional interesting and clearly recognizable features: one specimen exhibited cut marks to the skull (figure 3), a location that is not necessarily associated with the processing of an individual for the recovery of meat. This, combined with cut marks to the distal humerus and the previously highlighted lack of distal wing bones, may suggest that, before butchery, the feathered skin, including the distal portion of the wing, was removed (Overton 2010). Whilst rare in archaeological discourses, there are many ethnographic examples of birds being skinned as a method of gathering feathers, or as a warm alternative to mammal skins (Serjeantson 2009, 203), and in some cases the distal wings are removed with the feathered skin (Ubelaker and Wedel 1975, 446).

As with killing, we must consider the sensorial aspects of the treatment of the carcass (cf. Gamble and Gaudzinski 2005): the evocative scent and the visual impact of red blood on the white plumage, and the sight of visceral, skinned corpses with soft white skins would have made this an emotionally charged and distinctive event. Moreover, these would not have

Figure 3a Close-up of a swan skull fragment from Aggersund, exhibiting two cut marks running down the length (arrowed), approx. 4 cm in length. (Colour online)

been just random sensorial reactions; these were significant as continuing engagements within the developing biography of the relationship between humans and known swans. Not only are the processes of killing and butchery distinctive, they were also, through their sights, smells, sounds and textures, and the associated affective and emotional weight, embodied and sensuous processes that produce strong mnemonic effects and would have created bodily memories (Hamilakis 2002, 124; 2010, 193). By understanding the swans as sentient social actors, the processes of killing and butchery were not

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Figure 3b Location of fragment on skull. (Colour online)

a neutral necessity; instead they were powerful, emotive and distinct events, constantly mediating human relationships with swans, in turn creating strong memories that bound human understandings, the biographies of individual swans and places in the landscape to the material remains of the swans. As a result, consumption and deposition were arenas where relationships could be further negotiated.

At Aggersund, the consumption of swans was not a generic act of eating, but a charged event where sensory experiences evoked specific meanings and places, and mediated the formation of new relations, both human–swan, and human–human. The flesh may have been from a known individual, intimately connecting it to past engagements, the human who killed it and the place where it was killed. Meanings specific to certain individuals, therefore, inherent within the remains, would have mediated human social relations, as the meat was shared and consumed within the group. Moreover, consumption, as a highly sensorial activity, also creates new memories (Hamilakis 2008, 16; Sutton 2001; 2010), in which previous understandings are entwined with new experiences. The memories created through consumption would have gathered together many spatial and temporal elements, experiences from different places and different times, intimately binding humans and swans together in what can be termed a shared 'sensory horizon' (Hamilakis 2002, 124).

Strong parallels can also be drawn between consumption and the use of tools made from the remains of swans. Traditionally, bone tools have been interpreted along functionalist lines, with little consideration of the animal that has provided the source material. The 'bone point' netting needle (figure 2) becomes more significant when it is considered that swans may have been hunted using nets, as outlined above; in using remains of a swan to fabricate the means to capture others, the tool thus evoked memories of the individual it originated from and of the engagements and places that are bound up with that individual, intimately connecting them at the same time to future engagements with other swans. The deposition of this tool with the remains of other swans, possibly those caught by the nets the tool was used in

making, connects materially these activities, and demonstrates a recognition of the tool as swan, retaining, as Conneller has described it, its 'animalness', not as a symbol of the animal, but actually incorporating part of the animal agency (Conneller 2004, 45–47). Consumption and utilization of remains, therefore, were more than just economic strategies for survival and existence; they served as processes that reaffirmed and reworked the relationships connecting humans, swans, activities and places within the landscape.

After butchery and consumption, the remains of the swans were deposited, accompanied by mammalian remains, crushed shells, knapped flints and burnt material, into a small oval pit, close to the shoreline at Aggersund. Considered only as food, the deposition of the remains of swans can be explained simply as the disposal of objects with no further nutritional or economic value. Attempts to offer alternatives have suggested that the intentional deposition of animal remains showed respect (Chatterton 2006, 107), or that depositions were left as tangible traces for others to see, as a way of understanding the environment (Edmonds 1997, 101). In all these explanations, however, the remains are deemed objects at the end of their life, discarded in one final act of human involvement (McFadyen 2007, 119). Instead, the remains at Aggersund, understood as retaining and eliciting recollections of past experience and engagements, are bound up in a network of memories, places and activities, and their deposition can embody and materialize something else. In an activity that requires serious time and effort, deliberate deposition re-collects and preserves the fragments of a communal and emotive event (Hamilakis 2008; 2010, 195; Hamilakis and Harris 2011), creating a material reminder of experiences. At Aggersund, the deposition of whooper swan remains into a pit shortly after butchery created a mnemonic record of places, engagements and experiences, interlinking Aggersund with tasks undertaken elsewhere, connecting thus the existences of humans and swans through material memories. By considering the remains not as discarded, but as active within Mesolithic humans' world, Aggersund also becomes a 'condition of possibility' (McFadyen 2007, 124), not just a record of the past, but a still-active space that may be returned to. For groups of people who are understood to have lived a largely mobile existence, the marking of places materially and mnemonically through sensorial experiences and engagements, in other words the material production of locality (cf Appadurai 1995), would have been key in their understanding of the landscape. What would have been produced, then, out of an unknown expanse, was a network of familiar locales, created through relationships, engagements and practices, sustained through memories and future promises and possibilities.

Reinterpreting Vedbæk Grave 8

Aggersund, whilst frequently referenced in studies of Late Mesolithic mobility strategies and site use (e.g. Price 1983; Rowley-Conwy 1987), is by no means the only example of whooper swan remains in the Ertebølle. Although whooper swans have been recovered from many coastal Ertebølle sites, such as Havnø, Klintesø and Ertebølle (Grigson 1990), it is the remains from the cemetery site of Vedbæk-Bøgebakken that are probably best known. Originally, 17 graves were excavated at Vedbæk-Bøgebakken (Albrethsen

and Brinch Petersen 1976), which contained the remains of a wide range of different species, including red deer, roe deer, wild boar, aurochs and whooper swan, a feature that has been echoed in more recently discovered contemporary graves in the local area (e.g. Brinch-Petersen, Meiklejohn and Alexandersen 1993). Here we wish to focus upon the evocative remains of Grave 8, discovered in the original excavations, which contained the skeletons of a richly adorned female and a newborn child, thought to have been placed upon the wing of a whooper swan (Albrethsen and Brinch Petersen 1976) which has, unlike any other site or find, established and promoted the presence of whooper swans in the Danish Mesolithic.

Previously, the swan's wing was interpreted in terms of 'cult' activity (Møhl 1978, 68), as a cradle or shroud, and most commonly as a means through which the spirit of the child would have been carried to the afterlife (Mannermaa 2008b, 216; Serjeantson 2009, 345). The association of wings with an afterlife is predicated on the assumption that it is in some way 'above', requiring the ability to fly to reach it, very reminiscent of Judaeo-Christian belief systems that allude to the presence of heaven or an afterlife in the sky or above the material earth. Interpretations of this context that explicitly consider belief systems reference notions of a tripartite universe, and the perceived ability of water birds to move between all three zones, including the underworld, situated underwater, understood as the world of the dead; these interpretations often rely on ethnographic studies of circumpolar peoples (Mannermaa 2008b, 217; cf. also Zvelebil 2003a, 67; 2003b, 7). Whilst the concept of a tripartite universe offers further opportunity to articulate the connectedness of humans and swans in a single, shared world, previous explanations of the wing within this framework have relied on characterizing the wing in terms of its essential but generic ability for movement through the different zones. Other, less ethnocentric and essentialist and thus more interesting, interpretations (e.g. Fowler 2004, 74–76) consider the swan's wing as a partible object that confers specific animal-like qualities onto humans, stressing at the same time its role in engaging with the environment and with other animals. The broader assumption here is that the deposition of the swan's wing would have linked animal and human biographies, although it is not explained in any detail how such an interweaving would have been materialized, and therefore appears as a largely essentialist interpretation of the wing. The alternative interpretation offered here diverges from previous, symbolic and ethnocentric attempts, moving at the same time away from generic discussions that treat these remnants as representations of swan-ness, standing for a homogeneous animal species. Instead, it considers them as the remains of an individual swan, imbued with understandings and relationships borne through specific unfolding interactions between humans and itself.

Since their discovery, the swan remains upon which the child was resting have been described as a 'wing' (e.g. Albrethsen and Brinch Petersen 1976, 9; Bogucki 1996, 62; Mannermaa 2008b, 202; Møhl 1978, 68; Nilsson Stutz 2003, 286; Serjeantson 2009, 345). Whilst the remains are preserved '*in situ*' at Søllerød museum after the whole grave was block-lifted, thus making hands-on study of the osseous remains unfeasible, close inspection of the excavation plans and photographs and visual examination of the grave itself

Figure 4 Original plan of Grave 8 at Vedbæk. The bulky proximal end of the carpometacarpus is indicated by the arrow in the bottom left-hand corner (Albrethsen and Brinch Petersen 1976). (Colour online)

allows for a different interpretation. The original plan of the grave (figure 4), later modified versions (e.g. Fowler 2004), and published photographs (e.g. Nilsson Stutz 2003, 233, photo 19) present the 'wing' remains orientated with the bulky proximal end of the carpometacarpus at the feet of the child and the distal end towards the pelvis area. Oriented in this way, however, the bulk of the wing, made up of the radius, ulna and humerus, articulating at the proximal end of the carpometacarpus, would not extend under the child,

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but away from the child. In reality, the child was not placed upon a whole wing, but just the tip. This questions the validity of the wing as representing transport to the afterlife; if the intention were to allow the soul to fly, would a whole wing not have been more suitable than just the tip?

In a manner analogous to the deposition of remains at Aggersund, the placement of the wingtip in the grave incorporated memories of places and experiences from a range of temporal and spatial scales. The very limited number of elements and the inability to examine the remains closely restrict what can be said about the individual from which the wingtip originated; whilst difficult, however, this is not to say that an exploration of human–swan engagements in this case is entirely futile. As previously outlined, whooper swans use their wings in very specific ways, outstretching them in scenes of welcome and greeting, vigorously beating them to batter other adults into submission during territory disputes (Wilmore 1974, 98), or in the highly social practice of 'carpal flapping', where the wings are held outstretched shaking their tips in expression of bonding between individuals (Brazil 2003, 294). Mesolithic humans, therefore, may have understood the wings based not on their inherent ability to facilitate flight, but on their communicative and highly social roles. Furthermore, the wingtip may have elicited memories of the experiences and places of hunting, killing, butchery and consumption, and formed a material link with the other elements of swans deposited elsewhere, which existed as still significant places, as 'conditions of possibility' (Ingold 2011, 85; McFadyen 2007, 124), intimately imbricated within a network of tasks and memories. Moreover, this deposition may also cite other tasks undertaken within the environment; the ideal feathers used to flight arrow shafts are the primary flight feathers, attached to the carpometacarpus and phalanges (Serjeantson 2009, 191), the very same feathers that the child was laid upon. The wing is intimately bound, therefore, to practices of hunting with bow and arrow, eliciting memories of previous hunts, of social and, no doubt, affective engagements with different species and individuals in various places, drawing the sensorial landscape together within the practice of depositing the child upon the wingtip. Furthermore, these remains were not simply linked to places, tasks and materials, they were also linked to those individuals who engaged in such travels and practices; the deposition of the wing in Grave 8 may also reference ties the human individuals buried in the grave, or their relatives, had with the practice of hunting swans, and the swans themselves.

The child in Grave 8 was not buried on a generic 'wing', it was placed on the wingtip of a swan that was known and remembered by Mesolithic humans, hunted, killed and consumed at places that may have remained sites of possibility in the individual and collective memory and within the broader landscape, and potentially referenced specific ties the interred individual people had with these tasks, places and individual swans. It may be no coincidence that the wing is treated with such significance at a site that also provided evidence for the hunting of whooper swans, in the form of skeletal remains, including a humerus with the tip of a flint projectile point embedded within it (Noe-Nygaard 1974, 236). Moreover, the child was placed on a specific part of the swan, an appendage that had a strong and important

role in social interaction between swans, made up of the long primary and secondary feathers used to fletch arrows. The wing was placed in the grave not as a symbolic afterthought, but as a material acknowledgement of the intimate relationship between humans and whooper swans, the enmeshing of their worlds and the development of understanding both of themselves and of the surrounding world, through their continual and repeated engagements.

Conclusions

In this paper, we did not set out to demolish a dominant, monolithic zooarchaeological paradigm and replace it with another, equally monolithic one. We rather proposed to rethink the whole zooarchaeological operation, and reflect on the reasons for the limited impact of the subfield in comparison with its potential, despite the several recent encouraging works that explore alternative frameworks and expand into new areas. Moreover, we showed by way of example how one such novel, non-anthropocentric zooarchaeological framework can emerge. In the Mesolithic case studies we reanalysed, we demonstrated the richness of interpretative insights and the possibilities that can be opened to us once such a framework is adopted, even with the relatively meagre faunal remains available.

In concluding, we would like to sum up this exercise by stressing four interlinked points that we offer up for further debate. The first is that the 'social' in our title does not imply some sort of rejection of the 'environmental', the 'economic' or the 'subsistence' element in our work. It rather suggests an ongoing, intercorporeal interaction, a life process, a status of continuous enfolding and becoming, where human and non-human animals are intricately linked in a complex web of associations and are mutually constituted as sentient, active beings. This is a hybridic sociality, which, of course, includes elements of economizing and exploitation, more often than not on the part of humans. Zooarchaeology ought to write the whole history of this process of mutual becoming, not just some aspects to do with human economizing and subsistence.

The second stresses the need to redress the balance in zoorchaeology by considering in detail living and acting non-human animals, and not simply as 'walking larders', passive indirect storage devices, mere sources of meat or secondary products which are manipulated and programmed by humans for their own benefit. Non-human animals are embodied beings that, through their sensorial life processes, co-shape with humans the worlds we inhabit. In our case studies, we showed that in the Danish Mesolithic, while humans were clearly benefiting from the captured and killed swans in using their meat, feathers, bones and so on, it was primarily the living and sensorially acting swans that humans were engaging with, an engagement which must have shaped subsequent handlings of dead swans and swan parts. Moreover, our case studies have shown how much we can gain by studying closely animal ethology.

The third point relates to the potential of a social zooarchaeology that places at the centre of study and reflection not only species-to-species interaction, but also interpersonal, or rather intercorporeal, interactions between human and non-human organisms. In many cases this will not be easy to investigate zooarcaeologically, but it is worth the effort. As we showed here, the question often is not whether humans could recognize and relate

to individual animals, but whether they believed they could. Rather than aiming at elucidating individualizing, anecdotal and perhaps irrelevant cases, such an effort aims at evoking collectively experienced, valorized, celebrated and perhaps memorialized stories of unique, perhaps fabulous, encounters, contests and confrontations that carried affective and mnemonic weight.

Our final point is methodological. We have suggested here that, while we do not propose the abandonment of all received and well-established zooarchaeological methodologies (and in our case we made profitable use of many of them), it is about time we questioned the suitability of certain previous methods and working assumptions, and considered, for example, just how suitable for a social zooarchaeology specific methods of quantification are, especially since they were designed as parts of a framework that homogenized non-human animals, and endeavoured to investigate resource acquisition and output maximization on the part of humans. Furthermore, zooarchaeological classifications based on purely zoological taxonomic terms cannot fully account for the complexity of human–animal encounters and relationships (cf. Serjeantson 2000), propagating at the same time an implicit, anthropocentric hierarchy, and obscuring associations across the taxonomic spectrum. To paraphrase Tim Ingold (2011, 160), we have to bypass the classifications that 'split apart', in order to get to the 'stories, that always, and inevitably, draw together'.

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Turns, tropes and terminology. Toward an interspecies '(inter)social'

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All living creatures exist with others in relationships – networks of ecological, biological, psychological and social interactions – that are ongoing and meaningful, and at some level affect their animate neighbours. This point seems so self-evident that it should not need stating. Yet in many instances both archaeologists and scholars within other disciplines remain mired within an anthropocentric metanarrative which serves the purpose of limiting the study of these relationships either to the human use, or to the (human) cultural construction, of non-human animals. That is changing. In arguing that a 'shift . . . of emphasis to the live animal as an autonomous being with its own agency and even its known perspective on other species is long overdue' (p. 116), Nick Overton and Yannis Hamiliakis offer a valuable contribution toward refining the ongoing archaeological re-examination of the potential gestalt of the human–animal social interface.

I agree that this project can move forward without a deeper critique of why zooarcheology is the way it is and why it is being left out of discussions of human–animal relations within the broader academy; I don't take issue with these omissions. However, as a means of suggesting some theoretical scaffolding and direction I would like to touch on a few of the various other 'turns' which have funded, or could fund, such an endeavour, and why they make me optimistic for the future of a social-zooarchaeological venture. I do this because, despite some caveats, I share with the authors an overall conviction that this project can and should be one of convergence rather than collision.

First, the authors situate their proposal within the 'animal turn', and this does not stand alone. It is worth noting that Euro-American political activism of the 1960s and 1970s broadly challenged power relations generally and fostered both concern with rights and advocacy for the oppressed, including the environment as an entity, and academic interest in the creation of such disciplines as feminist, queer, ethnic, ecological and environmental studies (cf. Birke 2009, 2). Here, the animal rights movement led to philosophical challenges to the ethics surrounding the human use of animals (Singer 2002), a point to which I shall return. The last quarter of the last century also saw ethology expanded to incorporate aspects of animal cognition into previously purely positivistic theory (Griffin 1984). Challenges to modernist ideas separating humans from animals and the environment (e.g. Latour 1993) played a significant role in the development of a post-humanist ethic and research agenda aimed at decentring the human (Haraway 2003; 2008; Wolfe 2003). At the same time, a large-scale move away from positivist

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epistemologies fostered by the 'linguistic turn' manifested in postmodernism and post-structuralism, and refined in our field within postprocessualism, created an essentialist–constructivist dualism. This debate is still very much in play within the growing multidisciplinary subdiscipline (arguably now a discipline in its own right) of animal studies. Here, to oversimplify a bit, Shapiro (2008) differentiates between animal studies where animals are absent referents within constructions that are entirely human – where most conventional zooarchaeolgies have been situated – and human–animal studies which may reach beyond human conceptions to the animals themselves. The approach of human–animal studies, then, brings into scholarly discussions animals 'as such' – as they 'live and experience the world independently of our constructions of them' (Shapiro 2008, 9), 'both as experiencing individuals and as species-typical ways of living in the world' (ibid., 14). In other words, Shapiro has critiqued the animal-studies approach as moving from the objective to the (human) subjective, a shift that in the process excluded animal subjectivities. I read Shapiro to mean that one way around this is, essentially, to return to essentializing, because it is only through first understanding species-level ways of being that we can get at individual animal subjectivities and then from there to human–animal intersubjectivities.

Along these lines, Overton and Hamiliakis note that in 'exploring the "otherness" of whooper swans as a species, there is a danger of implicitly suggesting homogeneity, in which all swans, whilst understood as having agency, were considered intrinsically the same' (p. 124). While I appreciate the intent here to disengage from an anthropocentric stance, at the same time I applaud the authors' use of biological and ethological references and personal experience to set up just such a 'homogenized' swan-ness. I suggest that we need neither consider such background disrespectful nor apologize for such essentializing, because swan-ness is important; it provides the ground on which the individual stands and can be understood.

I also bring up this constructivist–essentialist tension because it can be seen to correlate with similar tropes underlying interpretive and conventional zooarchaeologies respectively, and because I think it is one of the challenges a 'transformed social zooarchaeology' (p. 112) will need to address. Within the essentialist–constructionist binary, James (2011, 127) notes that many interpretive archaeologists perceive '"Darwinians" [as] different, dreary, determinist, [and] therefore dodgy and probably dangerous'. While I consider my own work interpretive, reflexive and contextual, and while I recognize historical particularity and contingency, here I find myself pulling on both ends of this theoretical rubber band and compelled to necessarily venture into just such suspect territory. This is because if humans are fully plastic then nothing significant can be said about characteristics of human experience – human-ness – or, here, the collective state of swan-ness, in ways that would allow us to analogize human–animal relations in the present to those in the past, which seems to me a sensible and productive path to take (Albarella and Trentacoste 2011; Argent, forthcoming; Broderick, forthcoming).

Another reason to bridge the constructionist–essentialist binary is that it rests upon the faulty assumption that while humans construct their worlds, animals act on instinct within theirs. Considering some animals as having

agential qualities necessitates the acknowledgement that they can create contingent meanings. Conversely, when we relegate animal behaviours to instinct, we seemingly forget that humans, too, operate at this level. In this regard, however, it matters little if we characterize similarities in sociality as the product of agency or instinct, or whether the body shapes the mind or vice versa. What seems more on point is whether or not we can share sociality with the animals we find in archaeological settings, and can do so in a truly bidirectional way. I believe we can. I believe that a bit of critical essentializing can show that humans share a cluster of enacted needs that are indeed fundamentally pan-human, and arguably pan-social in that they may be shared with other social animals, and it is through these that interspecies sociality is possible.

To move this forward, what about 'the social' might be firmly stated? First, humans, along with various other species, are social animals, animals who rely on each other for collective coexistence. Gamble and Gittins (2007, 109) offer some characteristics of (human) social life that might be seen during any archaeological period: it is embodied; routinized; material and mutual, where interactions between agents and artefacts create and modify it; and hybrid, where 'analytical distinctions between thing/person, animal/human, nature/culture are no longer supported because of the social relationship contained in the notion of hybrid'. We might we also agree that these are 'non-discursive elements of social life' (Hodder 2007, 38), and that virtually all, if not all, of these elements are shared between and among members of other social animal species. Within human–human or human–non-human shared worlds 'the social' consists of a series of selves sharing interpersonal-relational, phenomenological-corporeal, and ontological spaces – all fruitful areas of study for a social-zooarchaeological agenda. I suggest, further, that the substrate upon which these proceedings rest concerns the needs that push us toward others. Schutz (1966) proposed one such model for humans by noting that we are driven to others, to the social, by needs for inclusion, affection and control, and I believe similar motives might be found in other social animals (see Argent 2010). All of these elements of shared sociality can provide a foundation upon which to base an interspecies zooarchaeological 'social', in ways that allow us to move beyond tropes of human domination and subsistence schemes.

This work might consist equally of pulling the animal into the human social, while at the same time situating the human within our animal nature. If we are to indeed consider that barrier we have set up between us and them as entirely artificial, we might break away from the notion that humans operate in the world primarily using their capacity for higher cognition, while non-humans function by instinct alone and therefore these two social planes cannot intersect. Because when we put down our 'work' – whether that consists of turning off the computer, putting away the donkey or bringing home a deer for dinner – we find that the worlds of interconnectedness we inhabit are incredibly similar to those of other social animals and constitute another category of work entirely, the work, precisely, of being social animals. We travel across the landscape to find things to eat; we tend our children, mates and families; we visit and meet new people; we adhere to agreed-upon

norms; we negotiate roles and statuses and agreements; we participate in collective action; we play and fight and teach and love. I am not suggesting animal social behaviours directly mirror human ones; we do these things in our own unique human ways and those ways vary considerably cross-culturally. I rather contend that there is enough overlap between behaviours, actions, intentions and needs that we can each understand a bit of what the other goes through. We see ourselves in other animals and, if we are open to these things, we recognize through their behaviour that they, too, see themselves in us. It is because of these shared elements that humans and non-humans can engage in relationships that are 'sympatric', an ecological term that refers to close interspecies associations that are social–behavioural, rather than biological (Lestel, Brunois and Gaunet 2006, 158).

In stating that human socialities can be seen to correlate with non-human ones in this manner, I have set aside my concerns at both essentializing and anthropomorphizing, as is being done in the study of other realms of shared human–animal experience. As a parallel, acknowledging that at an emotional level 'there are dog-joy and chimpanzee-joy and pig-joy, and dog-grief, chimpanzee-grief, and pig grief' (Bekoff 2006, 77) does not confuse these with human emotions. At the same time it does not discount their existence for fear of pejorative accusations of anthropomorphizing – an approach de Waal (2001, 69) has termed 'anthropodenial, the a priori rejection of shared characteristics between humans and animals when in fact they may exist, the concept of which operates to promote the human–animal dualism'. Rather, such comparisons focus on 'continuities' shared by social species while, at the same time, recognizing and respecting 'discontinuities', how animals differ from humans (Noske 1997, 126).

This takes us to a second recent and important turn, the 'affective turn', where the exploration of human emotion has received considerable attention in the humanities, sciences and social sciences (Clough and Halley 2007), and a bit in our own field (Argent 2010; 2013; forthcoming; Tarlow 2000; Harris and Sørensen 2010). Regarding affective states, psychologists recognize that emotions can carry positive or negative valence. I suggest we could expand this in scale to the social, where behaviours might be classified upon a spectrum from prosocial to antisocial. I will not loiter on the reasons for this, but simply note that a vast and pervasive metanarrative across a variety of disciplines focuses on the antisocial to the exclusion of the prosocial. Speaking of this, for instance, within the field of science, Balcombe (2009, 208) notes that 'discussions of animal sentience have been almost exclusively in the negative realm: pain, stress, distress … overlooking the positive qualities of their lives'. Outside the academy, television documentaries of grisly predator–prey encounters promote the notion that, to paraphrase Tennyson, nature is 'red in tooth and claw', cycling back into our belief that this is so. Within this metanarrative, antisocial tropes of objectification, hierarchy, domination are enmeshed with those of commodification and subsistence. This viewpoint ignores that what makes social animals social in the first place is that they are highly cooperative and, if we are to buy into Schutz's scheme of social needs expanded to include other social animals, seek not only control, but also inclusion and affection.

In response to this type of critique, within the affective turn a sub-turn we might term the 'pro-social turn' has emerged wherein empathy, cooperation and care are foregrounded as worthy of study. Aspects of this turn explore empathy, and how empathy serves to facilitate prosocial interactions in humans (e.g. Decety and Ickes 2009; Keltner, Marsh and Smith 2010; Sussman and Cloninger 2011), in animals (Bekoff and Pierce 2009; de Waal 2009) and in human–animal interactions (Argent 2012), including those that are archaeologically visible (see Spikins, Rutherford and Needham 2010; also Argent, forthcoming, for a fuller discussion). While certainly we need not abandon topics such as hunting, butchering and consumption when their traces appear in the archaeological record, I suggest that allowing for the possibility of impactful interspecies interactions of a more positive, prosocial valence is one way that a revised social archaeology can indeed 'revisit "economic" questions from a more productive angle' (p. 117). If we can move past the trope of the human exploitation of animals, we see that they can mean more to us than dinner. Framed in this way the 'capital' exchanged within the interspecies social reaches well beyond the economic, where prosocial currencies – time, care, interest and cooperation, all shared within interspecies biographies and histories – have immense value to all social animal species, including our own. As convincingly put by Clark (2007, 51), when concepts of '"giving," "generosity," "hospitality," "care," "affection" [and] "love"' regain validity in contemporary thought, we can begin to 'acknowledge that relations of giving and taking, caring and being cared for … are always already at play in the more official economies we partake in'.

Along these lines, Overton and Hamiliakis recognize that 'non-human animals have the power and ability to elicit responses from people, including emotive responses' (p. 114) and speak of 'affective engagements' (p. 134). Perhaps due to my own personal and intellectual trajectory, in their wonderfully rich discussion of the remains from Grave 8 at the Vedbæk-Bøgebakken cemetery I found myself wanting more. I found myself wanting – if only as qualified speculation – more about the potential *nature* of the affective engagements between this swan, this woman and this newborn child placed upon the swan's soft wingtip. I wanted more than practice and place, tasks and materials, and the suggestion that 'the wingtip may have elicited memories of the experiences and places of hunting, killing, butchery and consumption' (p. 134). Obviously a newborn would not have had the time to develop a relationship with this swan, but might there have been bonds – of friendship, companionability or protection – between this swan and this woman? Might the woman have raised or cared for the swan when young or ill or injured? Does this anomalous burial argue for a relationship that was anomalous as well, that extended beyond slaughter and tool-making?

I would like here to return to the essentials of swan-ness to explore their capabilities for relationships with a series of questions and answers. What are swans' social worlds like – without humans? Their lives are embedded within flocks, but also families. They are gregarious birds who usually pair-bond for life, and care for and protect their young, and to do this they must recognize each other. If 'each swan has the potential to be recognized as an individual' (p. 124), might also each swan have the ability to recognize humans as

individuals, as do horses (Stone 2010) and, perhaps more pertinently, crows (Marzluffa *et al.* 2010)? Can and might individual swans share bonds with humans? Other social animals can and do bond with other species; many lonely racehorses are given goats or donkeys as 'pets', and bond deeply and behave protectively with them and with humans. With these points in mind, it might be highly significant that this infant was not placed upon the swan's wing, but precisely upon the *wingtip*, the body part used by swans to communicate 'in the highly social practice of "carpal flapping", where the wings are held outstretched shaking their tips in expression of bonding between individuals' (p. 134), perhaps materially evoking ideal, if not actual, bonds of care, kindness and protection within this burial.

Questions like those I have raised are not inaccessible once 'the social' is expanded to encompass more than the 'human social'. I think the authors would agree with me that bridging the binary of (animal) nature as opposed to (human) culture to postulate an interspecies, cocreated 'social' cannot consist merely of the human side of the equation. As Hill (2011, 410) notes, 'Societies that conceive of animals as other-than-human persons are attributing to them what the philosophy of mind terms "phenomenal consciousness" – the ability to experience the world in qualitative, subjective and experiential ways.' A true social zooarchaeology seems to invoke a similar type of perspectivism, one that might productively send us deeper into previously unfamiliar, subjective animal lifeworlds and minds in challenging and exciting ways, one that allows for an animal's *Umwelt*, 'phenomenal world' (von Uexküll 1957, 5; see figure 1), and also its *Innenwelt*, 'inner world'. Although I am happy to include my work dealing with how smaller-scale interspecies interpersonal relationships feed into larger social structures under an umbrella termed social zooarchaeology, perhaps here the addition of the prefix 'inter-' – as in 'intersocial zooarchaeology' – might serve to remind us that what we are attempting to get at is interspecifically bidirectional, inclusive and intersubjective.

In sum, I believe Overton and Hamilakis have raised points that will continue to be extremely provocative in the best possible way. In closing I would like to backtrack to one final turn, the 'political turn' in archaeological theory concerned with the taking up of alterity, power, control, colonialism and exploitation both in the present and in the archaeologically visible past. Insofar as this manifesto is a declaration of principles, if we are to challenge anthropocentricism as a theoretical construct we might also recognize that from sociopolitical and postcolonial standpoints, animals today remain situated as Other to Western norms, subalterns within human worlds. Including animal others as impactful agents in our interpretations of past societies – doing intersocial zooarchaeology – requires a reassessment of our responsibility to animals in the present. Zooarchaeological narratives which portray animals in past societies as nothing more than unminded objects allow us to step back from our actions in the present. Such narratives about the past not only generate representations of reality, but also perpetuate the realities that those representations depict. In this way, they support a broader rhetorical vision which has the result of allowing the ongoing objectification and exploitation of animals in the present. If we are, as I

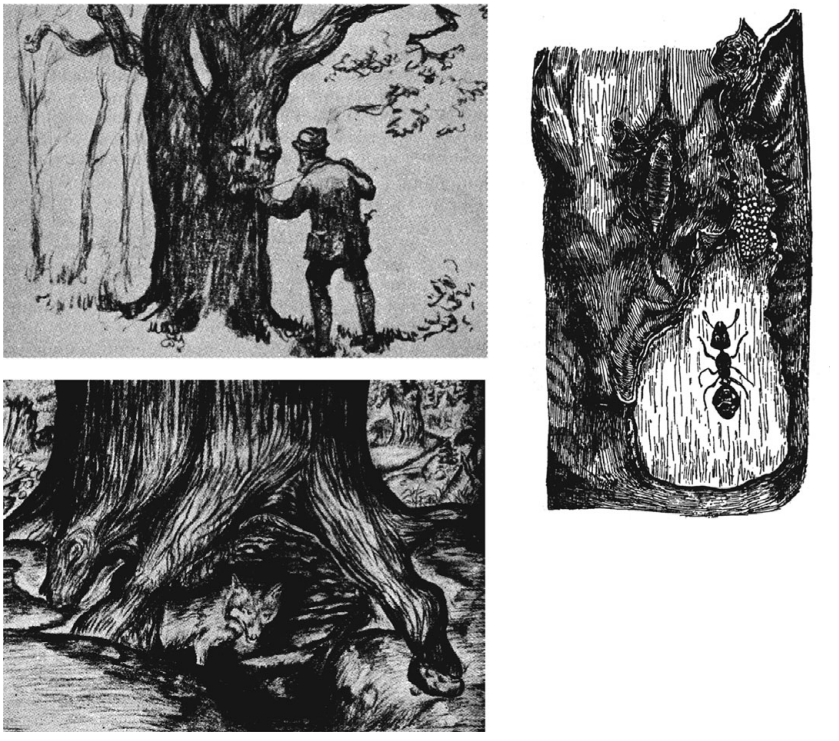

Figure 1 A forester's, fox's and ant's perceptions of an oak tree (von Uexkill 1957, figures 46, 48, 50)

enthusiastically agree with Overton and Hamilakis we should, to welcome animals into the human social as worthy of study, then might we not also welcome them into our schemes of social justice? If we are to advocate for a multivocality that includes animal voices, then including other animals in our efforts as the emotional, social and cultural agents they are – agents capable of both pain and joy, with their own agendas that both include and exclude us – not only provides a means to fresh interpretations of the societies that lived with them, it also is work we might do in good conscience.

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Do the swans deceive us all? *Brian Boyd**

A theoretically nuanced human–animal studies now stands at the forefront of many academic disciplines. The 'theoretical lag' characteristic of archaeology

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means that a subject largely reliant on the remains of humans and animals, and their associated material residues, lies lacking in theoretical sophistication.

Archaeology has a long tradition of enquiry into the relationships between and within nature and society. Outwith the discipline of archaeology, those relationships have become the subject of radical revision in recent years. As a result, human–animal relations – which lie at the heart of nature–society relations – are part of this rethinking. Across much of the humanities and social sciences there has been what Kay Anderson (1997) describes as the post-Cartesian 'animal turn'. The lead was initially taken by human geography (e.g. Anderson 1997; 1998; Philo 1995; Wolch and Emel 1998; Wolch, West and Gaines 1995), postcolonial studies and feminism/gender studies (e.g. Adams and Donovan 1995; Arluke and Sanders 1996; Birke 1991a; 1991b; 1995; Plumwood 1993). Archaeology has been slow to engage with this vital 'first-wave' body of literature, let alone the deeply philosophical nature of what has subsequently followed. But as Nick Overton and Yannis Hamilakis demonstrate effectively, such engagement is a necessary task if archaeology is to finally unburden itself of the dualisms which continue to run through the core of the discipline, and which remain a significant intellectual impediment in the endeavour to understand the place of humans and non-human animals in this new post-human/post-animal imaginary.

In this response article, and in keeping with the editors' request, I will raise a few issues that were brought to mind while reading Overton and Hamilakis's paper, rather than offering a critical review per se. These issues relate to the current state of human–animal studies in the wider humanities and social sciences, and how they may, and in my opinion do, have a bearing upon archaeological engagements with the topic.

Anthropocentrism and zoontologies

It almost goes without saying that the lives of people and the lives of animals are inextricably linked, but what is the social nature of this link? Consider these three statements:

1. Humans and animals live as beings in the world in relation to each other.
2. Humans and non-human animals live as beings in the world in relation to each other.
3. Humans and non-humans live as beings in the world in relation to each other.

Which is the most appropriate statement to describe this relationship? Each is widely used, yet each has its own problems typified by the anthropocentrism that pervades much current thinking. By this I mean that they maintain the anthropocentrism that Nick Overton and Yannis Hamilakis seek to abandon in their restructured zooarchaeology. Indeed the very first point in their manifesto is a call to break with anthropocentricity. In the above statements, despite the categories 'human', 'animal', 'non-human animal' and 'non-human' being placed within a relationship, the nature of that relationship is unclear. There still seems to be a comfort of the human–animal distinction prevalent in much contemporary thinking.

It seems appropriate that Overton and Hamilakis evoke the work of Franz Kafka in the introduction to their article. Kafka wrote several unpublished short stories in the early years of the 20th century which deal with human–animal relations. Many of these feature animal characters, and often tackle the moral and ethical issues inherent in the human–animal relationship ('The vulture', 'Investigations of a dog', 'A crossbreed', 'A little fable'). A recent edited volume, *Kafka's Creatures* (Lucht and Yarri 2010), devotes almost 300 pages to the deployment of non-human animals in his published writings. The non-anthropocentric nature of many of these writings is striking, with their focus on autonomous thinking animals as agents in allegories (arguably) intended to wilfully subvert anthropocentric assumptions and colonial prejudices. There are also playful, but incisive, demolitions of the authority represented by Western scientific animal taxonomies and classificatory systems, and this returns us to the question: why do many academic disciplines – including archaeology and its subdiscipline of zooarchaeology/archaeozoology – depend upon a persistent sense of anthropocentrism when it comes to consideration, categorization and analysis of non-human animals? For me, this is the key question in Overton and Hamilakis's manifesto, and it raises a number of challenges for the development of a social zooarchaeology as we, falteringly, move to a post-human condition.

For many scholars outside the discipline of archaeology, particularly those in philosophy, issues of anthropocentrism are paramount. Key figures in the history of philosophy have attempted to overcome boundaries in general and the human–animal distinction in particular. It was Jacques Derrida who primarily instigated (Continental) philosophical thinking into what he termed 'the question of the animal'. By this he was referring to the traditional ways in which philosophers portrayed animals in reductionist and essentialist ways by referring to them in the general plural as 'the animal', rather than addressing different ways of being animal, through behaviour, relationships, language and so on. He, and other theorists such as Heidegger, Levinas and Agamben, sought to challenge this traditional concern with trying to determine 'animality'. Obviously, they argued, this leads to politically uncomfortable questions, such as where does animality reside? How much animality does the human possess? And so on. Derrida charges,

> Animal is a word that men have given themselves the right to give. These humans are found giving it to themselves, this word, but as if they had received it as an inheritance. They have given themselves the word in order to corral a large number of living beings within a single concept: 'the Animal' they say. And they have given themselves this word, at the same time according themselves, reserving for them, for humans, the right to the word, the name, the verb, the attribute, to a language of words, in short to the very thing that the others in question would be deprived of, of those that are corralled within the grand territory of the beasts: the Animal (Derrida 2004, 124–25).

This Continental philosophical challenge to anthropocentrism colours many current debates in human–animal studies, and the reason I dwell on

it here is to ask Overton and Hamilakis this: is it at all possible to overcome an anthropocentric position on the human–animal relation? A big question. I ask because it has been argued that none of the philosophers mentioned here ever managed to achieve this task (e.g. Calarco 2008). In Heidegger's lengthy discussions over many years on 'the question of the animal' he gradually attempted to think about and through the animal in non-anthropocentric ways. In so doing, he created an alternative way of animals 'being-in-the-world' in which he concluded that animals were 'poor in world'. This leads us to an interesting reflection on the relationship between humans, animals and other non-human elements, one which has resonances with archaeology's ongoing engagement with agency – human and object. As Overton and Hamilakis observe, there is a lack of theoretical rumination on animal agency in archaeological writings, although we are becoming (more on becoming later . . .) comfortable with object agency. In Heidegger's concept of 'world', the distinction is made between stone (worldless), animal (poor in world) and human (world-forming). In other words, there is no object agency, and animals are poor in relation to humans. A hierarchical, and ultimately anthropocentric, distinction.

Derrida himself, despite his opposition to traditional philosophy's search for the distinctiveness of the animal and of animality, nevertheless insisted on maintaining (albeit reworking) the human–animal distinction, describing how, for him, there existed a difference between the human and the animal that cannot be overcome – in Heidegger's words, 'an abyss of essence'.

For some modern Continental philosophers, and this is a position which I myself find useful in thinking through the anthropocentrism problem, the very starting point of dealing with the issue is to '*simply let the human–animal distinction go*, or at the very least, not insist on maintaining it' (Calarco 2008, 148, original emphasis). In other words, it may be fruitful to adopt as our starting point the position taken by Donna Haraway more than 20 years ago in 'A cyborg manifesto':

> [at the time of writing] the boundary between human and animal is thoroughly breached. The last beachheads of uniqueness have been polluted if not turned into amusement parks – language, tool use, social behavior, mental events, nothing really convincingly settles the separation of human and animal. And many people no longer feel the need for such a separation (Haraway 1991, 151–52).

Haraway's own manifesto calls for a complete abandonment, or at least reworking, of the existing categories 'human' and 'animal'. Appealing as this sounds, we need to bear in mind that – as I mentioned at the beginning of this piece – human–animal relations are central to the Western society–nature distinction, so by extension those categories too have to be reworked/abandoned. As Descola and Pálsson have argued, Western scholars have found this exceptionally difficult to grapple with effectively, given the place of the society–nature divide as a dominant metaphor. As such, it is nothing less than fundamental to the ways in which the Western edifice conceptualizes the world and its place within it in relation to humans, non-humans and other elements. They argue with great incisiveness,

> If such analytical categories as economies, totemism, kinship, politics, individualism, or even society, have been characterized as ethnocentric constructs, why should it be any different with the disjuncture between nature and society? The answer is that this dichotomy is not just another analytical category belonging to the tool-kit of the social sciences: *it is the key foundation of modernist epistemology* (Descola and Pálsson 1996, 12, my emphasis).

And this difficulty is seen in a great deal of the recent human–animal literature within archaeology, and archaeozoology, as we take those first tentative steps towards thinking about animals in non-traditional ways. As Overton and Hamilakis point out, there is a tendency to present evidence for certain types of animal treatment evident in archaeological deposits by relying on those categories not-so-long-ago-maligned by many practioners: 'ritual', 'symbolic', 'unusual' – those nebulous terms for material that doesn't fit into, conform with, existing analytical categories and that we do not fully understand (e.g. Miracle and Milner 2002; Armstrong Oma and Hedeager 2010). The majority of these publications consist of specific temporal/geographic case studies dealing with animals in a variety of 'unusual' contexts, but in general few show theoretical engagement with 'the question of the animal' as understood within current human–animal studies in the humanities and social sciences. In my own field of research – human–animal relations in the later prehistory of South West Asia, the nature of the archaeological data – in this case joint human–animal burials, extensive animal carvings associated with 'non-domestic' monumental architecture, and so on – has practically forced archaeologists to turn to explanations of ritual, symbolism and 'symbolic behaviour'; there appears to be no alternative interpretive alley to run down. And of course, the archaeology/palaeoanthropology literature remains characteristically focused on 'the big questions': 'what is it to *be* human?' 'What *makes us* human?' 'What does it *mean* to be human?' And so on.

It is understandable that many zooarchaeologists do not feel a concern to engage with sociocultural anthropological works on animals and human–animal relations written by scholars outside the subdiscipline, or indeed with the broadly philosophical platform upon which much of the new animal studies rests. But as Overton and Hamilakis argue, zooarchaeology is an appropriate field of research for investigation into the human–animal condition only if 'it realizes its potential' (p. 112). The leads into a related, possibly causal, question: where is archaeology in contemporary animal studies/human–animal studies? Archaeological contributions to human–animal conferences (have a look at those listed on the Institute for Critical Animal Studies website: www.criticalanimalstudies.org) are scant. Similarly, in two of the longest-established, and highly respected, human–animal journals, *Society & animals* (est'd. 1993) and *Anthrozoös* (est'd 1997), the archaeological presence is nonexistent. That may be as much the fault of the (zoo)archaeologist, but the fact remains.

Consideration of alternative ontologies – zoontologies, maybe (Wolfe 2003) raises the question, what would alternative ontologies of the

human–non-human animal look like within a reworked zooarchaeology? Here, a key feature in Overton and Hamilakis's manifesto is the notion of 'species-shaping' or 'co-shaping', which gives consideration, partly at least, to mutual human–animal agency in terms of response and communication within relationship building and maintenance. Again, turning to Derrida, this brings to mind his well-known bathroom encounter with the cat, as recounted in 'The animal that therefore I am' (2008). The cat's gaze demands, directs, elicits an emotional response, in this case embarrassment. But there is greater theoretical purchase to be had from species-shaping/co-shaping than simply thinking about response and communication, as Overton and Hamilakis show us in a number of examples relating to hunting. Of particular relevance here is Conneller's (2004) 'Becoming deer', which evokes for me that most powerful of becomings, that of Captain Ahab and Moby-Dick, as thrown together in a 'monstrous alliance' by Deleuze and Guattari (1987). This alliance is Ahab's 'becoming-whale', part of Deleuze and Guattari's central animal studies '1730 plateau', 'Becoming-animal'. They deploy Melville's *Moby-Dick* (1851): 'one of the greatest masterpieces of becoming; Captain Ahab has an irresistible becoming-whale, but one that bypasses the pack or the school, operating directly through a monstrous alliance with the Unique, the Leviathan, Moby-Dick' (Deleuze and Gauttari 1987, 243). The effect of 'Becoming-animal' on contemporary animal studies has been profound. It has resulted in new ways of thinking about human–animal relations, 'relations that cannot be defined in terms of kinship, or sameness, or capacities, or identities, or progression' (Kalof and Fitzgerald 2007, 37), because 'becoming produces nothing other than itself' (Deleuze and Guattari 1987, 238).

In his recent essay – and I relate this back to my earlier discussion of the Continental philosophers' concern with the dissolution of boundaries – Gerald Bruns captures well what 'Becoming-animal' achieves: it shows that 'boundaries are not limits but zones of indiscernibility where experiments in forms of life can be developed and put into play . . . a kind of freedom' (Bruns 2007, 716). Perhaps thinking through this kind of 'species-shaping'/'co-shaping' would profitably transform – metamorphose – (zoo)archaeology into a discipline that can achieve its potential.

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Tooth-beads, antlers, nuts and fishes. Examples of social bioarchaeology

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I am sitting at my computer with a purring cat resting its head against the keyboard – a real animal–animal situation and a reciprocal relationship. For 15 years, my wife and I looked after horses that our children had left behind

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when they moved off into the world. The reason was that the horses belonged, in their own way, to the extended family. So I have no difficulty understanding what Overton and Hamilakis call 'social zooarchaeology'. As a pet owner who has personally observed the individuality of animals – from hens to horses – I have no problem accepting their view that animals are individuals, something that my urban colleagues often question. When discussing with hunters who have specialized for many years in one type of hunting, they can describe how different individuals in flocks – for example, among red deer and moose – can behave. They spend many hours moving in the terrain and observe the different animal species, not to hunt them but to acquire further knowledge about the animals, sometimes to find out which animals should later be culled, but often only for the sheer pleasure of feeling a kind of relationship between themselves and the animals they follow.

An important component of the study of osteological material is a good knowledge of ethology. This was something Mesolithic people possessed. They had a very good knowledge of the behaviour of the different animals that moved through their hunting grounds. We must bear in mind that thousands of years of experience informed them about these patterns of movement, and their way of engaging with nature through hunting and gathering was more similar to agriculture and animal husbandry than we usually recognize.

Aggersund was only one of a large number of sites that existed as a result of the patterns in which a group's prey moved varying distances each year. Our knowledge of the full picture is limited by problems of representation due to both preservation conditions and the selection of excavated sites. An example of this can be seen in the fact that until recently, only a few short-term settlements with well-preserved organic material in boggy areas were known. But today, after extensive field surveys in a boggy area of several square kilometres in central Scania, southern Sweden, more than a hundred small camps have been documented and investigated (Larsson and Sjöström 2011). With an increased amount of material for analysis, it is highly likely that finds of specific hunting, like that of the whooper swans in Aggersund, could give us a greater potential to extend our interpretations of relations between humans and other animals.

One can ask whether many of the animals found in these archaeological sites were primarily hunted for meat consumption. For example, front teeth of various animals are often found as beads in Mesolithic graves. These teeth compositions sometimes represent several dozens of dead animals, and in settlement site material the jaws from the same animals are usually relatively well preserved. This raises the question whether certain animals may have been hunted solely to provide ornamentation. If that were the case, this could very well be linked to central ideas in social zooarchaeology. Analyses of more than 2,000 tooth beads from more than forty graves have illuminated several aspects of the relationship with animal species and how they were integrated in ornamental dress (Larsson 2006). In hunting societies, pendants made of animal teeth are often common decorative objects, as tooth pendants are used to adorn the body and decorate clothing. The tooth pendants would have had a multifaceted meaning, and can be viewed as a kind of abstraction of the wild environment. When teeth are extracted from the animals and reshaped,

they are transformed into a domesticated form. As pendants, carnivorous and herbivorous animals, and animals from marine and terrestrial environments, are mixed together in an artificial world completely ruled by humans. Yet, at the same time, they remain part of the wild, and their special qualities might be transferred to the wearer. The use of teeth from particular animals may be generally taken to reflect norms and values accepted by individuals living in a shared physical and social environment. One has to keep in mind that the marking of different species makes the division of species very obvious. It would not be possible to recognize the distinction of the teeth unless one came very close to the person wearing them. The specific arrangements of different species most likely reflected a special meaning for the wearer and/or the person who arranged the pendants. I argue here that the most important concern was that people had knowledge about the arrangement, not that it was visible to everyone. The symbolic or social meanings of the decoration were based upon concepts accepted by society and did not need to be fully known and visible to people other than those who approved the outfit.

It is clear from the analysis of wear marks in the perforation of the tooth root that different animals' teeth were worn for different lengths of time. In several cases significant variations in use wear could be identified in the same set of teeth. Since a dress has to be worn a lot to cause extensive use-wear, it is very probable that some tooth beads were added to the dress during a person's life, while others were worn by more than one generation. The majority of teeth, for example from red deer and wild boar, showed relatively limited use-wear, whereas wolf and bear, as well as aurochs, more often had heavy use-wear and therefore would have been worn for a longer time. This can probably be related to the way different animals were perceived in different social spheres.

Other examples of the relationship between humans and their prey, which also can be interpreted in a way that can be integrated in some form of social zooarchaeology, are the finds of red deer antler in graves. One such grave from the Late Mesolithic cemetery of Skateholm II in southernmost Sweden contained five antler crowns, which had been placed on top of the body of a young man. Apart from the interpretations in terms of shamanism, fertility and rebirth that have already been presented (Larsson 1988), the antlers can also be interpreted alongside the ideas presented by Overton and Hamilakis for the antler headdresses from Star Carr.

Overton and Hamilakis illustrate their discussion with the significance of the dog in different societies. It is, then, particularly interesting to consider another grave in the same cemetery, where a buried dog had been given not just red deer antlers but also a decorated antler tool and three flint knife blades (Larsson 1990). Here the relationship between human and red deer can be seen as being mediated through the dog – an example of how the social relationship between humans and other animals probably was much more complex than merely a direct relationship. The dog mentioned above can be included in the group of buried bodies with the largest number of grave goods. Generally speaking, the evidence of the dozen or so dog graves in the cemeteries Skateholm I and Skateholm II, both pups and fully grown individuals, clearly marks the social role played by the dog. Another example

of this complex relationship is a feature at Bredasten, a Late Mesolithic find spot roughly 20 kilometres east of Skateholm. Here a pup was found surrounded by a trench-shaped structure filled with bones from a number of well-known prey animals (Jonsson 1986; Larsson 1986). This may be a true grave where the rich deposit of bones could have been a deliberate act in the social relations between humans, dogs and other animals.

One should be careful about perceiving the Mesolithic as an unchanging period. In Northern Europe, which is the focus for this article, there were significant climatological and isostatic/eustatic changes that affected both fauna and flora. Human impact in the form of the hunting of certain animals may also have been significant. For example, in southern Scandinavia people's ideas about the elk, an important prey item in the Early Mesolithic, may have changed when it became increasingly rare. The central significance of this animal from several different social perspectives is clear not least from the finds and depictions in the form of rock carvings and paintings of later date which occur in hunter-gatherer societies in Norrland (Fandén 2002; Sjöstrand 2011) and indeed still occur in areas with a high density of elk. The bear manifested in amber sculptures may have been yet another animal that was perceived as having a special relationship with humans, as also evidenced in later times. In the Late Mesolithic the red deer may have been felt to be an animal with special bonds to humans, as exemplified above.

Those who have difficulty accepting the ideas of social zooarchaeology would do well to consider how the stork is perceived in most countries of Northern Europe. If a stork nested on the farm it meant that humans and animals alike gained extra protection against violence and misfortune. The idea that the stork brings babies is one of several examples of the form that contact between humans and wild animals could take. When excavating an Early Neolithic settlement site in southern Sweden several years ago we found stork bones, and a picture immediately spread among members of the excavation team of a little farm with a stork's nest.

But why confine ourselves to social zooarchaeology, why not think in terms of social bioarchaeology? Richard Bradley has ironically stated, 'Successful farmers have social relations with one another, while hunter-gatherers have ecological relations with hazelnuts' (1984, 11). But could there not be an interesting state of affairs behind this statement? Why can we not perceive some form of social relationship with hazelnuts? They were an important part of the human diet during the winter, and hazelnuts were also used as a neck decoration (Larsson 1983). Similar remarks have been made about the water chestnut (Sundelin 1920). During certain parts of the year, Mesolithic people devoted considerable time and thought to the hazelnut. It is probably also the case that people deliberately planted hazelnuts in new areas, as suggested by the rapid northward spread of the hazel (Iversen 1973). Hazel had many uses in Mesolithic societies, for instance the well-documented practice of making large trapping devices for fish (Pedersen 1997). It would be strange if the hazel did not have a special place in people's minds, somewhat similar to the whooper swans in the article discussed here. In more recent times there have been frequent notions of how trees and other plants were integrated in social spheres.

Marek Zvelebil's well-known statement, 'The time has come to put man before fish' (1995, 422), can be pursued in a similar train of thought. Different fish species may have had different relations to humans. The significance of the salmon, not just as staple food but also in the conceptual world, is exemplified among the tribes on the east coast of North America, where its significance can be followed for thousands of years (Hayden 2004). A similar state of affairs probably existed in parts of Scandinavia (Brøndegaard 1985).

Overton and Hamilakis are sensible in not seeking to completely demolish an old paradigm in favour of a new one, as they say in their conclusion. This is, after all, a research area where the possibilities of interpretation are, to say the least, varied. But their presentation provides an opportunity to examine and evaluate old finds, as Overton and Hamilakis do with the whooper swans. We can hope that this will have an impact on the development excavation methods to include a concern for the questions and interpretations presented by social zooarchaeology. This may be especially relevant in Mesolithic research, where, at least in Northern Europe, there is often analysable osteological material, and also because it is only in recent years, in contrast to Neolithic research, that we have seen analyses that go beyond a purely functionalist perspective. We can, of course, criticize the interpretations here as being meaningless or even ridiculous, and content ourselves with the results emerging from actual conditions. But if we want to make further strides toward understanding ancient people's patterns of thought, it is necessary to formulate new ideas about how we should go about it. Overton and Hamilakis's article is a relevant example of that.

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On whooper swans, social zooarchaeology and traditional zooarchaeology's weight

*Kristiina Mannermaa**

The article by Overton and Hamilakis challenges so-called traditional zooarchaeology and works as a manifesto for a new social zooarchaeology, as the authors call it. This new social zooarchaeology moves beyond the thinking of animals as (purely) resources and instead reinstates their position as sentient and autonomous agents. The approach is fresh and evidence-based (e.g. Robb 2010). The sites and bone materials used as examples come from Late Mesolithic Denmark: the Ertebølle site Aggersund in Jutland and Ertebølle Grave 8 at Vedbæk, Sjælland. Both sites were excavated and analysed many years ago, but the bone material has been reanalysed and interpreted for this study.

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It is easy to agree with some of the main ideas proposed by the authors, but there are some problematic areas of their new social-zooarchaeological interpretations and arguments. The need to turn aside economic thinking and the consideration of animals as a resource for humans seems to be a rhetorical trick to highlight a new way of thinking. Another somewhat ambiguous idea is the discussion of wild animals (swans) as autonomous agents in Mesolithic human–animal relations. I also find some fragility in their argument for rejecting the earlier interpretation of the swan bone in Vedbæk Grave 8. In the next paragraphs, I will contemplate the reasons for my dissatisfaction.

Overton and Hamilakis denote an inclusive, non-anthropocentric framework for performing social zooarchaeology, where 'sociality conveys interspecies engagement, an engagement that is mediated, of course, by the totality of the material world and its agency' (p. 117). The article provides a deep analysis of swan flock behaviour and a human–swan relationship in a lived-experience scale based on the Late Mesolithic Aggersund site. I think that human life is composed of numerous aspects of being in the world and environment; this certainly includes economic aspects (subsistence), religions, rituals, thoughts of how the world is constructed (cosmology) and the system of engaging with nature. A new social-zooarchaeological theory may risk replicating the same flaw it is criticizing; that is, bringing to the forefront only a narrow part of the entity that represents a special relationship between humans and animals. I like the authors' idea about the sensorious, corporeal, sentimental encounter between swans and humans. I also agree that such aspects should be regularly integrated in archaeological discussion. However, I disagree with Overton and Hamilakis's attitude in underestimating the 'resource-based' approach in zooarchaeology. To a certain degree, all human behaviour is and has always been exploitation-oriented. When people estimate and validate the behaviour of an animal individual and include these substances in their world view, this is also utilization. The word 'resource' has negative associations for modern, capitalized people because the attitude to nature in our own society is highly biased due to the overexploitation of many natural resources.

One central point in Overton and Hamilakis's article is the idea of individualizing swans. As far as I understand, this includes the idea that it was significant for people to be able to recognize individuals in a flock of swans. People would have known some personal characteristics and taken this into account when hunting them or consuming the meat of these individuals. This may well have been possible, but I would like to go further and try to rationalize why this individualization would have been important. Ethnographic studies of animal totemism stress the tendency to construct totemic bounds between humans and animal species (e.g. Lévi-Strauss 1964). Nerissa Russell (2012, 25, 169) remarks that in totemic ideologies, the animal species are treated as unitary entities rather than as groups of individuals and that hunters usually relate to humans as individuals and animals as species.

People using the Aggersund site may have identified and personalized swans, but this must be separated from the idea that a swan would have individualized or personalized humans. The mutual relationship between humans and wild animals is mutual in a sense that there are two species

involved. The value of this relationship and its social, economic and ritual implications are, however, dictated and created by humans. As long as swans were hunted by people, they remained timid and tried to be as distant or unapproachable as possible. We are limited to a principally human perspective in archaeology: what animals meant for humans and what humans 'knew' about the emotional, behavioural or social life of wild animals, or how humans experienced voices, smells, landscapes, ecosystems and so on. Humans had assumptions, but this did not necessarily have anything to do with what a swan heard, felt, thought or smelt.

Zooarchaeology can research the ways humans have used, understood and experienced animals, as well as how they lived together. All these aspects are intertwined and included in the web of significances and functions that create the relationship between human and specific animal species.

In Grave 8 at Vedbæk, a fragmented proximal part of the right carpometacarpus of a swan was found in a baby burial (Albrethsen and Brinch Petersen 1976). According to Overton and Hamilakis, the baby had not been buried on a wing; rather, it was placed on the wingtip. According to them, the validity of the wing as representing transport to the afterlife would be less important because the wing was not complete. However, fragments and partial objects may have been put in graves, and their function was as valid as for complete ones. In fact, this question whether a fragment of the wing bone or several bones were placed in the grave is irrelevant. Fragmenting artefacts and bones before placing them in the grave is a universally construed practice in prehistory (Chapman 2000; Larsson 2009). Among the Saami of north Scandinavia, a piece of a bone of an important animal is sufficient to symbolize the animal and supply the desired function (Schanche 2000). In this sense, even one feather in a grave would be enough to carry out the task.

In rejecting the idea of the swan bone serving as a transporter between different worlds, the authors ignore the larger context of the Vedbæk find. They also ignore the fact that many anthropological and archaeological studies support the idea that burial practices are deeply connected with rituals of transformation (rites of passage) (e.g. Karsten 1955; Bell 1997; Nilsson Stutz 2003; Fowler 2004, 130–54; Mannermaa 2008; Garwood 2011). Ethnographic literature from circumpolar areas is full of this kind of reference (e.g. Karsten 1955; Napolskikh 1992; Ingold 1986). There is even archaeological and anthropological evidence that points to the long-lived existence of such beliefs (e.g. Zvelebil 1993; Lahelma 2012; Kristensen and Holly 2013). Good archaeological examples are waterbird remains in hunter-gatherer graves in Baltic countries (Mannermaa 2008) and the swan motifs in Lake Onega, Russian Karelia (Lahelma 2012). Overton and Hamilakis interpret the Vedbæk swan find as a loose example, or a single action without connection to the broader cultural context of the North European Stone Age. A connection is sought from the Aggersund site, but the larger significance, as well as the specific quality of swans for the Ertebølle people, is not discussed. I think that this kind of local perspective is not sufficient to properly describe the relationship between swans and humans.

Context is everything in archaeology, and taphonomy is all-important in zooarchaeology. However, animal remains also need to be researched

and understood in their broader cultural context. In animal studies in archaeology, it would be relevant to compare animal finds from contexts of different kinds (graves, settlements, hunting camps, ceremonial centres, etc.). It is important to try to identify what makes certain species different from others. For example, what made the whooper swan so important for the people at Aggersund? Migration cycle and a close connection to water might well have been key sources for inspiration for the central role of swans in Ertebølle culture. Observations of annual migrations and daily bird movements may have provided the raw material for the basis of cosmological journeys (Kristensen and Holly 2013, 50). Feathers and skins were probably the most considerable material gain; similar products could not be acquired from any other species. Swan bones from Aggersund had clear marks of meat separation, which indicates that meat was also consumed. However, it is impossible to say on what kind of occasion swan meat was eaten.

A holistic approach would be valuable in researching the relationship between humans and animals. This approach would call for research of the roles and significances that people placed on swans in material culture, economy, cosmology, etc. on a broader scale. Overton and Hamilakis's article succeeds in describing an alternative approach for a deeper understanding of a human–animal interaction on a local scale. However, their analysis fails in linking this interpretation and approach within the broader discussion of the meanings of swans for hunter-gatherers. For example, Antti Lahelma (2012) approaches the swan petroglyphs in Lake Onega, Russia via Finno-Ugric folklore. He finds evidence of a *longue durée* cultural tradition which considers swans symbols of the soul or messengers between the worlds of humans and spirits.

Finally, I have to admit that I do not agree with the authors' critique of the 'traditional zooarchaeology'. In fact, I do not think that 'a dominant, monolithic zooarchaeological paradigm' (p. 135) exists. No matter how many guesses we are able to make using different archaeological methods, we will always achieve only an echo of understanding of the diversity of past people's attitudes towards animals. This is why it is so interesting and important to look at the same materials from different perspectives, using different methods, and through various theoretical approaches.

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Escaping from the pen? *Mark Pluciennik**

First of all, congratulations to Nick Overton and Yannis Hamilakis for an excellent and stimulating paper, made all the better for including two

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considered and rich case studies. Though in no way an animal-bone specialist, I find myself in general agreement with their approach, which attempts to persuade zooarchaeologists of the value of engaging further with particular trends within theory in archaeology (and other disciplines) from the last decade or so. It is with the implications of relational archaeologies that I particularly wish to engage: I concur with the authors that zooarchaeology (and other subfields), as well as archaeology more generally, could benefit from challenges to anthropocentrism, whether expressed in ontological or other forms, and ultimately produce more holistic as well as more diverse pasts. My comments are thus more an exploration of some of the issues raised in this paper than a commentary upon the contents per se.

In recent years, some archaeologists and anthropologists have become interested in exploring alternative and plural ontologies (see e.g. Alberti *et al.* 2011; Olsen 2003; Henare, Holbraad and Wastell 2007). What is sometimes called symmetrical archaeology (Witmore 2007) has drawn especially heavily on Latour's insights and notions of entangled and hybrid objects (and their associated agencies), particularly the human and material, forming complex networks (Latour 1993; 2005). These concerns are not just ours, of course. In human or cultural geography, for example, what is called 'non-representational theory' (see Lorimer 2005; Thrift 2007) asks for explorations of multi-scalar and alternative ontologies and experiential approaches. There is also interesting environmentally related work in both geography and sociology (e.g. Castree 2003; Goodman 2001; Whatmore 2002). Some anarchist political theory, such as Bookchin's 'social ecology', also asks us to think about an 'equality of unequals' – specifically mentioning diverse ontologies – within societies and across ecosystems (Bookchin 2005, 411–47).

Following Latour, some 'symmetrical archaeologists' demand that 'things', by which they generally mean archaeological artefacts, are paid more attention (e.g. Olsen 2010; Webmoor and Witmore 2008). In particular, they ask that the ontologies or ways of being of other, non-human (and non-living) 'things' should be treated as equivalent, and the nature, capacities and agencies, especially of materiality, recognized in particular ways and foregrounded far more than has been traditional. However, in much of this 'symmetrical' archaeology there tends to be, as Ingold (2012) especially has pointed out, a noticeable lack of concern for other living entities, let alone consideration of what living in the world might be like from their, non-human, perspectives also. This is where Overton and Hamilakis offer valuable examples and insights. Another underrepresented aspect of a potentially interesting theoretical shift in emphasis is how past people (and not just present-day archaeologists) might have related to, shaped and been shaped by, co-habited with, experienced, expressed and engaged with 'things' (I much prefer the broader 'entities') and participated in processes, networks or 'meshworks' (Ingold's term). Two related examples of the difference such concerns might make to zooarchaeology are represented in this paper. What should be clear is that conceptualizing these kinds of participation, and thinking about resonances and interrelationships, is useful not only for archaeologists when considering past humans, but potentially for and

between other entities and groupings too, whatever the exact nuances of equivalent or 'flat' ontologies. Thus Overton and Hamilakis briefly make room for spiritual beings, though their particular interest here is in people and swans, as (mutually?) recognizable individuals, groups and communities within overlapping meshworks and places. They also refreshingly note that exploitation of others as a resource, and economic or other values, can still play a part in various relationships. This is an important counter to the tendency in some 'symmetrical archaeology' to value and essentialize 'things' in themselves and completely reject any approach in the present or past which might be seen as 'modern' in a Cartesian sense. Yet, for example, many scientific and other methodologies demand as a starting point that we do separate, describe and objectify for the purposes of analysis (cf Holbraad's (2011, 908) 'ontography'). We might add in other contexts that objectification in the form, say, of prey from the point of view of a predator can occur across and between many species and in various directions, depending on contexts, capacities and co-presence. Work such as that by Harris and Robb (2012) and Tarlow (2011) on ideas of the body and belief argues that categorical thinking demanding concepts of complete ontological separation and otherness is unhelpful, or even unworkable. They also show that people at least, as individuals and groups, are perfectly capable of having, sometimes simultaneously, many differing ideas, beliefs, feelings and indeed practices which may be contradictory as well as overlapping or complementary, whether they involve bodies, animals, things or other entities such as spiritual beings. As far as humans are concerned, perceptions, feelings, relations with and meanings of swans in places in Mesolithic Denmark are therefore likely to have been equally complex and sometimes to have been, and/or archaeologically appear to be saying, different things.

As Overton and Hamilakis consider, there may be perceived and/or constructed resonances between behaviours, appearances, qualities, potentialities and perceptions, such as family groupings and communication, within and across species and other entities. A different example of how one can think about such resonances in human and non-human relationships (and hybrid entities) is the work of Argent concerning horses. Using a partly phenomenological approach she has examined social and physical relationships between horses, horses and people, and horse–rider entities in the present and the past (Argent 2010; 2012). Elsewhere she has argued that aspects of horses and horse herd behaviour with which Iron Age peoples of the Russian steppes would have been familiar may have shaped and indeed co-produced particular patterns of human and horse socialities and horse–human mobility and warfare. One could equally consider in various ways how plants and trees (and humans and other animals) are co-related and interdependent (for widely divergent approaches see e.g. Lorimer 2006; Rindos 1984; Rival 1998). Walsh (2008) shows another aspect in thinking how geological and human processes, interventions and relationships may be explored through Latourian actor-network theory. All this suggests that to capture the genuine richness of any human societal past one needs to be thinking more about some kind of 'social palaeoecology'. The danger is that if more or less everything is connected, ontologically equivalent and able to be traced to

anything else, how might one produce intellectual and narrative coherence, in order to help us think differently and interestingly about the present and the past?

Ian Hodder's (2011; 2012) pursuit of ideas of the entanglement of objects, people, plants and materials at Çatal Höyuk offers one example. His explicit parallel entanglement of theories and methods (from evolutionary biology to social theory and material analyses) is also closely related to this general recent direction, and neatly demonstrates tendencies towards rhizomic thinking about connections, dynamic networks and intersections. His work is site-based and bounded in time and space, and one can imagine that this kind of starting point is likely to be the norm or template for much such archaeology (see also e.g. Webmoor 2005). In the paper currently being considered, Overton and Hamilakis also begin with sites (or assemblages) linked in part by chronology as well as by swans. One could argue that this approach is, then, a helpful expansion of what we currently consider to constitute contexts, and to provide dynamics of process and directions for tracing similarities or 'resonances' such as, say, biographies of particular technologies within broadly contextual archaeologies. Are there even wider approaches possible which potentially offer symmetry to entities and communities of all kinds? How might they interrelate, and and how can we begin to explore what different perspectives might add, at different spatial and chronological scales, and from varied positions and starting points?

One challenge might be to produce imaginative but rigorous histories of hybrid networks deliberately starting from non-human perspectives – those might give a different insight into intersections with human-influenced agencies and processes, if that is what we are really concerned with. Because from our disciplinary point of view the researchers – or, better, 'interlocutors', and eventually authors – will be archaeologists, usually with a particular interest in where humans might fit into and participate in the places, networks, meshworks, assemblages, entanglements or other relational constructions. What might a story of Aggersund, or Vedbæk Grave 8, or a swan biography, seem like from a swan's point of view? Or given the bone assemblage from Aggersund, one could explore the intersecting biographies, communities, places and histories of the deer, boar, fox, pine marten and shellfish, artefacts and artefact materials, plants and shoreline topographies, as well as the indirectly represented humans. Different patterns, materials and biographies would develop from Vedbæk, for example, though also with overlap and potential intersections.

For archaeologists, an archaeological assemblage of some kind, whether *in situ* or in a museum, will typically provide a disciplinary starting point. But such broadening of choice will of course lead through many different networks (and hence various pasts and stories, temporalities and entities), and will require many different expertises and imaginations. Agreeing that special consideration be given to shared nodes in hybrid networks, places and themes, or intellectually parallel paths and processes, will often provide focus and coherence. But the perspectives, the voices, the politics, the salience and the priorities of different aspects and encounters will perhaps equally often lead one away from archaeology and explicitly human pasts, and perhaps to a more

authentic or at least balanced notion of what symmetrical or equally valued but different relational ontologies might imply politically. Just as postcolonial critiques gave rise to exploration of how descendant and other communities might or should be involved in the process of producing archaeologies, so giving some kind of ontological and other equivalence to various non-human entities surely also implies some equivalence in moral value and hence within our concerns – the ethics of those inevitable entanglements in the present and with the past. The so-called 'ethical turn' was a feature of much 1990s thought across many disciplines, including archaeology. Some ethical aspects in relation to hybrid or other entities have been recognized in ecofeminist and other approaches to the contemporary world (e.g. Whatmore 1997), as well as within fields such as animal rights. However, such consideration has not, to my knowledge, particularly occurred in relation to archaeology, beyond recognition of possible responsibilities towards past peoples (Tarlow 2006).

Another aspect that Overton and Hamilakis's work, and relational approaches more generally, might be thought to point towards is the potential importance of multiple authorship. Could this help overcome the loss of dialogical exchanges between apparently divergent intra-disciplinary subfields such as zooarchaeology, as well as between other interested groups? It is not new in archaeology to criticize the ways in which 'specialist' reports such as those dealing with the lithics, the human bones, the animal bones, categories of artefact and so forth are often considered separately from excavation reports and project syntheses. In my own experience, zooarchaeologists have certainly long been among those complaining about the status and positioning of their contributions in a literal as well as metaphorical sense. However, the demands of accountancy and competition within contract archaeology and the production of 'commodified pasts', as well as similar trends within higher-education systems and the 'audit cultures' that go with them, make this difficult for most academic as well as commercial archaeologists (Shore and Wright 2000; Hamilakis 2004).

Overton and Hamilakis suggest that there often have been and are other constraints upon the form and nature of zooarchaeological investigations, but demonstrate and point to fruitful directions of theoretical travel. Working out some of the future contours of a social zooarchaeology will be challenging and exciting, and with implications well beyond this particular subdiscipline.

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A multi-species archaeology *Yannis Hamilakis and Nick J. Overton*

These are interesting times for the exploration of the relationships between humans and other animals. The 'animal turn' is in full swing in a number of disciplines; anthropologists have started talking of the emergence of a

multi-species ethnography (Kirksey and Helmreich 2010); and even archaeologists have, somehow hesitantly, started contributing to wider discussions within animal studies (e.g. see the recent – 2013 – special issue of the journal *Society and animals* devoted to archaeology; and Harris and Hamilakis, in press). Another indication that things are changing is the overwhelmingly positive response to our 'manifesto' by most commentators, who have offered many valuable thoughts which expand our reflections in many and interesting directions: we are grateful. Rather than trying to comment on every single point raised in this discussion, which in any case would have been impossible in the space provided, we have selected instead a couple of issues that, we hope, readers will find engaging and fruitful.

To start with, the degree to which all human behaviour has, as Mannermaa comments, been exploitation-oriented is an interesting point for future discussion. However, at the heart of such a description is the ultimately anthropocentric characterization of human 'utilization' of non-humans as explicit exploitation. The danger with confusing what she calls utilization (and which we would rather call engagement or interaction) with exploitation is twofold. First, in narratives of utilization/exploitation, one is put in mind of the idle shopper selecting ultimately objectified items from the supermarket shelf. The exclusive focus on the human extraction of necessary things from objectified animals negates the potential for non-humans to act, to act back, and ultimately affect human understandings, actions and relationships. In these exploitation narratives which refuse the agentic potential of animals it is unsurprising that the value or meaning of the remains of non-humans are, in Mannermaa's words, 'dictated and created by humans' (p. 161). An acknowledgement of non-human agency, as we demonstrate in our paper, enables the consideration of humans' 'utilization' of non-humans in terms of the social, sensual and experiential relations that developed between humans and non-humans, which are in part constituted by the individual and sentient actions of the non-human co-relaters. Our consideration of the swan remains in Grave 8 at Vedbæk is one such exploration of the potential relations imbued within material remains. It moves beyond the reliance on human-imposed symbolism, which, as Mannermaa claims, renders the relative completeness of the wing 'irrelevant', and instead considers the roles and meanings specific elements and materials may have engendered, and how the actions of the other may impact on these understandings. This, in turn, highlights the second problem: in narratives of exploitation, in which humans are driven exclusively by the need for the extraction and acquisition of resources, the only type of relation that exists between humans and, in this case, swans is hunting (save for the subsequent, strictly utilitarian consumption of the 'prey'). Such accounts only need to begin with the hunt, and usually only with the moment of dispatch, the moment of exploitation. However, in considering the development of relationships between human and non-human entities, as they lived, coexisted and co-shaped one another's lives, we are required to think about those moments that occurred before dispatch; envisage, in other words, a diversity of relationships between living, sentient beings, relationships that are not defined exclusively by the roles of the hunter and the hunted.

The consideration of 'local-scale' relations and engagements, as advocated in our exploration of the interactions between humans and whooper swans, presents a contrast to Mannermaa's call for 'broader discussion of the meanings of swans for hunter-gatherers' (p. 162). To what extent can particular relationships developed at specific sites be extrapolated to a pan-European consideration of the meaning of swans for hunter-gatherers? The mention of work on swans in Russia presents an interesting prospect; whooper swans are present in summer in Russia, where they mate, nest, raise their young and, potentially most significantly, moult. As a result, they are, for a time, flightless, far less mobile, and predominantly terrestrial (cf Brazil 2003); a close exploration of human–swan interactions in this scenario may have contributed to the formation of distinctly different relationships, compared to the winter sites of Aggersund or Vedbæk. A local perspective from a single site may not be sufficient to properly describe the wider relationships between humans and swans. Generalized descriptions, however, run the risk of homogenizing the specificities of interactions at particular sites, overshadowing thus the potential agentic impact of the very swans with which humans engaged. It is only when we define these specific, individual relationships at multiple sites that we will begin to understand whether the relationships with, or the treatment of, non-humans at any site represent the exception or the rule, in terms of broader narratives.

A number of commentators, most notably Argent and Pluciennik, have raised the ethical and political implications of a non-anthropocentric archaeology, an important issue that our original paper did not have the space to develop. We agree with them that a politically aware or a even politically sensitive archaeology cannot afford to ignore such an issue, especially since it is becoming more and more acute by the day, given the worsening food crises worldwide, the frequent health scares with regard to factory farming of animals, and the ongoing debates and clashes over experiments on animals and cloning. The 'animal rights' movement, of course, has a long history and counts a number of victories over these years. But, as has been noted by recent commentators within a non-anthropocentric philosophy (e.g. Wolfe 2013), the 'animal rights' discourse often fails to avoid the homogenization that the term 'animal' implies, and which has been critiqued by Derrida and others; a homogenization that assumes the singularity and uniqueness of one species, the humans, grouping at the same time all other sentient organisms under the rubric of the animal. Moreover, as Wolfe has noted (ibid.), non-human animals today are not subjected to the same fortunes and fates, and do not receive the same treatment. Compare, for example, the pet industry with the factory farming industry involving animals: today, about 10 billion animals are killed for food every year in the USA alone (excluding fish and sea creatures),[1] a figure that has doubled since 1980. At the same time, the pet care and pet products industry in the same country in 2012 was worth *c.*53 billion dollars, a figure three times the amount in 1994.[2] Some animals thus have

[1] See http://farmusa.org/statistics11.html, accessed 16 June 2013.
[2] See http://americanpetproducts.org/press_industrytrends.asp, accessed 14 June 2013.

become 'members of the family' of humans and receive care and protection on par with them, albeit within a power relationship that, more often than not, treats them as property, and subjects them to control and domination. At the same time, some others, in fact the vast majority of mammals that come into contact with humans, live mostly in horrendous conditions, and are treated as livestock that becomes 'deadstock' (terms that zooarchaeologists also use) to satisfy mostly the carnivorous appetite of Western, capitalist consumerism.

Wolfe (2013) has suggested that the concept of bio-politics and of bio-power, developed by Foucault and expanded upon more recently by Agamben (e.g. 1998) and Esposito (2008), amongst others, could be an appropriate lens through which to revisit the ethics and politics of interactions between humans and other animals: as with some humans such as undocumented African and South Asian immigrants in European countries today, factory farm animals are 'bare lives' who have been denied the right of *zoe* and of *bios*, the entitlement to a full social and political life. In the racist discourse in those countries and elsewhere, these immigrants are even 'animals', merging speciesism and racism, and can be killed with impunity, as has happened with many racist homicides that are never or are rarely investigated to a fruitful conclusion. They have acquired the status of *home sacer*, to use Agamben's term. Factory animals are also killed with impunity, by the billions. This has been the logical extension of the 'anthropological machine' that gave rise to the autonomous and omnipresent, individuated human being, the *anthropos* of colonial conquest and capitalist modernity. It was a process enmeshed with the 'question of the animal' and with the fear of the 'animalistic' that needed to be suppressed (cf. Hamilakis 2014). A more powerful and politically effective stance thus would be to show the connections between colonialism, racism, capitalist logic and the entrenched anthropocentrism that render ever-increasing numbers of animals and humans 'bare lives', and keep them outside the frame of rightful *bios* (cf. Nibert 2013). In this affirmative and empowering biopolitical stance, alliances are created across the species lines, defeating not only anthropocentrism, but also its ideological and political supporting devices.

Boyd raises a crucial question: is it at all possible to overcome an anthropocentric position on the exploration of the relationships between human and non-human animals? Such a question is most likely to remain in the spotlight within animal studies, at least for the near future. In thinking of the task at hand, however, we too find Calarco's work to be an extremely useful guide, especially with regard to the poverty of Western modernist philosophy on the matter, hence our recourse to diverse, non-Western ethnographic accounts, and to our personal experiences, which, as Larsson here demonstrates, can be invaluable. Can anthropocentrism be circumnavigated as simply as just 'letting go' the opposed and bounded categories of 'human' and 'animal' in our narratives of the past (Calarco 2008)? Perhaps it sounds simplistic, but why should we cling so tightly to such terms, which have come under increasing attack, eroding the once abyssal gap between the two? Maintaining this division only serves to allow modern categorizations to ride roughshod over those potentially different

modes of understanding in the past. Of course, simplicity does not equate to ease; anthropocentrism is deeply engrained in much modern thinking. It is only after the discarding of these monolithic opposed terms, however, in what Calarco has termed 'the space of surrender', that a truly legitimate meeting with 'the animal' can occur. Articulations of such spaces are beginning to be explored within archaeology; for example, rhythm has been considered as a means to explore human–non-human engagements in a shared space, without the need to explicitly ground the narrative in the human realm, nor needing an 'analytical bridge' to span between separated human and animal spheres (e.g. Brittain and Overton 2013). A social zooarchaeology that explores the formation and unfurling of conceptions of the non-human other through engagements, experiences and subsequent understandings presents an archaeologically workable 'space of surrender', a space which, as Argent notes, is a ground of interspecies sociality. The faunal material, the remains of the very individuals humans met, experienced, engaged with, killed, consumed and deposited, offer the data required to explore the specific engagements in the space of surrender between humans and non-humans, through which past human perceptions of non-humans, as opposed to our anthropocentrically tainted conceptions, can be explored and traced.

Finally, as some commentators, most prominently Pluciennik, note, this endeavour has implications far wider than zooarchaeology itself, and even wider than what Larsson calls for; that is, social bioarchaeology (a call which we endorse). A rethinking of the relationship between human and non-human animals is an inquiry of ontological nature. Our project is inscribed into current and ongoing ontological explorations in a number of fields, including archaeology, but we contend that such explorations should not limit themselves to the investigation of non-Western ontologies, and the need for archaeology to come to terms with them, but rather include the ontological foundations of the discipline itself, as we collectively attempt to produce an alter-modern archaeology. Elsewhere (Hamilakis 2014), we show how this alter-modern archaeology should not replace the problematic heritage of anthropocentrism with an equally problematic pragmato-centrism, which neglects non-human animals and conceives of things as bounded and rigid entities, albeit invested with agency. We propose instead an ontology of flows and of sensoriality, advocating that we should ground our inquiries in the in-between space of sensorial and embodied interaction, the space of flows and exchanges, through human and non-human bodies, of substances, experiences, memories and affects.

This cannot but be a multi-species archaeology in many senses: in the sense of coming to terms with alternative ontologies, including zoontologies, ontologies which may include in fact hybridic conceptions that cannot be accommodated by the rigidity and generalized emptiness of the terms 'human' and 'animal'; in the sense of recognizing that the constitution of the world, including its cultural dimensions, is the shared achievement of all sentient beings, not just humans; and in the sense of attempting to imagine and conjure up, as much as possible, and despite the inherent limitations, how archaeological narratives would have looked from the standpoint of non-human animals.

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