

Abstract

Global Hunting Adaptations to Early Holocene Temperate Forests: Intentional Dog Burials as Evidence of Hunting Strategies

Angela Ray Perri

The close connection between humans and dogs in the prehistoric past, often with a focus on a hunting relationship, has long been proposed, yet has rarely been evaluated. This thesis investigates parallels in environment, culture, adaptation and dog mortuary phenomenon among three complex hunter-gatherer groups in the early Holocene. Although dog domestication appears to have occurred in the late Upper Palaeolithic, the first instances of intentional, individual dog burials are not seen until after the Pleistocene-Holocene Transition. These burials appear nearly simultaneously among culturally and geographically unrelated early Holocene complex hunter-gatherers in three distinct locations: the midsouth United States, northern Europe and eastern Japan; coinciding with the onset of significant postglacial warming that triggered dramatic environmental change throughout the northern temperate zone; specifically the establishment of temperate deciduous forests. Along with this new environment came new ungulate prey species, and with the new prey species important hunting adaptations by humans. Ethnozooarchaeological fieldwork conducted with modern hunters in the United States and Japan, along with additional ethnographic material confirms the use of hunting dogs in temperate deciduous forests as a preferred method which yields improved results, in contrast to boreal forests or open tundra, where dogs can be a detriment. In densely forested environments, prey species often rely on concealment, rather than flight, to escape predators and human hunters. Dogs give vital assistance to hunters in these conditions, performing superhuman tasks such as locating concealed prey, tracking wounded animals, and bringing them to bay. This thesis presents a previously unidentified link between the first worldwide occurrences of individual, intentional dog burials and changes in hunting environments and prey species brought about by early Holocene climate change.

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Bronze ceremonial bell (*dotaku*) depicting dog-assisted boar hunting from Kagawa Prefecture, Japan (photograph: Tokyo National Museum)

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List of Abbreviations

ABG	Associated Animal Bone Group
BP	Before Present
ET	Effective Temperature
GISP2	Greenland Ice Sheet Project 2
GS1	Greenland Stadial 1
IMS	Interior Midsouth
KY	Kentucky
OAS	Original Affluent Society
SMA	Shell Mound Archaic
TN	Tennessee
WPA	Works Progress Administration

Abbreviations used in appendices:

ACH	Aichi Prefecture
AL	Alabama
B	Bluff Site
BP	Before Present
C	Cave Site
CHB	Chiba Prefecture
CO	Country
DB	Dog Burials
DK	Denmark
EHM	Ehime Prefecture
FSH	Fukushima Prefecture
GG	Grave Goods
I	Island
IBA	Ibaraki Prefecture
IL	Illinois
INJ	Injury
IWT	Iwate Prefecture
JP	Japan
KAN	Kanagawa Prefecture
KY	Kentucky
MO	Missouri
MYG	Miyagi Prefecture
N	No
NAG	Nagano Prefecture
NL	Netherlands
O	Open Habitation Site
PP	Prepared Pit
REF	Reference
RG	Region
RS	Rockshelter
SAT	Saitama Prefecture
SHZ	Shizuoka Prefecture

SM Shell Midden
SW Sweden
TN Tennessee
US United States
Y Yes

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Chapter 1: Introduction

Introduction

Current research suggests the domestication of dogs occurred around 15,000 years ago, with the location and number of individual domestication events debated (e.g. Germonpré, et al. 2009; Gray, et al. 2010; Larson, et al. 2012). Although domestication appears to have occurred in the late Upper Paleolithic, the first instances of intentional, individual dog burials (for a precise definition of this see Chapter 3) are not seen until the beginning of the early Holocene (e.g. Morey 2010). The initial occurrence of these burials appears nearly simultaneously in several culturally and geographically unrelated locations: the midsouthern United States, northern Europe, and eastern Japan. While these burials are often discussed in the archaeological literature of the locality in which they are found (e.g. Larsson 1994; Morey 2006; Naora 1973), a heavily regional focus in their analysis, and in the archaeological literature in general, has precluded any cross-comparisons with similar burials in other locations thus far. A need for a global comparative analysis of archaeological phenomenon has often been stressed by researchers, most recently by Peregrine (2004) and Smith (2012), yet it is acknowledged that these assessments can be hindered by a lack of well-defined samples, objectives, and units of analysis (e.g. Peregrine 2004; Tainter 1978). Given this, a global analysis of any archaeological phenomenon, such as the case of intentional dog burials here, must address these issues in order to be both comprehensive and reliable.

A crucial part of this research is the examination of ethnographic and modern data on the hunting use, relationship, and mortuary treatment of dogs among subsistence and sport hunting groups. The nature of the archaeological record means the material remains represent a biased sample; an incomplete picture of past human behaviors and activities (e.g. Wobst 1978). As there is no direct way to observe exactly how hunting dogs may have been used in the past, we must rely on models and analogies to inform the observed patterning (e.g. Binford 2001; Hamilakis 2011; Morey 2006; 2010). Whilst imposing concepts derived from modern hunter-gatherer behavior upon prehistoric groups in the past can be problematic (e.g. Gould 1978), it is appropriate to use the ethnographic record to speak to the range of modes of interaction possible between hunter-gatherers and their dogs (discussed in Chapter 7). Furthermore, the ubiquitous use of dogs in hunting strategies across both time and space suggests that their added value supersedes particular local cultural variations. This is not to say that culture does not play a significant role in the actual manifestation of human-dog relationships, but that the benefits of using dogs in hunting in certain situations are so great that they are rapidly adopted (see Chapter 7). In this way, the study of ethnographically-observed relationships between human hunters and their dogs can

serve as a framework for possible interpretations in the past (e.g. Ikeya 1994; Koster and Tankersley 2012; Lupo 2011b; Mitchell 2008; Nobayashi 2006; Skibo 2009; White 1972; see Chapter 7). The models used to interpret the recent ethnographic record are further integrated into the wider interpretation of the archaeological data.

This study attempts to provide an objective and cross-culturally valid method for comparing global prehistoric dog mortuary data, with a specific focus on dog burials from prehistoric hunter-gatherer sites. Once a typology of these burials is established (see Chapter 3), it will be used to compare, globally, incidences of a particular type of burial ('isolated burial'; see Chapter 3) in the prehistoric past, from their initial occurrence in the archaeological record. Once incidences of these burials are identified and described, it will investigate possible explanations for the parallel occurrence of this particular phenomenon within culturally and geographically unrelated regions, evaluating other similarities which exist between them, including palaeoenvironments, and archaeological evidence for levels of complexity, economy, and subsistence. Towards this objective, this thesis employs a systematic global literature review to identify and analyze these similarities in regions which possess prehistoric dog burials from the time of their initial occurrence in the archaeological record. It utilizes original site reports, faunal assemblage records, palaeobotanic records and ethnozoarchaeological accounts in order to build a comparative framework by which to objectively evaluate the three regions discussed. Laboratory and field research was conducted in the United States and Japan, consisting of an extensive literature review (including the first western-language translation of the majority of the Japanese material), hands-on analysis of several of the dog remains, and field observation of dog-assisted hunters. It also documents zooarchaeological changes in prey species types between the late Pleistocene and early Holocene to establish a clear chronology of subsistence species reliance over time, and site-specific palaeoenvironmental data (specifically, palynological) are compared from the late-glacial Upper Pleistocene and early Holocene records in each area to examine the rate, intensity, and nature of environmental change during the Pleistocene-Holocene transition. Using previous ethnographic research, as well as my own ethnozoarchaeological work with dog-assisted deer and boar hunters in the United States and Japan, it explores recent use of hunting dogs in an effort to consider possible correlations between human hunters, environments, prey and hunting dogs in the past. Thus, this thesis integrates faunal, palaeoenvironmental, mortuary and ethnographic records in order to characterize the dynamic relationships between complex hunter-gatherer groups, their environments, and the role of dogs in early Holocene hunting adaptations. The phenomenon of intentional dog burials appears to begin abruptly and concurrently with the influx of the deciduous oak-based forests in each of the three locations, corresponding to similar rapid biome shifts after the Pleistocene-Holocene transition, suggesting a relationship between the

environmental change, socio-economic practices, and the appearance of the burials. This thesis aims to explore this hypothesis through a cross-comparative analysis of the archaeological and environmental data, with insight incorporated from the ethnographic record.

The Meaning of Dog Burials

The dog in ancient, ethnographic and modern time has always occupied a liminal position, neither man, nor beast; existing outside of the “wild” animal kingdom, but not fully belonging to the human sphere (Ambros 2010; Fitzgerald 2009; Radovanović 1999; Russell 2010; Sharp 1976). Their burial, in various geographic locations, chronological periods, and cultures, has been widely discussed, with explanations usually deemed either sacred or secular, ritual or rubbish (e.g. Maltby 1985; Morey 2010; Morris 2011; 2012; Olsen 2000; see Chapter 3). While intentional dog burial has certainly been part of human cultural activity, now and in the past, this thesis documents their first, parallel appearance in the archaeological record, which occurs nearly simultaneously in three early Holocene complex hunter-gatherer groups which inhabit the aquatic riverine and estuary-deciduous forest ecotone of the northern temperate zone. In these regions the intentional, individual burial of some dogs appears to have meaning beyond that of ritual sacrifice or discarded rubbish, with a level of mortuary treatment equal to (or in some cases, greater than) their human counter parts.

Researchers such as Kroeber (1927) and Ucko (1969) have argued that there are few cross-cultural regularities among burial practices of different groups and that burials are a ‘... disposal of the dead (that) falls rather into a class with fashions, than with either customs or folkways, on the one hand, or institutions, on the other’ (Kroeber 1927: 314). Others have argued against this viewpoint, stating that burials reflect patterns of social organization and structure (e.g. Binford 1971; Goldstein 1981; O’Shea 1996). Saxe (1970) and Binford (1971) in particular set forth the framework for inferring social characteristics through mortuary data, with Binford (1971; see also Tainter 1978) contending that variability in mortuary practices must be understood in terms of variability in social systems. While in reference to human mortuary behavior, these arguments can be applied to dogs which were afforded human-like treatment in death, and to the cross-cultural analysis of these types of burials on a global scale. A comment made by Tainter (1978: 122) over 30 years ago highlights an issue in archaeological research that continues today,

Failure to consider the important concept of dimensions of differentiation has led archaeologists to derive an impressive array of information about past societies, but has rarely led to the production of information that is comparable.

While there has been a recent increase in contributions to comparative archaeology (e.g. Earle 1997; Lawrence 2012; Peregrine 2004; Smith 2012), comparisons of global phenomenon in archaeology are still wanting. Peregrine (2004) noted several issues with diachronic global comparative analyses in archaeology, including the lack of representation of the entire range of variation or obviously comparable units of analysis. He has stated that a primary issue with current attempts at global comparisons is that they ‘seem to lack...the very things that give comparative ethnology its strength—large and well-defined samples, well-defined units of analysis, and appropriately employed statistics’ (Peregrine 2004: 295). In terms of global mortuary behavior, Tainter (1978) echoed these arguments early on, stating comparative frameworks need to develop general principles ensuring they are objective and cross-culturally valid. Therefore, to appropriately analyze the cultural phenomenon of intentional dog burials on a global scale, this thesis incorporates a typology of prehistoric dog mortuary treatment which defines comparable units of analysis, allowing an objective and cross-culturally valid assessment (see Chapter 3).

In a discussion of prehistoric mortuary practices in the midsouth United States, Rothschild (1979: 660) stated,

It is assumed that distinctions visible in mortuary practices reflect status distinctions visible during life. If patterns exist in mortuary practices, it is assumed that they relate to structural divisions in society.

Though in reference to human mortuary practices, if these distinctions are applied to the dog mortuary record across the three regions discussed in this thesis, similar features are apparent. In all the sites considered, dogs are present in the archaeological record in a variety of ways (see Chapter 3). Individual elements, some with evidence for skinning or butchery, are found scattered around sites and within trash middens. At some sites single dog elements have been included in human burials, while complete dog remains have been included in others. This variation in mortuary treatment makes the finding of individual, intentional dog burials, identical to their human counterparts, even more remarkable. The very fact that an animal would be afforded a burial on par with humans indicates some level of elevated status. It is clear that some dogs were being treated in a very distinct way, which was likely a reflection of their role during life. The ambiguity of a dog in a complex hunter-gatherer society is, in itself, complex. The dog’s constant categorization as neither person, nor beast (e.g. Radovanović 1999) leaves it in a marginal position, much like infants and children (e.g. Fahlander 2008). Yet, its value as an important hunting adaptation (as seen in modern and ethnographic examples; see Chapter 7) affords the possibility of status, a living weapon which at its core holds a liminal social position within the human group, but can be elevated to full ‘personhood’ based on its skills as an ‘individual’ in an transegalitarian society.

The fact that the complex hunter-gatherer groups described in this thesis are all generally categorized as transegalitarian societies is significant. The use of the term 'transegalitarian' here allows for the possibility of minor inequalities which may exist based on age, sex, family position, etc., but refers to groups which do not support private ownership of resources, political dominance or institutionalized hierarchies (Clark and Blake 1994; Hayden 1995; 2007). The term 'transegalitarian', popularized by Clark and Blake (1989) and Hayden (1995) has alternatively been referred to as 'middle-range', 'tribal', 'ranked', or 'stratified', but the term 'transegalitarian' is preferred here in reference to groups which are neither purely egalitarian or politically stratified. The complex hunter-gatherers of the Archaic midsouth United States, Mesolithic northern Europe, and Jomon eastern Japan have all been described in such terms (see Chapters 4, 5, 6, and 8). In transegalitarian societies, status is accumulated during the life of the individual based on their role in the group, such as a skilled hunter or shaman. In death, this acquired status is then often reflected in burial, with the deceased being offered special treatment such as grave goods or being covered with red ochre. This thesis proposes that in life, and thus in death, the social position merited by those hunting dogs which proved skilled and valuable hunting tools was on par with that of skilled human hunters. This proposition is supported by ample evidence from the ethnographic record, which shows the superhuman proficiencies of a dog (e.g. scent-tracking, chasing, holding prey) can prove invaluable to many hunter-gatherer groups, leading to their venerated status as a group member, and eventual human-like burial (see Chapter 7). Though the probability that dogs in prehistoric foragers groups were being utilized as hunting assistants has been widely proposed (e.g. Clutton-Brock 1995; Clutton-Brock and Grigson 1983; Morey 1992; 2010), the possibility that their deliberate burial in these groups was a reflection of their elevated status as esteemed hunters has gone unexplored. This concept is hinted at by Conneller (2011: 366) when she suggested,

... as ambiguous animals, existing between human and animal cultures, we can perhaps see particular dogs only as having the particular qualities that allowed them to be full participants in human ritual practices.

Perhaps due to an inability to believe that some dogs, valued for their superior hunting capabilities, may have been afforded a burial equivalent to their human counterparts, archaeologists have proposed many other explanations for this phenomenon. At the Mesolithic Ertebølle site of Skateholm in southern Sweden (see Chapter 5), Larsson (1990a; 1994) has suggested that individual dog burials represent cenotaphs, substitutions for lost human bodies, while Strassburg (2000) has proposed burial due to their symbolic role as shape-shifters or shaman. Munt and Meiklejohn (2007: 167) have suggested intentional burials as 'real or symbolic protection to the encampment'. In contrast to what he proposes as 'the somewhat silly trend of ritualizing the past', Fahlander (2008: 36) has suggested that the Skateholm dog burials are simply the interment of 'dear members of the household'.

While Fahlander's proposal speaks to the notion that some dogs in hunter-gatherer societies may have been valued as pets, as they are today, it is probable that the buried dogs from Skateholm and the other sites described throughout this thesis warranted human-like status in burial due to their human-like (in fact, superhuman) hunting capabilities in life.

In addition to the phenomenon of isolated dog burials (see Chapter 3), this thesis highlights the many similarities shared between the complex forager cultures described. Individually, within the archaeology and literature of their respective regions, each area is considered a model example of a complex, semi-sedentary/sedentary forager population. Yet the possibility that they yield parallels which are observable in the archaeological record has gone largely unexplored. While the identification of similar isolated dog burials in each area is just one phenomenon explored here, the possibility of similar comparative studies among these and other prehistoric groups is necessary, as suggested by Tainter (1978: 122),

If the study of past social systems is ever to aspire to the study of social process, then archaeologists must develop the ability to model prehistoric societies in ways that yield comparable results. Two of the factors involved in the development of comparable social models are explicit consideration of the dimensions of a social system that are being investigated, and the development of cross-culturally valid criteria for isolating and measuring these dimensions.

Aims and Structure

This study is divided into four sections to reflect its aims and objectives. Chapters 2 and 3 provide a background to understanding the archaeological, cultural and environmental setting on a regional and global scale. Chapter 2 places each of the three regions in their archaeological and environmental context, documenting important changes which took place before, during and after the Pleistocene-Holocene transition, and evaluating these changes across the three regions in a short comparative analysis. Chapter 3 presents a typology of archaeological dog burials, which I created through an extensive literature review of reported dog remains from prehistoric sites worldwide. This typology provides a definition of the intentional, individual dogs burials ('isolated burials'; see Chapter 3) described throughout this thesis and allows these burials to be distinguished from other archaeological dog remains, and thus comparatively evaluated. Chapters 4-6 provide a more detailed analysis of the early Holocene archaeology, environmental change, and dog burials examined in each of the regions. Chapter 4 deals with the midsouth region of the United States first, as it has the most extensive record of dog burial sites, number of individual dog burials, and archaeological literature discussing these burials. Research for this chapter included laboratory and field work in the United States, observing dog-assisted hunters, examining some of the dog burial remains, and collecting data from grey literature. I then move on to Chapter 5, covering northern Europe, which comprises significantly fewer burials than the other two regions, but has a wide-ranging body of literature discussing the mortuary

treatment of dogs in prehistoric hunter-gatherer groups. Finally, I examine eastern Japan (Chapter 6), which has a large record of dog burials, but from which there is very little published in the western-language literature, leaving it nearly unexplored outside of Japan. In researching this chapter I made a three-month research trip to Japan where I worked with modern dog-assisted boar hunters and archaeological researchers at the Nara National Research Institute for Cultural Properties. The result is the first comprehensive, English-language publication of the Jomon-period dog burials (Chapter 6). Chapter 7 provides an extensive survey of ethnographic and modern examples of the role of hunting dogs in subsistence hunter-gatherer and sport hunting groups. Though not intended to claim precise analogies between ethnographic and ancient cultural activities, this chapter provides practical insight into the possible uses of hunting dogs in the prehistoric world. Chapter 8 comparatively analyzes the data presented in the preceding chapters and discusses additional theoretical arguments for the use of hunting dogs in prehistoric forests. The concluding Chapter 9 provides a summary of the main conclusions of the study and suggests some future research directions.

To summarize, the aims of this thesis may be stated as follows:

- To develop a typology that allows for the mortuary treatment of prehistoric dogs to be analyzed in a way which is objective and cross-culturally valid
- To use this framework to identify and analyze analogous occurrences of intentional dog burials to create a dataset which can then be compared on a global scale
- To further compare the archaeological, environmental, and cultural histories of regions which have parallel incidences of intentional dog burials (the midsouth United States, northern Europe, and eastern Japan)
- To analyze the use of dogs as hunting weapons, through modern and ethnographic records, specifically in temperate deciduous forest environments with ungulate woodland prey species
- To assess whether the parallel occurrence of early Holocene dog burials in three unrelated regions is the result of dog-focused hunting adaptations, due to rapid environmental change

The broad scale of this thesis places restrictions on the level of detail it is possible to cover. It does not attempt a full scale analysis of the archaeology, palaeoenvironmental change, and cultural phenomena of any of the regions discussed, each of which would require many theses in their own right, but instead seeks to organize and examine the data in a way that allows larger trends to emerge. It seeks to investigate possible parallels between (a) the

economy and cultural practices of emergent complex hunter-gatherers in the early Holocene; (b) adaptations in hunting strategies associated with the post-Pleistocene deciduous forests (and their accompanying ungulate prey species) in the northern temperate zone; and (c) the intentional, individual burial of dogs during this time period.