Over The Horizon: Human-Animal Relations in Bronze Age Crete

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Ph.D.

2009
Abstract

The iconography of Bronze Age Crete has long been noted for the abundance of animal imagery. The excavator of Knossos, Sir Arthur Evans, explained these depictions in terms of ‘nature-loving Minoans’: as part of the reassessment of long-held concepts in ‘Minoan’ archaeology this thesis offers a different framework for considering animals in Bronze Age Cretan material culture. Drawing on the interdisciplinary field of ‘animal studies’ it provides a perspective which foregrounds human-animal relationships, rather than the prevailing one-sided view in which humans impose meanings on animals. The affordance concept, in which meanings arise from interaction, offers a balanced way to consider the relations between humans, animals and material culture. Sealstones, frescoes, zoomorphic figures, ceramic decoration, animal bones and written documents are all regarded as material traces of human-animal relations, each medium potentially implicated in different types of human-animal relationships or ‘animal practices’. Iconographic and statistical analysis are used to establish the potential significance of these traces: different types of animals are depicted in different ways and occur in varying frequencies in each medium. This demonstrates that they were used actively to convey information about animals rather than reflecting a passive interest in the natural world. The implications of this approach for an understanding of Bronze Age Cretan society are considered.
Acknowledgements

The following thesis germinated during the course of an MA at the UCL Institute of Archaeology in 2003-4 funded by the AHRB, continued funding from which (with an AHRC doctoral award) enabled this thesis to be written. I have benefited enormously from a number of Institute people, both formally and informally, and would like to thank the following for their help: Marilena Alivizatou, Rose Baines, Camilla Briault, Lesley Bushnell, Jo Cutler, Maria Dikomitou, Rachel Fentem, Francesco Iacono, Robert Kirby, Borja Legarra, Kristin Leith, Gabe Moshenska, Margarita Nazou, Tobias Richter, Rachel Sparks, Ken Thomas, David Wengrow, Lefteris Zorzos. My thanks too to Anja Mansrud, Kristin Oma and Dave Orton for their discussions of human-animal relations and conference planning skills.

Walter Müller kindly approved the use of a large number of CMS images in this thesis, and Emily Bonney and Marika Zeimbekis kindly gave me permission to quote from their unpublished theses. I would also like to thank Marika for helpfully sharing her knowledge of Aegean matters with me, as well as John Bennet, Kerry Harris, Effie Gemi-Iordanou, Erin McGowan and Jacke Phillips. I am indebted to Olga Krzyszkowska for generously sharing her knowledge of seals with me.

The latter stages of writing the thesis have been somewhat hectic, and I would like to thank Lesley Fitton and Paul Roberts for their forbearance in the last two months.

A number of people have seen the thesis through from start to finish. I am extremely grateful to Cyprian Broodbank for his continued interest in, and comments on, my work after co-supervising the MA dissertation. My supervisors were Louise Martin, Jeremy Tanner and Todd Whitelaw, whom I would like to thank wholeheartedly for their advice, encouragement and patience. My unambiguous thanks too to Todd for giving me the chance to escape to Knossos every summer. Above all, and not least for putting up with me going to Knossos every summer, I am grateful to Susie for her constant support and baking.
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Introduction

The naturalistic spirit of the Minoan animal forms is no new theme in this Work. (Evans 1935: xvii)

The animal forms of the Minoan goddess were manifold. Her visible presence is often indicated by perched doves, as in the early Columnar Sanctuary. On the painted Sarcophagus they are replaced by birds of raven-like appearance. Lions and pards are also seen in close association, and, as we know from the contents of the Temple Repositories described below, spotted snakes were her peculiar emblem in her chthonic aspect as Lady of the Underworld. (Evans 1921b: 447)

This thesis offers no new theme in the study of the Cretan Bronze Age, but rather re-examines one which is so familiar that it has come to be referred with the shorthand: “nature-loving Minoans”. It seeks to offer a new set of approaches with which to explain the frequent depictions of animals which have become emblematic of what Evans called the ‘Minoan civilisation’. In the popular, and scholarly, imagination these depictions have all too frequently been seen as joyfully expressing a love of the natural world, and as the second quote illustrates, inextricably linked with religion. The first step in a re-evaluation of this kind is to examine how certain ideas have taken hold, and there is no better place to start than the *Palace of Minos*, Evans’s monumental description of his discoveries at Knossos and his vision of the Minoans.

The questioning of disciplinary assumptions has marked the last decade of Minoan scholarship, most notably with an edited volume published amidst the centenary celebrations of the Knossos excavations. In his introduction Hamilakis (2002: 4) draws attention to the “persistent and popular conceptual schemes” which archaeologists have inherited from Evans and continue to uncritically apply to the Cretan Bronze Age. Terms such as ‘Minoan’ and ‘palace’ have come under scrutiny, with arguments that the latter should be replaced with the more neutral ‘court-centred building’ (Schoep 2002b). If there is one word at issue in this thesis, it is ‘nature’, a term which has not so much come under scrutiny in archaeology and the social sciences, as sustained bombardment, since it epitomises a Cartesian separation of the world (Coates 1998: 1-22; Thomas 2000: 82-4). These issues will be considered in Chapter 1, along with a review of what can be put in its place. For there is a danger that this attack on assumptions and favoured terms will simply leave a generation of archaeologists tongue-tied and suffering from postmodern angst rather than contributing to an understanding of the Cretan Bronze Age (for which ‘Minoan’ will continue to be used in this thesis as a shorthand).
As will be outlined in Chapter 1 this thesis draws upon a set of approaches termed ‘animal studies’, an interdisciplinary enterprise which highlights the often neglected role of non-human animals in human societies. This will be used as one way to break down the nature:culture boundary which has been imposed on the Minoan past, by focusing on the relations between animals and humans in a premodern social context. These relations, as will be suggested in Chapter 2, were mediated by material culture, which, along with animal bones, is also our primary source of evidence for human-animal relations on Bronze Age Crete. Just as there has been a move away from a nature:culture dichotomy in recent scholarship, there has also been a re-evaluation of the separation of mind and matter. These will be seen to come together in the ecological psychology of J.J. Gibson, whose affordance concept is central to the theoretical approach applied here. “Affordances are properties taken with reference to the observer. They are neither physical nor phenomenal” (Gibson 1979: 143). From this perspective the properties of the environment, whether of animals or plants or objects, emerge from the interaction between entities. The importance of this concept here is that it is flexible enough to apply to human-animal relationships as well as human-object relationships, and indeed both animals and objects will be considered in terms of their affordances in a given situation, whether at the moment of encounter or mediated by objects. This concept will be extended through Peircean semiotics, using both primary and secondary readings of this complex body of theory, but the aim has been not to stray too far from a concept which unites the consideration of the interactions between humans, animals and objects.

Chapters 3-7 examine the main sources of evidence for human-animal relations: documents, zooarchaeology, seals, vessels and frescoes. Their separation into different chapters is predicated on the idea that each type of evidence itself has different affordances and mediates or signifies relations with animals in different ways. A sealstone showing bull-leaping potentially affects the viewer in a different way from a relief fresco, and these different interactions will be explored; in short, a sealstone affords interaction mainly with the person who uses it to make an impression, whereas a large number of people can potentially interact with a fresco, depending on its location. Drawing on a semiotic approach, each will be evaluated as potential ‘material traces of human-animal relations’. Summers (2004: 687) defines trace as “an indication of former presence and contact”, which is the same as an index in semiotic terms. The idea of traces is used to suggest that these media do not simply reflect human-animal relations, but are a constituent part of them.
There is a more pragmatic reason for separating the different classes of evidence, which is simply that there are sub-disciplinary boundaries which need to be acknowledged in the study of each type of material. There is an inevitable problem that, even within Minoan archaeology, texts, for instance, tend to be studied by different people, and with a different set of questions and assumptions, from pottery. If everything was published to the same standard, preferably as part of integrated site reports, this would not be so much of a problem, but this is not the case. Whereas the study of sealstones, for instance, has benefited from an approach co-ordinated by the Corpus der minoischen und mykenischen Siegel [CMS] project in Marburg, there is no such commonality of purpose in the study or publication standards of zooarchaeology for instance. This means that each class of evidence needs to be understood in terms of its own analytical, interpretative and publication traditions before being compared with other types of evidence, otherwise comparisons become meaningless. The fact that the longest chapter in the thesis covers seals can be seen as partly the result of the high quality of evidence available, in addition to the abundant animal depictions on this medium.

One of the main concerns in each chapter will be to establish a sample which allows the frequency of depictions of different types of animals to be quantified. In each chapter the relevant publication traditions are examined, as well as some of the assumptions that are particular to each sub-discipline. One of the contributions of this thesis is to establish a basis for comparison between different classes of evidence, based on the quantification of animal representation in each. This allows a comparison based on the proportion of animals in each class, overcoming the problem that there are hundreds of seals depicting animals for every fresco, but conversely, that almost every fresco fragment has been published while a shockingly small number of clay animal figurines has ever been properly published. Where possible, statistical analysis will be employed, but, again, the quality of data differs between different classes of evidence. Whereas statistical tests are used to establish patterning in animal depictions on seals in Chapter 5, in Chapter 4 they simply reveal the biases in the zooarchaeological evidence.

This is not the first attempt to compare different types of evidence depicting animals from Bronze Age Crete, although it is the first broadly-based attempt at quantification, however incomplete. Indeed one of the remarkable aspects of the Palace of Minos is the way in which Evans integrates the various classes of material in a seamless account; some of his insights will be highlighted in this thesis since he often did see the connections which have been obscured by the subsequent development of sub-disciplinary specialisations. The most comprehensive comparison has been Vanschoonwinkel’s
(1996) catalogue of animal depictions from Bronze Age Crete, which includes evidence from a variety of material culture types. Other accounts have examined depictions of particular animals from various sources, most notably Bloedow’s (2003) extensive treatment of goat depictions. Without denying the usefulness of these accounts, it is worth quoting the first line of one and a line from the abstract of the other to illustrate the necessity of taking a new approach to this topic in this thesis: “La nature a toujours été une des principales source d’inspiration pour les artistes minoens” (Vanschoonwinkel 1996: 351); “The principal significance of such a popular motif is that Capra aegragus cretensis provides additional insight into one of the most basic features of Minoan culture: a profound interest in and enjoyment of the natural world” (Bloedow 2003: 2).

The common assumption that nature is a separate entity which inspired the Minoans to produce depictions of animals will be replaced in this thesis with a focus on the interactions between humans, animals and objects.

Hamilakis has recently argued for the great potential of zooarchaeology, in the broadest sense, in the study of the Aegean Bronze Age: “The realization of this potential, however, would require the exploration of a diverse data base from bones to iconography, but also the deployment of insights from historical, ethnographic and anthropological sources and thinking” (Hamilakis 2003: 245). This thesis attempts to do exactly that, by combining these diverse types of evidence, but also seeking to draw on the insights of anthropology and animal studies.

Following the first two theoretical chapters, the aim has been to structure each chapter in the same way, with an introduction which tries to locate the study of that class of evidence in the history of scholarship, but also looking forward to how the theoretical approach of the thesis will be employed. It is followed by a review of previous approaches: as mentioned above, there is enough divergence in publication traditions and sub-disciplinary assumptions for this not to become too repetitive, although the idea of naturalism does recur frequently. Since the understanding and explanation of naturalism in its various material guises is one of the central themes of the thesis, it merits exploration from different angles in various chapters. Each review sets up the analysis, which seeks to quantify the different occurrences of animal types in each medium over time and space. The evidence has been collated and analysed using an Access database, which will be described in the seals chapter (Chapter 5). This is because it is the first chapter to analyse what can broadly be seen as the artistic evidence, which raises particular issues of data classification and entry. It also allows it to be situated within a discussion of other databases of Cretan Bronze Age archaeology, the most theoretically
explicit of which have been based on seals. The final chapter, Chapter 8, seeks to overcome some of the constraints imposed by separating the classes of evidence in previous chapters by integrating the discussion according to animal type. It also allows a broader discussion of the human-environment relations in Bronze Age Crete, framed by a consideration of the Mediterranean and Cretan ecosystem. Whether or not they were aware of it, most of the animals with which Bronze Age Cretans interacted with were introduced by their ancestors at the start of the Neolithic, or, in some cases, during the course of the Bronze Age. Most of the animals they depicted, however, were outside of the domestic sphere. Ultimately this is the most powerful argument against a ‘nature’ observed by the Minoans because they were engaged in the continual reshaping of an anthropogenic island environment. The other main argument against the ‘nature-loving Minoans’ comes by looking at how small a proportion of the island fauna the Bronze Age Cretans actually depicted. The central argument of this thesis is that the affordances of different types of material culture enabled relations with animals to be employed in social relations in a variety of ways. In many cases encounters with exotic animals from different ecosystems, or marine animals from a different environment, were more socially important than relations with domestic animals, particularly as elites emerged during the course of the Bronze Age. Minoan human-animal relations were not restricted to Crete in the Bronze Age but, mediated by a variety of material traces, extended under the sea and over the horizon.
1 Human-animal relations in the social sciences

1.1 Why Look at Animals?

1.1.1 Introduction

Animals came from over the horizon. They belonged there and here. Likewise they were mortal and immortal. An animal’s blood flowed like human blood, but its species was undying and each lion was Lion, each ox was Ox. This – maybe the first existential dualism – was reflected in the treatment of animals. They were subjected and worshipped, bred and sacrificed (Berger 1980: 4-5).

John Berger’s influential essay, “Why Look at Animals?”, has become an origin myth for students of human-animal relations, and offers a starting point for considering the animals of the Cretan Bronze Age. His central thesis is that with the advent of capitalism animals have disappeared, both literally and metaphorically, from people’s lives. Before this rupture he argues, “They were with man at the centre of his world” (Berger 1980: 1). Though we can go to a zoo to look at animals, the marginalised animal no longer looks back, inured as it is to the visitor’s presence. In a typical premodern encounter, however, animals returned the gaze, revealing that they were both similar and dissimilar, sentient but not endowed with language. From this comes the dualism at the heart of human-animal relations: that animals are “both like and unlike man” (Berger 1980: 4). The quote above illustrates why animals, according to Berger, were “the first metaphor”, the individual animal mortal like a human, inviting comparison, but as a species, outside society, different. According to Berger (1980: 9), only with the thinking of Descartes did the animal’s significance start to be displaced. When looking at Bronze Age animal depictions, then, we should acknowledge that animals have disappeared from our own society. Yet looking is not straightforward: Berger himself is looking at animals through the eyes of Claude Lévi-Strauss. What appears as a narrative of the disappearance of animals from modern life, encapsulated in the act of looking, is inevitably grounded in a modern theoretical position. While Berger (1980: 3) suggests that there is “a narrow abyss of incomprehension” between human and animal, we should not overlook a similar abyss between our understanding of animals and our interpretations of the animal-focused material culture of the past. Key to understanding the nature of, and potentially bridging, the abyss is to examine the recent literature on human-animal relations and place the act of looking at animals in a theoretical context.

Berger’s vision of a premodern Arcadia with animals at the centre of human society has drawn the approval of at least one recent archaeologist, who also draws on the opening
quote. As Marciniak (2005: 39) suggests, “The multiplicity of human-animal relations, their symbolism and association with the social domain, ritualised practices and classification systems have hardly been tackled in archaeological literature”. Yet the study of human-animal relations has developed considerably in the wake of Berger, with contributions from a number of disciplines, alongside a shift from structuralism to post-structuralism. At the same time his epigrammatic treatment of anthropological thinking about animals has echoed through the literature, and his essay continues to be discussed (recently Burt 2005). Furthermore he put human-animal relations in historical perspective, and he remains one of the few writers to consider a past before the stirrings of modernity when examining recent human-animal relations. There are, however, notable accounts of human-animal relations in Britain before and after the Industrial Revolution (Ritvo 1987; Thomas 1983). Recently Ingold (2001: 188) has argued that there is a need for “a more long-term and geographically inclusive vision” in the study of human-animal relations. With the launch of two specialist journals, Anthrozoös in 1989 and Society and Animals in 1993, ‘animal studies’ has grown in prominence (Rowan 1989; Schapiro 1993). Among the few archaeological papers they have attracted is a valuable, but brief, view of human-animal interactions in the Palaeolithic, covering the diversity of different relationships with animals apparent during the course of human evolution (Mithen 1999). The contribution of archaeology to animal studies can be to show that there is not one premodern, or even post-Palaeolithic, set of human-animal relations, but rather a diversity of societies and contexts against which to compare our various modern or postmodern relations with animals. There is a need for a dialogue between archaeology and animal studies, to question the assumptions of archaeologists, provide insights into past human-animal relations, but also to add a longer and more nuanced time depth to animal studies, as well as cultural diversity. The Cretan Bronze Age provides an ideal vantage point, with a long sequence of animal depictions, documents and zooarchaeological remains, with which to compare more recent accounts of human-animal relations and ask what is like and unlike in our relations with animals.

1.1.2 Anthropology and Structuralism

In anthropology there is a long history of studying human interactions with animals which Berger was able to draw upon, and his essay acts as a pivot between the anthropological approaches he discusses and the work of recent cultural theorists who draw inspiration from the essay. Claude Lévi-Strauss is a central figure in the study of human-animal relations, since his book, Totemism, evaluated the different explanations for the significance of animals in the ethnographical literature before proposing a new
explanation. He suggested that totemism had come to stand for a confusion between humans and nature, marking a lower stage of cultural evolution. Against anthropologists such as Frazer, Radcliffe-Brown and Malinowski, he argued that totemism was simply an example of a mode of thought. Rather than marking a confusion between humans and animals, the use of animals and plants in genealogies, or to label social groups, was an example of a metaphorical way of thinking.

The term totemism covers relations, posed ideologically, between two series, one natural, the other cultural. The natural series comprises on the one hand categories, on the other particulars, the cultural series comprises groups and persons. (Lévi-Strauss 1963: 16)

He suggests that animals and plants, in having both a categorical (i.e. Lion) and particular (lion) identity are appropriate metaphors for the individual’s relation to society. By this he means that it is possible to see oneself as belonging to a group without losing one’s individual identity. As he elaborates in The Savage Mind, animal and plant species provide the premodern individual with “the most direct manifestation he can perceive of the ultimate discontinuity of reality” (Lévi-Strauss 1966: 137). These recognisably distinct phenomena provide a parallel, metaphorical, set of entities with which to understand social reality. It is not people’s interactions with animals and plants which give them their meaning, but simply their differences. As he famously argues:

The animals in totemism cease to be solely and principally creatures which are feared, admired or envied: their perceptible reality permits the embodiment of ideas and relations conceived by speculative thought on the basis of empirical observations. We can understand, too, that natural species are chosen not because they are “good to eat” but because they are “good to think”. (Lévi-Strauss 1963: 89).

In The Savage Mind Lévi-Strauss broadens this observation to outline a theory of concrete thought, in which the significance of animals is again related to their position in the system of differences rather than their intrinsic qualities, or as a result of people’s interactions with them. Totemism becomes a part of the process of classification, and the same animal can have a different significance in different cultures. At the centre of Lévi-Strauss’s theories is the workings of the human mind, and the animal becomes a useful, but essentially arbitrary, sign, a “totemic operator” (Lévi-Strauss 1966: 151). His work has been hugely influential in the study of animals, opening the way for a number of anthropologists to describe how animals are “good to think”.

The arbitrariness of the animal sign is also apparent in the work of Mary Douglas. As she suggests: “No doubt the first essential procedure for understanding one’s environment is to introduce order into apparent chaos by classifying” (Douglas 1975: 32). She explicitly follows Durkheim, in suggesting that reality is socially constructed by the group, a view which creates a one-way human-animal relationship (or rather a human-human relationship), in which the mind gives meaning to the natural world, which otherwise
exists as a sort of formless chaos. The consequence of this activity is the production of anomalies, most notably in her work the pangolin, which is sacred to the Lele because it has scales like a fish (and so belongs to the watery abode of the spirits) but lives in the forest. According to the Lele it also gives birth to single offspring, making it similar to humans. Such an anomalous animal becomes the ritual focus of the culture not because of its intrinsic characteristics *per se* (one would not necessarily predict that the pangolin would be classified as a fish), but because of its position in a system of classification (Douglas 1990: 25). Recently her work has been cited by Zeimbekis (2005) in her analysis of the Xeste 3 fresco paintings at Late Bronze Age Akrotiri, who suggests that Douglas’s ethnography of the Lele is an appropriate analogy to use. In particular she argues that ducks and dragonflies are marginal animals, living at the interface of water and air, making them appropriate symbols for the ‘goddess’, on whose necklace they appear. But Zeimbekis’s work also illustrates the difficulty of applying Douglas’s approach to a prehistoric society since, in the absence of informants, she considers modern zoological observations of duck and dragonfly behaviour, for instance their flight patterns, to argue for their marginality. In contrast Douglas relies on her informants for her knowledge of the pangolin, and points to its arbitrary classification as a fish. Zeimbekis, then, relies on a phenomenological account of the animals in order to show why they appear on the goddess’s necklace rather than a social explanation. She does follows Douglas’s emphasis on classification in saying that “I aim to show how zoological knowledge and animal classification were employed to produce a set of symbols in order to convey cosmological ideas, and metaphysical ideas connected with the divine world” (Zeimbekis 2005: 245). But in her account zoological knowledge is to some extent independent of cosmological ideas, even though her starting point is the connection made on the fresco between ducks, dragonflies and reeds. She criticises those who see the ducks and dragonflies solely as attributes of the goddess, pointing instead to their existential link to marshland. This tension in her paper is reflected in the debate between what Morris (1998: 133) sees as the ‘cultural idealism’ of those in the broadly structuralist tradition, including Douglas, and more phenomenological accounts. The question is whether the depicted ducks and dragonflies are ‘totemic operators’ in the mind or the product of an engagement with the real world.

The tension between cultural idealism and phenomenology raises an important question within human-animal relations, and that is whether it is possible to encounter an animal unmediated by culture, and so whether the human-animal encounter is culturally relative or has a universal aspect. A scholar straddling this debate is Roy Willis, who is a self-declared structuralist, but whose conclusions in *Man and Beast* are slightly more
ambiguous. The analysis, however, epitomises the structuralist tradition. Willis’s analysis of the meaning of animals in three African cultures is highly metaphorical: it is only afterwards that he asks why animals should be chosen as metaphors. His approach is to try to reduce the meaning of the most important animal in a culture to a reflection of a central tenet of that culture. Using Douglas’s work for one of his ethnographic examples, he interprets the meaning of the Lele pangolin cult as, “the transcendence of individual differentiation in pure communalism” (Willis 1975: 8). He sees the pangolin as the ultimate expression of the holistic view the Lele have of village and forest, expressed in the communal hunt. The pangolin symbolises the power the forest has over the village. In contrast the Nuer conceive of wild animals as belonging to a parallel lineage to their own; the ox is the key symbol for them, as specifically a castrated bull, it mediates between society and nature. So whereas the Lele see wild animals as significant, the Nuer focus on an animal which has been modified to become part of society. Another African society, the Fipa, have a practical approach to wild animals, or rather ‘dangerous animals’, evaluating whether they are useful or not to society. The python is a key animal because it is brought into society and looked after by priests, symbolising the absorption of outside influences into Fipa society; its meaning, “pure becoming, or developmental change, both social and personal” (Willis 1975: 9). This illustrates the problem of the animal metaphor: it frequently has little to do with the animal itself.

Willis does ask, however, why animals are so frequently chosen as cultural symbols:

The crux of the explanation of the apparent universality as images of profoundest symbolic significance would seem, I argue, to lie in the fact that ‘the animal’ is both within us, as part of our enduring biological heritage as human beings, and also, by definition, outside and beyond human society (Willis 1975: 9).

In this he goes beyond a consideration of the metaphorical significance of animals by highlighting the metonymic aspect of human-animal relations, that is the biological, or phenomenological, continuity between humans and animals. This helps to explain why humans should choose animals as tools of thought: for Lévi-Strauss they happen to be a useful analogy for society, but for Willis their relatedness to humans makes the analogy an appropriate one.

The distinctive peculiarity of animals is that, being at once close to man and strange to him, both akin to him and unalterably not-man, they are able to alternate, as objects of human thought, between the contiguity of the metonymic mode and the distanced, analogical mode of the metaphor (Willis 1975: 128).

In other words, animals are both like us and not like us, but how this basic idea is expressed in any one society varies considerably. Berger quotes Man and Beast in his essay, so his debt to Willis, as well as Lévi-Strauss is clear. But Berger’s epigrammatic
prose, in contrast to Willis’s structuralist jargon has helped to give these ideas wider
circulation. As Berger put it:

Animals are born, are sentient and are mortal. In these things they resemble man. In their
superficial anatomy – less in their deep anatomy – in their habits, in their time, in their
physical capacities, they differ from man. They are both like and unlike (Berger 1980: 2).

Willis (1990) developed this idea into what he calls ‘oppositional complementarity’, in
which the opposite terms ‘human’ and ‘animal’ or ‘nature’ and ‘culture’ are
simultaneously distinct, but are also connected as the two opposite terms in a whole. He
argues that whereas Lévi-Strauss sought to deny the existence of the ‘totemic illusion’
that led to the confusion of human and animal in ‘primitive’ societies, our own society is
now entering a ‘neototemistic’ phase. In other words totemism is not just the product of
concrete thought, but reflects the enduring significance of animals in human culture. This
neototemism is the result of the science of ecology reinstating the links between humans
and animals downplayed by modernity. It is the metonymic, rather than the metaphorical,
aspect of animals that is important here: connectedness rather than difference.

1.1.3 Sociology and Post-Structuralism

Anthropological thought flows into the recent theoretical focus on human-animal
relations. Franklin (1999) suggests that sociologists and historians have followed the path
of structural anthropologists in arguing that animals are used in the modern world to
“signify or encode social thought”. The significance of animals, he suggests, is that:
“Animals are uniquely positioned relative to humans in that they are both like us but not
like us” (Franklin 1999: 9). Although his analysis clearly draws on anthropology, this
illustrates that thinking about animals need not be compartmentalised into different
disciplines, but rather that ‘animal studies’ can cross-cut subject boundaries. For
archaeology it has the potential to become a two-way process which involves a
consideration of how modern attitudes to animals have shaped archaeological thought and
how studying past human-animal relations can inform current thought. One can use
Franklin’s analysis both to situate the thought of scholars such as Arthur Evans but also
ask more general questions including the role of social change in changing human-animal
relations. As Franklin (1999: 2) suggests:

For any one culture the ‘animal world’ is never seen as an indivisible category, but as an
historically constituted and morally loaded field of meanings that derive from the human
habit of extending/imposing social logics, complexities and conflicts onto the natural
world, and particularly onto animals other than ourselves.

Franklin follows this social approach to human-animal relations by considering them
alongside theories of modernisation and postmodernisation, historical accounts of social
and cultural change. At the same time he identifies different, and often contradictory, currents of thought about animals to illustrate that there is no one modern, or postmodern, human-animal relationship. Following Tester (1991), he suggests that modern science created a demand for a differentiation of human and animal, but that the Romantic movement has continued to influence ideas about the essential unity of human and animal. These streams of thought have resulted in conflicting attitudes to animals, but he usefully suggests that one needs to examine how these relate to the different ‘sites’, or contexts, of human-animal relations, such as farming, tourism or pet-keeping. In general terms it will be useful to extend this idea to the Aegean Bronze Age: rather than look for one social logic concerning animals, it is worth trying to compare human-animal relations of physical ‘sites’, or ‘locales’ such as the palace, or more general ‘sites’ such as farming or hunting.

Franklin highlights a growing trend of misanthropy, which has its origins in Romanticism and Darwinian thought, but has emerged in reaction to the breakdown of the progressive ideas of modernity. Humanity has come to be seen in the West as its own worst enemy. This is reinforced by scientific evidence of the damage to the global ecosystem caused by humans, including the extinction of animals (Franklin 1999: 54). Looking at Minoan scholarship, one can suggest that the prevailing attitude is ‘Neo-Romantic’, an aesthetic idea of nature which was prevalent in modernity (Starr 1984). Postmodern thinking has eroded the boundaries between human and animal, leading Franklin (1999: 189) to echo Willis in identifying a ‘postmodern totemism’, which still contains an element of Romanticism. But these developments are unevenly distributed in society, between different sites and social groups; not everyone has become a vegetarian, and human-animal relations will continue to be diverse. Interestingly Franklin returns to the salience of the like us/not like us dichotomy in human-animal relations, but suggests that one side or the other can be emphasised according to social relevance. “What makes animals special, socially unique, in late modernity is the potential for animals to be like us and for the categorical boundary between human and animals to be blurred” (Franklin 1999: 194). As in Willis’s analysis the metonymic aspect of animals is used to balance more metaphorical meanings. This reinforces his argument that although relations with animals are historically and socially constituted, this does not fully explain why people become emotionally involved with their pets. As Serpell (1986) suggests, this emotional involvement with certain animal species is partly due to their characteristics and behaviour in interactions with humans: keeping dogs and cats is not a historical accident. Human difference from, or similarity to, animals is socially elaborated, but the animal
itself is not entirely socially constructed. This is not to deny that breeding and training affects the morphology of animals and the way they relate to humans (Tuan 1984).

This relationship between culture and the animal has continued to be a central question for post-structuralist scholars, for whom ‘the real’ is a problematic notion. Baker argues that the animal can only be understood through its representation, but at the same time uses the idea of de-centring the human subject, that is denying human pre-eminence, to argue for greater animal rights. Indeed this is the paradox underlying much recent work on animals: that modern society mistreats real animals, but that this reality (as opposed to representations of reality) is not directly accessible. Baker (2001: xvii) tries to escape this problem by arguing that:

To emphasize questions of representation is not therefore to deny any particular animal’s “reality,” in the sense of that animal’s actual experience or circumstances. Instead the point is to emphasize that representations have a bearing on shaping that “reality,” and that the “reality” can be addressed only through the representations.

Were it not for the animal rights agenda, the post-structuralist position would be more straightforward, and one can argue, as Mullin (2002: 390) does, that the perspective of anthropology stands apart from contemporary moral issues about animals, revealing the moral issues to be culturally specific. Franklin (1999) too suggests that the animal rights movement is a particular site of postmodern human-animal relations, largely at odds with other contemporary human-animal relations. Certainly the contribution of archaeology would seem to be to further illustrate the way human-animal relations vary between cultures and change over time, rather than naturalise a politically correct human-animal relationship. Nevertheless the relationship between reality and representation is a potentially useful question which will be explored further below. Yet there is a paradox in applying Baker’s post-structuralist position to the Aegean Bronze Age, which goes back to Berger’s thesis of disappearance. The animals Baker discusses, from Mickey Mouse to the Anchor Butter cows, or the animals of postmodern artists (Baker 2000, 2001), are the product of a society which is distanced from the relations with animals of a pre-industrial world. It is easier to argue that representation shapes reality in a society where anthropomorphic animated animals in television adverts are encountered more frequently than real cows.

It is the historical dimension of Berger’s essay, Baker suggests, which accounts for its continuing importance, since it is one of the few contributions to the study of animals to consider the interplay of the real and symbolic: it is the encounter with the real animal which results in its symbolic power. Baker challenges Berger’s notion of disappearance since animals have not disappeared from the modern city, and indeed pets have
multiplied. Instead he notes that our interactions with animals are now highly visual, and that there is a “space of representation” which shapes our attitude towards them (Baker 2001: 27). His post-structuralist line of argument leads him to suggest that representation operates independently of the living animals which are apparently represented. He applies the concept of metaphor and metonym not to animals, as Lévi-Strauss did, but to animal images (Baker 2001: 84). Metaphorical images, he suggests, tend to be therianthropic, giving the human form animal features to suggest difference. The animal features suggest that the represented human deviates from the norm. In contrast metonymic images, where the animal is connected with identity, tend to be straightforwardly animal, or theriomorphic, so that national symbols, such as the lion or kangaroo are associated with the people of the country. Baker (2001: 50-4) discusses ‘Bulldog Bobby’, the theriomorphic mascot of the 1982 England World Cup team. That the coach carrying the England squad for the 2006 World Cup bore the logo “One nation, one trophy, 11 lions” underlines Baker’s argument. The connection between the England football team and lions, derived from the historical use of lions as a royal heraldic animal, is not open to scrutiny, but taken for granted, naturalised; the bulldog has been forgotten. It shows that ‘the lion’ has become disengaged from the living animal that the majority of English people will have encountered in a zoo. Baker (2001: 177) terms this process ‘disnification’, which he defines as “common sense’s construction of the visual reality of the animal”. The lion of the England team, and that of Disney’s Lion King inform people’s image of the lion sleeping in the zoo without the contradictions between these images becoming apparent; only press stories about animals attacking zoo intruders challenge the cultural construction (e.g. MacDonald 1994). As a result of disnification, Baker (2001: 174) argues, “The animal is the sign of all that is not taken very seriously in culture; the sign of that which doesn’t really matter”. He is perhaps overstating the case, since football fans often take the lion imagery seriously, but the connection with real lions is tenuous. One could argue that the significance of the lion is reversed in the Bronze Age. Whereas few people would have seen a lion, the frequency of lion depictions in a variety of media suggests that the image does matter. And it matters precisely because the image is a part of the practice of lion hunting which is distributed through depictions, giving it a wider currency among people who have never seen a lion or a lion hunt. One contribution of post-structuralism is to highlight the operation of the disnified images of the present¹ as a challenge to thinking about images from a different cultural and historical context.

¹ The Priest-King fresco from Knossos is an excellent example of the disnified image. Its authenticity has been challenged, but it appears everywhere on Crete, from tourist merchandise, to postage stamps, to the chimney of Minoan Lines ferries (Hamilakis 2002: 3). The challenge is to
1.2 Recent anthropological approaches to human-animal relations

1.2.1 Symbolic ecology

One way to think about animals in a different context is by turning back to anthropology, which can help to put the human-animal relations of postmodernity into perspective. As Descola and Palsson (1996: 7) note, many anthropologists have abandoned notions of a dichotomy between society and nature as a result of their interaction with societies for whom there is no such distinction. One of the few to consider the implications of this for studying the historical dimension of human-animal relations is Ingold (1994: 18):

> Adopting an indigenous perspective, my contention is that the transition in human-animal relations that in western literature is described as the domestication of creatures that were once wild, should rather be described as a transition from trust to domination.

Contrasting hunters, who ‘know’ the animals they hunt, with pastoralists, who look after them, Ingold’s history highlights the different kinds of relations between humans and animals, depending on domestication. Clearly the shift to farming did have a profound effect on human-environment relations, but Ingold’s generalisations are of questionable use since his indigenous perspective is that of the hunter-gatherer. To suggest that farming is based on domination rather than trust betrays a simplistic and ultimately false idea of what looking after domestic animals entails, and indeed Ingold has more recently moved away from this binary opposition, while still suggesting that there was a shift in the terms of engagement (Ingold 2007). Serpell (1986) too sees domestication as a fundamental shift, but argues that having control over an animal need not result in domination. The history of human-animal relations, then, is not to be found simply by contrasting hunter-gatherers with the Western world. Indeed Knight (2005: 4) reverses Ingold’s description of human-animal relations by arguing that hunters only ever know animals generically whereas herders have specific relationships with their animals. Yet the idea that anthropological perspectives can be used to understand the human-animal relations of the past is worth pursuing, as are the different kinds of relationships that herders have with animals (whether domesticates or wild animals) compared to hunter-gatherers.

It is this distinction which Philippe Descola has recently employed to extend his work on human-environment relations in an Amazonian horticultural society, the Jivaro, and propose a universal framework for understanding the way in which societies might conceptualise their environment. A student of Lévi-Strauss, Descola can be seen as

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use the in-situ replica at the reconstructed Palace of Knossos as a starting point for a new set of questions, such as what the function of relief frescoes was in a palatial setting (see Chapter 7).
continuing the structuralist tradition with the model he termed ‘symbolic ecology’ (Descola 1992, 1996). In response to criticism that his scheme rendered human-environment relations as socially determined, he has more recently centred his scheme on the way in which the perception of the properties of non-human entities determines their place in a set of relations. As he suggests:

Now a system of relations cannot be understood independently from the elements it connects, provided these elements are taken not as interchangeable individuals or already institutionalised social units, but as entities that are endowed *ab initio* with specific properties that render them able or not to establish certain links between them. (Descola 2006: 139)

Whereas previous anthropological approaches have tended to regard animals in terms of their categorisation by society, following Durkheim, here Descola is arguing that the properties of animals, or trees, or any other entity, in part dictate the relations humans have with them, which is of particular relevance in terms of the affordance perspective to be outlined in Chapter 2. Descola, however, is more interested in the human side of the relationship, exemplified by his use of the word identification, defined as:

the elementary mechanism through which this subject will detect differences and similarities between himself and objects of the world by inferring analogies and distinctions of appearance and behaviour between what he experiences as characteristic of his own self and the attributes he ascribes to the entities which surround him. (Descola 2006: 140)

Nevertheless, his approach opens the way for a consideration of the role of animals in human societies in which the animals are not reduced to figures of a culturally idealistic system.

Starting with the premise that humans perceive others (human or non-human) in terms of their own ‘physicality’ and ‘interiority’, roughly body and mind, Descola has argued that there are four possible ‘modes of identification’. In this scheme ‘totemism’ rests on the sharing of both, ‘animism’ on the perception of a shared interiority but different physicality, and ‘analogism’ on the sharing of neither (Descola 2005: 176, 2006: 140-1). Naturalism is predicated on the relatedness of all life forms which is fundamental to biology (shared physicality), and the use of features such as culture to set humans apart from other animals (distinct interiority). He defines naturalism as “simply the belief that nature does exist, that certain things owe their existence and development to a principle extraneous both to chance and the effects of the human will” (Descola 1996: 88, 2006: 146). This mode of identification he sees as the modern Western one, which sees nature as a domain separate from culture.
Descola argues that there is a primary mode of identification in any one culture, which provides the dominant ontology within which relations between humans and non-humans (including animals and plants, but also spirits or what we might perceive as inanimate objects) are enacted. These ontologies are realised in what Descola, borrowing from Latour, terms ‘collectives’, “a way of assembling humans and non-humans in a network of specific relations” (Descola 2006: 147; Latour 1993). In a naturalist ontology this equates with human society, but other ontologies result in different collectives. Descola has focused on the way in which modes of identification are articulated by characteristic ‘modes of relation’ such as predation or protection, but suggests that other dimensions of experience such as spatiality, temporality and figuration are also important (Descola 2005: 166-7). This is particularly the case in farming societies, where two typical modes of relation, protection and transmission, introduce a spatial and temporal dimension respectively into the way in which humans interact with animals (Descola 2005: 445-58): whereas hunter-gatherer societies are involved in a form of fluid exchange with the environment, in farming societies land and animals are divided up and passed down the generations.

The mode of identification which Descola applies to premodern Europe and other stratified societies he terms analogism: “the analogic collective is always divided into interdependent constitutive units which are structured according to a logic of segmentary nesting” (Descola 2006: 152). The Medieval European Great Chain of Being is one example of analogism, in which order is imposed on a multitude of distinct entities. Here the modes of relation are production, protection, and transmission (Descola 2005: 439-58). The implications of this for Bronze Age Crete will be considered below. In any case Descola’s symbolic ecology usefully broadens the debate, describing other ways of identifying the world than ‘naturalism’ and makes the important point that it is the relations between people and their environment that determine how they conceptualize ‘nature’.

1.2.2 What is an animal?

Ingold’s (1988) response to the question posed by the title of his edited volume, ‘What is an Animal?’ was that each paper in it gave a different answer: the question assumes a different significance depending on academic discipline. Before going further, it is necessary to explore whether the term ‘animal’ loses its meaning in a broader ethnographic and historical context. Descola, for instance, uses the term ‘non-human’ to include the various entities humans might perceive and interact with in their environment.
As Knight (2005:12) argues, the category ‘animal’ is problematic: its breadth conceals differences between animals, differences which affect the way in which they interact with humans. The term ‘animal’, although of utility, needs to be used circumspectly so that individual animals of different species are not always subsumed into a discussion of ‘the animal’. Many writers in animal studies choose to use the term ‘non-human animal’ to show that the term includes humans, but its inclusivity can blur the real differences between animals that are of such cultural salience; humans are both like and unlike other animals. The bars of a zoo help to reinforce categories of ‘human’ and ‘animal’ but this should not allow us assume that lions, bulls and scorpions were seen in the same way in Bronze Age Crete, or rather in different places, by different people, within Bronze Age Crete.

Morris’s (1998) ethnography offers one account of animal categorisation in a farming society in Malawi, in which he attempts to steer between cultural relativism and over-generalisation. Rejecting Douglas’s account of the pangolin’s significance in a similar society he suggests that phenomenal types are perceived independently of symbolic concerns, but also criticises the formalist Berlin for suggesting that folk classificatory schemes are universal, and essentially independent of culture. Whereas Berlin (1992: 8-9) suggests that the differences between species are recognised independently of culture, Morris argues that Malawians’ classifications of the world are very similar to Western biologists’, illustrating a universal perceptual basis, but that “pragmatic and cultural concerns are not extraneous to phenomenological classifications, that they do influence the way ordinary people in Malawi classify the natural world” (Morris 1998: 167). Classification is therefore based on a modified phenomenology, so, for example, quadrupeds are grouped together on the basis of form, are also divided into categories based on whether they are edible and harmful (Morris 1998: 144-8). Hence edibility is an element in classification alongside phenomenological form. But this ‘pragmatic’ attitude towards animals and other life forms seen in classification is one of eight attitudes, including ‘realist, ‘aesthetic’ and ‘sacramental’, attitudes which are context specific, depending on whether the animal is encountered in the world, in poetry or in religious ritual respectively. Morris’s ethnography provides hope for archaeologists, since Malawian perception of animals is based on the same perception of different types as our own, but also a warning that human-animal relations are context-specific, diverse and even contradictory even within a culture.

From this point of view an animal can be defined to a certain extent phenomenologically, using the same criteria as biology. Science uses the same categories as a ‘common sense’
view of the world because different species of animals are perceptually distinct (Atran 1990). Yet this can be said of every species people might encounter in their environment, whether animal or plant. Here the basic distinguishing feature of an animal will be taken to be its animacy: as Reed (1988b: 112) suggests, whereas inanimate objects can be acted upon, animate objects interact. This distinction comes about from the application of the affordance concept, to be explored further in Chapter 2. This is the idea that the properties of different kinds of objects or animals are realised in their interactions, interactions which can also be mediated via material culture. And it is this mediation which provides a large amount of information about ‘animals’ in Bronze Age Crete, particularly via depictions, but also complicates the definition of an animal. Seal depictions show both horses and griffins pulling chariots, and so it can be argued that in this context these animals have equivalent affordances.

This approach has been used by Herva to suggest that in Bronze Age Crete depictions guided people’s perception of certain stones (baetyls) and trees in the real world, revealing them as animate:

What is being proposed here, in essence, is that the Minoans co-inhabited their everyday environment with manifold potentially living, conscious and sentient beings. Some were closer to humans in form and behaviour than others, but there is no reason to assume that the perceived agency of things was attributed to some ‘supernatural’ beings or forces external to things themselves – or that person-like non-human things were considered categorically distinct from the humans themselves. (Herva 2006b: 232)

It could be argued, then, that animacy need not be restricted to animals. Yet this is to assume the reality of the depiction: instead it can be seen as guiding perception of things as if they are animate, but whose affordances when encountered in the environment suggest that they are not. Some animals, such as griffins were never encountered in reality, but are depicted as having the affordances of an animal, and so can be categorised as such. Yet the perception of trees or griffins as animate is secondary to the knowledge of real interactions between humans and animals which can be drawn upon in the perception of art. The interaction when looking at a picture is not directly between person and animal, but between person and object. The relations between animals, humans and objects are thus central to this thesis, but each can be distinguished by their respective affordances. As will be argued below, one of the key features of Minoan animal depictions was at times the blurring of this difference, particularly in ‘naturalistic’ depictions.

A second objection can be made to the wider attribution of animacy, which goes back to Descola’s scheme. Herva envisages a form of animism, which Descola suggests is more
characteristic of the reciprocal human-animal relations of hunter-gatherers. In an analogistic scheme, the typical modes of relation of production, protection and transmission enact a worldview in which the world is divided into a multiplicity of separate entities. Here humans do not see themselves as equivalent to the animals and other objects with which they cohabit the environment (Descola 2005: 456-8). This is an argument based on the social relations which humans establish between themselves and animals, however, rather than a straightforwardly perceptual difference. But to return to affordances, it has long been recognised that certain animals are suitable for domestication, and others not (Clutton-Brock 1987). If it seems obvious that deer do not behave like sheep, but more like sheep than trees, this is the basis for both distinguishing the difference between animals and objects perceptually, and for an analogistic classification of the world.

1.3 The ‘New Animal Geography’: Place and Space

A new school of animal geography has emerged recently (Philo and Wilbert 2000b; Philo and Wolch 1998; Wolch and Emel 1995, 1998) offering a different way forward from a post-structuralist blurring of reality and representation. It began with a critique of what Wolch and Emel perceived as an anthropocentric social theory, in which, they argued: “Animals are signifiers, denied lives of their own” (Wolch and Emel 1995: 632). As Philo and Wilbert (2000a: 5) suggest:

If we concentrate solely on how animals are represented, the impression is that animals are merely passive surfaces on to which human groups inscribe imaginings and orderings of all kinds. In our view, it is also vital to give credence to the practices that are folded into the making of representations, and – at the core of the matter – to ask how animals themselves may figure in these practices.

The idea of animal practices has been used to elucidate the way in which racial differences are created in modern America (Elder et al. 1998). The authors suggest that animal practices are part of the social construction of human-animal difference, so that the animal practices of immigrant cultures in America can cause conflict because they violate the dominant culture’s idea of the human-animal divide. A concrete example they give is the case of a Hmong shaman, living in California, who ritually beat a puppy to death in order to use its soul to cure his wife. He argued that he performed release ceremonies for the animal souls he used, but was arrested for animal cruelty, and his case inflamed racial tensions. For most Californians, a puppy would be treated as part of the family, and the only person qualified to kill it would be a vet, animal practices which contrast sharply with the Hmong shaman’s actions. In suggesting that the human-animal
divide is realised, or contested, through specific animal practices, the authors usefully ground cultural ideas about the animal in social practice. They also draw attention to the place, or rather cultural context, in which these animal practices occur: the Hmong shaman’s actions are acceptable in Laos, but not in California. These animal practices are also located within power relations: “Policing the human-animal boundary through the regulation of animal practices is necessary in maintaining human identity and sustaining the legitimacy of the dominant group’s animal practices” (Elder et al. 1998: 195).

It is interesting to consider the idea of animal practices in relation to the Cretan palaces, and ask whether animal hunting or bull-leaping were used in the construction of identity and the maintenance of power relations. It is also worth considering the position of the animal in these practices: the bull-leap is a practice which does not just define the leapers, but arguably redefines the bull. The size and strength of cattle made them useful for both ploughing and leaping over, but the practice in part defines the animal’s identity, and probably distinguishes ox from bull (many bull-leaping depictions do show bulls rather than oxen). The non-domestic activity, the animal practice widely broadcast through material culture such as seal impressions, could act to defamiliarise the bull of the farmer and reclaim symbolic ownership on the part of the elite commissioning such depictions. Human-animal relations, and particularly different animal practices, can play a role in the formation of identity, whether in modern America or Bronze Age Crete.

Place is also central to the geographers’ account of human-animal relations, along with the related concept of space. Indeed, as Philo and Wolch (1998) suggest, consideration of animals in geography has oscillated between the two, starting with zoögeography, the study of animal distributions. This approach, associated with zoology and ecology, locates animals in an often dehumanised space, describing their natural range, but rarely considering individual animals’ lives. Recent advances in satellite tracking tend complicate this picture since there is a growing focus on the journeys of individual animals, although these too can be seen as marginalising the animal (Bergman 2005). The zoögeographical perspective contrasts with the approach above, in which a particular place, for instance the Hmong shaman’s Californian suburb, is important in the playing out of human-animal relations. Ecologists also focus on particular places, however, for instance when describing the fauna of a particular habitat. Yet in general the animals of ecology are quantified and located in geometric space, whereas human-animal relations tend to be described in terms of particular places.
The concept of space is used in another sense in recent work on animal geography, illustrated by Thorne’s (1998) account of the ‘kangaroo network’. She draws on Actor Network Theory (ANT) to examine the global trade in kangaroo meat. The kangaroo loses agency when killed by a hunter, and so the human-kangaroo relationship ends here. However, this particular event is located within a network which can best be described in spatial terms: the ‘killing spaces’ in the Australian outback, which is an imaginary, romantic space for most people who eat kangaroo meat rather than a set of places with which they are familiar. The decisions about kill quotas are made in what she terms ‘spaces of calculation’ which have a bearing on the moment of killing. Her point is that those who eat kangaroo meat, or devise quotas, are part of the network, and so partly responsible for the killing of a kangaroo, but her analysis relevant in illustrating how particular human-animal relationships can be part of much wider cultural networks.

ANT, developed in the context of studying the interactions between modern technology and culture, is arguably not entirely apposite to the study of human-animal relations, although the work of Latour has influenced the way in which Descola defines the human-environment relations of modernity (Descola 2005; Latour 1993: 129-30). In actor networks, agency is distributed between different entities in the network, so that animals need not be seen as passive in their relations with humans, but the same can be said of objects. This symmetry is illustrated in Callon’s (1986) account of the scallop industry of St Brieuc Bay, which usefully recognises the scallops as actors, but compresses differences such as those between the ‘representative’ scallop larvae studied by scientists and fishermen’s union representatives. As Philo and Wilbert (2000a: 16-20) suggest, ANT offers a way to discuss the agency of animals, overcoming the standard objection of anthropomorphism. At the same time they caution that the ‘otherness’ of animals should be recognised, but without necessarily subscribing to fixed boundaries between humans and animals in every respect. This means that, depending on context, humans, animals and objects are not necessarily equivalent within a network, a point which Knappett (2005b: 32) highlights in his discussion of ANT with respect to material culture networks. Instead animals, objects and humans each contribute different aspects to the network, and the relations between them cannot be reduced to the contribution of any one agent. From the point of view of Ingold (2008), however, this still underplays the role of the entities: he prefers to see a ‘meshwork’ in which the connections and medium for action also assume a reality. Thorne’s analysis can be applied usefully to Bronze Age lion hunting, but more its material results than the encounter itself, with trophies of the lion and depictions distributed through a wider material culture network. The ‘otherness’ of the
lion needs to be recognised as central to the significance of the encounter, rather than being subsumed within the idea of the network.

When studying human-animal relations there is already a powerful network perspective at hand, however, that is the Mediterranean ecosystem. This is the ‘space’ which will be explored from the point of view of Crete in the Bronze Age. That this can be integrated with ‘place’ is shown by an approach to the animal remains of Neolithic Orkney which takes advantage of phenomenological insights, but is also aware of cultural context. Jones (1998) examines the links between human-animal relations and social practice, and shows an awareness of place, parallelising the work of the animal geographers mentioned above. He argues that animals were associated with particular places in the landscape, that is, their natural habitats. This is reflected in their deposition, so that sea eagle remains tend to be found in upland tombs, whereas whale remains are found in the coastal settlements. As he argues:

It would seem that animals are deposited in certain places according to a set of topographic and symbolic principles and it seems likely that the combination of different animal deposits in any one place represents a conceptual map of the resources located in any one part of the landscape (Jones 1998:315).

He draws on Riegner’s phenomenological ecology, in which animals are not just associated with place, but rather animal morphology can be read as a part of the landscape: marine mammals, for example, often have a rounded aquatic form. The implication of this is that humans do not arbitrarily impose meanings on animals; instead an animal’s significance is revealed by looking at its body, “a way of seeing that seeks to experience the whole as it comes forth through the parts” (Riegner 1993: 212). Jones’s study illustrates that these same links were made in Neolithic Orkney: a study of animal bone deposition can start to reveal how animals were perceived. Whereas structuralism would suggest that the sea eagle’s meaning is culturally-specific, Jones suggests that there is an ecological background to their deposition in the highest points in the landscape.

A phenomenological ecology is of particular relevance to animals which were imported to the Crete in the Bronze Age, whose bodies would reveal their origin in a different ecosystem, somewhere over the horizon. Monkeys are not native to Crete, but were traded and kept as pets in the Bronze Age Mediterranean (Greenlaw 2006). If, as will be argued in Chapter 7, they were brought to Crete, the human practice of importing monkeys and the monkey’s liminal identity on Crete arose from the distribution of species in the Mediterranean Basin. The frequent depictions of marine animals on pottery and other media in Bronze Age Crete could be using the animals’ form to stand for the underwater world, particularly the sinuous tentacles of the argonaut and octopus. Philo
and Wilbert (2000a: 20) make a further distinction between ‘animal spaces’, the conceptual location of animals in cultural orderings, for instance an association between wolves and wilderness, or monkeys and palaces, and ‘beastly places’, “as lived by the animals themselves”, either apart from human intervention, or transgressing where they are meant to be. One example of this is the rodent remains recovered from Cretan archaeological contexts which, unlike those of other animals, got there without human agency (Payne 1995).

1.4 Conclusion: Reality and metaphor

The foregoing discussion has examined the dialogue about human-animal relations within the social sciences. The study of animals in anthropology has a long history, but Berger’s essay was one of the first applications of these ideas to our own society. His notion of disappearance provides an important historical dimension, suggesting that a close premodern relationship between humans and animals has been replaced with one of distance (Burt 2005). The idea that the animal in our own society is primarily a representation, a corollary of Berger’s disappearing animals, has come under more intense scrutiny recently. Armstrong (2002: 415-6) has criticised Berger’s “paralyzing fatalism”, a denial of any agency to the zoo animal which reduces it to a “hollow phantasm”. Acampora too argues against the idea that representations are entirely socially constructed, even if they do not transparently ‘produce’ the animal to the viewer. He argues for ‘translucent’ representations of animals, “not “in themselves” but in relation to their human, organic and geographic environments” (Acampora 2001: 303). In other words, the animal encountered by the human is not entirely socially constructed, but nor is it free from cultural meaning. Following Acampora, Dombrowski (2002) argues for a ‘realist zoontology’, which allows for the interaction of human and animal: whereas the bear of popular culture could be seen as a social construction, when a hiker meets a bear, Peirce’s notion of ‘pragmatic coping’ better describes the encounter. That is, hiker and bear interact, so that the outcome, such as the bear eating the hiker, is more negotiation than construction. It is here that the stories of zoo intruders can be seen as not just newsworthy, but of theoretical significance. As Dombrowski (2002: 199) suggests,

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2 Dombrowski’s scenario is illustrated by a recent film, ‘Grizzly Man’ (2005), which follows the grizzly bear activist Timothy Treadwell, whose ideas about befriending bears resulted in his being mauled to death by one of the bears whose company he sought. While Treadwell’s conception of the bears could be seen as a typical 21st century representation, it was proved incorrect by his grisly death, a result of his interaction with a particular grizzly bear. The film, of course, has become part of the representation of the grizzly bear.
“There is, from a theoretical point of view, a dynamic interrelationship between our social constructs and the world we attempt to describe and evaluate”. From this point of view the lion is not an arbitrary symbol of royal power: although not every ruler will express power using the lion, the choice of the lion can be seen partly as the product of its dangerousness in relation to humans.

Berger concludes his essay in the zoo, where one is unable to “encounter the look of an animal”. “That look between animal and man, which may have played a crucial role in the development of human society, and with which, in any case, all men had always lived until less than a century ago, has been extinguished” (Berger 1980: 26). Yet looking at animals is a practice shaped by the spatial and temporal context of the zoo (Baratay and Hardouin-Fugier 2002; Mitman 1996); the human-animal relations of the Bronze Age Aegean were a diverse set of animal practices, of which hunting, leaping or shearing were arguably more important than looking. These animal practices were in part determined by the affordances of animals. Berger argued that looking has a deeper meaning: it is by looking an animal in the eye that their metaphorical significance becomes apparent. Animals were ‘the first metaphor’ because the returned look revealed them to be both like and unlike man. Recent scholarship, however, has come to question whether the identification of animals as metaphors reveals more about our own attitudes to animals. Ingold criticises social constructionism because: “Animals, in this view, cannot participate in the constitution of the social world but only can stand in, metaphorically or metonymically, for human social realities” (Ingold 2001: 187). At the same time the terms metaphor and metonym have been shown to be useful ways of thinking about animals across a variety of disciplines. And Berger, following Willis, did not just ask “why look at animals?”, but more fundamentally “why animals?”. This remains a very pertinent question to ask in relation to Minoan material culture, even if the answer should focus on specific practices relating to specific animals, as suggested above. A final contribution of Berger is a spatial metaphor, “animals came from over the horizon”, a crucial aspect of human relations with lions, griffins and monkeys in the Bronze Age Aegean.

1.5 Summary

There are two aspects to the application of animal studies to the understanding of human-animal relations in Bronze Age Crete. The first is to undermine the common-sense understandings of animals in the present, summed up by Baker’s notion of disnification,
that are applied uncritically to the past. A powerful critique of the idea of nature comes from social anthropology, which underlines the cultural relativity of modern Western ideas. The work of Descola, in particular, leads us to expect that perceptions of, and interactions with, the environment and its constituent animals in Bronze Age Crete would have been very different from those of modernity. At the same time, the second aspect of animal studies, in its theoretical foregrounding of animals, helps to overcome one of the frequent pitfalls of social anthropological thought: cultural constructivism. Animals are not culturally constructed, but are real entities with which humans interact. It is by looking at how humans interact with animals in certain contexts, summed up in the term ‘animal practice’, that it becomes apparent that human-animal relations are a two-way process. In other words, animals and humans have different affordances with respect to one another in different situations. From this perspective, lions have always been dangerous to humans, but the situations in which humans encountered lions in the Bronze Age were different from those mediated by the modern zoo. It is the zoo, however, as Berger argued, that has helped to shape the way humans look at animals in modernity, and hence the past. This introduces a third aspect of human-animal relations, to be examined in Chapter 2, which is how material culture is implicated in mediating and extending these relations.
2 Towards an ecological approach to animals and material culture

2.1 Introduction: Naturalism

It would be nice if animal art was a window to another world inhabited by another culture that we could simply step through. Nice, but we wouldn’t learn as much – for the window is distorted by the intricate pattern of the glass of culture, and in learning how to see through this we learn the structure of the cultural system that produces the images (Morphy 1989: 2).

For much of the twentieth century, animals in Minoan art have been seen not so much as through a window, but in a mirror. While Heinrich Schliemann’s imagination flooded Mycenae with Homeric heroes, Sir Arthur Evans’s populated Crete with peaceful nature-lovers. A keen gardener, as Starr points out, Evans saw a reflection of his escapist fantasies in the frescoes being restored by Gilliéron. But such is Evans’s influence that Starr’s deconstruction of the idea of ‘Minoan flower lovers’ concluded: “we may properly continue to believe that the Minoans cherished the flora and fauna of nature” (Starr 1984: 9). Evans’s (1921b: 316) “naturalistic spirit” echoes outside of Crete: Minoan animal and plant depictions were seen as the prototypes of Mycenaean pottery ‘motives’ by Furumark (1941), while Renfrew suggests that the Minoan-Mycenaean civilisation displayed “a vivid appreciation of nature” (Renfrew 1972: 415). As Hamilakis (2002: 7) has pointed out, there is a need to defamiliarise the Minoan past and shed Evans’s “unconscious conceptual schemes”. Depictions of animals should be considered in terms of Bronze Age human-animal relations rather than starting with the assumption of ‘nature-loving Minoans’. But after shattering Evans’s mirror, should we replace it with Morphy’s intricately patterned “glass of culture”? Reminiscent of the “web of culture” that Renfrew, who introduced the concept of the cultural system to the Aegean, interposed between ‘man’ and ‘nature’ (Renfrew 1972: 11), there is a danger that Morphy’s visual metaphor, like his use of the term ‘art’, helps to render animals merely a de-corporealised reflection, or refraction, of culture. All of these accounts of art would fit into Descola’s naturalist scheme discussed in Chapter 1. Morphy (1989: 14) concludes: “For animals in art do not provide a window to the world, but a selection from the world, a selection that tells us as much about human societies and human concerns as about the animals themselves”. It is necessary to consider how far ‘animals in art’ relate to ‘the animals themselves’ and human interactions with them.

According to one of the most influential accounts of Cretan art, by Henrietta Groenewegen-Frankfort, art turns a painted surface into “a mere window” when a
“functional relationship” is created between the object depicted and observer; her account is influenced by the theory of optics which underpinned Renaissance art. When an animal, for example, is rendered in perspective, it gains “illusionary corporeality”, placing it “in a definite spatial relation to the observer”. With the addition of a temporal dimension, “organic corporeality” is achieved (Groenewegen-Frankfort 1951: 3-6). Since Cretan frescoes were painted prior to the development of perspective drawing, the corporeality of the animals depicted is not even illusionary, although she makes the useful point that the characteristic profile of animals often gives them a ‘functional’ appearance, as seen in a real encounter. To use another of her terms, the ‘autocracy’ of their form is not sacrificed to the needs of representation: the animal body is not foreshortened in Cretan art. Instead of focusing on optics, her attention to ‘corporeality’ and ‘autocracy’ do constitute useful ways to approach animal depictions, even if for her the Cretan examples fail by Renaissance standards of mimesis.

A substantial, but often over-looked, contribution to the discussion of Cretan art is Groenewegen-Frankfort’s rejection of Evans’s naturalism:

To speak of naturalism, for instance – that is, of a conscious interest in, and respect for, the appearance of the phenomenal world – may be tempting in the face of forms so buoyant with life, yet it means ignoring the fact that several of these forms cannot have been observed at all; blossoms and leaves of different plants have been high-handedly combined, birds’ plumage altered (Groenewegen-Frankfort 1951: 196). Similarly she observes that a scene of plants, trees, rocks and watercourses is not a landscape, since “the essence of landscape, the rendering of natural phenomena in space, is lacking completely” (Groenewegen-Frankfort 1951: 196). Her critique illustrates the difficulties of applying art historical terms to the art of past societies. At the same time she detects “a sense for the organic” which, she suggests, prevents Cretan art from being purely decorative, making the scenes “authentic” (Groenewegen-Frankfort 1951: 197). Animals in flying gallop display “absolute mobility”, a freedom of movement which does not relate to the rest of the scene, but is self-fulfilled. This leads her to suggest that there is an ambiguity in the depiction of animals, which are surrounded by the components of landscape, but do not fully interact with them. “Such separable entities as occur in the form of single beasts, plants and stones – though plants frequently seem to merge into one another – are caught in a web of a living world that has indefinite orientation and indefinite multiple relations” (Groenewegen-Frankfort 1951: 201). Although she suggests the Minoan frescoes were “non-functional”, and ultimately religious, her attention to corporeality, and “the web of a living world” rather than the “web of culture”, gives her work resonance with a more phenomenological approach to Cretan art. The “non-
functional” rendering of Cretan art could help to create a certain type of relationship with the viewer.

Yet before going on to discuss such an approach any further, it is worth pausing to consider Groenewegen-Frankfort’s discussion of naturalism. Immerwahr (1990a: 41) closely follows her argument, suggesting that “the term ‘naturalism’ is really a misnomer, for there is more artistry than realism involved”, but also points out the “sense of animation”. More recently, Warren has revived the term with reference to plants:

The proposition is that, in the part of their work concerned with representations of the real world, Minoan and Theran painters, sculptors and engravers, astonishingly acute and detailed in their observational powers, mentally translated distinct real world identities into images on a representational spectrum which ranged from near naturalistic through to essentialist. By near naturalistic is meant an image closely, though never exactly, copying nature; by essentialist is meant an image which reproduces not literal nature but rather the essential characteristics, including the relative proportions of parts to each other, of a real world form. (Warren 2000: 365)

He contrasts this approach with Furumark’s distinction, arising from pottery ‘motives’, of ‘pictorial’ and pictorialized forms. Pictorial forms are ‘naturalistic’, whereas pictorialization is “the process by which an abstract design is made pictorial, i.e. through some similarity it is associated in the artist’s mind with the idea of some physical object and is accordingly completed” (Furumark 1941: 133). Rather than the pictorialized design arising from the observation of a real world form, it consists of elements such as J-spirals or S-spirals, which are combined to form animals or plants. In rejecting this account, Warren is suggesting that all plant and animal forms are representations of the real world. He is also echoing a debate which has a long history in Palaeolithic art and anthropology, which is illuminating for Aegean art.

As Lorblanchet (1977: 52) has shown, the corpus of Palaeolithic art has been interpreted in a variety of ways, from ‘essentially realistic’, Warren’s position, to ‘constant stylisation’. The latter position was taken up by Leroi-Gourhan, who suggested that “like artists in every age, those of the Palaeolithic saw with the eyes of their own society – that is they reproduced not animals, but images of animals” (quoted by Lorblanchet 1977: 51). Similarly, Ucko and Rosenfeld (1967: 48) suggest that a focus on the realism of animal depictions overlooks underlying styles, techniques and conventions. This has an important bearing on identification: “when we call a representation realistic, we often push the implications to an extreme in trying to assign species and even subspecies to an identification” (Lorblanchet 1989: 109). Indeed, this is exactly what Warren proceeds to do, suggesting binomial classifications for the various flowers depicted. The alternative, as Lorblanchet suggests, is to see the forms themselves as part of a continuum ultimately
based on lines, rather than real world forms. As a result composite ‘imaginary’ forms are
no less classifiable than realistic forms, but are part of the “graphic continuity of
Palaeolithic art” (Lorblanchet 1989: 139). This is relevant for debates over stylization in
Aegean sealstones, particularly the debate, to be discussed in Chapter 5, over whether it is
possible to recognise animal forms in the ‘Talismanic’ style of engraving, which is based
on recurrent drill marks (Morgan 1989; Onassoglou 1995). Although it is difficult to
argue that the monkeys depicted in Cretan frescoes are not related to a real world form, it
is informative that there is a lack of agreement about species. If naturalism is a style
rather than a guarantee of realism, as Layton (1977) suggests, then we can no longer be
certain that identification of animal species in Aegean art is possible or desirable. Instead,
as Layton argues, naturalism can be seen as a style which focuses on a particular moment,
and it is this information that the artist is trying to convey.

2.2 Conventionalism

These debates parallel those over the representation versus the reality of animals in
cultural forms discussed in Chapter 1. Is an animal represented in perspective more
realistic than a schematic carving on a seal? The idea that only functional or perspective
art creates a window onto the world has been questioned by a number of scholars,
particularly in reaction to Gombrich. Naturalistic painting, for Gombrich (1982: 12),
“enables us to recognise the familiar world in the configurations of paint upon the
canvas”. Yet, he argues, representing the familiar world is less straightforward because
reality is far too rich to reproduce. As a result, the brain relies on a set of learned symbols,
the schema, to aid the process of recall which facilitates representation. Different
traditions have different codes, and so different art styles represent the same thing in
different ways. Yet naturalism is not entirely relative because at certain points in history it
has become desirable for art to deceive the eye, casting the viewer as an eyewitness, for
instance, to a Biblical event in Renaissance art. The discovery and gradual perfection of
perspective fulfilled this function (Gombrich 1982: 21). From this point of view,
Classical Greek painting achieved mimesis through the continued modification of its
schemata in order to represent narrative poetry effectively. A different situation existed in
Pharaonic Egypt or the Bronze Age Aegean, whose ‘visual inventory’ of the world was
just as complete, but presumably did not require art to fulfil the same function. As
Gombrich (1977: 122) suggests, “in these early cultures the schemata of animals and
plants were often refined to an extraordinary degree”. Like Groenewegen-Frankfort,
Gombrich sees Cretan art as failing to achieve the mimesis of perspective art: but whereas
Groenewegen-Frankfort sees an almost ecological effect, Gombrich sees a schema, like Morphy’s ‘glass of culture’ standing between viewer and animal.

Gombrich’s account of the schema intervening between the real world and the image has been seen as problematic. The real world, for Bryson, is a cultural construction, and so the idea that there is a relationship between the image and the real world also needs to be historicised. Rejecting the idea that painting is primarily concerned with perception, Bryson (1983: 16) argues that it is a “material signifying practice”. The problem with Gombrich’s idea that the schema is gradually perfected, Bryson argues, is that it suggests that the viewer has access to a reality outside of society, that is nature, against which to judge the degree of mimesis. Gombrich’s idea of recall, as modified by the schema, is not conventionalist enough for Bryson because it locates painting within the domain of perception. Perfect the schema, and the viewer perceives the image as if it is real. For Bryson, recognition is a social rather than a mental act, so perception is irrelevant: what matters is that the viewer acts in a socially prescribed way upon seeing the painting. For Gombrich (1982: 12) recognition produces the exclamation “that is an x”; for Bryson recognition is that exclamation. If one cannot assume that the viewer’s experience is universal, this has implications for looking at Bronze Age art. The first is that we cannot expect to access it simply by sharing the same faculties of perception as the people who created it. The second is that the image will not have the same significance to us as it did to a person in the Bronze Age. Instead, as Mitchell (1986: 90) points out:

The “nature” implicit in Gombrich’s theory of the image is, it should be clear, far from universal, but is a particular historical formation, an ideology associated with the rise of modern science and the emergence of capitalist economies in Western Europe in the last four hundred years.

Even if Gombrich argues that art can never exactly imitate nature, the latter’s existence is necessary for his theory of recognition and his privileging of Greek and Renaissance naturalism.

The reaction against Gombrich’s account took two forms. The first, led by scholars such as Bryson and Goodman was to suggest that reality is a convention. “Realism is relative, determined by the system of representation standard for a given culture or person at a given time” (Goodman 1976: 37). For Bryson recognition of a painting’s subject is a social act because it takes place within “the interindividual territory of the sign” (Bryson 1983: 51). His conception of the sign is one in which the relation between signified and signifier is arbitrary: there is no reality beyond the sign. For Bryson the image is a ‘site of production’, bound up in social practice where meaning is created rather than reflected (Bryson 1983: 55). As he argues: “The image, both in its production and recognition, is
from the beginning both a continuum of social practice, and interactive with other processes around it” (Bryson 1983: 151). This is a useful insight, but it is possible to take a different approach to signs, discussed below.

2.3 Ecological psychology

Another reaction against Gombrich comes from the ecological psychology of J.J. Gibson, who came to some of the same conclusions as Goodman (although they remained diametrically opposed (Goodman 1979: 175)). For Gibson ecology meant something akin to being-in-the-world rather than referring to the science of ecology: central was the study of interactions between animals (including humans) and environment (Cutting 1982, 1993: 235-8). Gibson and Goodman shared a common realisation that a picture created according to the conventions of perspective could never fully represent reality. It is for this reason that Gibson preferred the term depiction to representation (Gibson 1979: 279). The reason for this is that perspective pictures need to be observed from a fixed point, through a peephole in order to recreate a scene, and so deceive the eye. Yet whereas Goodman concluded that if pictures do not represent reality they must be conventional signs, Gibson concluded that they must only be an incomplete substitute for the experience of the world. Distinguishing between the ‘artificial perspective’ of pictures, with its fixed viewpoint, and the ‘natural perspective’ of the moving observer, he suggested that: “Pictures are artificial displays of information frozen in time” (Gibson 1979: 71). From this perspective Groenewegen-Frankfort’s description of Cretan frescoes is interesting because she suggests that they convey an impression of life despite their ‘non-functional’ rendering.

It is only in movement, Gibson argued, that the invariants of form which specify objects are perceived fully. For Gibson invariants were the aspects of an object which underlay its changing appearance in different light conditions or in movement: invariants made an object what it is, rather than the brain piecing together different images of the same object (Gibson 1979: 310-11). Gibson suggested that perception took place in the world rather than in the brain, and so rejected the idea that the brain made sense of fluctuating stimuli from the world; rather the world already has a structure to be perceived in the form of invariants. He rejected an account of vision which rested on a mind:body dichotomy, with the passive eye deceived by the illusion of perspective: “natural vision depends on the eyes in a head on a body supported by the ground, the brain being only the central organ of a complete visual system” (Gibson 1979: 1). And the consequence of his theory of
vision was that the objects depicted in paintings were to be understood not as representations, but as mediated real world forms, since they displayed some of the same visual information, or invariant properties as those objects; they were perceived essentially in the same way. For example, even a simplified silhouette of an animal is recognisable because it conveys some of the invariant properties of the animal’s body: a long neck in relation to the body, or curved horns. Rather than the central object of enquiry, images become an incomplete version of the observer’s interaction with the world. From this point of view even a ‘schematic’ animal depiction depends on a real world form: the invariants link the depiction with the animal.

Gibson’s argument is that objects already specify information about themselves, and it is in the interaction between observer and environment that this information is perceived. The meaning of objects cannot be reduced to a system of differences, since their meaning is not located purely in the observer’s head. Instead of ‘meaning’ he used the term ‘affordance’. “The affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or for ill” (Gibson 1979: 127). Yet affordances are not the result of classification of the world for Gibson, a giving of meaning, but are to some extent perceived directly, since their properties are specified by their appearance. The observer can learn how to perceive affordances, in the process of socialisation into a given culture, but the affordances are not themselves culturally determined because they arise out of interaction. Returning to the example of the hiker and the bear in the previous chapter, the bear might appear to the hiker as a cuddly cultural construct like Winnie the Pooh, but if the bear attacks the hiker it affords danger. “Affordances are properties taken with reference to the observer. They are neither physical nor phenomenal” (Gibson 1979: 143). Or as Gibson’s biographer, Reed argues: “A single object may yield different affordances to different people, not because affordances are subjective, but because they are functional, related to the observer as well as the environment” (Reed 1988a: 293). Indeed, Gibson’s work has been criticised as overly functionalist, and an insufficient account of the complex interactions humans have with other humans. The affordance concept, for instance, has recently been seen as the most basic in a nested set of mechanisms for explaining social interaction (Knoblich and Sebanz 2006, 2008). Art objects too require a more complex account in order to place them in a cultural, rather than just perceptual context (Knappett 2005a: 49). However, the value of Gibson’s work is exactly in providing a realist account of both perception and human interactions with animals which does not take culture as its starting point.
Gibson’s debates with art theorists perhaps polarised his views, and subsequent scholars have sought to develop the cultural implications of the affordance concept.

Affordance meanings can be perceived directly when information is available specifying them. They can also be perceived indirectly when someone selects and displays that information in one or another form of representation, using pictures, language and so on. The pictures and words are also meaningful, but in a way that is partially historical and cultural as well as ecological (Reed 1988a: 307).

From this perspective one can learn about culturally selected affordances through pictures. But while affordances can be selected, they cannot be constructed, since they are located in interaction between person and environment, and not reducible to culture. It is at this point that Knappett (2005b: 50-51) suggests one needs to “deradicalize” Gibson, distinguishing “transparent” affordances which are independent of cultural meanings, and affordances which operate within a cultural context. In this view a picture provides part of the context in which an affordance can be perceived: the picture itself can also have affordances, for instance as an object of worship. It is undeniable that an Aegean fresco has cultural meanings which we can only guess at (invocations of nature goddess are symptomatic of this uncertainty), but at the same time it can indicate how the affordances of certain animals were perceived (for instance a bull affords leaping in Crete). Whereas explaining animal frescoes in terms of a nature goddess is speculative, the animal’s body has a reality beyond this particular cultural manifestation which allows us to interpret an image even without fully knowing its cultural context.

Herva (2005, 2006a,b) has recently applied Gibson’s ecological psychology to the Bronze Age Aegean, arguing that depictions of plants and trees are not explained by reference to a nature goddess. As discussed above, he suggests instead that the depictions guided people’s perception of these environmental objects:

Minoan nature scenes were instruments for perceiving the rich texture of their world. Nature scenes thus directly guided bodily engagement with the environment that people co-habited with manifold non-human beings. (Herva 2006b: 236)

One can argue that Herva neglects the cultural and social dimension of these depictions, but his argument that they should be seen as part of the human-environment system locates the object as a part of a set of relationships rather than a reflection of them. This is a useful approach to depictions of animals and plants, and will be pursued here. Yet it is surely significant that the depictions he draws upon appear on frescoes and gold rings; their exclusivity has implications for the sort of knowledge they were conveying, and to whom. Nor does a fresco depiction guide perception in the same way as a minute depiction on a ring. For this reason Bryson’s description of painting as a “material signifying practice” is a useful way to consider depictions, albeit with a different theory of signification.
2.4 Semiotics

For Gibson an image of an animal mediates between the viewer and animal, allowing the perception, to some extent, of its affordances. For Bryson the image is instead a sign which mediates between people, whose social knowledge allows them to recognise it as a depiction of an animal. The relation between sign and object, however, need not be arbitrary: of the three sign-object relations define by Peirce, Gibson’s description of the image can be described as an index: “An Index is a sign which refers to the Object that it denotes by virtue of being really affected by that Object” (Peirce 1998c: 291). This is because Gibson’s animal depiction is connected, by invariants, to the perception of the animal in the real world. In the Peircean scheme an icon signifies its object by likeness, and a symbol by convention. Representation for Peirce was a triadic relationship, which involves sign, object and interpretant. The interpretant can be seen as the outcome of the sign-object relationship, for instance the recognition of an animal. Both sign-object relationship and sign-interpretant relationship were defined by Peirce with reference to his tripartite categorisation of the world into possibility (Firstness), existence (Secondness) and law (Thirdness). He applied this division to define the three sign-object relations: icon, index and symbol; three sign types: qualisign, sinsign and legisign; and three sign-interpretant relationships: rheme, dicent and argument. Each term in the trichotomies arises from First, Second and Third respectively. The different permutations of these trichotomies result in various classes of sign: the complexity of this account of signs is also the basis for its flexibility, allowing a comparison of Gibson and Bryson’s conception of the animal image. Gibson’s, for example, can be seen as a dicent (indexical) sinsign, “any object of direct experience in so far as it is a sign, and, as such, affords information concerning its object” (Peirce 1998c: 294). In denying any existential connection between signifier and signified, Bryson’s animal depiction becomes a rhetic symbol, operating in exactly the same conventional way as the noun “cat” or “Felis”. Given that animal depictions normally have an iconic relationship to their object this becomes difficult to sustain from a semiotic point of view, underlining the difficulty of treating images as symbols. Nevertheless the concept of the interpretant allows for sign-object relationship to be iconic or indexical, while allowing that a conventional meaning, for instance ‘nature goddess’, can be its product. Although the interpretant is often located in the viewer’s mind, it is also a sign which can produce another sign (a dynamical interpretant), such as a statement of recognition, allowing the social aspect Bryson argues for (Peirce 1998a).
Gibson’s affordance concept is entirely consistent with Peirce’s idea of possibility or Firstness, which is brought into existence in interactions (Secondness). Like Gibson, Peirce did not see a fundamental split between the mind and the world, but regarded the two as continuous, a doctrine he termed synechism (Peirce 1998b). The point to be made here is that one way to expand the work of Gibson, within a similarly phenomenological account of reality, is with the work of Peirce. His voluminous writings, some of which are only now being published, have become increasingly influential in the social sciences. Although his complex sign classification has recently been applied to archaeological case studies (Preucel 2006; Watts 2008), of particular interest here is the way in which semiotics can be considered in concert with Gibson’s work.

Summers (2003: 687) uses Peirce’s index as the basis for his definition of trace as “an indication of former presence and contact”. He argues that all art objects should be seen as “real metaphors”, meaning that they are substitutions for something that is not present. The link between the art object and what is not present can either take the form of resemblance, for which he uses Peirce’s term icon, or alternatively the object can be a trace of what it is making present. For this he uses the term effigies, which, he argues, “take their primary authority from causal or indexical relation to what they reproduce, or continue to make present” (Summers 2003: 284). The example he uses is a death mask, which is an object shaped by contact with what is no longer present. Summers also notes that it is possible to have ‘images with the value of effigies’ which gain authority from the appearance of being traces, even if they are not. The importance of this phenomenological approach is that it redefines the art object as a substitute for something in real space rather than an illusion of something as Gombrich would suggest. Rather than being a window to a different space, Summers argues that the observer has real spatial relations with the art object. His account of art can be broadened to describe spatial relations with other objects: an animal bone can be seen as a trace of an animal. This approach to art allows for a material dimension to the study of animal depictions: whereas Gibson saw depictions as secondary to experience of the world, Summers shows how the spatial and material conditions of depictions are integral to our experience.

2.5 Relationality

The work of Gibson and Peirce is brought together in Knappett’s (2005b) Rethinking Material Culture. He combines a semiotic approach to material culture, describing the ‘horizontal’ connections or relationships of objects, with a discussion of the ‘vertical’ axis
of object, body and mind, which coalesce in the idea of affordances (Knappett 2005b: 110). He describes indexicality as “the most important of the semiotic processes through which connections multiply across networks and artefacts and technologies acquire their meanings” (Knappett 2005b: 162). Applying the concept of indexicality to material culture, in this case Minoan drinking vessels, he distinguishes contiguity (spatial connections), factorality (part-whole relations) and causality. The first two relate to the social context in which cups are found, populated by the hybrid ‘individual-with-cup’, engaged in status competition within networks of subtly differentiated material culture. The last type of indexicality Knappett relates to manufacture, arguing that, as indices of wheel-production, cups become associated with particular workshops, and valued specialist knowledge. At the same time he considers the affordances of the cups, which would have held enough liquid for one person, but shows how the networks in which the cups are located are as important for their meaning as their affordances; Gibson, he suggests, tended to equate affordance with meaning (Knappett 2005b: 51). Another useful point he makes is that metaphor and metonym can be used interchangeably with icon and index: the former indicate substitution, whereas the latter indicate contiguity (connection). In this way he brings together the work of Peirce and Gibson, in a way that is compatible with the ideas of Summers. Like Summers (and also Tilley (1999)) he suggests that metaphor and metonym are not purely linguistic concepts, as they are used by Levi-Strauss, but can be applied to material culture.

This returns to the problem raised in the last chapter of where animals fit into these material culture networks, or rather how to consider animals from such a viewpoint without subsuming them into the category of objects. One way to explore this issue is with an example in which animals are ostensibly regarded as art objects. In an ethnographic case which is relevant to the bull-focused iconography of Crete, Coote describes the centrality of oxen to Nilotic cattle-keeping societies. He argues that in the absence of a tradition of making art objects, certain cattle become objects of aesthetic appreciation. These are the ‘song-oxen’ which, in contrast to the rest of the off-white herd, are born with striking brown and white markings, subsequently castrated, and then praised in poetry and songs by their owner. Various aspects of their form are seen as aesthetically pleasing, including their hump, the sheen of their coat and their trained horns, but it is the terminology for different configurations of cattle-markings, he suggests, which shapes the way these societies see the world. “In a real sense they see the world through a sort of grid or matrix of cattle colours” (Coote 1992: 256). Adapting Baxandall (1988), he describes this as the ‘cultural eye’. But while Coote (1992: 269) argues that “[c]attle provide the primary aesthetic locus of Nilotic society”, he hints that
there is an ideal form behind each configuration. This is a consequence of his theory of perception as culturally constructed. “While our common human physiology no doubt results in our having universal, generalised responses to certain stimuli, perception is an active and cognitive process in which cultural factors play a dominant role” (Coote 1992: 247). The problem with this is that although the cattle are ostensibly at the centre of the analysis, and Nilotic society, the colour configurations become the basis for seeing, and the cattle reduced to patterned aesthetic forms. Like Morphy, Coote sees culture as interposing between viewer and animal. Gibson, in contrast, would suggest that while children might learn how to appreciate a fine colour configuration, the individual ox is perceived directly. Perceiving it as a ‘song-ox’, however, results from the meaning of the coat colour arising from the culturally-defined relations between the marked cattle and the unmarked cattle. Coote’s aesthetics, however, is not located in an engagement between human and animal but rather is predicated on a pre-existing cultural ideal.

Gell’s criticism of Coote questions his idealistic approach from a different point of view. Tracing the Kantian influence behind Coote’s paper, Gell (1995: 25) rejects the idea that beauty is perceived by a disinterested observer, and dismisses the concept of the ‘cultural eye’ which judges appearance “independently of the non-visual, non-aesthetic characteristics of objects”. Instead,

Dinka admiration of oxen is intrinsically linked to the possibility of ownership and control...Insofar as Dinka have an aesthetic attitude towards oxen, this attitude cannot be disassociated from their practical interest in oxen as mediating elements in social praxis, tending towards the realisation of their social ambitions (Gell 1995: 24).

Gell also rejects the idea that aesthetic appreciation exists independently of art, but rather the ox is “a non-artefactual artwork”, created by the singing of songs about it (Gell 1995: 26). Whereas for Coote the perception of the ox is mediated by a cultural screen, Gell focuses on the relationships in which the ox is located. His analysis perhaps neglects the animal, with his characterisation of the song-ox as a “bovine Ferrari”, but it is clear that the Dinka regard their oxen as participants in social practice rather than simply objects (Gell cites a song about ‘my Mijok’). Incidentally, oxen are named on the Knossos Ch series Linear B tablets, with the ‘boonyms’ based on their appearance, and so it is potentially justified to think of Bronze Age oxen in these terms (Killen 1992).

Gell’s account provides a starting point for the approach advocated here, reversing the assumption that culture defines the perception of the oxen so that the relation between human and ox (ownership) results in its cultural significance. The relations of protection and transmission, central to cattle-keeping societies, are those identified by Descola as at the heart of his analogistic mode of identification. What needs to be stressed, however, is
that the animals are not incidental: among the Karimojong, young men only sing songs about oxen, not uncastrated animals, and so this artistic process is not just about appearance, but based on relations of ownership (Gourlay 1972: 252). Gell (1998: 13) drew on Peirce in his account of the art object as an index, from which agency can be inferred, or ‘abducted’. This is true in the case of the oxen’s trained horns, which are an index of human intervention, and seen as aesthetically pleasing. The ox itself, however, is able to use its horns, and so these can be simultaneously indices of human and animal agency. Gell’s focus is on social agency, which, he suggests, can be exercised by humans, animals or objects alike; it is the relations that are important rather than the entities (Gell 1998: 22). The affordance concept is a useful counterbalance to this view, since it is important to recognise that animals have different affordances from objects.

The usefulness of Gell’s approach in this thesis is to define a set of relationships between humans and art objects (excluding animals). Gell (1998: 23-27) suggests that artifacts are indexes of manufacture by an artist, but that these indexes are also part of social relationships with the prototype on which they are based, and their recipients in a given social context. In any one of these relationships, one of the four entities (index, artist, recipient, prototype) can be either an agent or patient with respect to another entity. Gibson’s concept of invariants, for instance, suggests that the prototype is the agent which causes the index to resemble it. The importance of this account in subsequent chapters will be the recognition that depictions of animals could simultaneously be seen as indexes of skilled manufacture, and could have different effects on different recipients. The departure from this account is simply the argument that human-animal relations are not reducible to social relations, and so animals have agency in a different way from that described by Gell. Song-oxen are not just outcomes of social relationships, but a fundamental part of the way in which these cattle-keeping societies survive within a particular ecological zone.

Human-animal relations on Bronze Age Crete, however, are only available to study by their material traces, rather than songs, another type of index. The central research question of this thesis is: What are the material traces of human-animal relations on Bronze Age Crete, and what are their social implications? Texts such as the Linear B oxen tablets, bones and depictions will all be examined in these terms, using the concepts explored above. But it is worth considering a less straightforward case here, that is whether absent or non-existent animals can be seen in this way. This highlights the importance of considering the affordances of different types of material culture in the extension of human-animal relations.
A useful example is the animal depictions which came to be used on Chinese porcelain after a long history in other media, such as architecture. In the case of the lion, it is unlikely that artists would ever have seen the animal, whose depiction was borrowed from the Near East. One Ming tomb frieze shows a circular composition in which two lions chase a ball: “These lions have been acquired through the accidents of Chinese history, tamed, and given a Chinese aspect” (Rawson 1984: 114). In the case of the dragon, the link with reality is even more tenuous. As Rawson points out, its depiction is based on the snake, although also incorporating features from other animals and taotie designs, and shown in stylised poses. One of these characteristic poses, the dragon looking back over its shoulder, was adopted by neighbouring people to depict the tiger, which came to show some of the attributes of the dragon. This hints that the dragon was not seen as purely ornamental, but rather still existed in some relation to the animals of the environment in order for it to be re-interpreted in this way.

In some of his final work, Gibson tried to extend his theory of direct perception to such situations, suggesting that there could also be “nonperceptual awareness of the nonexisting features of the world” (Reed 1988a: 299). Dreaming, remembering and imagining could all be seen as understandable in terms of the processes of perception, despite being of a different order. Gibson made the distinction between imaginary forms, which were impossible (like certain optical illusions), and ‘fictional’, “a mixture of the existing and the non-existing”. Awareness of fictional forms is closer to perception of the world than awareness of imaginary forms. This is the conclusion that Rawson draws, despite her demonstration that the animals in Chinese ornament are the product of an artistic tradition only vaguely linked to real world forms. She suggests that “we understand both animals and plants as having an existence outside the decoration of the buildings and bowls on which they appear” (Rawson 1984: 119). The combination of animal and plant designs, she argues, often gives the impression of animals in a landscape. As she concludes: “Animal and flower subjects are particularly effective because they are evocative of creatures and plants of the world in which we live” (Rawson 1984: 120).

This is to return to the problem encountered at the beginning of this chapter, that Evans’s definition of naturalism included non-existent forms. If these are depicted as if they are animals, however, they can, to a certain extent, be perceived as animals. As Groenewegen-Frankfort (1951: 196) suggested, even the non-existent forms are “buoyant with life”. One sealstone (CMS VS.1A 202), discussed in Chapter 8, shows a griffin.
attacking a lion, which is attacking a deer. Showing these entities in action is one way to show that they have the affordances of predators and prey, animal behaviour which would have been familiar to the viewer, even if the animal forms were not. What modern observers have termed ‘naturalism’ will be approached in these terms in the following chapters: at certain points depictions conveyed more information about animals, showing, for instance, enough of the characteristics and behaviour of a griffin to perceive it as a predator. These depictions were embedded in social networks, and a social context in which demonstrating relations with animals was significant. Objects could be an active part of this process, creating relationships with animals such as griffins which only existed over the horizon, or mediating relationships with Cretan animals to give them social significance.

2.6 Conclusions

Animals in art, then, need not be seen as solely cultural manifestations. The animal body has invariant features which specify to the observer, or the viewer of an art object, its affordances, although this depends to some extent on the knowledge of the observer. The affordance is perceived in the interaction between a socialised observer and an object in the environment: it is reducible neither to a culturally imposed meaning or a fact of nature. This is because perception can be seen as an act of environmental engagement or social practice. Groenewegen-Frankfort’s ideas about the autocracy of form and the ‘corporeality’ of the depicted animal are useful ways to examine animal depictions from a more phenomenological point of view. When looking at Aegean animal depictions, it will be essential to locate these objects within both environmental engagement and social practices, for it is within these circumstances that the affordances of animals are perceived and human-animal relations emerge. Their context becomes crucial: the animal figurines found on peak sanctuaries can be seen as indices of domestic animals, accommodated in ritual practice in a particular environmental context. Just as the boar’s tusk helmet materially signifies the hunted boar (Morris 1990), so too can lion or bull-leaping depictions index a highly meaningful practice. Nor should one forget that creating art objects is a material practice: an examination of style and material is necessary to understand the dialogue between animal subject and object manufacture. But rather than see art, passively, as a window to the world, one can see art objects, and material culture generally, as part of a semiotic network linking humans and animals. The material traces of human-animal relations, from bones to sealstones, offer a way to reconstruct these
networks in Bronze Age Crete and hence examine which affordances of animals which were perceived as socially significant.

2.7 Summary

This chapter has introduced the key concept of ‘the material traces of human-animal relations’. Describing animal depictions in this way, as well as more obvious traces, such as animal bones, helps to challenge the idea that depictions are reflections of the world. Instead, as Gibson suggested, depictions can be seen as conveying a selection of the same information as the world, involving the same way of perceiving. Rather than naturalism being a convention, it can be seen as a way of conveying detailed information about the invariants and affordances of animals. In semiotic terms this link between depictions and animals can be described as indexical. These material traces are part of a network of relations which arise from relations between humans and animals. However, as the example of griffins illustrated, these traces can be constitutive of the relationship rather than simply an outcome. Even in the case of relationships such as hunting or bull-leaping, these material traces are the durable aspect of an essentially fluid and fleeting encounter. This means that while they can convincingly be seen as traces of an animal practice, it is impossible to know whether they refer to a specific encounter; in any case, the successes rather than the failures are usually depicted. Without denying the social significance of the human-animal interaction, it is these durable traces that are carried forwards into social interactions. As Gell suggests, these objects are also indexes of manufacture: as will be suggested, traces of human-animal relations manufactured by skilled craftsmen in valuable materials were exclusive products which further enhanced the status of the owner or user. Yet the argument here is that these were not simply symbols of power but indexes of socially significant relationships with animals. The following chapters will explore these networks of relations connecting animals, humans and objects.
3 Reading between the signs: human-animal relations in Cretan Bronze Age documents

3.1 Introduction

And, in what regarded the more special object of my quest, my researches were well rewarded by the discovery *in situ* of traces of a pra-Pheonician system of writing in the island, of which two distinct phases were perceptible, one pictorial and hieroglyphic, the other linear and quasi-alphabetic. (Evans 1894: 275)

Although Arthur Evans is principally remembered as the excavator of Knossos, the impetus for his first visit to Crete in 1894 was to trace the origin of a hieroglyphic script he had first observed on sealstones. On the same visit he was able to see the excavations of Minos Kalokairinos first-hand, and begin the process of purchasing the site of Knossos (Brown 2000). When he commenced his own excavations in 1900 he began to find almost immediately the fire-baked tablets which would provide further evidence of the Cretan scripts he had already recognised on sealstones and other objects. This laid the foundation for his first major work, *Scripta Minoa*, which established the classification still used for the Aegean scripts: “The archaeological evidence produced by the various deposits in which the successive types of script occurred – primitive pictographic, hieroglyphic and the advanced linear of Classes A and B – is brought to bear on their historical sequence” (Evans 1909: vi). He had identified the three main scripts, Cretan Hieroglyphic, Linear A and Linear B, as early as 1902 and realised that all were syllabic (Pope 2008: 2). As is well known, however, the decipherment of these scripts eluded him; indeed his failure to publish the majority of the Knossos Linear B tablets in his lifetime also impeded other decipherers. While Kober made some progress with the tablets illustrated in the *Palace of Minos*, it was only with the full publication of the Pylos and Knossos tablets after Evans’s death that Ventris had enough material to discover that they recorded an early form of Greek (Pope 2008). This would have been an anathema to Evans, who had explicitly rejected this possibility in his dismissal of the reading ‘po-lo’ from the Cypro-Minoan syllabary next to a sign resembling a “maneless” horse on one Knossos tablet (Evans 1935: 799) (Figure 3.1). Instead Evans noted that the horses’ heads were examples of “primitive pictography”, which on other tablets had become “conventionalized” into a linear form (Figure 3.2). It turns out that Evans was right on the linguistic reading and wrong on the conventional forms, some of which are now recognised as cattle ideograms. The signs resembling horses’ heads are still recognised as horse ideograms and ‘po-lo’ is recognised as representing the Mycenaean Greek word for foal, here neatly explaining the lack of mane on the ideogram (Ventris and Chadwick 1973: 48). This, however, only augments Evans’s supposition that the tablet recorded a certain number of horses: despite
refusing to believe what the tablet said, he still knew what it did, that is, account for a number of horses. This distinction, and the importance of exploring Evans’s suppositions, are central to this chapter.

The scripts used on Bronze Age Crete are a useful starting point for exploring the material traces of human-animal relations because they provide an exemplar for the theoretical approach outlined in the previous chapters. In short, the tablet in Figure 3.1 is the material trace of a transaction involving a number of horses: the affordances of clay both allowed it to be inscribed as a temporary record, and have resulted in its survival through accidental burning. The horses’ heads are iconic because they refer to horses by resemblance, while the numbers refer to real horses, making this an index, or trace. The signs for po-lo are only linked to language arbitrarily, and so are symbolic. Hence Evans could perceive that the tablet depicted a horse by what have been described above as the invariants of its head, that is the characteristic proportions and features which are common to real horses and this depiction (Gibson 1979: 269). It was only with the decipherment of Linear B that the syllables could be read, however, illustrating that the affordances of the tablet are partly dependent on the cultural knowledge of the observer: this tablet only refers to young horses if the observer knows what the syllables stand for, or knows that the absence of the mane is significant here.

Before considering how the information recorded in the scripts relates to human-animal relations it is worth considering further the way in which the preconceptions of the observer affect the tablet’s affordances. Evans rejected the reading ‘po-lo’ because he assumed that the language represented by the script he had defined as Linear B could not be Greek. This was based on his belief that the Minoans were originally from Anatolia and that the Greeks had arrived on the Mainland much later; in any case he was certain that the Mainland was under Minoan domination. These assumptions were, of course, largely refuted with Ventris’s decipherment. Ventris and Chadwick (1973: 198) failed to understand why so many rams appeared on the Knossos tablets: as will be discussed below, by reading the male version of the sign for sheep as ‘wether’, Killen (1964) was able to see the tablets as part of a large-scale wool industry. Yet, as has been argued in the previous chapters, other preconceptions still affect the way in which scholars perceive objects such as these tablets. Of relevance here is the common description of signs such as the horse’s head as logograms, that is, signs that stand for words. It will be argued that this is a barrier to understanding this tablet as the material trace of a relationship between humans and animals because it is part of a process of defining the objects which carry Cretan Hieroglyphic, Linear A or Linear B signs as primarily the carriers of a linguistic
message. Whereas language stands in a largely arbitrary relationship to the world, these tablets can be seen as carrying iconic depictions of horses, while the numbers and descriptors show that they index particular horses. Furthermore the tablet is a part of a relationship between people and horses, also involving a central authority. The decipherment of the linguistic signs did not actually contribute a great deal to the understanding of the tablet’s meaning: more important is to understand the set of relationships of which this is the remaining trace.

3.2 Previous Approaches

3.2.1 The Tyranny of the Alphabet

Evans’s grouping of the Cretan scripts into the “successive stages” quoted above illustrates his grounding in evolutionary thinking. Not only did he see a development from pictographs to Linear B, but saw a continued evolution, via Cyprus, of the Minoan script into the Phoenician alphabet (Evans 1909: vi-vii). Although this has been discounted, in some ways he was ahead of his time since Gelb founded his influential science of grammatology on the theory of the invariable evolution of writing from pictographs to logographs to syllabographs to an alphabet (Gelb 1963: 201). The problem with this approach is that the alphabet becomes seen as the endpoint in a process of improving a script until it represents the sounds of language efficiently; progress is the refining of a script so that it can do this with fewer and fewer signs. The use of the alphabet as a paradigm for the evolutionary study of scripts has been termed the ‘tyranny of the alphabet’ (Harris 1986). The problem is exacerbated in the case of Linear A and Cretan Hieroglyphic by the continued attempts at decipherment: the focus on linking signs to phonemes obscures the ways in which these signs operate in different ways from the letters of the alphabet.

Both Evans and Gelb placed pictographs at the beginning of the evolutionary sequence leading to writing. Such use of pictures to convey meaning without intervening linguistic forms Gelb (1963: 191) termed ‘semasiography’. As has been pointed out, however, there are a number of systems of graphic notation in modern usage which fit this description, including mathematical or musical notation (Boone 2004; Harris 1995). Of relevance here is that many of the signs used in Cretan writing, such as measures, numbers or fractions are also semasiographic, and so could be analysed prior to decipherment (Bennett 1950). These can be seen as separate categories of sign, but the practice of ligaturing ideograms, for instance to denote an animal’s sex (see Figure 3.3), can also be seen as a visual
solution to specifying further information about a sign, apparent particularly in Linear A (Schoep 2002a: 28-30). The linguistic solution, combining the ideogram with a syllabogram standing for an abbreviated word, is far more frequent in Linear B (Hooker 1979: 32). The additional use of the initial syllabogram of a word in Linear B (and possibly Linear A) as an ideogram means that technically these are logograms, that is, signs standing for words. However, the usefulness of this term for the animal signs in these scripts will be questioned. Although, by definition, ideograms refer to ideas (and pictograms to objects), the more general usage in Bronze Age epigraphy of ideograms as signs referring to things will be followed here (Hooker 1980: 40-1). Syllabograms, of course, do represent phonemes, but the Linear B combination of ideogram and syllabogram shows their co-existence rather than the evolution of one to another.

Evans’s failed attempt to show the decomposition of the horse ideogram (Figure 3.2) is interesting because it illustrates a process observed in various scripts, although it conversely demonstrates that newly invented ideograms in Linear B could be pictorial. Following Peirce’s definitions, Robertson (2004) argues that iconic signs tend to develop into symbolic signs in writing systems. He describes this as the shift from indirect representation of language, in which an iconic sign refers to a word via a depiction of an object to direct representation, in which a symbolic sign refers to a word without the object intervening. As Knappett (2008: 147-150) has pointed out, however, the shift Robertson describes does not happen completely in Aegean scripts because ideograms of pots continue to be iconic, while syllabograms “do seem to maintain some iconic memory”. Moreover Robertson is subject to the same tyranny of the alphabet with the notion that direct representation is the relation of written sign and spoken sign without the interference of the object. This relationship is reversed by the Gibsonian approach taken here, in which pictures have a more direct relationship with objects than words do, since they share some of their invariants.

This does not mean, however, that the process Evans attempted to apply to the horse ideogram is not observed in Cretan scripts. Indeed a phylogenetic analysis has recently been successfully applied to the development of the Linear B signs based on the same principle that signs in scripts change over time (Skelton 2008). Of interest here is that Evans (1909) was attempting to explore the iconic origins of signs and seek relations between signs in different scripts. This process has become associated with the problematic attempts to read Linear A and Hieroglyphic signs using Linear B values as a method of decipherment. However, one of the theories for the invention of scripts is the acrophonic principle, in which a picture of an object is used to represent the first syllable,
seen for instance in Maya glyphs (Robertson 2004: 29). This is of interest because even when the sign appears to be non-iconic in appearance, it could refer to the object in question by resembling its first sound. Although Egyptian hieroglyphs are not a good analogue for Cretan syllabic signs in many ways, Goldwasser (1995: 79-80) has observed a similar situation in which iconic signs have a primarily metaphorical significance, but never cease being depictions of an object, as becomes clear in certain cases. Discussing this process in Aegean scripts Knappett (2008: 150) suggests that the ‘shadow’ of the thing lingers in iconic syllabograms.

From this perspective the animal-related signs in the Aegean scripts operate in complex ways. The signs for animals can operate as both ideograms and syllabograms in Linear B (and Linear A) but the pig sign in particular remains clearly iconic in both (Figures 3.3 and 3.5). In this context it is intriguing that the Linear B signs with the values ‘ma’ and ‘mu’ seem to derive from the hieroglyphic cat sign and cattle sign respectively, but also imitate the sound of the animal (Younger 2007a). The use of ‘mu’ (Linear A/B sign no. 21) as the cattle ideogram (A/B 109) provide further links between sign and animal; a resemblance to a cow’s head has long been suggested (Ventris and Chadwick 1973: 169). This form of iconic relationship in language is otherwise known as onomatopoeia, and has also been suggested for the goat ideogram when used as a syllable with the possible value mi, from the onomatopoeic Cretan word μίκλας (Janda 1986). The sheep ideogram has also been traced back to more visually iconic origins in Linear A (Brice 1971) and possibly Cretan Hieroglyphic (Younger 2007a). If such relationships seem rather tenuous, the point is that there is no reason to expect that Bronze Age Cretan writing should work in the same way as the alphabetic signs which were subsequently used to represent Greek.

### 3.2.2 The Cretan Scripts

As will be the case in subsequent chapters, there is a tension between outlining approaches according to widely agreed categories of material (here scripts) and questioning whether those categories are meaningful in terms of human-animal relations. These categories have been employed because they also represent sometimes separate bodies of literature, but it is worth pointing out here that a number of authors have argued that these distinctions are problematic. Brice (1989), for example, has observed that Linear A signs carved on objects show a greater resemblance to Cretan Hieroglyphic signs than the cursive versions inscribed on clay. He argues that it makes more sense to divide inscriptions as ‘accounting’ and ‘monumental’ than along script lines. In contrast Olivier (1986: 387) suggests that the two undeciphered scripts represent two languages.
Nevertheless, a number of documents could be either (Olivier and Godart 1996: 18). Owens’s (1996) argument that the two scripts, along with the Phaistos disk and other unclassified inscriptions are basically the same is at least partly contingent on his desire to decipher what he sees as the underlying language.

As has been suggested above, however, a focus on language can hamper a full understanding of the way the scripts work. It is precisely the failure of efforts to decipher Linear A and Cretan Hieroglyphic, despite their sharing a large number of signs with Linear B, that underlines the partial autonomy of the script: the shared signs do not necessarily have the same values (Hooker 1979: 20). Similarly the ‘Archanes script’, a sequence of signs on Prepalatial seals, including seven from the Phourni cemetery at Archanes (Sakellarakis and Sapouna-Sakellaraki 1997: 327) is not necessarily writing, but could have been given values in its later assimilation by Linear A and Cretan Hieroglyphic (Olivier 1996: 107). Even if it is accepted that the signs represent a word, “a-sa-sa-ra-ne”, the signs as read ultimately with Linear B values, there is more to say than this (Godart 1999a). As Schoep has pointed out: “The attestation of script on sealstones in MMIA mortuary contexts suggests that writing was imbued with symbolic powers, and its initial restriction implies that it was a closely guarded technology shared only among elites” (Schoep 2006: 54). As is widely accepted, the first appearance of script was stimulated by contact with the Eastern Mediterranean (Branigan 1969: 22; Evans 1909: 236; Olivier 1986: 378). Yet it was arguably adopted as something which derived its power from the majority of people not being able to read it: the impenetrability of the signs was as important as their meaning. The later scripts certainly did in part represent language, but it is useful to consider them in a wider perspective.

3.2.2.1 The Phaistos Disk

The Phaistos disk provides an extreme, if illuminating, example of the approach to be taken to the animal depictions in this thesis. A unique artifact, it was found in Room 101 to the northeast of the palace, with MMII-IIIB material (Duhoux 1977: 3-12). In one respect the disk is an object which bears animal depictions since there is an obvious iconic link between certain signs and animal forms. The most common response to the Phaistos disk, however, is to try to decipher it. Commenting caustically on one attempted decipherment, Bennett has described the process as follows:

Start with recognizing the signs. Put simple names to the dozen or so which are unmistakable. Put metaphorical names to the dozen or so which are almost recognizable ... What you know, or what you have heard or read, about the Minoans and their civilization, together with your other interests, will then help you find less obvious metaphoric names for the next ten signs. (Bennett 1998: 156)
The disk invites would-be decipherers because certain signs do resemble things. After this, approaches diverge, with differences over the direction in which the text is to be read, the type of signs (logograms or syllabograms) and, most notoriously, the language represented. This does not mean, however, that every approach is equally invalid: Duhoux’s (1977) careful examination and authoritative publication provides the basis for further understanding. He provides a clear argument that the disk was read from the outside, and has also observed that if certain marks are taken as line dividers, then the sign groups appear to form rhyming couplets (Duhoux 1980). Here Duhoux is not providing a decipherment, but rather examining the way in which signs relate to spoken language. His work has been used as the basis for decipherment, that is an attempted reading, as a hymn to the Mother Goddess (Owens 1997: 95). Duhoux, however, is rightly critical of decipherments of the disk which fail to meet certain criteria and it is worth observing that he does not attempt to provide one.

The point to be made here is that decipherments treat the signs on the Phaistos disk not primarily as iconic depictions of objects but as symbols of words or phonemes. In the latter case it is entirely possible that phonemes are linked to the objects by the acrophonic principle, but without knowing the language this is conjecture (and rejected outright by Duhoux 2000: 598). The only test of decipherments of the disk is whether they are internally consistent, and whether they fit with certain generally agreed principles. Since the connection between the signs on the Phaistos disk and decipherments is symbolic, and so arbitrary, there is no absolute basis for establishing their validity. However, Duhoux’s entirely understandable (given publishing conventions and techniques of cryptographic analysis) practice of rendering the signs as arbitrary numbers for the purpose of examining patterning only reinforces a primarily symbolic approach.

The animal depictions on the Phaistos disk do not appear to be the material traces of human-animal relations, on the basis that it appears to function differently from a Linear B sheep tablet, although they are icons of animals. The discussion of the three main Cretan scripts below will illustrate how animal depictions can function iconically, indexically and symbolically. Here it is worth making a wider point about the Phaistos disk, as an analogy for approaching animal depictions in the Cretan Bronze Age. The first point is that some interpretations of the disk, such as that it contained a chant to the Mother Goddess, can be traced back to Evans (1909: 291): without knowing the content of the disk’s inscription there is no way of evaluating this interpretation. Instead it is worth pointing out that deities and their symbolic manifestations tend to be the default interpretation for a variety of Minoan depictions (Herva 2006a). This leads on to the
second point which is that the predominant approach to the disk has been to read the signs purely as symbols, and the lack of an agreed decipherment has shown that this is almost certainly futile on the basis of the present evidence. Looking instead at the way signs function offers a different way of using objects such as the Phaistos disk as sources of evidence: there is an iconic link with animals, although without close comparanda it is difficult to go any further than this. One plausible analogy is with the first Egyptian script, found on tokens in the Naqada IIIa tomb U-j: Baines (2004: 157-8) has suggested that the animals, plants and objects chosen as signs were derived from folk categories. One of the best ways to pursue this line of inquiry is by going back to *Scripta Minoa* since Evans actually provided a considered analysis and classification of the signs on the disk which is still of interest since he examines what is being depicted (Evans 1909: 275-80). So although Evans is the source of many of the simultaneously unquestioned and unconvincing interpretations current in Minoan archaeology, his work in many cases offers a breadth of vision which offers alternative ways of approaching the evidence.

3.2.2.2 Cretan Hieroglyphic

Documents, sealstones and seal impressions bearing Cretan Hieroglyphic inscriptions form a varied corpus of evidence for a writing system which both uses animal forms as part of the script and records transactions involving animals. The clay documents are a north Cretan phenomenon, found at Mallia, Knossos and Petras, in MMIIIB and MMIII contexts (Schoep 2001; Younger 1999b). The sealstones are more widely dispersed, but one centre of production was found at Quartier Mu at Mallia (Poursat 1996). Although Evans distinguished between Hieroglyphic A and B on sealstones, this is now regarded as a stylistic difference (Olivier 1996: 104). This points to the different affordances of materials: Cretan Hieroglyphic signs are rendered differently on soft and hard stone seals, but also when inscribed in clay.

The history of publication again exemplifies the dialogue between a narrow linguistic approach and a broader iconographic approach going back to Evans. Nowhere is this more apparent than the authoritative *Corpus Hieroglyphicarum Inscriptionum Cretae* [CHIC] which only includes signs which represent writing (Olivier and Godart 1996: 13). In the case of hieroglyphic sealstones this means that ‘ornament’ is excluded. This approach has been questioned on the basis that it was the whole design of the sealstone which was used to identify its user, rather than the signs isolated in CHIC (Brice 2002: 47-8). As Brice also points out, the editors of CHIC pay little attention to the appearance of the signs, not even providing a commentary in contrast to Evans’s “bold and stimulating proposals about the ‘pictographic’ prototypes of individual signs” (Brice
2002: 46). In fairness, the editors of CHIC argue that they are not seeking to replace *Scripta Minoa*, which they see as the bible for the study of Cretan scripts, but rather to provide a critical edition of hieroglyphic texts (Olivier and Godart 1996: 5). Calculating that there are 581 sign groups totalling 1555 signs on seals, sealings and inscriptions\(^1\), Olivier describes his method as follows:

I do not take into account in my calculations either the decorative elements or the possible “symbolic” elements (representations of human beings, of animals or of other entities, etc.) which add perhaps something to the general meaning of the sign groups but have certainly no syllabic value. (Olivier 1990: 12)

Olivier also excludes logograms, fractions and an x-shaped sign used to denote the start of words from this total. As a starting point to decipherment this sort of analysis is invaluable, but as has been argued, an analysis of the meaning of the signs needs to go beyond this.

Nevertheless, both the CHIC approach and a more iconographic approach to the script can provide information about human-animal relations. Although the distinctions that CHIC makes between signs and decoration can be seen as problematic, the identification of ‘logograms’ allows an interpretation of certain documents as materialising transactions involving animals. This is based on the sign’s position and association with numbers. One logogram in particular, 152, resembles an animal head (Figure 3.4); other tablets (not illustrated) appear to deal with commodities such as wool (Younger 2005). The CHIC identification of 152 as a logogram, however, is paradoxical because it cannot be linked with a word since the language is unknown, but can be identified because of the iconic link between sign and animal. To take this one stage further, it is not necessary for the sign to refer to a word for it to function: it could be defined as a pictogram. However, the same sign appears to function elsewhere as a syllabogram (when it is given the number 013). If it does refer to an arbitrary sound it would function as a symbol, but 013 is a depiction of an animal, and so it would be wrong to describe the sign as purely symbolic. While the distinction between 013 and 152 makes sense from the point of view of the editors of CHIC, it obscures the fact that the same sign was used in two different ways, so that the choice of sign for a particular syllable is presumably not arbitrary, but relates in some way to an animal. Following this logic Younger (2007a) identifies it as a bovine head and gives it the value ‘my₂’.

It is in this context that Evans’s attempt to trace the pictorial origin and development of signs is interesting, and indeed CHIC does offer a table to show how Cretan Hieroglyphic

\(^1\) This excludes the Cretan Hieroglyphic archive from Petras
signs resemble those in Linear A and Linear B (Olivier and Godart 1996: 19). They do not provide an identification of signs, but do link 017 to the Linear B pig sign (85/108). Given that Cretan Hieroglyphic and Linear A co-existed, the connections between them are a matter for debate, and so direct evolution cannot be assumed. The important point is that the Cretan scripts should not be seen entirely as arbitrary signs representing sounds, but some, at least, are linked iconically to objects in the real world. Eight signs recognised by CHIC resemble animal heads, and two more look like insects.

As has been noted, the Cretan Hieroglyphic signs appear on both sealstones and clay documents. CHIC tends to exclude signs which do not appear on clay inscriptions. Among many of the excluded signs identified by Evans as part of the script is the cat’s head, although Younger argues that it does have a syllabic value, and has a descendent in Linear B (Younger 1999b: 387). This, however, simply illustrates the problems with trying to classify signs which look like animals according to supposed linguistic versus decorative function. For this reason the signs which resemble animals on hieroglyphic sealstones will be considered in Chapter 5, along with other depictions of animals since all are depictions of animals, even if some have a secondary linguistic significance, particularly the animal heads. This is based on the different affordances of the objects: seals are durable objects which are on display, whereas clay tablets and sealings can be seen as primarily for temporary record keeping. This leaves a very small number of animal ideograms on tablets to be considered below, which are the physical traces of transactions involving animals.

3.2.2.3 Linear A

Linear A was not inscribed on sealstones, but has been found on a variety of objects including stone libation tables and metal pins (Schoep 1994). Although it occurred simultaneously with Cretan Hieroglyphic in the Protopalatial period, where it is attested mainly in south Crete, it became the dominant script on Crete in the Neopalatial period. The largest number of documents come from LMIB destruction deposits, particularly at Ayia Triada, Zakros and Chania. A recent count of documents totals 1370, of which 328 are tablets (Schoep 2002a: 38). Here the focus shifts to the clay documents as material traces of human-animal relations.

The major difference between Cretan Hieroglyphic and Linear A is not in the syllabograms but the ideograms. The basic animal signs are the same as Linear B, with minor exceptions: ideogram 336, which clearly depicts an animal head, has been suggested to be dog (Godart and Tzedakis 1992: 139), but Schoep disagrees on the basis
that it could equally be an equid, and identifies another as cow (306) (Schoep 2002a: 125-7). The difference from both Cretan Hieroglyphic and Linear B lies in an extremely complex system of ligatures used to modify Linear A ideograms. Some of the meanings of these are unclear: a ligatured oxen ideogram at Ayia Triada is next to the number 100, making it possible that this is referring to something related to oxen, but given their rarity otherwise, probably not the animals themselves (Schoep 2002a: 122). There are 137 ligatured signs in Linear A compared to 36 composite signs in Linear B, often negating the need for phonetic writing (Palaima 1988: 324-5). This is another reason for questioning the term logogram, since Linear A ideograms seem to be used instead of words, as a more efficient way of storing information (Schoep 2002a: 29-30).

The main document types with surviving records of animals are tablets and roundels. Roundels, typically, are inscribed with an ideogram and have a number of seal impressions around the edge, which almost certainly equate to the number of items (Hallager 1996a: 100-1). The view that roundels are receipts for goods provided by a central authority, rather than received by it, has been questioned by Schoep, but it is agreed that they record transactions (Hallager 1996a: 116-7; Schoep 1998: 405). The appearance of documents in themselves was probably significant as a way of conveying information about what was recorded (Schoep 1998: 403). Schoep also identifies different formats: animal ideograms appear on both mixed commodity tablets (at Ayia Triada) (Figure 3.5) and specialised livestock tablets (at Kato Zakros).

There are limits to the evidence about animals which can be derived from Linear A but although decipherment would help interpretation, arguably more significant are the gaps due to random preservation. It will be useful to introduce the Linear B documents before discussing the small numbers of animals recorded in the tablets, but the occasional large numbers of ewes compared to few male sheep have been seen as indicative of gaps in the evidence (Palmer 1995: 145; Schoep 2002a: 120-1, 186). It is worth pointing out, however, that this pattern is difficult to reconcile with the workings of the later wool industry.

3.2.2.4 Linear B

Two aspects of the prodigious Linear B literature are relevant to the present discussion. The first is the use of ideograms: as mentioned above there does seem to be a greater phonetic component to the use of ideograms in Linear B instead of ligatures. For example, in the consumption texts, SUS + si has been interpreted as ‘fatted pig’, so that the ideogram has been qualified by an abbreviation of an adjective (later Greek σίωλος)
The phenomenon known as ‘double writing’, when a sign group of a word is followed by the relevant ideogram, had been seen as a redundancy related to rapid recognition of the tablet’s subject, or even for the semi-illiterate. However, Palaima (2005: 272) has suggested that even in cases which seem like straightforward repetition, the word is still qualifying the ideogram. This can be seen as another example of the distinction between ideograms and words, each conveying different kinds of information.

An example of this is Ca 895 from Knossos, where the ideogram follows the words ‘horse’ (i-qo), foal, and donkey (Figure 3.1) (Chadwick et al. 1987: 363). This leads Hooker to suggest that: “Here the HORSE logogram has been made to serve as a kind of determinative or classifier expressing the general concept of ‘equid’” (Hooker 1988: 176-7). Yet this can be reversed if the horse ideogram is seen as relating directly to the animal, an indexical icon, and the word as the classifier, distinguishing the different varieties; once more the privileging by modern observers of language over other types of sign is apparent. The appearance of ideograms in Linear B is also informative: whereas those that were borrowed from Linear A do not have a clear iconic relationship to their subject in most cases, the newly invented signs do. Among these are the ideograms for horse and deer (Palaima 1988: 328-9). These animals presumably did not need to be regularly accounted for in Linear A tablets, illustrating that these documents materialised only a very particular type of human-animal relations. A close examination of some horse ideograms reveals that the mane is shown tufted in the same way as in depictions of horses pulling chariots. Horses without manes are not always labelled as foals, however, so it is possible that this distinction is only applicable to Ca 895, reinforcing the meaning of the words (Vandenabeele and Olivier 1979: 63-76). This emphasises the fact that these iconic ideograms related to observed features of the animals, notably the way the manes were tied when the horses were attached to chariots. That the ideogram was newly invented underlines the idea that even in the more phonetic system of the Linear B script there was a need for new signs functioning in a non-linguistic way.

Linear B studies have also contributed directly to an understanding of human-animal relations in Bronze Age Crete, or at least those co-ordinated by the palaces. While Ventris and Chadwick took the tablets listing sheep as contributions to the palace, Killen was able to demonstrate that they made more sense as evidence for a palatially administered wool industry (Killen 1962, 1963, 1964; Ventris and Chadwick 1973: 198) (Figure 3.6 & 3.7). Central to this was the realisation that the sheep ideogram with the male ligature could refer to castrated animals, wethers rather than rams, but more broadly, the use of the mediaeval wool industry as an analogy. Work by Olivier (1967b) on scribal hands
showed that the Knossos Da-Dg and Dn series of tablets were all written by the same person, designated 117; he also argued that these two series mainly involved the same sheep at different stages in the administrative process (Olivier 1967a). The wool from the palace-controlled sheep appears elsewhere in the tablets, disbursed to weavers also under palatial supervision (Killen 1984, 2008). It is worth pointing out that conclusions about the Mycenaean economy are drawn from an analysis of tablets from both Knossos and Mainland sites combined, but here the Knossos tablets are the focus. Knossos has yielded the greatest number of Linear B tablets so far: about 3500 compared to 1200 from Pylos (Driessen 2008). Wool and textile production is attested at both, but the Knossos wool industry, involving approximately 100,000 sheep, dwarfs that recorded at Pylos. Scribe 117 alone is responsible for 723 tablets (Olivier 1988: 219).

Halstead’s particular contribution has been to challenge a top-down view, in which the palace is forcing shepherds to manage its flocks, with an exploration of the complementary strategies of centralised wool production versus individual shepherds. The palace, for instance, sets targets for wool yields per sheep and expects the shepherd to maintain the flock at the same number. Although Killen emphasised the importance of wethers in wool production, Halstead (1999a) suggests that shepherds were allowed to remove wethers for consumption and replace them with their own ewes; the palace recorded the sex of the animals with a view to redistributing sheep among flocks but, as long as wool targets were met, accepted this substitution (Figure 3.6 & 3.7: tablet Dd 1171 is at the upper end of the scale with 72 ewes). “The palace was principally concerned to recoup wool and prescribed numbers of sheep from these flocks, with little interest in which animals were returned” (Halstead 1999a: 161). The palaces did keep breeding flocks, for which these ewes might have been destined, but the animals documented in the surviving tablets are insufficient to maintain flock levels without other contributions from shepherds including yearling sheep (Halstead 1998). He regards palatial flocks as “open systems” with an interchange of sheep between shepherds and the palace, according to centrally defined targets, going so far as to see flocks as an accounting device rather than referring to specific animals (Halstead 2003).

Since the palace and shepherds were pursuing different strategies, Halstead sees the various exchanges as mutually beneficial. Male lambs are not particularly useful to small-scale farmers, except for consumption, but the palace needed a constant supply of them to maintain its flocks of wethers. The contribution of yearlings in return for flock deficits can be seen in the Do series (Halstead 1998: 193-4). Mature fat wethers were prime animals for consumption, but in terms of wool production could be substituted for a
younger animal or even an infertile ewe by the shepherds (Halstead 1999a: 153-4). At a broader level Halstead sees the palatial flocks as a mobile reserve of food: it was beneficial for communities to accept this system since the palace could relocate unwanted sheep as famine relief (Halstead 1992: 74, 1993: 69). One of the few aspects of the system Halstead does not account for is the role of the ‘collectors’: as he points out, their flocks were not run any differently from palace flocks (Halstead 1999a: 163). Bennet’s (1985: 239) observation that the proportion of collector sheep increases with the distance from the palace could imply that the system needed officials to at least monitor or guarantee shepherds’ participation.

This is a useful juncture to return to the role of material culture in this process: the storage of information on the tablets enabled one person based in the palace at Knossos to control, or at least monitor, the movements and productive capabilities of some 100,000 sheep. Clay tablets have particular affordances which facilitate this: erasures and corrections on the tablets are evidence that they could be modified when a shepherd had fulfilled his contribution (Halstead 1998: 191-2). The practice of recording boonyms, the descriptive names of oxen, on the Ch tablets from Knossos, has also been seen as a form of monitoring: here those in the palace were keen to avoid the substitution of animals (Killen 1993). Plough oxen would have been valuable, high-maintenance animals, perhaps loaned out for ploughing with a supply of fodder (Halstead 1999b: 323). Such oxen allowed the cultivation of large areas of land (5ha per pair) with low human labour input (Halstead 1992: 66). Again Halstead sees this as a palatial strategy which would have worked as a collaborative enterprise with the populace who were needed at harvest time, and perhaps owned the land: it is likely that the harvest was shared (Halstead 2001). Nevertheless the combination of oxen and Linear B tablets was central to the ability of palatial officials to coordinate significant production across Crete, with 800 tons of grain recorded at da-wo in the south of the island (Halstead 1992: 67).

As Palaima points out, the oxen listed in the Cretan tablets do not appear to be in a religious context, whereas those from Pylos can be linked with sacrifice and feasting (Palaima 1989, 1992). Oxherds are listed at Pylos, but the animals themselves appear on tablets such as Un 138 listing 16 sheep, 13 goats, 13 pigs and 3 oxen, which is frequently cited as a list of contributions to a feast (Bendall 2004: 106; Killen 1994: 72; Palaima 2004: 224; Weilhartner 2008: 413). Feasting has become a particular focus of attention in the archaeological literature, but it is worth pointing out that the evidence in the Knossos tablets for animal sacrifice and feasting is sparse, particularly when compared to that for the wool flocks. Small numbers of animals do appear on some of the C(2) series of
tablets, and a possible reference to sacrifice, pointing to consumption (Bendall 2004: 107; Killen 1994: 73-6). A fuller consideration of the Cretan evidence for consumption will be given in Chapter 4, alongside the zooarchaeological evidence. It is worth considering why there is not more evidence for animal consumption in the Knossos tablets given that the retired wool-sheep were almost certainly slaughtered and eaten: this could be the result of the seasonal nature of the tablets, so that the hypothetical cull records are missing (Halstead 1992: 68). Slaughtering cattle would perhaps have been a rare occurrence, which happens not to be preserved in the documents. Such events can be inferred from the Linear B evidence from other sites, but without overemphasising the frequency of records of feasting: instead the surviving Linear B records are primarily the material traces of animal management, pertaining to the wool industry and cereal farming. The same animals were almost certainly eaten, but this is the point at which they disappear from the network of relations centred on farming, materialised by the tablets, and enter the domain of zooarchaeology.

3.3 Analysis

Quantification is one basis of comparison for animals appearing in different media. Proportional comparisons between Linear B documents and zooarchaeological assemblages have been made (Halstead 2002; Killen 1994), but one of the aims of this thesis is to expand this sort of comparison to evaluate the way in which different types of animals appear in different media in different proportions.

3.3.1 Cretan Hieroglyphic

There are three occurrences of the cattle ideogram 152 in CHIC, two of them on the same bar (Hh (08) 01 [Figure 3.4]). As with bar Hh (08) 02, the ideogram is associated with the numeral 1, and both documents are from Knossos (Olivier and Godart 1996: 118-121, 423 [#065, #067]). The bars appear to deal with other commodities alongside the cattle, and this ‘mixed commodity’ format in Linear B tablets is associated with provisioning for consumption events, but this is far from conclusive. Another ideogram, 168, resembles a bird, and is associated with the number 100 on a medallion from Mallia (Olivier and Godart 1996: 155, 327 [#104]). Birds are not listed in Linear B tablets, and Younger (2007b) doubts the sign identification. There are so few documents in this script that their
interpretation is far from clear, but the bars at least do seem to be part of transactions involving cattle.

3.3.2 Linear A

The material traces of human-animal relations have here been regarded as the tablets listing animal ‘logograms’ as classified in *Recueil des Inscriptions en Linéaire A* [GORILA] (Godart and Olivier 1985) and Schoep (2002a). Although the term ideogram has been preferred here, these authors have distinguished the occurrences of the animal signs as syllabograms and where the tablet is referring to a specific number of real animals. The other source of animal ideograms is the roundels, as published by Hallager (1996a,b).

<table>
<thead>
<tr>
<th>Site</th>
<th>Tablet</th>
<th>Roundel</th>
<th>T/R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ayia Triada</td>
<td>HT 6b, 20, 26b, 30, 34, 38, 64, 114a, 118, 121, 127b, 132, 136a, PH (?) 31a,b</td>
<td>HT Wc 3014b</td>
<td>14/1</td>
</tr>
<tr>
<td>Gournia</td>
<td></td>
<td>GO Wc 1b</td>
<td>0/1</td>
</tr>
<tr>
<td>Chania</td>
<td>KH 6, 14, 87</td>
<td>KH Wc 2063, 2069, 2102</td>
<td>3/3</td>
</tr>
<tr>
<td>Knossos</td>
<td></td>
<td>KN Wc 29</td>
<td>0/1</td>
</tr>
<tr>
<td>Phaistos</td>
<td></td>
<td>PH Wc 44</td>
<td>0/1</td>
</tr>
<tr>
<td>Tylissos</td>
<td>TY 3a,b</td>
<td></td>
<td>1/0</td>
</tr>
<tr>
<td>Kato Zakros</td>
<td>ZA 9, 22, 26a,b</td>
<td></td>
<td>3/0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>21/7</strong></td>
</tr>
</tbody>
</table>

**Table 3.1: Tablets (T) and roundels (R) with animal ideograms.**

The total number of animals listed by ideograms is shown in Figure 3.8; Table 3.1 gives the tablets and roundels on which these figures are based. As can be seen, the sample is a small one, with the largest number of animal records coming from Ayia Triada. This includes tablet PH (?) 31, which is also agreed to have originally come from this site, shown in Figure 3.5 (Brice 1988; Godart and Olivier 1976a: xx, 318-9; Schoep 2002a: 121). Of the 10 rams listed in the Linear A archives, 9 appear on PH (?) 31, which is inscribed with 13 animal logograms. The number of animals represented is small: 9 rams, 5 ewes, 7 she-goats, 2 he-goats, 2 pigs and the only 3 occurrences of 513. The latter sign is one of the many ligatured Linear A signs, and it is unclear whether it refers to goats directly or something connected with goats. As a result of this problem of interpretation, Figures 3.9 and 3.10 give the totals of animals with and without these ligatured signs. The
major discrepancy is with cattle at Ayia Triada: the composite sign 521 is associated with 100 on HT 34, and if this is taken as referring to cattle rather than fodder, it does skew the proportions; it is not impossible that it refers to 100 plough oxen (Schoep 2002a: 187). A count of cattle this large seems unlikely in the context of the other surviving tablets.

Half of the animal ideograms refer to sheep, with 22 logograms accounting for 214 animals. Of these 187 are ewes: tablet ZA 22 (from Zakros) accounts for 102, while two from Ayia Triada refer to 27 and 30 animals. These numbers are exceptional, and apart from another tablet detailing 13 ewes and a problematic tablet referring to 30 pigs (HT 118) (Schoep 2002a: 121), the remainder of the ideograms are associated with fewer than 10 animals. The number of ewes is difficult to explain because, as discussed above, the Knossos wool industry was based on wethers denoted by the ram logogram. The problem with interpreting ewes in the Linear A tablets as breeding flocks is that the concomitant evidence for wool flocks is missing and, as Schoep (2002a: 191) points out, there is also a low frequency of textiles recorded in the Linear A tablets. The main problem is, however, the small sample size, and making these tablets unrepresentative of the economy. As a result these large quantities of sheep have been seen as indicating an interest other than meat and dairy, and there are gaps in the evidence (Palmer 1995: 148; Schoep 2002a: 121, 186). Yet this is an argument from silence, and there is a rationale for building up flocks of ewes as a risk buffer and for disposal when needed (Halstead 1993b: 362-3). If these ewe numbers are typical then they are consistent with small-scale flock management, and possible seasonal or special culling of older sheep.

Given that most of the evidence from these documents is for transactions involving small numbers of animals, including all of the roundels, it does seem likely that they are destined mainly for consumption. A comparison with the copious Linear B evidence reinforces this idea.

3.3.3 Linear B

Totals for animals in Linear B have been given by a number of scholars, both for flock management (Olivier 1967a, 1988) and possible consumption (Bendall 2007: 203-221; Halstead 2002). Here Halstead’s (2002: 158-9) totals for the animals recorded in the Knossos Linear B tablets and his division into management and consumption texts have been used. While acknowledging that the sheep in the Da-g and Dn tablet are probably the same animals in cases where the toponyms match, he does not attempt to adjust his totals since there is no straightforward way of doing this. Figures 3.11 and 3.12 shows the
huge numbers of sheep recorded in the Linear B tablets, dwarfing the totals of other animals and those in consumption texts.

Figure 3.12 shows the totals of 1000 or fewer animals in more detail. The oxen in ‘herd’ texts are those identified as plough animals, often listed in pairs. The horses are mainly associated with chariots: depending on how the fragmentary tablets are interpreted there could be evidence for 110 rather than the 77 Halstead gives, but this does not change the general picture (Vandenabeele and Olivier 1979: 65). As noted above, few Linear B tablets deal with animals which are clearly destined for consumption, and Figure 3.12 includes tablets which Halstead regards only as possibly connected with consumption. He does suggest that in the absence of any other recorded uses for goats and pigs in the tablets, all are potentially recorded for this reason (Halstead 2002: 188). Halstead uses these totals to compare with the zooarchaeological evidence from Aegean Bronze Age sites, and this line of enquiry will be explored in Chapter 4.

3.3.4 Comparison

Although the Linear B evidence is far more extensive than the Linear A evidence, a comparison is shown in Figure 3.13 of the proportions of animals in each. Although the Linear A evidence is obviously unrepresentative, it is clear that it is far closer in appearance to the proportions of animals in the Linear B consumption tablets than the herding tablets. One Linear B consumption text defined by Halstead, Ce 50, lists 190 male sheep and 144 female sheep, showing that large numbers of sheep, including ewes, could enter the records as destined for consumption. This is an exceptional record, however, and small numbers of mixed animals are most likely to be associated with consumption.

3.4 Discussion

3.4.1 Material traces

Two themes relevant to human-animal relations have been explored above. The first is the way in which the Cretan scripts referred to animals not just symbolically, using words, but iconically, whether the sign was used as a syllabogram or ideogram. Animal ideograms, it has been argued, cannot be seen simply as signs for words, logograms, but convey extra information. As well as the iconic information, the use of ligatures, particularly in Linear A, illustrates the way in which the signs used in the Bronze Age are
not always straightforwardly based on language, but rather condensed information visually in a single sign which would have taken several words to express. In Linear B the practice of writing a related word next to an ideogram can also be seen as evidence that words could not replace ideograms; rather the combination was used to convey a nuanced meaning. Conversely the amount of information that can be obtained from the undeciphered Cretan Hieroglyphic and Linear A tablets, and not just by analogy with Linear B, shows that the meaning of these tablets is to an extent independent of language.

It has been argued above that the clay documents do not just record transactions, but are a constituent part in them. One scribe was able to co-ordinate the movements of 100,000 sheep and 452 shepherds across Crete using the clay documents as an extension of his/her mental capabilities. At the other end of the scale, for transactions involving just a few animals, roundels were used. Wc 2063 from Chania is inscribed with a sheep ideogram and around the edge are nine impressions of a seal depicting two lions (Godart and Olivier 1976b: 138; Hallager 1996b: 101). Summers (2004: 284) uses the term effigy to describe an image which is caused by contact with an object, like a death mask or here a seal impression; in other words it is a trace. Here it is the trace of the seal user involved in the transaction with a central authority, and the ideogram shows that the roundel was the material trace of nine sheep. In Chapter 5 the idea of an indexical connection, a trace, will be applied to the depictions of lions too. The roundel, then, is the material trace of a relationship between an administrative official, an individual, and nine sheep. The affordances of the clay, realised with both the inscription of the ideogram and impressions of the seal, allowed the trace of this transaction to be made durable and retained, presumably as part of a set of social and economic obligations. Its accidental burning realised another affordance of a clay document, not generally realised in the Bronze Age. In contrast to a record on parchment, it became an artifact stable enough to be recovered over 3000 years after it was made.

3.4.2 Traces of farming

Whereas consumption can be inferred from most zooarchaeological remains, only in a few cases is it possible to find evidence for the use of an animal as part of a particular farming strategy. Age and sex data do provide a more general picture of management practices, although this is not well reported for Bronze Age Crete. One exception is in the identification of traction pathologies on a small number of cattle bones from Bronze Age Knossos (Isaakidou 2006: 104-8). In contrast it is impossible to identify directly sheep which were once part of the palatial wool industry, although a high proportion of mature
male animals in a zooarchaeological assemblage would be one possible indication of this essentially palatial strategy.

The internal workings of the wool industry have been minutely analysed by Killen (1964) and Olivier (Olivier 1967a, 1988). The aim of this thesis, however, is to bring different perspectives to bear on human-animal relations in the Cretan Bronze Age: Killen drew on the wool records of mediaeval England in order to interpret the workings of the Knossos tablets, while Halstead has pursued a project of accumulating ethnographic knowledge in order to understand the various possible strategies farmers have employed. He emphasises the need to employ appropriate analogies: recent pastoralists are an important source of information about keeping animals, but their reliance on a market economy, for instance, needs to be evaluated before their herding strategies are assumed to be relevant to the Bronze Age (Halstead 1987, 1993a, 1996). There are a finite number of Linear B tablets from Knossos, each of which has been published and analysed, but it is still possible to provide new interpretations by bringing a different theoretical or analytical approach to bear.

The interpretation here is that these tablets were the material traces of herding, giving information about the sex and age of sheep, or the name of the shepherd. It is not just people who are named in the Linear B tablets, but also oxen. Since these names are descriptive, they provide evidence that Bronze Age cattle were different colours, black, red, and also had particular markings which can be taken as evidence that their hides were dappled. Although Killen (1993) has convincingly seen them as protection against fraud, it is hard not to use the analogy of the Dinka discussed in Chapter 2. That cattle markings were significant can be seen in the depictions of cattle on frescoes, as will be seen in Chapter 7: the artistic convention of the quatrefoil shows that hide markings had become engrained in Bronze Age Cretan art. The depictions, however, are not of cattle ploughing, but involved in bull-leaping. It is the tablets and bones which provide the best source of evidence for some of the mundane activities which were not the human-animal relations depicted in the visual culture of a palatial elite.

3.5 Conclusion

The documents have provided a model for the application of the theoretical framework discussed in Chapters 1 and 2 to the material culture of Bronze Age Crete. The
overwhelming focus on language and decipherment in previous scholarship can be seen as an analogy for the symbolic interpretations of material culture which dominate in Aegean archaeology, putative goddesses being of particular relevance here. By examining how signs can function iconically and indexically as well as symbolically, it has been shown that the inscription of signs in Bronze Age Crete could have a very different significance from, for instance, writing the word ‘cow’ alphabetically: as a syllabogram the sign recalled the noise of cattle, and as an ideogram it referred directly to cattle in the real world, functioning as an index, but also, in the Cretan Hieroglyphic script, if not after, as an icon.

One of the central themes of the interpretative archaeology of the 1980s and 1990s was the material culture as text analogy (Buchli 1994). Hodder (1991: 126-8) stressed the different ways in which material culture could signify, as opposed to language, but advocated a broadly structuralist approach to reading it. Aegean Bronze Age texts are more complex, however, since they are simultaneously archaeological objects with particular affordances and carriers of a system of signs which is inadequately described with the Saussurean model of an arbitrary connection between signified and signifier. This chapter has outlined a different approach to objects such as roundels, as the material traces of human-animal relations, in which the object is a constituent part of the transaction involving animals. In this way Bronze Age texts are a useful analogy for the animal-related material culture of the Cretan Bronze Age. This is not to say that different types of material culture materialised the same human-animal relations in the same way. Documents for instance, were intended to be temporary records, primarily of animal management, to be read only by an administrative elite. This is in contrast to frescoes, for instance, which were designed to be seen by all visitors to the Knossos palace. While it is possible to match the same coat colourings on the bulls in the frescoes to the Linear B boonyms, the point to be made is that the documents are traces of plough oxen, and the frescoes of bull-leaping. The next chapter follows up and widens the evidence for consumption of animals from the documents, but also examines how the affordances of animal remains differ from clay documents. Both are traces of human-animal relations, and while there are overlaps, each medium is implicated in a different set of animal practices.

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2 The debate over the interpretation of the Thebes Linear B tablets is a perfect illustration of this trend: the dubious reading of ma-ka as ‘Mother Earth’, i.e. Demeter, by the tablet editors (Aravintos et al. 2001) is the foundation of a religious interpretation of the content of the tablets which has been convincingly challenged by Palaima (2001).
4 Consuming animals

4.1 Introduction

The remains of all the animals found in the upper stratum, the domestic ox, the goat, the horned sheep, the fallow deer, and the hog were parts of offerings to Zeus, while the dog from the lower stratum may belong to an earlier period in the history of the cave, when it was used as a habitation and before it was used as a shrine of the Dictaean Zeus. The perfect condition of the offerings contrasts strongly with the fragmentary remains of the refuse heap. (Boyd-Dawkins 1902: 165)

Regarded as the first zooarchaeological report from Crete (Reese 1994: 191), Boyd-Dawkins’s publication of the faunal remains from Psychro Cave offers a useful starting point for this chapter. Exemplary in his approach, his brief report gives species identifications, measurements of specimens, and, as can be seen, a consideration of context and interpretation of significance. For the goat and pig remains he mentions the appearance of these animals on sealstones, bringing iconographic evidence into the discussion. Of particular relevance is his distinction between ritual offerings and domestic refuse, a theme which runs through the interpretation of zooarchaeological remains from Bronze Age Crete. Yet the validity of such interpretations depends on the methods of excavation, and given the way that Psychro Cave was excavated, it is unlikely that the small numbers of bones that Boyd-Dawkins published are a representative sample. Without an indication of a sampling strategy his report can only be treated as an indication of the presence of certain animal remains in certain layers of Psychro cave, and not an accurate reflection of the proportions of different taxa, particularly given the small sample size. Nor does it follow that other species were absent: the bones of smaller animals or the fragmentary remains of marine invertebrates tend to be recovered by sieving. Sieving also affects the proportional recovery of different taxa, even if one does assume that all remains over a certain size were collected. This might seem a harsh criticism of an excavation which took place in 1901, but the sad fact is that this report is no less informative than any other zooarchaeological report from Crete for nearly a century. Some excavations published in the 21st century still only give an idea of the presence of a certain taxon in a given context. This favours exactly the sort of interpretation that Boyd-Dawkins made: the presence of animal remains in a ritual context is evidence for sacrifice, or consumption if found elsewhere. Conversely the presence of certain animal remains is used as evidence for a ritual context. These interpretations reflect assumptions which can be traced back to the origins of Minoan archaeology. The aim of this chapter is to broaden the scope of interpretations by
integrating the zooarchaeological remains into a more general consideration of the material traces of human-animal relations.

Animal bones and shells can be seen, straightforwardly, as the indices of animals. As discussed in Chapter 2, the term animal is defined here by affordance, most basically that of interaction. Clearly mammals have different affordances from marine invertebrates, but bivalves snap together when touched and snails retreat into their shells, revealing them to be animate. A distinction needs to be made, however, between the animals encountered in the environment and the inanimate remains recovered by archaeologists. The chain of inferences connecting the two is familiar to zooarchaeologists, from the published assemblage to the sample assemblage (what was collected by archaeologists), to the fossil assemblage (what survived in the archaeological record to be collected), to the deposited assemblage to the death assemblage (the animals killed), to the life assemblage (the animals of the environment) (Klein and Cruz-Uribe 1984). While this is central to the analysis of consumption patterns, one focus of this chapter, the significance of animal remains in the past is also crucial. Shells can be gathered on the beach after the animal has died, and deer antlers can also be gathered without encountering the animal. Both appear in a particular context, the Temple Repositories from Knossos, making it possible to evaluate their significance contextually. From this it will be argued that even shells collected empty or shed antlers can be used as indices of animals or environments. Bones and shells can themselves also index certain practices: Boyd Dawkins (1902: 163) records that some of the cattle bones had been “scraped”: cut marks can be used to infer skinning and/or consumption depending on their position on the bone. The smashed remains of murex shells can be used as evidence for dye production (Reese 1987a; Ruscillo 2006). This chapter examines the different ways in which these remains signify particular relationships between humans and animals to zooarchaeologists, but also could be used to signify certain relationships in the Bronze Age.

Even in the absence of indications such as cut marks, the most common human-animal relation of which deposited bones and shells are the outcome is predation, and most of the remains discussed here can be seen in these terms. This, it has to be said, is an assumption, since bones are not the direct traces of human predation: this logical step can be termed abduction, a term used by Gell (1998: 14-6) to refer to inferences about the agency responsible for artworks from the artwork itself. In this case the disarticulation and depositional context of bones can be used to infer that they were consumption debris, even though this might not be true in every case, for instance, if a joint of meat had gone rotten. By making further abductions about relations with animals and practices arising
from the affordances of particular animals, even the presence of certain remains can be highly informative. With a consideration of context the significance of the remains in the past can also be assessed, in terms of structured deposition for example. The proportional occurrence of animal remains or certain pathologies can be used to infer information about management, and be considered alongside the documentary evidence. The reliability of such inferences is dependent on the sampling strategy and also methods of analysis, making it necessary to consider the way in which zooarchaeological remains from Bronze Age sites have been published. The conceptual schemes running through the interpretations of zooarchaeological remains will also be considered.

4.2 Previous approaches

4.2.1 Introduction

As with other classes of evidence dealt with in this thesis, the material is grouped according to the divisions normally made in the publication of material, usually because different specialists are involved for mammals, fish and marine invertebrates. These divisions tend to be perpetuated in separate faunal reports, addressing different questions, according to the traditions of each specialism. For the purposes of the analysis, specimens which have been identified to genus are used because this is the standard level of identification in the zooarchaeological reports. Other identifications are made, for instance to family level, or more general such as ‘small mammal’. Table 4.1 (p. 310) is a list of genera and their common name where used. When considering animal depictions, genus can be problematic since our own folk taxonomy can amalgamate genera with similar forms, for instance ‘cockle’ (*Acanthocardia* and *Cerastoderma*) or ‘cowrie’ (genera of family *Cypraeidae*). This follows on from the debate mentioned in Chapter 2 between formalist classifications and a more ethnotaxonomic approach. But this does not mean that ‘shell’ or ‘mammal’, or *Murex* or *Sus* are entirely arbitrary divisions. Mammal, for instance, is an almost universal category in folk taxonomies, even if what is included differs between cultures (Brown 1979). Since genus does have a phenomenological basis, its use does not mark the imposition of an arbitrary Western scheme of classification on the animal remains of Bronze Age Crete, but clearly pragmatic and cultural factors do need to be considered (Morris 1998). Without suggesting that these categories correspond exactly to Minoan classifications, it can be argued differences were salient in the Bronze Age, particularly in terms of affordances. Murex shells, for instance, were used in different ways from pigs; pigs, as can be seen from Linear A and B tablets, were
distinguished from goats. When comparing zooarchaeological reports, such terms provide a useful common ground.

It is also informative to consider the split mentioned above between offerings and refuse, into which many interpretations of animal remains can be grouped. These interpretations can be evaluated in terms of both the theoretical framework established in Chapters 1 and 2 and by a statistical analysis of the zooarchaeological remains. This shows that while it is entirely justified to see different types of remains signifying different things according to context, interpretations frequently go far beyond the evidence. This happens particularly when bones are implicitly used as evidence for animal practices such as sacrifice, without considering the equivocal linkages between the deposited remains and the inferred practice. A cattle skull is potentially as much evidence for bull-leaping as it is for blood sacrifice: both are depicted but could only be inferred archaeologically from very particular contextual markers which are completely lacking in the Cretan remains.

Before analysing the published zooarchaeological reports, it is worth examining the interpretations which have been brought to bear on faunal remains, since these do not come exclusively from faunal analysts: once again Evans provided some of the still dominant interpretations of faunal remains without having employed systematic collections of bones and shells at Knossos. Instead, as mentioned above, the presence of a given bone or shell has often been used as the basis for impressionistic interpretations.

4.2.2 Mammal
4.2.2.1 Ritual
Animal sacrifice, particularly involving cattle, has become part of the archaeological imagination for Bronze Age Crete (Marinatos 1986; Nilsson 1950: 229-35). Animal remains are not, however, unequivocal traces of this practice, since sacrifice is usually followed by consumption, and so usually indistinguishable zooarchaeologically from other traces of animal consumption (Hamilakis and Konsolaki 2004: 145). If sacrifice is defined as the ritual killing of a live animal, it needs to be asked what the material traces of this would be. If it is specifically seen as an offering to a deity, this is a symbolic link between a practice and an intention which is not readily apparent even in depictions of animals on tables, such as the Ayia Triada sarcophagus (Cromarty 2008: 15; Long 1974: 61-8). In any case, there is no clear iconographic evidence for this practice until the Final Palace period: the relevant seal depictions will be considered in the next chapter.
One of the few faunal reports in the *Palace of Minos* elides the special deposition of animal remains and sacrifice, helping to establish a conceptual connection between the two. In the House of the Sacrificed Oxen, Evans records smashed cattle skulls in the basement with the remains of portable altars. He interprets them as follows:

These sacrificial relics, thus ranged on the floor of the basement Chamber, could have only one significati on. The methodical filling in of the ruined building and its final relinquishment as a scene of human habitation had been preceded by a solemn expiatory offering to the Powers below. (Evans 1928: 302)

Continuing with a quote from the Iliad, “in bulls doth the Earth-shaker delight”, Evans explicitly gives these remains a religious significance. His interpretation for this context as ritual is not unreasonable, in terms of the structured deposition of cattle skulls, but this is an exceptional context and not clearly sacrificial. Another bucranium was found embedded in an LMIIIA wall blocking a side-chamber doorway in Tholos A at Phourni, next to a dismembered horse burial (Sakellarakis 1970). The cattle skull has been seen by the excavators as the remains of an animal sacrificed and then eaten in a funerary banquet (Sakellarakis and Sapouna-Sakellaraki 1997: 262). The skull, however, is the only direct piece of evidence for either the banquet or sacrifice, and it is an index of the animal rather than either of these practices in the absence of associated evidence.

A different type of sacrifice involves burning a portion of the carcase; the important aspect of this is not the killing of the animal but the offering of the remains, a practice with parallels in later Greek sacrifice (Hamilakis and Konsolaki 2004: 145). Cooking very rarely results in the burning of bone: this is either post-depositional or the result of deliberate practices. Only five burnt cattle bone were found at Bronze Age Kommos, and Reese (1995b: 188-9) explicitly denies any religious connotations for these remains, which he sees as food refuse. Since burnt bones have been seen as the traces of sacrifice at Iron Age Kommos, associated with altars, it can be assumed that there was no such contextual evidence for sacrifice in the Bronze Age levels (Reese 2000: 474, 491; Shaw 2000: 682-90). Burnt bones of various species are found frequently at Kommos (Reese 1995b: 171) and over 50 are reported from Mochlos (Reese 2004), but no arguments are made to support a sacrificial interpretation. Since the burnt bones at Mochlos are found in the areas with the highest concentrations of animal bones, these do not appear to be evidence for the discrete deposition of burnt bone often associated with sacrifice.

There is evidence for burnt animal sacrifice from the Bronze Age Aegean, but this comes from the Mainland. At LHIII Ayios Konstantinos in Methana burnt pig remains have been argued to be evidence for burnt sacrifice associated with a hearth, supported by differences in species and body part representation between this particular context and
others in the same building (Hamilakis and Konsolaki 2004). At Pylos, in the palace, a number of discrete deposits of burnt bone, showing unusual body part representation, have been studied recently, and convincingly argued to be evidence for sacrificial offerings (Halstead and Isaakidou 2004; Isaakidou et al. 2002). These deposits have been connected to Linear B tablets listing animals, including cattle, destined for large-scale consumption; one of the burnt bone deposits found in the archive room has been used to argue that the sacrificial remains were accounted for by the palace administration before disposal (Stocker and Davis 2004). One tablet from Knossos refers to goats with a word interpreted as meaning ‘sacrifice’ (Killen 1994), included by Halstead (2002) as one of his ‘consumption’ texts. This is a major problem with discussions of animal sacrifice: animals were killed to be eaten, and some Linear B tablets give lists of animals which can be connected with this. This can be described as sacrifice (Godart 1999b) or feasting, or both (Palaima 2004), but the material remains will be of consumed animals. Even the Pylos evidence for burnt sacrifice can be interpreted purely within a feasting context.

In the absence of references to burnt offerings for Bronze Age Crete, another anomalous occurrence interpreted as evidence for sacrifice as distinct from consumption is the deposition of whole animal carcases. The Archanes horse is one of the very few examples of this, but it is not completely intact: the cut marks on the skeleton could indicate skinning or defleshing. Another animal associated with sacrifice in burial contexts is the dog, including at Tholos B at Archanes, which the excavators argue “could not be eaten and therefore only have been sacrificed” (Sakellarakis and Sapouna-Sakellaraki 1997: 263-4). As will be seen, however, dogs were eaten in Bronze Age Crete, and the Archanes dog skeleton was not intact (Preston Day 1984: 23). Intact dog burials have been reported from an Early Iron Age tomb in Kavousi, but it is unclear how deliberate the burial is (Reese 2000: 493); the other examples cited from LMIII Crete largely involve disarticulated dog bones in mortuary contexts (Preston Day 1984). Since sacrifice is a deliberate act with a particular purpose, even these dog burials are open to different interpretations, including the remains of consumption, or disposal of dead animals. The recently published Late Minoan Palaikastro wells had a large number of dog remains in the fill, including a number of near complete skeletons (Wall-Crowther 2007). It is suggested that the latest of these were ritually deposited, explicitly following Evans’s argument that dogs were sacred to the Minoan goddess, although the word ‘sacrifice’ is not used (MacGillivray and Sackett 2007: 226). However, since both dog remains and occupational debris were found in the fill, the deposition of dogs could equally be seen in terms of refuse disposal (Wall-Crowther 2007: 195). There is not enough contextual
evidence to infer the reason for the deposition of the dogs, and the wells provide no basis for a symbolic connection between these remains and a goddess.

A recent examination of sacrificial ritual in Bronze Age Crete has similarly come to the conclusion that animal remains at Psychro, Kato Syme and Juktas are better described as indicating “commensal meat rituals” rather than sacrifice since there is no evidence that these were offerings to supernatural powers (Cromarty 2008: 117). Given that the Psychro report mentioned above is the only zooarchaeological report the author cites for these sanctuary sites, it can also be said that there is no evidence for either interpretation. As was argued in the previous chapter, explanations involving deities are symbolic interpretations with an essentially arbitrary relationship to material culture. It follows that ‘sacrifice’ is a secondary, symbolic, interpretation of animal remains on the basis of disposal. Clearly certain body parts could be dealt with in particular ways, retained, for instance, as indices of animals; the House of the Sacrificed Oxen deposit could equally be seen as the commemoration of a feast. Skulls and antlers are useful trophies since they are the most clearly iconic, as well as indexical, signs of the dead animal. Animal remains, unless burnt and/or deposited in particular ways, cannot be seen as the material traces of sacrifice, particularly in the absence of clear iconographic evidence until the Final Palace period. These few depictions can be seen as the material traces of sacrifice, but bones are largely the traces of consumption.

4.2.2.2 Refuse
The large majority of mammal remains, have been interpreted implicitly or explicitly as food debris. Further evidence for this is the indexical trace of a knife on a number of the mammal bones. Butchery marks are reported from Kommos, Mochlos, Pseira and Kastro, indicating an increasing level of detail in recent zooarchaeological reports. Reporting of cut marks can also depend on the preoccupations of the faunal analyst: a reanalysis of the LMIIC-Early Iron Age Kavousi data (from the sites of Kastro and Vronda) by the same analysts indicated that they had underreported cut marks on pigs and cattle to a larger extent than dogs because they were looking more closely for evidence of consumption of the latter (Snyder and Klippel 2003). Although cut marks in certain positions on the bone are also indicative of skinning, here there was clear evidence for dismemberment and defleshing; the depositional context of the canid bones in middens along with other species also supports this interpretation. This indicates that cut marks are a useful way to challenge assumptions about which animals were regarded as edible. Butchery marks are also reported on badger remains from the same two sites (Snyder and Klippel 1996).
4.2.2.3 Other

Not all animal remains can be explained in terms of consumption, even though most of the animal is likely to have been eaten. Bones were then either discarded, or in some cases used as a raw material. One sheep/goat bone from Kommos is reported as worked: hollowed out to be used as a scoop (Ruscello 2006: 820-1). There are other examples of bone-working, for instance 16 pieces of worked mammal bone from MMI Mallia (Jullien 1975: 155-6). Often worked bone is reported as artifactual rather than zooarchaeological remains, and the two tend to be considered by different analysts and published separately (Isaakidou 2003). Evidence for horn-working was found in a Protopalatial deposit north of the SW House at Knossos (Isaakidou 2007a). It acts as a reminder that the comparative rarity of animal skulls in faunal assemblages could be the result of secondary processing of the remains. Animal skinning need not be for food preparation, and the position of cut marks can be an indicator of this. The occasional finds of martens or weasels could be explained in this way (Yannouli 2003: 184). Context, however is key: the significance of the weasel skull in the Temple Repositories can be inferred to be connected with the assemblage (Panagiotaki 1999: 118). Small mammals can also be commensal species, living alongside humans. When found in jars, for instance, they were not necessarily deposited by humans: some rodent remains can be explained in this way (Payne 1995). This indicates some animals’ affordances as pests.

4.2.3 Marine Invertebrates

4.2.3.1 Ritual

The triton shell, Charonia, has parallels with Bos in the way it has been described. Again Evans provides an influential interpretation, describing a ledge with a triton shell on it as a “domestic shrine”, with the triton “a usual concomitant of these sanctuaries”. He continues: “Such conch-shells were in fact used as trumpets in Minoan cult for calling down the divinity to altars of offering” (Evans 1921b: 580-1). The evidence for this is a seal from the Idaean Cave which shows a large gastropod being blown. Reese (1985: 353-64) provides an exhaustive list of the triton shells found in the East Mediterranean, at least some of which he suggests were ‘trumpet shells’, used to summon people or as fire alarms. In this article and elsewhere he also follows the cultic interpretation (Åström and Reese 1990). As will be discussed in Chapter 6, there are also a number of imitations in various materials found on Crete, some of which were used for pouring liquids, as were some of the unmodified shells (Baurain and Darcque 1983; Reese 1985: 364). Triton shells are likely to be reported as finds in the absence of a zooarchaeological report, and are also more likely to be hand collected than smaller and less distinctive shells. Their
significance should be assessed in terms of context and these skeuomorphs, rather than entirely symbolically.

4.2.3.2 Refuse

As Claassen (1998: 16) suggests, ‘predation’ is the “relationship that typifies the role of humans in molluscan populations”. In his publication of the marine invertebrates from the LM I-III Unexplored Mansion, Evely (1984: 246) lists Charonia as both ‘religious’, with Tonna, and ‘eaten’, with Donax, Glycymeris, Murex, Thais, Patella, Paracentrosus and Tapes. One way to identify food genera is by their quantity. The superabundance of Patella (over 31,000 specimens in Bronze Age contexts) at Kommos indicates consumption. Only 58 specimens of Charonia are recorded at Kommos, which is not conclusive for its being eaten, and the overall total for Bronze Age sites discussed here is less than 400.

Refuse need not be the result of eating. Edible species (and nearly all shellfish are edible) are not necessarily eaten by humans, but can be used as bait, or could be collected for other reasons (Claassen 1998: 186-7). Murex, for example, is the fourth most abundant genus at Kommos, but was also used for the purple dye industry there. A large number of Murex fragments from Kommos (over 15,000) are not published with contextual data, and it has been suggested that many more would have been burned for lime (Ruscillo 2006: 808).

4.2.3.3 Other

The less frequent genera are often explained as aesthetic. At EM Myrtos, the aesthetic shells were seen as Thais, Cymatium, Tonna, Cassidaria and Murex (Shackleton 1972: 325). Evely also suggests that a group of shells at the Unexplored Mansion at Knossos is ‘decorative’: Columbella, Conus, Dentalium, Spondylus, Astraea and Arcularia (Nassarius). As he suggests: “Three separate motives underlie the collection of these creatures – a desire for decorative objects, for edibles, and probably for religious purposes” (Evely 1984: 246). Evely’s background, however, is as a material culture specialist rather than zooarchaeologist; nevertheless he is one of the few to explicitly suggest what shells were used for. As Ruscillo suggests of the less frequent genera:

Although not found in great numbers at the site, these species, exploited for ornamentation, bait, and perhaps other more obscure uses, suggest the resourcefulness of those who collected them and thus benefited from even the most miniscule of natural resources in the area. (Ruscillo 2006: 790)

One way to examine whether shells were decorative rather than edible is to look for a hole; of shells recovered from Neolithic levels at Knossos, Evans (1928: 10) observed
that: “Many of the cockles and some of the other shells had been bored to be worn as ornaments”. Predatory gastropods also bore shells and so it is not always easy to distinguish these holes from those made by humans or erosion but a hole either indicates that a shell was collected dead or subsequently modified by humans. That the Knossos shells reported by Evans were holed by humans can be assumed from the publication of John Evans’s excavations under the Central Court: a number of the Cerastoderma shells were pierced from the inside, which is not consistent with extracting the meat (Shackleton 1968). In fact this appears to be a largely Neolithic phenomenon since other genera are more frequently holed in the Bronze Age, and rarely Cerastoderma. Although few cowries are holed it is likely to be a genus collected for display rather than eating since they are found intact (Reese 1995c: 269). Other genera too, including Pisania, Cypraea and Arcularia “could very well have been collected for adornment, although signs of string attachment are not always present or preserved” (Ruscillo 2006: 801).

 Glycymeris was almost certainly not eaten because the majority of specimens were collected dead: those at Kommos are frequently holed and waterworn. Reese suggests that many were brought onto the site with beach pebbles to be used for building, but concludes: “It is unclear what purpose the Kommos Glycymeris served” (Reese 1995c: 255). At Myrtos, Shackleton (1972: 325) suggested that a couple were used as spoons or scrapers, but Ruscillo (2006: 803-4) discounts this for Kommos. Referring to the concentration of the Kommos Glycymeris in LMIII she suggests another possible scenario:

   A storm or a seismic event produced large waves that deposited hundreds of cockles on the site in arbitrary locations. Inhabitants of the site would have found the waterworn shells around their settlement and collected some, perhaps as mementos of a tragic event to be revered lest it happen again. The environmental implications of finding 4,000 waterworn Glycymeris predominantly from one period are significant. (Ruscillo 2006: 805)

In any case the second (although probably the third given the number of Murex mentioned at Kommos) most abundant marine genus in Bronze Age Cretan contexts was not eaten in the majority of cases. The diversity of genera, which often appear in small numbers at any given site, makes it more difficult to argue for consumption in every case. Even the abundant genera, could have been brought to the site by various means, including transport for building material (Reese 1995c: 256), scraping from ships’ keels (Ruscillo 2006: 801) and transport by seabirds (Claassen 1998: 11). Some shells, however, were deliberately collected, and not just for food. This is underlined by an assemblage found in the centre of the palace at Knossos, the Temple Repositories, which will be discussed below.
4.2.4 Bird

Bird remains are reported at a number of sites but apart from three partridge (*Alectoris*) specimens from Mochlos (Soles 2003: 18) were only closely identified at Kommos. The most abundant bird here is the shearwater, a seabird. That they appear in the same contexts as dove, partridge and chicken leads Reese (1995a: 204) to suggest that they are all being eaten. Swift and pelican were also found, and he suggests that they too could have been consumed. Support for the idea that seabirds were eaten comes from the Middle to Late Bronze Age site of Kolonna on Aegina, where butchery marks are reported on the remains of cormorants and raptors, if these are not for the removal of feathers (Forstenpointner et al. forthcoming). Reese (1995a: 194) does mention that the bird remains are concentrated in one area of Kommos, the Southern Cliffside, but the significance of this is unclear. Again predation is the most likely explanation for bird remains, although post-abandonment nesting cannot be excluded.

4.2.5 Fish

Fish remains were recovered by water sieving from Kommos, Mochlos, Palaikastro and Pseira. For Kommos, Rose (1995: 204) suggests that the fish remains indicate ‘a coastal fishery’ which would have involved the use of nets. There are also hooks recovered from Kommos, and these, with the presence of a small number of deep water fish (*Carangidae* and *Scombridae* [tuna]), are used as evidence for fishing from boats. Mylona suggests a very similar picture for Mochlos and Chalinomouri, with an assemblage of mostly small coastal fish, with *Sphryenidae* (barracuda) and a few larger specimens possibly indicating the use of boats. Some of the remains show signs of digestion, another direct trace of consumption by either animal or human (Mylona 2004: 124, 2007: 217). There are a number of remains from vessel contexts: it has been suggested that these could have contained fish sauce or broth (Rose 1995: 223; Mylona 2004: 123); the characteristic state of preservation of the remains at Palaikastro has been used as further evidence for this (Mylona 2007: 220). There is a range of material culture evidence for fishing from the Bronze Age Aegean (Powell 1996), and so the recovery of fish bone assemblages from only four Cretan sites highlights the incompleteness of most faunal reports.
4.3 Analysis

4.3.1 Quantifying animal remains

The interpretative issues over animal remains discussed above are not unique to Bronze Age Crete, but have been rehearsed in debates about zooarchaeological remains elsewhere. Whereas the majority of zooarchaeological material is interpreted as refuse, phenomena such as articulated skeletons are often seen as ritual. Research in Iron Age Britain has resulted in a more explicit approach to animal remains which is relevant to the Cretan material. In an analysis of Iron Age pits, Hill (1996) looked for evidence of structured deposition by looking at the co-occurrence of different types of animal remains. Included in the analysis was what he termed ‘associated bone groups’, that is partly articulated skeletons, allowing him to explore the question of whether a distinction between rubbish and ritual could be made. The interpretation of associated bone groups, however, has also been convincingly shown to depend on the intellectual climate: this phenomenon was predominantly seen in economic terms in the 1970s, as butchery waste or animals falling into pits, but almost exclusively as a ritual act of deposition in the last decade (Morris 2008). This leads Morris too to focus on context in order to look for ‘ritualised activity’, but without imposing a problematic distinction between ritual and rubbish on remains which could be both. The analysis here is an attempt to ask whether the Cretan material can similarly be used to evaluate the sorts of interpretations which already exist in the literature. The conclusion is largely negative because of the limited way in which faunal remains have been recovered and published: both Hill and Morris use contextual analysis to go beyond the ritual:rubbish dichotomy, but this is almost impossible to do systematically for Bronze Age Crete at present (cf. Halstead and Isaakidou 2004: 150). This does not mean that the zooarchaeological evidence is unusable, or does not support particular interpretations, but it is necessary to ask whether the remains from different sites can be compared, and how they can integrated into the evidence for human-animal relations from texts and depictions.

The first question is whether the various published zooarchaeological assemblages are comparable, and if so, at what level. The most significant are summarised in Table 4.2 (p. 311). The size of the sample is crucial when comparing sites. As a general rule, with 10 identified specimens one can start to compare the species exploited between different sites. Comparing these proportionally is possible with 100 specimens, while with 1000 one can start to look at intra-specific age and sex differences (Davis 1987: 46). When looking at the Bronze Age Cretan evidence, only Knossos, Kommos, and Vronda, and Mochlos and Chalinomouri combined, have a Number of Identified Specimens (NISP)
count over 1000 for the main domestic taxa (see Figure 4.1). The 3076 bones published from the Minoan Unexplored Mansion at Knossos do give proportions of species, but the only age data is a comparison between age of death of pigs in one context compared with the others (Bedwin 1984: 307-8). At Kommos the poor conditions of preservation resulted in very little data being obtained from 9400 larger mammal fragments found in the area of the houses (Reese et al. 1995: 163-4). Of these only 1624 were identified to species, with a Minimum Number of Individuals (MNI) of 352. While there is some discussion of age, and hence kill-off patterns, there are problems of sample size. Reese does not distinguish sheep and goat, and was only able to age 62 out of an MNI of 185, of which 15 are 2.5-3 years or older (Reese 1995b: 170). This leads him to suggest a meat kill-off pattern, but since these figures are aggregated from the whole Bronze Age occupation of Kommos, they are hardly conclusive, and give no insight into herding strategies. Since differential preservation conditions at Kommos have been linked to building use, with even poorer preservation of bones from the civic area, it is possible that there are further taphonomic biases (Ruscillo 2006: 785-7). Just over 1000 mammal bones were identified at Vronda (from 7,620 fragments), but the authors suggest that the bones are too fragmented to study age (Klippel and Snyder 1991: 184). Sheep and goat are distinguished, but the identification of 26 sheep elements to 9 goat elements cannot be generalised into a herd composition. Vronda is also an LMIIC hilltop site and so a very different type of settlement from Knossos or Kommos, which are settled for almost the entire Bronze Age. If one wants to compare the domestic animal remains of these and other sites, it will be limited to proportions of different genera rather than kill-off patterns.

The proportions of the main domestic taxa at Kommos, Knossos and Vronda are very similar, with a preponderance of Ovis/Capra followed by Sus and Bos (Figure 4.1 & 4.2). The Knossos data in Figure 4.2 are from three assemblages: a Protopalatial deposit north of the SW House (NISP=98, but detailed as Minimum Anatomical Units so not included in the NISP totals in Figure 4.1 (Isaakidou 2007a)), remains amalgamated from the Neopalatial Acropolis Houses (Jones 1979) and the Neopalatial and Final Palace Minoan Unexplored Mansion (Bedwin 1984). Of the sites with a combined NISP of over 100, all follow this pattern generally. The greater proportion of Bos in the Knossos Protopalatial deposit is the result of the number of horn cores, connected with horn working (Isaakidou 2007a: 141-2). The proportion of Sus is higher at certain periods at Ayia Triada and Kommos, but only at Chania does Sus predominate. Here, however, there is a combined NISP of only 54 because of the way the site was published (Hallager and Hallager 2000, 2003). It is interesting to compare the predominantly Iron Age site of Kastro, with a
combined NISP of over 15,000, in the same location as Vronda. Here the percentage of *Bos* and *Sus* are equal (8%), showing a relative decrease in the percentage of *Sus* compared with earlier Vronda (17%). The work of Snyder and Klippel (1999) at Kastro also shows that these raw percentages can be significantly affected by the method of recovery: sieving experiments showed that the percentage of cattle is decreased by sieving since cattle bone fragments are bigger and therefore more likely to be collected by hand. Before partial sieving the cattle component was 12.1%, but this decreased as the recovery of sheep/goat, pig and other fauna increased (Snyder and Klippel 1999: 70). Despite this finding the site was only partially sieved, as was the case at the earlier excavations at Kommos where floor deposits and others were dry sieved and only a few contexts such as vessel contents were wet sieved (Reese et al. 1995: 163-4). No mention of sieving is made for the Minoan Unexplored Mansion (nor has this been common practice at Knossos), so that the sampling strategies of these three sites are not comparable: differences in proportion could be largely the result of recovery.

The effect of sieving on the recovery of faunal remains was first reported by Payne (1972), an article cited in a review of Warren’s (1972) Myrtos publication: “The full potential value of the excavation, however, was not realized through one major flaw – the lack of any kind of sieving, and hence of an objective standard of recovery by which to evaluate the sample” (Vitelli 1974: 192). In terms of a site-wide standard of recovery involving full dry sieving, the same could be said of all the faunal reports analysed here except the 600+ mammal specimens reported by Ruscillo (2006: 786) from the 1990-97 excavations at Kommos, 1072 from Mochlos/Chalinomouri (Soles 2003: 9), and undisturbed contexts from Pseira (Betancourt and Davaras 1995a: 4; Floyd 1998: 5).

Comparisons with other sites are difficult because of the combined result of small sample sizes and incomparable sampling strategies; even comparisons between these sites are affected by the degree of additional water sieving. Differences in proportions of the main domestic taxa between sites could be an artifact of sampling, even before taphonomy is taken into consideration.

Sieving aside, there are other problems of comparison. The high fragmentation levels at Kommos and Vronda make the use of NISP for mammals problematic because NISP is simply a measure of identified fragments: a complete bone gives an NISP of 1, but if the same bone were fragmented the NISP could be 10 or more. MNI can potentially provide complementary information (Klein and Cruz-Uribe 1984: 25-6), but it is difficult to obtain the associated MNI figures for almost all of these assemblages. Only at Kommos can the MNI figure be compared with NISP, although Reese does not state how MNI was
calculated. Indeed, as Grayson (1984) suggests, this inherent subjectivity is one of the major drawbacks with this method, along with resulting small sample sizes. For this reason a comparison of different assemblages based on standard zooarchaeological criteria is almost impossible for Crete. Instead one has a series of interpretations based on general criteria such as proportions of taxa. For instance at Debla, an Early Minoan site, the exclusive presence of adult *Ovis/Capra*, along with other factors such as the altitude and architecture, led to the suggestion that this was a summer pasturage camp (Warren and Tzedakis 1974: 334). Despite the fact that this is based on a NISP of only 60, it is a valid interpretation for a small upland site.

Chania has a major faunal assemblage, but it is not currently directly comparable with the sites discussed above because of the way it has been published. For each deposit there is a section for animal bones, and while there is an indication of MNI but no NISP in volume II (Hallager and Hallager 2000), in volume III the first (and typical) entry, for a deposit in Building 1, Room E reads: “Very few bones from adult *Ovis, Capra* and *Canis*; one bone from young *Sus*” (Hallager and Hallager 2003: 28). It is perhaps unfair to compare this volume with the Palace of Minos, but one can see that the information given for the Neolithic levels beneath the central court at Knossos is similar in scope:

> Abundant remains of bones of animals, mostly cut or split, came out throughout both layers of the deposit. These included the Cretan ox, goats and swine; bones of a dog also occurred. (Evans 1928: 10)

In both cases the information about the animal bones is presence/absence. In defence of the Chania publication, the above is almost the only faunal report in the *Palace of Minos* and is not specific to a single context. In contrast, the contextual information for Chania is excellent, meaning that it is possible to establish presence, and sometimes NISP and MNI, for each taxon, context by context. The real problem, however, is the lack of sieving, making even the absences in any given context questionable. One area has been analysed quantitatively: the highly varied assemblage from Rubbish Area North at LMIIIC Chania is interpreted as “waste from offerings in a nearby shrine” (Hallager and Hallager 2000: 194; E. Hallager 2001), partly because of the high percentage of deer and agrimia compared with the rest of the site. The Chania material is currently being restudied: Harris (2008) suggests that the high proportion of deer limb bones in pits points to consumption events, and her reanalysis will allow more direct comparisons between Chania and other recently excavated sites. Less information is available about the Ayia Triada material, which was recovered during the early excavations, and has been published by date but not context (Wilkens 1996a, 1996b).
The *Palace of Minos* faunal report continues:

That some of the food supplies were brought up from the sea was shown by the numerous cockles found, supplemented by limpets of large size and an occasional whelk and other shells [4 species given in footnote]. Many of the cockles and some of the other shells had been bored to be worn as ornaments. (Evans 1928: 10)

The combination of mammal bones and shells is typical, and the marine taxa are widely reported for Crete. In particular Kommos is the largest Bronze Age marine invertebrate assemblage in the Mediterranean or Near East, with over 35,000 specimens (Reese 1995c: 240). Although of great value, this presents another problem for analysis: the disparity in the number of specimens between sites, as can be seen in Figure 4.3, showing sites with more than 10 specimens reported. Kommos is by far the largest assemblage, and so any analysis using the raw numbers would be skewed towards Kommos, and towards *Patella* (limpets) which comprise 82% of the total. The large sample size would also potentially result in greater diversity than other sites. Of the publications not mentioned above, Figure 4.3 includes information from Mallia (Chevallier 1975; Poursat 1996), Palaikastro (Reese 1987a), Trapeza (Pendlebury et al. 1936) and Knossos (Panagiotaki 1999; Reese 1982, 1987b). Figure 4.4 uses the percentage of shells in the most well-reported sites to provide a comparison between the disparate numbers. It highlights the very different nature of the assemblage in the Temple Repositories at Knossos, while the shells at other sites are dominated by *Patella*, frequently occurring with *Monodonta* and *Murex*.

Figure 4.5 gives the fish specimens found at different sites. It illustrates the coastal nature of most fishing, as mentioned above. Of those which are identified, the *Sparid* and *Centracanthid* families, including sea breams and picarels, constitute the largest group. These are small coastal species which could have been caught in shallow water. Once again sampling strategy is a major factor in recovery: fish otoliths from the ear and most fish bones are only found by water sieving. The recovery and reporting of fish bones is a useful indicator of the thoroughness of excavations and the reliability of faunal reports, although water-sieving was only carried out for some contexts at Kommos, Mochlos/Chalinomouri, Palaikastro and Pseira.

4.3.2 Contextual analysis

Shackleton’s (1972) publication of the marine invertebrates from Myrtos, an EMII site on a hill overlooking the south coast of Crete, illustrates how even a small sample can provide the basis for an insightful contextual analysis. After listing the shells found in each of 73 contexts, he compares the observed distribution of shells with what would be
expected if they were distributed randomly. He argues that it is likely that *Patella* (limpets) “represent food refuse”, and that those found tended to be small, perhaps indicating that “the smaller ones are more likely to be overlooked in the sweeping up” (Shackleton 1972: 323). He also notes the lack of *Monodonta*, which are usually collected with *Patella* as they occupy the same habitat: as Shackleton suggests, their absence represents a conscious choice in shellfish collection at Myrtos. This is also apparent in the frequency and distribution of conches (*Charonia*) and cowries: 23 of the 27 conch remains are not associated with limpets. As he argues: “Clearly the two groups have entirely different distribution patterns over the site, suggesting that if the limpets represent food refuse, the conches do not” (Shackleton 1972: 324). Further evidence for this is that two of the whole conches were collected dead; one of them he was able to sound as a trumpet, although “there is no evidence either that a Minoan intentionally broke the end, or that he discovered its sonority” (Shackleton 1972: 325). Nor are the cowries randomly distributed, but appear in the ‘pot cupboard’ and upper contexts, suggesting that they were not part of the floor debris, as the limpets were. He also isolates an “aesthetic” group, *Thais, Cymatium, Tonna, Cassidaria* and *Murex* which do not overlap with the limpet distribution, and have a similar habitat.

It would be useful to carry out the same type of analysis for other sites on Crete, with Shackleton’s findings suggesting a series of questions: Are different genera differently distributed between contexts? Can one distinguish between food refuse and other remains? Is ‘sweeping up’ a factor in the distribution of faunal remains: are smaller remains more likely to be found in occupation areas? Table 4.2 (p. 311) provides a breakdown of the sites available for analysis, with information about the way they were published. As can be seen, sieving is now more common, and a restricted number of sites are published by context, providing a complete list of finds per context and more information about context type than Shackleton considered. The question addressed in the following analysis is whether it is possible to take forward Shackleton’s general approach and apply it to a group of well-published Neopalatial contexts from Mochlos/Chalinomouri, which are not analysed in this way in the site publication, and whether this approach can be extended to other sites. Shackleton interpreted the Myrtos shells in terms of conscious choices in gathering, and differential distribution across the site according to use. Yet before asking these questions it is necessary to ask how far sample size and recovery methods prevent them from being answered: the problem with Shackleton’s analysis is that it was based on a small number of unsieved contexts which were only contextually analysed in a later study (Whitelaw 1983). The analysis below
shows that taphonomic and recovery factors need to be considered before even addressing the sort of useful questions Shackleton asked.

The recent excavations at Mochlos and Chalinomouri focused on the stretch of coast facing the island of Mochlos. The former is a group of two houses with the remains of craft activity while Chalinomouri is identified as a farmhouse. Both were occupied during LMIB, at the end of the Neopalatial period. Mochlos and Chalinomouri offer a way to explore interpretations of the type Shackleton made, but with sieved contexts for which all faunal remains are reported. They are combined because they were excavated and published together, and are both in the same area (Soles 2003). This makes them comparable in terms of recovery, but, as will be suggested, there are differences in assemblage composition between and within buildings. With presence/absence data one can investigate two types of relationships: the first is between genus and context type, and the second is between genus and genus in the same contexts: Shackleton for instance suggested that *Patella* and *Charonia* did not co-occur at Myrtos, which has implications for how they were interpreted. With the Mochlos/Chalinomouri (hereafter Mochlos) data it is possible first to assess to what extent presence/absence is affected by recovery methods before going on to investigate whether there are any patterns in the distribution of different genera. One way to examine the effect of recovery methods is to look at fragments.

Unlike other publications, with one exception (Ruscillo 2006), the Mochlos data includes a breakdown of complete shells against fragments. Other sites typically have only a species list. Table 4.3 (below) gives the distribution of marine invertebrates which are reported as either complete or fragmentary between different types of contexts. The totals are the number of contexts per genus. It is apparent that there are more fragments in occupation contexts (floor levels) than expected (calculated by dividing the fragment total by the total of occupation contexts, multiplied by the overall total contexts), and fewer in fill and abandonment contexts. All deposits were dry sieved, and some floor deposits were sampled to be wet-sieved, so at once recovery methods can be seen as likely to be affecting the reported distributions. The difference between complete and fragmentary shells is significant (taken to be a $\chi^2$ significance level of <0.05) in all contexts except dump contexts (pits and other dump deposits).

This data can be used to ask another question: what effect would the recovery of only complete shells have on the presence/absence data? In a site such as Myrtos, for example, which was hand collected, would the collection of fragments have resulted in a
completely different pattern? One way to investigate this is with the most abundant
genus, *Patella*, whose contribution to Table 4.3 is shown in Table 4.4.
Abandonment/Dump/Fill were amalgamated because of the small numbers: although this
results in a loss of resolution, the contrast is between occupation and non-occupation
contexts. The distribution of these (when the expected value is calculated according to the
proportion of each type of context) is close to random: this illustrates that the significant
distribution is fragment/complete shell rather than *Patella* remains per se. If, however,
only the complete shells of *Patella* were collected, the distribution would appear slightly
skewed towards non-occupation contexts, as shown in Table 4.5, although this is not
statistically significant.

<table>
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<th>Abandonment</th>
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<th>Fill</th>
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<th>Storage</th>
<th>Total</th>
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<td>17</td>
<td>72</td>
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<td>4</td>
<td>145</td>
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<td>21</td>
<td>217</td>
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</tbody>
</table>

Table 4.3: Distribution of shell fragments and complete shells at Mochlos.

<table>
<thead>
<tr>
<th></th>
<th>Abandonment/Dump/Fill</th>
<th>Occupation</th>
<th>Storage</th>
<th>Total</th>
<th>( \chi^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patella observed</strong></td>
<td>25</td>
<td>40</td>
<td>6</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td><strong>Patella expected</strong></td>
<td>26.49</td>
<td>39.10</td>
<td>5.41</td>
<td></td>
<td>0.91</td>
</tr>
</tbody>
</table>

Table 4.4: Distribution *Patella* at Mochlos.

<table>
<thead>
<tr>
<th></th>
<th>Abandonment/Dump/ Fill</th>
<th>Occupation/ Storage</th>
<th>Total</th>
<th>( \chi^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Complete Patella observed</strong></td>
<td>17</td>
<td>19</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td><strong>Complete Patella expected</strong></td>
<td>13.43</td>
<td>22.57</td>
<td></td>
<td>0.22</td>
</tr>
</tbody>
</table>

Table 4.5: Distribution of complete *Patella* shells at Mochlos. Categories amalgamated for purposes of test.
There are two conclusions to draw from this: the first is that sieving can affect even presence/absence data. Although fragment/complete is an imperfect measure, because it is possible that fragments are hand collected, it is likely that in the absence of sieving a ubiquitous genus such as *Patella* would be reported in more non-occupation contexts than occupation contexts. The second conclusion, is that it is likely that there is size sorting at Mochlos, although it is impossible to know how far water-sieved samples have affected the contextual data: fragments are smaller than complete shells, and it is the larger complete shells that are found more frequently than expected in non-occupation contexts.

When sites are published by context it is possible to ask which genera typically occur in the same context. Shackleton, for example, suggested that *Patella* and *Charonia* tended not to occur in the same context: this is interesting since, as discussed below, the former is typically seen as a food animal and the latter as an indicator of ritual. A $\chi^2$ test is used to assess co-occurrence: the number of contexts in the sample (here every stratified context at Mochlos) is broken down into 4 categories: contexts with *Patella* and *Charonia*, *Patella* and not *Charonia*, *Charonia* and not *Patella*, and neither. A set of values are calculated which are the number of contexts in each category expected if the distribution was random. The $\chi^2$ test is used to compare observed and expected, with the null hypothesis that the distribution is random. The probability of the distribution being random in Table 4.6 is 0.02, disproving the null hypothesis.

<table>
<thead>
<tr>
<th></th>
<th>Patella</th>
<th>No Patella</th>
<th>Total</th>
<th>$\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Charonia</em> observed</td>
<td>28</td>
<td>3</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>Expected</td>
<td>21.7</td>
<td>9.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>No Charonia</em> observed</td>
<td>30</td>
<td>22</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>Expected</td>
<td>36.3</td>
<td>15.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>25</td>
<td>83</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Table 4.6: $\chi^2$ test of *Patella* versus *Charonia*. All contexts with reported faunal remains.

The same can be calculated with fragments excluded from the analysis:

<table>
<thead>
<tr>
<th></th>
<th>Patella</th>
<th>No Patella</th>
<th>Total</th>
<th>$\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Charonia</em> observed</td>
<td>11</td>
<td>1</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Expected</td>
<td>7.8</td>
<td>4.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>No Charonia</em> observed</td>
<td>40</td>
<td>27</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>Expected</td>
<td>43.2</td>
<td>23.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>51</td>
<td>28</td>
<td>79</td>
<td>0.21</td>
</tr>
</tbody>
</table>

Table 4.7: $\chi^2$ test of *Patella* versus *Charonia*, excluding fragments. All contexts with reported faunal remains excluding fragments.
As can be seen from Table 4.7, excluding fragments has a number of effects, including reducing the number of contexts which would have appeared to have had faunal remains. Although the Charonia/Patella co-occurrence is still apparent, the association is no longer statistically significant. One of the expected frequencies also drops below 5, making the test unreliable. These are simply sample size problems. However, since full sieving was carried out at Mochlos and Chalinomouri one can say that Patella and Charonia do occur together more frequently than would be expected if the distribution was random (shown in Table 4.6). The conclusion to be drawn from this is that an analysis based on whole specimens is not as robust as that involving the results of sieving. The Mochlos data must at least cast doubt on the statistical significance of the contextual patterning identified at Myrtos.

This does not mean, however, that whole triton shells were treated in the same way as limpets at Mochlos. Indeed the one context in which Charonia occurs without Patella in Table 4.7, the North Terrace at Chalinomouri, includes a specimen which Reese suggests had been hollowed out to make a vessel (Reese 2004: 120). The significance of triton vessels can be seen from their skeuomorphs in ceramic, faience and stone, which will be discussed in Chapter 5. Triton shells have also been found across Crete, and the Eastern Mediterranean, in what have been interpreted as shrine contexts, although there is the danger of a circular argument (Åström and Reese 1990). If it is accepted that Patella shells were generally swept away, and some complete Charonia kept (even if some fragments were treated in the same way as Patella), they can be seen as having different meanings. In Peircean terms the two shells can have different interpretants: the logical interpretant for Patella shells is the response of seeing rubbish to be swept away, while the logical interpretant of the Charonia shell on the North Terrace was perhaps to keep it on display, or use it as a vessel. These interpretants are in turn based on the affordances of the shells in this context: the size, shape and comparative rarity of triton shells offers a wider range of uses. It should be stressed, however, that this is not based on the statistical analysis, given that this is an interpretation of a single context, but rather on a set of assumptions that are common in studying Cretan faunal remains. A statistical analysis could potentially reinforce such assumptions, or bring in other genera, but the Mochlos assemblage is too small, and not comparable with the larger assemblage at Kommos, for which only the larger contexts of shells have been published, and which was not entirely sieved.
4.3.3 Presence

Above it was suggested that proportional comparisons between sites become possible with 100 specimens, and this does provide an informative measure which to a certain extent overcomes differences in sampling between sites. Figure 4.6 simply shows the proportion of marine specimens vs. terrestrial specimens in different Neopalatial contexts at Mochlos/Chalinomouri, Pseira and Kommos which have over 100 specimens. This does not directly reflect dietary contribution since the meat weight of a sheep leg, for instance, exceeds that of a limpet: this would be difficult to calculate without some idea of the size or weight of bone or shell fragments. It is possible that even a basic comparison such as Figure 4.6 is skewed by the way in which sites are published, although if anything the Kommos marine taxa should be underrepresented because the mammals are published in full. The Pseira and Mochlos sampling strategies and publications are, however, very similar. At the level of inter-site comparison it simply shows that in each location marine animals are a significant part of the diet. More interesting is that there is no sampling difference between the Mochlos Buildings A, B and Chalinomouri Building A, and yet the proportions vary. By looking at the contribution of different genera in Figure 4.7 it can be seen that Building B had the greatest number of shellfish, but also a lower proportion of sheep/goat, even if the unidentified mammal bones, likely to be sheep/goat, are taken into account. Yet the most informative data is the presence of certain genera in Building B which are hardly being utilised at the other locations, such as hare and crab, and also land snails (including Helicella). This points to a more diversified diet in Building B which could be related to differential access to sheep, goat and pig.

The presence of wild species in faunal assemblages offers important evidence for hunting: totals are given in Figure 4.8. As will be suggested in Chapter 5, although hunting was not a major part of subsistence, it is this human-animal relationship which is frequently depicted for certain species including agrimi and deer. However, the 200+ hare bones in Bronze Age contexts are worth remarking upon because of the absence of hares in Bronze Age animal depictions. Found in a variety of sites, hares were clearly a useful source of meat. Deer remains are more complex to interpret. It is possible that some of the remains from the Palatial period are trophies, particularly red deer, although there is evidence for fallow deer consumption at Late Minoan Knossos (Isaakidou 2007b: 16; Vigne 1999: 301). The Chalinomouri deer remains are antler fragments, metacarpals and phalanges (Reese 2004: 120), which could have come from a skin. This illustrates the
need for consideration of factors such as body part representation, but also iconographic evidence, in evaluating the significance of the presence of wild animals at these sites.

The conclusion to be drawn from the analysis of Mochlos is that it remains difficult to compare the zooarchaeological assemblages from the sites of Bronze Age Crete, either because they are published in different ways, or because their sampling strategies are different, or a combination of both. The excavations in East Crete are setting a new standard of reporting, allowing here a discussion of the proportional differences in a range of taxa between buildings. With a larger number of sites published in this way, a more contextual approach will be possible, but without knowing whether absences are a product of sampling, comparisons will remain at the level of proportions, and the presence of certain species.

4.3.4 Comparison with texts

Another way in which the proportions of different taxa can be used is in comparison with the Linear A and B documents discussed in the previous chapter. Figure 4.9 shows the species distribution in a range of faunal assemblages against the animals listed in the Ayia Triada and Zakros Linear A tablets, and what Halstead (2002) classifies as consumption and herding Linear B documents from Knossos. As can be seen, the Ayia Triada totals are closer to a number of the faunal assemblages than the Knossos Linear B texts. As Halstead (2003: 258) points out, the comparison is between deadstock from faunal remains, animals which have almost certainly been eaten, and livestock listed in the documents. This means that the lifespan of animals, for instance, needs to be corrected for. Even the Linear B texts which seem to be concerned with consumption do not show the same proportions as any of the faunal assemblages since they are heavily dominated by sheep and goat: only Mochlos and Chalinomouri show a similar, but not identical pattern. These are the sites which are perhaps least analogous to the palace at Knossos in terms of social structure. Yet in broad terms the small number of Linear A and B texts with mixed animals are the most comparable to the zooarchaeological evidence for consumption. This can be used to suggest that the Ayia Triada tablets are listing animals which are mainly destined for consumption. In contrast, even the Linear B consumption texts appear to be listing animals in proportions which are difficult to reconcile with everyday consumption.
4.4 Discussion

4.4.1 Temple Repositories

The Temple Repositories have been left for discussion here because their contents illustrate how the difference between ritual and refuse can be approached by considering faunal remains in terms of structured deposition. The Temple Repositories assemblage is different in composition from other Neopalatial shell assemblages, as Figure 4.4 shows, but more importantly it is different in intention. Rather than being discarded, the shells here were gathered together. The most diverse (in terms of different genera) Bronze Age assemblage, with 37 genera represented, comes from a cist in an area of the palace called the Central Palace Sanctuary. Panagiotaki (1999) has recently republished the whole area, bringing together previously lost and scattered finds. Among these, from the Eastern Temple Repository are 6340 shells (only one context at Kommos has a higher total), of which 481 were painted. As Evans records:

The shells from the Repository …. bushels of which were taken out, were the ordinary seashells of the neighbouring coast, many varieties being included, though cockles were the most abundant. But they had been streaked and banded with brilliant artificial tints – crimson, Venetian-red, orange, brown, green and black – tastefully applied in unison with the natural lines and hues (Evans 1921b: 518-9)

The faunal remains, almost entirely shells, are shown in Figure 4.10, both painted and unpainted, and also their typical habitat. As can be seen the majority of them are soft substrate species, and so could well have come from a sandy beach near Knossos. The most frequent food genera, *Patella* and *Monodonta*, come from rocky shores. *Cerastoderma*, from sandy beaches, is also the most abundant genus in two other assemblages from Knossos, from the Neolithic Central Court excavations mentioned above, where the majority were holed (Shackleton 1968) and the EM West Court House fill, where the majority were collected dead (Reese 1987b). All of the *Monodonta* specimens in the Temple Repositories are painted, perhaps underlining that its appearance in this assemblage is incongruous. It is also anomalous in being a painted gastropod rather than a bivalve. Both genera of cockle are represented: *Acanthocardia* and *Cerastoderma*. The latter are more common in Bronze Age contexts, although outnumbered here by *Acanthocardia*. In terms of shape they are very similar, so that the difference in genus might not be relevant in this case.

However, the shells in Figure 4.10 are not the only traces of marine life in the Temple Repositories. In addition there were a number of faience objects including 12 cockles, 6 argonauts and 2 flying fish. Neither argonaut nor flying fish remains have been identified in Bronze Age contexts on Crete. Evans interpreted these faience objects as part of a
panel, along with faience rocks, but at least some are likely to have been free-standing. Another faience vessel had an embossed cockle-shell pattern. Of this collection Panagiotaki (1999: 81) writes: “It is significant that such a variety of marine creatures is portrayed. Their existence in the TR may point to the veneration of the sea, perhaps in the form of a sea goddess” (Panagiotaki 1999: 81). One of the aspects of the collection which leads her to suggest the role of a goddess are the faience ‘snake goddess’ figurines found in the same place; the common interpretation that these are goddesses has to be seen in context of nineteenth century theories about the Mother Goddess and Evans’s transposition of these onto the Knossos remains (Lapatin 2002: 76-90). Another group of faience objects are plaques showing agrimi and kid, and cow and calf; these she suggests symbolise another, nurturing, aspect of the goddesses. This returns to the frequent assumption that unusual deposits of animal remains are symbolic.

As Herva (2005: 217-8) points out, this does not itself explain why these animal remains and objects were deposited. He prefers to see such deposits in terms of an animistic conception of human-environment relations, in which buildings are to be seen as dynamic entities, engaged in a process of interchange with their inhabitants.

The making of building deposits was an attempt to keep on good terms with the ancestral and other powers perceived to reside in palatial sites and affect human life, a practical technique of maintaining relations with buildings when they were undergoing transformation and in circumstances where human-environment relations were based on reciprocity and mutuality (Herva 2005: 224).

He acknowledges that such deposits could involve social relationships between people too, and the manipulation of power relations. But his prime concern is with the way in which deposits such as the Temple Repositories should not be seen as containing objects which are no longer needed, but in themselves are an important part of the fabric of buildings.

As argued in Chapter 2, however, it is not clear that this animistic worldview is appropriate to Minoan Crete. Instead it can be argued that the objects in the Temple Repositories invert the usual reason for collecting shellfish, that of consumption, in order to demonstrate different kinds of human-environment relationships. One can see how a relation with the animals of the sea has been manipulated, with sea shells brought to the centre and turned into artifacts, both through the addition of paint and through manufacture in a different material. Animals which were more difficult to collect, and which would lose their invariant features when on dry land, the fragile argonaut and the flying fish, have been materialised in faience instead. Although these objects could have had a variety of significances, one can suggest that both shells and faience objects share
an indexical link with the sea. The moulding of marine animals in faience and other materials will be discussed further in Chapter 6, since these objects are indexes of both the sea and skilled manufacture.

Other animals in the Temple Repositories are represented mainly by objects, except for the roe deer antlers and the weasel skull. The former are the inedible parts of an animal which are also suitable trophies because they have an iconic as well as an indexical relationship with that animal. Evans (1921b: 496) related these to an ivory knife handle, as evidence for the “sacrificial element” of the deposit. As Panagiotaki (1999: 118) points out, however, at least one of the antlers was collected as a shed specimen, and these are the only deer elements recovered. Furthermore the only other roe deer specimens from Bronze Age Crete have been tentatively identified at Protopalatial Kommos (Ruscillo 2006: 618-20). No other roe deer remains have been reported from Knossos, and there are only a couple of other possible instances known from Bronze Age Crete (Isaakidou 2007b: 10; Jarman 1996: 215, 222). Rather than evidence for sacrifice, these remains are more likely to have been indexes of an animal which was not seen on Crete. Given that these are imported remains, and given the context, it is possible that these too indexed the sea.

The Temple Repositories offer a way to integrate zooarchaeology into the study of Bronze Age Crete by eroding the classificatory distinction between animal remains and material culture. As well as the cockle shells there are a number of sealings, clay objects impressed with seals, including a design of four cockle shells on one side of a set of nodules and a sheep or goat’s head on the other. As well as the faience marine animals there are plaques depicting a cow and calf and agrimi and kid. These objects, as well as models of plants and the ‘snake goddess’ figures are linked by what Summers (2003: 74) terms facture (indexically): they are made from the same material, so that one can see a relationship between the faience marine animals, plaques and the female figures. The deposition of all these objects together establishes a complex set of relationships between humans, animals and material culture, which the following chapters will explore further. Instead of suggesting that these objects symbolised the shrine of a sea goddess it is possible to trace a set of relationships which link the centre of the palace to the sea.

4.4.2 Tracing Consumption

As suggested above, the majority of animal remains discussed here can be seen as the traces of predation and consumption. A few bones show the traces of skinning and
defleshing, or even cut marks related to particular cuisine (Isaakidou 2007b). Yet the evidence for consumption in the majority of cases is context: bones and shells were deposited in such a way that it can be inferred that the occupants of houses or palaces had no further use for them. Even if they were still visible, for instance in a dump, they would have been regarded as refuse. The evidence adduced for ritual is, in most cases, also contextual, such as the skulls deposited in Archanes Tholos Tomb A and the House of the Sacrificed Oxen. From this point of view a fundamental relationship between human and animal, that of killing and eating, can be at the basis of both refuse and ritual. The difference is that certain animal remains were retained and used to index an ongoing connection with an animal practice, or with a consumption event, or with a particular environment. When deer remains were thrown into the Rubbish Area North at Chania, this link was arguably lost, whereas the deer antlers in the Temple Repositories, although not necessarily the traces of killing an animal, were used to establish a link between the centre of the palace and the world beyond. That Rubbish Area North is described as the waste deposit from a shrine illustrates how archaeologists have tended to create conceptual links between certain animals and the ritual sphere. Instead it can be argued that animal remains have a variety of affordances, most frequently as food for dogs or waste to be disposed of, but occasionally as indexes of animals or activities involving animals which have a social relevance.

4.5 Conclusion

This chapter has illustrated that animal remains have different affordances. A particular focus has been the first set of affordances, which arises from the interaction between the zooarchaeologist and the excavated remains: by studying cut marks, or body part representation, or simply by identifying species, these remains can be used to reconstruct past interactions with animals, particularly those which were eaten. This is simply because those animals which were not eaten, or rather disposed of, at excavated sites are less likely to have left a surviving material trace: the exceptions to this, including what can be broadly called trophies, are of particular interest because they illustrate a different set of affordances, as recognised by the people who brought them to the site. Other remains, such as those of rodents, illustrate different sorts of human-animal interactions, termed commensality. Dog remains can also be used to infer commensality, but when found scattered in refuse contexts can sometimes be more directly inferred as the traces of consumption. As has been stated repeatedly, however, it is only with adequate recovery
and documentation of both remains and contextual data that the full potential of zooarchaeological data can be realised.

The affordances of animal remains in the Bronze Age were insignificant most of the time: it was the animal which afforded eating, and the remains were discarded. These discarded remains can be interpreted by zooarchaeologists as the material traces of killing, preparation and consumption, as emphasised by the appearance of cut marks on some bones. Some animal remains have further affordances, as raw materials for instance. Another affordance can best be described in semiotic terms: all animal remains are indexes of animals, but only in certain circumstances was this realised. This affordance of material remains can be described as ‘animalness’, making animals present in a given context. The importance of the Temple Repositories here is that it challenges our analytical boundaries between animal remains and material culture. Painted shells are simultaneously artifacts and ecofacts, while faience shells take this one stage further. Unlike shells deposited in what can be seen as rubbish deposits, it is clear that the indexical connections between shells and a marine environment were of continuing importance since some of the faience objects reinforce this connection.

From this perspective the animal remains which have been interpreted as sacrificial can be seen instead as deposits in which the traces of animals are used to index certain practices, whether in a transient or more permanent way. In some cases the bones of animals could have signified both sacrifice and consumption: it is unclear whether the Pylos cattle bones were retained to document a consumption event or just the execution of the burnt sacrifice. The remains of the horse at Archanes were arguably important because they signified the ownership of an exotic animal. It is unclear whether the horse was eaten but its remains were used metonymically, to connect the tomb, and by implication one of the deceased, with an animal whose ownership would have been linked with status or perhaps warfare. Animals and animal remains undoubtedly had symbolic significance, but the focus here is on the way in which animal remains could be used indexically, to make the animal present in a certain context. The objects in the Temple Repositories suggest that material culture could be used in the same way, except that the facture of certain objects could simultaneously signify elite manufacture. The next chapters will explore how different classes of material culture could operate in this way.
Facetted Stones

5.1 Introduction

The lentoid and amygdaloid gems in question did not, as we now know, serve the purpose of seals, but were simply ornamental beads worn round the wrist or neck. Like the oriental periiaps, however, worn in the same manner at the present day, they may often have been intended to serve as amulets or talismans; and both the principal type of the intaglio and the smaller or abbreviated forms introduced into the field may have possessed something beyond a mere artistic significance. (Evans 1894: 272)

The pursuits of the possessors of the seals are clearly indicated, the ships that they sailed in, the primitive lyres to which they sang, the domestic animals that they tended, the game that they hunted, the duodecimal numeration that they employed. (Evans 1894: 372)

Arthur Evans’s first visit to Crete in 1894 has already been mentioned in connection with his search for the Cretan scripts. Among the sealstones he bought which provided him with further evidence for the Cretan Hieroglyphic script was the three-sided prism illustrated in Figure 5.1. Of interest here is that a sign resembling a dog’s head appears on one of its faces. Evans contrasted these inscribed prisms with the apparently decorative Mycenaean ‘ornamental beads’. He would soon understand these as seals too, with the discovery of clay sealings preserving impressions of this shape; the “gems” are now seen as having both a sphragistic and ornamental function (Younger 1977). He did not abandon his conceptions of such seals entirely, however, but identified a certain style of engraving, still known as ‘Talismanic’, which “served a talismanic or amuletic purpose” (Evans 1921b: 672). Although most scholars would distance themselves from this particular interpretation now, talisman, and particularly amulet, are still used as terms to describe seals. This can partly be attributed to Evans’s continued advocacy of the idea, before it was given renewed currency by Victor Kenna, who also extended the idea to three-sided prisms (Evans 1935; Kenna 1960, 1969). The irony of this is that, as the second quote above suggests, Evans did not see the prisms as talismans, but simply reflections of the occupations of their owners: “In certain cases the figures on these early engraved stones seem to have a reference to some episode in personal or family history” (Evans 1894: 343). Unlike the talismans, however, it was not an idea which Evans explicitly favoured in his later accounts of seals, and as a result it has never been a popular interpretation. This serves to underline, of course, the influence of Evans’s preconceptions on the study of what he was already calling ‘‘Minoan’ Crete’’(Evans 1894: 367). At the same time, while the idea of talismans and amulets has remained in currency, the idea that a seal relates to the pursuits of its possessor deserves more attention than it has previously been given.
Figure 5.2 shows another three-sided prism with a depiction of a dog, but although contemporary with the seal in Figure 5.1, this and the other designs on the seal faces are not regarded as part of the hieroglyphic script. It comes from the standard publication for Aegean seals, the *Corpus der minoischen und mykenischen Siegel* [CMS], which gives photographs of the seal, an impression and drawing of an impression: for convenience CMS drawings of impressions are used here, although the materiality of the sealstone itself will be of importance. CMS numbers in the text refer to drawings reproduced at the back of the thesis. Seal designs are conventionally read from the impression, for instance when referring to the direction the dog is facing. In some cases the seal itself does not survive, as in Figure 5.3, which is just one of the impressions of a ring1 depicting a female dog, found on sealings from a number of places in the palace at Knossos. Like most of the Linear B tablets at Knossos, the sealings were preserved by the final destruction, but the ring is dated stylistically to LMI-II (Popham and Gill 1995: 12; Pini 2002: 442). Figure 5.4 shows a lentoid which is dated stylistically to the Final Palace period, showing a dog attacking a deer. Style, however, is not just a means of dating, but part of the central problem to be addressed here. These examples show four very different depictions of dogs, one of which epitomises the naturalistic style of the Neopalatial period. Yet they also show that seals depicting dogs were made throughout the Palatial period of Bronze Age Crete, objects which participated in a bureaucratic system. Different accounts of seals have stressed these different aspects: it is easy to see how these depictions could support the idea of an evolution in style followed by degeneration; there has also been substantial interest recently in sealing practices, in which the actual design of the seal is not always important, except as a unique identifier. The aspect which will be stressed here is that these seals show how certain human-animal relations, here both dog ownership and hunting, recur on seals over long periods of time. Animals are the most common subject for Cretan seals, yet there is huge variation in the range of animals depicted and the ways in which they are depicted, whether in terms of style, or activity, or composition.

In order to understand how seals are implicated in the relationships between humans and animals, their affordances as objects also need to be considered. A seal face affords the leaving of an impression in clay by its user. Summers uses the term ‘effigy’ to describe an image which is caused by contact with an object, like a death mask. While a seal impression is an effigy, the same logic is extended to ‘images with the value of effigies’. These are images which operate as if they are directly connected with what they depict,

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1 ‘Seal’ here is broadly defined to include rings, as opposed to just sealstones.
like the statue of a ruler which is treated as if it is the absent person. Effigies are traces since they have an indexical relationship with the missing object: “effigies derive from absolutely particular things and events” (Summers 2003: 284-91). What is interesting about seal impressions is that they are in many cases both effigies of the seal, but also images, so that the question becomes: why use an image of an animal as an effigy? In using a seal depicting an animal a seal-user establishes a link between themselves and the animal because that image becomes the trace of the user. It will be suggested that these are images with the value of effigies because they seem to be conveying specific information about animal practices, particularly hunting. Rather than reflecting an appreciation of nature, seals appear to index specific activities, and perhaps even specific animals, even if those animals were not encountered or do not exist.

It is possible that some seals were used by more than one person, although Hallager (1996a: 89-92, 99) suggests that the same seal was applied in the same way on roundels at Chania, indicating consistent motor habits, except in the case of two rings. Some seals depict the same type of animal in the same way, and, in common with other designs, seals with a particular design of two cattle have been identified as suitable “badges of office” (Younger 1988: xv). Yet this does not change the fact that any given seal impression is the effigy of a single person’s use of the seal, linking them in that act with the animal depiction, and hence animal practice, on the seal, and it is this set of connections that will be explored here. The small-scale of the seal depictions is an argument for the depiction having a personal significance, rather than being intended for wider consumption. Taking the sealing in Figure 5.3 as an example, the basic argument here is that seals had the potential to establish a set of relationships between the seal user and a dog, mediated by a piece of clay which itself functioned as part of a bureaucracy. As outlined in Chapter 3, pieces of clay were the material traces of the interactions between humans, animals and objects. Depictions of dogs, among many other animals, were one persistent feature of the way in which people participated in this system. If these depictions are taken as having a meaning beyond artistic whim or arbitrary design, then it is by looking at the relationships between people and the animals depicted that this meaning is to be found.

5.2 Previous approaches

The CMS project has been at the centre of the study of Aegean seals for over 40 years, making this a well-published dataset, with a large bibliography (Younger 1991; Krzyszkowska 2005: 341-8). This means that the study of seals involves far fewer
problems with the publication of evidence, in contrast with the zooarchaeological data examined in the previous chapter. Here the discussion of previous approaches will focus on two themes. The first is the various interpretations of animal depictions on seals, which can be grouped broadly under the headings of ‘symbolic’, ‘animal study’ and ‘badge’. A fourth type of interpretation, which will be favoured here, is related to Evans’s argument that the seals were linked to the ‘pursuits of the possessors’, but this is less frequent. The second theme overlaps with the first, which is the various attempts to study seals systematically using databases. This is because a database of Cretan seals has been used for the analysis here, and so it is necessary to situate this within other similar approaches to seals. However, the themes overlap because databases of seals are predicated on their compilers’ theoretical approaches, whether stated explicitly or not. The database developed for this thesis is no different in that respect: the analysis below aims to show that the variation apparent in Cretan seals cannot be fully explained within the three main interpretative frameworks, but can be seen as evidence that seal depictions did convey information to link the user with animal practices.

Hundreds of seals are illustrated in the volumes of The Palace of Minos, and in various chapters Evans gives an account of their development (particularly Evans 1935: 484-618). However, far from giving a systematic treatment, Evans tended to use seals to illustrate more general topics. In the following it will be seen that his various interpretations have influenced a variety of approaches, but this perhaps underlines that he did not develop a coherent approach to seals himself. It is worth returning to Evans, both to trace back certain subsequent interpretations to his unsubstantiated assertions, but also because he made some useful points.

5.2.1 Symbolic

5.2.1.1 Amulet

In his publication of the Ashmolean Museum’s collection of Aegean seals, which Evans had both curated and then augmented with his donations, Victor Kenna suggested that Evans had never dealt with the seals as fully as he had wished and proceeded to provide the first synoptic account of Bronze Age Cretan seals. Kenna’s account, however, is underpinned, and arguably undermined, by the idea mentioned above. “In the examination of Minoan seals archaeologists appear to have overlooked the possibility that some of these seals were regarded as amulets, and that the style of others, made perhaps with this characteristic in mind, had been correspondingly affected” (Kenna 1960: 1). For Kenna certain shapes, such as the three-sided prism and the amygdaloid, were amuletic, while the Talismanic style recognised by Evans imbued the sealstone with magical
power. The basic idea is that the shape of the seal, or the style of depiction, has an arbitrary meaning over and above any more obvious iconic meanings.

The idea of amulets is still current in the discussion of Prepalatial zoomorphic seals. Evans saw an Egyptian inspiration in certain seals, such as a lion crouching over a human (CMS II 1 130), which he saw as a guardian (Evans 1928: 55). Evans did apply the term to a particular type of zoomorphic seals shaped like an animal foot (and the more frequent human feet); for him this too implied Egyptian connections. Branigan, in his examination of ‘foot amulets’, argues that such a connection is unnecessary, also noting that the animal feet are unparalleled in Egypt, but still accepts the amuletic interpretation. This illustrates how interpretations can take hold, even when the original reason for making them has been disproved. “The purpose and significance of the amulets is uncertain but they may have been worn as a protection from snake-bites” (Branigan 1970: 21). Pini points out that there were two types of zoomorphic foot, hoof and paw, and suggests that seen as belonging to lions and bulls they could have given power to the wearer, based on the idea of sympathetic magic (Pini 1972: 184). More recently Karytinos has extended this: “Zoomorphic seals were found along with the rest, in the same contexts, but possibly had amuletic and prophylactic meaning, concerning owners or animals” (Karytinos 1998: 85; cf. Karytinos 2000: 41). Sbonias also argues for “eine besondere bzw. amuletische Bedeutung”, a special or amuletic meaning, for zoomorphic seals (Sbonias 1995: 44).

The amulet argument is based on the fact that objects such as scarabs were amulets in the Near East (Kenna 1960: 4), but also the assumption that they retained such a meaning despite being used in a different cultural context. To justify this Branigan and Phillips both look forward to the similar beetle forms deposited at peak sanctuaries as figurines (Branigan 1970: 17-18; Phillips 2004: 169). Sbonias, echoing Kenna, points to the conservatism of the forms, used over a long period of time, as a justification (Sbonias 1995: 44). The issue is once again one of referent: do these zoomorphic forms have a symbolic, that is amuletic, significance in which the form is more or less arbitrarily linked to a set of ideas about protection? However, the forms are not arbitrary. The zoomorphic foot is a particularly apt shape for a seal since a real animal’s foot leaves an indexical trace in clay. This would suggest an alternative iconic meaning for these feet, although unfortunately there are very few examples and they do not leave impressions which look like animals’ feet. Whereas it is possible to consider the iconic meanings of zoomorphs, whether related to imported material culture or exotic animals, the amulet interpretation relies on symbolic meanings for which the evidence is lacking. The problem with the amulet interpretation in general is that there is no way to prove or disprove it because it
simply assumes seals of particular shapes must have had a particular significance. The association between scarabs and beetle figurines in peak sanctuaries is unconvincing since it does not explain why scarabs themselves were not dedicated at peak sanctuaries. A will be discussed further in Chapter 8, scarabs made in Crete do not always appear to refer iconically to beetles: there is no evidence that these imported objects or forms retained the same significance as they had in the Eastern Mediterranean.

5.2.1.2 Talismanic
The idea that sealstones had magical power was in fact encountered directly by Evans when he toured Crete. These were the ‘milk stones’ which he bought from people who wore them for their perceived benefit; in use thousands of years after their manufacture (Evans 1894: 276). Eccles (1943: 44) elaborates on this: “the best milk-stones have white markings, blood-stayers red” (cf. Boardman 2001: 19). Many of these brightly coloured stones were carved in the Talismanic style; Evans’s first-hand observations perhaps provided a type of conceptual support for this label. As will be suggested below, the colour of Talismanic stones could have been of significance, as well as making them attractive to people who later discovered them. Hughes-Brock (1995: 115-116) rightly points out that: “In seals the popularity of red stone and of green (jasper) for the talismanics must surely mean more than that the producers of these pieces happened to have particularly good supplies of it”. However, she sees largely symbolic associations, with “life, vegetation and rebirth after death” as the signifiers of these colours. As this chapter demonstrates, with large samples of seals, it is possible to look for statistical patterning in features such as colour, and finding significance this way, rather than making assertions about symbolic significance.

The Talismanic seals offer a microcosm of the analysis of seals: they were described by Evans as “a series of intaglios of rough execution with stereotyped designs of a rustic class” (Evans 1921b: 672-673). Evans remarks that had they not been found in an MMIIIB-LMIA context at Sphoungaras they might have been considered to be later, illustrating the tension between his ideas of degeneration of style versus archaeological context as a means for dating. Kenna (1969) formalised the label ‘Talismanic’ to describe this particular style, arguing that the design itself was seen as a source of power. Onassoglou (1985) gave the Talismanic seals the fullest treatment, constructing typologies to define and identify each particular design, focusing on style over content. The Talismanic style is now largely seen, following Boardman, as a technique in which the drill marks of the engraver are left undisguised, which, as such, would have been relatively quick to manufacture (Boardman 2001: 43-44).
One of the questions this raises is whether designs in a Talismanic style had a different significance from contemporary naturalistic seals. Yet authors who have questioned the separation of the two styles have tended to argue that all seals potentially had a talismanic function (Betts 1974). Bloedow (1992a) has recently rehabilitated Evans’s argument that: “the rude figure of a running agrimi or wild goat with a shaft in his side … may well have brought good sport to the huntsman” (Evans 1935: 541). Bloedow suggests that depictions of goats, whether in the Talismanic style or not can be seen in these terms. “Both the conceptual and the chronological span of producing sealstones with the object of ‘bringing good sport to the huntsman’ should thus be seen as considerably broader than that represented by Onassoglou’s thirty wild goats” (Bloedow 1992a: 21). Although Bloedow (2003) does suggest that seal depictions show evidence for close observation of goat behaviour, here the connection between depiction and hunting magic is symbolic. There is nothing within the depictions of goats to suggest that they functioned in this way. This chapter instead suggests that seal depictions of goats arose from a relationship of hunting, which was an animal practice used as a social marker.

5.2.1.3 Sacrificial symbols
The ‘smaller or abbreviated forms’ in the quote at the start of the chapter which frequently occur on LMII-III seals, such as the ‘figure of eight’, ‘impaled triangle’ or ‘sacral knot’ have also been seen, following Evans, as having a symbolic significance (Evans 1901: 122, 154; 1935: 553, 578). Morgan (1995a: 142) describes them as “sacrificial adjuncts”, along with the double axe and circle. She associates them with the depiction of animals frontally, which she argues symbolises death. The most common frontal animal depiction is the bucranium which does appear on certain seals with a figure of eight, and an impaled triangle. The ‘sacral knot’, Morgan (1995a: 147) argues, frequently accompanies these sacrifice symbols. It is certainly possible that these elements carry a conventional meaning, since there is often no particular spatial relation to the animal apparent. This is one case where a symbolic interpretation could be justified, and can also be tested statistically since these symbols should co-occur with certain scenes if they are connected with sacrifice. This will be done below, but although Morgan’s reading of the seals is plausible, it finds little statistical support since it is based on an iconographic approach to a few seals rather than a systematic analysis of every instance of that symbol.
5.2.2 Animal study

For Evans naturalism was closely allied with the depiction of animals and landscape: the fish and squid on a sealing from the Knossos Temple Repositories (II 8 157), for instance, display “truest sympathy with natural forms and surroundings” (Evans 1935: 491). Dating the Repositories to MMIII, he saw this phase as the peak of naturalism before conventionalism and heraldic designs took over (Evans 1921b: 319). He describes a number of these sealings as “subjects of natural inspiration”, including a goat and kid, marine animals and trees bending in the breeze (Evans 1921b: 697). Kenna highlights the last of these, which “even in its attenuated form shows feeling for nature which was once thought to be the preserve of the nineteenth century in England and France” (Kenna 1960: 44). Both authors contrast these with contemporary Talismanic seals: Kenna’s (1960: 66) thesis is that seals with naturalistic designs did not function as talismans, and were instead used sphragistically. Talismanic seals, meanwhile, he saw as unsuitable for making seal impressions, a suggestion rejected by Betts (1974: 311), and partly undermined by the existence of a small number of such sealings. Yet it is true that the vast majority of Neopalatial sealings were made using seals of the ‘naturalistic’ type seen in these two Knossos deposits.

Kenna’s explanation for these designs was that they “came from a preference for studies of animal life and nature, and the desire to produce these motifs in a natural likeness” (Kenna 1960: 66). He saw the naturalistic “bird studies” of Crete as a reaction against the stiff formalism and religious significance of Egyptian bird depictions. As he argued of one particular seal: “This is nature in art without the intervention of extraneous values, unknown in the glyptic of the Ancient Near East, in Anatolia, or in Egypt” (Kenna 1968: 38). Rather than birds being symbols, this is art for art’s sake. As will be seen in Chapter 6, this echoes Riegl’s ([1900] 2000) discussion of the Vapheio cups, but it is important to ask whether the realism of Aegean depictions is simply the outcome of an appreciation of nature.

The qualitative difference in the style of seals of the Late Bronze Age is illustrated by Betts and Younger’s (1982) attempt to subject them to an art historical analysis involving the distinction of individual hands and workshops. The identification of ‘masters’ was soon abandoned in favour of the more neutral idea of ‘groups’ (Younger 1985: 48-50), but the important aspect of this is that the depictions are so detailed as to encourage the identification of particular stylistic traits. For example the ‘Line-Jawed Lions Group’ encompasses a particular type of lion depiction with stippled mane and open mouth. The
use of the term “animal studies” (Betts and Younger 1982: 104-5), echoing Kenna (1960: 66), implies that the artist’s primary aim was to capture the formal properties of animals (cf. Younger 1988: xv). This idea will be put under scrutiny below, but it makes the point that these depictions are distinguished by a high level of detail.

Naturalism, however, has not just been identified with the seals of the Neopalatial period. Although a qualitative change can be recognised, this illustrates the subjective way the term has been used. Betts follows Evans’s location of naturalism in the depiction of plants and animals, but also considers the role of convention and pattern:

The real break between this earlier formal tradition of pictorialised pattern and symbolism, and the new tradition of naturalism, seems to come suddenly with the latest of the seals which impressed the Phaistos sealings at the close of MMII; the motifs from nature used in both traditions are largely the same but the whole ethos has changed. (Betts 1989: 2)

Other authors, however, have seen naturalism in the Prepalatial: Sbonias (1999: 39) sees a development from “naturalistic complex and decorative themes” in the Prepalatial ivory seals towards abstraction and simplicity in the Protopalatial Mallia prisms. Yule (1980: 176) meanwhile sees the deer and goats of his Prepalatial Border/Leaf complex as naturalistic. For him naturalism is not a linear progression, but revolves around certain features:

First, naturalistically depicted animals are more supple and less stiff. Second, they show relatively correct observation of bodily proportions. Finally, they are integrated in a realistic way into a background setting. So-called naturalistic representations may be contrasted to conventional ones, those where the artisan wants to depict a design without giving any really specific information as to pose or setting. (Yule 1980: 226)

Each author, of course, has chosen a different moment, and a slightly different set of criteria for naturalism. The idea that these depictions of animals are inherently ‘natural’ is highly problematic, and has been discussed in earlier chapters. Yet both Betts and Yule identify a change in the way animals are depicted as well: what Betts calls an “ethos”, Yule more closely allies with observation and “specific information as to pose or setting”. Seeing naturalism in this way, as a means of conveying specific information, is highly instructive: as discussed in Chapter 2, the term ‘naturalism’ tends to be applied to styles which provide a lot of specific information about a single time and place (Layton 1977). This can be seen in Evans’s (1921b: 272) response to the Temple Repositories sealing (II 8 157), as showing a specific moment: “a fish and sepia stranded, as if by a retiring wave, in a rocky pool”. Yet just because the Talismanic depictions of cuttlefish are not so immediately accessible, to the point where they have been regarded as having magical significance, should these be seen differently? The question is whether a more detailed
depiction, providing detailed information about a particular moment, can be seen as having a particular function.

In terms of administrative function, it has been suggested that naturalistic seals functioned no differently from those in other styles. Weingarten (1988: 105) dissociates ideas of quality or competence from naturalism, suggesting that seals did not have to be naturalistic to be effective. This returns to the question of why different styles co-existed in the same period. This cannot be explained, for instance, by the affordances of different materials, since both Talismanic and naturalistic depictions were carved on hard stones. The concept of the ‘animal study’ and Weingarten’s suggestion that the degree of naturalism of seal depictions is irrelevant to their functioning are two sides of the same coin: naturalism becomes an artistic movement which is separate from the use of seals in administration. It will be suggested instead in this chapter that naturalism functioned to locate particular animals in space and time, which enhanced the value of these depictions as markers of particular animal practices.

5.2.3 Badge

Once again the idea that certain seal depictions functioned as badges can be traced back to Evans. A particular three-sided prism with a cat depicted on one side he regarded as the personal seal of the priest-king, with his name and title on the other faces (Evans 1921b: 9, 278). The reason why a cat should be the chosen design for such a person is left unstated, and this suggestion can be seen as part of Evans’s desire to substantiate his assumptions rather than being supported by any evidence. Particular seal impressions have also been seen as the insignia of Knossos. Betts suggested that a number of sealings with impressions of bull-leaping either originated at Knossos or were impressed with a Knossian ring (by a Knossos official). He suggested that impressions of the same ring, or at least replicas of the same ring, were found at Ayia Triada, Gournia and Sklavokambos, showing that these sites were under the control of rulers at Knossos “using signet-rings of the finest quality with bull-leaping as their chief insignia” (Betts 1967: 27). That impressions of the same ring, depicting bull-leaping, can be found at these sites is true: another bull-leaping ring impression is found at the same three sites as well as the palace at Zakros. But as Krzyszkowska (2005: 189-192) points out, this is not the same as the suggested set of replicas, since each ring was individually carved, and not necessarily evidence for a Knossian hegemony.
The “Knossian bull” is an idea which is amenable to statistical analysis since were this correct, one would expect that bull sealings would concentrate around Knossos. This idea has been taken further to suggest that depictions of cattle can be read as statements of the power relations of Knossos. The lion attacking the bull was seen by Persson as a metaphor for Mycenaean domination of Crete (cited in Kenna 1960: 62), an argument inverted by Hallager and Hallager (1995: 552) who suggested that the absence of any such depictions in the Neopalatial period symbolised Knossian pre-eminence. The systematic publication of Cretan sealings by CMS has shown that such depictions do exist, notably the impression of the largest ring known from Crete (II 6 274). Here the symbolic reading of animal depictions allows them to be seen as markers of a particular place; whether seen as badges of particular people or places, this interpretation renders the animal itself insignificant, and can be seen in terms of Baker’s (2001) argument that modern animal depictions are disnifications. Indeed this can be seen as the product of a modern mindset, potentially overlooking the significance of animal depictions in the Bronze Age.

Younger’s (1988, 1993) catalogues of seal iconography are underpinned by the same notion that animal depictions stand for something other than animals. Of particular interest is his classification of animal pose types: he suggests 54 main poses which he suggests encapsulates all the variation in the depiction of animals in Aegean glyptic. He makes no attempt to perform a further iconographical analysis because he regards all variation as essentially stylistic: that is reducible to the conventions of individual artists and workshops.

These seals with animals make up the bulk of the iconography; they convey almost no information about the Minoan-Mycenaean society and only a little insight into the artist’s view of the natural world, limited as it seems to have been to a few animals (most commonly the lion, the bull, and the agrimi) in 54 (most commonly, 36) conventional poses. (Younger 1988: xi)

The irony is that his iconographic system remains the most internally consistent and fully published in Aegean glyptic, and so in many ways amenable to statistical analysis. Yet apart from a few percentages Younger eschews this sort of analysis, an illustration that each author’s conception of seals guides their approach (Younger 1993: 187). Younger’s insistence on defining pose types and using heraldic terms for animal poses largely stems from this belief in convention: stylistic groups, such as a particular group of bulls, are seen as denoting badges of office (although he is careful to distinguish this from heraldry per se) (Younger 1988: xv-xvi).
This conception of the seal is illustrated in Younger’s suggestion that a less naturalistic style was a marker of the putative Mycenaean administration at Knossos, and each particular design as belonged to a person with a particular role in the administration: “we must imagine an arbitrary relationship between iconography and its emblematic meaning, with certain seal compositions being associated with bureaucratic functions coincidentally, as if by accident” (Younger 2000: 350). This provides a useful starting point for analysis since the demonstration of non-arbitrary relationships between iconography and meaning can be used to question this emblematic approach.

5.2.4 Pursuits

From the point of view of badges, seals identify their user because certain images are arbitrarily associated with certain bureaucratic functions. Evans’s suggestion that seal depictions were linked to the “pursuits of their possessors” implies a second step: depictions are connected with the user because they index a certain practice with which the user wants to be associated. This is not necessarily the same as individual identity; in Mediaeval Europe, for instance, hunting wild animals was associated with the seigneurial class of people (Pluskowski 2007: 32). Nor were the animals of mediaeval heraldry arbitrarily linked with this group of people, since they were often the animals of the hunt (MacKenzie 1997: 9).

Hunting will be central to this chapter because it is one practice which is clearly shown in seal depictions. Important in this respect is the work of Bloedow (1992a), even without accepting his argument that such depictions are talismans: he argues that the depictions of goats standing with spears over their backs should inform the interpretation of those without. He suggests the same for running goats, some of which have a spear in their back, so that all standing or running goats are interpreted as abbreviated hunting scenes. Although he makes the debatable assertion that agrimi were also observed in captivity, he sees hunting as central to both the observation and depiction of goats. “Particularly important in determining the significance of the wild goat is the human-agrimi relationship. The most striking factor here is that the agrimi was hunted” (Bloedow 2003: 6).

From this point of view Younger’s description of poses as conventional can be challenged since they can be seen as referring instead to observations of hunted animals. Evans (1935: 523) suggested that animals with heads over their shoulders showed the animal being chased. Bloedow (2003: 23) takes this on, seeing animals with front legs bent as a
shorthand for wounded animals collapsing. Loughlin (2004b: 184) too suggests that the seal depiction of a calf kicking at a projectile in its side shows the “characteristic cattle response to pain”. Even seemingly conventional details, such as the direction in which the animal faces could be significant: Bloedow (2003: 24) observes that the majority of standing agrimi face in the same direction. Both pose and direction can be analysed statistically to determine whether there is any relationship, for instance between animals shown with spears, pose, and direction facing. The demonstration of such relationships below will be used to undermine the idea that there is an arbitrary relationship between seal user and seal depiction, and to show instead that there is a connection between the seal user and a particular practice which was also of social significance. The close observation and detailed depiction of animals that was described with the term ‘animal study’ can also be seen as the product of providing information about animal practices such as hunting rather than an artistic interest in the natural world. Not every detail of seal depiction can be explained in this way, but this opens the way to a more convincing explanation of some of the features of seals mentioned above.

5.2.5 Databases and Classifications

The first statistical analysis of three-side prisms by Henri and Micheline van Effenterre was predicated on a similar idea of seals to that discussed under ‘pursuits’. Returning to Evans’s (1894: 301) account they take on the idea that “the seals were designed to convey information regarding their owners” (quoted by van Effenterre and van Effenterre 1974: 23), and investigate whether the combinations of designs on faces support the idea that they had a specific significance for the seal user. The first step was to construct a typology of about 200 motifs, and they note the diversity of animals, comprising around 40% of the distinct types; although they suggest a possible totemic significance for this, their prime concern is with combinations and the necessary precursor to this, a “liste definitive” of seal designs. Despite the variation in the combinations of motifs, so that each of the 300 three-sided prisms is unique, bar a couple of duplicates, they identify a pattern. In a third of cases the three faces show a combination of linear design/animal/human, hieroglyph or artifact, allowing them to tentatively suggest that these are indeed personal identifiers (van Effenterre and van Effenterre 1974: 26-27). Although this is hardly conclusive of a set ‘grammar’ of seal combinations, the uniqueness of combinations is certainly indicative of individual identification. They also point out the frequency of animals on seals, approximately 70% of seal faces, and their regular co-occurrence with a human figure on another side. What is important about this study is that it marks the start of a trend in glyptic research, involving the categorisation
of motifs, followed by a basic statistical analysis, or at least a systematic presentation of results. This is the logical next step after the systematic publication of seals, as continues to be the role of CMS, and the potential for using computers in this analysis became increasingly obvious as they became more readily accessible and powerful. Rather than an exhaustive account of glyptic studies, the following will trace this particular line of research, since it highlights two key problems. The first is the categorisation of seal designs, about which there is still no consensus, and the second related problem is that of ‘objective’ analysis.

The use of computers to analyse Aegean seals started in 1976, a project initiated by the van Effenterres in collaboration with computer specialists (Ozanne 1984: 95). This project again highlighted the lack of standardised descriptions necessary for effective analysis (van Effenterre and van Effenterre 1981: 59). They describe a project to classify seals, providing each with an index card describing the seal and the design, the latter requiring the development of an effective language to describe the scene. The system of description is a sophisticated one: as they realised, a design consists not only of individual elements, but also the relations between them, and their relative positions on the seal face. In this first part of the article M. van Effenterre also discusses the hierarchisation of terms, so that a lioness is part of the series lion, itself part of the series animal (van Effenterre and van Effenterre 1981: 63). This is a necessary step in making databases flexible, although with only one possible hierarchy this can impose the categories of the programmer on the evidence. The second part, by H. van Effenterre, discusses the application of this scheme to a computer program: he divides questions asked into ‘documentary’ and ‘heuristic’. The documentary questions are largely based on counting instances of design elements, or seals with certain features. The heuristic questions are based on set of comparisons, in which the similarities of certain seals are used to suggest a common origin. H. van Effenterre makes the valid point that such studies had been left to scholars with an extraordinary visual memory of seals: now a computer could be used to suggest similarities between seals for an expert to consider (van Effenterre and van Effenterre 1981: 67). The article suggests initial results from a test analysis of 121 seals, but it is not clear whether a full analysis was carried out on the initial sample of 500, or if any other results were published from this project.

Subsequently the analysis of iconography was set aside in favour of data which could be more easily codified, such as date or material, allowing the analysis of a much larger sample (Ozanne 1984: 96). This sample was 3000 seals, but owing to the constraints, financial apart from anything else, on analysing this number, iconography was reduced to
a single category such as ‘animal’ or ‘marine’. This allowed, for example, the conclusion that on Cretan Neopalatial lentoids ‘animals’ were twice as frequent as ‘marine subjects’, but this situation was reversed for amygdaloids (van Effenterre and van Effenterre 1989: 35). However, setting aside the problems of classifying marine animals, this could be explained by the association of amygdaloids with the Talismanic style, which favours marine subjects. The same explanation lies behind the observation that there are no steatite amygdaloids: the Talismanic style is employed on hard stones. This does not exclude the possibility that there was a direct relation between marine animals and amygdaloids, but there is a need to consider more than these two variables. Although these results provided a statistical basis to what might previously have been only impressions about, for instance, distribution, they are of limited use here. It was the earlier study which remains the most sophisticated attempt to analyse seal designs statistically.

The van Effenterres did, however, recognise the utility of computers for analysing large numbers of Aegean seals at once. What is evident 25 years on is that with the development of the appropriate computer software in the last decade or so, and the concomitant increase in the processing speed of computers, the kind of analysis the van Effenterres envisaged has become quick and straightforward. They mention the time to produce a record: up to an hour to compile an index card, another half an hour to transcribe it into code, and then another 15 minutes to punch the card (van Effenterre and van Effenterre 1981: 73). Adding a similar record to my own Access database took a couple of minutes, and analysis of complex queries is almost instantaneous: they do not mention how long it took for the punch cards to be processed by the computers they were using. That said, the van Effenterres’ description of the project is still of use in designing a database, since their solutions to the various problems of coding data from Aegean seals is highly perceptive. Indeed the limitations of computers at the time they were working required economical solutions to problems, since every memory bit mattered. At the same time their emphasis on classification illustrates that each database author has different questions in mind which affect what is included. Yet while they published the structure of the database with a sample record, this is probably all that remains of the database, since it only existed as physical punch cards, predating stored database files.

Alongside the work of the van Effenterres there have been other attempts at a standardised categorisation, although the ultimate aims of these have tended to be typological rather than iconographic analysis itself. The entire span of Aegean Bronze Age glyptic is catalogued in three books which largely build on the CMS volumes: Yule’s
Early Cretan Seals and Younger’s (1988) Iconography of Late Minoan and Mycenaean Sealstones and Finger Rings, followed by a second volume dealing with earlier hard stone seals (Younger 1993). Both authors’ primary concern is stylistic: Yule defined a number of stylistic groups from the Pre- and Protopalatial material as a means to suggest a system of dating, along with a typology of the various shapes of early seals, with the same aim of finding chronological indicators. This illustrates how approaches differ between sub-disciplines of Aegean Bronze Age archaeology, since one of the main problems with studying seals in particular is accommodating the large number of unprovenanced objects. As mentioned above, in a series of articles (starting with Betts and Younger 1982), Younger had already defined a set of stylistic groups with attached absolute dates, and so his two books are largely a catalogue of iconography by “primary motif”, then “filling motifs”, arranged by pose types. Both authors provide a useful source of reference for standardised terminology and have contributed to the stylistic dating of seals. However, Younger’s approach is of particular interest in this context because his catalogue was generated using a database program, and is one answer to the van Effenterres’ call for standardisation. Each design is described using a standardised set of conventions, including relative position of different motifs, and the pose types of animals. Although Younger did make use of a database, his theoretical approach meant that he did not attempt to analyse variation, regarding it as arbitrary.

Younger’s work provides a useful caveat to the ongoing calls for a standardised neutral terminology: his work provides a framework for this, but few other scholars have taken it up, perhaps partly because they do not accept its reductive nature. Ingo Pini, the current director of the CMS project, suggested in a keynote address to the EIKON conference that the prerequisites for an iconography consisted of “accurate description, and closely linked to this, the correct identification of motifs” (Pini 1992c: 11). Although acknowledging Younger’s pose types, he suggests that they were difficult to use and argues that specialists should begin a dialogue to define the iconography of Aegean glyptic. CMS has not used a standard terminology, or indeed a single language, since it has always relied on the compilers; this was partly a pragmatic decision to ensure the participation of various individuals, and the volumes compiled by Pini are at least consistent. The problem with the idea of correct identification is that there are a number of frameworks in which a description could be ‘correct’ rather than a single objective identification. Younger’s identification of a particular pose type on a given seal is correct within his system, but it is difficult to accept that system without accepting the idea that animal depictions were largely vehicles for style rather than based on observation. This echoes a point made by John Cherry in the plenary session of the conference (Various 1992), in which John
Younger had re-asserted his claim to already having provided the sort of objective description that Pini had called for.

At the heart of the disagreements aired at the *EIKON* conference are two more proposed databases for Aegean glyptic. The first has long been planned by the CMS project, provisionally titled SPHRAGIS, which presumably will rely on its own set of standard terms (Pini 1992c: 12). This is due to be released in 2009\(^2\). The second is the long-awaited ICONAEGEAN database by Janice Crowley, which has yet to be released, but has been extensively heralded (Crowley 2000, 2003; Crowley and Adams 1990, 1995). It too is based on a theoretical position, outlined in a further series of papers by Crowley. Again the aim is to provide a systematic iconographic approach to Aegean glyptic. This revolves around Crowley’s suggestion that seal designs can be reduced to a certain number of ‘icons’, characteristic designs used by seal engravers to fulfil their client’s order for a seal on a particular theme. “The icon is the concept of the Aegean artist and appears to be in its origin, eidetic. The artist seems to have retained a picture in the mind of some memorable event or scene” (Crowley 1989: 210). These icons she sees as conveying the essence of a particular subject, and subsequently clarifies the process of artistic composition, in what she terms the “Thalassa theory”: “The initial perception is visual but this is then transmuted because the thinking artist seeks to convey the very essence of the subject and the resulting image is then conveyed by the practical artist who is sensitive to the final effect on the viewer” (Crowley 1991: 233). In a final paper in the series she outlines the “Icon Imperative”: “The creative sequence of images – initial, essential, elaborated – produces the icon, the memorable image” (Crowley 1992: 25).

This latter paper leads directly into a description of her proposed standard terminology for Aegean glyptic, as used to structure the Iconaegean database. Yet before considering the database it is important to understand that it is grounded in a theoretical position, and more particularly an account of visual perception and artistic creation which is open to debate. The idea of an essential image is difficult to reconcile with Gibson’s account of perception, outlined in Chapter 2, in which depictions supply the same type of information as the world. Crowley wants to see icons as the product of an artistic imagination acting on the world whereas for Gibson the world and artist interact. What is presented as a database avoiding interpretation in favour of objective description revolves around a concept, the ‘icon’, which requires the user to accept a particular interpretative approach.

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Crowley’s papers usefully present all the thinking behind the design of her database, and a number of sample entries, which have proved useful in the design of my own. Her database is structured according to a hierarchical scheme, starting with Category (e.g. humans), then Theme (bull sports), Icon (somersault), then Element (leaper, codpiece, hair-ringlets, bull, mane-striated) and Syntax (focus, frame) (examples in brackets belong to a record given in Crowley and Adams 1990: 71). Each icon is characterised by a particular design, termed the “prototypical”, since it best captures the particular memorable image. Again she argues that there is a lack of standardised terminology, and so suggests her own, largely based on the existing literature. Griffins are part of the category “fantastic creations”, belonging in the ‘Symbolic’ theme, while all cattle are described as ‘bull’. Any animal being ridden or led by a human “VIP” is a “familiar”; all these terms are described as “objective” (Crowley 2000: 16-17). Two objections can be levelled at this scheme. The first problem is that once again terminology intended to be objective is instead the result of the author’s own conception of Aegean iconography. In particular the division between griffins as creations that do not exist, and are therefore symbolic, and animals which were equally unknown to most Cretans, such as lions, is debatable, as is the equation of griffins with other hybrids: from a different point of view the terminology ceases to be objective. In the case of bull for cattle it starts to become confusing: the English language already uses cow as a generic term for cattle, which in itself is ambiguous. This leads to the second objection, which is that the structure of the database is the source of a number of problems such as grouping bull-leaping scenes under the category ‘human’ or only having one term for cattle. Whereas the first problem is the confusion of interpretation and description, the second is simply that the structure of a database needs to fit the data.

The most recent database on Aegean seals is part of the ‘DBAS Project’, a collection of databases on Aegean subjects online (Jasink et al. 2006, 2008). It is a relational database of Cretan hieroglyphic seals, comprising 193 seals/sealings, of which the seals mostly have more than one face (Jasink et al. 2008). The basic research question concerns the combination of elements on each design, focusing particularly on the relationship between hieroglyphic signs and what are currently seen as iconographic elements. Through the website it is possible to find the occurrences of any given element, and all its combinations with other elements: the structure of the database fits the needs of the user, since every sign on the seal face is displayed in terms of its relation with every other sign. Here the dominant linguistic approach to Cretan Hieroglyphic is apparent, with the main aim of decipherment. The database is exemplary in its publication and availability, although the authors have not published any results as such: clearly its function is as a
research tool, also linking the publication of seals in CMS and CHIC. The authors usefully discuss the process of formulating a standardised terminology for elements and syntax, but as with the databases discussed above, these are of specific relevance to the data in question: hieroglyphic seals have a regular layout and set of elements which allows for greater standardisation in this case.

Databases are not simply ways of storing and retrieving data: as these various examples for Cretan seals show, the design of a database is predicated on the author’s research questions and preconceptions of seals (and, particularly in the past, the limitations of computers and software). For this reason it is important to give a brief account of the database at the heart of this thesis, which includes data on seals, the material culture types to be discussed in Chapters 6 and 7, and the zooarchaeological data analysed in Chapter 4. Other seals databases offer the best comparanda since they have generated the most varied and explicit discussions of using databases in Aegean archaeology.

5.3 Analysis
5.3.1 Designing a database

Iconaegian is an example of a hierarchical database, until the element and syntax level, at which point it consists of an unordered list. In contrast a relational database consists of data across a series of unordered tables, but allows the specification of hierarchies of narrow to broader terms in look-up tables. This is the type of database that I have designed using Microsoft Access. It allows data to be retrieved in a variety of ways using different queries: the record of a particular seal given above would be retrieved in any number of ways depending on the question, for instance all designs with a somersaulting human, all seals with a bull: there is no overarching Category. Using a look-up table in which bull is equated with cattle, cattle with quadrupeds, the seal would be retrieved in a query of all quadrupeds and humans. In contrast, because the bull and leaper have individual records, the bull’s pose, perhaps flying gallop, is separate from the leaper’s pose, the somersault. As in the van Effenterres’ database, the relative positions of bull and leaper can then be recorded, so that leaper and bull each have their own syntax. Whereas Crowley’s database is structured towards her view of Aegean glyptic, my database reflects my own view, in which, for instance, the animal table contains bulls, griffins and humans. It is also geared towards statistical analysis, whereas Crowley’s is based on the retrieval of a record and corresponding image (and whereas being able to retrieve an
image for a particular record was novel when Crowley first outlined her database, it is now straightforward given modern software and storage capacity).

With a system of lookup tables, as in the Access database, the need to define one’s terminology before starting largely disappears, since most queries can use look-up tables to standardise terms, or try a number of different possibilities: griffins can be hybrids in one query and animals in the next. This also allows the retention of an entry in CMS such as the obsolete material description ‘sardonyx’ which becomes agate in queries: replacing sardonyx with agate in the record confuses more recent positive identifications of agate with a secondary identification of agate. The same approach has been described for a database of Near Eastern seals:

We settled for entering the terms mostly as they appear in the Corpus, and hoping that at a later date we might be able to develop a faceting scheme of our own or adapt one developed by someone else (O’Keefe 1998: 193)

The faceting scheme in my database is contained within the hierarchical look-up tables. O’Keefe divided her description of the seal design into “main pictorial element”, “subsidiary pictorial element” and “decorative element”, and my database is structured around “animal” and “subsidiary element”. This reflects the focus on animals: a database about weapons would probably not have these as subsidiary, and the Cretan hieroglyphic seals database treats all elements as equivalent. Crowley also abandoned the term ‘motif’ in favour of ‘element’, and I found this a term which better fitted my conception of seal designs, since motif has particular artistic connotations. My choice of terminology such as this was based on similar considerations: I used Younger’s terminology where I found it useful, but not in its entirety. This leads on to a more general point, which is that my database is as selective as any of the databases described above, particularly in that it only contains records for seals depicting animals. Whereas the CMS database and Iconaeagean are aimed at satisfying the needs of other scholars, as is the more narrowly focused hieroglyphic seals database, mine is a research database explicitly organised around a set of research questions and a theoretical standpoint. Converting it into an online database would necessitate making it more user-friendly, particularly by considering the possible interests other users might have.

5.3.2 Defining the sample

The sample from which all of these are taken is restricted to all seals published in CMS from Cretan collections (CMS II, III, IV, V) (Müller and Pini 2007; Platon 1969; Platon and Pini 1984, 1985; Platon et al. 1977; Pini 1970, 1975, 1992a, 1992b, 1998, 1999,
This has the benefit of including the more recent volumes compiled by Ingo Pini and Walter Müller, which can be considered internally consistent and representing the latest research on topics such as material classification and stylistic dating. The reason for constraining the sample to Cretan collections is not simply because these include the majority of Cretan seals and sealings from stratified contexts, but also because it allows some confidence that the unstratified seals from private collections now in Cretan museums are also originally from Cretan contexts. A number of CMS volumes cover the public and private collections of Europe and North America, and here the attribution of a seal to Crete would be less secure. These volumes also tend to be the earlier in the series, a number of them compiled by Kenna, and so the information cannot be treated with the same confidence as later volumes (see Krzyszkowska 2005: 341-348 for a user's guide). A final reason for restricting the sample to Cretan collections is that the exceptional collection from the Ashmolean museum, which contains a large number of Cretan seals and sealings with a known provenance, including some from Evans’s excavations, is on the verge of publication in the CMS series (Hughes-Brock and Boardman 2009). This will supersede Kenna’s (1960) publication of this collection, and so the decision was taken not to use an imminently outdated source.

The main criterion for the inclusion of any seal is that it depicts an animal. This is reflected in the structure of the database, in which each animal on a seal has an individual record. Zoomorphic seals are included, even if the face carries an abstract design, as is each face of a seal, even if an animal is only depicted on one face: in the case of multi-sided seals this allows an analysis of the relationships between faces. The identification of the animal relies on CMS: for the later volumes this can be assumed to be based on coherent criteria developed in recent decades by Ingo Pini and Walter Müller. Where the identifications in earlier volumes have seemed questionable to me, particularly by comparison with the standards of the modern CMS, I have ‘demoted’ them. In most cases this consists of adding a question mark to the identification, or giving a more general identification such as ‘quadruped’ (also used by CMS) or ‘animal’ (usually in the case of isolated heads). This means that the database is consistent with CMS: there are debates about identification, which will be mentioned below, but relying on Pini and Müller where possible allows a greater degree of consistency than can be achieved otherwise. Demoting existing identifications seemed less subjective than providing an alternative identification.
Question-marked identifications pose no problems when using a faceting scheme: generally in the graphs below ‘lion?’ is included as ‘quadruped’, and ‘lion’ and ‘lion with mane’ as ‘lion’, but the database allowed ‘lion?’ to be included as ‘lion’ for heuristic reasons when needed. It should be pointed out that ‘human’ refers to any human form, avoiding religious connotations such as goddess. More importantly, these have been included in the database only where a non-human animal is depicted on the same seal (whether on the same face or a different face), so do not represent all depictions of humans on seals from the collections included. The term ‘element’ has been used for all other items in the design, such as objects.

The basic sample of 2410 seals depicting animals is broken down in Figure 5.5, according to the stylistic date of the seal. As can be seen, for all but the Prepalatial seals and the imports (mainly scarabs from Prepalatial tombs) the unstratified seals are the largest category. The sample is biased by recovery: for example, a number of Prepalatial tombs with large numbers of seals were excavated by Xanthoudides, and this is reflected in the graph, as is the large number of Protopalatial seals found at Quartier Mu in Mallia. The seals are dated stylistically, either by CMS (or in articles by Müller and Pini) or by me in consultation with Olga Krzyszkowska. Some seals are difficult to date and these are recorded as ‘unknown’. Applying period dates can be problematic since to a certain extent stylistic development is independent of the pottery chronology and corresponding Palatial periods (Betts and Younger 1982: 120; Krzyszkowska 2005: 10-11). In view of this Younger has taken a radical approach to dating, defining a large number of stylistic groups, and then giving these an absolute date range. There are two reasons for not using these here: the first is that some of these stylistic groups have been called into question since Younger proposed them (e.g. Müller 1995: 158-160), and they have not been taken up by CMS. The second is that this chapter and the thesis as a whole attempts to give a broad overview of animal depictions, for which the Palatial scheme is a useful standard of comparison, particularly when comparing different classes of evidence. At the same time there is evidence to connect some seal manufacture with the palatial centres, as well as sealing deposits preserved by destructions at the end of periods, and so period dating is a useful way to analyse the data. Most seals have more specific dates (a faceting scheme is used to recode these for the graph), and these will be used where relevant. Period dates will be used to structure the following analysis.

It should be remembered that the seals under consideration have been chosen for their depictions of animals, in line with the research question. As such this is not always the most useful selection with which to explore other questions which have occupied
scholars. Cult is one example of a topic which involves some depictions of animals, but whose full examination requires a different data set; administration is another. Many of the seals and sealings were found in the same context as others which did not depict animals: entire assemblages of sealings are considered where relevant below, but no attempt has been made to date seals which do not depict animals where the date is not given in CMS or is dubious (in the earlier volumes). As a result it is not possible to give an accurate figure for the proportion of seals of a given period which depict animals.

5.3.3 Prepalatial seals

The main questions to ask of Prepalatial seals are whether and how they relate to human-animal relations. Animals feature in both the shape of certain seals and in depictions on the seal face, and many are made of animal products: bone or ivory. However, the problem is distinguishing objects valued as imports from objects which index human-animal relations.

As seen in Figure 5.5, the seal evidence for the Prepalatial period is dominated by mortuary assemblages; it is fair to assume that most of the unstratified seals were also plundered from tombs before making their way into private collections and museums. This points to a wider problem with evidence from the Prepalatial period, which is that the picture is skewed away from what were probably the central settlements, and towards the communal tombs of southern Crete (Bevan 2007: 96).

Figure 5.6 shows seals dated stylistically to the Prepalatial period, both zoomorphic seals and those of various shapes with animal depictions on the face (the few seals which are both are included as zoomorphic). It uses slightly different context definitions to highlight the number of seals which have no secure provenance, as opposed to those which were recovered in excavations but, for a number of reasons, are unstratified. Attributed locations are difficult to deal with: Pini for instance, broadly accepts the attribution of a number of seals in the Mitsotakis collection to Moni Odityritia. This is one piece of evidence he uses to locate a centre of manufacture in the Asterousia mountains for the zoomorphic and other seals made from a synthetic material which are termed ‘white pieces’ (Pini 1990: 120). Similarly a large number of seals of the same material in the Metaxas collection were labelled as being from Kali Limines, on the south coast, near Moni Odityritia. Despite problems with the evidence, the general picture is of a concentration of both zoomorphic seals and seals depicting animals in south central Crete in this period.
Zoomorphic seals are largely a Prepalatial phenomenon, and the earliest examples can be dated to EMII, from the lower fill at Lenda tholos IIa (CMS II I 213). With the exception of a small number of scarabs, the last zoomorphs were produced in MMII. Figure 5.7 gives a breakdown of the seals in the sample. As can be seen the zoomorphs are mainly non-Cretan animals, with few quadrupeds. Like the scarab, the monkey shape, most commonly sitting with hands on knees (CMS III 2), has clear Egyptian parallels, derived from the baboon (Phillips 2008: 180-1). Figure 5.8 illustrates a further indication of overseas contact in the Prepalatial period, in the form of material. Many of the ‘organic’ seals are made from imported hippo ivory, although this is frequently confused with bone (Krzyszkowska 1983, 1988, 1989). The ‘synthetic’ seals are either faience or ‘white pieces’, which were probably glazed, and therefore similar in appearance to imported faience (Pini 1990: 112). Although the exact composition of the latter remains unknown, they are probably a soft product of heating powdered steatite, using a technology which originated in Egypt (Pini 2000: 112). Of these, 12 are in the shape of scarabs, which is why imported Egyptian scarabs have here been considered alongside these Cretan products. An obvious interpretation of the combination of form and material is that these seals were valued because they looked exotic, as indexes of foreign contacts. The animal shape is distinguished by its difference from local animal forms. However, it is difficult to establish how far these shapes were significant as animals, rather than as exotic forms.

One way to establish the way in which zoomorphic seals were perceived is with the design on the face, compared with non-figural seals. This is particularly apparent in the difference between Egyptian and Cretan scarabs, as Phillips (2004: 164) notes, “clearly no attempt is made to follow Egyptian face designs even though the scarab form itself is deliberately derivative”. Whereas Egyptian scarabs frequently have hieroglyphs on the face, these Cretan scarabs, which also differ morphologically in a few details, have geometric designs on the face. Sealings from the period indicate that seals were used to secure property, indicating that the design on the face functioned sphragistically (Schoep 1999: 269; Vlasaki and Hallager 1995). The white pieces illustrate that even though the exotic form was adopted, a local design was more appropriate.

Relevant here is that zoomorphic seals rarely have animals depicted on the faces, as can be seen in Figure 5.9. This suggests that the animal on the face of the seal was regarded as separate from zoomorphic seals. Very few zoomorphic seals have figural scenes, and there is no example in the sample of the seal face depicting the same animal as the zoomorphic seal shape. It is also difficult to find any patterning in the relation of animal
and shape since the diversity of both designs and shapes is large: Figure 5.10 shows a correspondence analysis of the data in Figure 5.9, with the less common animals amalgamated. This is based on a $\chi^2$ test, but displays the contribution of each value to the overall variance. Spiders, insects and scorpions are grouped into the common folk category ‘wug’, standing for worm/bug (Brown 1979), and dogs and pigs are included with the more generic quadrupeds. The only clear relationship is between cylinder-shaped seals and lions/wugs. The shape is often an indicator of material: the majority of cylinders can be assumed to be hippo ivory (Krzyszkowska 1989: 112). Although this provides a link with an exotic animal, without any depictions of hippos it seems that this link was not realised. Cattle metatarsals were sectioned to make a ring shape preserving the bone’s morphological features, but there is only one example of an animal depiction on this type, showing bees or wasps. The large number of lions on cylinders can also be seen in terms of a stylistic group Yule termed the Parading Lions/Spirals Complex (Yule 1980: 208-209). A typical seal has a circular arrangement of lions and/or scorpions, on one face (e.g. II I 223), and a spiral on the other, although the same group includes a number of other shapes. Small and undetailed, the lions have a characteristically leonine shape, sometimes with a cross-hatched mane (Yule 1980: 128).

As can be seen from Figure 5.9, the most frequent animal on Prepalatial seals is an unidentified quadruped. This is a residual group, containing all uncertain identifications of goats or lions (with only one uncertain cattle depiction), or where the form is a generic quadruped. The generic quadrupeds could be of significance as standing, for instance, for all domesticates, or all hunting quarry. Just under half of these quadrupeds belong to another of Yule’s groups, the Border/Leaf Complex. Seals depicting quadrupeds from the Border/Leaf Complex are found in both North and South Crete, with five seals from this group found at the Phourni cemetery near Archanes. One of these (II I 391) has 14 faces on a paddle shape, of which five show quadrupeds: two have been identified as horses (Sakellarakis 1970: 209-10), which would predate any known equid remains on Crete. If these are horses, the style is not effective at conveying enough of their characteristics to be definite about this, at least to modern eyes. This can be used as an argument that depictions in this period were not intended to ground a particular animal in a particular place.

Figure 5.11 shows the number of animal depictions on seal faces (but not the number of depicted animals since a single design can show, for instance, up to seven lions) by geographical region, including attributed seals. This shows that lions are largely a southern Cretan phenomenon in this period. Interestingly the less detailed the lion, the
less strong the relationship with southern Crete. However, a sealing from an EMIII domestic context at Knossos (II 8 6) clearly does show lions, highlighting the problem of establishing patterns from evidence concentrated in mortuary contexts. Nevertheless, it is possible that there was a growing unfamiliarity with the form outside central Crete due to the second-hand copying of designs. Of 118 depictions of animals on the Prepalatial seals examined here, 33 are lions, making them the largest closely identifiable animal; a further 38 are quadrupeds. Quadruped depictions are found across Crete, but as can be seen in Figure 5.11 unidentifiable quadrupeds are most frequent in North Crete, partly due to the influence of the Border/Leaf Complex type found at Phourni. These tend to be forms which are not identifiable more closely because they lack any distinguishing features: in contrast, the animals with question marks refer to the eroded forms which probably were once recognised as a lion for instance. As Yule (1980: 131) suggests: “In a relatively large number of cases it is difficult to determine unequivocally the exact kind of quadruped depicted on early Cretan seals”. Yule’s stylistic groups are a useful way of explaining certain patterns, although his idea that the Border/Leaf complex is ‘Egyptianizing’ is difficult to reconcile with the animal types. More likely is that the lions on ivory cylinders in the south and zoomorphs pointed away from Crete, while a separate group of seal depictions of quadrupeds referred to the animals of Crete, although in an unspecific way. The development of more specific depictions of animals is one of the central areas of enquiry here, since it will be argued to have social significance.

Syntax too is significant: as Weincke (1981: 254) has pointed out the symmetrical or rotational designs create a sense of perpetual motion rather than any feeling of a specific time or place. Prepalatial depictions are in general in iconic relationship to animals, but there are few suggestions of indexical links: zoomorphs are not reinforced by depictions of animals on their faces, but rather fit with a set of borrowed forms and technologies from abroad whose significance arguably lies in their unfamiliarity (Bevan 2007: 32, 96-7). Even the non-exotic animals are often generic, making it difficult to infer any underlying human-animal relation from the depiction. These features can be contrasted with the seals of the Palatial periods.

5.3.4 Protopalatial

The evidence for the Protopalatial period, including attributed seals, is summed up in Figure 5.12. The three-sided prism, which is infrequent in the Prepalatial period, becomes the most popular shape. Finds are no longer concentrated in southern Crete, although a particular reason for this is the large number of seals found at Mallia. The exception to
this is the evidence from a very substantial sealing deposit at Phaistos, the result of the destruction at the end of the period. In this deposit, as in later ones, multiple impressions of the same seal are frequently found. In order to compare seals and sealings all the figures for this chapter include seals known from multiple sealings only once. Since Figure 5.12 is based on stylistic dating, some designs from the Knossos Hieroglyphic deposit are also included: although Yule (1980: 215-219) made a case for an MMIIB date, the consensus is now that the sealings are largely later, on the basis of the stylistic date of a number of the designs (Krzyszkowska 2005: 112-116). Since the deposit is unstratified, and potentially not a single deposit in any case, the hieroglyphic Protopalatial designs can be considered here, even if the seals were used later. The following section will concentrate on two particularly apparent phenomena in this period: the abundance of multi-sided prisms, and the first large deposits of sealings.

5.3.4.1 Seals

“The facetted stones with pictographic and linear symbols” were the subject of Evans’s first contribution to Minoan archaeology (Evans 1894: 288). Although he collected and studied a large number of them, a major discovery at Mallia, the Atelier des Sceaux, resolved some of the chronological problems and provided a wealth of new examples (Poursat 1996: 8-22). The finds here demonstrated that both soft stone (steatite) and hard stone prisms were being manufactured at the end of the Protopalatial period; Evans and Kenna saw a development from ‘crude’ Prepalatial prisms in soft stone to the fine hard stone hieroglyphic prisms, but these can now be seen as overlapping rather than in evolutionary sequence (Krzyszkowska 2005: 92-98). The steatite three-sided prisms, dated to MMII, do show some hieroglyphic signs, but typically have animals, humans, artifacts and geometric designs in almost unique combinations on the three faces (some have one or two sides blank). Without confusing ‘crude’ execution with techniques appropriate for carving soft stone, it can be said that the animal depictions are often simple and lacking in distinguishing features. Yule notes that some can be described as dog/lion, but that “schematic quadruped” is often the most appropriate description for these depictions, as in the case of Prepalatial seals (Yule 1980: 131). It is fair to say that these seals were quick to make, and of local material, and numerous enough to have been owned by a wider section of the population than previously. As Schoep (1999) suggests, the emergent elite at Quartier Mu was using writing and sealstones as a means of differentiation: in this context the soft stone seals could be a means of participation these activities, but within a hierarchy, shown, for instance, by the existence of hard stone seals.
The three- and four-sided prisms made from hard stones are evidence for imported materials, but more importantly for the use of the rotary drill. The use of this has stylistic implications, allowing sharper and more precise cuts and drill marks. The four-sided hard stone prisms also frequently have hieroglyphic inscriptions, although these can be found on soft stone steatite prisms too. Certain designs, notably the cat face, only occur on hard stone seals, and have affiliations with the hieroglyphic script. It can be argued that hard-stone seals were more costly to produce, and so were associated with higher status. However, there is enough overlap between hard and soft stone seals, and three- and four-sided prisms, and also hieroglyphic and non-hieroglyphic designs, to consider these as a group for the purposes of analysing animal depictions: there is a continuum between quickly made seals from local stone and drilled hard stone seals which can be assumed to share common meanings.

Figure 5.13 shows the number of seals with each type of animal; a small number of forms categorised as hybrids are either human/animal combinations or double headed animals. As can be seen, quadrupeds are the largest category. Goats, distinguished by their horns (e.g. II 2 272), and waterbirds, by their long neck (e.g. II 2 151), are the next most frequent. It is striking that cattle only appear as bucrania: these could be seen as analogous to the goats and waterbirds as the form characteristic of the animal shape. Certainly the small number of hieroglyphic forms are almost entirely animal heads, suggesting that this is the most useful abbreviation. This raises the question as to whether the animal heads which are not recognised as hieroglyphic do in fact function in similar ways to hieroglyphic signs, albeit not in sign groups. The difficulty of defining which signs are part of the script is epitomised by the frontal cat head, which is not regarded as a true sign since it does not appear on documents, making it unclear whether it is part of the script. Whereas Younger argues that the cat face is a sign, Olivier is equivocal (Olivier 1981: 109; Younger 1999b: 387). This is to return to the point made in Chapter 3 that treating signs as either functioning as part of a script or decorative is to impose an anachronistic idea of how written signs should function: the boundaries appear to be more blurred, so that signs can function both iconically and symbolically. A further blurring of boundaries occurs on a three-sided prism (IV 156) in which a prancing goat is shown on one face of an otherwise hieroglyphic seal; on another face a cat mask is shown with the recurring ‘trowel and eye’ sign group. Conversely, the seal Evans regarded as the priest-king’s badge is one of the few with a whole cat, along with hieroglyphic signs. Here all animal depictions are analysed together, regardless of possible script functions, although the use of animal heads does emerge as a distinct phenomenon, more closely connected with script.
As discussed above, a central question in the discussion of three-sided prisms has been the combinations of different faces, and the meaning of this. Younger points out that of 481 prisms with two or more engraved faces he studied, there was only one example of duplicate seals. Although he says that the probability of this happening by chance is low, if anything he underestimates this\(^3\), so that his suggestion that the seals were made deliberately unique is questionable (Younger 1999a: 953). He also sees the seals as simply part of a system of differences rather than explaining the content of individual faces. Whereas Younger based his calculations on 16 common designs, van Effenterre identified 200 designs from 350 prisms, of which 42.5% are animals. He finds no seals with the same 3 designs, which of course would be extremely unlikely to happen randomly with 200 designs\(^4\), but does point out the similarity of the combinations of designs on two three-sided prisms (II 2 220 and II 2 269); one of the latter looks strikingly like a rhino, but this is unlikely: they could be cattle. Given the number of permutations of 200 designs, one would suggest that duplicates are almost certainly deliberate, rather than unique seals. Van Effenterre’s analysis suggests that 9/10 seals depict an animal on at least one face, if the definition of animal extends to bucrania, so that he sees a totemic principle at work. Ultimately he too sees prisms as functioning as unique identifiers, although he does consider the potential significance of certain combinations.

The approach here is to see the prisms not just as unique identifiers, but rather to ask how the sealstone created a relationship between the different animals or objects on its different faces. One way to explore these relationships is with network analysis. The package used here is Netdraw (Borgatti 2002) which is used to provide visualisations of networks based on graph theoretic principles. Central to this is the analysis of nodes in terms of how they relate to other nodes: important factors are which nodes are most connected, or occupy pivotal positions in reaching other nodes in the network. Tie strength is another variable that is used to analyse the way nodes relate to one another, for instance, if a certain animal repeatedly occurred on the same seal with another animal. Here this package has been used in an exploratory way, generating layouts of networks in which the proximity of nodes illustrates their relative connectedness.

Table 5.1 (p. 323) shows the co-occurrences on different faces of animal types and humans: it is the product of 141 seals and 362 animals (including humans), and shows,

\(^3\) Younger suggest that there are 16 different motifs, so 408 different possible combinations, but a different way of calculating this using factorials \([16!3!(16-3)!]\) gives 540 possible combinations.

\(^4\) \(200!3!(200-3)!\)=1,313,400 possible combinations.
symmetrically, all of the different relationships on a given seal, but not of two of the same animal on the same face. Figure 5.14 shows the data in Table 5.1 graphically, as a network in which the thickness of the lines represents the relative frequency of relationship and the size of node the relative number of occurrences of each animal. The layout is based on geodesic distance, so that the nodes which have the shortest paths to all other nodes are closer together (Hanneman and Riddle 2005: Ch. 4). Although human is the most connected to nodes of different types, its function in the network is to connect various outliers so that it does not emerge as particularly similar to any other node. The two nodes which occupy a similar place in the set of connections based on co-occurrence on seals are quadrupeds and waterbirds, as shown by the layout of Figure 5.14. This could suggest that these are equivalent in the set of combinations on three-sided prisms, but more generally the network diagram provides a useful way to visualise these relationships. Rather than focus on the uniqueness of each seal, it shows that there was a core group of depictions, including quadrupeds, waterbirds, goats, humans and cattle which frequently co-occurred on the same seal. This is consistent with a set of relationships involving Cretan, although not necessarily domestic, animals to be explored further in Chapter 8.

5.3.4.2 Sealings
As mentioned above, the Hieroglyphic Deposit at Knossos has been the cause of much debate, largely because the stylistic dating of some of the seal designs is incompatible with Evans’s reported context date of MMII (Evans 1921b: 272). Indeed he saw some of the lentoids as the start of a trend of naturalism continued in MM III. As he says, “By the close of M.M. II, as we learn from the sealings of the Hieroglyphic Deposit at Knossos, the engraved designs on these lentoids were already attaining a considerable degree of naturalistic perfection” (Evans 1921b: 671). This is in fact more applicable to another palatial deposit, at Phaistos, the Archivio di Cretule in the southern part of Room 25. Although there has been discussion over the stratigraphy, this is largely agreed to be a closed, in-situ, deposit from the end of MMIIB (Walberg 1981). As mentioned above, it is this deposit that Betts (1989: 2) cites as the start of naturalism. Certainly the animal depictions are shown in more detail and in poses including the flying gallop (II 5 259). This only emphasises the diversity of seal design in this period: there is overlap with North Crete, with hieroglyphic dogs’ heads appearing in the Phaistos sealings too (II 5 300), but there is an appreciable difference between the Phaistos sealings and the Mallia three-sided prisms. Only 21% of the distinct seals used in the Phaistos deposit depict animals, but these are far closer in style to the Neopalatial animal seals. It can be
suggested that this is the start of the trend of using animals in specific scenes as seal designs, rather than using animal bodies as identifiers, as the prisms do.

As can be seen from Figure 5.15, the animals depicted differ in certain ways from the Mallia seals: although goats and quadrupeds predominate, it is at the left of the graph that the wider diversity of animals can be seen, with the number of lions (II 5 270) particularly striking as well as the earliest seal depictions of griffin (II 5 317), octopus (II 5 301) and cuttlefish. This shows that the difference between the two is not just one of technique: steatite prisms are difficult to carve in the same level of detail as seen in the Phaistos sealings, some of which were probably impressed with metal rings. Yet there is another difference in content: whereas the Mallia animals are predominantly accompanied by geometric designs (on the same face), the Phaistos animals are most commonly depicted with plants or rocks, as seen in Figure 5.16. One can also argue that the syntax of the designs is different: whereas those at Mallia are essentially combinations of forms, some of the Phaistos designs place moving animals in a setting composed of landscape elements.

The introduction of rocks and plants marks a significant change in the way animals are depicted, linking them with a particular landscape. These differences in the range of animals depicted and the elements they are shown with can be seen as central to the analysis of what is seen as naturalism in the Neopalatial period. At the end of the Protopalatial period there was a variety of different shapes of seals and styles of depiction, with differences in the three main centres. Yet it was naturalism which did come to dominate in the next period, which can similarly be analysed in terms of the range of animals, the way they are depicted and what they are depicted with. The significance of these developments will be assessed following a comparable analysis for the Neopalatial and Final Palace seals.

5.3.5 Neopalatial

Three-sided prisms largely disappear across Crete in the Neopalatial period, in which a limited number of seal shapes usually inscribed on only one face predominate: lentoids, amygadaloids and cushions. As with Phaistos in MMIIB, the destructions which mark the end of the period have resulted in a number of useful sealing deposits; to these LMIB deposits can be added the Knossos Temple Repositories, which have been dated either to the end of MMIII or LMIA (Panagiotaki 1999: 151). These sealing deposits largely
consist of lentoid impressions: Figure 5.17 gives the totals of seals and sealings of different shapes depicting animals with stylistic dates between MMIII and LMII. The reason for this slightly later cut-off is to include seals dated LMI-II since stylistic dating, as employed by CMS, can be difficult to reconcile with period dating, despite the abundance of sealing deposits to work with. As seen in Figure 5.17, amygdaloid seals are relatively frequent in this period, but rare in sealing deposits. The reason for this is that amygdaloids are most frequently used for Talismanic designs, which are considerably underrepresented in sealing deposits compared with their frequency in the Cretan collections. Amygdaloids are also commonly used for the Cut Style, dated LMI-II. The implication of this is that the sealing deposits cannot be seen as entirely representative of seals of this period, while seals of this period cannot always be fitted neatly within the period as marked by the destruction horizons. The main question which emerges from this is whether the naturalistic style seen mainly in sealings had a different set of meanings from Talismanic and Cut Style seals, as has long been suggested.

5.3.5.1 Talismanic seals
Nearly all seals dated to MMIII-LMI in the database are Talismanic with a few closely related tête-bêche fish. Here Onassoglou’s (1985) identifications and stylistic attributions have been accepted since she gave this class of seals the fullest treatment, constructing typologies to define and identify each particular design, focusing on style over content. Morgan (1989) put these identifications under scrutiny, arguing that many designs were inherently ambiguous. Onassoglou (1995: 184-186) refuted the grounds of this analysis, suggesting that Morgan had chosen extreme examples from various authors’ identifications of cuttlefish, for instance, rather than challenge Onassoglou’s own typology. The concept of invariants is particularly relevant to this debate, since Onassoglou argued that the basic cuttlefish form consisted of an oval, S-shaped tentacles and fins, seen in nearly every example in her typology, although often elaborated. One can see these as the basic elements required to perceive the cuttlefish form, whether in the environment, or depicted on a seal.

There has been a tendency in recent volumes of CMS to date Talismanic seals to LMI, but this is to ignore a small number found in MMIII contexts; in any case there is a clear chronological overlap with naturalistic seals. Although Onassoglou’s typologies have largely been accepted, some of the birds she identified as Talismanic have recently been associated with the later Cut Style. This illustrates the most common problem with stylistic dating: authors tend to overextend their schemes so that less convincing examples are drawn into association with a coherent stylistic group. A more recent
The usefulness of this group of seals rather than sealings is that it allows an analysis of material, and hence colour. As discussed above, this has frequently been seen in symbolic terms, but here it will be suggested that it is linked indexically to the animal depiction. Figure 5.18 shows the Talismanic seals in this sample by colour group: as can be seen it is particularly cuttlefish which are depicted on more clear/blue/green stones than expected, and the reverse is true for goats and spiders. A similar result for all Talismanic animal seals appears in Shapland (forthcoming). This is summarised in Table 5.2: it is apparent that the important difference lies in marine animals versus non-marine animals, but excluding fish, which are distributed almost exactly as expected, assuming no association, between the colour groups. The overall distribution is highly significant.

<table>
<thead>
<tr>
<th></th>
<th>Clear/Blue/Green</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Marine</strong></td>
<td>43</td>
<td>43</td>
<td>86</td>
</tr>
<tr>
<td><strong>Fish</strong></td>
<td>23</td>
<td>42</td>
<td>65</td>
</tr>
<tr>
<td><strong>Non-marine</strong></td>
<td>7</td>
<td>46</td>
<td>53</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>73</td>
<td>131</td>
<td>204</td>
</tr>
<tr>
<td><strong>Expected</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Marine</strong></td>
<td>30.77</td>
<td>55.23</td>
<td></td>
</tr>
<tr>
<td><strong>Fish</strong></td>
<td>23.26</td>
<td>41.74</td>
<td></td>
</tr>
<tr>
<td><strong>Non-marine</strong></td>
<td>18.97</td>
<td>34.03</td>
<td></td>
</tr>
<tr>
<td>$\chi^2$</td>
<td>&lt; 0.01</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5.2: $\chi^2$ test for significance of colour in Talismanic seals.

It is possible to interrogate the slightly unexpected values for fish further. Of all the seals in the sample, the most frequent materials are carnelian (45 seals) and jasper (39). Of the
jasper seals, 27 are green, and all but two of these depict marine animals (including fish). Of the 10 rock crystal seals, 9 are fish or marine animals. Fish, however, also appear on 17 carnelian seals, all varieties of red to brown stones. One particular fish design, two shown tête-bêche, is more likely to appear than a single fish on a carnelian seal, particularly an amygdaloid; single fish are more likely to appear on clear/blue/green stones. However, neither the seal shape nor the design are exclusively associated with certain colours: there is no difference in patterning between different shapes with respect to colour. If these colour distinctions are meaningful, it could be argued that there are different types of fish depicted, perhaps dolphins, but this still does not explain the colour difference. Translucency is another potentially important factor, with the more translucent carnelian seals perhaps associated with water, but this is impossible to gauge without first-hand study. Another possibility, suggested below (5.3.5.4), is that the difference is chronological. The important point is that one can start to explain the striking colours of many Talismanic seals by asserting a connection between the colour of the stone and the animal depicted. Incidentally this vindicates Boardman’s (1966: 266) minor criticism of the first CMS volume that it did not record the colour of each seal, since he suggested it might be expected to be associated with the “device” or shape. Here the stone itself can be seen as an index of a particular environment, as well as the depiction.

5.3.5.2 LMI
What can be broadly defined as the ‘naturalistic’ style is now dated by CMS mainly to LMI: two Knossos sealing deposits of a similar style, the Hieroglyphic Deposit and Temple Repositories are dated MMIII-LMI. However, these can be seen as providing a continuum between the Phaistos deposit and the naturalistic style of the Neopalatial. Indeed in the final volume of the Palace of Minos, Evans had come to see MMIB-LMIA as “the great Age of Minoan intaglio work” (Evans 1935: 591). The animal depictions on non-Talismanic MMIII-LMI seals and sealings are summarised in Figure 5.19. What is striking about these seals is the range of animals depicted, with the appearance of butterflies, Minoan dragons and horses. The exclusion of the Talismanic seals highlights the relative dearth of marine animals in this group, illustrating that the two groups are different in emphasis. The evidence is dominated by seal impressions: mostly from the LMIB destructions at Zakros (which accounts for the largest category, hybrids, a phenomenon specific to this site, and perhaps largely a single seal carver (Weingarten 1983)), Ayia Triada, Chania and others. Most of the Knossos LMI seal designs are from sealings preserved in the final destructions, from older seals presumed to be still in use in LMIIIA.
With a large number of seals with detailed depictions, it is possible to analyse whether certain aspects which are seen in terms of naturalistic depiction have a different significance. Three variables are of interest here: pose, direction facing and other elements in the design. Figure 5.20 shows how the direction of quadrupeds varies with pose in a way which is not randomly distributed. In each case direction is read from the seal impression, whether seal or sealing. Talismanic seals will be considered in the same way below, but here the question is whether there is more to naturalistic designs than at first appears. The pose Evans identified with a wounded animal, head over shoulder, appears to be associated with animals facing left, although not achieving the standard accepted $\chi^2$ significance level of <0.05, as Table 5.3 shows:

<table>
<thead>
<tr>
<th></th>
<th>Left</th>
<th>Right</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head over shoulder</td>
<td>38</td>
<td>30</td>
<td>68</td>
</tr>
<tr>
<td>Other pose</td>
<td>112</td>
<td>141</td>
<td>253</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>171</td>
<td>321</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Expected</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Head over shoulder</td>
<td>31.78</td>
<td>36.22</td>
</tr>
<tr>
<td>Other pose</td>
<td>118.22</td>
<td>134.78</td>
</tr>
</tbody>
</table>

$\chi^2$ 0.09

Table 5.3: $\chi^2$ test for the significance of the association between pose and direction facing.

As can be seen from Figure 5.20, the proportions of left and right for other poses are not distributed as evenly (overall there are slightly more to the right): ‘head down’, ‘running’ and ‘hindlegs’ have $\chi^2$ significance levels of < 0.05, so that they too are significant associations. The association of running and facing left certainly ties in with a hunting interpretation. The predominance of animals with head down to the right could suggest depictions of submissive behaviour, so taming rather than hunting. There is a danger of reading too much into such associations, but they illustrate that animal depictions, even in a naturalistic style, should not necessarily simply be read at face value.

The same is done for quadrupeds with other elements in Figure 5.21: the proportion of quadrupeds facing left and right is mirrored by the proportion of the largest category, ‘line’. The majority of these are groundlines, which act to locate the quadruped in space; this element is not significantly associated with either direction. However, the same cannot be said for all elements, some of which appear to be associated with one direction or the other. This is particularly the case for spears: Table 5.4 (below) shows that the
association is statistically significant, with a $\chi^2$ value of 0.01. Again there is a link between hunting and animals facing left.

<table>
<thead>
<tr>
<th>Observed</th>
<th>Left</th>
<th>Right</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spear</td>
<td>17</td>
<td>7</td>
<td>24</td>
</tr>
<tr>
<td>Other object</td>
<td>97</td>
<td>126</td>
<td>223</td>
</tr>
<tr>
<td>Total</td>
<td>114</td>
<td>133</td>
<td>247</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expected</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Spear</td>
<td>11.08</td>
<td>12.92</td>
<td></td>
</tr>
<tr>
<td>Other object</td>
<td>102.92</td>
<td>120.08</td>
<td></td>
</tr>
</tbody>
</table>

**Table 5.4:** $\chi^2$ test for the significance of association between animal direction and spear on LMI depictions.

This particular association will be explored further below, since it is wider than the naturalistic seals, and has relevance for particular animal types. However, the point to be made from these associations is that these seals convey more information about the animals depicted than can be explained by seeing them as ‘animal studies’. Rather, the detail of these seals allows for variations of pose, activity, direction and associated objects whose patterning seems to be more significant than artistic whim.

### 5.3.5.3 Seal combinations

Alongside naturalistic animal seals at Zakros is an example of parochialism: a prevalent and almost unparalleled style of design in the LMIB deposits has been seen as the product of one individual, the “Zakro Master”. These hybrids are included in Figure 5.19: they are frequently composed of animal parts such as wings and antlers. Their maker, according to Weingarten (1983: 122) was “content to adapt contemporary naturalism to an earlier artistic vocabulary”. The majority of the Zakros sealings come from a single room, Room 25, where packet sealings (containing parchment) and hanging nodules (securing the ends of a piece of string presumably tied to something) were stamped with one or more seals. The sealings with combinations of seal impressions, mainly the packet sealings, are described by Weingarten as a ‘Multiple Sealing System’ (MSS). It is notable that these are mainly comprised of the Zakros monsters, although these are less than half of the total Zakro designs (Krzyszowska 2005: 180). Figure 5.22 is a graphical representation of the seals in the MSS, again produced using Netdraw. Each node represents a distinct seal design, its size the frequency of occurrences and the line thickness the frequency of the combination of one design with another on the same sealing. This simply makes the point
that the naturalistic style is not the only one represented in sealing deposits, but one of a number of style groups used interchangeably with others. Some groups are exclusively composed of seal-impressions depicting these hybrids, whereas others are more diverse. This gives an intriguing idea of the context in which seals were used, and hence seen by other users: the groups of Zakro Master seals could indicate a closely linked group of people, whereas seals with other types of designs could have been a means of differentiation. The human/quadruped seals, for instance, include depictions of bull-leaping, and these are not combined with the Zakro monsters. This is one of the few cases where it is possible to look directly at the social signficance of particular seal designs.

5.3.5.4 **LMI-II**
The third major stylistic group in the Neopalatial period is called the ‘Cut Style’, seen as the successor to the Talismanic seals. Four Cut Style seals were found in LMIB contexts at Mochlos, and so such seals were certainly being made in the Neopalatial period.

More recently a number of birds with wings outstretched from the Giamalakis collection have been called Cut Style, dated LMI-II, even though they were described by Onassoglou as Talismanic. III 490, Onassoglou’s VO-46, is carved on steatite: no other animal in the Cut Style appears on a seal of this material (most are hard stones, carnelian or haematite). However, if the CMS definition of Cut Style is accepted, a number of other very similar bird depictions have to be included: Figure 5.23 shows the resulting Cut Style animal depictions: as can be seen the bird group is anomalous in having the only clear/blue/green seals. Most of these should almost certainly be restored to the Talismanic group, and the CMS attribution and LMI-II dating questioned. This in turn raises the question of whether the anomalous patterning of fish and stone colour for the Talismanic seals can be explained in terms of chronology: over time the colour associations become less important, but current stylistic criteria are insufficient to distinguish earlier and later seals for some animals.

This opens the question of whether the three major stylistic groups of the Neopalatial period, Talismanic, naturalistic and Cut Style are relevant to the meaning of the animal depictions. This question will be addressed following the analysis of the last period of seal manufacture on Bronze Age Crete.
The seals of the Final Palace period are dominated by the Armenoi cemetery and Chania in West Crete and the large collection of sealings from Knossos, only some of which can be assigned to a particular context. This is summarised in Figure 5.24. The seals of the Final Palace period show an increasing proportion of quadrupeds, as can be seen in Figure 5.25. Compared to the Neopalatial period there is a decrease in the diversity of animals, which is not simply a product of the restricted range of sites since the Knossos sealings preserve a more diverse range of animals in the previous period. Although seals showing marine animals, for instance, were used as heirlooms in this period, the greatest number of sealings with fish and other marine animals from Knossos comes from the Neopalatial Temple Repositories.

The major stylistic feature of this period is what Younger (1986) has termed the ‘Spectacle Eye’ group. The main diagnostic feature is the eponymous large circular drilled eye with a dot in the middle; dots are often used for joints, but the animal bodies lack the modelled musculature seen in LMI. Seals of this style are evenly distributed between seals and sealings, contribute approximately 20% of the total animal depictions of this period, and are found across Crete. As mentioned above, Younger (2000) has argued that this style was connected with a Mycenaean administration on Crete, fulfilling the need to distinguish their seals from those of the previous regime. One of his arguments is that earlier designs, such as two recumbent cattle, are repeated in the ‘Spectacle Eye’ style, which signifies the continuation of the same administrative role. However, this could equally be seen as an argument for the content of a seal being more important than the style: the change could be technical rather than social.

There is a shift in the elements occurring with animals in this period: Figure 5.26 can be compared with Figure 5.21, showing that plants are now the most frequent addition to seals, but that the depiction of rocks has declined. It is worth noting that animals with spears are more likely to face left, but the numbers are too small to attach much significance to this despite the fact that almost 2/3 of quadrupeds face right. That the majority of animals face right in this period can be seen as a change in the conventions of depiction, since previous associations between pose and direction become less significant. As mentioned above, much has been made of the addition of certain elements such as the ‘figure of eight shield’ and ‘impaled triangle’ to designs. Morgan (1995a: 142) describes them as “sacrificial adjuncts”, along with the double axe and circle. She associates them with the depiction of animals frontally, which she argues symbolises death. The most
common frontal animal depiction is the bucranium, and of 12 from this period, one appears with a figure of eight, and another with an impaled triangle. Another type of depiction is with the animal shown in profile with the head frontal: of 36 depictions, 3 have one or other sign. In neither case is this considerably more than would be expected due to chance. The ‘sacral knot’, Morgan (1995a: 147) argues, frequently accompanies these sacrifice symbols, and in Figure 5.26 all three accompany a left-facing animal. Although Morgan’s association of death and certain signs is plausible in single examples where they are associated with sacrifice scenes (for example, II 3 338), it is difficult to provide statistical support for regular co-occurrence: certainly there are no obvious correlations within this sample. It is does appear that these elements carry a conventional meaning, since there is often no particular spatial relation to the animal apparent. As a result these can be seen as symbols, perhaps modifying or clarifying the animal depiction, but they are too infrequent to establish their meaning.

As a whole the Final Palace period has been seen as marking a formalisation in the depiction of animals. Certainly antithetic animals become more frequent (e.g. II 8 326), but it is difficult to say whether such compositions had a particular significance. Signs also appear on the seal face in this period, in a move away from what could loosely be termed the realism of the Neopalatial animal depictions, which tend to locate the animal in space. Despite this, one can still suggest that these seals conveyed information about animals: the naturalistic style of the Neopalatial need not be seen as the standard against which to judge later seals. Instead Cretan seals can be seen as comprised of a variety of different styles, depicting a large range of animals.

5.3.7 Comparison

The previous sections have sought to explore some of the specific trends in seals of different periods: shape is significant for an understanding of Prepalatial seals, combinations for Protopalatial seals, but in the subsequent periods most seal designs occur on a single-sided seal, almost exclusively lentoid, amygdaloid, cushion or ring. This has necessitated different analyses: the Prepalatial zoomorphic seals were shown to have little relation to the design on the face; this disjunction points to a split between exotic seal shapes and local designs. This makes it difficult to tie the zoomorphs in to the arguments made about seal designs: it was suggested that these were significant mainly as imports. The way in which animals were combined on the three-sided prisms was analysed to show which were combined in the same way, suggesting a core group of humans, quadrupeds and waterbirds. The growth of naturalism from the end of the
Protopalatial period opened up a consideration of details of pose and subsidiary elements on seals, with the suggestion that hunting was indicated in certain details of the depiction. Different styles in the Neopalatial period were analysed separately to examine their coherence, but the separation of the Talismanic and Cut Style seals was questioned on the basis of colour significance. In the following the problems of style will be overcome by examining features which cross cut styles, arising from the examination of pose and direction in the Neopalatial and Final Palace seals.

One of the most straightforward ways to compare the seal depictions is by examining the range of animals shown on seal designs (zoomorphs are excluded). As can be seen from Figure 5.27 quadrupeds dominate in each period, although the decrease in the Protopalatial and Neopalatial period can be seen as a corollary of the increase in the range of animals depicted, including marine subjects, birds and hybrids. Wugs, however, peak in the Prepalatial seals and decline over time. The decrease in the residual category ‘animal’ can be straightforwardly connected with the increasing detail in the depiction of animals, linked to the change in the material of seals and carving technology.

Figure 5.28 gives the animal types. This shows that the largest category is still ‘quadruped’. In many cases this is due to the fact that seals are either too worn, or sealings too fragmentary to identify the animal more closely. However, as suggested above, some quadruped depictions, particularly in the Prepalatial seals and three-sided prisms lack enough detail to specify a particular quadruped. Of the identifiable quadrupeds, cattle, deer and sheep peak in the Final Palace period, but goats are an interesting exception since they peak in the Protopalatial period but remain a fairly constant proportion of seal depictions. Lions peak in the Prepalatial period, but drop away in the Protopalatial period before increasing subsequently. This can be seen as one indication that the Prepalatial lion depictions are a separate phenomenon from those from the Neopalatial onwards: it will be suggested in Chapter 8 that only the later seals index lion encounters. The most frequent quadrupeds will now be analysed further to extend the analysis of the naturalistic seals above.

Figure 5.29 illustrates the directions of animals depicted singly in all periods. This is to remove the potentially complicating factor of compositions involving a number of animals. It illustrates that animals predominantly face right in all periods except the Neopalatial: this points to a deliberate choice in depicting animals in a certain direction during this period. Goats are particularly clearly biased to the left in this period, and lions to a lesser extent, but cattle are an exception in LMI, since they mainly face right. Figure
5.30 uses goats to assess if this is mainly a function of style, or whether this phenomenon cross-cuts stylistic differences. The conclusion is that it does, but the predominance of goats facing left is particularly clear in the Talismanic style as Bloedow (1992a) pointed out. The ‘Mallia Workshop Complex’ is Yule’s term for the three-sided prism depictions, so the goats facing left in the Protopalatial period can be associated with the naturalistic sealings of the Phaistos deposit, and a few other extant seals. The implication of this is that with ‘naturalism’ comes a convention which, as has been suggested above, is linked to hunting.

The link between direction and hunting is brought out more clearly in Figure 5.31, which is based not on single animals, but on depictions which can be clearly classified as either ‘attack’, in which one animal attacks another, ‘hunt’, in which an animal is shown with a weapon, and the self-explanatory ‘mother/child’. This clearly brings out the association between hunting and direction in the Neopalatial period, including cattle, but does not explain the anomaly of cattle facing right in LMI. The predominance of cows with calves facing right in the Final Palace period cannot be used to support the possible explanation that domestic cattle face right in the Neopalatial period since the few Neopalatial cows and calves face left.

Figure 5.32 returns to pose, showing that the majority of single goats facing left are either standing or running. Bloedow (2003) suggests that the pose identified in CMS as ‘running’ in which the goat’s legs are bent could show collapse, but either can be associated with hunting. The standing goats are interesting because if direction is seen as the primary indicator of hunted animals, they suggest that direction alone is a sufficient indicator. There are depictions of goats standing with spears over their backs, so a hunting explanation is the most likely. Cattle are again problematic since the head over the shoulder pose is not clearly associated with cattle facing left, an association which works for quadrupeds. The ‘head up’ pose does seem to be the exception, however, in being associated with left-facing cattle. As can be seen in Table 5.5 (below), this is a significant association. It could be suggested that the ‘head up’ pose shows cattle bellowing (Loughlin 2004b: 184). In her examination of cattle depictions in her thesis, Loughlin (2000) suggested that detailed depictions of cattle could be linked closely with particular behavioural traits of cattle. Figure 5.33 confirms that the majority of cattle shown being hunted are in this pose, and also confirms the link between hunting and standing and running goats.
The conclusion to be drawn from this is that the way in which certain animals were depicted during what is seen as the height of naturalistic seal depiction can be linked with hunting. This phenomenon is particularly apparent in the Neopalatial period, but is not restricted to the naturalistic style. However, these depictions are more detailed than those on three-sided prisms, since they frequently include other elements, such as spears or plants. It could be argued that these provide extra information about pose and direction which would not necessarily have been needed in the Bronze Age. This suggests that all variation in pose and direction was potentially meaningful, but only the most obvious associations can now be convincingly recognised and explained.

The occurrence of subsidiary elements is summed up in Figure 5.34. It shows an increase in the depiction of plants in seal depictions over time, as well as a general decrease in the number of depictions which lack these extra elements. Although no explanation was offered for many of the elements in Figure 5.26, this simply means that there were too few for statistical analysis in most cases. Figure 5.34 suggests that the addition of elements became increasingly important, perhaps to convey additional meanings. These can be described as symbols, which have an arbitrary link to what is signified, making it more difficult to suggest potential meanings. It can, however, be argued that the decrease in detail in the Final Palace period was compensated for by an increase in these additional elements to specify meaning. It could be that direction was a way of indicating hunting without breaking up the composition of the seal design, but in the later seals composition became less important. These later seals are often described, following Evans, as showing a ‘horror vacui’: this could be seen as a shift in the way in which the seal conveyed meaning, from conventions which did not compromise realistic depiction to the addition of symbols which are now difficult to interpret satisfactorily.

<table>
<thead>
<tr>
<th>Observed</th>
<th>Left</th>
<th>Right</th>
<th>Total</th>
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<tbody>
<tr>
<td>Head up</td>
<td>21</td>
<td>11</td>
<td>32</td>
</tr>
<tr>
<td>Other</td>
<td>15</td>
<td>29</td>
<td>44</td>
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<tr>
<td>Total</td>
<td>36</td>
<td>40</td>
<td>76</td>
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<tr>
<td>Expected</td>
<td></td>
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</tr>
<tr>
<td>Head up</td>
<td>15.16</td>
<td>16.84</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>20.84</td>
<td>23.16</td>
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</tr>
</tbody>
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\[
\chi^2 = 0.01
\]

Table 5.5: $\chi^2$ test for the significance of association between animal direction and pose in Neopalatial cattle depictions.
5.4 Discussion

5.4.1 Pursuits

The previous approaches discussed above are insufficient to explain the sort of patterning which has been revealed, however incompletely, in the analysis of seal depictions. The ideas of naturalism and ‘animal studies’ make no allowance for the conventions of direction which have been argued to link to hunting, even when a spear is not apparent in the depiction. It is clear that seal depictions, particularly from the period of the Phaistos sealings until the end of the Neopalatial period, conveyed more information about animals than just an appreciation of their form. The conventions of direction, however, do not support the interpretation of badges since these conventions have been shown to be meaningful in terms of human-animal relations. Differences in direction do not symbolise offices in the bureaucracy, for instance, but particular activities. Nor are the depictions purely symbolic: it can be suggested that the poses of certain animals are linked to the way they were encountered in the hunt rather than being arbitrary ‘pose types’. The same can be said of the non-arbitrary colour significance of Talismanic seals, which appear to index a marine environment.

This, however, is to focus primarily on just one phase of seal production, which Evans saw as the rise of naturalism. The obvious question is what came before and after. It has been suggested above that zoomorphic seals are difficult to link with human-animal relations, but rather, like the hippo tusks which other Prepalatial seals were made from, were simply exotic objects. This is borne out by the way in which the designs on the faces of zoomorphic seals do not relate to animals: shape and design were not integrated. The animal depictions in the Prepalatial period are also difficult to link with human-animal relations because they do not show the animals doing anything, that is describe their affordances. Whereas lions in later seals attack animals, the Prepalatial lions ‘parade’: this is another indicator that the form was known, but the animal and its affordances were not. The arrangement of animals in circular patterns also removes the sense of specificity which a groundline, a frequent addition to seal designs in the Neopalatial period, establishes by giving the animal a spatial context.

The three-sided prisms are difficult to now interpret partly because of the affordances of steatite. These depictions engraved in soft stone show only the basic animal form, although there is some variation in pose. The majority of animals cannot be identified as a particular type of animal, since what have been described in Chapter 2 as the invariants of form of particular animals are missing. The invariants of goats, for instance are curved
horns, and these are shown in a number of cases. This raises the question of why the invariants of a quadruped are shown, but not of particular types of quadruped. One way to pursue this question is to ask whether these quadrupeds are domestic or wild. The association with waterbirds suggested by the network analysis is one argument in favour of wild animals. Another is the rarity of clearly domestic animals, apart from dogs, in Bronze Age seal depictions, with the exception of the occasional milking scene in Neopalatial depictions. However, depictions of dogs can be linked to hunting wild animals from seals of the Protopalatial period onwards. An additional piece of evidence is the hieroglyphic signs discussed in Chapter 3 which also occur on three-sided prisms. Here a cattle head can be seen as the ideogram for, almost certainly domestic, cattle. It could be argued that there is a distinction between domestic and wild based on whether the whole animal is shown or the head. Again dogs are an exception. However, there is no clear line between hieroglyphic signs and animal depictions, and so it is possible that depictions of whole animals were not entirely distinct from written signs. The lack of detail and the possibility of conventional meanings do make these depictions difficult to interpret. Here it will be suggested that hunting was used to classify certain people who took part in the bureaucracy, in an analogous way to depictions of potters, for instance, on three-sided prisms. A goat, or just a quadruped was a shorthand for an activity.

One of the interesting aspects of the Phaistos sealing deposit is that it comes from a bureaucratic context in which writing (Linear A) and seals have already been separated; in contrast hieroglyphic signs occur on both seals and written documents in north Crete until the beginning of the Neopalatial period. This separation can be seen as opening the way to a different kind of depiction, which locates the animal in time and space. This ‘naturalistic’ style of depiction can be seen as one which gives enough information about an animal to suggest a particular animal practice with which the seal user was, or wanted to be, associated with. Hunting is the most evident type of encounter, but the depiction of marine animals could link the seal user to an environment beyond the domestic sphere. The depiction of a griffin or a lion could suggest observation, and hence knowledge of, exotic animals which were not native to Crete. The significance of depictions of particular animal types will be explored further in Chapter 8. Here the point, as discussed above, is simply that the seal impressions can be images with the value of effigies, indexing certain animal practices. Naturalism, however that is defined, is not essential for this since it has been shown above that Talismanic seals used the same conventions as contemporary naturalistic depictions.
This raises the question of whether there was any functional difference between Talismanic and naturalistic depictions. The idea that a certain style had a magical significance can be seen as another one of Evans’s unsubstantiated assumptions that has been repeated by Kenna and others. One argument against this is the difficulty in distinguishing between Talismanic, Cut Style and naturalistic depictions, as Ruuskanen’s (1992: 43-44) ‘naturalistic-talismanic group’ of bird seals shows. It is possible to suggest that all seals depicting goats had this magical aspect, as Bloedow (1992a) does, but this is simply to return to Evans without providing any argument for the validity of this interpretation. Instead naturalism can be seen as a development which demonstrates the skill of the seal carver, but also provides a depiction of an animal whose effect on the viewer is to suggest first-hand observation. This is to reverse the frequently made argument that animals must have been observed because their depictions are so detailed. This implies a social context in which encounters with animals, and hence observations of their behaviour, were of significance.

5.4.2 Traces of hunting

One such encounter which has been at the centre of this chapter is hunting. In Late Bronze Age Mainland Greece hunting has been seen as ‘an important ideological resource for aspiring as well as established Mycenaean elites’ (Hamilakis 2003: 244). As Hamilakis suggests, drawing on Helms (1993), encountering animals inhabiting a different temporality was a rite of passage which imbued its participants with authority: certainly the location of Crete means that overseas travel was integral to hunting lions, and obtaining or hunting wild cattle or deer. This is one possible explanation for the depiction primarily of goats on Talismanic seals: if these seals were quicker to make and so were sub-elite, as has been suggested, then they could be associated with a less prestigious type of hunting than wild cattle or lions. This could explain the lack of Talismanic or Cut Style cattle depictions, and extreme rarity of lions in these styles. In Chapter 4 the use of deer remains as hunting trophies was explored: it can be argued that a seal depicting a deer was a different means of indicating the same thing.

Hunting with dogs is another aspect of this practice shown on seal depictions: whereas domestic animals are rarely shown, or at least not in ways which allow them to be identified as domestic, dogs are an exception. This can be explained by seeing dogs as linked to the practice of hunting. As will be seen, hunting is rarely shown in other media. On this basis it can be argued that seal depictions established a personal connection between the user and this animal practice.
5.5 Conclusion

The most obvious affordance of a sealstone in a Bronze Age context is that it makes an impression on a piece of wet clay: this impression is the trace of the seal, and by extension the person who used it. Many Bronze Age Cretan seal designs were geometric: some zoomorphic seals had a simple cross-hatching on their face. In functional terms this is as effective as an animal depiction for sealing things; the existence of complicated geometric designs in the Phaistos sealing deposit shows that distinctive non-figural designs could be used for sealing. This shows that animal depictions were not a functional necessity to the practice of bureaucracy, but suggests that animal depictions on seals had another significance. It has been argued here that this was to convey information about encounters with animals: the seal impression is thus the trace of a human-animal relation.

The complexity of seal depictions of animals, with variables such as pose and direction which have been argued as meaningful in terms of human-animal relations, also presents a problem of explanation. The emphasis in this chapter on hunting is partly the result of it being the most obvious human-animal relation depicted: different affordances of animals were conveyed in other depictions, such as cows and goats nurturing their young, but the significance of this is far less clear outside of a Bronze Age Cretan social context. Other details of pose, or the colour of the seal, can also be seen as meaningful, but in a way which is difficult to interpret now. However, the point has been made that the existing interpretations of seal depictions either disregard such details by attributing them to artistic whim, or in the case of Younger, give them a wholly symbolic significance which is difficult to reconcile with the sort of specific associations suggested here. Instead detailed depictions of animals can be seen as conveying specific information about relations with animals which was socially useful.

One of the problems with seal depictions, however, is assessing the extent to which they affected the Bronze Age viewer, Gell’s recipient. The Zakro sealings do provide some insight into the interactions among a community of seal users, with possible internal distinctions. Impressions were predominantly seen in bureaucratic contexts such as these and were, of course, no bigger than a couple of centimetres in diameter. This could explain the use of pose and direction to indicate hunting, since a spear might be difficult to discern. Some materials used for seals obscure the design when seen on the face, so the act of sealing provides the most reliable way to read it. The act of sealing is also of social significance, since the use of a seal implies the ability to participate in a bureaucracy, but at the same time establishes a context in which the seal can define the user through its
depiction. Even if the depiction was only seen by a few people, it was produced at the moment of interactions involving an administrative authority. At this moment the user was frequently defined by a relationship with a non-domestic animal.
6 “Nature moulding” and “Nature printing” in Minoan Crete

6.1 Introduction

It thus appears that from the very beginning of the Middle Minoan Age the development of ceramic art in the ‘marine style’ was facilitated by a system of ‘Nature moulding’ in the same way that at a slightly later date – M.M.I.I.a – we have seen the same style in wall painting promoted by a process of ‘Nature-printing’ by means of small sponges dipped in paint (Evans 1935: 109).

An art historical approach has long been at the forefront of studies of painted and plastic depictions of animals. Indeed it can be said to predate Minoan archaeology, with Milchhöfer’s (1883: 31) discussion of the “naturalistische” depiction of marine animals on pottery found on the Mainland, and his identification of their origin on Crete (Schiering 1998: 22). Evans found abundant ‘Marine Style’ pottery at Knossos, confirming this supposition; the greatest concentration was in a deposit on top of the South House (Mountjoy 2003). Before Mountjoy’s complete publication, however, studying this deposit, and other Marine Style sherds, involved, in many cases, going through boxes of pottery at the Stratigraphical Museum at Knossos or elsewhere. Nevertheless, two scholars attempted this task, producing valuable, and comprehensive, corpora (Mountjoy 1984; Müller 1997). The same process can be seen for zoomorphic rhyta, with early art historical treatment followed by extensive corpora (Koehl 2006; Miller 1984). Some of the most celebrated rhyta, including those found in the early twentieth century at Pseira, or in the Little Palace at Knossos, can now be studied as part of a comprehensive site publication (Betancourt & Davaras 1999: 131-7; Hatzaki 2005: 184-5). It is in this gap between discovery and display on the one hand, and the painstaking assembly of corpora and retrospective site publications on the other, that the art historical approach has flourished. In the absence of context-by-context publication of most Cretan sites, objects are known from museum displays, summary publications and art books. The most comprehensive corpus of Minoan animal depictions, for instance, relies heavily on Zervos’s (1956) L'art de la Crète néolithique et minoenne (Vanschoonwinkel 1996). Such sources of evidence and the resulting accounts do full justice to the diversity and aesthetic appeal of Cretan animal depictions, but privilege the unique and the spectacular over the quantifiable and the representative. The following exploration of Cretan animal figuration and depiction relies instead on corpora and full site publications to try to establish a quantitative dataset. This is used as the basis for an examination of the role of such animal depictions in human-animal relations.
Paradoxically, the publication of corpora of certain classes of evidence illustrates the difficulty in establishing clear distinctions. The division here into zoomorphic figures, relief depictions and painted ceramic decoration broadly reflects different publication traditions, which are rarely explicitly integrated into a broader picture. Koehl’s (2006) catalogue of rhyta is exceptional in including zoomorphic figures, including animal heads (Figure 6.1), relief stone vessels such as the ‘Sanctuary Rhyton’ (Figure 6.2), and ceramic Marine Style examples (Figure 6.3). Even this however, arbitrarily isolates a class of vessel as the basis for study. Most authors use form rather than function as a defining criterion, with catalogues of zoomorphic vessels (Miller 1984), hollow zoomorphic figures (Guggisberg 1996) and bronze (and clay) figurines (Pilali-Papasteriou 1985). Yet it is often impossible to determine whether large hollow votive animal figures deposited in sanctuary sites were also used as vessels, particularly if they are broken. Zoomorphic rhyta were found at Kophinas, for example (Figure 6.4). At Petsophas large figurines occur in the same depositional context as small solid animal figurines (Figure 6.5). Bronze figurines occur occasionally in settlement contexts (Figure 6.6), but in later periods are found mainly in caves. In her catalogue of ceramic relief Foster (1982) includes examples such as a bowl from Palaikastro with what can be described as 160 animal figurines and one human attached inside (Figure 6.7). A vessel recently discovered at Poros is decorated with both attached relief shells and Marine Style painting (Figure 6.8) (Dimopoulou 1999). Other authors see stone relief vessels, in which the relief is usually carved rather than the appliqués used for ceramic vessels, as prototypes for Marine Style decoration (Figure 6.10 and 6.11). As these examples illustrate, the reason for discussing animal figures and depictions, in various materials, together is that these different classes of evidence form a continuum. This is particularly the case when focusing on animals, rather than technological traditions, particular categories of site, or depositional context.

Where possible site publications will be used to provide both contextual information and an idea of the frequency of animal depictions from particular sites. The focus here is on the sites used previously for the analysis of faunal remains, notably Kommos and Chania, with smaller assemblages from Pseira and Mochlos/Chalinomouri. These provide useful contextual information for settlements, but unfortunately a particular class of site, peak sanctuaries, suffer from a lack of comprehensive publications. One site, Petsophas, has been published retrospectively, but without a full catalogue of extant animal figurines (Rutkowski 1991). The animal figurines from the major peak sanctuary of Juktas have recently been analysed in an unpublished thesis (Zeimbekis 1998), while the site itself awaits final study and publication. Until the final publication of Atsipadhes (Peatfield...
1992), these remain the best available sources of information for animal figurine deposition at peak sanctuaries. Another useful re-publication of historic excavation material covers Psychro cave, which provides further evidence for what the author terms “extra-urban sanctuaries” (Watrous 1996). The differences between material culture forms from within settlements and these other types of site are of particular interest.

As will be argued in this chapter, material from outside settlements illuminates a different aspect of the social geography of human-animal relations compared to the largely elite buildings excavated in settlements. Domestic animal figurines are more frequently deposited in sanctuary sites, whereas marine imagery predominantly comes from settlements. These patterns cannot be separated from their social context: it will be suggested that there is a long-term tradition of animal figuration on Crete which both predates and survives palatial cultures. At the same time zoomorphic rhyta in mould-made clay or expensive materials show the adoption and manipulation of this form of material culture by a palatial elite. The development of marine imagery, alongside a naturalistic style of depiction in the Neopalatial period, points to another way in which material culture was used to bring non-domestic, underwater animals into an elite social context. This too can be seen as a longer-term phenomenon, in which marine animals, but rarely land animals, were seen as appropriate decoration for the surface of vessels. These distinctions between settlements and sanctuaries, land and sea, domestic and wild need not be seen in a fixed structuralist mode; rather the manufacture, consumption and deposition of animal-related material culture materialised these oppositions as and when they were appropriate.

The forms of material culture will be analysed separately because the different scholarly traditions make quantitative comparison difficult: there are few stone relief vessels depicting animals, for instance, but these have been exhaustively published and discussed. In contrast thousands of animal figurines have been recovered from excavations, of which all but a small number are awaiting publication. The separation of media also results in a tendency to regard stylistic change as internal to that medium: Marine Style animal depictions are seen as a development of abstract Kamares patterns despite the chronological gap between them. It will be suggested in this chapter that cross-cutting these boundaries is an emphasis on making animals present in various social contexts. Some vessels would have been seen by those present at drinking ceremonies, for instance, but in some cases the details of the depiction would only have been seen by a few people. In this way the affordances of vessels in terms of interacting with viewers are intermediate between seals and frescoes. At two ends of the vessel continuum are three-
dimensional models of animals (whether figurines or zoomorphic rhyta) and naturalistic decoration, particularly Marine Style. Intermediate between these are various relief forms attached or integral to ceramic and stone vessels. The argument is an exploration of Evans’s emphasis on the importance of ‘nature moulding’ and ‘nature printing’ to the development of ceramic designs. Although examples of relief appliqués directly moulded from shells, or sponge-imprinted vessels, are rare it will be argued that these direct traces of environmental forms provide an insight into the significance of animal depictions in these media. The prevalent assumption is that these various animal depictions are religious, whether figurines offered to deities, or marine markers of a goddess. Instead it will be suggested that at certain times, and in particular spatial contexts, socially useful human-animal relations were extended and elaborated with the material traces of animals.

6.2 Previous Approaches

6.2.1 Zoomorphic figures

A number of themes run through the study of zoomorphic figures, with a longstanding interest in typology, and questions of origins and function. Zoomorphic rhyta have received the most attention: Karo (1911) defined the term rhyton for vessels with two openings, and identified the two main types as non-zoomorphic and zoomorphic. The latter was further subdivided into head-shaped and complete figures. Tuchelt too argued for a typology of animal head rhyta based on the angle of the head and neck (Tuchelt 1962: 36-45). The significance of this, as will be seen, is that there is a shift from straight-necked animal heads based on existing ceramic forms to more sculptural forms which more closely resemble disembodied heads. Koehl (2006: 7) has argued instead for a functional typology for all rhyta, with four types based on the presence/absence of a foot and wide or narrow opening. He argues that each type necessitated a different use, so that those with narrow openings could be filled by immersion and kept full until emptied by uncovering the primary opening, useful for libations or decanting. In contrast those with wide openings had uses based on liquid flowing straight through them, involving filtration and infusion (Koehl 2006: 259-76). As a result he divides the formal category of animal head rhyta into two types based on these different functions, coinciding with Tuchelt’s division. The rarer type with a wide opening is essentially like a conical rhyton, so has an unnaturally straight neck, whereas those with narrow openings tend to have a bent neck. From an affordance point of view it is significant that the majority of zoomorphic rhyta would have been able to hold liquid, since this has implications for the way they were perceived.
Other scholars have developed formal typologies, which provide a vital chronological framework, especially since the manufacture of animal figures continues on Crete through the Bronze-Iron Age transition. Guggisberg traces the development of hollow animal figures in the Aegean from the Late Bronze Age until the 7th century BC, but does not use openings as a distinguishing feature in his typology (Guggisberg 1996: 20). All hollow animal figures needed vent holes for firing purposes, and it is impossible to determine the number of openings of fragmentary figures, so his decision is pragmatic. Zeimbekis (1998) takes the same approach, suggesting that some of the fragmentary animal figures deposited at Juktas could have been used as rhyta. A bimodal size distribution leads her to make a distinction between larger figures and small figurines. This will be followed here, with figure used to describe the larger hollow forms, and figurine the small solid forms. Miller (1984: 8-11) focuses on zoomorphic vessels, rejecting the term rhyton since she sees the number of apertures as irrelevant to her discussion of the artistic and cultural development of these forms, and potentially the way they were used. The major contribution of these studies, apart from providing catalogues of known zoomorphic figures, is to the question of development, which will be examined further below. The LMIIIC figures in particular provide evidence for a long-term tradition of animal figuration, which is not restricted to palatial culture.

The same can be said of animal figurines, although the lack of published catalogues make these difficult to study systematically. Pilali-Papasteriou (1985) provides a typology and catalogue of Bronze and Iron Age bronze figurines which, like the figures, illustrate the continuity of cult practice on Crete. She also discusses clay animal figurines, providing valuable lists of those in Heraklion and Ayios Nikolaos Museums. In the absence of any published study devoted to Cretan Bronze Age animal figurines, this at least gives an impression of the types of figurines deposited and their location. However, Zeimbekis’s typology of animal figurines in her study of the Juktas and Kophinas material casts doubt on some published identifications. Her explicit discussion of the problems of identification, and the use of the term ‘bovine’ in the almost complete absence of sexed figurines highlights the description of other figurines as ‘bull’ problematic (Zeimbekis 1998: 244). Some of the Atsipadhes cattle figurines, in contrast, do have sexual characteristics, both male and female (Peatfield 2000). Although Zeimbekis acknowledges the subjectivity of species identification, she provides illustrations to set out her criteria. Horns in particular are used to distinguish cattle, agrimia and sheep. Since Zeimbekis’s unpublished typology remains the only systematic analysis of animal
figurines, all published identifications have to be regarded as open to question since the criteria on which they are based are not as explicit.

The long-term tradition of manufacturing and depositing animal figures and figurines has been used to argue for a division between ‘popular’ and elite cultures. The mould-made ceramic Neopalatial rhyta have been seen as suited to ‘courtly’ tastes (Guggisberg 1996: 370). Miller (1984: 188-9) too suggests that there was a palatial tradition, which was more sculptural and naturalistic, including the non-clay vessels, and a ‘rustic’ tradition which was more closely tied to the vessel shape and often less naturalistic. Both authors see the Postpalatial animal figures as a resurgence of the popular culture. Zeimbekis (1998: 159-65) suggests that large, but schematic, zoomorphic figures deposited at the peak sanctuaries in the Neopalatial period mark a parallel tradition to the naturalistic rhyta found in settlements. However, she does not see them as non-elite, since they would have been a substantial offering. She also argues for a hiatus between LMI and LMIIIIC in the production of zoomorphic figures (Zeimbekis 1998: 198). Peak sanctuaries, particularly in the Protopalatial period, have been seen as primordially expressions of a popular religion which are later absorbed into palatial cult practice (Peatfield 1992: 60). This gives the deposition of animal figurines a popular aspect too; Rutkowski (1986: 94) sees the emergence of this tradition in response to the needs of cattle and sheep breeders, but this does not explain why peak sanctuaries should have emerged then, given the previous millennia of animal husbandry on Crete. Watrous (1996) argues instead that the emergence of the palaces, coinciding with the start of ritual deposition at these sites, provides the social context within which to understand these extra-urban sanctuaries as territorial markers. Nevertheless, the deposition of zoomorphic vessels at Prepalatial tombs, and the continued deposition of figures and figurines at sanctuaries in LMIIIC, including the peak sanctuary at Juktas, does give these forms a longer timespan than the palaces. This is not to suggest, however, that the significance of animal figuration at these different locations over a long period of time was constant. Rather the longevity of the practice of creating animal figures to mediate human-animal relations is of interest.

Since this thesis only considers material from Crete, the often speculative issue of origins will not be discussed in detail. There is a consensus that Anatolian zoomorphic cups influenced the development of animal head rhyta (Koehl 2006: 353). Tuchelt (1962) placed the Aegean vases in their wider Mediterranean context, with suggestions of Near Eastern origins, but his work was extensively discussed and modified by Miller (1984: 13-23). There are also Mycenaean influences recognised in later figures and figurines, although this has been seen more in terms of an interchange given the Mycenaean
figures’ Cretan origins (Nicholls 1970: 8-11). Given the prevalence of animal depictions in Crete such imported forms would almost certainly have been accommodated within existing traditions, also including early anthropomorphic vessels. In the absence of metal rhyta from Crete, with the exception of a bronze ear found at Palaikastro (Miller 1984: 495), it is also difficult to discuss possible metal prototypes; these issues are better covered in the pan-Aegean studies, for which the Mycenae Shaft Graves in particular can provide some of the ‘missing’ evidence. The silver Anatolian stag vessel is a vivid reminder of the rarely-found objects circulating in the Bronze Age Aegean (Koehl 1995); the golden goat figurine from Akrotiri raises further questions about unheralded classes of evidence (Blackman 2000: 122).

The issue of sacrifice has been discussed in Chapter 4, and three-dimensional animal depictions do not provide unambiguous evidence of this practice, despite arguments to the contrary. Alexiou’s particularly vivid interpretation of zoomorphic rhyta envisages them filled with blood, although coagulation would be a problem (Koehl 2006: 263). Rehak (1995b: 451) has suggested that stone bull’s head rhyta were simulacra of sacrificed bulls, deliberately broken by the same blow to the muzzle as was used to stun cattle. An analogous interpretation of peak sanctuary animal figures and figurines is that they were sacrifice substitutes (Watrous 1996: 49; Kourou and Karetsou 1997: 115). Certainly cattle would have been expensive animals to sacrifice, explaining the use of substitutes, but in the absence of evidence for sacrifice until the Final Palace period there is no external support for these interpretations.

In contrast to these arguments based on metaphorical uses of animal depictions, there are metonymic arguments, in which the offering of animal figurines at sanctuaries is directed at the well-being of the supplicant’s animals (Peatfield 1992: 78). Here the figurine is an extension of the herd or flock for the purposes of favourable divine treatment. Rutkowski (1986: 90-1) takes this further to include beetle figurines, arguing that their association with sheep dung made them appropriate offerings to request multiplication of flocks. There is no supporting evidence, however, that the beetle was seen in this way.

Peatfield (2000) too has more recently argued for cattle figurines symbolising fertility. Shaw (1996: 290) sees cattle figurines, here in household contexts, as symbolic of strength. More generally, animal figurines have been seen as symbolic of attributes of the deity or particular requests (Gesell 1985: 3). Blomberg’s (2006) unconvincing argument that figurines represent constellations can similarly be seen as symbolic. As argued throughout this thesis, there is no way of justifying these symbolic arguments based on
the material evidence of Bronze Age Crete. Nor is there enough evidence to support particular metaphoric or metonymic explanations, but in general they do raise useful questions about whether animal figures and figurines acted as substitutes for, or extensions of, the depicted animals. It will be suggested that figurines of domestic animals were extensions of the relations farmers had with their animals, but also what Summers (2003) calls ‘real metaphors’, so depending on form and context can have both a metaphorical and metonymic aspect.

6.2.2 Relief

Relief is a broad category. At one end of the continuum, as noted above, it describes figurines attached to vessels, while at the other the relief is integral to the surface of the vessel. The existence of stucco wall reliefs means that it is not simply restricted to small-scale objects. There are different opinions about the coherence of the category. Kaiser (1976) included reliefs of all different materials, including painted plaster, which was provocative in seeing the large- and small-scale as part of the same phenomenon. Foster prefers to see ceramic relief as distinct, arguing that: “Ceramic sculptural relief is unique in being indissolubly bound to a vessel, although created apart from it” (Foster 1982: 122). As she notes, Evans saw relief as a way of depicting things naturalistically; instead she focuses on decorative effect. Interpreting relief forms as having a primarily ornamental or representational effect runs counter to the argument which will be developed for small-scale reliefs in this chapter, and larger scale fresco reliefs in Chapter 7.

One of the earliest, and simplest, forms of ceramic relief is barbotine, which consists of protrusions or other relief patterns created by manipulating the slip. Evans argued that this effect was based on the imitation of marine objects, such as the spiny oyster, and used descriptions such as “barnacle work”. He linked these early Protopalatial design features to the later MMIII ceramic relief forms including crabs and shells which he found in the fill of the Knossos Kouloures. In connection with these he discusses ceramic shell reliefs which he suggests were moulded from actual cockle shells, and another form of relief which was made by stamping a shell design into the vessel wall (Figure 6.12). The latter, he suggests was made using a stone stamp, since the shell is a composite form, the “Venus-Pecten” (Evans 1935: 100-120). He went further, seeing these developments as leading towards the Marine Style, as in the quote at the head of the chapter. By linking these phenomena together Evans saw a direct and long-term link between the sea and
various decorative forms, also mentioning the faience shells from the Temple Repositories.

Evans’s interpretation of barbotine has been widely rejected. Foster (1982: 75) lists the various alternative explanations, including the imitation of metal, but sees it instead as a purely aesthetic effect:

three-dimensional slip design endows a vessel with an additional spatiality, increasing the potential of its surface. At the same time, this creates a tension between the vessel’s two- and three-dimensional embellishments, resulting in products that are often visually disconcerting, but intellectually challenging. (Foster 1982: 144)

She accepts, however, that when combined with marine relief forms, barbotine can become representational, suggesting water, most notably in an unparalleled stand from Phaistos, with plastic dolphins circling it (Foster 1982: 92-3). In suggesting that barbotine can also be used to imitate stone, she maintains that spatial surface effects are its primary function, with representational effects an occasional development. For the clearly representational reliefs she examines the way in which vessel and attachment interact, maintaining the idea that the consistent effect is the production of multiple surfaces. In this way she sees barbotine and relief as developments which refer ultimately to the manufacture of ceramics, exploring the potentials of this medium. Walberg (1987: 41) too suggests that barbotine has “a decidedly ceramic character”, although she sees moulded decoration as a separate phenomenon.

At the start of the Late Minoan period ceramic reliefs become rarer, and a class of stone relief vessel is produced. Once again metal vessels are integral to the debates and the interplay with other materials; the Sanctuary Rhyton from Zakros was originally covered in gold leaf (Platon 1971: 164). This points to the interdependence of relief depictions in these two media. Although no comparable metal vessels with relief scenes have been found on Crete, at least one of the Vapheio cups has been seen as an example of Minoan repoussé relief, whether or not the other is a local imitation (Davis 1974). It is worth considering the Vapheio cups not just as surrogates for unknown objects, but because of their place in art history. Alois Riegl, compared the ‘subjective’ depictions of the Vapheio cups, taking account of the viewer in features such as the overlapping cattle, with the ‘objective’ style prevalent in Near Eastern art. The complex composition of scenes in which one animal’s pose balances another or two share the centre point was also distinctive, rather than the clarity of the parts taking precedence over the whole. He also considered the depiction of animals in space: “the Vapheio cups display a landscape that encompasses a section of the earth’s surface intended for subjective momentary viewing, a concept that was completely foreign to ancient Near Eastern art” (Riegl [1900] 2000: 159)
The type of modelled relief seen in the Vapheio cups, among other features, produced a way of seeing the world which Riegl saw as anachronistic in its similarity to 17th century Dutch painting rather than anything seen in the Bronze Age or most of Classical art.

The importance of Riegl’s discussion is that the modelled relief technique used in the Vapheio cups becomes an integral part of a convincing realism; the central idea was to show an event as it happened rather than the religious overtones he saw as stifling Egyptian art. Minoan stone relief vessels have similarly been seen as arrested moments, as well as expressing an interest in the natural world (Warren 1969: 174). The goats above the doorway on the Sanctuary Rhyton (Figure 6.2) illustrate the way in which the depiction is ‘subjective’ with the goats slightly overlapping, and with the left-hand one’s head frontal, rendering its characteristic curved horns an ellipse. The realism of the scene leads Bloedow to read it absolutely literally, as a palatial zoo enclosure; he suggests that such accuracy could only come from an observation of goats in captivity and that the building is more likely to be the Zakros palace than a peak sanctuary. Quoting the Zakros excavator, Platon, he argues: “the way in which the goats are depicted is so natural that they may be thought of as, so to speak, ‘historical events’” (Bloedow 1990: 70).

Although, as Shaw (1978) points out, there is ambiguity in the relative depth of parts of the building, the scene gives the impression of a single frontal viewpoint. The consequent relationship with the viewer and small scale suggests that only a few people would have been able to be affected by the depiction at any one time: as Logue (2004: 172) has suggested, these relief scenes could primarily have been meant for consumption by members of the elite, and perhaps referred to the actions of their owner.

Marine animals are also depicted in stone relief, such as the ‘ambushed octopus’ found in the fill above the Throne Room at Knossos (Figure 6.10). With the coral overlapping the octopus, it is regarded as another highpoint of naturalism: “Strength, naturalism, humour and freshness are delightfully conveyed” (Warren 1969: 176). As Kaiser (1976: 186) suggests, the marine environment negates many of the difficulties of depicting the spatial relations of landscape. Another stone vessel from Knossos shows a very different approach to depicting an octopus, with the plastic tentacles separate from the surface of the vessel (Figure 6.11). As will be discussed below, stone vessels with marine subjects are widely accepted as influencing the Marine Style. The first octopus vessel can be compared in technique with relief vessels such as the Sanctuary Rhyton, while the other is more similar in approach to ceramic relief, even if the relief is integral. Leaving aside Evans’s ideas about barbotine, it is interesting to consider these vessels together with
ceramic vessels decorated with moulded and impressed shells. These relief depictions highlight an important component of ‘naturalism’, which is an attempt to make animals spatially present, albeit at a smaller scale. As examples of realism these are analogous, but very different, to Renaissance experiments in perspective. A further difference is their tactility, which would have enhanced the sense of reality.

6.2.3 Ceramic decoration

One of the most striking features of ceramic decoration is the comparative absence of quadrupeds, and indeed humans, during most of the Palatial period. Evans (1921b: 558, 606-7; 1928: 468-499) explained this in terms of a taboo on depicting these forms on pottery, but not other media, either for religious or artistic reasons. Although the idea of a taboo has never exercised a particular hold over ceramicists, the corollary that frescoes provided the models for depictions on ceramics has. Ceramic painters, Evans suggested, had readily available models for animals in fresco painting, but chose to excerpt the plants but not the animals. The appearance of birds on ceramics was again due to copying other art forms showing ‘Nilotic scenes’ (Evans 1930: 115). This was taken up by Furumark (1941: 153, 167) in his discussion of Minoan pottery, and more recent discussions of birds on LMII pottery have continued to cite fresco painting (Popham 1967: 343; Watrous 1992: 129) and Nilotic scenes more generally (Crouwel and Morris 1995: 176) as inspirations.

That the idea of ceramic painters copying frescoes remains attractive stems from the generally accepted account of the development of Minoan pottery. Pictorial designs are seen as largely outside this tradition, and so when they appear are assumed to be borrowed from other art forms. This account is largely based on the work of Furumark, who elaborated Matz’s identification of the principles of Minoan design to demonstrate that pottery design was essentially a geometrical solution to the problem of decorating a given vessel form. Whereas ‘tectonic’ decoration divides the vessel into zones, ‘unity’ decoration treats the vessel’s surface as a three-dimensional whole. As Furumark (1941: 115) suggested, an octopus can readily be rendered as a radiating design which is a good unity decoration for rounded vessels. From this point of view, however, the octopus is primarily an appropriate abstract design and only secondarily an octopus. In the Protopalatial period there are extremely few animal depictions of any kind on pottery, even though, as Furumark notes, contemporary seals were pictorial. “Evidently it was not indifference towards nature but a strict sense of the claims of composition that prevented the ceramic artist in the earlier periods from using primarily pictorial motifs” (Furumark
Here the assumption that design is prioritised over content, implicit in most discussions of pottery decoration, is made explicit.

Furumark’s account was a preamble to the classification of Mycenaean pottery, but his work has been extensively applied to Middle Minoan pottery by Walberg (1983, 1987). She defines the few depictions of marine animals, as well as a frog, in palatial Kamares pottery as ‘pictorialized’, and includes no animal depictions in the ‘pictorial’ category. “Pictorial means a motif that is primarily representative, while pictorialized means an originally abstract motif which has been transformed into a representation of an object to which it has some similarity” (Walberg 1987: 65, cf. Furumark 1941: 133). Of the few animal depictions, she describes the EMIII dark-on-light goats from Gournia and Palaikastro as pictorialised, since they have triangular bodies: although geometric shapes are typical of this linear style, these can equally be seen as stylised depictions of goats rather than triangles with legs. She reserves ‘pictorial’ for an MMIII depiction of a bucranium on a jar from Palaikastro and Pachyammos funerary pithoi showing dolphin and octopus depictions; the latter have been seen as fresco imitations by the excavator among others (Furumark 1941: 145; Seager 1916: 24). She does comment that the pictorialised motifs “were deliberately chosen for the representation from the beginning” (Walberg 1983: 58), but by definition were not primarily based on direct observation of an animal form, but rather an abstract motif. Indeed Walberg’s (1987: 47) definition of motif as “an artistic theme, an idea, or trend realized through a specific type of design, for example, a whirling movement, a radiation or a continuous surface pattern” (italics in original) underlines the idea that ceramic decoration is not dependent on the real world. This can be seen as a product of focusing on ceramic design as an artistic phenomenon rather than asking why animals should be depicted.

This idea that ceramic decoration exists within a closed artistic system has also been extended to LMI pottery, which “is able to adapt the movement and syntax of the essentially abstract Kamares Ware to a new naturalism borrowed from the real world” (Betancourt 1985: 120). This situates Marine Style not in observations of marine animals, as will be suggested below, but in a pottery style which had long ceased to be produced.

Small irregularities, along with naturalistic details (e.g. crossing tentacles and air bubbles) make the compositions appear full of life and as if taken directly from nature, but still they are altogether planned according to ornamental principles, and these principles are essentially the same as those which dominate the Kamares decoration. (Furumark 1941: 146)

Furumark also saw the assimilation of fresco painting to ceramic decoration, but argued that dolphins, for instance, were less frequently depicted because of their unsuitable
shape. From this point of view Marine Style becomes Kamares in another guise: Schiering (1998: 194) locates an “Uroktopus” in Protopalatial Phaistos, whose characteristics are taken over by the octopuses of this second flowering. This is the *reductio ad absurdum* of a view of artistic production which negates the idea that artists interacted with the world.

This consensus is somewhat different to Evans’s account, which placed the origins of Marine Style, as mentioned above, in the reproduction of seashells in relief. His suggestion that Marine Style depictions were influenced by stone relief vases is more widely accepted, and so not precluded by a recognition of distinctly ceramic features (Evans 1935: 276; Müller 1997: 308-9; Schiering 1998: 196). What appear as naturalistic depictions are rather seen to be influenced by a combination of different artistic traditions. There is also a consensus that the purpose of these depictions is religious, due in part to find contexts and vessel shape (Mountjoy 1985). Several authors have suggested that the disruptions to the Minoan psyche and marine environment caused by the Thera eruption explain the timing of the Marine Style (Bicknell 2000; Müller 1997: 322; Schiering 1998: 199). A more nuanced suggestion is that disruptions to the production of elite goods in other materials resulted in the shift of focus to ceramics to fill the gap (Driessen and MacDonald 1997: 62). With the corpora available, an examination of Marine Style offers the chance to study wider issues such as the role of design traditions, interactions between media, and the social and temporal context of its emergence.

The ceramic stages succeeding LMIB are seen in terms of the dissolution of naturalism, with the standardisation and eventual abstraction of natural forms (Betancourt 1985: 159). Furumark discerned a new interest in the ornate and grandiose: “Without regard to nature designs are made symmetrical, elements belonging to one motive are added to another, and pictorial motifs are made ornamental” (Furumark 1941: 167). Octopuses become symmetrical, and in some cases are reduced to tentacles without bodies. An increased Mycenaean influence is recognised, particularly in LMIIIB, in both form and designs such as an abstracted whorl shell. Watrous (1991: 286) also recognises a renewed Egyptian influence on the form and decoration of LMIIIA-B larnakes. The larnakes are often decorated with animals, while birds and fish in particular are more frequent on vessels, leading Betancourt (1985: 164) to suggest that even in LMIIIA “the Minoan romance with nature is still very much alive”. But these animals of the Final Palace and Postpalatial periods are qualitatively different from the realistically depicted animals on Marine Style pottery: this can be tied in with the almost complete disappearance of relief.
forms after LMIB and a hiatus in the production of zoomorphic figures. The following quantitative analysis seeks to ground this account in the visible patterns in the data before seeking to explain some of these developments.

6.3 Analysis

In the following analysis, the material published in the various corpora and site publications will be quantified as the basis for the discussion which follows. Since corpora tend to focus on a particular artifact type, the divisions used above will be kept. Although the ultimate aim is to compare these overlapping artifact forms, considering them separately is necessary because of the differential coverage of various publications. Figurines and decorated pottery are both more numerous and less completely published than other forms, and so any comparison needs to take this into account. Different forms also have different sequences of development, and so these will be considered in each section.

6.3.1 Zoomorphic figures and figurines

6.3.1.1 Development

Animal and human figurines were found in Neolithic levels at Knossos (Evans 1921b: 43-5). Although infrequent in the Prepalatial period, parts of a figurine and rhyton, both cattle, were found in an EM II settlement context at Myrtos Fournou Korifi (Warren 1972: 220). Zoomorphic rhyta are also found in tomb contexts, with the largest number and greatest variety from Koumasa, with 10 examples including 4 bird-shaped askoi and a cattle-shaped rhyton with plastic human figures attached to the horns. Both illustrate Miller’s point that these early vessels are in formal terms primarily vessels rather than animals, most obviously with the latter’s handle, which later figures lack (Miller 1984: 66).

Although the dating of the establishment of the peak sanctuaries is debated, the consensus is still that they start broadly contemporary with the Palatial era, in MMIB. Regardless of whether one or two sanctuaries may have evidence of earlier cult activity, the deposition of animal figurines at these sites is agreed to start in the Protopalatial period. At this time animal figurines are deposited at every one of the 20+ identified peak sanctuaries (Kyriakidis 2005: 149). Deposition continues in the Neopalatial period, although many peak sanctuaries fall out of use. At Juktas and Kophinas, both figurines and larger cattle
figures are deposited in the Neopalatial period, some of which might have been rhyta (Zeimpekis 1998, 2004).

A wider range of zoomorphic rhyta are found in settlements, including the two types of head-shaped rhyta as defined by Koehl. They are not restricted to palaces, but found across the areas which have been excavated. The rarer straight-necked type (III) appears first at Phaistos decorated in Kamares style, and so dated MMIIB. This cattle head is one of only seven Type III animal head rhyta listed by Koehl, which occur occasionally and are not restricted to a particular period; the latest, from Chania, is in the shape of a ram’s head and is dated to LMIIIB (B. Hallager 2001). It also occurs in faience at Zakros, as what have been seen as two calves’ heads (Foster 1979: 68). Since these are far from a homogeneous group it is worth asking whether these few should be separated on the basis of function. The more frequent Type II animal head rhyta also first occur at Phaistos, in MMIII (Koehl 2006: 33). It is this form, with a bent neck, which occurs in a variety of media in the Neopalatial and Final Palace periods. Following Miller, the straight-necked rhyta can be seen as primarily vessels rather than sculpture, as seen in the putative derivation of the MMIIB example from Anatolian cups (Koehl 2006: 41). Whereas Miller suggests that the Kamares animal-head rhyta favoured aesthetic effects over naturalism, she argues that some of the Neopalatial animal-head rhyta, particularly in stone, are primarily animal sculptures which imply a living animal rather than a disembodied head (Miller 1984: 121). As will be suggested below, rather than having a purely artistic rationale, this enabled the rhyton to stand in for a real animal more effectively.

The Prepalatial rhyta mentioned above belong to Koehl’s type I, and he sees in the cattle in particular development towards naturalism in the Protopalatial and Neopalatial periods (Koehl 2006: 16-17). An MMI example from Phourni at Archanes has stipple which could indicate hair and is realistically modelled rather than following a vessel form (Figure 6.13). Although the Phaistos Kamares examples are more abstract in form, in the Neopalatial period a small number of highly realistic rhyta are produced in moulds. Koehl (2006: 17) describes one example as: “The apogee of naturalism in Minoan coroplastic arts”. Whereas the Kamares decoration is the typical geometrical shape, patterns on these Neopalatial examples have been suggested to be depicting nets. Mention should also be made of the stone and clay vessels the shape of triton shells which are almost exclusively dated to the Neopalatial period (Baurain and Darcque 1983) (Figure 6.14).

Production of both figural and head-shaped rhyta continues in the Final Palace period, although with so few examples stylistic dating could be problematic. Turning to the
sanctuary sites, Zeimbekis (1998: 285) sees a hiatus in the manufacture and deposition of zoomorphic figures from LMII-IIIB, before there is a reappearance at Juktas in LMIIIC. These figures differ from Neopalatial examples in being mostly wheelmade. Although cattle are dominant, a new type of human-animal hybrid is also found at sites such as Ayia Triada, which in LMIIIC seems to have become an open-air sanctuary where figures and figurines were deposited (D’Agata 1999). A contemporary ‘sphinx’ from Juktas has been seen as more bovine than those from Ayia Triada. This and other cattle figures are decorated with Mycenaean pottery designs, and are part of a wider Aegean phenomenon (Karetsou 2003: 60-64; Nicholls 1970). Although the tradition of depositing bovine figures at Juktas is continued, the use of the wheel suggests that the modelling, and hence corporeality of the animal diminishes in significance.

6.3.1.2 Quantification

An impression of the distribution of figurines can be gained from Figure 6.16. Most of the figurines are those reported by Pilali-Papasteriou (1985), who catalogued only the bronze figurines comprehensively but also reported 1162 clay figurines by animal type in Cretan museum collections. Stylistic dates are used because deposition of figurines continues at cave sites in particular after the Bronze Age. Protopalatial peak sanctuaries provide the highest concentration. Given that almost 3000 figurine fragments are reported from Juktas (Zeimbekis 1998: 77) and 5000 from Atsipadhes (Peatfield 1992: 64), however, the totals for peak sanctuaries given here reflect a history of incomplete excavation, publication and, probably, museum acquisition. Where possible I have compared Pilali-Papasteriou’s figures with subsequent site publications, but clay animal figurines have been almost totally neglected. The following provide some additional information, but hers remains the most complete survey of the evidence, despite her focus being on bronze figurines: incomplete data from Petsophas (78 clay figurines published, mostly from a Canadian collection) (Rutkowski 1991); 11 clay figurines from Psychro in addition to the bronze figurines (Watrous 1996); 33 clay figurines from Ayia Triada (D’Agata 1999). Among settlement finds, occupation levels at LMIIIB-C Chania did produce ten animal figurines, of which four were dated as contemporary with the context. The only other site publication included here with more than ten figurines is Kommos: 30 reported from here are also included, although few were in primary contexts (Shaw 1996, 2006). The picture that emerges from the graph, however incomplete, is that sanctuary sites account for the majority of figurines. Although this largely reflects the most frequently excavated site types in each period, sanctuary sites do appear to be the locus for the most concentrated figurine deposition, whereas the figurines are found in lower concentrations in settlements throughout the Bronze Age.
A breakdown of different types of animal figurines from peak sanctuaries is given in Figure 6.17. The problems mentioned above with identification should be borne in mind, but the preponderance of cattle in many sites does tally with the Juktas assemblage. Zeimbekis (1998: 244-5) identified quadrupeds without any other distinguishing features as cattle, resulting in a proportion of 70% cattle, with agrimi and sheep 4% and 3% respectively. Whether or not one includes the forms Pilali-Papasteriou identified as quadrupeds with cattle, only at Traostalos does there appear to be a higher total of a different domesticate, sheep. Piskokephalo is the most pronounced example of the deposition of beetle figurines, seen at other sites in East Crete. Petsophas shows a diverse range of animals, including birds and weasels. The only animal reported from Juktas, but not these sites, is the snake. As before, this graph can only provide an impression because of the problems of publication and identification, but it supports the idea that peak sanctuary deposition was connected with domestic animals, particularly cattle. Together with the occurrence of sexed figurines at some sites but not others, this points to another aspect of the deposition of animal figurines at peak sanctuaries, which is arguably apparent in the different proportions of animals in Figure 6.17: that of diversity within a shared practice.

The reporting of zoomorphic figures, as opposed to solid figurines, is far more comprehensive, with several overlapping corpora (Guggisberg 1996; Koehl 2006; Miller 1984). These are collated in Figure 6.18, which follows the identifications given by these authors: here rhyta are only those with two openings, as catalogued by Koehl. Although all can be regarded as zoomorphic figures, ‘hollow zoomorphic figure’ refers in the graph to those not identified elsewhere as vessels. The graph shows that after the Prepalatial period, when the majority of zoomorphic figures are found at tombs, there is a concentration at settlement sites, particularly in the Neopalatial period. Given that these are the most frequently excavated site types in each period this is hardly surprising, but as Figure 6.19 shows, those in settlement contexts are not exclusively restricted to the palaces. Their comparative absence from peak sanctuaries in the Protopalatial period is also potentially interesting. Koehl (2006: 329) suggests that rhyta did play a part in peak sanctuary ritual but points to the lack of evidence. He dates a small number from Kophinas to EMIII-MMIA by their white-on-dark decoration (Figure 6.4), which would apparently make them heirlooms at this site (Koehl 2006: 16). Not included here are over 2000 zoomorphic figure fragments from a Neopalatial context at Kophinas (Zeimbekis 1998: 79-80). Zeimbekis has reported that these figures and those from Juktas were hand-built rather than mould-made, so were unlike Neopalatial rhyta (Zeimbekis 2004: 359). In
the Postpalatial period wheel-made hollow zoomorphic figures dominate, and are deposited mainly at sanctuary sites such Kato Syme, Patsos and Juktas, and also open-air sanctuaries at former settlement sites such as Ayia Triada and the central court at Phaistos (Gesell 1985: 132).

A breakdown of the zoomorphic figures by animal type (Figure 6.20) demonstrates the dominance of cattle throughout the Bronze Age. In the Prepalatial period there are an almost equal number of bird vessels, and the Neopalatial period sees the appearance of a number of vessels in the shape of a triton shell. Other animals are infrequent, with very few examples of domestic animals. There is variation, however, in the way these more frequent zoomorphs are depicted. As Figure 6.21 shows, two further variables are the material and, in the case of quadrupeds, whether the whole animal or only the head is shown. This reveals a split in the Neopalatial period between whole figures, which are only in clay, and heads and marine forms, which occur, as well as clay, in both faience and stone, and probably bronze. There are, as mentioned above, differences in manufacturing techniques, so that some of the ceramic Neopalatial rhyta are distinguished by being mould-made. However, it can be argued that the most investment went into the manufacture of animal heads and triton shells, which are found almost exclusively in settlement contexts, although not just palaces (the exception is Figure 6.14 from the Kalyvia cemetery (Baurain and Darcque 1983: 62)). Of the animal types, only cattle and lions and felines (either leopard or cat) are made using materials other than clay, as seen in Figure 6.22. This points to a hierarchy of forms in the Neopalatial and Final Palace period, with animal heads and marine forms more valuable than whole quadrupeds.

6.1.1 Relief
6.1.1.1 Development
Among the earliest relief forms are the small humans figurines attached to the horns of the Prepalatial cattle rhyta from Koumusa and Porti (Foster 1982: 82). Early Protopalatial examples of what are essentially figurines attached to bowls come from Palaikastro, with the well-known shepherd bowl, but also examples of a bovine, bird and possible weasel figurine within vessels (Bosanquet and Dawkins 1923: 12). Incidentally, the 160 ‘sheep’ in the Palaikastro bowl would not be identified as sheep if found separately, illustrating that the vessel context makes it far easier to identify them than single figurines deposited at peak sanctuaries. Foster (1982: 120) describes these relationships between vessel and relief, also seen with human plastic figures, as ‘symbiotic’, arguing that the reliefs “assume a temporality that they would not have as freestanding figurines”. This can be
seen with the human figurines on the horns of the cattle rhyta, and the shepherd in the Palaikastro, which in both cases are brought into relationships with animals by the fact of attachment to vessels. In the latter case the vessel simply contains the figurines, but it is interesting to consider the implications of vessels as containers of liquids.

Liquids can potentially have a number of metaphorical meanings, and the vessel shape can again provide a context for understanding them. The liquid within animal-shaped rhyta could stand for a number of bodily fluids, but relief shapes on a number of vessels in the Protopalatial period clearly index the sea, whether the moulded shells mentioned by Evans, or mould-made plaques. Both were found at Quartier Mu, including appliqués of cats, crabs, fish, and several types of shells (Figure 6.15). Some were found attached to two cups and a bridge-spouted jar, combining cats, trees and marine forms (Detournay et al. 1980: 122-5; Poursat and Knappett 2005: 115). These have often been seen as pointing to Egyptian connections, by both Detournay and others (Immerwahr 1985: 41; Karetsou and Andreadaki-Vlazaki 2001: 56-7). Phillips (1995), however, has pointed out chronological problems with this connection; of interest here is that cats and marine animals are to some extent equivalent, in that they are both made as appliqués and appear on the same vessel. The moulded cockle shells at Mallia appear exclusively on spinning bowls, otherwise associated with painted fish (Detournay et al. 1980: 130). It has been suggested that spinning bowls contained water used for wetting the thread (Barber 1991: 70-6): their use establishes a relationship between thread, water in the bowls and the sea, indicated by the fish. As Poursat (1984) points out, van Effenterre’s suggestion that these were for fishing line does not explain the association with shells and octopuses. Instead this points to a more generalised connection between certain vessels, marine animals and water. Impressed shells referred to by Evans are also a Protopalatial phenomenon, associated with Kamares vessels from Phaistos and Knossos (Figure 6.12); examples from Palaikastro and Kamilari have been seen as palatial products (Walberg 1983: 62).

Cattle and goat appliqués span the Protopalatial and Neopalatial periods. A particularly well-known bridge-spouted jar from Phaistos has a plaque showing a goat (Levi 1976: 571) (Figure 6.9). The MMII-III Anemospilia bucket vase is the most well-known example of a cattle appliqué, and certain decorative details including the rosettes have been compared to the Phaistos vessel (Sakellarakis and Sapouna-Sakellaraki 1997: 548-562). The goat from Phaistos is also paralleled by an example from Juktas (Simandiraki 2006: 96). Most cattle appliqués, including further MMII examples from Mallia are in the form of heads, but a rhyton from one of the ‘charnier’ burials has a galloping cow in relief (Foster 1982: 88-90). Other relief cattle on vessels are reported from Psychro cave,
dated MMIII-LMI (Watrous 1996: 35). However, these are far from identical to the Anemospilia vessel, and relief quadrupeds are rare in general.

Of the vessels in other materials, stone relief vessels have been discussed above, and form a coherent group dated to LMI. Three Late Minoan vessels with cockle shell reliefs can be used to illustrate the interplay between materials: a faience bowl from the Knossos Temple Repositories (Panagiotaki 1999: 93), a metal vessel from Zapher Papoura Chieftain’s Grave (Evans 1906: 54, 118) and a Marine Style Ewer from a tomb at nearby Poros which is the only one known with such reliefs (Dimopoulou 1999) (Figure 6.8). Each marks a continuation of the existing tradition on vessels distinguished by their craftsmanship.

Relief virtually dies out after LMI, except for a class of objects known as ‘snake tubes’, some of which have birds and snakes in relief. The name comes from Evans’s (1935: 138-68) theory that drain pipes came to be used as homes for cultic snakes. Gesell (1976) has convincingly argued that these were stands for bowls which were frequently paired with ‘Goddesses with Upraised Arms’. As a result the relief decoration serves as a referent to the same decoration on the figure, including birds and snakes. These snake and bird reliefs on human figures, and by extension snake tubes, can be seen as a distinct phenomenon since they are the only form of relief in LMIII, and exist as part of distinct sets of material culture. The development of relief up to LMI will be seen as part of a wider movement towards naturalistic depiction, in which the relief forms create definite spatial relations with the viewer.

6.3.2.2 Quantification

Figure 6.23 gives a breakdown of reliefs by period, material and date: the counts refer to vessels or sherds rather than individual appliqués. The ceramic examples are primarily based on Foster’s extensive (1982) catalogue, with additions from more recent site publications. The forms give a general idea of the type of relief: here ‘plastic’ refers to the three-dimensional figurines attached to vessels, excluding shells and other appliqués which are classed as reliefs. All of the impressed examples are shell-shaped, with additions to Foster’s catalogue from Knossos (MacGillivray 1998: 160, no. 799) and Kommos (Betancourt 1990: 165, nos. 1389, 1391). A more up-to-date list of relief goats has also been included (Simandiraki 2006), although this only adds a handful of new examples. Watrous’s (1996) publication of Psychro modifies some of Foster’s identifications. Psychro is of interest because of the lack of marine reliefs, but the total number of appliqués is 10; the majority of relief vessels or sherds published are from
settlement sites: Mallia, mostly Quartier Mu (38) and Knossos (28), Palaikastro (12) and Phaistos (9). Marine appliqués were found at each of these sites, but there is not enough evidence to exclude marine reliefs from sanctuary sites. As can be seen from the graph, marine reliefs are concentrated in the Protopalatial period, although they do appear in all materials in the Neopalatial period. The proportion of quadrupeds increases in the Neopalatial, reversing the dominance of marine appliqués previously.

A breakdown by animal type is given in Figure 6.24. This shows the diversity of animals depicted in relief, and also the predominance of shells, particularly in the Protopalatial period. One unusual example, from Phaistos, has been identified as a bear, or at least animal, pelt (Foster 1982: 89; Levi 1976: 414). Neopalatial stone relief vessels are well reported, with an initial catalogue by Warren (1969). Few animals occur only on stone vessels: Argonauts and dolphins appear in ceramic relief in the previous period, at Knossos and Phaistos respectively. Exceptions are the pig, which occurs on a fragment from Palaikastro, most probably a wild boar hunt scene (Koehl 2006: 181, no.771); Minoan genii appear on the Mallia stone triton (Baurain and Darcque 1983), and the octopus relief depictions have been mentioned above. The two most complete stone vessels with animal reliefs are the Sanctuary Rhyton and the ‘Boxer Rhyton’, the latter with scenes of both human combat and bull-leaping. In general, stone reliefs do not show domestic animals, while ceramic reliefs show a diverse range of animals: there is not enough information in the depiction to determine whether the cattle and goats are wild, but there is an overlap, in both deposition context and subject, with the figurines deposited at sanctuary sites.

6.3.3 Ceramic Decoration

6.3.3.1 Development

Since accounts of ceramic development are integrated with theoretical concepts such as pictorialization and abstraction, the key ‘moments’ of animal-related decoration have been mentioned above. These include the goats depicted on East Cretan Light-on-Dark Ware, dated to around EMIII (Betancourt 1984). This decorative style has been seen as a prototype to Kamares decoration; of the few recognisably animal-related decorations in Kamares pottery, most are marine animals. The MMIII Pachyammos jars have been seen as the forerunner of naturalism in Neopalatial pottery, although they are a somewhat isolated occurrence. Similarly buccrania depicted on jars at Palaikastro (Bosanquet and Dawkins 1923: 18-21) and Pseira (Betancourt and Davaras 1995a: 35), dated MMIII and LMIA respectively, can be seen as early examples of ‘pictorial’ decoration, but are again isolated occurrences.
Although plants are frequently depicted on pottery at the start of the Neoopalatial period, only with LMIB Marine Style do animals appear in large numbers. The ‘Special Palatial Tradition’ is seen as a Knossian phenomenon, although Marine Style was produced at various centres across the Aegean (Betancourt 1985: 140; Mountjoy 1984; Mountjoy et al. 1978). Not every Marine Style vessel does depict a marine animal: some show only the plants and rocks which are a consistent part of nearly every example of the style. At the same time, depictions which might seem alien to a marine environment also occur with plants, rocks and marine animals, particularly double axes and ‘palettes’. This leads Müller (1997) to include these forms in his catalogue, but suggest that the ‘starfish’ design, like the double axe, is not a marine animal (Figure 6.3 shows starfish, double axe and triton).

After LMIB the identification of marine animals becomes problematic. The first issue is one of resemblance: as has been seen, shells are a significant part of relief decoration, and forms identified as ‘shells’ or ‘bivalves’ appear on LMIII pottery. Furumark (1941: 236), although he established the term ‘bivalve’, described it as “chiefly of floral origin with a distinctly marine significance in only a very few cases”. Rutter (2006) has recently suggested that a form on a vessel from Kommos resembles two cuttlefish. This identification of cuttlefish, rather than octopus (Furumark and others confuse the two), sets it apart from the repertoire of ceramic designs; Rutter argues further that the form is composed of other forms, variously ivy leaf, papyrus, skirt and boar’s tusk helmet, allowing him to explore the “semantic potential” of the design. The interplay of marine and floral forms leads him to suggest additional metaphorical meanings including gender and seasonality. From this point of view resemblance between forms is both intentional and integral to the symbolic meanings of designs. The problem, however, is how to define such connections: the modern observer might see an iconic link between such designs and shells or cuttlefish, but there is a lack of contextual evidence (such as bivalves consistently occurring with other marine forms) to demonstrate this in the Bronze Age. In contrast a demonstrable set of indexical and iconic relations link relief shells to real shells in the preceding periods.

The second problem is one of derivation. Whereas ‘bivalves’ are difficult to link with other appearances of these shells in material culture, a range of apparently abstract forms in LMIII can be seen, through intermediate stages, as linked to the octopus depictions on LMIB pottery. Even undulating lines can be seen as a type of synecdoche, and are identified as ‘tentacles’. Similarly a linear form termed a ‘whorl shell’ appears in LMIIIB
pottery (Hatzaki 2007: 245). This is regarded as an imported Mycenaean design, but derived, according to Furumark (1941: 193, 309) from the Marine Style triton shell depictions. Here there is a way of connecting the form to animal depictions in Cretan Bronze Age material culture, even though the design itself comes from the Mainland. The approach taken here is to accept authors’ identifications of designs, which are largely consistent because of the continued use of Furumark’s terms, and subsequently consider whether these designs have any relevance to the study of human-animal relations.

In the Final Palace period, other animal types are also depicted on pottery, particularly at Knossos (Crouwel and Morris 1995). Birds appear in LMII, particularly on pyxides, and the depiction of fish continues: the latter, whether identified as fish or dolphins, are infrequent in Marine Style pottery. Morris (1995) suggests that a single individual, the ‘Knossos Fish Painter’ is responsible for a number of depictions on vessels and the inside of a tub larnax from the Royal Villa at Knossos. This, she suggests, reinforces a connection between the larnax and water. Larnakes are a particularly rich source of iconography for this period, combining both land and marine animals in certain cases. An example from Armenoi shows a deer hunt framed by argonauts, one example Watrous (1991) uses to suggest that these depict an afterworld across the sea. Although agreeing that this is one possible meaning, Morris (1995: 193) argues that larnax imagery should be seen in connection other marine depictions. Certainly the connection between larnakes and marine imagery establishes a relationship between the deceased and the sea, but the specific interpretation of an afterworld is a symbolic step beyond this. These depictions could equally be biographical, or even related to the liquid from a decomposing corpse: this has been used to explain the holes in the bottom of the Ayia Triada sarcophagus (Burke 2005: 411). There is no fully illustrated corpus of Cretan larnakes and a large number of unpublished examples, making systematic study difficult (Preston 2004: 193; Rutkowski 1966: 129). For this reason they have not been included in the analysis.

Animal depictions continue in Postpalatial pottery, with the ongoing stylisation of marine designs, and some depictions of quadrupeds (Betancourt 1985: 178-183).

6.3.3.2 Quantification
There has traditionally been a major bias in Cretan archaeology towards studying the fine decorated wares: since this is the medium for ceramic animal depictions, these are likely to have at least survived selection processes and been kept. Even so, the quantity of pottery recovered in excavations means that site publications with catalogues of pottery usually present only a selection, based on various, often unspecified, criteria: one can assume that all animal depictions are unusual enough to be published for earlier periods,
but the increasingly repetitive depictions of marine animals in LMIII makes this less likely. In the case of Marine Style, Mountjoy (1984) and Müller (1997) provide a fairly comprehensive picture of what had been excavated up to the mid-1980s since they consulted both publications and excavated material. Both published and unpublished animal depictions (excluding marine invertebrates) from Final Palace Knossos have also been catalogued (Crouwel and Morris 1995). Despite the severe selection of the Knossos material by MacKenzie and Evans (Popham 1970: 11), what remains has been well published in part, particularly Protopalatial pottery deposits (MacGillivray 1998), two elite buildings (Hatzaki 2005; Mountjoy 2003) and Palace Style jars (Niemeier 1985). In refining the Knossos pottery chronologies Popham published a large amount of material from earlier excavations, but his purpose was to be illustrative rather than exhaustive (Popham 1964, 1970); similarly he focused on defining LMII in his selective publication of the pottery from Minoan Unexplored Mansion (Popham 1984). His other publications have not been included as they focus on motifs rather than context (e.g. Popham 1965). More recent site publications do offer detailed pottery statistics to show what proportion of the excavated material has been published in terms of fabric and weight, but one has to assume that the animal depictions will have been included in the catalogues (Barnard and Brogan 2003; Floyd 1998). Ultimately electronic publication will provide data which can be used for detailed statistical analysis; the recent Kommos volume referred to complementary information on the website about only the published sherds, which were selected primarily according to their value in dating deposits (Rutter and Van de Moortel 2006a,b). An online pottery database is available for the multi-period Pylos Regional Archaeological Project (Heath 2005), but apart from the Antikythera Survey Project (Bevan and Conolly 2009) downloadable project databases are not yet a feature of Aegean archaeology.

Given the way decorated pottery is published, the aim here is to quantify the animal depictions given in broadly comparable site publications and subject only Marine Style pottery to further analysis. Figure 6.25 shows a breakdown by site of the animal depictions included in the database, from a mix of site publications, corpora and other works. This includes publications which are not corpora, but do give detailed information about ceramic decoration (Popham 1964, 1970; Walberg 1983, 1987). For the Pre- and Protopalatial periods, painted animal depictions are rare, and so Walberg’s catalogues of motifs do include most of the individual examples of animal decoration up to MMIII. Few sites are covered more comprehensively for these periods: for Mallia there is the detailed Quartier Mu publication (Poursat and Knappett 2005) as well as a catalogue of fish depictions from the site (Poursat 1984). MacGillivray’s (1998) catalogue of the Knossos
material is constrained by the excavators’ selection, while the Phaistos publication is an inventory of the vessels mentioned in the excavation report rather than a comprehensive catalogue (Levi 1976; Levi and Carinci 1988). For the later periods, site publications provide detailed pottery catalogues. The Marine Style corpora, and Koehl’s (2006) catalogue of rhyta provide the remainder. In broad terms the graph provides a useful impression of the way in which Marine Style is the first abundant occurrence of painted animal depictions on ceramics, with a continued emphasis on animal depictions in LMII-III.

Figure 6.26 shows data from a comparable set of site publications, for Chania (Hallager & Hallager 2000, 2003), Kommos (Betancourt 1990; Rutter and Van de Moortel 2006b; Watrous 1992), Knossos (Hatzaki 2005; MacGillivray 1998; Mountjoy 2003; Popham 1984), Mallia Quartier Mu (Poursat and Knappett 2005), Mochlos/Chalinomouri (Barnard and Brogan 2003), Palaikastro (MacGillivray et al. 2007) and Pseira (Betancourt and Davaras 1995a,b, 1999; Floyd 1998). Each publication has slightly different selection criteria, but it is assumed that this gives a broad conspectus of the animal depictions from each site. As can be seen, marine animals dominate the assemblages, whether or not shells are considered in the later periods. In the Final Palace period, birds form a small but significant proportion of depictions at each site, but not quadrupeds except in Postpalatial Chania (Figure 6.27).

It is difficult to give an idea of the frequency of animal depictions as a proportion of the total site assemblage because of the different ways data is collected and published. However, at a crude level less than 1% of the Quartier Mu and Kommos catalogues of Protopalatial pottery depicted an animal, compared to about 8% of the inventoried LMIIC pottery from Chania, and 5% of the LMIIIB material. Similarly, the graph represents about 7% of the Final Palace material from the Kommos catalogue. Given the attention to Marine Style pottery at the LMIB Mochlos Artisan’s Quarter, it is worth considering that 6 sherds of this style were published from a total assemblage of 11,981 in Building B, and 1 from 12,743 in Building A. No painted animal depictions were noted in the 5,572 Fine Fabric sherds from the Neopalatial Plateia building at Pseira; other deposits there are less easy to quantify because most were the result of cleaning Seager’s excavations. Two wells at Palaikastro abandoned in LMIB contained a stone relief vessel fragment depicting dolphins, but no Marine Style pottery. Overall it can be seen that animal depictions were never a major component of pottery decoration, although they increased proportionally in later periods.
The focus on Marine Style means that it is disproportionately published compared with other ceramics. This provides a useful dataset to explore the relationship between vessels and painted animal depictions. Figure 6.28 gives a breakdown of the provisionally recognised different types of animal on Marine Style pottery, and Figure 6.29 shows the different shapes of Marine Style pottery. Of the most common shapes, the conical rhyton is more closely associated with starfish and triton shells than other shapes, where octopus tends to dominate. The general observation that Minoan pottery design suits vessel shape has been applied to Marine Style (Mountjoy 1972: 128). However, this does not explain why three conical rhyta do have octopus designs, or a number of pear-shaped rhyta. There is certainly no exclusive correlation between vessel types and animal, although the picture is complicated by the co-occurrence of different animals on the same vessel: all but two stirrup jars do have an octopus design.

The syntax of designs, however, provides useful contextual information to approach the problem of defining animals. Figure 6.30 shows the co-occurrences of the four most common animal types, with the size of the nodes and proximity giving an idea of frequency. This does give an idea of the complexity of Marine Style design, with lots of different elements, but most frequently plants and what are variously identified as rocks or coral. The dots frequently occurring with octopuses are often identified as air bubbles. It is noticeable that the starfish co-occurs with fewer other design elements, and only the triton, whereas the other animals do co-occur. Figure 6.31 shows the way in which a number of forms co-occur, based on the principles outlined in Chapter 5: here the proximity of plants and rocks on the graph show that they occupy similar places in the network. The thickness of lines indicates frequency of co-occurrence and the size of node the frequency of the form (all appear more than ten times, and the more abstract scale pattern, lines, and geometric forms have been excluded). This makes clearer the way in which triton, octopus, argonaut and sea urchin co-occur, but of these starfish only appears with the triton. This is similar to the double axe, which only co-occurs once with argonauts. In this figure only plants and rocks have more connections than tritons, showing that the former two are central to the syntax of Marine Style. The triton could be seen as pointing to an equivalence between the various forms it co-occurs with, blurring the distinction between animate and inanimate. More generally it can be argued that vessel shape in itself does not determine which forms were chosen, since there appears to be a syntax of combination too. In general Marine Style imagery is built up of a collection of forms, which serves to give the marine animals a specific underwater context, whereas later depictions of octopuses, for instance, tend to show them as the only design. As will be argued in Chapter 8, this shows that Marine Style is not just based on depictions of
marine animals, but more generally, the underwater world. As with landscape elements on seals, the rocks and plants situate animals, and hence the viewer, in an unfamiliar environment, where octopuses have open eyes and triton shells and even double axes float. Rather than the vessel shape acting on the design, the depictions act back on the contents of the vessel.

An overview of animals depicted on ceramics is given in Figure 6.32. It shows an emphasis on fish and other marine animals which extends before and after Marine Style. The occurrence of starfish only in the Neopalatial is another indication that it is perhaps conceptually different from other marine forms. Here triton shells and bivalves have not been distinguished, although the former can be assumed for the Neopalatial period, with one exception. In the context of the continued depiction of octopuses and argonauts after LMIB, it is possible that ‘bivalves’ are part of the same phenomenon, but this would mean a shift from triton shells to a different kind of shell. The appearance of ‘whorl shells’ in LMIIB could indicate that the association between shells and pottery decoration had not been lost. The division between bird and waterbird is fairly arbitrary, based on description and the lack of an obvious long neck in most cases. The overwhelming emphasis on marine animals could suggest that bird depictions too were associated with water. The lack of diversity in ceramic decoration also suggests a common theme.

6.3.4 Comparison

A comparison of the different ceramic forms in Figure 6.33 underlines the dichotomy between quadrupeds in zoomorphic forms and marine forms in decoration, particularly in the Palatial periods. Relief forms can be seen as intermediate, with a marine emphasis in the Protopalatial period followed by a shift towards quadrupeds in the Neopalatial. As can be seen in Figure 6.21 and 6.23, there is a more or less equal split between marine forms and quadrupeds in stone relief and zoomorphs. Focusing on the material culture of Knossos, the split between cattle depictions and marine forms can be seen in Figure 6.34. In each period ceramic decoration is linked to marine animals, so although it is the most prominent example, Marine Style should not be seen as an isolated phenomenon. Given that cattle are often seen as ubiquitous in the material culture of Knossos, it is striking that no examples in ceramic decoration have been reported. If not necessarily a taboo, this does suggest that different animals were appropriate for different forms of depiction.
6.4 Discussion

6.4.1 Figures of quadrupeds

The analysis illustrated that there are two overlapping phenomena in the manufacture and deposition of figures. The first, involving figures and figurines of whole animals, begins in the Prepalatial and continues into the Iron Age, although not necessarily uninterrupted on the present evidence. Figures have been found at mortuary, sanctuary and settlement sites, and figurines were deposited in huge numbers at sanctuary sites. They are almost exclusively ceramic, with only a few bronze figurines found from the Neopalatial period onwards. Nearly all depict animals found on Crete, most of which are likely to be domesticates. These can be seen as substitutes for real animals whose affordances as objects allowed them to be deployed in certain ways. Their iconic and indexical relations to animals allowed them to function simultaneously as extensions of human-animal relations. These can be described, in Summers’s terms, as real metaphors: “In general, a real metaphor is something that is able to take the place of something else, to make the absent in some sense actually present” (Summers 2003: 258). There were different kinds of metaphor, however, from the figurines deposited in their thousands at peak sanctuaries to the unique animal head rhyta found in elite buildings in the Neopalatial period. The different ways in which different animals were made present, and the reasons for this, will be explored.

Much has been written about the meanings of animal figurines. With regards to the figurines deposited at Protopalatial sanctuaries, one can suggest that in each case the animal was encountered on Crete, and that meanings arose from interactions between human and animal. For quadrupeds most of these meanings probably stemmed from farming practices; the affordances of some animal types are less apparent, although dung beetles are useful to farmers, and weasels control pests. This is not to deny that animal figurines could have had a diversity of meanings: the point is that those offering figurines used animals they were familiar with, and which were potentially significant in their daily lives. In this way the figurines can be seen as an outcome of everyday human-animal relations, even if they may have acquired additional symbolic meanings. Since human figurines with particular gestures and also isolated human limbs were offered, which have been seen as individual supplications, it is possible that animal figurines were metaphors, but metonymic of individual animals. The disproportionate occurrence of cattle need not be an argument against this if individual cattle, but not sheep for instance, were seen as important enough to make supplications for. Cattle figurines from Petsophas were decorated in different ways, one black with white spots and another with red patches.
The vast majority of ceramic zoomorphic figures are cattle, and these show indications of particular animal practices. The earliest, from Prepalatial tombs, show human figures on their horns, and later examples have a painted pattern which has been interpreted as a net. Here the practice of capturing and subduing cattle is perhaps indicated (Loughlin 2004a), although there are only a few examples over a long period of time. Some cattle rhyta have what can be seen as cut horns (Koehl 2006: 328; Rehak 1995b: 446). This could indicate the trimming of horns, otherwise known as polling, a practice directly related to cattle keeping. The affordances of the figures as vessels is also surely significant. Whatever liquid was used, the fact that some vessels have openings in the mouth or anus metaphorically suggests a real animal, and liquid pouring out of these would have various metaphorical meanings. These features point to zoomorphic figures as metaphorical living animals, particularly when filled with liquid and used in certain contexts. These vessels cry out for residue analysis to determine the liquid used, as has been done for the Greek Neolithic (Marangou and Stern 2008). Milk and wine seem likely, as an index of cows and a potential metaphor of blood respectively.

The naturalistic depiction of the mould-made Neopalatial rhyta can similarly be seen as functioning to evoke a living animal. If the cattle form is seen as primary, the function as a container for liquid can be seen as a logical extension of the perception of the form as a living animal. That ‘naturalism’ can be of analytical interest can be seen from a description of one of the stone cattle head rhyta from Zakros (Figure 6.1). The head also has relief carving of curls, emanating from a whorl on the forehead, and as Miller suggests, the asymmetrical eyes suggest movement.

The vibrant naturalism of this work reflects an experience of nature far more intense than perhaps we can understand today. Both artist and observer perceive the subject not as a natural object viewed at a distance but as part of an order in which they too participate. No aspect of nature may be isolated but exists in a complex web of interrelationships. (Miller 1984: 120)

From this point of view ‘naturalism’ is a way of drawing the viewer in, and allowing them to relate to the object as if an animate form: the realism of the depiction, Miller argues, means that it doesn’t seem like a disembodied head. Even though the head is not life-size, the detail of the hair and the form of the sculpture allow it to be perceived as life-like. This would have been particularly the case for those who were not familiar with
such objects; the impact of such objects would have been enhanced if they were only used in occasional socially charged events (Bevan 2007: 11). The choice of material also contributes: an object from the Minoan Unexplored Mansion has been seen as a rock crystal lens, as found on the Little Palace bull’s head rhyton (Evely 1984: 239; Rehak 1995b: 456). Although the materials mark these rhyta out as exceptional, their execution suggests a real animal.

As has been mentioned above, scenes on relief stone vases have a number of features that add to their realism such as overlapping forms or frontal animals. Foster noted the importance of three dimensional relief, but saw it as an aid to design; instead it can be seen as providing a cue for perceiving the real world. Riegl’s analysis of the Vapheio cups is still informative in arguing that certain technical features, such as high relief, and stylistic features create a sense of action taking place in a landscape. In contrast with objective depictions arising from the religious ideas of the Near East, he sees in the Vapheio cups, and by extension Greek art, “a subjective interest in the relationships and causal connections of objects, either with the viewer or among each other” (Riegl [1900] 2000: 124). The realism of depictions of animals allows the viewer to perceive them in particular contexts: although few, the relief stone vases show boar being hunted, bull-leaping, goats in a rocky landscape and an octopus underwater. An object which is bound up with high status craftsmanship and elite centres acts to locate animals in unfamiliar environments beyond the centre. As shown above, relief almost disappears at the end of the Neopalatial period, suggesting that these animal practices were no longer mobilised in elite social interactions in the same way.

If the Postpalatial figures did not function as vessels, this could be an indication that the form continued, but liquids no longer gave the form this further significance. Similarly, the location of sanctuary sites at former centres of administration such as Phaistos and Ayia Triada could suggest that the significance of the form was no longer as an animal but as an evocation of a type of material culture associated with the past. However, the manufacture of new forms, such as hybrids, and an unparalleled horse with panniers argues against this; even the 12th century figures from Juktas have been described as ‘naturalistic’ (Kourou and Karetsou 1997: 107). Problematic as this word is, the recognition of naturalism in zoomorphic figures across the Bronze Age can be explored further as a means, like the blotches of paint on figurines, of signifying a real animal. A term used more frequently in ecological psychology is ‘realism’, which suggests that the information available in the depiction equates to the real world.
6.4.2  Marine animals

The suggestion that the tradition of naturalism was transferred to pottery in response to social disruptions is a useful one (Driessen and MacDonald 1997: 62). This helps to explain why naturalistic animal depictions on pottery take off only in LMIB since it becomes the result of an elite tradition of naturalistic depictions in luxury materials combined with an existing tradition of pottery decoration. This raises the question of why marine forms were adopted rather than other depictions on relief vessels. Whether or not there is a direct connection, it is clear that the affordances of these vessels for containing and pouring liquids had already been explicitly related to the sea in the Protopalatial period. The relief shells of this period are a form of realism which arises from an indexical connection with real shells. In Summers’s terms these are effigies, and so direct traces of shells. They are among the first attempts to establish indexical links between manufactured objects and animals.

It is also worth mentioning the small number of depictions of fish and octopuses on the interior of MMII spinning bowls from Quartier Mu at Mallia (Poursat and Knappett 2005: 224). The affordances of these bowls for spinning were realised by filling them with water. In her description of a fish depicted on the interior of an LMII bathtub larnax, Morris points out that when filled the fish would be seen underwater. More generally she argues that depictions of fish are related to vessel forms associated with liquid, regarding them as “iconographic reinforcement” which “reflect and emphasize the function of the object they adorn” (Morris 1995: 193). From this point of view the association between ceramic containers and liquid explains the frequent occurrence of marine forms as ceramic depiction. Rather than reinforcement, however, the presence of animal depictions is transformative: it establishes a metaphorical meaning between the water in the bowl and water from the sea, just as zoomorphic vessels metaphorically transform the liquid within them into an index of the depicted animal.

The tenets of realism which are seen in relief vessels can also be seen in Marine Style, as Furumark’s (1941: 146) description suggests: “Small irregularities, along with naturalistic details (e.g. crossing tentacles and air bubbles) make the compositions appear full of life and as if taken directly from nature […]”. Even if it can be seen as the result of the transference of production in luxury materials to cheaper pottery forms, its realism can be seen as having a similar function. Whereas fish on the interior of vessels are immersed when the vessel is filled, here the details of the depictions, such as the overlapping tentacles, and also the ubiquitous plants and rocks which were seen to be a key part of
Marine Style syntax have a similar effect. This would be further enhanced when certain vessels were immersed in liquid to fill them, resulting in a wet and dripping surface. The realism of the depictions establishes a set of relations between the liquid within the vessel and the sea. This can be seen within religious terms (Mountjoy 1985), but previous discussions have tended to make the leap from depiction to religious symbolism without considering the affordances of the objects and the way the depictions relate to the viewer.

The referents of Final Palace depictions of octopuses can be seen as the preceding Marine Style itself, and the compelling depictions of marine animals underwater are replaced by lifeless, symmetrical forms.

6.4.3 Traces of the sea

Taking the Mohs scale as a useful shorthand for ease of working the stone vessels discussed here, two stand out as the only zoomorphic vessels carved from hard stone (Bevan 2007: 41-2). These are a triton shell vessel from Palaikastro and a Tonna shell vessel from Ayia Triada, both made of obsidian and dated MMIII-LMI (Baurain and Darcque 1983: 60, 65; Warren 1969: 91). Both were found in fragments, but the Tonna has been reconstructed, to a length of 39 cm (Figure 6.35). Reese (2000: 631) suggests that Tonna reach 25 cm, “with larger ones found at greater depths”. The stone version shows a high degree of realism, with the fine striations and scalloped edge, but is oversized. To use Gell’s terms, in form it closely resembles its prototype, but as an index it demonstrates a high degree of craftsmanship. It can be seen as a real metaphor for an object from the bottom of the sea, used in elite social contexts in an administrative centre. A hole in the bottom allowed it to function as a rhyton, connecting it metaphorically with the other vessels with this function, including bull’s heads. From this point of view naturalism can be seen as a means of enhancing an object’s affordances as a substitute for a real shell, through its close resemblance. But it has the advantage over the real shell of being the restricted product of a palatial workshop, rather than available to anyone who can dive deep enough, or who finds one on the beach; its size further distinguishes it.

To return to the discussion in Chapter 4, the sea was a rich resource for the palatial elite. The Temple Repositories too show how there was an interchange between elite material culture and objects which indexed the sea. The faience flying fish and argonauts materialised experiences which could only be gained out at sea, rare encounters with unfamiliar animals. As Müller (1997: 214-6) has argued, the inaccurate depiction of argonauts could point to their rarity. Marine Style, following on from the naturalistic relief stone vessels, also shows argonauts and tritons, swimming underwater, as well as
octopuses with open eyes and curling tentacles. Whereas modern observers have all too often looked at these and seen Kamares syntax, in the Bronze Age these depictions can be seen as indexing an underwater world. These objects established a connection between their users and an unfamiliar environment. The sea was a source of metaphors of the unfamiliar, particularly the forms of animals. Naturalistic depictions and objects were used to create connections between people in the centre and the sea. The animal practice depicted can be seen as a generalised one, simply involving encounters with the constituent animals of this environment. As can be seen from argonaut depictions, however, these depictions were likely to have been based on experience of the remains of these animals, showing them in a more unfamiliar, animate state.

6.5 Conclusion

The idea of place has reoccurred throughout this chapter. Relations between humans and animals occurred at certain ‘sites’, whether farming on the plains of Crete, or encounters with marine animals at sea. The sites at which the material traces of these human-animal relations were deposited, however, are entirely different. Animals encountered in everyday life were brought to marginal places in the landscape, whether peak sanctuaries, or caves; marine animals were brought from the sea to settlements. In some cases animals themselves might have been brought to these places, but the material culture discussed above suggests that animal metaphors were frequently brought instead. These substitutes, as has been argued, had features which allowed them to be perceived to a certain extent as real animals: zoomorphic figures contained liquid, as well as showing increasingly realistic characteristics of real animals. The size of shells meant that they could be directly moulded from the real thing, without the intermediate scale model needed to mould cattle rhyta. The three dimensional character of each allowed them to be perceived as akin to the real thing.

The figurines deposited at peak sanctuaries were evidently effective with only summary indications of the type of animal, although paint might have specified particular animals. The bronze Neopalatial agrimi figurines from Ayia Triada (Figure 6.6) show how a different material both allowed a finer modelling, but also marked out the depiction as distinct from more readily available clay examples. This epitomises the naturalism of the Neopalatial period: the use of luxury materials and fine craftsmanship to produce depictions of animals whose realism allowed the viewer to locate them in particular types of environment, or perceive them as almost animate. Such objects materialised the
human-animal relations of the elite, re-locating animals in elite performances in contrast to the more familiar experience people had of animals. Their realism was foreshadowed by developments in Protopalatial centres: the ‘nature moulding’ and ‘nature printing’ described by Evans. The first known cattle head rhyton from Phaistos is decorated like a vessel, rather than the later finely modelled stone examples.

The cultic, or ritual, associations attributed to many of these objects can be seen to belong, at least in part, to a framework of interpretation set out by Evans. The aspect of his work which has been less favoured is perhaps more informative. In seeing the moulding of sea shells as an antecedent of the later ceramic depictions now termed Marine Style, he saw a tradition of taking things from the sea, modelling them, and using them as a means of distinction. Rather than seeing the origins of Marine Style in Kamares design, one can argue that it was a logical extension of Neopalatial realism to ceramics. Zoomorphic vessels and relief depictions brought animals into definite spatial relations with viewers, so that the object mediated relations either with the unfamiliar animals of the sea, or familiar domestic animals which could be manipulated in performances involving libations and the consumption of liquids. These objects brought animals into ceremonies from the Prepalatial period onwards. Developments in the social implications of these ceremonies are epitomised by the Mallia cups with cat and marine animal appliqués, whose elaborate manufacture and indexes of marine and imported animals were extravagant statements of difference. The following chapter moves animal traces which could be brought into social situations discussed here to the fresco depictions which distinguished the highly charged social space of elite buildings.
7  **Presencing animals: Fresco painting in Bronze Age Crete**

7.1  **Introduction**

The brilliant naturalism of the great Transitional Epoch that links the Middle with the Late Minoan Age reaches its acme in the high reliefs of painted stucco at Knossos, in the frescoes of Hagia Triada and such works as the ‘harvester vase’. (Evans 1921b: 28)

One of the most striking features of the modern day palace at Knossos is the replica relief fresco of the charging bull at the North Entrance, enclosed in Evans’s restored bastion (Figure 7.1). Since some fragments of the fresco overlay the destruction layer in the entrance, Evans presumed that it had remained on the walls long after the fall of the palace, helping to inspire later myths of the Minotaur. As Hood (2005: 57-8) has argued, the fragments were probably part of the make up of the bastion wall which collapsed on top of the destruction layer, so that they belong to an earlier building phase: their original position is unknown. Fragments of an olive tree found with other bull fragments have been included in the restoration; the leg of a human, probably a bull-leaper, has been omitted. Like the Priest King, this image, which adorns any number of fridge magnets, is open to question. And yet the core of the replica, the life-size head of a bull in painted plaster (Figure 7.2), is remarkable in its own right, deserving of its place in Evans’s list above. If it did not stay on the walls long enough to inspire later myths, the influence of such reliefs was felt far afield in the Bronze Age: in 1990 similar fragments were found at Tell el-Dab’a in Egypt, so far the only other site to yield bull stucco reliefs (Bietak and Marinatos 1995). Other fresco fragments at this site, showing bull-leaping (Bietak et al. 2007) and hunting scenes (Morgan 2004), have led to a renewed surge of interest in Cretan frescoes, just as the discovery of in-situ figural frescoes at Thera did before. Mark Cameron’s work too opened the Cretan frescoes to new interpretations, revisiting the original restorations commissioned by Evans. The replicas of the latter in the palace of Knossos have remained immune to these waves of interpretation and new comparanda, standing as a testament to Evans’s original vision. Yet their continued presence is an important reminder that at a certain point at the end of the Middle Minoan period, such impressive frescoes and relief frescoes became an integral part of the building’s fabric and visitors’ experience. If modern scholarship has tended to dismantle these replicas and place them alongside frescoes from far away, it is by metaphorically reinstating these depictions on the walls of the palace and surrounding buildings that their role in human-animal relations can best be understood.

The wealth of literature about frescoes illustrates both their immediacy as seemingly accessible images, and the potential for interpretation supported by their depth of detail.
The term fresco itself has wide currency, and is a largely accurate description of the
technique of Aegean wall painting, particularly for the later figural frescoes discussed
here. Technical studies have indicated cases where paint was applied when the lime
plaster was dry (a secco rather than a fresco), but for the purposes of the present
discussion the term fresco will be used to describe both wall and floor paintings (Jones
2005 provides a useful summary of the history of research). A particular type of fresco,
referred to above, consists of painted modelled plaster, frequently in the shape of animals
and humans: the term stucco relief will be used here (Immerwahr 1990a: 40). Such reliefs
can be seen as an alternative to the use of perspective painting to depict reality, since their
modelling gives the depiction a real presence, or corporeality, as will be argued below.
This provides a useful counterpoint to the debates on Renaissance naturalism in Chapter
2, since this phenomenon reveals an entirely different approach to depicting reality on a
plane surface. As shown in Chapter 6, the most frequent type of relief additions to
ceramic vessels were moulded from actual seashells, a clear example of an indexical
relationship between object and depiction, and this provides a conceptual basis for the
interpretation of these later large-scale reliefs. The main difference in affordance between
a sea-shell relief vessel and the North Entrance bull fresco is that whereas the former
could be brought out when needed, the latter was a permanent fixture. Apart from this
they can both be seen as approximately life-size three-dimensional forms which interact
with the observer.

The present chapter deals primarily with the interpretation of such frescoes, a venture
which once again has to begin with the impressions of Arthur Evans, and the way in
which they have shaped following scholars’ responses. Indeed the corpus of Cretan
frescoes depicting animals is almost exclusively from Evans’s excavations at Knossos:
the only exceptions are a fragment from nearby Katsambas and some notable examples
from Ayia Triada. The first part of the chapter presents the commonly discussed
frescoes and traces the way in which these largely fragmentary pieces have been studied and
restored. Evans (1935: 6) commissioned restorations during the course of his excavations:
these often form the basis for his discussion in The Palace of Minos, and were later
collated and republished (Cameron and Hood 1967). Over the course of the twentieth
century these restorations were augmented, often as new pieces were recognised in the
storerooms of the Heraklion Museum. Most notable among these were those produced by
Mark Cameron, which have in turn become the basis of new interpretations. The
discoveries at Thera and Tell-el Dab’a among other sites beyond Crete will also be
discussed, particularly since they have contributed to the idea of a generalised corpus of
‘Minoan’ or ‘Aegean’ frescoes: features from these broadly contemporary frescoes have
often been discussed as a single phenomenon in order to widen the range of examples. Mycenaean frescoes are largely ignored here because they are later than most of the Knossos frescoes, and are less frequently brought into the discussion. While this approach has been productive, since there is a common set of techniques and themes, the aim of the chapter is to turn the focus back on the animal depictions of Knossos and Ayia Triada, to analyse them in their own terms, and particularly to consider their historical and spatial context. This leads on to a discussion of the animal practices in which these frescoes are implicated: it will be argued that the frescoes in buildings other than the palace often draw on experiences of exotic/non-domestic animals, locating them in unfamiliar places. In contrast, many of the frescoes of the Knossos palace present a familiar animal, the bull, in non-domestic practices, most likely reinforcing actual palatial animal practices. It will be suggested that the sudden appearance of such frescoes in the Neopalatial period arose from a need to associate fluid and fleeting practices more permanently, and monumentally, with elite buildings as a means to establish the social significance of these locations. The rise of naturalism can be seen as the adaptation and development of an existing technology to provide life-like or detailed depictions of, among others, socially useful human-animal relations.

7.2 Previous Approaches

7.2.1 Religion and Nature

Evans’s legacy with regards to the frescoes is far reaching, both in practical matters such as dating and restorations, and also in interpretation. Whereas restorations can be updated in the light of new information, dating has proved a problem in the absence of proper stratigraphic control in the Knossos excavation, or adequate comparanda from elsewhere. The pottery sequence, for instance, has been refined in the light of new excavations, but pictorial frescoes have been found infrequently in Crete, and these are largely limited to plants or women (including stucco reliefs of women from Chania and Pseira) (Immerwahr 1990a: 179-85). Aside from the problems of off-island comparison, Thera provides only a snapshot of fresco painting in LMIA, as seemingly does Dab’a, which has its own problems of dating. As Hawke Smith (1976: 65) argued of the Knossos fresco fragments, “the stratigraphic evidence is indecisive, the structural phases are conjectural, and the stylistic considerations open to doubt”. Apart from the frescoes left on the walls at the time of the destruction, which could nevertheless have been painted somewhat earlier than LMIIIA, nearly all the fresco fragments found in the palace are subject to considerable debate on matters of dating and context. Yet most of the time it is possible to find a broad agreement on date, and accept the restorations as approximating the original
fresco in subject if not necessarily composition. A more pervasive issue is the interpretative framework Evans provided. His response to the frescoes discovered at Knossos was twofold. The first was related to his overall conception of the palace as a sanctuary: “The wall paintings themselves have, in almost all cases, a religious connexion, direct or indirect” (Evans 1921b: 4). The second, as mentioned in previous chapters, was his idea of naturalism.

The earliest figural fresco in Evans’s opinion was the Saffron Gatherer (Figure 7.3), which epitomises the above debates. For Evans, the crocuses pointed to an association with the Goddess, and also an MMII date (Evans 1921b: 264-6). The frescoes will be discussed in more detail below, but famously the original restoration of a ‘Blue Boy’ gathering crocuses turned out to be a monkey (Figure 7.4). With regards to dating, Hood has compared the accounts in the excavators’ day books, the initial excavation reports and the Palace of Minos, as well as any associated finds that were kept in order to reassess the fresco dates given by Evans. The Saffron Gatherer cannot be firmly dated by context, since it was at first associated with the final destruction of the palace, before Evans (1930: 22) changed his mind about where the fragments were found; Hood argues for an MMIII context based on a reassessment of the excavation records. For this reason the fresco can only be dated stylistically, with Hood opting for MMIIIA, Immerwahr for MMIIIB/LMIA and Cameron for LMII-IIIa (Hood 2005: 62). In the absence of a well-stratified context, stylistic dating is problematic because it depends on the parallels chosen: Hood uses ceramic dating for the depicted pot, while Immerwahr (1990a: 41) regards other monkey frescoes from Knossos and Thera as contemporary. On this basis an early to middle Neopalatial date seems reasonable.

To continue the religious theme, and also debates over stratigraphy, Evans attributed a number of stucco reliefs involving cattle, humans probably involved in bull-leaping and other activities including boxing, and chained griffins, to a conjectural ‘Great East Hall’ opening onto the Central Court. Doubts have been raised about Evans’s division of this into 2 phases, instead of the reliefs all belonging to a single MMIII context (Hawke Smith 1976: 68). The central focus according to Evans was a large wooden statue of the Minoan Goddess, only the bronze hair of which survived (Evans 1930: 497-525). Here as elsewhere, he connected bull sports and the Goddess (e.g. Evans 1928: 676). A further religious connection was the presence of white-skinned figures which he read as female bull-leapers in the Taureador Frescoes, found nearby (Figure 7.5 shows one from the most recent reconstructions). “In these champions of either sex we must rather recognise the flower of the Minoan race, executing, in many cases under a direct religious sanction,
feats of bravery and skill in which the whole population took a passionate delight” (Evans 1930: 232). Griffins too, had religious associations, as also indicated by their presence in the Throne Room of the Priest Kings (Evans 1935: 905-13) (Figure 7.6 and 7.7). Griffins and sphinxes were also found in miniature on fragments of what Evans saw as depicting embroidery from the North West Fresco Heap, a dump of fragments. Needless to say this was probably the robe of the Goddess (Evans 1930: 42). The point to be made is that Evans’s consistent interpretation of the palace frescoes as religious established a set of associations between bull-leaping or griffins and the Minoan Goddess. These associations have remained current even though, for instance, the East Hall is an ill-defined group of stucco relief fragments whose integrity and dating remains open to debate. That Hood (2005: 54) can reassess the contexts of the palace frescoes but also suggest that they are “essentially religious in character” shows how what are ostensibly reassessments of the frescoes all too often end up restating the Evans position (Hood 2005: 54).

Frescoes from the buildings at Knossos excavated after the palace, notably the House of the Frescoes and Caravanserai, were seen in more secular terms. In the former the scene of birds and monkeys reflected the owner’s preference for landscape. “The subject chosen for illustration may best be described as wild nature. Man is excluded but animal forms such as monkeys and blue birds appear here and there amidst a wilderness of grotesque rocks overgrown with flowers and creepers” (Evans 1928: 446). He suggested that the inspiration had come from the Nile, but that the ‘naturalistic spirit’ showed that Egyptian conventions had not yet dominated Minoan style. At the same time he suggested that Egyptian tomb paintings were more lifelike, whereas this fresco took liberties with some of the natural forms (Evans 1930: 456). In a building whose main feature is a spring-fed pool which was seen as a ‘Caravanserai’ along the road to Knossos, the well-known frieze of Partridges and Hoopoes was discovered (Figure 7.8). Gilliéron fils, who carried out the restoration, was also present at the excavation, helping him to take into account the spatial relations of the excavated fragments. Evans suggested that the stylised background and stationary birds could owe something to tapestry design, but saw its setting as indicating a room for ‘refection’. “The frieze gives an anticipatory assurance of good cheer, and recalls, indeed, the walls of an old Dutch dining room, hung with pictures of game or domestic fowl, or of still life more immediately referring to the table” (Evans 1928: 114). In both cases, in a rather circular argument, the frescoes were seen as appropriate to their particular location, the House of the Frescoes dweller’s interest in landscape, or a room for hungry travellers.
This disjunction between Evans’s interpretations of the palace frescoes compared to those of surrounding buildings is interesting given the merging of the ideas of religion and nature in recent literature (Chapin 2004: 53). It is important to remember that there are significant differences between the subjects of the two groups of frescoes. Hawke Smith (1976: 76) makes the point that this could be the result of differential preservation, making it possible that “the Palace before its renovation had displayed as varied and vivid an array of plants, birds and animals as any of the lesser buildings”. Early Neopalatial frescoes from the palace do survive, however, and Evans saw naturalism here expressed differently. The high point came with the MMIII stucco reliefs of bulls at the North Entrance and ‘East Hall’, whereas later frescoes of the same subject, such as one found just to the north of the palace showed a ‘pseudo-naturalism’ (Evans 1928: 620). Later frescoes such as the Procession Fresco, or the Throne Room showed a “sacral and conventional style”:

Lost is the free spirit that had given birth to the finely modelled athletes in the East Hall groups and to the charging bulls of the North Portico… Departed, too, is the strong sympathy with wild Nature, still visible in the flowering plants with their rock setting as seen in the ‘House of the Frescoes’ (Evans 1935: 880)

Here Evans’s naturalism is spelt out: a stylistic judgement which enabled him to date certain frescoes, and not just referring to a particular subject matter, although this is an integral part. Hence Evans could see the North Entrance bulls and House of the Frescoes as part of the same phenomenon, but without collapsing his different conceptions of the two contexts.

The idea of a nature goddess effectively blurs the distinctions Evans made, but the momentum for this has come from outside the Knossian frescoes. The other main group of animal fresco fragments, from Ayia Triada, includes the remains from Room 14 (Figure 7.9). The cat stalking a bird was regarded as naturalistic by Evans (1921b: 539-41), but recent interpretation has centred on a reconstruction of the adjoining walls, with a woman kneeling among crocuses and lilies and another, perhaps dancing. This figure has been taken by Militello, in the final publication of the frescoes, as the goddess of the world of nature (Militello 1998: 282). Elsewhere he has argued:

If we have rightly understood the context of Room 14 as an epiphany scene, the cat fresco would have exalted with its luxuriant landscape the power of the nature goddess whose epiphany was depicted in the adjacent east wall, and would have constituted, due to its nature subject, a kind of structural opposition to the scene from the north wall. (Militello 2000: 85)

Morgan (2005: 28) echoes this description: “the world of nature within the sphere of the divine”. More recently authors have come to see the plant and animal frescoes from Knossos as similarly reflecting the “implied presence of the Goddess” (Immerwahr
In order to understand how depictions of animals and plants have acquired religious overtones, however, one has to step back and examine the study of frescoes between Evans’s publication of the Knossos frescoes and Militello’s publication of Ayia Triada. These are the two main sources of evidence for animal depictions on fresco in Bronze Age Crete, but they are separated by a number of developments which have affected how the animal frescoes have been interpreted. Another significant fresco from Ayia Triada is an in-situ marine fresco floor depicting dolphins, fish and a central octopus, dated LMIII (Militello 1998: 80, 321-9) (Figure 7.10). If one views this as a valid comparandum for the Knossos Dolphin Fresco, it provides evidence to undermine Evans’s restoration of it as a wall painting, and his earlier date (Koehl 1986) (Figure 7.11). Yet caution must be exercised in using frescoes from one site to interpret another: the widening frameworks in which the Knossos frescoes have been interpreted will now be examined.

7.2.2 Broadening horizons

7.2.2.1 Cameron, Kaiser and Reusch

As Morgan has recently argued, one might expect to have recovered only 5-10% of the fresco fragments from a Minoan building. “Our perception of these wall paintings is therefore inevitably steeped in the vision of those who recreate ancient images for our contemporary eyes” (Morgan 2005: 23). This is an important point: whereas Evans referred to the cat stalking the bird from Ayia Triada, the most frequently used image is now the reconstruction of the three walls by Mark Cameron (Figure 7.12). The basis for this has never been published since it was part of his PhD thesis, which his early death left as the only source for many of his reconstructions (Cameron 1975). An exhibition of his work curated by Evely has brought many of his artworks wider currency but Cameron was clear about the importance too of the scholarly basis of his restorations (Cameron 1976; Evely 1999: 116-7).

The fragmentary nature of the Knossos frescoes is of particular salience: although a few were in situ, the majority from the palace came from secondary contexts, either deposited as part of the fill when an area was remodelled, or probably transported from elsewhere and dumped in the case of the Northwest Fresco Heap. The Palanquin Fresco provides one example: originally published by Evans as showing a figure being carried in a litter, Cameron argued that some fragments belonged instead to a chariot scene. Other fragments from this scene were found in three different areas of the palace. Cameron’s (1967b) restoration showed a procession, including a bull being led by figures in a horse-drawn chariot (Figure 7.13). His contribution was both to recognise new pieces belonging
to published frescoes, and incorporate them in an often more ambitious composition. Whereas in situ fresco fragments provide a starting point for restoration, here fragments, apparently of the same fresco, were found scattered around the palace, and one is left with the two different attempts to piece them together.

Two other scholars who worked on the fresco fragments in the Heraklion Museum were Helga Reusch and Bernd Kaiser. Cameron acknowledges the work of Reusch in locating new pieces from the House of the Frescoes during her cataloguing of the Knossos excavation material. Nor can one forget the Heraklion Museum conservators: the pieces Reusch found were used to update Gillieron’s panels in 1966 by T. Phanourakis (Cameron 1967a). Cameron (1968) then published a restoration on paper which has now become the standard reference for the Birds and Monkeys scene, recasting Gilliéron’s panels as a continuous frieze (Figure 7.14). This fresco, then, exists in three different forms: in Evans’s (Evans 1928: 431-67) publication, in the Heraklion Museum restoration, and in Cameron’s reconstruction (here the colour version). Cameron re-interpreted certain details, for instance changing a fountain to a waterfall, which has implications for the setting of the birds and monkeys.

The work of Kaiser, whose thesis was published posthumously, raises further problems with the Knossos frescoes. He mentions 650 stucco relief fragments, animal, human and non-figural, which he found in the Heraklion museum storerooms. Of these, 200 were from one of the contexts Evans associated with an East Hall (Kaiser 1976: 278). In other cases he found relief fragments attributed to different locations to those already published. His study points to the need for a full publication of the Knossos fresco fragments, since he does not illustrate each one, but rather reveals the existence of a body of material which Evans either mentioned in passing or not at all. In comparing Kaiser’s account with the investigations Cameron made for his PhD, Shaw (1995: 113-7) points out potential confusion of the labelling of particular areas: it is not entirely possible to separate the relief fragments of the North Entrance and ‘East Hall’ since in some cases both were referred to as ‘Area of Bull Relief’. Kaiser’s work does associate further material with each location, in some cases providing evidence for more bulls. He brought some of the fragments together in reconstructions, but these are not the fully imagined compositions of Cameron. Like Cameron, however, he demonstrated that much material remains to be incorporated into our knowledge of the Knossos frescoes.

Maria Shaw, who worked with Cameron, and Koehl, have continued the reassessment of the existing restorations. Koehl (1986) has published his own restoration of the Dolphin
Fresco as a floor, arguing for a carved limestone rockwork border. He points out that the replica Evans commissioned for the palace was meant as a “‘spirited amplification’” as opposed to the more evidentially-based Heraklion Museum version (Koehl 1986: 414). Shaw (2005) has recently reassessed the Caravanserai frieze, publishing the existing fragments and adducing evidence for an extra landscape scene rather than radically altering Gilliéron’s reconstruction. Marinatos and Palivou (2007) have recently published a catalogue of pieces and new versions of the Taureador Frescoes, using imaging software to manipulate the fragments (Figure 7.5). Taken together the work of these scholars shows that the Knossos frescoes in particular are not fixed entities, but rather a set of proposed images based around a growing list of published fragments. Reconstructions using computers are a profitable new development.

7.2.2.2 Thera and the Cyclades
The frescoes from Akrotiri, preserved by the eruption of Thera in LMIA soon after they were painted, have generated a wealth of interpretation. Regardless of whether a high or low chronology for the eruption is adopted they are more or less contemporary with the House of the Frescoes, and scholars have frequently drawn Theran landscape scenes into a more general discussion of ‘nature scenes’. Other scholars have pointed to the relations between the Theran frescoes and the Theran environment, and it is this dimension that is of particular interest here. It will be argued that the Cretan and Theran frescoes have certain principles in common, particularly indexicality, but should be analysed separately. Differences in the extent of preservation, subject matter and context are significant.

The fresco from Xeste 3 showing a female figure sitting on a platform, a griffin behind and being presented with saffron by a monkey is a useful starting point for thinking about the relevance of the Theran imagery to Crete (Figure 7.15). Both griffins and monkeys occur in the Knossos palace frescoes, the former flanking the throne and the latter gathering saffron. Attention has also been drawn to the animals on the seated female figure’s necklace: ducks and dragonflies. Marinatos has described the figure as goddess, “a mistress of nature”, the necklace associating her with marshes as well as the crocus landscape in the background (Marinatos 1984: 70). The restoration of a reed fresco on an adjoining wall has made this association more immediate. In a detailed discussion of this reed fresco, Vlachopoulos argues that these different landscapes encompass air, water and land: “The ‘Great Goddess of Nature’ is presented and adored in a symbolic milieu of serenity, fertility and natural life” (Vlachopoulos 2000: 642). As mentioned in Chapter 2, Zeimbekis (2005: 246) points to the specific association of the animals on the necklace and those depicted among the reeds.
The question is to what extent one can generalise this depiction to elucidate the frescoes of Crete. Marinatos argues that the decorative scheme of Xeste 3, which also includes scenes of women gathering saffron and various other female figures, contains a set of themes which “revolve around nature and womanhood” (Marinatos 1984: 71). The particular natural theme is a symbolic spring, a rebirth of nature even though, as she notes, crocuses bloom in autumn. Similarly she argues that the Birds and Monkeys fresco at Knossos, with its abundant vegetation is: “A symbolic depiction of the ideal spring” (Marinatos 1984: 92). Noting the votive table found in the House of the Frescoes, she sees the room as a shrine, and suggests that in common with other Minoan nature scenes, fertility is symbolised: in some scenes the Goddess appears, while others are the background for cult (Marinatos 1984: 92-6). Here, then, Marinatos establishes a broad definition of nature, a set of plants and animals which is symbolic of fertility and linked to the Goddess. On this basis she regards depictions of plants and animals in Crete and Thera as comparable. In contrast, Angelopoulou (2000) takes the same approach of viewing animals and plants as symbolic, but argues for a context specific symbolism rather than a unified meaning for nature scenes.

Zeimbekis offers a different approach, seeking to locate the Goddess not within a broad conception of nature, but the marshy landscape. She argues that fertility is not a sufficient explanation for the complex set of relationships within the frescoes, and that more than an abstract concept is needed. “Such an interpretation would artificially isolate the interpretation of the images from the Theran experience of the world and its symbolisation” (Zeimbekis 2005: 244). In closely linking the theme of the fresco with Therans’ experience, for instance, of dragonfly habitats and behaviour, Zeimbekis undermines the idea that all Aegean nature scenes can be explained by invoking the Mother Goddess. Vlachopoulos (2000: 641) also argues that the reeds have been closely observed, suggesting a real world model. More generally, Angelopoulou (2000) argues that Theran and Cretan nature scenes are context specific: although she regards them as symbolic, she suggests that the symbolism differs between scenes. Other scholars too have pointed out the specificity of the Theran imagery: swallows for instance, are not depicted in Cretan frescoes, but are found in both frescoes and pottery decoration at Akrotiri leading Immerwahr to describe them as “an indigenous Theran motif” (Immerwahr 1990b). Renfrew (2000) suggests that the mode of representation employed at Thera points to this particular place, a phenomenon he terms “locus iste”.

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Paradoxically, it is possible to generalise this specificity as a characteristic of Aegean frescoes. Morgan (1990) compares the miniature frescoes of Crete, including Knossos, and the Cyclades, including Akrotiri, Ayia Irini on Kea, and Phylakopi, and suggests that each shows an environment appropriate to its setting: an architectural complex at Knossos, and depictions of ships at Akrotiri and Ayia Irini. More recently she has suggested that the Kea scenes could have been visible from the room in which the fresco was located, except for a hunt scene in larger scale, perhaps a convention to distinguish it from the visible aspects (Marinatos and Morgan 2005: 120). In the large scale frescoes she argues for different approaches to ‘nature’: “If Kean artists abstract aspects of nature from their contexts, while the Cretans incorporated them into their environmental settings, Thera integrated the world of plants and animals with that of the human world” (Morgan 1990: 258). At Ayia Irini, bluebirds are depicted in isolation, compared with the landscape setting of birds in Cretan frescoes; the monkey from Xeste 3 is interacting with humans, unlike the monkeys from the House of the Frescoes. Overall she sees an ‘island iconography’ with particular concerns, such as the sea or robing ceremonies, which distinguishes Cycladic from Cretan frescoes.

It can be argued that the difference between the Cretan frescoes and Thera is preservation: if more frescoes survived from Knossos or Ayia Triada, particularly from LMI, more common features would be apparent. Yet Marinatos uses the concept of nature to embrace the different animals appearing at Ayia Triada, Phylakopi or Thera. “The female deity is shown in nature surrounded by the living beings of her domain whether they be monkeys, griffins, birds, cats, fish or humans” (Marinatos 1984: 89). While monkeys and griffins are depicted in both Knossos and the Cyclades, the birds are different: swallows at Akrotiri, partridges and hoopoes at Knossos. Moreover the griffins at Knossos appear next to an empty throne, and do not have wings. If the Theran depictions have Theran referents, as suggested above, it follows that the Cretan animal frescoes too have a local significance. The specificity Morgan outlines can be seen as an indexical significance: frescoes are relevant to particular places, rather than all symbolising a nature goddess.

7.2.2.3 **Tell el-Dab’a and the Eastern Mediterranean**

There have long been suggestions that fresco painting in the Eastern Mediterranean indicated a connection with the Aegean. At Alalakh, Woolley found frescoes of a bucranium, and trees which looked Aegean; later reanalysis revealed the presence of a Cretan-style griffin. A floor painting at Tel Kabri in Israel was also interpreted as Aegean, in both style and technique (Niemeier 1991; Niemeier and Niemeier 1998).
While these have previously been considered in terms of debates about travelling artisans, the frescoes at Dab’a are of far greater significance here. Found in 1990 in a series of dumps, which have unfortunately proved difficult to date, they depict scenes of bull-leaping and hunting which have clear Aegean affinities, and only vague similarities with Egyptian tomb painting (Bietak 1995; 2000; 2005; Bietak and Marinatos 1995; Bietak et al. 1994). They have stimulated a number of papers comparing them with aspects of Aegean frescoes (Morgan 1995b, 2006), although the project of restoration is ongoing. Indeed the most recent discussions on bull-leaping on Crete are the result of comparisons with Dab’a (Morgan 1998; Shaw 1995). The problem here is whether to regard these scenes of animals as proxies for lost Cretan frescoes or another set of related but different depictions.

The fresco dumps were found next to a building called Palace F, of which only the foundation platform remains. This has made it difficult to reconstruct the layout of the building from which the frescoes almost certainly came. Originally a Hyksos citadel, this led to an initial association between the frescoes and the rulers of the Second Intermediate Period (Bietak 1995: 20), but the stratigraphy of the dumps is now seen as indicating a later Early Tuthmosid date (Bietak et al. 2007: 38-41). Although the re-dating has implications for debates about Aegean chronology and the nature of Cretan relations with Egypt, here the important point is that the frescoes are almost certainly contemporary with LMIB (Morgan 2004: 284). This makes them earlier than the best preserved equivalent, the Taureador Frescoes, but contemporary with depictions of bull-leaping on fragmentary frescoes from Knossos and other media such as rings.

The bull-leaping frieze, 0.89m tall, as reconstructed by Marinatos and Palivou (Figure 7.16), consists of six bulls and five or six leapers, although there is evidence for at least three more bulls in other friezes. The leapers are shown in a variety of positions, and the bulls are different colours (Bietak et al. 2007). Much has been made of the maze background of part of the frieze, which has been seen, with varying degrees of conviction, as a symbol of the Knossos palace (Bietak et al. 2007: 71-2; Morgan 1995b: 44; Shaw 1995: 108). At the same time attention has been drawn to the unusual features of the depictions compared to Cretan examples: the exact position of the leapers, the frontal face of one bull and the subdued attitude of another have all caused comment. Whereas one option is that Cretan parallels simply haven’t survived (Niemeier and Niemeier 1998: 92), others have seen the hand of artists who were trained at Knossos but were not necessarily Cretan (Shaw 1995: 93). Bietak’s (1995: 26) suggestion that the frescoes were the result
of a dynastic marriage is one possible solution to an imponderable question. What the frescoes tell us about bull-leaping will be discussed below.

Although not yet fully restored, the scenes of hunting are relevant to the questions raised above about the Cycladic frescoes. Although the animals are in flying gallop, and in the same Aegean style as the bull-leaping depictions, there are no comparable Cretan frescoes. Again, part of the problem could be preservation: Marinatos uses the frescoes as evidence of an aspect of Minoan iconography which happens not to have been recovered in this medium in Crete. Given that there are hunting scenes on seals, there would be nothing unusual in this (Marinatos and Morgan 2005: 119). At the same time Morgan points out that the combination of dogs, humans, lions, leopards and hunted ungulates is more typically Egyptian, although not in the art of this period. The number of leopards in particular is more appropriate to an Egyptian setting, although there is a probable leopard head from the Northwest Fresco Heap at Knossos, Morgan argues that there is a common iconographic basis: the symbolism of leadership and dominance (Morgan 2004).

There are also indications that these frescoes are context specific: it is possible to find Aegean, if not Cretan parallels, for frescoes showing hunting and depictions of lions, but there is no animal which would not be alien to the Delta or Egyptian painting.

The painting from Tell el-Dabā'a is indisputably Aegean in idiom, iconography and technique, yet a characteristic of the Tell el-Dabā'a paintings and those from the Aegean is that the artists were always careful to include species of animals and plants which would be at home in the settings of their physical space (Marinatos and Morgan 2005: 121)

This suggestion that the hunting scenes at Dabā'a draw upon experience of the Delta parallels the discussion of the Cycladic frescoes above, which were linked in many cases to certain features of their island environments. One can make the case that Aegean fresco painting was closely linked to experience of local environments. There are exceptions to this in the Aegean, not to mention the problem of defining the relation of the Dabā'a frescoes to this tradition. However, the indications are that fresco painting was not a rigid tradition, but adaptable to different settings. This suggests that frescoes were used to augment experience rather than to represent an entirely different time and place. Bull-leaping was alien to Egypt, but bull iconography was not: here the animal and human bodies could have acted as a common basis of understanding, whether anything like it occurred at Dabā'a or not. Morgan (1998) points to comparable practices in Egypt, arguing that both symbolise the power of bulls. But rather than finding a common symbolism in the frescoes of Crete, the Cyclades and Dabā'a, this comparison has brought out the differences in fresco depictions between these places. This suggests that there was a common iconographic tradition which could be adapted to the local environment, so that
the content of the frescoes is often context-specific. The technique, which itself could have been an index of elite craftsmanship, was also common to these frescoes. Returning to the argument made in Chapter 6, each fresco could have been appreciated both as a restricted technology, but also for its content, which affected viewers by drawing on the local environment.

7.3 **Analysis: Cretan frescoes**

The sample chosen for analysis is all of the published animal depictions from frescoes excavated on Crete: compared with the other datasets this is very small. It comprises 59 ‘frescoes’ and 115 records, totalling 175 animals (including humans where in direct association with animals). The actual number of frescoes is debatable because it is inflated by finds of various fragments, particularly those recorded by Kaiser. If these were not firmly assigned to an existing fresco panel, animal depictions (excluding humans) were included separately. Some of the separated relief fragments, however, probably did once belong to the same panel. Given the disagreements over the East Hall mentioned above, for instance, it is often difficult to determine which fragments belong together. Cameron’s reconstruction of the Chariot Fresco from pieces dispersed across the palace underlines the fact that proximity is not necessarily a useful indicator of association. As a result the most robust measure of animal depictions is akin to the zooarchaeological Minimum Number of Individuals, relying on the judgments of Cameron and Kaiser particularly as to how many individual animals were depicted within a group of fragments. This allows an estimate of the proportions of different types of animals depicted.

Dating is another contentious issue: although stylistic date and context date are recorded separately in the database, here the stylistic dates linked to context dates are preferred. In practice this has meant accepting Hood’s dating of the palace frescoes in most cases, which takes a consideration of context as a starting point. Exceptions such as the Dolphin Fresco, dated by Hood to LMI, are based on the Ayia Triada marine floor context date. Cameron and Kaiser tended to employ stylistic dating, but their late dating of the Saffron Gatherer and some of the stucco reliefs respectively have been questioned by later scholars. Kaiser in particular followed Evans’s problematic stratigraphy of the North Entrance (Kaiser 1976: 289; Shaw 1995: 100). As argued above, however, the dating of most frescoes is broadly agreed, and here the division of Neopalatial and Final Palace is sufficient (cf. Shaw 1997). It has been suggested that figural frescoes existed earlier than the Neopalatial on the basis of the quality of the earliest examples (Hood 2000: 191).
None have been found however, despite a significant number of Protopalatial wall and floor paintings known (Blakolmer 1999; Hirsch 1977). Depending on definition, the only exception is a sponge fresco from Knossos created using what Evans called ‘nature printing’ (Evans 1930: 361-3). Given the depictions of animals in other media in this period, there is no reason to suggest a lost sequence of figural frescoes, as opposed to a transfer between media in MMIII (Immerwahr 1990a: 34).

A list of frescoes depicting animals is given in Appendix 1: Numbers in brackets refer to the database identifiers, given in the appendix, with references to the main catalogues by Hood (2005), Immerwahr (1990a), Kaiser (1976), Militello (1998) and Shaw (1995). The most complete ones published by Evans have been introduced above, but here all of the frescoes are discussed by context.

7.3.1 Knossos palace
7.3.1.1 Stucco reliefs
The earliest context date for a figural fresco is MMIIIA, the “Bull Relief and Spiral Fresco” (F20), from the Loomweight Basement, which Evans associated with the earlier phase of the East Hall. As mentioned above, Hood also dates the North Entrance bull reliefs (F13) to an MMIIIB construction context. Two further relief fragments were found in MMIII contexts: one with detailed hair from the Southeast Palace Angle (F14) has divided opinion between identification as a fragment of a lion’s mane or bull’s head. Hood (1994: 73) originally described it as “lion seizing prey” an over-interpretation which has obscured the fact that there is no clear evidence for lion frescoes or attack scenes at Knossos. This has been used as evidence that the Dabça lion frescoes are also derived from Knossian frescoes (Marinatos 1998: 85). Apart from the East Hall griffins (F9), the only other identified animals in stucco reliefs are wild boar (F47) and possibly agrimi (F60). As Hood (2005: 55) points out, no stucco relief was found in situ in the palace; he regards stucco relief in general as a Neopalatial phenomenon (Hood 2000: 192). As a result stucco reliefs at Knossos are here all dated to the Neopalatial period, and mostly from its initial phase in MMIII. The large majority depict large-scale bulls and people, although there is a small-scale cattle hoof (F55). The other relief fragment in an MMIII context was found in the fill of the House of the Sacrificed Oxen, but is likely to have come from the palace (F48). Most of the relief fragments found by Kaiser can be attributed to the eastern side of the palace, although stratigraphy is often problematic. The overall picture is one of a widespread use of stucco relief from the first phases of the Neopalatial.
7.3.1.2 Other frescoes

Non-relief frescoes from the palace can be equally split between Neopalatial and Final Palace periods. From the earlier period comes the Saffron Gatherer (F2), and other fresco fragments found in the same area, including the textile decoration of griffins and an unusual hybrid bull (F15) and depictions of a leopard’s head and bird (F33). Evans (1921b: 539-41) saw these as part of an equivalent scene to the Ayia Triada fresco, but Cameron suggested the cat was a leopard, and possibly a depiction of a rhyton or piece of clothing (Evelly 1999: 219). Depictions of bull-leaping have also been dated to the Neopalatial: miniature fresco fragments from the Ivory Deposit (F34), the Queen’s Megaron (F37) and Magazine XIII (F16). The first shows a frontal bull and what could be part of the same animal against an architectural background, while the last could be associated with depictions of spectators in the same deposit. The Grandstand Fresco is another miniature fresco from the same period which has been argued to show spectators for a bull-leaping scene, but there is no direct evidence for this (Immerwahr 1990a: 63-5). In contrast to the large-scale reliefs, these depictions are small-scale or miniature. A butterfly restored on the Priest King fresco (F36) completes the list: while it is depicted on a fragment found in the same vicinity, there is no direct association between the two (Evelly 1999: 239).

Dated later are the Taureador Frescoes (F21) from the Court of the Stone Spout, and pieces from a miniature bull-leaping scene found nearby (F43) (Marinatos and Palivou 2007: 124-6). The Taureador Frescoes are larger than the miniature frescoes, but on a relatively small scale; the same is true of Cameron’s Charioteer Fresco (F30) and an in-situ fragment of a bull’s hoof (F28) in an upper storey in the Domestic Quarter. In contrast, two in-situ frescoes with only hooves preserved provide evidence for large-scale bulls along one of the entrances to the palace, on the West Porch (F26) and in the Anteroom to the Throne Room (F27). The former was repainted several times, and so a fresco of a bull at this entrance could go back much earlier. Other large scale frescoes include an Argonaut (F25) and the Throne Room griffins, as well as the Dolphin Fresco (F7).

7.3.2 Around the palace

The most complete frescoes from the vicinity of the palace have been discussed above: The Birds and Monkeys fresco (F3) from the House of the Frescoes and the Partridge Frieze (F12) from the Caravanserai. Cameron found evidence for a second fresco at the House of the Frescoes, including crocuses, olive and the horns of agrimia (F4). His
reconstruction of the goats flanking an olive tree is hypothetical. From the South House came a fragment depicting a bird (F5), and the tail of a mouse around a stem of grass from the Southeast House (F6). All have been dated to the Neopalatial. Later evidence for animal depictions is scarce: A piece showing a bull’s leg, plant and the hair of a leaper which was outside the Northwest Treasury, and was probably dumped from the palace (F44); a fragment with patterning similar to a deer’s hide (F18) was reported from the Minoan Unexplored Mansion, in an LMIIIB context (Popham 1984: 137).

The Royal Road excavations have yet to be published, but various mentions have been made of fresco fragments, including relief fragments of bulls (F58) and a floor painting with a striped and spotted pattern. This has been described as “a floor-fresco imitating a rug or carpet made up from leopard and possibly zebra hides” (Cameron 1970: 165). Although this would provide evidence for the transport of animal skins to Crete, the patterning looks overly geometric (Cameron 1975: plate 144).

7.3.3 Other sites

The only other animal frescoes from Crete are from Katsambas and Ayia Triada. The Katsambas fresco (F11) has been identified as another textile design, depicting two birds (Shaw 1978). The Park Fresco from Ayia Triada (F10), damaged but preserved by the LMIB destruction, has been mentioned above: as well as cats stalking birds in a rocky landscape, there are depictions of quadrupeds which Cameron restored as agrimia: originally they were identified as hares, but this is no longer accepted (Militello 1998: 266). Later frescoes include the marine floor (F39) and procession scenes from a fresco dump, including a woman seemingly leading deer to an altar (F38).

7.3.4 Quantification

Given the small sample size, the analysis will seek to present the types of animals by location and date. A similar exercise was undertaken by Shaw (1997), who presented a quantitative analysis of Aegean frescoes by themes, such as landscape (including most animal depictions), humans, seascape, processions and bull-leaping. She argued that the distribution of themes reflected choices on the part of sponsors of particular buildings. Here the focus is on animals, and the question is whether any patterns are apparent in the distribution of particular types of fresco or types of animal.
Figures 7.17 and 7.18 show the distribution of frescoes depicting animals, both by context and stylistic date. Frescoes are evenly distributed between Neopalatial and Final Palace contexts at Knossos, although a significant number lack stratigraphic information: the stucco reliefs in particular were often found in labelled boxes, but it is difficult to arrive at a context date. Stylistic dating also results in an even distribution of frescoes between Neopalatial and Final Palace, but here all of the stucco reliefs are dated to the Neopalatial.

Figure 7.19 gives the number of depicted animals: this shows the predominance of the Knossos palace as a location for animal depictions. However, preservation also influences the number of animal depictions: the House of the Frescoes, Caravanserai and the Ayia Triada marine floor provide evidence for a large number of animals. However, as Figure 7.20 shows, patterns are still apparent, here looking at the contrast between the palace and other contexts at Knossos. Cattle dominate the animals depicted in the palace, even though these frescoes are often more fragmentary and so could under-represent the number of animals depicted. The cattle fragments associated with the Northwest Treasury and House of the Sacrificed Oxen probably came from the palace. A wider range of animals is depicted only in the palace, including griffins, marine animals and single examples of a cat (possibly a leopard) and horse. Birds, however, are largely represented outside the palace, even if the good preservation of the two main frescoes inflates this figure. Stucco reliefs too are almost entirely a palace phenomenon: apart from Dab’a the only animal stucco reliefs found outside the palace at Knossos (and the only clearly non-palatial cattle) are those reported from the Royal Road.

Figure 7.21 and Figure 7.22 are based on number of frescoes and number of animals respectively, further illustrating that the predominance of cattle in the Knossos palace is apparent by either measure. Birds are the only animal type to occur in more than two locations, although it is worth pointing out that different types of birds are represented. There is not a pronounced decrease in the diversity of animals in the Final Palace period: although butterfly, cat, monkey and mouse are only depicted in Neopalatial frescoes (which tallies with the disappearance of the first three in seal depictions in the Final Palace period), marine animals and horse add to diversity in the Final Palace period. Marine animals in particular are prominent in Neopalatial seals and pottery depictions, and so it is interesting that they are a later phenomenon in frescoes, and largely restricted to floors: this, however, is based on only three frescoes. Although Figure 7.21 shows a larger number of birds, cats and monkeys outside the Knossos palace than in, Figure 7.22 shows that this is biased by preservation except in the case of birds. The Knossos palace
contains a diverse range of animals, since very few (mouse and octopus) are found exclusively outside the palace.

Comparisons with other media help to point to significant aspects of fresco depictions, and also absences. Given the small number of frescoes, Figure 7.23 does not distinguish Neopalatial and Final Palace, but instead compares the proportion of animals in Knossos frescoes (based on number of frescoes, rather than animals) and seals/sealings from Knossos. In most cases, for animals which occur in both media, the proportion of animals in frescoes is approximately twice that of seals: this in part can be attributed to the greater diversity of animals on seals, and the greater number of uncertain depictions (quadrupeds). The anomalies are goats, which are far more common on seals, and lions, for which there are no certain fresco depictions. Deer do appear in an Ayia Triada fresco (and possibly at the Minoan Unexplored Mansion), but the lack of dogs in frescoes is also interesting. Lions and dogs are shown attacking animals at Dab’a, so the question becomes whether their absence at Knossos reflects the non-preservation of animal attack and hunting scenes, which are represented in the seals, or whether this theme is absent in Knossos frescoes.

Despite the small sample size, and potential biases in preservation, certain patterns need explaining: the concentration of cattle depictions, and stucco reliefs, in the palace at Knossos; the difference between the palace and other locations.

7.4 Animal practices

A number of explanations for the depictions of animals in frescoes have been mentioned above: Evans described an interest in ‘wild Nature’ for the House of the Frescoes, but also religious motivations for the palace. The Theran frescoes, as interpreted by Nanno Marinatos and others, have provided an impetus for the idea of a nature goddess, which Militello applies to Ayia Triada: here the animals are the creatures of her domain. This interpretation is based on a symbolic reading of the frescoes which, as such, is an unsubstantiated reading of these images. The following seeks to locate the depictions of animals in Bronze Age Cretan human-animal relations, as a way to explain why certain animals were depicted in frescoes. The frescoes specify the affordances of the animals depicted, most frequently allowing them to be perceived as unfamiliar or part of unfamiliar practices. The social and spatial context of these depictions will then be considered as a means to understand the location and significance of certain frescoes.
A common response to exotic animals in frescoes is that they appear to have been painted from first-hand observation, particularly the monkeys (Shaw 1997: 492; Evely 1999: 108). The same has been argued of the Ayia Triada cat (Morgan 1988: 147). The importation of both animals to Crete seems almost certain on this basis. However, there is also a tendency to link such depictions to Egyptian tomb paintings, although the two responses are not mutually exclusive. Morgan for instance sees both the House of the Frescoes and the Ayia Triada scenes as Aegean examples of an Egyptian landscape genre, also seen at Thera. Although she argues that the genre has been transformed in the Aegean, based on the ideas of hunting and cultivation, the inspiration is overseas. Militello (2000) too sees the translation of an Egyptian fowling scene to an Aegean setting at Ayia Triada, losing the marsh and tomb owner depicted in the original. Shaw (2005: 103) also brings a tomb painting from Beni Hasan into the discussion of the hoopoes from the Caravanserai. The implication of these comparisons is that frescoes of exotic animals are Aegeanized versions of Egyptian scenes. Here the animals are subsidiary to what is primarily an artistic borrowing.

As Phillips (1995: 763-4) points out, Egyptian tomb paintings were not particularly accessible, and the cat has a long history of depiction in Crete which need not be derived from Egyptian iconography. Rather, she suggests that the fresco painters are just as likely to have observed cats first hand, engaged in typical hunting behaviour (Phillips 2008: 205-6). Here too it will be suggested that these frescoes of monkeys and cats are to be understood in conjunction with the physical presence of these exotic animals, and as argued recently by Herva (2006b), the fresco provides a framework for perceiving the animal. At Ayia Triada and the House of the Frescoes, the animals are shown interacting with birds in a rocky landscape. This has been seen as symbolic of predation, but there is also a juxtaposition of an exotic animal with a familiar one. Having said this, the birds at Ayia Triada elude identification, whereas the House of the Frescoes birds appear to be doves (Masseti 1997: 356, 360). It seems more likely that the Ayia Triada bird is generic, rather than this non-identification being significant. The goats point, in Crete, to mountainous terrain, locating the cats in a landscape which is non-domestic but not apparently overseas. This fresco can be seen as describing two characteristics of the cat: that it associated with the mountains and that it is a hunter. At the same time the inclusion of the cat in this landscape would make the setting even more unfamiliar than with goats alone. Here the context of the fresco in the same room as depictions of women dancing and picking crocuses should be considered: taken as a whole the inclusion of the
unfamiliar body of the cat further removes these scenes from everyday experience. It could be argued that the cat is simply a marker of the mountains too, and the possibility of feral cats should not be excluded. However, very few animals are depicted in large scale frescoes, and so the choice of cats needs to be explained. It is possible that the animal practice of fowling is being alluded to, an activity which, like the practice of saffron gathering, took place in the mountainous terrain of Crete. The connection of cats with this practice will be examined in Chapter 8. If the cats are not the focus, their place in a world beyond everyday experience is demonstrated.

The Saffron Gatherer fresco shows monkeys picking crocuses, again locating an exotic animal in a set of practices which was of particular significance in Crete. The plants in the House of the Frescoes scene have been the subject of much discussion. Flowers such as crocuses and lilies in reality bloom at different times of year, but here they are shown together, while other plants are hybridised. Marinatos saw this as an idealised spring, while Chapin argues that: “The presence of the floral hybrids thereby reinforces the unearthly, magical quality of the composition already suggested by the simultaneously flowering natural species” (Chapin 2004: 58). The plants can be seen as locating the monkeys in a landscape which contains familiar plants, but which also differ from the viewer’s experience in certain details. Both frescoes can again be seen as presenting these animals in a way which distances them from everyday experience.

Maria Shaw (1993: 669) has argued that the House of the Frescoes scene could either be depicting the original habitat of the monkeys, a garden or a nature sanctuary. However, these three possibilities are based on the assumption that there is a passive relationship between the viewer and fresco, with the fresco providing information about monkeys. The missing aspect is the actual monkeys depicted: one can argue that the fresco mediates the relationship between the viewer of the fresco and monkeys which, even if not present, were under the control of people who wanted them to be seen in the way depicted in the fresco. Hence the frescoes potentially gave ownership of monkeys a greater social significance than the association, in itself significant, with an unfamiliar animal. The same can be said of the Ayia Triada cats, although they do not have quite the same focal position in the fresco. It is this social aspect which Herva’s incisive approach overlooks, and which Chapin relates back to ideas about a nature goddess via the idea of a theocratic elite. By contrast monkeys depicted in Akrotiri are shown directly interacting with human figures or artifacts (a sword and musical instrument). These Thera frescoes define monkeys in a different way, interacting with familiar artifacts in order to show them as similar but different from humans. One can argue that at Knossos it was socially useful to
stress the unfamiliarity of a monkey, by locating it amidst apparently familiar plants and animals.

Griffins are another unfamiliar animal, restricted to the palace. The griffins in relief are shown chained to pillars, a setting which can be seen as emphasising human control over them. The later Throne Room griffins, large-scale frescoes rather than the smaller-scale reliefs, are in a different setting. Their positions flanking the throne and a doorway point to human interaction with these depictions, which will be considered more generally below. The griffins seemingly on textile fragments, along with sphinxes and hybrid bulls, have a different image context again. Here one can suggest that the fresco is focused on fantastic embroidered textiles, with these unfamiliar animals seemingly markers of difference. The Katsamba bird fresco too would seem to be focused on the elaborate nature of the textile as this has been identified as a dress (Shaw 1978).

It is unclear whether the Partridge Frieze depicts an exotic animal or a familiar one. A species of partridge is found on Crete now, *Alectoris chukar*, but its existence could be the result of importation; Masseti does raise the possibility that it was kept in captivity (Masseti 1997: 60-2). Bones of this species were found in a Neopalatial context at Kommos (Reese 1995a: 195) and Mochlos (Soles 2003: 18): monkeys and cats are absent in published faunal reports and so there is no zooarchaeological evidence for their presence in Bronze Age Crete. As Evans noted, partridges are good to eat, and so this is one possible explanation for their depiction. Hoopoes, however, are seasonal visitors to Crete, and are not usually considered as a game bird since they are rather smaller than partridges. Evans also noted the stylised background, in comparison with the House of the Frescoes: he did, however suggest that the black background indicated a cave (Evans 1930: 130). Shaw considers Evans’s suggestion that the scene related to the water source of the Spring chamber, but offers a different interpretation: More likely, however, the painting had a subject that provided a universal and easily comprehended appeal. It was essentially a paean to the exuberance of nature, probably in the early spring – a popular and venerated Minoan theme, presented here in a richly colourful and ornamental fresco, the beauty of which still astounds us today. (Shaw 2005: 111)

Yet as the examination of other Aegean frescoes illustrated, one frequent feature is their relation to the local environment. This makes Evans’s suggestion that it relates to the locality of the Caravanserai more likely than this simply being a subject of universal appeal. The significance of the position of the fresco in a relatively accessible architectural context will be considered below.
In the case of monkeys, cats and griffins, one can argue that the fresco depictions are actively locating unfamiliar animals in particular contexts, and also the particular spatial locations of the frescoes. Whereas a small-scale depiction, such as on a seal, is sufficient to demonstrate knowledge of such animals, and therefore connection, frescoes can provide far more elaborate and detailed depictions providing further information to the viewer about these animals. This allows them to demonstrate a detailed knowledge of unfamiliar animals on the part of the owner. Frescoes, of course, are larger scale than seals, can depict animals life size, and are also fixed in particular locations, with implications for the way in which viewers interact with them. These unfamiliar scenes could be seen as bound up in religious experience: this will not be pursued here, but the point is that this sense of unfamiliarity, or other-worldliness, is the product of the relationship between these exotic animals, the social importance of owning, or demonstrating knowledge of, them and the ways they are depicted in frescoes. This reverses the usual religious explanations: it is the existence and observation of these animals which results in these depictions, not a belief in a nature goddess.

7.4.2 Bull games

Depictions of bull-leaping and other similar activities are not limited to frescoes, but appear on seals, zoomorphic vessels and other media including a painted rock crystal plaque from the Knossos Throne Room (Evans 1930: 108-11). Information from these have been used to piece together a sequence of activities, including bull capture, grappling/wrestling, leaping and sacrifice (Younger 1995: 508). Although Evans saw the North Entrance Passage stucco relief as depicting bull capture, his baseless argument was that there must have been a forerunner at Knossos to the scenes on the Vapheio cups (Evans 1930: 177-83). While the practices shown on these cups, capturing bulls, are attested on other media, with other depictions of hunting and sacrifice, the only animal practice depicted clearly in the Knossos frescoes is bull-leaping. The point to be made here is that, taken together, these depictions in all media offer a great deal of information about bull games, and it is this excess of information that has led to debates over the identity of the participants, the precise activities involved and the location and the participants. These debates will be considered here as a way to illustrate the particular properties of frescoes.

The Taureador Frescoes show participants with both white and red skin (Figure 7.5). This caused Evans problems of interpretation, since he saw red and white as an “invariable convention” for male and female respectively, based on Egyptian art (Evans 1921a: 251).
The problem of otherwise differentiating the figures by anatomy or costume led him to envisage a ritual transvestism, reinforcing the religious connotations of bull-leaping (Evans 1935: 22). This continued to trouble scholars, with suggestions that the red/white was a convention for lapsed time (Damiani Indelicato 1988), hierarchy based on initiatory status (Marinatos 1989), and more generally age/skill (Marinatos 1994: 93). The Dab’a bull-leaping scenes provided more evidence, including one yellow-skinned leaper (Bietak et al. 2007: 68). More recently Marinatos has seen a colour as one of a set of indicators, including size, activity and dress, to indicate the specialised activities involved in bull leaping (Marinatos 2007: 127). At the same time there has been a growing awareness of the multiple indicators of gender and status in frescoes, so that the idea of a contextual identity is widely accepted (Alberti 2002; Morgan 2000). It has become apparent, then, that frescoes such as the Taureador scenes display far more detailed information than was previously realised, and also more than can be displayed on a seal face. The same can be said of the way the bulls are differentiated by colour and markings. As was shown in an earlier chapter, cattle markings are of particular importance in one ethnographic context, and would have at least aided the identification of the individual animals named in the later Linear B oxen tablets.

This complexity is also apparent in the activity itself. Whereas Evans (1921a) and Younger (1976; 1983) tried to describe bull-leaping in terms of idealised schemata, one can argue that each scene in the Taureador frescoes is displaying a different aspect or permutation of a complicated activity (Cameron 1987: 325). Younger’s position has led him to see the Dab’a frescoes as misunderstandings of the practices of bull-leaping, with unique and impossible positions of leapers (Younger 1995: 521). It seems more likely that these are simply nuances which are too subtle for seal depictions, and which haven’t survived in the few Cretan frescoes. The recent reconstructions of the Taureador scenes also show accidents, apparent too on the Boxer Rhyton, and at Dab’a (see Figure 7.16). Again, these can be seen as an integral part of bull-leaping depictions, showing the dangerousness of the activity, related to the affordances of the bull. It has been suggested that the possibility of accidental death was the entire point of bull-leaping, as a form of sacrifice (Pinsent 1983). However, this is to focus on only part of the abundant information available in bull-leaping frescoes. Debates continue about the feasibility of bull-leaping, but this is to regard the frescoes simply as a source of evidence. If the frescoes are seen as elaborating a particular practice involving bulls and leapers, the exact manoeuvres are less important than the role of the fresco in reproducing what either did, might or should have happened.
Arguments over the location of bull-leaping similarly use the frescoes as transparent representations of an event. Neither seals or frescoes, however, locate the activities unambiguously. At Dab’a the labyrinth background is often seen as symbolic, and the Knossos frescoes are either fragmentary or, in the case of the Taureador frescoes, have a plain background. Evans (1930: 204) imagined a bull ring to the east of the palace, whereas various attempts have been made to relate certain features of the palace central courts to bull-leaping (Graham 1957; Ward 1968). Younger (1995: 512-5) is more equivocal, pointing to a possible grandstand on the Royal Road without excluding the Knossos Central Court. Yet, if one examines the distribution of depictions of cattle and bull-leaping in frescoes, there is a clear association with the palace. Wherever these practices took place, they were depicted on the walls of the palace at Knossos, but seemingly nowhere else on Crete, except perhaps for the Royal Road. This does not mean that either bull-leaping was only practiced at Knossos, or only in the palace, but rather that the depiction of bulls and bull-leaping exclusively here needs explaining.

7.5 Discussion: The Spatiality of Frescoes

If one considers only the iconography of frescoes it becomes difficult to explain why figural frescoes emerged when they did, why they were located in some places and not others, and why certain animals were depicted in certain places. Immerwahr (1990a: 32), for instance, suggests a foreign impetus for the development of figural frescoes. Gates rejects this in favour of an internal explanation, suggesting that the sudden emergence of pictorial painting was linked at Knossos, as in other cultural contexts, with the establishment of a new elite. Frescoes were a way to display the ideological basis of a new theocracy (Gates 2004). Whereas Gates focuses on the veneration of nature as one of the metaphysical bases of this new elite, Marinatos sees bull-leaping as an ideological statement. “Bull-leaping was more than a sport: it was the claim of the Minoan elite to have attained unusual skills of outwitting and conquering the wild bull” (Marinatos 1994: 93). Regarding the frescoes as ideological is one way to ground them in a particular social context, but it leaves most of the above questions unanswered.

Shaw also favours an ideological explanation, but makes the point that frescoes are integral to particular buildings. She suggests bull-leaping scenes were the insignia of Knossos, “an ideal theocratic symbol” (Shaw 1997: 501). Of the stucco reliefs she notes: “They must have been particularly important to the Minoans to judge by their unusually monumental scale and their powerful modelling, both of which must have created the
impression of real life” (Shaw 1995: 98). Similarly Morgan (1995b: 41) notes that: “At both entrances the bulls face outwards, greeting or fending off the approaching visitor, like the heraldic emblem of the palace”, although the North Entrance fresco was not found in situ. Chapin focuses on the ‘nature scenes’ in elite houses, including the House of the Frescoes, pointing out that these are frequently in inaccessible private rooms. She suggests that a non-elite visitor would have been subject to a “powerful psychological impact” on entering the room. The departures from reality in the flowering of the plants and hybridisation would have revealed the presence of the divinity, reinforcing a theocratic elite’s power (Chapin 2004: 61). Both Shaw and Chapin consider frescoes in their spatial context, and their effect on the viewer, but see this as a device for reinforcing an ideological worldview.

The problem with these ideological explanations is that they tend to invoke a theocracy, a highly debatable concept which is no more than a reiteration of Evans’s views. In this view frescoes become symbols of an elite or a divinity, overlooking the potential relations between these animal depictions and animal practices. Nevertheless, Shaw and Chapin raise an important question which is worth exploring further: what do these frescoes do? This is the approach Tanner (2001) has taken to explain the development of ‘naturalism’ in classical Greek sculpture. He argues that the dispositions of later cult statues enabled viewers to interact with them, enhancing the sense of the deity’s presence.

What is striking about the development of Cretan naturalism is that what Evans saw as the high point, the stucco reliefs, seem to come at the start. These are not straightforward representations, but inhabit what Summers has termed “real space”: “Real space is the space we find ourselves sharing with other people and things; virtual space is space represented on a surface, space we ‘seem to see’” (Summers 2003: 43). The North Entrance bulls extended into real space by virtue of their modelling: this creates the sense of ‘real life’, just has been argued for the Palaeolithic cave paintings of animals given form by bulges in the rock (Lewis-Williams 2002: 210-4). Although any fresco, as part of a wall, exists in real space, these depictions, Summers suggests, are in virtual space. The reason for bringing the depiction into real space was to enable interaction with the viewer, to bring the bulls into a shared space. In Summers’s terms, as was argued in Chapter 6 for small scale reliefs on vessels, the stucco reliefs can be seen as real metaphors: “In general, a real metaphor is something that is able to take the place of something else, to make the absent in some sense actually present” (Summers 2003: 258). In this case the life size and detailing of the bull enhance the real metaphor. The bull reliefs, then, do more than create an impression of real life, but act as a substitute for an animal which was
either present occasionally, or not present at all in the palace, but whose physical presence was important or useful, particularly in relation to the practice of bull-leaping. They provide a literal example of the ‘corporeality’ Groenewegen-Frankfort detected in Cretan art. These reliefs can be dated to the first phase of the Neopalatial period, starting with the fundamental remodelling of the Knossos palace. A key part of this remodelling was to give these bulls, probably in scenes of bull-leaping, a permanent presence.

The social implications of this will be considered below, but first it is worth considering the majority of frescoes, painted on a flat surface. Summers argues that “virtual space” can also make the depiction present by addressing the viewer as if space carries on beyond the surface of the wall. The way in which the Ayia Triada fresco surrounds the viewer is one way to achieve this effect, but Summers specifically mentions the Partridge Frieze, since the irregular undulating groundline suggests a specific place, while the frame creates the effect of a limit to the field of vision: “birds stand among swelling, particularized contours, the undulations of which seem to be cut off by the upper and lower edges of the frieze” (Summers 2003: 440). The overlapping of birds and their occlusion by terrain also creates a sense of depth. A further visual effect at Ayia Triada and Knossos is to render the surface of a floor as the water’s surface, showing sea animals below. In each case the fresco is perceived as an extension of the viewer’s spatiality, extending beyond surfaces which are the limits of the room’s real space. The same can be said of the overlapping forms in the Birds and Monkeys fresco (Figure 7.14). As Morgan (2005: 24) suggests, “One of the extraordinary features of Minoan paintings in their original context is their tendency to envelope the spectator in a total environment”. This recalls Groenewegen-Frankfort’s (1951: 201) identification of the “web of a living world” depicted on frescoes. This cannot be said of all frescoes, but it is an indication of the potential relationship between viewers and frescoes.

Not all frescoes can be seen in this way: the Taureador frescoes lack a groundline, and so the humans and animals float. As argued above, it could be that the small scale of these frescoes, and other miniature frescoes, implies that different effects are intended. The different panels of the fresco suggest that these are more concerned with conveying particular information, about the different outcomes of bull-leaping. One notable feature of these frescoes is the variegated stone border (Figure 7.5). This is a recurrent feature in the Knossos frescoes: the larger scale bulls in the West Porch and Anteroom to the Throne Room have a fresco of a stone dado below, while there is evidence for a similar stone groundline in the North Entrance fresco. The so-called ‘Easter egg’ pebbles in the Birds and Monkeys fresco and Partridge Frieze are also interpreted as stones shown as if
sectioned to show their patterning, “cut like agates” (Evans 1928: 467) (Figure 7.8). Cut patterned stone is prominent in Minoan architecture, as well as stone vessels and seals, and cut gypsum, which was also used for dadoes would have had a similar variegated effect (Hood 1994: 49-50; Schiering 1960). One could argue that patterned stone is being used as an index of elite architecture and material culture, grounding the image in an elite context. The choice of painted stone dadoes is particularly striking, since these are a direct substitute of readily available gypsum: here the absent presence of the gypsum could be guiding the viewer’s perception of the bull as another absent presence.

The idea that people were meant to interact with frescoes is not new in the discussion of the Knossos palace. The Throne Room has long been seen as being decorated in such a way that it requires completion by the person sitting on the throne. Reusch (1958) argued that a priestess would have sat on the throne to become a goddess, paralleling certain ‘mistress of animals’ seal depictions. Whether one accepts this interpretation of an epiphany, the large-scale griffins do seem to relate to the doorway and the throne, whose undulating back is an extension of the landscape in the fresco. Whereas the earlier East Hall stucco relief griffins were directly present in real space, in this later fresco there is a more complex interaction between the virtual space of the griffins and the real space of the throne and its occasional occupant. In this late fresco the presence of the person is key, rather than the presence of the animal.

7.5.1 Traces of bull-leaping

One way to consider the palace emphasis on bull-leaping is in terms of social significance, and the social context of bull-leaping is starting to receive scholarly attention. As Zeimbeikis (2006: 27) has observed, “over the millennia, a unique archive of practices, ideas and values surrounding cattle were generated on Crete”. She suggests that the importance of cattle at a community level explains why they were used in “metaphors of power” by an elite. “The Knossian elite organised and formalised rituals relating to the subjugation and containment of the bull which were, very likely, established before the advent of social stratification” (Zeimbekis 2006: 34). Loughlin (2004a) too suggests that the social context of bull-leaping was based on techniques of containing cattle developed by herders and hunters. Bull-leaping can be seen as an elaboration of these practices and rituals, resulting in a performance which took bulls out of everyday experience and associated them with a palatial elite.
This relocation of bulls from the domain of agriculture to the practices of the elite was reinforced and made permanent by the frescoes of bulls at Knossos. These were not the only depictions of bull-leaping in the palace: the ivory deposit contained both ivory leapers and a faience bull’s head. Another unique object showing bull-leaping is the painted rock crystal plaque showing found in the fill of the Throne Room. The list includes relief vessels, notably the Boxing Rhyton, sealstones and the unique bronze group of bull and leaper in the British Museum (Evans 1921a). Bull-leaping can be seen not just as a cyclical performance but a practice which was distributed through an extended network of material culture. The frescoes at Knossos, since they were not portable like these other objects, can be seen as anchoring this practice to the centre.

7.6 Conclusion

With different scales of frescoes, and different settings, it is not possible to provide a single explanation to cover all of them. However, two types of animal practices have been highlighted: the ownership of exotic animals and the various bull sports. The role of frescoes in the social context of these practices can now be considered.

Bull-leaping can be seen as an animal practice in which an elite was able to demonstrate an unfamiliar set of relations with a familiar animal. This practice, however, would conceivably have happened infrequently, perhaps as Younger (1995: 512) has suggested, as part of a festival. One could link this with the centralisation of power at Knossos seen at the start of the Neopalatial period: what was a community event became a spectacle organised by the palatial centre. In order to consolidate the effect of this event further, however, an existing technology was adapted to make a fleeting performance a permanent fixture, to make cattle present in the redeveloped architectural centre. The prominent, near life-size stucco reliefs would have reinforced the periodic link between the palace and bull sports in visitors’ experience. These were not the everyday practices with cattle prominently depicted, but a non-domestic practice which was nevertheless presented all year round. The position of this relief at the entrance suggests that everyone admitted to the Central Court would have been intended to associate such practices with the palace: whether this was bull-leaping or bull-grappling it was certainly not a depiction of ploughing. Olive trees and variegated stone could have been further indices of palatial control since the use of gypsum outside the palaces is much less frequent.
Accessibility is an important aspect of fresco depictions. The depictions of monkeys and cats, both within and without the palace were perhaps not intended to be available to everyone. Those who stood in front of them, however, could view not just the animal itself, but the setting with which the owner wanted it to be associated. The animal itself would have appeared unfamiliar, but the frescoes helped to reinforce this perception of unfamiliarity. Conventions of depiction helped to locate the animal perceptually within that space. Even if cats and monkeys became more familiar, these frescoes were ways to maintain control over the correct perception of the animal.

In many ways the Caravanserai fresco, depicting birds which would have been relatively familiar, is an anomaly. As has been suggested by Chapin (2004: 60), the Partridge Frieze would have been far more accessible than most frescoes, although there is no firm evidence that the Caravanserai was open to all (Schofield 1996). The building’s most important feature, however, was arguably its location near a spring, from which water was channelled. Summers’s argument that it was pointing to a specific place can be allied with Evans’s initial interpretation that it depicted a cave on Gypsades, source of the spring for the Caravanserai (Shaw 2005: 103). If there is a commonality between the frescoes of Crete, the Cyclades and Dab’a, it is their relevance to the place in which they were located. Here the use of fresco would have marked the place as an elite building, but the depiction was simply appropriate to the location.

Even when frescoes did not seemingly specify places, as in the Taureador frescoes, they did convey detailed information. The colours of the leapers’ skin, or the bull’s hide, their specific manoeuvres and clothing could all be depicted on a fresco, but not on a seal. If seals linked a person with the activity depicted, the fresco could be used to describe the activity far more effectively. Again, the architectural context of frescoes meant that it would have been possible to control who could access this information, and in what social context. Whereas canonical depictions of bull-leaping were distributed on sealings, the Taureador frescoes describe particular nuances, perhaps to a chosen few.

The development of naturalistic frescoes, coinciding with the start of the Neopalatial period, can be seen as meeting a particular social need. One means of elite differentiation was through non-domestic animal practices, based on the affordances of exotic animals and bulls. Fresco painting provided a means to elaborate these animals and associated practices, and locate them in particular places. Bulls and bull-leapers were incorporated into the fabric of the palace, monkeys were re-located in unfamiliar landscapes and dolphins and octopuses were brought underfoot. Locating these practices and animals in
Bronze Age Crete archaeologically has proved impossible, but their presence is, and was, assured by the frescoes.

Each class of material discussed in Chapters 3-7 had different affordances. As permanent fixtures of buildings frescoes made animals permanent presences to define particular spaces as different. In contrast the vessels with relief decoration, or in the shape of animals, could be brought out for particular social occasions: these made animals present at particular times. Arguably frescoes are important for their spatiality, and vessels for their temporality of use. Seals were different again: whereas frescoes and vessels are objects for public display, even if this is circumscribed so that non-elite people are excluded, seal depictions were miniature, and only ever realised fully in the practice of sealing. These depictions arguably had more significance for the seal user than anyone else, although they have been seen in Chapter 5 as indexes of socially important animal practices. The next chapter seeks to shift the focus from object affordances to animal affordances, although, as can be seen different animal practices were more appropriate for display on different media.
8 Discussion

8.1 Introduction

The complexity of the Mediterranean environment suggests that what is needed from scholarship is a more organic and ecological account of how the effects of human activity intertwine with the processes of geomorphology and the life-cycles of other living things. (Horden and Purcell 2000: 176)

The history of the Mediterranean, as is admirably illustrated by *The Corrupting Sea*, is one of long-term interaction between humans and their environment. Horden and Purcell’s application of historical ecology offers a way to study this history without privileging either human or environment: “Millennial processes of interaction have made all Mediterranean landscapes essentially anthropogene” (Horden and Purcell 2000: 410). From the point of view of this thesis, this is another reason to reject the nature:culture dichotomy imposed onto Bronze Age Crete by Evans, and perpetuated by subsequent scholars. The focus of this thesis, however, has been material culture rather than historical ecology. This chapter aims to draw a number of threads together: the diverse traces of human-animal relations from a range of media discussed in previous chapters and the broader ecological picture within which these human-animal relations can be situated. This poses theoretical problems, however, since the science of ecology can be seen as epitomising the ‘naturalism’ which Descola (2006) suggests is a modern western response to the environment. Yet there is a growing interest in the way in which cultural attitudes to the environment can be reconciled with an abstract ecosystemic approach. It is for this reason that historical ecology, as advocated by Horden and Purcell, or environmental history, are suitable as a broader set of approaches which can bring together the human-animal relations implicated in the material remains of Bronze Age Crete and a wider ecological picture within which these can be situated. As defined by Hughes (2001: 4): “The task of environmental history is the study of human relationships through time with the natural communities of which they are a part, in order to explain the processes of change that affect that relationship”. Given the nature of the evidence, changes in society over time will be central to this relationship, but without rendering relationships between humans and animals as entirely socially determined.

To illustrate this point with an example from the previous chapter, one can ask why the frescoes of Knossos show bull-leaping, but not, it seems, lion-hunting. The answer from an environmental historical point of view is that lions are not native to Crete, whereas bulls have existed on Crete since the time of the first settlers (Broodbank and Strasser
As Zeimbekis (2006) has argued, bull-leaping can be situated within a long-term relationship between humans and cattle on Crete which made them not just of economic, but also of social importance in the Bronze Age. The affordances of bulls make them dangerous, but possible to leap over in certain situations, whereas the affordances of lions make hunting the primary relationship in the Bronze Age. This does not explain, however, why those affordances should have been the ones which were realised in human interactions with them, or, more importantly, why these relationships were depicted in different types of material culture. Lion hunting was depicted on small-scale items which can be seen as personal possessions, and more so on the Mainland, whereas bull-leaping was also depicted in a medium, frescoes, that would have potentially affected a far larger number of people. It has been argued in Chapter 7 that bull-leaping is an animal practice which placed the animal in a non-domestic setting, used to define the human-animal relations of an elite. Whereas Near Eastern rulers were depicted protecting their people’s domesticates from lions, in Bronze Age Crete it was a domesticate which was used to differentiate a social group through a particular animal practice.

Before returning to the way in which different media were used to mediate and materialise different relationships between humans and animals, and the consequent social relationships, a brief account will be given of the environmental history of the Mediterranean within which these traces of human-animal relations from Bronze Age Crete can be situated. It aims to describe how human-environment relations on Crete have made the distinction between nature and culture irrelevant, but also to show how the approach to animals and material culture in this thesis is consonant with what is variously called historical ecology or environmental history.

8.2 Environmental history

A potential pitfall of applying an ecological approach to the past in the context of this thesis is that the Western concept of ‘nature’ becomes transposed to the term environment. For Ingold the study of an ecosystem is part of a process of disengagement from Bronze Age existence, of replacing environment, brought into being through the individual’s dwelling in their world, with a detached, scientific ‘nature’.

The distinction between environment and nature corresponds to the difference in perspective between seeing ourselves as beings within a world and as beings without it. Moreover we tend to think of nature as external not only to humanity, […] but also to
history, as though the natural world provided an enduring backdrop to the conduct of human affairs (Ingold 2000: 20).

This is a valid point, but the following brief account of Mediterranean environmental history, and even more so Crete since the first settlement, would be incomplete without considering the impact of human affairs.

Grove and Rackham’s (2001) *The Nature of Mediterranean Europe* is a Mediterranean environmental history which locates people firmly within the developing ecosystem. Indeed, Rackham would equate what Ingold terms ‘nature’ with ‘pseudo-ecology’: “The first step on the road to pseudo-ecology is to confuse ecology with environment: to treat living creatures as part of the scenery of the theatre, rather than as actors in the play” (Rackham 1996: 17). While there is clearly a different use of terminology here, the point is that the natural history of the Mediterranean is one of long-term interaction between humans, animals and plants.

There are several definitions of ‘the Mediterranean’ from a biogeographic perspective: one focusing on climatic zones, another on vegetation, although the two can be combined: the bioclimatic definition used by Blondel and Aronson results in a land area centred on the Mediterranean Basin of 2,300,000km$^2$ (Blondel and Aronson 1999: 17). The Mediterranean climate, although highly variable locally is characterised by summer droughts, with over 90% of precipitation falling in the cooler winter months (Allen 2001: 4). Typical Mediterranean vegetation is evergreen: Groves and Rackham (2001: 46) use the terms maquis for shrub and phrygana for undershrubs, particularly the aromatic plants which are particularly abundant in this region. Although climate and vegetation can be used to define the Mediterranean as a unit, its most salient feature is its diversity. As Allen (2001: 161) suggests: “In the Mediterranean region there is marked heterogeneity of landscape over very short distances – differences in relief, slope, climate, rock type and soil type – and these have resulted in biogeographical, taxonomic and genetic diversity”. It is exactly this feature, the fragmentary topography, which has led Horden and Purcell to analyse Mediterranean history in terms of ‘microecology’, defined as:

a locality (a ‘definite place’) with a distinctive identity derived from the set of available productive opportunities and the particular interplay of human responses to them found in a given period. It is not the solid geology or the characteristics of the climatic zone, the relief or the drainage, that of themselves define microecologies. It is rather the interaction of opportunities: for animal husbandry, foraging, hunting, intensive agriculture, forest management, horticulture, fishing or whatever – and, as the final but by no means the least ingredient, for engagement in larger networks of redistribution. (Horden and Purcell 2000: 80)
This is the affordance concept at a larger scale, in which the diversity of the Mediterranean offers different opportunities in any given period. Horden and Purcell (2000: 123) suggest that these microecologies are linked together by varying degrees of ‘connectivity’, which are also not fixed, but depend on a variety of factors. Crete has the typical Mediterranean mosaic environment, and its microecologies can be seen as showing increased degrees of connectivity as social complexity increased, both within and beyond the island.

Inhabiting the diverse Mediterranean landscape are the animals at the centre of this study. Cheylan (1991) lists 197 mammals recorded since the classical period, but suggests that the figure probably exceeds 200. Of these 155 have a distribution mainly confined to the Mediterranean. The Eastern Mediterranean is richer, with 106 species, of which 80 are found in the Aegean. Due to geographical barriers the mammal faunas of southern Europe, the Middle East and North Africa are largely distinct: this uneven distribution provides the rationale for a trade in mammals in the Bronze Age. He counts 366 species of bird which breed in the Mediterranean region, of which 64 are indigenous: the rest are mostly forest birds which have a wider distribution in the Palaearctic faunal realm. A large number of other bird species pass through the Mediterranean on seasonal migration routes. 165 species of reptiles and 63 species of amphibian inhabit the Basin, the former concentrated more in the south and east. An estimate for insect species in the Basin is 150,000, including up to 4000 bee species. There are c.8500 macroscopic animal and plant species in the Mediterranean Sea. One thing to note of the Mediterranean faunas is the high rate of endemisms, a result of in-situ speciation in a diverse environment: it is now listed as a world biodiversity ‘hotspot’ (Blondel and Aronson 1999: 47-84). These species figures are, of course, not always relevant to the Bronze Age: the Mallia bee pendant could be a depiction based on an ethnotaxonomy which did not distinguish species of bee. A brief consideration of the numbers, however, illustrates that only a very small proportion of the animal species of the Mediterranean, or of Crete, were ever represented.

The distribution of animals in the Mediterranean can be linked to a series of ‘life-zones’, communities of plants and animals found in certain latitudes and altitudes. Yet, as noted above, the topographic diversity of the Mediterranean results in a range of other habitats, including wetlands, cliffs and caves, each with its particular species of plants and animals. Nor should the commensal animals of human settlements be forgotten, although no animal community is outside human influence. As Blondel and Aronson (1999: 10) put it: “The Mediterranean region, with its islands, coastal lands, rivers, and high
mountains, provides a veritable cornucopia of habitats, all finely distinguished by local
topographies and soil types, an intricate filigree of microclimates related to altitude,
rainfall, and exposition of slope”. Maquis animals include tortoises, for instance, while
cliffs and caves support a number of raptor species, 12 on Crete alone (Blondel and
Aronson 1999: 142). Yet this static list of species and enumeration of habitats is lacking
in two crucial ways: it is only by considering the temporal dimension of Mediterranean
ecosystems that their dynamic nature can be appreciated. And it is only by considering
the involvement of humans in the landscape, and their domesticated animals, that the past
and present ecology of the Mediterranean can be understood.

The present distribution of Mediterranean animal species is the product of a long process
of topographic, climatic, and, more recently, anthropogenic change. “Located at the
crossroads between Europe, Asia and Africa, the Mediterranean has served as a melting
pot and meeting ground for species of varying origin” (Blondel and Aronson 1999: 31).
While the northern half of the Mediterranean is in the Palaearctic faunal realm, the
African coast lies within the African realm: hence the Mediterranean lies between two
distinct areas of faunal diversity. The last time terrestrial animals were able to cross
directly from Africa to Europe was during the Messinian Salinity Crisis 6 million years
ago, when the Straits of Gibraltar closed and the sea dried up: since their re-opening, the
Levantine Corridor has been the link between the two continents. What has driven the
exchange and turnover of animal populations since then, as well as creating barriers to
movement, are the climatic oscillations of successive epochs. The Mediterranean region
acted as a refuge for a number of northern species during the glacial periods: it is partly
for this reason that there are very few endemic bird species in the Mediterranean, since
there was a continuous exchange of populations as ranges expanded and contracted
according to the climate without becoming isolated (Blondel 1991: 315). Present animal
diversity in Europe and the Middle East has its origins in the Riss-Würm interglacial
(110,000-70,000 BP), with immigration from Eurasia. The Würm glaciation then pushed
Eurasian mammals south towards Africa, but the aridization at the beginning of the
Holocene resulted in a greater isolation of animal populations between the two continents
(Blondel and Aronson 1999: 42-3). In contrast, isolation created by the diversity of
habitats in the Mediterranean led to the speciation of distinct Mediterranean endemics,
particularly on the islands.

At the beginning of the Holocene it is on the islands where anthropogenic impact is most
apparent: as yet there is no evidence for the overlap of the Cretan endemics with humans
as a cause of their extinction (Grove and Rackham 2001: 73). However, Martin’s overkill
hypothesis suggests that it is difficult to explain these extinctions in any other way, whether through habitat change or hunting (Martin 1984; Lax and Strasser 1992). The Holocene can be divided into two phases climatically: following the Younger Dryas there was a warmer period from 11,500BP until around 5000BP. A period of aridization followed whose beginning centres on 3400 BC in the Aegean; lime disappears from the Cretan pollen record at 2500BC (Grove and Rackham 2001: 145). The implications of this are that the Bronze Age climate was largely as it is today, although of course marked by characteristic short-term fluctuation. As Grove and Rackham point out, however, this should not be seen as a neat watershed between natural and anthropogenic change: the origin of the human-induced degradation and deforestation thought by many to account for the present Greek landscape. “Most commentators assume that changes in vegetation before the Neolithic are due to climate, whereas, after the Neolithic, climate stops operating and changes must be due to human activity” (Grove and Rackham 2001: 162). While agriculture undoubtedly modified the landscape, the impacts of climatic change could still have been unfolding, while the browsing of vegetation did not start with the introduction of the goat. As Rackham and Moody suggests, the Holocene in Crete simply marks the shift from one community of browsers (deer, elephants and hippopotamuses) to another. “There can be no doubt that in Crete, ‘excessive’ browsing is not an artefact, but is the natural state to which the flora, and especially the endemics, are adapted” (Rackham and Moody 1996: 51).

Jarman characterises the introduction of the domestic package to Crete at the start of the Neolithic as “a complete faunal break” between the Pleistocene and Holocene. He goes on to suggest that: “It is interesting to note that man has acted on Crete not as an agent of zoological impoverishment, as he has done in so many mainland situations, but has considerably enriched the Cretan fauna over the past eight thousand years” (Jarman 1996: 221). Yet the introduction of the domestic package does not mark the end of species turnover, since the deliberate and accidental introduction of wild animals, such as hedgehogs or deer, continued to affect the species composition of islands such as Crete. A recent genetic study has also suggested that imported wild goats rather than feral domesticated goats were the ancestors of the agrimia, but that interbreeding has occurred (Horwitz and Bar-Gal 2006). In addition to the small number of endemics the introduced species can be characterised as domesticates, game animals, including rabbit and partridge, and accidentally brought small mammals (Blondel and Aronson 1995: 79). In ecological terms all of these introduced species can be described as ‘exotic’; during the course of the Bronze Age other exotic species, such as monkeys and cats are likely to have been brought to Crete. This can be seen as part of a long-term process of consuming
‘exotic biodiversity’ in the Mediterranean which continued in later periods (Hughes 2003). At the same time the gradual habitat retreat of some of the larger wild mammals was underway on the Mainland with the lion present in Thrace and Macedonia until the 1st century AD, and in Syria and Turkey until the 19th century. The Asian elephant was also present in the Orontes valley until the Iron Age (Allen 2001: 141). Cheylan (1991: 231) lists 8 species which have become extinct in the Mediterranean since the classical period, including the lion. King Otto hunted wild boar in Attica in the 1830s, which were present with bears, deer and wolves in the Pindus mountain until the end of the 19th century (McNeill 1992: 329). While the Mediterranean climate has hardly changed since the Bronze Age, faunal turnover has continued (McNeill 2003).

The Bronze Age also sees the establishment of what might be seen as the typical Mediterranean landscape, the product of the drier climate and agriculture. The notable feature of this landscape is its ‘patchiness’, a mosaic effect, as described by Grove and Rackham (2001: 194): “The Mediterranean mosaic of maquis, phrygana and steppe is a sort of savanna in which the trees have been reduced to shrubs by browsing, burning and woodcutting”. Browsing, by goats (as opposed to the grazing of sheep and cattle), and burning are complementary, since fire is used to regenerate pastures by encouraging the growth of plants more palatable to sheep and goats. This cycle is particularly characteristic of uplands beyond the scope of intensive cultivation, and has been defined by Naveh (1994, 1995) as a homeorhetic system, which is maintained by continued perturbation by humans. This is in contrast to successional models which suggest that human action is preventing equilibrium, and so interfering with a homeostatic system. “These regular, centuries-lasting grazing, burning and coppicing regimes and agro-pastoral functions led to a human-maintained balance between the tree, shrub, herb and grass layers in those forests woodlands and shrublands that were neither overgrazed nor over coppiced or were completely rested for prolonged periods” (Naveh 1994: 175). These processes led to a Bronze Age landscape in Crete that can hardly be described as ‘natural’, but was rather the product of the continual intervention of humans.

Returning to the Mediterranean fauna it becomes clear that even in the Bronze Age the distribution of animals is as much a result of anthropogenic processes as natural ones, and not simply with the replacement of wild faunas with domesticates. “Throughout the Mediterranean Basin, uninterrupted forest clearing, burning, hunting, persecution, and finally, both deliberate and accidental introduction of exotic species, have all combined to alter the pre-existing faunas” (Blondel and Aronson 1999: 45). Indeed the overall effect, as Allen suggests, has been to increase diversity: “Mammal diversity is now two to five
times as great as it would have been during the Pleistocene, although this increase has been accompanied by a decrease in genetic diversity since most of the endemic mammals have become extinct with human settlement” (Allen 2001: 111). Only by examining the Mediterranean landscape from an ecologist’s point of view can one see that the environment is an artifact of human occupation: so how are we to understand the encounter between human and animal within what Ingold sees as the environment? The problem of reconciling Ingold’s distinction between nature and environment and the historical ecology of the Mediterranean can be seen as one of scales of analysis and the positions of analysts. A human-altered landscape is still ‘nature’ for Ingold if it is studied by a dispassionate observer rather than experienced directly. But the picture that emerges from the biogeographers and environmental historians is of a landscape which cannot be understood apart from the actions of humans over the last 10,000 years. The environment experienced by inhabitants of the Aegean in the Bronze Age was already inscribed with the actions of others. In the words of Blondel and Aronson (1999: 199): “Apart from sheer, vertical cliffs and some remote mountainous areas, there is probably no square metre of the Mediterranean that has not been directly and repeatedly manipulated, and, one might say, ‘redesigned’ by humans”. What can be seen at the larger, generalised, biogeographical scale of analysis surely has a bearing on the smallest scale of analysis, at which we might view herder and goat or hunter and lion. Horden and Purcell’s concept of microecologies helps to bridge this gap.

8.3 Human-animal relations in Bronze Age Crete

At the centre of the analysis in this thesis have been the material traces of human-animal relations. Linear B tablets, for instance can be linked straightforwardly to particular microecologies on Crete: the named places which provided grazing for a certain number of sheep. In this case it is the centre of Knossos which connects these different microecologies as part of a large-scale wool industry. However, different media are implicated in different human-animal relations, and sheep depictions are notable by their scarcity in the artifacts considered in the last three chapters. The animals which are depicted on seals, vessels and frescoes are frequently those which occupy different places in the set of ecological connections which spans Crete and beyond. In order to try to explore the relationships between humans, animals and material culture, groups of animals will be examined in turn. In general it is the animals on the margins of animal husbandry which occupy a central place in Minoan depictions. Horden and Purcell group
a number of activities as “environmental opportunism”, taking advantage of the diverse opportunities provided by the Mediterranean environment.

On land, using the aleatory resource of the sea is more closely paralleled by the pursuit of game in mountain, forest and marsh than by inland fishing. Fowling is a special case of this, and in places, mainly on the coast, where they make their first landfall after crossing the Mediterranean in vast flocks”. (Horden and Purcell 2000: 195-6)

With notable exceptions, it is these animals encountered infrequently, in locations beyond the domestic sphere that are the focus of depictions. There is a continuum from animals encountered on Crete to those which could only have been encountered, or at least claimed to have been encountered, overseas, including lion and griffins. The traces of animals, such as pelts, could have substituted for such encounters. In the case of cats and monkeys these animals from different biogeographical areas of the Mediterranean could have been brought to Crete as part of the social strategies of the elite. And it is this dimension, social context, which is key to explaining the reason why certain animals were depicted and not others. A recent analysis of the animals mentioned in Homer and Hesiod underlines this selectivity: in these 8th-7th century BC texts, domestic animals, particularly horses are the most prominent, with a general focus on terrestrial animals (Voultsiadou and Apostolos 2005). As the authors argue, the focus was on animals involved in human activities, but crucially Bronze Age depictions revolve around a largely different set of activities, including, for instance, a large number of marine animals. There is an expanding ecological network centred on Crete in the Bronze Age, in which the animals on the margins are being exploited for different reasons than the domesticates at the centre.

The following brings together the animal depictions on different media. It differs from Vanschoonwinkel’s (1990, 1996) comprehensive discussions of animals in Bronze Age Aegean art in seeking to locate these depictions in specific animal practices based on the affordances of various animals. Figure 8.1 shows the sample, broken down by artifact type and period. Following the analysis in Chapters 5 and 6, zoomorphs are separated from surface/relief decoration. The zoomorphic vessel category includes zoomorphic figures, but excludes figurines since these are inadequately published. The samples have been discussed in previous chapters: although the seals and fresco samples are more representative of the excavated artifacts than vessel decoration, the aim is to provide broad comparisons of animal depictions based on their proportional contribution to each category shown in Figure 8.1. Clearly some categories comprise a small number of depictions, making the proportional contribution of each depiction much higher than other categories.
A general overview of the proportional contribution of each general animal type to Figure 8.1 is given in Figure 8.2. As can be seen, there is generally a greater association between marine animals and vessels from the Protopalatial period onwards than other media. In contrast, quadrupeds dominate most abundant classes of material in each period, although the greater diversity of depictions on seals in the Neopalatial period means that this proportion drops to 53%. Since different types of artifact have different affordances, these different proportions can be seen as reflecting the greater significance of certain types of animal in particular media. These broad morphological categories, of course, contain a variety of animal types. The following discussion is structured using these morphological categories, on the basis that the animal types grouped in this way share certain affordances. The discussion proceeds broadly from the animal types appearing in lower proportions in Figure 8.2 to higher proportions, with fish and marine animals grouped together; although birds are more prevalent than hybrids, the latter are discussed immediately prior to monkeys and cats because of an overlapping set of significances.

Even if some categories are skewed by the effect of small sample size, the overall picture is clear. This is that different types of animals are depicted in different proportions in different media in different periods. This is impossible to reconcile with the idea that the Minoans took a delight in the natural world since it shows that animals were selectively depicted in different media. This can be explained instead in terms of the ways different media were implicated in different animal practices. These different media have been discussed in Chapters 3 to 7: here the affordances of different animal types and the resulting animal practices are highlighted. The division of the discussion into media emphasises, however, that these animal practices were materialised in different ways: the social implications of these animal practices cannot be disentangled from the way these practices were extended using different media and materials.

8.3.1 *Reptiles and Amphibians*

Although these animals would have been encountered regularly in the course of daily activities, particularly lizards and snakes, the paucity of depictions suggests that the animal practices involving these animals were not socially significant. Occasional depictions, such as the gold frog pendant from Koumassa, are exceptional; like the scarab, it is possible that this is related to Egyptian artifacts rather than a specific animal practice (Karetsou and Andreadaki-Vlazaki 2001: 186-7).
There are very few clearly recognisable snake depictions in Bronze Age Crete (Vanschoonwinkel 1996: 374), although the “snake goddesses” from the Temple Repositories have given them a central place in the archaeological imagination. This is, of course, evidence for the practice of snake handling, but there are very few material traces of this activity. In general, it can be suggested that some animal practices did not need to be materialised: those that were often preserved a fleeting event, such as hunting, in a depiction, made an exotic animal present, or shaped the way an animal’s affordances were perceived. It is possible that snake handling was a common feature of rituals, but did not fall into these categories.

8.3.2 Wug

As introduced in Chapter 5, wug is a term coined by Brown (1979) reflecting a widespread category in folk zoology which includes insects, spiders and other small animals apart from birds or snakes. Figure 8.3 shows the contribution of different types of wug to the totals in Figure 8.1. As can be seen, the only category in which wugs comprise a large proportion is zoomorphic seals, where scarabs are the most frequent shape. The occurrence of wug depictions is also largely a Pre- and Protopalatial period phenomenon, with only butterflies and dragonflies peaking in the Neopalatial period.

There are, as mentioned above, thousands of species of these animals on Crete, and their depiction is often difficult to explain convincingly in terms of human-animal relations. Apart from land snails, these animals are not reported from faunal assemblages from Bronze Age Crete. The following seeks to explain the depiction of these small animals in terms of their affordances.

8.3.2.1 Seal

The anomalous proportion of scarabs in Figure 8.3 is one argument against their being perceived as an animal since wugs are otherwise a small proportion of animal depictions. In Egypt, scarabs undoubtedly signified a particular type of dung beetle, Scarabeus sacer (Ward 1994). The Prepalatial Cretan imitations are quite close to the Egyptian form, differing in a few details (Phillips 2004: 163; Pini 2000: 111); these cannot be understood separately from Egyptian scarabs. Phillips suggests that the few Protopalatial examples are less scarab-like, and suggests that they could show the tapering head of the Cretan dung beetle. Her description of one of them, however, from Knossos (II 2 56), leaves the question open: “[T]he artist had no real understanding of the basis of the scarab form and has engraved the leg markings in two different directions on the scarab sides, so that the
legs descend from front to back on one side, and back to front on the other” (Phillips 2004: 166). A related form is the ‘scaraboid’, a seal shape described by Yule (1980: 80): “The anatomy is abstract and the foreparts are sketchily indicated”. These examples indicate that the shape of imported scarabs was the original referent, but that a distinct Cretan scarab form developed (Phillips 2008: 132); this seems to have been without reference to beetles.

Spiders and scorpions both appear on seals of the Parading Lions/Spirals complex, and Boardman (2001: 24) links the depiction of these three animals as “threatening subjects”. Hood (1994: 211) echoes this, naming the spiders as the “dreaded rogalidhas” of Crete. This could be the European Black Widow, *Latrodectus tredecimguttatus*, which can be dangerous to humans (Rackham and Moody 1996: 50; van Helsdingen 2008). Spiders become more popular than scorpions in the Protopalatial period, although both occur on three-sided prisms, and continue in the Neopalatial as Talismanic designs. A detailed scorpion depiction occurs on a seal impression from the Eastern Temple Repository (II 8 153). Apart from this, depictions of both animals cease with the Talismanic seals. Given the fact that scorpions and spiders are interchangeable at the centre of the ‘parading lions’ (II 1 223/II 1 248a, b), it is possible to see a conceptual link between them, and a venomous bite/sting is a common feature. This painful affordance can be seen as the basis of their significance. A species of scorpion, *Iurus dufoureius*, is native to Crete (Crucitti 2007), although Evans (1921b: 120) saw them as an Egyptian motif. The existence of scorpions on Crete, however, would have enabled these to be understood as harmful animals, rather than being an unknown exotic form like lions.

Exceptionally among the wugs, butterflies and dragonflies are concentrated in LMI. A particular type of butterfly with eyes in the wing was repeatedly discussed by Evans, latterly as a divine symbol (Evans 1935: 491). This has resulted in an entrenched view that butterflies had religious connections, and indeed they do appear on what are taken as cult scenes on gold rings. A striking example (II 3 22), from the vicinity of the South House at Knossos (Krzyszowska 2003: 202), does reinforce the idea that the butterfly’s wing markings were regarded as eyes. A religious interpretation does not explain, however, why these animals should have been chosen. One possible explanation is that these are not butterflies, but silk moths, as suggested in connection with the finding of a silk moth cocoon at Akrotiri (Panagiotakopulu et al. 1997). This would provide a different kind of affordance behind the depiction of these animals.
The remaining wugs, grouped as insects, include the unique fly-shaped seal from Archanes (Karytinos 2000), which Aruz (2000: 4) tentatively brackets with Egyptian-inspired zoomorphic seals. A few other depictions resemble bees/wasps, a form which is also identified as a hieroglyph. They appear on an unprovenanced sealing from Knossos (II 8 149) dated stylistically to LMI. Here the three insects around a central dot are reminiscent of the Mallia pendant, which has been interpreted, among other things, as depicting bees holding a pollen ball (Kitchell 1981). Kitchell considers the pendant alongside the hieroglyph, arguing that it depicts a honey bee. There is no reason to doubt that apiculture was practised in Minoan Crete, and this relationship with bees provides a basis for their depiction (Evans 1921b: 281). At Mochlos beekeeping has been tentatively identified both from residue analysis suggesting beeswax was used in lamps and fragments of vessels with incisions on the inside, interpreted as beehives (Evershed et al. 1997; Barnard and Brogan 2003: 36, 56).

8.3.2.2 Vessels
The Cretan scarab seals are largely spatially and temporally distinct from the beetle figurines, and the associated vessels. As described in Chapter 6 the majority of beetle figurines are found in East Crete, and only ever comprise a small proportion of the total figurines found at a given site. Their significance is difficult to interpret since there is no other iconographic evidence for the way in which people related to them.

8.3.2.3 Conclusion
The depictions of various insects and arachnids suggest a range of possible human-animal relations, depending on the affordances of the animal. Overall it is apparent that the number of occurrences of wugs declines from a peak in the Prepalatial, with the last confidently dated examples occurring in LMI. It can be argued that with the expanding horizons of Bronze Age Crete, these relationships were no longer considered important enough to be depicted. These relationships were either based on economic use, or harmfulness. In the case of bees, it could have been both.

8.3.3 Bird
The most frequent interpretation of birds results from their occasional appearance on cult scenes: here they are frequently seen as epiphanies of the deity, or “spiritual manifestations” (Evans 1935: 614). This arbitrary symbolic linkage does not explain the variety, and some of the details, of bird depictions.
8.3.3.1 Zooarchaeology
Although birds are infrequently reported in Cretan zooarchaeological reports, there is evidence that they were eaten at Kommos (Reese 1995a). The large-scale hunting of birds, whether songbirds or waterfowl is attested across the Mediterranean up to the present, and there is no reason to doubt that this occurred in Bronze Age Crete. Although not every bird depiction can be explained in this way, this fits in with the more general pattern identified above, which is that the animals marginal for subsistence are the predominant subject for depiction. Kommos also provides evidence, albeit a single bone, for a domesticated bird, the chicken (Reese 1995a: 196). Although it would have been an exotic import, it can be suggested that it was primarily involved in subsistence agriculture, and so not depicted.

8.3.3.2 Seals
The only systematic treatment of bird depictions on seals is given by Ruuskanen (1992). His primary aim was to develop a typology for bird depictions, but he also considers issues of identification and artistic principles. In an attempt to provide closer identifications than the ‘bird’ and ‘waterbird’ largely used in CMS he tested five ornithologists’ identifications of the depicted birds against one another to look for a consensus opinion (Ruuskanen 1992: 52-63). Despite the simplicity of the depictions, he suggests that the MMII Mallia waterbirds can be more closely identified as waders, particularly cranes (e.g. II 2 151). Some of the Talismanic waterbirds are closer to herons (e.g. II 4 13). The remainder are described as heron/crane, with the occasional pelican. Another group is the mainly Neopalatia depictions of waterfowl: ducks, geese (e.g. II 8 172) and swans (e.g. II 4 191); most are more broadly identified, but some are suggested to be specifically domesticated waterfowl (II 4 145). The most frequent type of bird, with wings outstretched, was also the most difficult to identify: the most common identification was with various passerines (songbirds). The Ayia Triada birds are mostly identified as swallows (II 6 113) rather than eagles, although interestingly the Cut Style birds were often seen as having combinations of passerine bodies and bird of prey wings (e.g. II 3 194). Although Ruuskanen is rightly cautious of many of the identifications, arguing that species identification is rarely possible on this particular medium, he concludes that: “It is possible to identify birds on Aegean seals more exactly than has formerly been suggested, by comparing the depictions carefully with existing species” (Ruuskanen 1992: 62). In the cases where this is not possible, one can suggest instead that the invariants are simply not those of particular species. Generalised depictions of birds could be used to support the idea that in terms of human relations with birds, the exact type of bird was not important. From this point of view, different waterfowl were
distinguished on many seals, but it was sufficient to specify ‘wader’, or simply ‘flying bird’ using the invariants of bodily proportion. It is possible that Bronze Age observers would have known which specific bird was depicted from the particular invariant chosen; even so the most likely explanation for the depiction of birds, whether general or specific, is fowling.

The way in which the birds on seals are depicted would be entirely consistent with the practice of hunting waders and wildfowl, which would have involved specific habitats, alongside the indiscriminate catching of flying birds. II 6 123, probably a metal ring impression, fits in with Ruuskanen’s (1992: 85-7) discussion of naturalism involving the depiction of birds in three-quarter profile as if in movement. Here the greater detail which is associated with naturalism means that a net is also shown, in which the bird appears to be caught. Although this is only one depiction, if this reading is correct it suggests that the pose is more writhing than flitting, and that it is not necessary to see it as an artistic experiment in perspective. Without wanting to deny the artistic component to these bird depictions, which can be seen in aspects of style, pose and composition, it is possible to interpret them as implicated in certain practices involving birds. What Ruuskanen sees as evidence for artistic schemes can instead be viewed as bird depictions specific enough to indicate various types of fowling.

8.3.3.3 Vessel
The generic bird-shaped zoomorphic vessels and occasional bird figurines in bowls are difficult to interpret in terms of animal practices since they have no contextual information about the birds. This in itself could be a pointer to the significance of the birds: whereas seals could be carriers of information about hunting, this medium could have been used simply to make birds present in certain contexts, although the reasons are unclear. These vessels are an infrequent occurrence in the Prepalatial and Protopalatial period. Bird figurines are rare at peak sanctuaries.

The main episode of bird iconography is on LMII-III pottery decoration. The distinction in Figure 8.4 between bird and waterbird for vessels is fairly arbitrary, based on description and the lack of an obvious long neck in most cases. More complete depictions are also more likely to be described as waterbirds. Although the common description of these as ‘Nilotic scenes’ is based on a tenuous connection with Egyptian tomb paintings, these depictions could be linked with a riverine environment. This would tie in with the connection between vessel decoration and marine animals described in Chapter 6: again the emphasis is on depicting animals in a non-domestic setting linked to water.
8.3.3.4  **Fresco**  
It was suggested in Chapter 7 that the Partridge and Hoopoe frieze at the Caravanserai at Knossos can be explained as a depiction of the particular local environment. It is possible that the implication was that these were birds to be eaten. Similarly the Monkeys and Bluebirds frieze from the House of the Frescoes could show monkeys engaged in a human activity, namely collecting rock dove eggs or hunting them. The remaining birds on frescoes are on depictions of textiles, making these less closely tied with animal practices.

8.3.3.5  **Conclusion**  
Fowling is a human-animal relation which could underlie a large number of bird depictions in Bronze Age Crete. It is an activity which takes place beyond the domestic sphere, and so can be seen in line with the other human-animal relations chosen for depiction. However, not all non-domestic hunting and gathering is depicted: hares are one example. The reason for depicting fowling could be, by analogy with Egypt, that it was a socially significant animal practice, perhaps involving cats or dogs as hunting companions. It could also have been an activity which provided food to be consumed in particular ways: different types of birds could be used as the basis for diacritical consumption activities. An emphasis on consumption potentially links depictions such as the Partridge and Hoopoe fresco and the birds on Final Palace ceramics.

8.3.4  **Marine**  

Once again a religious interpretation dominates the understanding of depictions of marine animals. This has been reinforced by interpretations of the Temple Repositories, but in Chapter 4 this deposit has been seen instead as a rich source of indexical connections with the sea. Marine animals generally afford eating when brought to land, but depictions focus on the invariants of underwater animals. It will be argued that it was encounters with these animals, whether in a boat or underwater, that were of social significance. As Gill (1985: 63) observed:

Shells and other shore debris were easily come by, some marine animals could be watched on and from the shore, and the fisherman’s catch might be examined when brought to land dead or dying, but creatures of the open sea and the underwater habits of those nearer the shore were more difficult to observe; then the artist would have had to depend on chance sightings or on sailors’ and travellers’ tales.

This summarises perfectly the way in which depictions of marine animals could index the unfamiliar, even though other marine animals were a regular part of subsistence. The distinctive bodies of marine animals were useful markers of a different environment.
Figure 8.5 shows the most frequent marine animals depicted, including the pottery designs termed shell and starfish which are at times questionable: as can be seen octopuses dominate pottery decoration whereas fish have a much wider distribution among different media.

8.3.4.1 Zooarchaeology
As seen in Chapter 4, the fish assemblages that have been recovered point to coastal fishing, with the occasional deep sea species. From this it can be suggested that fishing by boat was not a regular activity: although it is difficult to prove, it can be suggested, however, that depictions focused on this rather than coastal fishing. The marine invertebrate remains are dominated by *Patella* and *Monodonta*, which were evidently eaten, but a wide range of shells are found. A different type of assemblage, in the Temple Repositories, uses shells as indexes of the sea. Collecting shells dead can be seen as a reversal of the practice of shellfish collecting for eating, as can painting them and keeping them rather than throwing them on refuse tips. Whereas argonaut depictions, for instance, were distinguished by their unfamiliar form, with shellfish it is an unfamiliar practice that was significant, or, in the case of shell skeuomorphs, a familiar form in an unfamiliar material.

8.3.4.2 Seals
Fish and marine animals, including the cuttlefish and octopus, peak in popularity in the Neopalatial period, particularly in the Talismanic style. Fish are depicted on Prepalatial seals: a gable seal from Platanos shows a ship with fish swimming underneath (II 1 287c). In the Protopalatial period fins are marked on even the simplest depictions, making it possible that these point to particular fish species. Powell (1996: 67-68), however, doubts that any identifications can be made confidently, pointing out the inconsistencies in various recent authors’ attempts. Overall this is sensible, although it is possible to point to a number of depictions which provide enough visual information to be more specific, including flying fish (III 325) and dolphin (II 8 161). Powell’s caution in identification is instructive, however, since these identifications are too liberally made in many cases (Gill 1985).

Some depictions can be associated with the practice of catching marine animals. Seals showing humans holding fish reinforce the idea that fishing (II 2 174), in this case probably by line, is implicated in the depiction of fish (Powell 1992: 311). Depictions of nets are more difficult to find since cross hatching could be following the convention for sea, often between two fish (II 6 133). Cuttlefish (e.g. (II 3 244) can be caught by various
methods, including going out in a boat at night with a lure which would potentially distinguish this from usual coastal net fishing (Powell 1996: 21).

The other aspect of seal depictions, which ties in with other media, is the association with underwater. This is epitomised by a clear rock crystal seal (II 3 251) which, as suggested in Chapter 5, indicates an indexical link with water by its material. Some other Talismanic octopuses are reduced to a series of circles and half-circles. But rather than an octopus hung out to dry, these depictions (e.g. II 3 263) indicate the tentacles of the animal underwater, which is arguably the important aspect of the depiction.

8.3.4.3 **Vessels**

As has been suggested in Chapter 6, there was an association between pottery decoration and marine animals throughout the Bronze Age. This extends to the marine reliefs of the Protopalatial period, to the elaborately decorated larnakes at the end of the Bronze Age, with the influential Marine Style at the end of the Neopalatial period. Figure 8.5 highlights the restriction of the ‘starfish’ design to one medium and one period; this is further evidence that this is not intended to be a depiction of a marine animal.

Although there is frequently a confusion in terminology, it is striking that cuttlefish and squid depictions are absent from ceramic decoration, where octopuses dominate. The converse is true of another tentacled animal, the argonaut, which is very rare in seal depictions, but comparatively frequent on vessels. Octopuses are less frequent on seals than cuttlefish. This can be explained in terms of affordances, both of the vessels and the animals. Since marine depictions were on display on vessels, it can be suggested that the emphasis was on encounters either with rare animals, such as the argonaut, or animals underwater, for which the open eyed octopuses were the most appropriate marker. The critical point in Late Bronze Age pottery depictions of marine animals is LMIB, when the animals were selected, since the subsequent development of the same basic set of designs points to copying of earlier examples during the rest of the Bronze Age.

The use of shells for relief decoration, as suggested in Chapter 6, is a highly interesting phenomenon. In Gell’s terms the division between index and prototype is blurred: manufacture in a few cases involves the direct trace of the shell. This can be seen as an attempt to make the depicted object present in the depiction, which has been argued in previous chapters to be central to what is often termed ‘naturalism’. The imitations of shells in faience provide a related example where the skilled crafting apparent in the
index makes these more valuable than, but contextually interchangeable with, shells picked up on the beach.

Apart from the designs which could be bivalves, prevalent in Late Minoan pottery, tritons are the most frequently depicted shell. They occur both in Marine Style and also as zoomorphic vessels. This suggests that it is the affordances of this particular animal, but more importantly its shell, that was important. Large triton shells are likely to have been prized for their rarity value, as were their life-size skeuomorphs in various materials. Marine Style depictions locate them in the same underwater environment as octopuses suggesting that they were indices of this environment.

8.3.4.4 Frescoes
If, as seems likely, all marine frescoes were painted on floors, this affects the way these depictions were experienced. They enhance the realism of what Summers terms ‘virtual space’ by establishing the surface of the fresco as a metaphorical water surface. Gill (1985: 67) makes the interesting point that the red colour used for the octopus on the Ayia Triada floor suggests “an awareness of the habits of the living animal not merely a pale corpse seen in the hands of fisherman”. Dolphin remains have not been reported from Bronze Age Crete, but they could be seen as concomitants of sea travel, as on the Thera Miniature Fresco (Morgan 1988: 62).

8.3.4.5 Conclusion
As described in Chapter 4, the Temple Repositories is of central importance in understanding the role of marine depictions and other indexes in the Bronze Age. The faience shells and fish, along with the seal impressions, shark remains and painted shells all bring the unfamiliar underwater environment into the centre of the palace. The shell assemblage cannot be related to normal subsistence in terms of proportions of taxa, and the faience skeuomorphs of shells or painted shells themselves further distinguish this assemblage from mundane shellfish collection. The Marine Style shows fish rarely, but, does show argonauts, also represented in the Temple Repositories by faience substitutes. The conclusion to be drawn is that the affordances of the depicted marine animals was not primarily their importance to subsistence, but their indexicality of the sea.

The only exception to this pattern is seals, particularly Protopalatial three-sided prisms and Talismanic seals: here fishing does seem to be an animal practice which is depicted explicitly, or implied by the depiction of fish. This would explain why cuttlefish are not depicted on pottery, since they point to a particular type of fishing rather than act as
indexes of the sea. The best example of the social importance of off-shore fishing is the ‘Little Fisherman’ fresco from Thera, holding a type of fish not attested in the limited fish assemblages from Bronze Age Crete or Akrotiri (Economidis 2000). The occasional occurrence of tuna in these assemblages does, however, point to fishing from boats, which can be seen as a practice separate from coastal fishing.

Like griffins or monkeys, it was the bodily difference of marine animals which underlined their significance as animals from beyond the domestic sphere. The size and shape of certain marine animals made them perfect candidates for reproduction in different materials, resulting in objects which both indexed the sea and specialised craftsmanship. When attention switched to pottery decoration in LMIB, the Neopalatial naturalistic style of depiction was used to continue to emphasise the underwater connections of these animals. Although marine animals do not afford the same complex interactions with humans as quadrupeds, their frequent depiction in the Bronze Age suggests that it was simply the interaction with an unfamiliar environment, and its constituent animals, that could be of social significance.

8.3.5 Hybrid

The fabulous creatures depicted in Bronze Age Crete have attracted a great deal of scholarly attention, and have been the subject of a recent thesis (Zouzoula 2006). Here they will be seen, paradoxically, in ecological terms. Griffins, for instance, are shown in animal poses, and engaged in animal behaviour such as attacking other animals or even pulling chariots, as on the Ayia Triada sarcophagus (Long 1974: 29-32). Of the hybrids, the imported animals can be seen as existing in the furthest ecological zone, knowledge of which was conveyed by depictions. This ties in with Helms’s (1993: 6-7) definition of cosmological zones radiating from the centre, with the most distant the focus of elite activities. However, there is no need to divorce this concept from the existence of distinct biogeographic zones in the Mediterranean which are the habitats of exotic creatures from the point of view of Crete. Hybrids could have been seen as occupying these zones, with only their depictions ever reaching Bronze Age Crete.

8.3.5.1 Zooarchaeology

Exotic animal materials, including hippo and elephant tusks, and ostrich eggs did reach Crete in the Bronze Age. The point to be made about these is that they were similar to known animal-derived materials, as the substitution of bone for hippo ivory in Prepalatial seals shows, but their exact origins were presumably unknown. Ostrich eggs too had clear
analogies on Crete, but were considerably bigger, and so could be used to make vessels (Phillips 2008: 148-52). These objects were used as raw materials, but it is worth considering whether they were perceived as indexes of unknown animals: the link between ivory seal and lion depictions was discussed in Chapter 5, but this does not indicate an understanding of the animal origins of ivory.

8.3.5.2 Seals

There are two main types of hybrid on seals, which can be termed Cretan and imported, although these are two opposite ends of a continuum. The Zakros hybrids can be seen as kaleidoscopic combinations of various forms, including human and animal. They are agreed to have originated in Crete, although there have been suggestions of Egyptian influence (Hogarth 1902; Weingarten 1983: 102). More stable human-animal hybrids, based on birds, goats and cattle are also distinctively Cretan, but all of these have been seen by some authors as showing overseas influence. The Minoan genius originates overseas, but is considerably adapted on Crete. Minoan dragons, sphinxes and particularly griffins show fewer formal changes as a result of their adoption, and here hybrid becomes more of a term of convenience, since these can be seen as animal depictions not unlike those of monkeys, horses or lions.

It is difficult to establish the place of the Zakros hybrids in an account of human-animal relations: it is possible to regard them as an extreme form of a tendency identified by some authors towards hybridity or metamorphosis in Cretan art. However, the difference with the Zakros sealings is that, for instance, animal and plant forms are combined: this is not the same as combining details from what are now seen as distinct plant or animal species. They are restricted almost entirely to Zakros and widely seen as the work of one individual (see Weingarten 1983 for detailed attributions) and so although one can examine his/her influences, it is difficult to integrate these sealings into a wider narrative of human-animal relations. Schlager (1996) has suggested that a fossil deposit at a particular site near Zakros inspired a group of similar seals depicting an antler and animal head with human arm and breasts (e.g. II 7 169), but in the absence of any evidence for this, there is no reason to suggest the antler is a fossil. Fossil shells are fairly commonly found in Bronze Age contexts, but not animal bones, with the possible exception of one example from Neolithic Knossos (Jarman 1996: 215). It is possible that fossils were collected and interpreted as animal remains, as they were in the Classical period (Mayor 2000), but it is not an explanation for the iconography of the Zakros hybrids. However, it is interesting that the antler is separated from the animal head, and it is also worth noting that a boar’s tusk helmet is the only artifact incorporated into the monstrous forms (e.g. II
7 168, also seemingly showing a horn). This could be an argument for the perception of both as animate or at least parts of animals. Although the hybrids do not appear to be well-defined animals, their constituent parts could be illustrating forms considered to have human/animal characteristics.

Other human-animal hybrids involve goats and cattle: interestingly Evans (1921b: 69) argued for an Egyptian inspiration behind the minotaur. As with the Zakros hybrids, the relevant question here is whether these forms can be seen as iconic, copies of similar forms circulating around the Eastern Mediterranean, or indexical, linked to a particular experience of animals. This is the interpretation Morgan (1995: 144) favours for the minotaur, arguing that the form is an abbreviated depiction of bull-leaping (e.g. II 3 67). These ‘minotaurs’, the term extended to goat-humans too, some with two heads, are restricted to the Final Palace period (Krzyszkowska 2005: 207-208). Rather than look overseas in these cases, it seems more likely to see these forms as highly abbreviated displays of visual information, whose referent is no longer clear, but involving human-animal relations.

The Minoan genius has received a great deal of scholarly attention (Gill 1964; Phillips 2008: 157-67; Rehak 1995a; Weingarten 1991). Evans’s (1935: 433) view still holds that it is a transformed version of the Egyptian hippopotamus goddess Ta-urt, whose significance and role had been modified in the process of transmission: the borrowing is on Cretan terms. A sealing from Zakros (II 7 31) shows that it is unlike any other animal, since it is shown spearing a bull. An earlier sealing from Phaistos shows a typical manifestation, with the genius holding a jug (II 5 322). In behavioural terms it is unlike any depicted animal.

Griffins appear in the Protopalatial period, at Phaistos (II 5 317), and continue to be depicted in the succeeding periods. Much less frequent are depictions of sphinxes and Minoan dragons, but all can be seen as imports: whereas Evans (1921b: 709-11) saw an Egyptian origin for the griffin, Gill (1963) and Aruz (2000: 8) point to the role of Syria as an intermediary for all of these forms. Krzyszkowska (2005: 32) doubts that the early “isolated images” provide much information about the iconographic transfer of these hybrids, and argues that by the time their role becomes apparent in the Late Bronze Age, “their original symbolism had been thoroughly transformed to meet Aegean needs”. The role of the griffin is particularly interesting, because it is a depicted as a predator, attacking not only deer (e.g. II 8 192), but also lions. One LMIIIA seal (VS.1A 202), can be seen as a hierarchy, or perhaps pecking order, with griffin attacking lion attacking
deer. Other depictions show lions attacking griffins, for instance II 8 360, a fragmentary sealing from Knossos. Laffineur (1992: 110) sees the griffin as “the traditional attendant of the Minoan deity”, and indeed they are shown on ‘Potnia Theron’ depictions (e.g. II 3 276) and even pulling a chariot on a sealing from the Temple Repositories (II 8 193). Without denying a symbolic significance, the important aspect of these depictions of griffins as predators or in harness is that they are shown acting like other animals. II 3 219 even shows a griffin with teats, also seen on dogs and lions. Griffins also appear in the Cut Style (III 508), where there are close similarities with birds in the depiction of the wing. Several are depicted on seals from Armenoi: VS. 1B 256, for instance, is a soft stone seal at the very end of the period of production of seals on Crete. Both of these examples illustrate that the griffin is not confined to the palaces, or to cult scenes, but is one of the repertoire of animals depicted on seals. Its role as a top predator reinforces its significance when depicted with humans: this can be seen as giving it more weight than as simply an ‘exotic’ or ‘supernatural’ form. Given that griffins are depicted as behaviourally similar to, but more powerful than, lions, hunting a griffin becomes an even more impressive feat than hunting a lion. Controlling a griffin becomes an expression of power rather than its presence being a symbol of a deity.

Although the Minoan dragon is much less frequent than the griffin, it too is depicted in the Talismanic style (III 320) and is also shown being ridden by a woman (II 6 33). Its invariant feature is its proportions, with elongated body and neck. As with the griffin, these depictions suggest that it can be regarded as an unusual animal. In contrast, it is difficult to find a context for the sphinx in seal depictions, since it tends to be shown singly (II 3 118), and is very infrequent. Weingarten (1983: 91) describes the griffin and sphinx as “royal monsters” in contrast to the “fantasy monsters” at Zakros, along with the various ‘minotaurs’; the Minoan genius she puts in a third category. However, this does not entirely capture the distinction, as argued here, between hybrids and what might be seen as exotic animals, with their particular invariants and affordances. Whereas the Zakros hybrids and minotaurs are short-lived phenomena, griffins and Minoan dragons are depicted in different styles and contexts. Paradoxically these have a stronger claim to being included in the Cretan bestiary, albeit as exotic animals, than the fleeting indigenous hybrids.

8.3.5.3 Vessels
As can be seen from Figure 8.6, hybrids are very rarely depicted on or as vessels. The ceramic sphinx figures from Ayia Triada and elsewhere are not included as they are essentially an Iron Age development (D’Agata 1999). The Prepalatial exceptions are two
vessels with bird bodies but ram and cattle heads. These could be explained as simply the adaptation of the existing vessel shape to show mammals, and are one-offs. Minoan geniuses are shown pouring from jugs on the Mallia stone triton (Baurain and Darque 1983), which, Morris (1995) has suggested, reinforces the function of the rhyton. However, this does not explain why Minoan geniuses should only be depicted on this vessel. In general the scarcity of hybrids on vessels underlines the clear association of decoration with marine animals, and of a restricted range of zoomorphs.

8.3.5.4 Frescoes
Griffins were depicted on frescoes in the palace of Knossos in both the Neopalatial period, in relief in the East Hall, and in the Throne Room at the time of the destruction of the palace. The East Hall griffins are shown chained to pillars, suggesting the animal practice of capturing and restraint. It can be argued that the relief frescoes made present the claims of the Knossos elite to have brought under control an animal never encountered on Crete. Here the fresco materialises a non-existent animal practice, giving it a basis in reality, especially in these Neopalatial reliefs.

The Throne Room griffins (Figures 7.6 and 7.7) similarly associate the incumbent of the throne with the unfamiliar animals, shown here in detail. This does not need to be explained in religious terms, but simply demonstrates the knowledge of, and control over, an animal which would only have been known from depictions on overseas imports. As the seal depictions show, however, it was assimilated into the Minoan bestiary, with the depiction of its particular affordances.

The North-West Fresco Heap accounts for the other Neopalatial hybrids. There are sphinxes on what appear to be textile designs, along with griffins. These could similarly be markers of difference, associating the person wearing such clothes with exotic animals. Also found here were depicted bucrania with what appear to be tusks: these could be interpreted as the imagined origin of elephant tusks. This is one argument in favour of the suggestion made above that animal remains were associated with hybrid animals.

8.3.5.5 Conclusions
There is no reason to describe animals such as griffins as ‘mythological creatures’. Depictions show their characteristic behaviour, whether predation, or, in the case of Minoan geniuses, human activities. Depictions of griffins pulling chariots, or women riding dragons show how these creatures were assimilated within an understanding of the
affordances of animals. From this perspective the griffins in the Knossos Throne Room are the logical choice of an animal at the furthest reaches of the known world. By controlling their depiction, the palace elite were able to make claims about the extent of their knowledge and power (Helms 1999).

8.3.6 Monkey

Figure 8.7 shows the distribution of monkey depictions: zoomorphic seals are most prevalent, along with fresco depictions. These can be contrasted as the result of contact with imported objects and with imported monkeys respectively. No monkey bones have yet been recovered from Bronze Age Aegean contexts.

8.3.6.1 Seal
In percentage terms monkeys are most frequent in the Protopalatial period, largely because of the zoomorphic ‘squatting ape’ seals (III 2). The closest analogy to these is the scarab, since the ape is also a direct Egyptian borrowing (Aruz 2000: 3). Aruz points out, however, that a squatting ape seal with a cross-hatched base was found in the Montet Jar in Byblos, so the route need not be direct. As Phillips (2008: 180-1) argues, whereas Neopalatial monkey depictions, particularly on frescoes, point to the import of live animals, these earlier depictions of baboons are most likely to be copies of imported objects. Perhaps unlike scarabs, however, the form of the baboon, with recognisable head and limbs, specifies an animal by analogy, but unlike any that existed on Crete at the time. This suggests a rationale for importing this particular shape, but not others, since the exotic animal form reinforces the exotic origin of that type of seal. It is interesting that in both the Protopalatial period (II 5 297) and even into the Neopalatial period, the majority of monkeys are shown seated: this posture and the curving tail act as the monkey invariants. Even when they are shown climbing on a rocky landscape in a Neopalatial seal impression from the Hieroglyphic Deposit (II 8 286), the sitting pose is used. These monkey depictions are markedly restricted in posture in comparison with the frescoes: seal designs do not seem to be affected by observation of real monkeys, or the engravers chose not to depart from a conventional depiction. This could suggest that the sitting pose usefully distinguished the monkey from other animals with a tail on the limited space of a seal, whereas the frescoes allowed more detailed depictions of a wider variety of monkey behaviour.
8.3.6.2  Vessel
A relief head, identified as a monkey, was recovered from an MMI context at Mallia (Foster 1982: 92, 171). This date would seemingly connect it with the importation of zoomorphic seals.

8.3.6.3  Fresco
The animal practice shown on frescoes is the keeping of monkeys, and also their engagement in human-like activities. This suggests that their affordances were based on their similarity but difference from humans. The Birds and Monkeys fresco links these exotic imports with the Cretan landscape, and, as suggested above, a particular activity, fowling. Frescoes at contemporary Thera also depict monkeys, playing a musical instrument and brandishing a sword, stressing their human-like qualities. That the Saffron Gatherer was originally reconstructed as a ‘Blue Boy’ (Evely 1999: 121) indicates the possibility of confusion, at least on the part of the restorers, between human and monkey depictions: this similarity between human and monkey is emphasized by the Theran monkeys’ activities. At the same time the frescoes do appear to be based on the observation of monkey behaviour. These frescoes served to describe the affordances of monkeys: this would have further enhanced the social significance of owning them.

8.3.6.4  Conclusion
It is highly likely that monkeys were traded around the Mediterranean and kept as pets in the Bronze Age (Greenlaw 2006). The frescoes show how material culture can be used to elaborate on socially significant human-animal relations, both presenting an exotic animal and shaping the way its affordances are perceived. Whereas the Prepalatial seals of monkeys were significant because of an exotic form, the frescoes provide complex information about both monkey form and behaviour. Ownership of an exotic animal would have showed foreign contacts, but the frescoes elaborate this ownership by establishing the monkey as an almost supernatural animal. The Birds and Monkeys fresco also affected the viewer by surrounding them, immersing them in a landscape in which spring and autumn flowers bloomed together, and monkeys were performing a human-like activity. Here naturalism was deployed to reinforce the social significance of owning monkeys by convincing the viewer that these were remarkable animals and demonstrating knowledge of their affordances. It is possible that imported monkeys were fairly common at periods of high volumes of trade, and so these frescoes could also have maintained monkey ownership as an exclusive animal practice, by revealing contextual knowledge about them.
8.3.7 **Cat/Feline**

Cats are analogous to monkeys in that they were imports to Crete during the Bronze Age, although it is possible that they were already present on Crete in the Protopalatial period. As with monkeys, frescoes provide clear evidence for the observation of cats, but only in what Phillips (2008: 202-3) terms ‘fowling scenes’.

### 8.3.7.1 **Zooarchaeology**

*Felis* was identified at Knossos, but in a mixed Minoan/Roman context (Jarman 1996: 214). A tentative identification has also been made for an LMIIIB level at Chania (Hallager and Hallager 2003: 137), and *Felis sylvestris* is reported from LMIIIC-Late Geometric at Kastro (Snyder and Klippel 1999: 68). One can speculate whether cat remains would have been deposited in refuse heaps or whether they were deposited in particular, so far archaeologically invisible, ways; the same can be said of monkeys.

### 8.3.7.2 **Seal**

Cat depictions are often seen as Egyptian imports, although as Phillips (1995, 2008: 202-6) argues, the lack of plausible Egyptian prototypes makes it more likely that cat depictions are based on the animal itself. In the Protopalatial period, the cat mask is the most frequent cat depiction; that a shorthand sign for a cat was used as a hieroglyphic sign (e.g. IV 156) perhaps indicates familiarity with the animal. One LMI seal (II 3 172), a haematite amygdaloid, depicts a cat attacking waterbirds; in Egypt cats were apparently used in fowling to flush out birds (Janssen and Janssen 1989: 17). This can be seen as an affordance of the cat rather than necessarily a continuation of Egyptian practice (Phillips 2008: 205-6).

### 8.3.7.3 **Vessel**

As discussed in Chapter 6, cats occur in relief on a remarkable set of vessels from Mallia, which associate them with marine animals. This iconographic context can be seen as distancing the animal from the Cretan environment, and perhaps indicate an overseas origin. This is, however, an argument based on very limited evidence.

### 8.3.7.4 **Fresco**

Apart from the possible leopard in the North-West Fresco Heaps, the only depiction of cats in a fresco is from Ayia Triada. As argued in Chapter 7, this places cats in a landscape context, and shows their affordances in relation to birds, as hunters. As with the monkey frescoes, this can be seen as the use of material culture to shape the way an
animal’s affordances were perceived. It can be argued that the association of cats and birds was still of social significance if cats were involved in fowling, and so this was the only animal practice involving cats which was depicted.

8.3.7.5 Conclusion
The domestic aspect of the cat, either asleep somewhere or catching rodents, is ignored; rather it is only shown out in the landscape in the Neopalatial period. It could be argued that cats were infrequent enough to be depicted on seals in the Protopalatial period, but by the Neopalatial they were only worth depicting engaged in a particular non-domestic activity. In any case, they are rarely depicted, indirectly supporting Phillip’s argument that they were being kept on Crete, since, as has been argued in this thesis, unfamiliar animals were more frequently depicted. Cat depictions were perhaps ultimately significant as the material trace of fowling.

8.3.8 Lion

The affordance which is most frequently revealed in depictions is the lion as a dangerous predator. However, since the lion was not native to Crete, the most likely location to have encountered it in the Bronze Age would have been Mainland Greece, if not further afield in the Eastern Mediterranean. This suggests that the depictions of lion hunting also implied foreign travel, which would have been a source of social distinction. It can be argued that these two factors, their exotic location and their dangerousness, gave them a privileged place in displays of, or claims to, personal prowess on Bronze Age Crete.

8.3.8.1 Zooarchaeology
It is certainly possible that lions were brought to Crete in the Late Minoan period, as Younger (1988: xi) puts it, as a “palace showpiece”, but there are no faunal remains to support this. Even in the absence of lions, if, as suggested below, lion pelts were imported to Crete, these too would have left a trace in the form of the small toe bones. Given the way the major palaces were excavated, the absence of remains is far from conclusive. Lion bones have been found elsewhere in the Bronze Age Aegean (Thomas 2004: 189-90; Trantalidou 2000).

8.3.8.2 Seal
The lion is the second most frequently identifiable animal on Cretan seals; given that it was not part of the Cretan fauna this is in need of explanation. The lion depictions on seals have been given a great deal of attention, but in most discussions the evidence is
merged with Mycenaean iconography, and often with other media (Ballintijn 1995; Bloedow 1992b; Pini 1985; Thomas 2004). To a certain extent this is justified since iconographic interchange between Crete and the Mainland is apparent in the Late Minoan period. The studies tend to focus on the question of the observation of lions and lion hunting, which would have occurred on the Mainland, using the most detailed Bronze Age depictions. As a result, however, these authors overlook the often idiosyncratic lion depictions on Late Minoan seals. It will be suggested here that these Cretan depictions are based on two characteristics of lions, the mane and tufted tail, but frequently show no understanding of what a lion looks like. However, this is a more complex problem than it appears, since Cretan engravers did seem to know what a griffin looked like, in that it has a stable and enduring form. Furthermore, earlier seals depict lions which are more easily recognisable to a modern observer than many of the later depictions.

Lions are the most frequently depicted identifiable animal in the Prepalatial period. The invariants of Prepalatial lions are distinct from later depictions: as can be seen from a typical depiction from Platanos (II 1 248a), the proportions of the lions are the most distinguishing feature, as well as the indication of a mane. As has been pointed out, the pattern for the mane is the same as the abstract ‘palmette’ which sometimes occurs with lion depictions, as in II 1 252 (Guest-Papamanoli 1996: 344-346). Guest-Papamanoli suggests that these are instruments for making noise, as would be expected from ethnographic accounts of the lion hunt, or battue, in Algeria. “Anyone having participated in a lion-battue as a rabatteur would be identified by this heroic act which could be indicated on his personal seal” (Guest-Papamanoli 1996: 346). This is an interesting argument, but here it is predicated on the existence of lions on Prepalatial Crete and similar hunting techniques: Guest-Papamanoli blames poor recording of tholos excavations for the lack of evidence for lions, but a more likely explanation is the lack of lions, particularly living wild on Crete. While occasional lion imports in the Palatial period are possible, lions are not part of the native Cretan fauna. However, in the absence of lions, the accurate depiction of their proportions can instead be explained in terms of imported depictions. The only constant is the lion proportions since manes can also be cross-hatched, as on II 1 224, in which the heads are not as leonine as II 1 248. Rather than being based on observation, these depictions use two basic invariants of lions which could have easily been conveyed by depictions, such as those on Near Eastern cylinder seals.

An ivory seal from Kalathiana (II 1 130) shows a sitting lion with a human underneath, which Evans (1928: 55) saw as an example of the Egyptian idea of the guardianship of
the dead, but which has also been seen as showing lions as a threat to humans (Bloedow 1992b: 302). However, it is unique, and can more simply be seen as the borrowing of a form: whereas Evans’s interpretation assumes that complex ideas were attached to imported objects (if this was based on an import), Bloedow’s requires the lion form to be imported into a cultural context which was informed about the threat of lions, presumably from the Mainland. The problem with these interpretations is that the lion’s affordances are not otherwise clearly indicated in the Prepalatial period because it is typically shown standing or walking. Even on a seal (II 1 222) from Marathokephalo which has been interpreted as a possible Prepalatial lion hunt scene (Krzyszkowska 2005: 67), there is no interaction between human and lion. As was mentioned above, spiders, scorpions and lions have been seen as having a significance as dangerous animals: whereas the existence of spiders and scorpions on Crete potentially provides independent evidence, in the absence of this it is difficult to interpret any particular seal of this period as showing the lion’s affordance as dangerous. Such knowledge could have travelled from overseas, but based on the depictions alone, the lion can best be seen as having iconic significance whose value derived from indexing prestigious imports rather than unseen lions.

As can be seen in Figure 8.7, there is a dip in the proportion of lions on seal depictions in the Protopalatial period: this can be seen as a watershed between two distinct sets of depictions. On three-sided prisms the proportions and indication of a mane remain the lion invariants. Whereas VS.1A 43 has striping across the body, II 2 245 has a mane which resembles ‘white piece’ lions in flowing from the head. Other depictions from the same period are less easy to see as a continuation of the Prepalatial imagery. At the end of the period, from the Phaistos deposit, comes a lion depiction which is far more detailed than anything seen before (II 5 270), although the V-shapes on the mane are markedly stylised. Again this shows the form of the lion but not its affordances.

A discoid seal from Palaikastro (II 3 277) is difficult to recognise as a lion, although it does have the indication of a mane and the earliest dotted tail, familiar from later depictions. The head over shoulder pose and object over the back which has been described as a plant, but could conceivably be a weapon, also point to later depictions; its MMII-III dating means that it could come from the start of the Neopalatial period, but more importantly, it is one of the first of the peculiarly Cretan depictions of lions. In contrast to earlier depictions it is impossible to see this form as derivative, but rather the lion is almost certainly being shown in the context of a hunt. An unprovenanced steatite lentoid from Heraklion (II 4 175) illustrates the continuity, in pose and subsidiary element, of the previous seal with a very common type of Neopalatial lion depiction.
Frequently the lions are in a symmetrical arrangement (II 8 319). The mane becomes the key lion invariant in such LMI depictions, and the circular head and dotted eye is a common feature (e.g. II 7 70, with a spear over its back); these depictions are common on soft stone seals, that is, locally available material rather than imported hard stone (Pini 1995). Their most interesting aspect, how unlike lions they appear compared with earlier depictions, is often attributed to the competence of the engraver, “certainly not one of the greatest artists of LMI glyptic” (Betts 1981: 7), or “very mediocre pieces”¹ (Pini 1995: 196). Instead one can argue that they illustrate that the engraver knew two things about a lion, that it had a mane and tufted tail, but was unclear on the head. Rather than the continuation of earlier imagery, the most obvious explanation for this is that these depictions were based on lion pelts, with claws, which effectively convey these invariants, but not a lion’s proportions or head shape. Some seal depictions, such as II 4 156, show this particularly clearly.

There are also very detailed lion depictions on Neopalatial seals. Another LMIB sealing from Ayia Triada (II 6 91) shows a lion with an arrow in its side: even this depiction, however, could be based on a pelt because of the way the feet are depicted, arguably more like toe bones. At the same time it is an unambiguous depiction of lion hunting. The detail of the depiction, conveying information simultaneously about skilled craftsmanship and lion hunting, can be seen in contrast with the less informative soft stone seal depictions. This could indicate that there was competition among seal users for the most detailed depictions of lion hunting, as a means of demonstrating superior knowledge, as well as access to skilled engraving and imported materials. A carnelian seal with gold caps from an LMII context at Knossos (II 3 64) again shows the lion with head over shoulder pose, and a spear in its back, as well as a possible dart in its front, in the same tripartite form as the ‘plants’ seen above other lion depictions. As mentioned in Chapter 5, Evans saw this pose as indicating a hunted lion even without the spear, and more recently the significance of the ‘arrow’ shape as a weapon, and its often plant-like appearance, has been suggested (Bloedow 1992b: 298; Krzyszkowska 2005: 209; Weingarten 1989: 306). It can be suggested that plants and spears were often confused by those who did not recognise these objects: this seal depiction was perhaps only fully appreciated by those who knew the conventions of depiction such as pose, and the significance of elements such as the tripartite spear.

¹ “sehr mäßige Arbeiten”
Ballintijn (1995: 36) argues that the wounded lion pose is in fact borrowed from dogs and cattle. The same can be said of the scenes of a lion with a mane suckling a cub (e.g. VS.3 152, dated LMII-III A1); apart from the obvious incongruity, cows, but not lions, suckle their young standing (Ballintijn 1995: 26). She argues, however, that the mane is a useful way to identify a lion, rather than this betraying a lack of first-hand experience of lions. At the same time this type of depiction is unparalleled in the Eastern Mediterranean. This underlines the importance of the mane as the lion invariant in Cretan depictions. A final incongruity is the fact that lionesses tend to do the attacking, but again lions with manes are shown in attack scenes (attack scenes account for 19% of lion depictions in the Neopalatial, and 25% in the Final Palace period). A sealing from Myrtos Pyrgos (II 6 233), impressed by a ring dated to LMI, with two lions attacking a cow, is mirrored by the hunting behaviour of African lions (Pini 1985: 154). On the other hand, the arrangement of a Final Palace seal (II 3 44), with a lion running alongside a cow and biting it, is borrowed from dog behaviour (Pini 1985: 162). It is useful to investigate how much knowledge of lion behaviour is shown in various depictions, as evidence for encounters with lions, but these scenes can be regarded as providing information about the lion’s affordances, as a dangerous animal capable of attacking goats or cattle. The implication perhaps intended is that the seal-owner has hunted or encountered such a dangerous animal, an activity shown rarely on Cretan seals, but which does appear on a sealing from Chania (VS. 1 A 135). More generally the seal creates an association between seal owner and this socially significant animal practice.

Depictions of lions in the Final Palace period tend to be seen as more conventional, with poses and designs more formal. Younger (1985: 51-52) suggests that the later lion depictions were hardly based on observation. Lions are also shown arranged either side of people or objects, although this begins in the Neopalatial with seal designs like the ‘Mother of the Mountains’ at Knossos (II 8 256), dated to LMI. The ‘Master of Animals’ depictions are typical of the Final Palace period, most often with lions (e.g. II 8 250 from Knossos). Bloedow (1996) has argued that rather than seeing such arrangements as symbolic, they can be seen as depicting lion subjugation; although he sees the central figure as a deity or hero, he focuses on the way the lions are depicted. “Clearly, this is not a fate which lions would have chosen for themselves, and so depicts in supremely dramatic fashion the sheer violence by which they had been brought into subjection” (Bloedow 1996: 1163-1164). Elsewhere he suggests that even late depictions of lions should be seen against the ongoing background of a “fundamentally antagonistic” relationship with humans (Bloedow 1992b: 304). One example is the LMIII A1 steatite lentoid from Grave 15 at Armenoi (V 246), seemingly depicting a lion attacking a human,
with a quadruped behind. This can be read, as Bloedow does, as a human trying to intervene to prevent lion predation, although he seems to suggest that this was also a problem on Crete. As with interpretations of Prepalatial seals above, however, any account of Cretan seals has to accommodate the absence of evidence for wild lions on Crete. Like hunting scenes, these seals can be seen as providing information about the affordances of lions; it is the knowledge of these affordances which gives the depictions of subjection, to accept Bloedow’s interpretation, their significance as indexes of a dangerous activity.

Lions on Cretan seals are always indexes of foreign contacts, and here it is suggested that information about them gradually reached Crete, first as proportionally accurate depictions, then lion pelts, and finally, perhaps, the animal itself. The mane is the key to lion depictions throughout Late Minoan seal engraving, and one can see these depictions as providing information about the animal whose mane it was. Often the information was, in comparison with modern zoological knowledge about lions, incorrect, but this is not always a useful standard against which to judge these depictions. To dismiss these differences simply as poor artisanship is to overlook the fact that they can be seen as useful indicators of what the seal engraver and seal owner knew about lions. These seals displayed the affordances of the lion, first as an exotic animal and later as a dangerous animal to be hunted. The seal itself afforded the user of the seal a way to demonstrate knowledge of an unfamiliar animal and associate themselves with the animal practice of lion hunting. Yet these seal depictions reveal varying levels of familiarity with lions.

Roundel Wc 2063 from Chania was discussed in Chapter 3: it has an ideogram of a sheep on it and nine impressions of the same seal, depicting two lions (VS. 1A 163). Each seal impression presumably stands for a sheep, but although the document establishes a connection between the seal user and nine sheep, the effigy of the seal establishes a connection between the user and two typical ‘Cretan’ lions. The roundel is at the interface between a network of obligations involving sheep and a network of depictions, which, however indirectly, relate to encounters with a dangerous non-Cretan animal. Whether or not the seal user had ever seen a lion, the seal was a means of connection with this socially significant practice. In this way the social implications of an animal practice extend beyond those directly involved in it, mediated, and replicated, by these seals. The roundel embodies the dichotomy between everyday, but rarely depicted, economic relationships with animals and the relationships with animals with which people wanted to be associated with on Bronze Age Crete.
8.3.8.3 **Vessel**

Apart from what has been identified as a lion protome in relief on an MMIII vessel, lions occur in the form of four zoomorphic rhyta. The three from the Knossos palace have been included in Figure 8.7 as Neopalatial, but could date to LMIIIA (Koehl 2006: 122). Manes are indicated on three, although the most well known is usually identified as a lioness. As argued for zoomorphic rhyta in Chapter 6, these objects acted as real metaphors, allowing the lion’s head to be manipulated during drinking ceremonies or similar performances. The red jasper and rock crystal eyes of one (HM 44) would have made it particularly striking, and a demonstration of complex craftsmanship.

8.3.8.4 **Conclusion**

In contrast to Mycenaean depictions, lions were generally not accurately depicted in Late Minoan seals. The contrast between these depictions and those Prepalatial seals, where the lion proportions are accurate, suggests that the former were based on imported depictions, and the later ones on imported skins. Only in cases such as the zoomorphic heads can a real understanding of lion anatomy be seen. This would have made them particularly prestigious, since they demonstrated close knowledge of an animal which is likely only to have been encountered on the Mainland. This choice of medium, rather than frescoes, suggests that such a detailed depiction would only have been relevant to a small group of people; whereas seals conveyed knowledge of the invariants of a lion skin, these vessels, with their rock crystal eyes and naturalistic carving, evoked real lions, but only among an elite social group. The frequency of lion depictions on seals, but also their idiosyncrasy, could point to a different process, in which using the seal established a connection with lions in a context where few people knew what a lion looked like (including perhaps the seal owner). Lion depictions on soft stone seals can be seen as part of a network connecting people and lions, but these can be seen as inexpensive products connecting people who had never encountered a lion with an elite animal practice materialised in more detailed depictions on hard stone seals, which were ultimately linked to lion hunting. The animal practice itself was socially significant, but material culture allowed people to create associations with lions as well as celebrate them.

8.3.9 **Dog**

Although dogs are domestic animals, it is their affordances as hunting companions which can be seen as explaining many seal depictions. However, as Figure 8.7 shows, depictions of dogs were consistently present in seals. The animal practice within which dog depictions can be understood is hunting, and, by implication, ownership.
8.3.9.1 **Zooarchaeology**

Zooarchaeology reveals that another affordance of dogs was realised in Bronze Age Crete, as food. This illustrates that animals’ affordances are affected by cultural context, since they are generally not eaten in Europe today. The robusticity of the dog skeletons found in the Palaikastro wells was used to suggest that these were like modern Cretan hunting dogs: planned DNA analysis on these specimens will produce more evidence about dog breeds in Crete (Wall-Crowther 2007: 196-7).

8.3.9.2 **Seal**

Dogs are depicted on Protopalatial seals both in profile (II 1 427c) and just the head (II 5 300), which is a hieroglyphic sign. In contrast to these earlier, often equivocal depictions, the Neopalatial period provides a number of detailed ring impressions showing dogs standing, playing, or on a lead. Most ring depictions however show only dogs: a frequent impression on sealings at Knossos (II 8 287) (also Figure 5.3) shows a bitch wearing a collar looking over her shoulder, another (II 8 289) has puppies. II 6 79, a ring impression from Ayia Triada, shows two collared dogs playing, or perhaps fighting. The detail that metal engraving allows is often used to depict the collar, indicating that these dogs are under human control, but it is almost certainly the particular breed of dog that is the focus of attention. Whereas earlier dog depictions are difficult to identify, here the proportions and thick neck point to a specific breed like a mastiff (cf. Marinatos 1993: 169). These detailed depictions appear to be pointing to a particular breed of dog, arguably a way of distinguishing elite hunting dogs from the more common breeds of dog in Bronze Age Crete.

The other group of Neopalatial and Final Palace dog depictions shows it as a predator, attacking other animals. The impression of a ring, probably soft stone, from the Hieroglyphic Deposit (II 8 353) shows a dog attacking a quadruped. Humans appear with what can be seen as hunting dogs in two depictions, one from the Temple Repositories (II 8 236), with a collared dog alongside a man with spear and shield. A more definite hunt scene is shown on a ring impression from Palaikastro (VS. 1B 341), in which two smaller dogs attack a large central animal, with the hunter behind. There are fewer dog depictions in the Final Palace period, but a lentoid from Mallia (II 4 167) shows a dog attacking a deer in a typical LMII-IIIA1 composition. Here it is the dog’s role as hunting companion that is important rather than the dog itself.
8.3.9.3 Vessel
A Prepalatial vessel from Crete shows a dog reclining on the top (Bevan 2007: fig. 8.2b). The only canine zoomorphic vessel, from Palaikastro, is reported by Miller (1984: 397), but it is now lost. Another from Zakros, although described as feline, could be a dog (Koehl 2006: 237). Dogs appear on LMIII larnax depictions in hunting scenes, from Armenoi and Episkopi (Watrous 1991: 299-300). The curly tails of dogs on the latter indicate, Watrous suggests, Egyptian royal hunting dogs; the same invariant is highlighted by Wall-Crowther (2007: 197) in her discussion of modern Cretan hunting dogs. This is a reminder that different breeds of dogs could have had different significances.

8.3.9.4 Conclusion
The main animal practice involving dogs which was seen as appropriate for depiction was hunting. A suggestion was made that the ownership of certain breeds of dog brought social status, either because they were exclusively owned by an elite, or perhaps because they were imported. The possible burial of dogs at Phourni could be associated with ownership rather than consumption, since they are reportedly whole. However, the later consumption of dogs suggests that they had a range affordances in Bronze Age Crete. Only hunting and ownership were chosen for depiction, and this almost exclusively on seals.

8.3.10 Deer
Like lions, deer were Mainland animals which afforded hunting during the Bronze Age. However, there are deer remains from Bronze Age contexts in Crete, particularly in the Neopalatial period. Earlier evidence, including from Late Neolithic Knossos (Jarman 1996: 214), consists of smaller numbers of specimens which need not indicate a live animal. Deer antlers, even when separated from deer, were used as material traces of relationships with what can be seen as an exotic animal.

8.3.10.1 Zooarchaeology
The evidence for deer in Bronze Age Crete consists of both trophies and consumption debris. The most abundant deer remains are from fallow deer, the animal which Isaakidou (2007b: 16) suggests was part of elite consumption practices at Knossos. There are also abundant deer remains at the end of the Bronze Age from Chania. Red deer remains are far less frequent, possibly because red deer were more difficult to keep, and so were unsuccessful imports (Clutton-Brock 1987: 202-5).
8.3.10.2 **Seal**

Deer depictions are often similar to goats, including a Cut Style example which differs only in the antlers (II 4 183). A more distinct depiction, dating to LMI occurs on an amethyst lentoid from a Knossos grave (II 3 74). Here another characteristic of the deer is shown, a spotted coat, which along with the antler shape suggests a fallow deer. These depictions all continue into the next period: a seal from Armenoi (VS. 1B 287) shows a deer with long toothed antlers, as does stratified LMIIIA1 seal from Chania (VS.1A 105), where deer remains have been found in this period. These are more likely to be red deer, with the antlers acting as the clearest deer invariant. The latter appears to show the animal practice associated with deer, hunting.

8.3.10.3 **Vessel**

Deer depictions occur on pottery from Postpalatial Chania (Figure 6.26). These can be connected with the deer remains mentioned above. This is striking because it shows that what has been termed the Local Kydonian Workshop broke the tradition of most Bronze Age Cretan pottery painting and depicted quadrupeds (Hallager and Hallager 2000: 116, 135). It can be suggested that hunting animals on Crete, both deer and agrimi, became central to elite identity after the fall of the palaces.

8.3.10.4 **Conclusion**

In terms of affordances, deer and wild goats are similar, but deer were not native to Crete. The co-occurrence of deer and agrimi remains in the Rubbish Area North at Chania potentially shows that they were involved in the same hunting and consumption practices. Deer antlers, however, had a life of their own, and were used as trophies before there is clear evidence for the presence of deer on Crete.

8.3.11 **Horse**

Horses are not widely depicted, although they were clearly high status animals. They occur in the Linear B tablets in connection with chariots, which is also the most common iconographic context.

8.3.11.1 **Zooarchaeology**

The majority of horse remains known from Bronze Age Crete come from the Minoan Unexplored Mansion (Bedwin 1984), although the horse burial is from Phourni is also of note (Sakellarakis 1970).
8.3.11.2 **Seals**
The transportation of horses is shown on one seal impression from Knossos (II 8 133): although the seal is fragmentary this is likely to be a military expedition since the boat is rowed. A metal ring impression shows horses pulling a chariot, found on sealings at Sklavokambos, Ayia Triada and Thera. This suggests it belonged to one of the administrative elite. Horses are, however, very infrequent on seals, and not found in the Final Palace period.

8.3.11.3 **Vessel**
The Phaistos equid zoomorphic vessel carrying pots is one of a number of depictions of horses, or in this case probably a donkey, from Postpalatial Crete. Other zoomorphic figures are found at Ayia Triada and Karphi. Chariot kraters, vessels used for the mixing of wine commonly depicted with scenes of horses and chariots, are a common Mycenaean export, but are scarce on Crete: a locally made example occurs at Chania (Hallager and Hallager 2000: 59, 148).

8.3.11.4 **Fresco**
Cameron’s reconstruction of the Palanquin Fresco as a horse and chariot provides the only such fresco from Bronze Age Crete (Cameron 1967b) (Figure 7.13). The Final Palace date ties it in with mainland fresco depictions.

8.3.11.5 **Conclusion**
Horses are shown engaged in an essentially militaristic animal context. Given that they must have been high status animals, it is striking that they were not depicted more frequently. However, the most frequently depicted animal practices involved hunting or exotic animals: once established on Crete, horses were neither; the Linear B tablets show that there was a significant number of horses kept around Knossos in the Final Palace period. The fresco depiction of a horse and chariot is interesting, as it suggests that this was part of an elite identity to be displayed to the populace. At the same time the rarity of other depictions could suggest that horse ownership was not a sign of personal prowess or intra-elite competition. Instead the Linear B tablets suggest that horses were just one part of a suite of military equipment controlled by the palace bureaucracy.
8.3.12 Pig

One of the main domesticates kept and consumed during the Bronze Age, pigs are suited to living on food remains. The animals that were depicted, however, were almost certainly wild boar. The clearest material evidence for the practice of hunting boar is the boar’s tusk helmet. Whereas the animal whose bones are found at sites across Bronze Age Crete afforded essentially a way of converting waste food into protein, the affordances of wild boar were as dangerous animals to hunt. It is not clear whether depictions of hunting boar, such as the Lasithi dagger (Evans 1930: 122; Long 1978: 39-42), and a dagger from Anemospilia (Sakellarakis and Sapouna-Sakellaraki 1997: 597-8), refer to Crete in the Bronze Age or whether these were Mainland hunting trips.

8.3.12.1 Zooarchaeology

Distinguishing domestic pig from wild boar is difficult zooarchaeologically, and so it is only long tusks that tend to be identified as wild boar. Like antlers, these could be trophies, and are present from the Prepalatial period onwards, both as tusks at Phourni, and as a raw material for seals. Here the triangular profile preserves the original shape to some extent (Krzyszkowska 1989). Other remains are reported later, from LMIIIB Chania (Hallager and Hallager 2003: 125) and LMIIIIC Vronda (Klippel and Snyder 1991: 180). It is not clear whether there were feral pigs on Crete during the Bronze Age.

8.3.12.2 Seal

One feature of modern wild boar is their bristles, in contrast to modern day domesticates: this is not unequivocal evidence for Bronze Age depictions of wild boar since there are no depictions readily identifiable as domestic pigs. However, a ring impression from Ayia Triada is notable for both the detailed bristles of the pigs and the rocky outcrop below (II 6 72). The rocky outcrop can be seen as contextual evidence for a non-domestic animal. Although Prepalatial (II 1 64d) and Protopalatial depictions show less detail, they too seem to emphasise the bristles. A three-sided prism from Mallia (II 2 88) shows this detail on the back, while a sealing from Phaistos (II 5 287) displays a zigzagged back. One might expect the tusks to be of significance in these depictions too, but they are not always apparent in profile depiction, perhaps because the proportions and bristles are alternative invariants. Tusks are shown on another Protopalatial discoid, probably from Knossos (II 2 213), which shows only the head. Some of the Zakros ‘boar masks’ also depict the tusks, often elaborated, as in II 7 201, perhaps significant because they were used to make the boar’s tusk helmet, another element in the Zakros hybrids (II 7 168). As with goats, it is not always easy to use seal depictions to distinguish domesticates from
animals for the hunt, since the significant difference is the animal practice, rather than the morphology of the animals.

8.3.12.3 Vessels
A stone conical rhyton fragment from Palaikastro appears to show a boar hunt (Koehl 2006: 181). In contrast, the few ceramic pig figurines and rhyta could be seen as domesticates, as suggested in Chapter 6. This underlines the importance of material and context in the interpretation of animal depictions: an elaborately carved vessel is more likely to show the animal practices of an elite (Logue 2004).

8.3.12.4 Conclusion
In what will become a recurring theme, the existence of domesticated and wild species of the same genus in the Mediterranean offered a situation in which the animal practices of an elite could be differentiated from those of herders. Although it is now difficult to be certain about the domestic or wild status of depicted pigs, it can be argued that the material culture context made it clear in the Bronze Age. Objects such as seals, boar’s tusk helmets and relief vessels were used as indexes of a practice which was predicated on relations with the wild version of a domestic animal.

8.3.13 Sheep
Sheep are prominent in the Linear B tablets as part of the wool industry, and are mentioned in significant numbers on a small number of Linear A tablets, but their relative rarity in depictions suggest that their affordances as useful domestic animals were not significant in social relations transacted using the types of material culture analysed in this thesis. The absence of sheep provides a supporting argument that depicted pigs and goats are wild, or at least feral.

8.3.13.1 Zooarchaeology
Sheep and goat are the predominant animal remains in Bronze Age refuse deposits; they are rarely distinguished in Bronze Age faunal reports, but there is little doubt that these were domestic animals.

8.3.13.2 Seals
Few seals unambiguously show sheep, with their characteristic down-curved horns. The earliest of these (II 8 33), an impression of a Protopalatial seal from the Knossos Hieroglyphic Deposit, shows a sheep with a spear over its back and human below, with
what could be nets around. Sheep do not occur in clearly domestic scenes on seals; the few examples from the Final Palace period include a depiction of a ram’s head with a lion and goat’s head (II 3 104). The most obvious explanation is that the seal demonstrated the hunting of all three animals.

8.3.13.3 Vessels
The ram-headed vessel from LMIIIB Chania is unparalleled on Bronze Age Crete; vessels of this shape were found across the Eastern Mediterranean in this period, and so it could be an imitation of an import (Aruz et al. 2008: 341-4).

8.3.13.4 Conclusions
The lack of wild sheep on Crete can be used to explain the scarcity of depictions, in contrast to goats. Figurines and rhyta almost certainly do depict domestic animals, but these are secondary in importance to cattle. It can be suggested that sheep show most clearly the inverse relationship between frequency of depiction and economic importance. The prime material trace of human-sheep relations in Bronze Age Crete are documents and domestic refuse. Although the documents show an elite concern with sheep, and particularly wool, animal practices involving sheep were clearly not socially significant in the same way as those with wild animals.

8.3.14 Goat
The contrast between sheep and goat depictions in Figure 8.8 is striking. This can be explained primarily in terms of the social significance of hunting agrimia, as argued by Bloedow (2003). The co-existence of a domestic and wild form of goat on Bronze Age Crete offered a metaphorical differentiation between domestic and wild animals.

8.3.14.1 Zooarchaeology
Sheep/goat remains are abundant at sites on Crete throughout the Bronze Age, as discussed in Chapter 4. Agrimi remains have only been identified from LMIII levels so far, in two reports of horn cores from Palaikastro (Bosanquet and Dawkins 1923: 87; Wall-Crowther 2007: 195), and at Chania (Hallager and Hallager 2000: 108, 2003: 122), and Kastro (Klippel and Snyder 1991: 180). Remains have been identified at Late Neolithic Phaistos (Wilkens 1996a: 243), however, indicating the possibility that agrimi remains were deposited in different ways in the Bronze Age, not recognised, or not yet reported.
Goats are occasionally depicted on seals of the Parading Lions/Spirals Complex: II 1 311 from Platanos has goats on one face and lions and people on the other. The design does not give the goats any clear context, however, so it is difficult to assess their significance. The clear depiction of hunting goats first occurs in the Protopalatial period, although it remains uncommon. An unprovenanced three-sided prism shows a goat with an arrow in its back, and human in front (IV 12D), and another surface find from Gournia (II 2 272) shows a goat with a weapon in its back.

Goat heads, however, are frequently depicted (as on II 2 170), and are also a hieroglyphic sign (018). Equally, goat depictions occur on hieroglyphic seals, for instance IV 156, with hieroglyphics on the two other faces. Exceptionally, these could be referring to domestic animals. Showing just the head would be a clear way of conventionally differentiating domestic from wild goats: goats in profile on Protopalatial seals generally lack any specific information about hunting. From the end of the period, among the Phaistos sealings come depictions of goats running, including the impression of a ring (II 5 259) with what appear to be rocks below the goat: such a landscape setting would point to a wild goat, and presumably hunting. Another Phaistos sealing (II 5 258) shows a goat with extremely long curved horns perched on a rock, probably with dogs either side. This and similar contemporary depictions can be seen as evidence for hunting with dogs. Despite the lack of information on Protopalatial seals, the various indicators discussed here point to the depiction of wild hunted goats in all cases, but only made explicit in a few seals.

Although there is a danger of anachronism, the case for Neopalatial goat depictions indicating hunted goats helps to strengthen the case for Protopalatial depictions having a similar significance. A number of goats in the Talismanic style have clear spears above them (e.g. II 3 258). The LMI seals provide other kinds of information about goats, since they are frequently more detailed than the Talismanics or Cut Style. A fairly common depiction is of a female figure with a goat, for instance on a sealing from Ayia Triada (II 6 30). Here the highly detailed metal ring impression clearly shows an agrimi with curved ridged horns and robust proportions. A similar type of depiction shows a female figure holding what is probably a goat, despite the lack of horns (e.g. II 4 111). Bloedow (2001: 8) sees such depictions as “emphasising triumph in one of the most challenging feats on the island – namely hunting and/or capturing alive virtually the most agile and most intriguing native animal”. He frames his discussion in terms of the Potnia Theron, a figure indicating “divine help” for this feat, whether or not she is a goddess. He is right to point to the significance of hunting agrimi, but amalgamates the mistress and master of
animals as one idea expressing the subjugation of animals. Yet rather than see men with lions and women with goats as equivalent, one can argue that these depictions show women engaged in a gendered animal practice in opposition to hunting. A ring impression from Chania of a seated woman feeding a goat is hardly violent (VS. 1A 175): the practice here can best be described as ownership, and given that these appear to be wild goats, it can best be described as a metaphorical claim to ownership. The ‘Master of Animals’ tends to be a supernatural figure in hunter-gatherer societies who gives animals reciprocally (Descola 2005: 474-6); in a stratified society such as Bronze Age Crete it is more likely that these depictions point to an elite claim on the ownership of wild animals. An analogy can be drawn with the hunting privileges exercised by the elite in Mediaeval Europe (Cartmill 1993: 60-67).

Final Palace depictions also connect goat depictions with hunting. A slate lentoid from Armenoi (VS. 1B 229) shows two goats, with a spear above the back of one. As with other later seals, the ridged horns of the goats receive close attention. Although the women/goats iconography is largely restricted to LMI, there is a scene from Armenoi of a woman and goat dated to LMIIIA (VS.1B 261). However, here the goat has a plant-like spear over its back: there are a number of LMI seals at Armenoi, and this could be an example of drawing upon earlier iconography, but also adapting it, or making it more explicit, since now a female figure is juxtaposed with what appears to be a hunting scene. Whereas Neopalatial seals arguably attached significance to pose and direction, it is apparent that Final Palace seals more frequently used symbols, as in a sealing from Knossos with symmetrical goats, impaled triangle and figure of eight (II 8 529). It was argued in Chapter 5 that these symbols do not occur frequently enough to evaluate their significance statistically, but it is difficult not to see them as informing the meaning of the depiction in some way. Even if the rules of the Neopalatial period appear to be broken in these later seals, one can argue that they are using different conventions to convey very similar information about goats.

8.3.14.3 Vessel

Goat decoration on vases peaks in the Prepalatial period with the white-on-dark ware from East Crete. However, it is notable that there is a small number of vessels with goat depictions, most frequently in relief, from each period. These include the Kamares vessel from Phaistos with a relief appliqué (Levi 1976: 693) and a similar example from Juktas (Simandiraki 2006: 96) and two elaborate LMI rhyta from Palaikastro with a goat’s head and horns forming the handle (Koehl 2006: 132). In each case the length of the horns suggests that these are agrimia. Even less ambiguous is the Zakros Sanctuary Rhyton,
which clearly shows agrimia interacting with a building in a rocky landscape. Although Bloedow (1990) has argued that this is the Zakros palace itself, his argument that this shows goats in captivity can be reversed. Rather the significance of the goats is that they are wild animals, in one case leaping over the rocky landscape, which act to provide the context for the building.

8.3.14.4 Fresco
The Ayia Triada Park Fresco can be seen in similar terms to the Sanctuary Rhyton and other goat depictions. The fresco displaces the viewer from its architectural context to a landscape context, inhabited by cats, birds and goats. The depiction of goats acts as a useful marker of a particular aspect of the Cretan landscape, and, as in the seal depictions, are associated with women. It can be tentatively suggested that this is a metaphorical claim of ownership over the Cretan landscape, including its crocuses and goats.

8.3.14.5 Conclusion
There are two aspects to goat depictions. The first is an association with hunting which can be used to explain depictions of goats on seals even without objects like spears. Vessels and frescoes, however, potentially interacted with a wider audience, and these seem to draw on goats as spatial markers of the landscape, described in Chapter 2 as phenomenological ecology (Riegner 1993). This is particularly apparent on the Sanctuary Rhyton and Park Fresco. Other pottery reliefs of goats can potentially be seen in these terms, as bringing a wild form into certain performances in settlements.

These two aspects are not mutually exclusive: hunting is an animal practice which involves travelling to the part of the landscape inhabited by goats, and the bringing back of agrimia horn trophies in the Final Palace period provides an index of this practice in domestic contexts. However, it can be suggested that Neopalatial material culture used the form of the wild goats to define a particular set of associations, including with women. As has been suggested in Chapter 6, in objects such as the Sanctuary Rhyton, the convincing depiction of goats in a particular landscape was combined with the connotations of control over elaborate craft production. These objects can also be seen as one way for an elite to establish ideological control over a landscape beyond the domestic sphere, perhaps in an analogous way to the putative takeover of peak sanctuaries in the Neopalatial period (Peatfield 1992).
8.3.15 Cattle

As can be seen from Figure 8.8, cattle were depicted in every medium, in nearly every period, and are the most frequently depicted animal. This is something of a paradox given the above discussion, since in many cases these can be seen as domesticates. Crucially, however, cattle are almost never depicted in domestic human-animal relations, with only one fragmentary sealing from Knossos showing milking and no depiction showing ploughing. It will be suggested that one part of the elite control over cattle in the Bronze Age was the depiction of non-domestic human-cattle relations and the manipulation of skilfully crafted models.

8.3.15.1 Zooarchaeology

The remains of domestic cattle have been discussed in Chapter 4. Recent zooarchaeological work on traction pathologies has shown the potential of these remains to provide further insights into relations with cattle based on farming (Isaakidou 2006). There have also been suggestions that there were wild cattle on Crete. Nobis’s (1996) theory that cattle were part of the Pleistocene fauna of Crete on the basis of his identification of auroch remains is simply incorrect, as there is no mechanism for wild cattle to have travelled to Crete before human settlement (Broodbank and Strasser 1991: 236). However, an explanation is still required for the specimens Nobis (1990, 1993) identified as aurochs, which could have been transported by humans. The problem is that his identifications of wild versus domestic cattle on the basis of the size of the remains have been questioned (Vigne 1999: 300). This underlines the need for better zooarchaeological publication for Bronze Age Crete, since this issue can only be resolved by examining whether the remains from various sites come from a single population, or whether Nobis did identify specimens outside the expected range of variability (Isaakidou 2007b: 16).

8.3.15.2 Seal

Cattle depictions are anomalous for a number of reasons. Cattle only start to be depicted on seal faces in the Protopalatial period, with the proportion increasing in the Neopalatial and Final Palace periods, when they are in each case the most frequently depicted animal. This is not quite the whole story, however, since all but two of the 47 Protopalatial cattle depictions are bucrania: apart from a couple of questionable depictions on three-sided prisms, it is only with the Phaistos sealings that cattle are depicted in profile. Yet unlike lions or deer, cattle were one of the main domesticates throughout the Bronze Age: the question becomes why an animal which was part of everyday life only fully appeared on
Late Minoan seals. An obvious answer is that it was not domestic cattle that were being depicted; since wild cattle were not native to Crete, it follows that these were being hunted on the Mainland, or perhaps imported to be hunted on Crete.

The depiction of bucrania on three-sided prisms (e.g. VS.3 17) raises the question once again of the relationship with the hieroglyphic signs, for cattle 011 and 12; the former, for instance, appears on a sealing in the Knossos Hieroglyphic deposit (II 8 36) and the latter on a prism from Mallia (II 2 78). Given that these signs were used as cattle ideograms, as seen in Chapter 3, it could be again suggested that the depiction of animal heads on seals does indicate domestic animals.

Depictions of cattle in the Neopalatial period are frequent, but stylistically more restricted than goats: bucrania do appear as a Talismanic design (e.g. II 3 289), but cattle in profile are very rare in the Talismanic style. Cut Style cattle are also exceptional, although the proportions of an animal depicted on an amygdaloid from an LMIB context at Mochlos (VS.3 350) do seem closer to cattle than goat. The pose is also indicative, since goats tend to be shown running with head pointing forwards. One of the earliest depictions of a speared cow occurs on an MMIII chalcedony discoid (II 2 60), from a grave at Profitis Ilias in Knossos. Stylistically it foreshadows the vast majority of Neopalatial cattle depictions: the modelled bodies have widely been seen by modern scholars as a criterion of naturalism.

Humans do appear in depictions with cattle in this period, but only engaged in non-domestic animal practices, apart from a fragmentary sealing showing milking (II 8 232); the most frequent depictions are of bull-leaping (e.g. II 6 44) and occasionally ‘bull-taming’ (e.g. II 8 229). This is an entirely different type of animal practice from hunting, which is also depicted with human involvement on a sealing from Ayia Triada (II 6 37): as an animal practice, hunting is based on a relation between a human and wild animal, whereas bull-leaping arguably requires an animal under human control. This can be inferred from the occasional architectural elements in bull-leaping depictions, but also makes sense in view of the lack of a wild population of cattle on Crete. Behaviourally, however, bulls are far less placid than oxen: a sealing from Ayia Triada (II 6 39) shows a bull goring what is presumably a leaper. This depiction points to the affordances of the bull as a dangerous animal, and this is perhaps one reason why bulls are the only domestic animal seemingly depicted frequently: in at least some of their affordances they are closer to wild animals. As mentioned above, bull-leaping is shown on the impressions of the same ring found at various different sites across the island.
Another animal practice often associated with cattle is sacrifice: of the nine possible depictions in this sample, four are recognisable as cattle, and the rest as quadrupeds. The clearest depiction, probably LMII-IIIA, from a later context at Mallia (II 6 173), shows a cow on a table with legs crossed. A fragmentary LMI-II sealing from Knossos shows a similar scene, but in more detail (II 8 480). Animals with crossed legs also occur on two Protopalatial three-sided prisms (III 213), but neither have a provenance. As discussed in Chapter 5, Morgan (1995) argues for a complex of signs and frontal depictions of animals as relating to sacrifice (coming together in II 3 338). However, these depictions of sacrifice are extremely uncommon, and largely connected with cattle.

Cattle are often seen as symbolic of Knossos (Hallager and Hallager 1995). Bett’s (1967) argument that the bull was an insignia of the Knossian elite is difficult to disprove because the evidence he used was the dispersal of bull-leaping scenes at a number of sites. At the risk of entering into a circular argument, in which the depiction of cattle outside Knossos becomes evidence for Knossian hegemony, it might at least be expected that Knossos would have a high proportion of cattle depictions if this was so. However, as Table 8.1 illustrates, this is not the case for the Knossos sealings. At Zakros the number of hybrids lowers the percentage of cattle. The problem with this comparison is that the Neopalatial seal designs from Knossos are not preserved as the result of LMIB destructions, as elsewhere, but are preserved on later or earlier sealings. This depositional history could skew the proportions if there were reasons why certain Neopalatial seals carried on in use into the time of the final Knossos destruction, but not others. In general there is no reason for seeing cattle depictions as being particularly associated with Knossos.

<table>
<thead>
<tr>
<th>Site</th>
<th>Number of cattle seals</th>
<th>Total number of animal seals</th>
<th>%</th>
</tr>
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<tr>
<td>Ayia Triadha</td>
<td>25</td>
<td>114</td>
<td>22</td>
</tr>
<tr>
<td>Chania</td>
<td>12</td>
<td>45</td>
<td>27</td>
</tr>
<tr>
<td>Kato Zakros</td>
<td>28</td>
<td>193</td>
<td>15</td>
</tr>
<tr>
<td>Knossos</td>
<td>22</td>
<td>117</td>
<td>19</td>
</tr>
</tbody>
</table>

Table 8.1: Proportion of Neopalatial cattle depictions per site on sealings (>40 seals). Excludes repeated uses of the same seal.

The majority of depictions of cattle do not indicate the sex of the animal, but in many cases, they could be assumed to be bulls by proportion, or activity. However, it is also possible to compare the number of clear depictions of bulls between sites (Table 8.2, below): here Knossos has the lowest proportion of all sites with bull depictions.
<table>
<thead>
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<th>Site</th>
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<th>Total number of animal seals</th>
<th>%</th>
</tr>
</thead>
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<td>114</td>
<td>5</td>
</tr>
<tr>
<td>Chania</td>
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<td>Sklavokambos</td>
<td>4</td>
<td>12</td>
<td>33</td>
</tr>
<tr>
<td>Tylissos</td>
<td>1</td>
<td>4</td>
<td>25</td>
</tr>
</tbody>
</table>

Table 8.2: Proportion of Neopalatial bull depictions per site on sealings. Excludes repeated use of the same seal.

Of the Final Palace period sealings, there are 53 cattle (of which 5 are bull) seal designs among the 127 depicting animals at Knossos. This gives a much higher proportion of cattle, 42%, than in the Neopalatial period, but little change in bulls (4%). However, this period sees a decrease in the diversity of animals depicted, and in the absence of contemporary sealing deposits the significance of this is unclear. Of the Neopalatial seals found at Knossos, 10/68 (15%) depict cattle, rising to 7/27 (26%) in the Final Palace period. The only other site where more than 20 seals of either period were found is Armenoi: here 9/55 Final Palace seals depict cattle (16%). None of this evidence points to Knossos as the centre of bull iconography: in fact the opposite conclusion can be drawn, that Knossos seals included a large diversity of different animal types, so that the proportion of cattle on sealings was lower than at other sites in the Neopalatial period. Hunting cattle and bull-leaping can be seen as the animal practices of an elite, but there is no evidence from seals to suggest that they were restricted to, or particularly representative of, a Knossian elite.

8.3.15.3 Vessel

Although small in number, zoomorphic vessels in the shape of cattle can be seen as a phenomenon which continues throughout the Bronze Age. These have been seen in Chapter 6 as real metaphors for cattle, allowing them to be manipulated during the course of social events. They can be seen in terms of the metaphorical ownership of these animals.

A few examples of relief and painted bucrania on vases exist, but these are never a large part of the marine-dominated ceramic repertoire. Scenes of bull-leaping do occur on the Boxer Rhyton (Koehl 2006: fig. 29), establishing it as one of a number of elite practices, including combat. The realistic depiction of bull-leaping, however, is given most prominence in fresco depictions.
8.3.15.4 Fresco

The use of relief frescoes to make cattle present in the palace at Knossos has been discussed in Chapter 7. These materialised the occasional performance of bull-leaping, establishing it as part of the fabric of the palace. Rather than hunting this was the animal practice which those in the palace wanted to broadcast to visitors since it dramatised the palatial control of cattle, and perhaps particularly bulls.

The later, smaller-scale bull-leaping frescoes in the East Wing of the palace were arguably not as accessible, but rather captured the details of the performance. These were perhaps more for elite consumption, along with the small-scale artifacts depicting bull-leaping found in the Ivory Deposit. It can be suggested that bull-leaping was both a spectacle and a practice with detailed rules. Whereas the larger scale frescoes ensured that it had widely visible presence in the palace, these smaller frescoes could have showed its nuances to a more select audience.

8.3.15.5 Conclusion

Both frescoes and zoomorphic vessels can be seen as real metaphors for cattle in the hands of an elite. Material culture was used to define a relationship with cattle which was based on non-domestic practices. Hunting, however, seems to have been restricted to seals, since frescoes generally emphasised bull-leaping. Whereas hunting cattle can be seen as a mark of distinction among an elite, bull-leaping was arguably a public spectacle which differentiated a palatial elite from those who only had relations with cattle based on ploughing. The palace was involved in this too, but the trace of this practice is a different form of material culture, written documents. Although Knossos has become synonymous with the depiction of cattle, it can be suggested that rather than symbolising the palace, these depictions were an active part of the maintenance of control over cattle. The questionable association in modern scholarship of Knossos alone with these practices can be seen as a mark of its successful deployment of material culture, on both a large and small scale.

8.4 Conclusions

8.4.1 Material traces of human animal relations

As the discussion of bull-leaping makes clear, apart from the animal remains, the material traces of human-animal relations in Bronze Age Crete were frequently those of the elite.
This simply emphasises the way in which material culture could be used to bring animals, or particular animal practices, into social relationships. Rather than the product of ‘nature loving Minoans’ the animal-related material culture of Bronze Age Crete can be seen as serving particular social functions, often involving the negotiation of power relationships. The difference in the proportions of animals in different types of material culture can be seen in terms of audience. If seals were traces of largely personal human-animal relations, involving practices such as hunting, frescoes and ceremonial artifacts were more suited to the display of more corporate human-animal relations, establishing the metaphorical ownership of an elite over exotic animals, cattle, or even the Cretan landscape.

Other forms of material culture can be used to investigate sub-elite human-animal relations. The deposition of figurines of largely domestic animals at peak sanctuaries reflects the concerns of a wider population, and the deposition of zoomorphic figures in peak sanctuaries and caves extends beyond the period of palatial control on Crete. These were objects which did not require specialised crafting, but were still implicated in human-animal relations. At the same time, the manufacture of zoomorphic rhyta in various materials in the Neopalatial period can be seen as a takeover of this tradition of creating models of animals, which could be brought into elite social practices.

However, the full investigation of these practices requires figurines to be published as well as zoomorphic rhyta, with contextual information. This thesis has aimed to quantify the occurrence of different types of animals in different types of material culture, but categories such as figurines or larnakes have proved almost impossible to analyse in this way. The way in which animal depictions has been published tends to reinforce the idea of ‘nature-loving Minoans’ since the most aesthetically appealing objects are widely reproduced, while the more mundane objects remain largely unpublished.

Zooarchaeological remains potentially provide the widest set of insights into sub-elite human-animal relations, but again the way in which these have been reported has limited their potential usefulness. So too has the separation of the analysis and interpretation of zooarchaeological remains from those of other classes of material in publications. Reconstructing the material traces of human-animal relations, as can be seen from this thesis, involves a diverse range of archaeological evidence. Only when site databases are published electronically can archaeological context be effectively interrogated as a further source of evidence for the way in which different media interact. The republication of the Temple Repositories (Panagiotaki 1999) shows how important contextual relationships can be in establishing the significance of animal depictions.
The Temple Repositories assemblage is also an example of the way in which preconceptions, often inherited from Evans, can dominate the interpretation of material culture and stifle further analysis. This thesis has sought to analyse the linkages between transient human-animal relations and their surviving traces in material culture as a means to suggest interpretations based primarily on indexical rather than symbolic connections. This, it is suggested, should be the starting point for symbolic interpretations, for instance, involving deities: figures in chariots pulled by griffins are being marked as exceptional by the demonstration of control over animals so exotic that they were never seen in Crete. This is different only in degree, not kind, from seals demonstrating victorious encounters with lions on the Mainland: the movement of lion pelts, and perhaps even lions, to Crete made them more familiar animals. Rather than starting with assumptions about deities, this approach builds up to a point where certain animal practices could be seen as beyond human experience.

An ecological perspective need not exclude considerations such as these. Rather it focuses attention on the distribution and affordances of animals in Crete and further afield. The analysis of the material traces of human-animal relations in Bronze Age Crete has shown how different media were used to bring different relationships with animals, in different places, into social practice. These traces of human-animal relations have been widely misunderstood as simply reflecting an appreciation of the natural world, but this thesis has shown how they played an active role in Bronze Age Cretan society.

8.4.2 The ‘nature-loving Minoans’

The ‘nature-loving Minoans’ have been argued in this thesis to be the result of a pervasive interpretation of a particular set of depictions of animals and plants; a final question is whether this thesis has replaced it with a more convincing interpretation. A theme throughout the discussion of previous approaches has been the label ‘naturalism’, usually taken to be the lifelike depiction of animals. What Evans termed ‘nature-moulding’, however, adds another dimension to naturalism: in its basic form this was using a shell as a mould for an appliqué. Its companion term, ‘nature-printing’ was the use of a sponge to make indexical prints on a wall or vessel in paint. In both of these cases the depiction is in a direct indexical relationship to the shell or sponge, eroding the distinction between representation and reality. From this perspective naturalism is a style of depiction which replicates animals as if they are present.
It has been argued that near life-size relief frescoes of bulls at Knossos made the animal present in real space. Similarly the relief depictions of goats on the Sanctuary Rhyton, with their turned heads and overlapping bodies establish a relationship with the viewer with some perspectival features. These too can be seen as indexes of animals, in which the style of depiction establishes a connection between human and animal as if interacting, either spatially or visually. Naturalism in Minoan art can be seen as a downplaying of the role of the object in mediating human-animal relations, even though the relationship is in fact with a depiction of an animal. The Zakros bull’s head rhyton (Figure 6.1) was not just naturalistic in style, but in certain contexts would been animated, spewing liquid from a hole in its mouth. At the same time the skilled manufacture required to make the object made it more exclusive than the possibility of owning cattle: as argued in the case of frescoes too, naturalistic depictions convincingly depicted animal practices, but in this way restricted them because the depictions shaped the perception of socially significant affordances and animal practices.

The implication of this explanation of naturalism, that it was a means by which objects could substitute for real animals in a social context, is that human-animal relations were of prime importance in Bronze Age Crete. These relationships were not merely socially determined, but arose from the interaction between human and animal. The basic affordance of humans and animals accepted here is animacy: this results in certain types of interaction between humans and animals which are different from those between humans and objects. Yet the effect of naturalism is that the object assumes a kind of animacy because it closely replicates the way in which humans interact with animals. This is exemplified by bull’s head rhyta, but also apparent in the replication of the characteristic pose of an animal when struck by a hunter’s spear. The argument that animal depictions are both implicated in, and extend, human-animal relations can be seen as a replacement for the idea that depictions reflect the artist’s appreciation of nature. Naturalism cannot be reduced to a way of depicting animals; rather the most socially effective way of replicating the way humans interact with animals is by using a naturalistic style of depiction.

One example of this is bull-leaping: although this performance had great social significance, as can be seen by the way in which it was promulgated using a variety of material culture, the outcome was partly determined by the affordances of the bull. One outcome was a graceful leap, as depicted frequently, but another was injury to the leaper, as seen, for instance on the Boxer Rhyton. Depicting this convincingly necessitated skill on the part of the artist, particularly since this was a departure from the usual type of
depiction (Younger’s (1995) Type A), so, again, the depiction also indexes of the skill of the manufacturer. Being able to control the output of skilled craftspeople enabled an elite to own the most effective depictions of socially significant animal practices.

Although bull-leaping occurred in a given social context, it is not reducible to this, since it is partly determined by the affordances of the bull in that context. In the short term that context was probably an area in the vicinity of the palace. In the long term, however, that context can be seen in ecological terms. It is no accident that a highly socially significant animal practice involved the biggest and most dangerous animal on Bronze Age Crete. Hunting, owning and leaping were all socially significant animal practices which can be seen in a wider ecological context: hares were hunted in Bronze Age Crete but this was not depicted.

This thesis has examined Bronze Age animal depictions from a human-animal relations perspective. It is fitting to end with an account of the highly naturalistic animal depictions because they have come to stand for the ‘nature-loving Minoans’. It has been argued instead that that these were the traces of socially significant relations with animals. The affordances of different animals in part determined which relationships were socially significant, but the affordances of different objects, from deer antlers to zoomorphic rhyta, in part determined the social significance of these traces.

When Berger (1980: 4) wrote: ‘Animals came from over the horizon. They belonged there and here’, he probably did not have the role of material culture in human-animal relations in mind. But from the perspective advocated in this thesis, a lion-head rhyton could bring an animal from over the horizon into a drinking ceremony in the palace at Knossos. The affordances of the lion, its biogeographical context on the Mainland, all contributed to the social significance of encountering, or even killing a real lion, but the rhyton meant that it was not just there on the Mainland, but present in a particular social context in Bronze Age Crete. The ‘nature-loving Minoans’ can instead be seen as participants in a set of relationships between humans, animals and objects, of which only the objects, the material traces of human-animal relations, survive.
Bibliography

Abbreviations

AJA American Journal of Archaeology
BCH Bulletin de Correspondance Hellénique
BICS Bulletin of the Institute of Classical Studies
BSA (Annual of) the British School at Athens
CMS Corpus der minoischen und mykenischen Siegel
JHS Journal of Hellenic Studies
OJA Oxford Journal of Archaeology
SIMA Studies in Mediterranean Archaeology
SMEA Studi micenei ed egeo-anatolici


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Reese, D. S. 1987b. The EM IIA Shells from Knossos, with comments on Neolithic to EM III Shell Utilization. *BSA* 82: 207-211.


3 Figures

Figure 3.1 Tablet Ca 895: as published by Evans (1935:799) (top) and as published in COMIK with join (Chadwick et al. 1987: 363).

Figure 3.2: Suggested development of the horse ideogram (Evans 1935: 800).

Figure 3.3: The Linear B ideograms for humans and animals, with OVIS showing the typical female and male ligatures (Hooker 1980: 42).
Figure 3.4: Photograph, drawing and transcription of four-sided Cretan Hieroglyphic bar (KN Hh (08) 01) with animal heads (sign 152) indicated with an arrow. Reproduced from CHIC (Olivier & Godart 1996: 118-9 [#065]).
Figure 3.5: Drawing of two-sided Linear A tablet (PH (?) 31), with (ligatured) pig ideogram indicated with an arrow (Godart & Olivier 1976a: 318).

Figure 3.6: Photograph of Linear B tablet (Dd 1171) from Knossos (GR 1910,4-23.2). © Trustees of the British Museum.

Figure 3.7: Drawing and transcription of Dd 1171 (Chadwick et al. 1990: 49).
Number of animals recorded by ideogram and site

Figure 3.8

Number of animals recorded by site (excluding compound signs)

Figure 3.9
Figure 3.10

Figure 3.11. m = male, f = female, j = junior
Number of animals in Knossos Linear B tablets (after Halstead)

Figure 3.12 (as 3.11, but detailing the smaller totals). m = male, f = female, j = junior

Proportion of animals in Linear A/B tablets

Figure 3.13
Table 4.1: Common names (where used) for genera names.

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<td>Lepus</td>
<td>Hare/rabbit</td>
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<td>Monodonta</td>
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<td>Goat</td>
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<td>Mouse</td>
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<td>Cockle</td>
<td>Nassarius</td>
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<td>Triton shell</td>
<td>Ovis/Capra</td>
<td>Sheep/Goat</td>
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<td>Rock Dove/Pigeon</td>
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<td>Pisania</td>
<td>Whelk</td>
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<td>Sparisoma</td>
<td>Parrotfish</td>
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<td>Spicara</td>
<td>Picarel</td>
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<td>Wedge-shell</td>
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<td>Spiny/Thorny Oyster</td>
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<td>Horse/Ass</td>
<td>Sus</td>
<td>Pig</td>
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<td>Crab</td>
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<td>Tonna</td>
<td>Giant Tun or Tun Shell</td>
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<td>Site</td>
<td>Date</td>
<td>Sieved</td>
<td>NISP</td>
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<td>------------------------------</td>
<td>-----------------</td>
<td>--------</td>
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<tr>
<td>Ayia Triada</td>
<td>EM onwards</td>
<td>N</td>
<td>Y</td>
</tr>
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<td>LMIB</td>
<td>Y – dry (all), wet (floor samples)</td>
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<tr>
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<td>LMIII published so far</td>
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<td>EM</td>
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<td>MMIIA</td>
<td>N</td>
<td>Y</td>
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<td>LMIA</td>
<td>N</td>
<td>Y</td>
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<tr>
<td>Knossos (Unexplored Mansion)</td>
<td>LM</td>
<td>N</td>
<td>Y</td>
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<td>EM onwards, LMII predominant</td>
<td>Partly dry and water-sieved</td>
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<td>Myrtos</td>
<td>EMII</td>
<td>N</td>
<td>Y</td>
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<tr>
<td>Palaikastro wells</td>
<td>LMIB-LMIIA2</td>
<td>N, but partly water-sieved</td>
<td>Y</td>
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<tr>
<td>Pseira</td>
<td>Mostly Neopalatial, with later occupation</td>
<td>Y – dry (all), wet (floor samples)</td>
<td>Y</td>
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<tr>
<td>Vronda</td>
<td>LMIHIC</td>
<td>Partly dry sieved</td>
<td>Y</td>
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</table>

Table 4.2: Summary of zooarchaeological reports for Bronze Age Cretan sites.
Figure 4.1

Figure 4.2: Proportions of main domestic taxa, as Figure 4.1, with addition of Protopalatial Knossos deposit, calculated according to Minimum Anatomical Units (MinAU) (Isaakidou 2007).
Total number of marine invertebrate remains from Bronze Age contexts

Figure 4.3

Percentage of marine invertebrates (>5%) by site and period

Figure 4.4
Fish specimens by site and family (Sites >100 NISP)

Figure 4.5

Comparison of the proportion of marine vs. terrestrial specimens by site, Neopalatial contexts

Figure 4.6
Genera and (general type) found at Mochlos/Chalinomouri by NISP (>10 specimens)

Figure 4.7

Wild animals in Bronze Age contexts (NISP except Chania)

Figure 4.8
Comparison of faunal assemblages and Linear A/B texts

Figure 4.9

Faunal remains in Temple Repositories (NISP)

Figure 4.10
5 Figures

Figure 5.1: Drawing of a three-sided prism, and impressions of each face (Evans 1894: 288, 291).

Figure 5.2: CMS VS.3 21, three-sided prism from Mallia, including typical entry for side c, identified as a dog. Drawings of impressions of other two sides shown and prism profile.
Figure 5.3: Seal impression of a ring showing a female dog (II 8 287), and picture of hanging nodule 258/1 from Knossos (Popham and Gill 1995: Pl. 4).

Figure 5.4: Agate lentoid from Chania showing dog attacking deer (CMS VS. 3 153).

Seals/sealings depicting animals by stylistic date according to context type

Figure 5.5
Non-figural Prepalatial seals depicting animals and zoomorphic seals (including imported scarabs in stratified contexts)

Figure 5.6

Zoomorphs by shape and period

Figure 5.7
Zoomorphs by material and shape

Figure 5.8

Number of depictions of animals on most frequent seal shapes (Prepalatial)

Figure 5.9
Correspondence analysis showing most common Prepalatial seal shapes and animal types

![Correspondence analysis graph]

Figure 5.10

Animal depictions on Prepalatial seal faces (with taxonomic groupings) by geographical area

![Animal depictions graph]

Figure 5.11
Protopalatial seals and sealings by area and context type

Figure 5.12

Animals shown on 3- and 4-sided prisms

Figure 5.13
| Animal type       | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | Total |
|------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| animal (1)       | 6  | 1  | 3  | 1  | 7  | 4  | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    | 35  |
| bird (2)         |    | 1  | 1  | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 9   |
| cat (3)          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 1   |
| cattle (4)       |    | 2  | 3  | 2  | 5  | 5  |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 33  |
| dog (5)          | 3  | 3  |    | 6  | 3  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 18  |
| dog/lion (6)     |    | 2  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 2   |
| fish (7)         | 1  |    |    |    |    | 1  | 5  | 1  |    |    |    |    |    |    |    |    |    |    |    |    | 17  |
| goat (8)         | 7  | 1  | 1  | 5  | 6  | 1  | 4  | 16 | 3  |    |    |    |    |    |    |    |    |    |    |    | 63  |
| human (9)        | 4  | 1  | 5  | 3  | 2  | 5  | 16 | 12 | 2  | 4  |    |    |    |    |    |    |    |    |    |    | 116 |
| hybrid (10)      | 1  | 1  |    | 2  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 7   |
| insect (11)      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 2   |
| lion (12)        |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 5   |
| monkey (13)      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 1   |
| pig (14)         |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 2   |
| quadruped (15)   | 8  | 4  | 12 | 1  | 4  | 10 | 32 | 1  |    |    |    |    |    |    |    |    |    |    |    |    | 132 |
| scorpion (16)    |    | 1  |    | 2  | 4  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 10  |
| sheep (17)       |    | 1  |    |    |    | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 2   |
| spider (18)      | 1  | 2  | 2  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 15  |
| waterbird (19)   | 3  | 1  | 1  | 2  | 5  | 15 | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    | 51  |
| unknown (20)     | 1  | 2  | 2  | 5  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 25  |
| Total            | 35 | 9  | 1  | 33 | 18 | 2  | 17 | 63 | 116| 7  | 2  | 5  | 1  | 2  |    | 132| 10 | 2  | 15 | 51 | 25 | 546 |

Table 5.1: Co-occurrences of animal types on three-sided prisms.
Figure 5.14: Network diagram showing the combined relationships between faces of three-sided prisms. Geodesic distances.

Number of animals on seals/sealings from most abundant sites in Protopalatial period

Figure 5.15
Comparison of subsidiary elements with quadrupeds on seals/sealings

Figure 5.16

Neopalatial seal shapes by location

Figure 5.17
Talismanic seals by colour and animal type

Figure 5.18

Types of animal depicted on MMIII-LMI seals/sealings (excluding talismanic)

Figure 5.19
Pose and direction of MMIII-LMI quadrupeds (excluding talismanic)

Figure 5.20

Elements with MMIII-LMI quadrupeds by direction (excluding talismanic)

Figure 5.21
Figure 5.22: Network diagram showing Zakros Room 25 Multiple Sealing System, indicating general content of seals, relative frequency and frequency of combinations.

Figure 5.23
Final Palace seal shapes by location

Figure 5.24

Seals/sealings dated to LMII-III

Figure 5.25
Elements associated with quadrupeds (to left/right) on LMII-III seals

![Graph showing the proportion of animal morphology by period across different periods: Prepalatial, Protopalatial, Neopalatial, and Final Palace. The graph plots the percentage of animal morphology for each category, including animal, marine, wug, fish, human, bird, hybrid, and quadruped, across the periods. The y-axis represents the percentage, and the x-axis represents the morphology types.](image)

**Figure 5.26**

Proportion of animal morphology by period

![Graph showing the proportion of animal morphology by period across different periods: Prepalatial, Protopalatial, Neopalatial, and Final Palace. The graph plots the percentage of animal morphology for each category, including animal, marine, wug, fish, human, bird, hybrid, and quadruped, across the periods. The y-axis represents the percentage, and the x-axis represents the morphology types.](image)

**Figure 5.27**
Proportion of animal type (>10 occurrences) by period

Figure 5.28

Single quadrupeds by direction

Figure 5.29
Directions faced by single goats, by date and style

Figure 5.30

Direction of quadrupeds in selected iconographic contexts

Figure 5.31
Figure 5.32

Cattle and goat pose by iconographic context

Figure 5.33
Figure 5.34
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Figure 6.2: Drawing of scene from Sanctuary Rhyton (Shaw 1978: fig. 7) and the restored chlorite vessel (Platon 1971: 165). Replaced with author’s photo in redacted version.
Figure 6.3: Ceramic Marine Style conical rhyton from Palaikastro (Bosanquet and Dawkins 1923: pl. XX).

Figure 6.4: Ceramic cattle rhyton from Kophinas. Author.

Figure 6.5: Ceramic animal figurines from Petsophas. Author.
Figure 6.6: Bronze agrimi figurine from Ayia Triada. Author.

Figure 6.7: Ceramic bowl containing human and animal figurines from Palaikastro (Bosanquet and Dawkins 1923: pl. VII). Replaced with author’s photo in redacted version.
Figure 6.8: Ceramic Marine Style ewer with relief decoration from Poros (Dimopoulou 1999: pl. XLVII). Replaced with author’s photo in redacted version.

Figure 6.9: Ceramic Kamares bridge-spouted jar with goat appliqué from Phaistos. Author.

Figure 6.10: ‘Ambushed Octopus’: soft stone rhyton with carved relief decoration from Knossos (Evans 1928: fig. 130).

Figure 6.11: Limestone octopus rhyton from Knossos (Warren 1969: P 487).
Figure 6.12: Ceramic Kamares cup from Phaistos impressed with shell decoration (Tzedakis and Martlew 1999: fig. 41).

Figure 6.13: Ceramic bull rhyton from Phourni, Archanes. Author.
Figure 6.14: Alabaster triton from Kalyvia. Author.

Figure 6.15: Ceramic cup with appliqués of cat, trees and marine animals from Mallia (Karetsou and Andreadaki-Vlazaki 2001: 56, no. 31).
Figure 6.16

Figure 6.17
Catalogued zoomorphic figures

Number of zoomorphic figures/vessels in settlements by context type

Figure 6.18

Figure 6.19
Totals for zoomorphic figures/vessels (excluding figurines) for different animal types

Figure 6.20

Number of zoomorphic figures/vessels by period and animal type

Figure 6.21
Breakdown of animal heads by type and material

Figure 6.22

Breakdown of reliefs by form, material, period and general animal type

Figure 6.23
Figure 6.24

Animal types in relief by material

Breakdown of recorded vessels with ceramic decoration (Marine Style in white)

Figure 6.25
Figure 6.26

Figure 6.27: Painted LMIIIIC sherd from Chania depicting deer, probably red deer (Hallager & Hallager 2000: Pl. 78c:4).

Figure 6.28
Figure 6.29

Figure 6.30: Co-occurrences of main Marine Style animals.
Figure 6.31: Network diagram showing the co-occurrences of frequent Marine Style elements. Geodesic distances.

Animal types in ceramic decoration by period

Figure 6.32
Proportion of general animal types in different ceramic forms (excluding figurines)

Figure 6.33

Animal depictions from Knossos

Figure 6.34
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Figure 7.2: Bull’s head from North East Passage (Evans 1930, fig. 116).
Figure 7.3: The Saffron Gatherer Fresco (Evans 1921: plate IV).

Figure 7.4: Saffron Gatherer: Heraklion Museum restoration (Evely 1999: 121).
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Figure 7.7: Knossos Throne Room as restored. Author.

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Figure 7.17
Frescoes depicting animals by site and stylistic date

Figure 7.18

Total number of animals depicted by area (humans excluded)

Figure 7.19
Total number of animals depicted (MNI), by location type and fresco type at Knossos

Figure 7.20

Number of animals in frescoes

Figure 7.21
Figure 7.22

Comparison of proportions of animal types from Knossos (excluding Pre- and Protopalatial seals) (>1%)

Figure 7.23
Figures

Total number of animal depictions by period (excluding figurines)

Proportions of general animal types by medium and period

Figure 8.1

Figure 8.2
Figure 8.3

Percentage of wugs by artifact

Figure 8.4

Percentage of birds by artifact
Percentage of marine animals by artifact

Figure 8.5
Percentage of hybrids by artifact

Figure 8.6

Percentage of monkeys, lions and other felines by artifact

Figure 8.7
Figure 8.8
Appendix 1

Bold indicates stucco relief

<table>
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<tr>
<th>Fresco No</th>
<th>Fresco Name</th>
<th>Site name</th>
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<td>Knossos Palace</td>
<td>Queen's Megaron</td>
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<td>North-South Corridor</td>
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<td>Chained Griffins (High Reliefs of Athletes and Griffins)</td>
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<td>North-South Corridor</td>
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<td>Knossos Palace</td>
<td>South-East Palace Angle</td>
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<td>Argonaut</td>
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<td>Lower East-West Corridor</td>
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<td>Throne Room</td>
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