1 PREAMBLE TO THE DOG'S JOURNEY THROUGH TIME

> Like the Dachshund that is a dog and a half long and half a dog high, the state of Tennessee has peculiar proportions.
>
> (Kneberg 1952: 190)

For one who lived and worked in the state of Tennessee for many years, Madeline Kneberg's deliciously phrased perspective holds special resonance for getting started on a book about dogs. Her comment, of course, concerns a modern breed, but modern breeds are not the focus of this book. This book is concerned mostly with how and why dogs in general came into being, and why they have the basic characteristics that they do, irrespective of modern breed standards. That said, it is still reasonable to ask a simple question: Is the world really in need of yet one more book about dogs? Over approximately the past half-century many books that center on dogs have been published, so at face value the question is legitimate. I, of course, believe that what is offered here should be desired and welcomed. But to make clear how this offering differs from previous works, it is useful to consider briefly the nature of those other contributions. Following that, it is important to spell out this book's framework, an approach that should help serve to highlight how this volume is different from others. There is no claim to exhaustiveness here, and the purpose is simply to draw attention to a series of works, mostly prominent, that I am acquainted with. Most of these works receive attention, to various degrees, at different point in this volume.

The essential goal here is that this volume be useful to specialists with particular areas of interest, and simultaneously accessible to interested lay readers. In keeping with this goal, I have attempted to write in a style that is clear and avoids pretentious academic jargon. That means

avoiding cumbersome technical presentations as much as possible, in an effort to express the content in a clear and, hopefully, engaging style. In briefly characterizing some previous volumes below, I largely bypass (with exceptions, including the first one) those written for the public in general. To be sure, several of those efforts receive attention at different points, but the primary goal here is to identify and compare some more specialized efforts with this one.

PREVIOUS VOLUMES ABOUT DOGS

First, covering this ground entails bypassing volumes that deal with the topic of domestication broadly enough that dogs are but one component. In briefly covering several previous dog books, it is useful to take a basic chronological approach, beginning just over half a century ago. In 1954, the well-known Austrian ethologist Konrad Lorenz published a book on dogs (first published in German), intended to be accessible to the public (Lorenz 1954). In that book Lorenz covered, among other things, the behavioral features of dogs, augmented with accounts of his own dogs, emphasizing the fundamental compatibility between dogs and people. In fact, early on he made a statement that is appropriate for different parts of this book: "The whole charm of the dog lies in the depth of the friendship and the strength of the spiritual ties with which he has bound himself to man" (Lorenz: 1954: ix). This is a theme that he developed subsequently (e.g., Lorenz 1975), providing some important insights. Given that this book was published some half a century ago it did not, by definition, benefit from all that has been learned since then. In fact, at that time Lorenz advanced an erroneous case that the golden jackal, *Canis aureus*, was the wild ancestor of most dogs. It is notable that Lorenz himself later recognized this position as erroneous, and retracted it (Lorenz 1975). Lorenz's retraction predated the empirical demonstration of the true ancestry of dogs, covered in the next chapter, and his reasoning at that time is especially notable. That aspect of Lorenz's work is featured later in this volume, especially in Chapter 9.

About a decade after Lorenz's book, John Paul Scott and John Fuller produced a book on dogs intended to be more relevant to professional workers (Scott & Fuller 1965), but accessibly written, as well. This book was based on some thirteen years of research at the Jackson Laboratory, in Bar Harbor, Maine. They were especially focused on the role of heredity in shaping behavior. They dealt with several dog breeds, and

working especially with crosses between Basenjis and Cocker Spaniels, they found that heredity is involved in virtually every trait tested. They emphasized, however, that there can be a complex link between genetic endowment and the behaviors that take place. For present purposes their findings regarding the formation of social bonds are especially relevant. This aspect of their work is especially important in Chapter 4 here, where domestication as a process is the focus. A few years after Scott and Fuller's work, Michael Fox (1971) published a book that focused on how brain development was integrated with behavior in the dog. Fox was working from the vantage point of physiological psychology, a theme he developed more in later work. In 1975, he edited the volume on wild canids containing the foreword by Konrad Lorenz, in which Lorenz rescinded his earlier view that the golden jackal was a primary ancestor of the dog. Subsequently, Fox (1978) published a book that was intended to be a rather comprehensive account of the domestication of the dog. Not being fully familiar with areas outside his realm of expertise in modern canids, Fox made an unsupported inference about dog ancestry. At the same time, though, he developed some noteworthy insights, stemming from his background in physiological psychology, concerning the behavioral capacities of dogs, highlighted here in Chapter 8.

In 1985, Stanley J. Olsen (1985) produced a book on dogs for which his vantage point was primarily the archaeological record. And just as Michael Fox's earlier work reflects his lack of primary background in that area, Olsen's work, understandably, reflects his own lack of primary background in Fox's areas of expertise. Olsen was no newcomer to dogs, though, having produced several published papers about them during the years prior to his book, and on domestication in general. In his book Olsen was dealing especially with the origins of the dog, as understood primarily from their archaeologically recovered skeletal remains. Because of this emphasis, Olsen's book is relevant here, especially during the earlier portions of this volume. Although now somewhat outdated, more than twenty years having passed since its publication, Stanley Olsen's book was very important for its time.

Moving to the 1990s, Stanley Coren (1994), a dog trainer and professional psychologist, published an engagingly written book in which he purported to examine the capacities of dogs that can be can be regarded as intelligence. Well into the book, he conceptualizes his central model of canine intelligence as occurring along three basic dimensions: Instinctive, Adaptive, and Working/Obedience intelligence. In earlier sections

of the book, however, he addresses a number of issues that don't really seem to contribute to his framework. For example, a chapter on the natural history of dogs doesn't seem particularly germane to his objectives. He is also prone to express his views in anecdotal style, though ironically, it is in one of those sections that he offers some information that is useful here. Specifically, he provides an account of the receptive vocabulary of his own dogs, information that gains credence when one considers the later work of others, done with more methodological rigor.

Also in that decade, 1995 saw the publication of a collection of different pieces on dogs, edited by James Serpell (1995a). This volume was an outcome of a 1991 conference hosted by the Companion Animal Research Group in Cambridge, England. Its express goal was to offer a thoroughly modern synopsis of the behavior and natural history of the dog, from a scientific standpoint. Sixteen different contributions were distributed among three basic sections: (1) domestication and evolution, (2) behavior and behavior problems, and (3) human–dog interactions.[1] The year 1996 saw the publication of three noteworthy books about dogs. One was anthropologist Mary Thurston's (1996) engagingly written account of dogs, ranging from scenarios about their origins all the way to their standing in modern societies. Thurston's greatest strength lies in the more recent realm, and of primary importance to this volume is her treatment of how favored dogs are often dealt with in modern times when they die. How dogs have been treated upon death is a topic that figures prominently into this book, with Chapter 7 devoted to that subject alone. The second 1996 book is by Michael Lemish and deals exclusively with the role of dogs in warfare activities (Lemish 1996). That topic is important in Chapter 10 here, when the focus is on modern dogs. Finally, for the year 1996, Hank Whittemore and Caroline Hebard (1996) produced a thoroughly appealing account of search-and-rescue dogs. Written for a general readership, rather than a specialized audience, the authors aimed (successfully) for this book to be enjoyable, as well as informative regarding just how useful dogs can be in certain kinds of situations.[2]

[1] This is a volume that I have decided familiarity with, having formally reviewed it in print (Morey 1997). Several of the chapters in Serpell's volume receive attention at different points in this book, since aspects of all three of the principal areas are important here, at different junctures.

[2] The book is primarily accounts of Hebard's search-and-rescue dogs in operation, on an international basis. Beyond the fact that this book is simply a good read, its special relevance here lies with the accounts of the psychological impact of certain missions on the dogs themselves. This is an aspect of the book that has occasioned

In 1997, Marion Schwartz produced a more academically oriented book on early dogs in the Americas (Schwartz 1997). Schwartz considers their roles in different places in the New World, aided by relevant ethnohistorical information, including an entire chapter devoted to one of the subjects addressed here in Chapter 5, the use of dogs as food. She also devotes an entire chapter to how dogs were conceived of and then dealt with in death, a topic that has relevance in Chapter 7 of this volume. Schwartz also includes a chapter on the representation of dogs in artistic expressions, a topic that gets brief attention in Chapter 5, here. Because the topic has been dealt with ably before, this volume addresses it only in limited fashion, focusing especially on the ways in which artistic representations of dogs can entail a conspicuously anthropomorphic theme.

In a distinctly nonarchaeological vein, Linda Case (1999) produced a book on the care and management of modern dogs. That it is distinctly nonarchaeological is reflected in occasional inaccurate background comments. An obvious one is her statement that "During the Mesolithic Period, human culture developed the use of weapons for hunting" (Case 1999: 9). In fact, people developed hunting weaponry well before the Mesolithic Period, which began about 10,000 years ago in Europe, and slightly before that in certain other regions. Aside from missteps such as that, Case does provide some genuinely useful information, for example about common health disorders in dogs, though in some cases she seems to be stressing the obvious.[3]

Of considerably more relevance here is an edited volume published the next year (Crockford 2000a). This volume was the product of the first symposium held by the International Council for Archaeozoology (ICAZ) on the history of the domestic dog. The symposium was held in Victoria, British Columbia, and the resulting volume covers diverse

some professional attention, and that factor is important in Chapter 9, here. A more recent account pertains to the roles of search-and-rescue dogs in the aftermath of the fateful destruction of the World Trade Center in New York City on September 11, 2001 (Bauer 2006).

[3] An example of that is when she covers proper feeding strategies: "If a dog gains too much weight (energy surplus) the amount fed should be decreased. Conversely, if weight is lost, an increased amount of food is provided" (Case 1999: 314). She is also concerned with the conformity of any given dog to pure breed "show" standards, but with little attention to the overall well-being of the animals. Her contribution plays no real role here, and bringing this book up mostly reflects a desire to be thorough, given that I formally reviewed it in print (Morey 2000). A new edition was released in 2005, and one hopes that it has been updated with, if nothing else, greater accuracy regarding the archaeological record.

topics within the realm of how dogs are represented through time, as known archaeologically. It is worth calling attention to one particular contribution, by the editor herself (Crockford 2000b). This brief paper, about the role thyroid hormone physiology in dog domestication was in fact an initial effort of hers that she expanded, revised, and elaborated on in subsequent publications (Crockford 2002, 2006).[4] Shortly after that, Raymond and Lorna Coppinger (2001) produced a biologically oriented book on dogs, intended to be accessible to educated readers and relevant to a variety of specialists. With a backlog of previous experience writing about dogs, the Coppingers develop two themes that are especially relevant here. The first theme is that dogs' characteristics have changed as a consequence of domestication, and they are fundamentally different animals from their ancestors. Their second theme is the idea that dogs evolved from wolves to be efficient feeders at human waste dumps. This theme receives some critical attention here, especially in Chapter 4.

Finally, for present purposes, three newer volumes should be identified. One is an edited volume of pieces stemming from a 2002 conference session on dogs focused on archaeozoological matters (Snyder & Moore 2006). Different chapters in it are relevant to parts of this book. Another useful book is a volume of separate contributions, edited by Per Jensen (2007a). The chapters in his book concern mostly modern dogs, and accordingly, I draw from several in my later chapters. Other chapters in his book do have some archaeological relevance, and so I refer to them earlier in this volume. Lastly, for present purposes, is a recent book by Ádám Miklósi (2007a), also concerning mostly modern dogs, but including some archaeological considerations.[5]

[4] In general the goal in this introductory chapter is to highlight volumes that are specifically about dogs; however, Crockford's (2006) most recent contribution is a book that, while it goes well beyond dogs, calls on dogs as her primary example. She discusses at some length how and why evolution occurs under domestication, and just what constitutes domestication. Accordingly, Crockford's book receives substantial commentary in Chapter 4, here, which deals with the process of domestication, and it plays a limited role in Chapter 8 as well. She also wrote an earlier volume devoted to archaeological dogs (Crockford 1997), but only to a structural aspect of dogs inhabiting a quite specific region of North America.

[5] Archaeological considerations are of primary concern in a work originally written in German close to a century ago, by Kontondo Hasebe, recently translated into English by Holger Funk (Hasebe 2008). The bulk of the book, Hasebe's work, is about osteological characteristics of some prehistoric Japanese dogs. Funk's lengthy introduction, though, offers a variety of useful insights that concern matters covered here especially in Chapter 7.

As mentioned earlier, this is by no means an exhaustive account of dog books, but a sample of works produced over about the past half century that focus explicitly on dogs, that I have had occasion to become familiar with. To be sure, the foundation of this book lies in knowledge of the archaeological record, and a goal is to be comprehensive in identifying archaeological books about dogs. As far as other works previously described, some address specialized nonarchaeological audiences, though they are sometimes relevant.[6] I also appeal to modern general books at different points. Though examples of each are incorporated, the sheer quantity of material available about dogs prohibits one from meaningfully covering everything.

THIS VOLUME ABOUT DOGS

A central, unifying theme of this book is how and why dogs and people developed a distinctive social bond with each other. But it is appropriate initially to explore some background topics that are important as a frame of reference for what follows, leading up to the book's end. That said, it may be common knowledge that the wolf, *Canis lupus*, is the immediate ancestor of domestic dogs. For that reason, beginning by delving into the topic of immediate ancestry (Chapter 2) may at first seem like old news. In part, however, it is important to establish the basic taxonomic framework, an important first step. Then, as to the issue of immediate ancestry, going over the history of uncertainty on that topic and ultimately its modern resolution is an exercise full of useful lessons. To anticipate one, the genetic near-identity of wolves and dogs stands in sharp contrast to the fundamentally different animals that they are. Beyond basic wolf ancestry, I also consider the issue of which variety or varieties of wolf were involved.[7]

[6] An example is the recent comprehensive assessment of the genome of the dog, in a volume edited by Ostrander et al. (2006). As a specialized collection dealing with a topic that is not a central concern here, it does not warrant substantial coverage, though I call on one chapter in it later in this volume. To be sure, as one reviewer of this book pointed out "The dog is poised to be a guide for geneticists" (Lyons 2007: 64). But I am not a geneticist, and this book is not really about dog genetics.

[7] One of the points emphasized is how absolute body size has historically figured into considerations of this issue. For example, small Indian or Arabian wolves have often been invoked as ancestral, partly because most dogs have been considered too small to be derived from larger wolves. The issue of size reduction under domestication is taken up in Chapters 3 and 4, so is set it aside for now. Instead, it is worth making the simple point that the earliest definitively identified dog is not from one of the regions

Chapter 3 deals with the morphology of dogs versus wolves, both how they are similar, and how they are different. Drawing extensively from archaeological research, it highlights the use of quantitative data to explore in some detail the nature of the differences between dog and wolf skulls, and circumstances that can render the distinction difficult to achieve. An additional point of emphasis is the evolutionary significance of the changes that have occurred, specifically what biological mechanisms they reflect. A central overall objective is to make clear how different kinds of archaeological information speak rather directly to the question of when domestication of the dog first occurred. Those kinds of information are primarily in the form of skeletal morphology and the initial occurrence of dog burials, the latter a topic to be dealt with much more fully at later points in the volume. The understanding gained from those sources of information is at direct odds with some inferences based on the genetic studies of modern animals. It is important to explain how that is the case, along with why the archaeological evidence can be regarded as more reliable when considering the issue of domestication timing.

Having elucidated the changes that occurred in dogs, along with considering the timing of dog domestication, Chapter 4 then turns to the very process of domestication. An initial step is to spell out the traditional view of domestication in general, as associated with the scholarly tradition in North American social sciences, including anthropology, the field in which I received my basic training. This chapter highlights several examples of that approach in traditional, and in certain prominent cases, recent literature. Perhaps not surprisingly, that conception of domestication is not favored here. What may be surprising, though, is the explanation of why, which begins with several well-documented examples of domestic relationships that do not involve people at all, a point at direct odds with dominant themes in the social science tradition. Therefore, it is important to consider just what is meant by a domestic relationship.[8] Turning to dogs specifically, the first and foremost task is to spell out what seems to be the most likely general scenario for dog domestication, one that accounts for the changes that are documented

with smaller wolves, but from Europe. That fact is important toward the close of the next chapter.

[8] A common denominator, whether the topic is people or not, is that both organisms derive an evolutionary benefit from the close association. The particular manner in which it got started in any given case varies depending on which domestic association is under consideration. And it may not always be reliably determined.

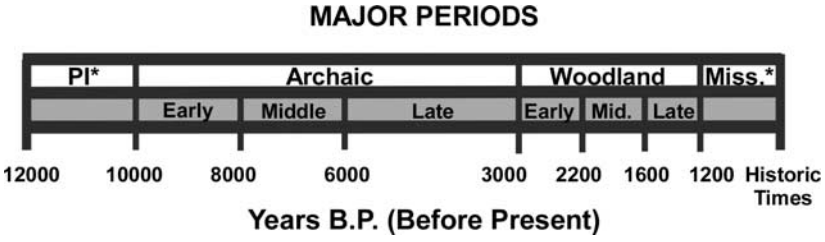

FIGURE 1.1. Schematic representation of major periods in the prehistory of interior eastern and midwestern North America, as commonly conceived (e.g., Fagan 1991). Time boundaries within major periods are arbitrary, reflecting certain trends over time. Major periods themselves are approximations corresponding to fundamental changes in human economic strategies that are important in this volume at several different points. *PI = Paleoindian, Miss. = Mississippian.

archaeologically. This effort is informed by some important biological principles. Also explored in this chapter is the issue of why dog domestication, although apparently the first domestic relationship with animals that people developed, occurred relatively late in the larger sweep of the human past. That is, behaviorally (apparently) modern humans had been on the scene for thousands of years before they became involved in documented domestic relationships, with any organisms. Chapter 4 ends with an effort to encapsulate, in simple and graphic terms, what constitutes the primary basis for the domestic relationship between people and dogs.

Having established my take on how, why, and when dogs and people entered into a domestic relationship, Chapter 5 then considers the various roles that dogs played among past people. In part, this effort is guided by a substantial body of empirical archaeological information, and given my own primary background, much (not all) of it is from North America. Given that factor, it is useful to introduce right now the basic cultural historical framework that structures considerations of a significant portion of the course of North American prehistory (Figure 1.1) and is relevant at several junctures throughout this volume. How certain non–North American schemes correspond to this framework is indicated at appropriate points. Chapter 5 also makes use of relevant ethnohistoric information on different peoples. In doing so, it is important to be clear as to the distinction between secure archaeological information and compelling though not entirely definitive ethnohistorical information. At the same time, some of the roles inferred for dogs of the past are substantially conditioned by what dogs get used for in

modern or recent times, and in some cases, logical supposition comes into play in these ideas.

Chapter 6 represents the point at which this effort departs in a major way from topics covered in other books. This chapter is devoted to a specific area of the world, the northernmost regions, or the Arctic. Although the Arctic has been dealt with in some fashion in previous books on dogs, coverage here is extensive, and presents some original information that stems from my own past experiences. The North American Arctic, especially archaeological work in Greenland, is the focal point of this original effort, though other arctic areas are selectively incorporated. The unique aspects of the coverage involve the later periods of prehistory there and stem primarily, though not exclusively, from information gathered by me some two decades ago on archaeological dog bones from many different sites in Greenland.

And that brings this sequence to a chapter devoted to dog burials, another distinctive aspect of this book. Although other books have dealt with this phenomenon, sometimes substantially (e.g., Schwartz 1997), this volume is distinctive in that it is cosmopolitan in scope. It elaborates on a portion of an article previously published (Morey 2006), but includes many more dog burials than I reported then (certainly there are more yet to be identified). In addition to examples from around the world, an entire section of Chapter 7 is focused on a particular region in North America, to highlight how routine dog burials are in some contexts. Coverage of modern dog cemeteries, dealt with briefly in the 2006 article, is delayed to a more substantial treatment in Chapter 10.

Having gotten the dogs dead and buried, so to speak, the next step in the sequence, Chapter 8, is distinctive as well. The focus on dog burials leads rather directly to the question of just why dogs and people relate so closely. Working toward an answer to that question involves explicitly linking specific categories of archaeologically derived information, with information on modern animals. Obviously, other works do that to one degree or another, but this effort focuses especially on the neurological characteristics of dogs as compared to other animals, and especially on the linking of distinctive behavioral traits of dogs with their underlying neurological and neurohormonal characteristics. Notably, this effort also makes use of information on experimentally domesticated foxes in Russia, in modern times, and develops what I believe is a compelling argument for why foxes could only be domesticated experimentally, such apparently never having taken place in prehistory. Another conspicuous topic is the question of what relevant neurological