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## Dogs and People: Exploring the Human-Dog Connection

Petra Cunningham-Smith<sup>1\*</sup> and Kitty Emery<sup>1</sup>

The domestic dog, *Canis lupus familiaris*, is regarded as humankind's earliest companion and domesticate. While the exact origin of the earliest dogs remains unclear (Larson et al. 2012), dogs and humans have lived together for many thousands of years. Recent genetic studies suggest the domestic dog comes from at least one lineage of the gray wolf, whose behavior and morphology were modified through persistent exposure to humans (Vonholdt and Driscoll 2017). Because the bond between human and dog has been strong and enduring throughout centuries, the roles of dogs in human societies are an excellent source of study for archaeologists, biologists, and ethnobiologists. The influence of humans on the evolution of dog morphology and behavior is easily observed; more subtle, but no less important, is the integration of the dog into human society as guardian, companion, and working partner.

Along the way, dogs participated in human society in an astonishing variety of roles: as hunting guides, beasts of burden, guardians, sentinels, and companions. Dogs have been used as commodities, providing meat for food (Losey et al. 2018; Wing 1978), skins and hair for garments (Schulting 1994), and bones and teeth for crafting and jewelry (Emery 2008). Dogs have served as ritual actors and sacrificial offerings (Emery et al. 2013; Morey 2006). In ancient Mesoamerica, they were described in origin myths and depicted in iconography as traveling with their human masters through life as companions, accompanying them to the grave (Cunningham-Smith et

al. 2020; Tozzer 1941), and guiding their spirits after death into the next life (Wing 2013). Humans have embraced the many roles that dogs have played, intentionally and unintentionally shaping the dogs' form and behavior to fit these many roles, and thereby creating hundreds of breeds with thousands of physical characteristics. As a result, while all dogs are the same sub-species, the variations in phenotype and morphology among and even within breeds are incredibly diverse, and dogs exhibit phenotypic variability greater than that of any other mammal (Spady and Ostrander 2008). Ancient civilizations used dogs for different tasks, such as hunting, herding, guarding property, carrying burdens, and companionship (Coppinger and Coppinger 2002), and selective breeding has produced a wide variety of traits that complemented these tasks (Kim et al. 2018; Larson et al. 2012). Dog breeds vary considerably in size, morphology, and behavior; even a single trait can have many variations depending on selective breeding. Consider that the hair of the dog can be long or short, straight or curly, a single color or many colors, soft or coarse, or the dog may be naked except for small patches here and there, all as a result of selective breeding (Łapiński et al. 2014; Parker et al. 2017).

Dogs may have been shaped by humans to fit the roles required of them, but they have not been passive participants in the human-canine relationship. Dogs themselves are non-human social actors with lives of their own. They are individuals with complex behavior patterns and

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biological and emotional needs (Cooper et al. 2003). As diverse individuals, they interact with humans, with each other, and with the various domesticated and wild animals that populate their environments in complicated ways. Dogs are incredibly responsive to social cues provided by humans (Hare et al. 2002; Merola et al. 2012; Nagasawa et al. 2015; Reidel et al. 2008) and research indicates that many dogs prefer human interaction to a food reward (Cook et al. 2016).

In this special issue, the authors look at the relationships between humans and their dogs in a variety of contexts and settings, including examples from the Carpathian Mountains of Romania to the tropical jungles of Mexico, and from the ancient Pacific Northwest to modern Madagascar. These papers explore the ways in which dogs and humans interact with one another, how dogs contribute to varied societies, and what we can learn about those communities. Dogs are represented here as vital partners at work and at leisure, and as integral members of the community. These studies show the intricate and holistic integration of dogs into human culture and highlight the unique aspects of the human-dog relationship.

Recent investigations on the evolution of the connection between dogs and humans have centered on coevolutionary strategies that emphasize cooperative hunting and foraging (Pierotti and Fogg 2017; Shipman 2015; Sykes 2019). To tease out the intricate variables associated with coevolutionary theory, Chambers and her colleagues (2020) use data from multiple cultures and ethnographers to evaluate various hypotheses for dog-human coevolution. Their work illustrates how the development of the dog-human bond was influenced not only by cooperative hunting strategies, but also by a host of other variables, including ecological constraints and gendered division of labor.

When archaeological context and the zooarchaeological examination of canid

remains are combined with ethnographic analysis, it is possible to explore the role of dogs in a single community across time. Anza-Burgess, Lepofsky, and Yang (2020) combine genetic and morphometric data from archaeological contexts with local knowledge and ethnographic interviews to describe the role of dogs among the Northern Coast Salish Tla'amin people. Dogs have a long and continuous history in the Tla'amin territory and, although their roles have changed across time, their cultural importance to the Tla'amin people continues. Anza-Burgess and her colleagues combine genetics with ethnographic inquiry about modern hunting, training, and husbandry practices to document the historical importance of dogs to the people of this community.

Hunting is perhaps one of the oldest and most continuous uses for dogs and one of the most cited in the literature (Lupo 2017; Perri 2019; Shipman 2015). Although archaeological evidence is scarce, dogs are often viewed as the earliest example of animal biotechnology and are often formidable companions when used in hunting (Nobayashi 2006; Perri 2019). As such, they can enhance the social standing and prestige of their owners. Plata and Montiel (2020) examine the role of hunting dogs in the rural areas of the Yucatan Peninsula among Maya subsistence hunters and *milpa* farmers. Through data analysis and participant observation, Plata and Montiel document the versatility and utility of different types of Maya hunting dogs. Because hunting in the Yucatan is a social affair where men hunt together as a group, successful hunting dogs can enhance the standing of their owner and contribute to social and economic well-being of the community.

With the advent of pastoralism during the Neolithic period, dogs developed a new role as livestock shepherds and guardians (Coppinger and Coppinger 2002). Perhaps nowhere is the human-dog bond expressed in such strong visual and acous-

tic communication as between shepherd, dog, and sheep (McConnell and Baylis 1985). Dogs have maintained this role into modern times in areas where pastoralism is still practiced and, today, there is increased interest in the development of livestock guardian dogs (LGDs) in association with livestock and wildlife management throughout the world. In this issue, Ivaşcu and Biro (2020) use ethnography and participant observation to explore the use of LGDs in the Carpathian Mountains of Romania. Through close study and communication with the dogs, Carpathian herders can keep their livestock free from predation by wolves and bears. Ivaşcu and Biro demonstrate that the close association between dogs and herders has benefited the livestock, the dogs, and the shepherds, and has prevented the extinction of some of the area's last large predators.

Most of these papers explore the ways in which dogs contribute to the social and economic well-being of their communities. Yet dogs may also be a detriment in some environments. Kshirsagar and colleagues (2020) document human-dog relationships in the ecologically fragile national parks on the island of Madagascar. While dogs are valued locally for companionship and protection, free-roaming dogs have had a negative impact on local wildlife. Kshirsagar and colleagues found that dogs have a complicated and sometimes conflicting role in Malagasy culture and daily life. Through the exploration of the role of dogs in the local community, the responsibilities of the owner toward the dog, and the burgeoning conservation issues, Kshirsagar and his colleagues hope to develop management initiatives that will benefit both the dogs and the local wildlife, as well as provide services to the dog owners in the community.

All the examples gathered for this issue reveal the variation and complexity of the bond between dogs and their people. It is through the study of these affiliations that we can truly appreciate the depth and

longevity of the human-dog association. Where there are dogs, there will be humans and where humans are, dogs will be close by. It is this continuous connection, ancient yet also contemporary, that entwines the lives of dogs with humans, and makes these relationships infinitely valuable when studying human culture.

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