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Domestication of Dogs and Their Use on the Great Plains

Ruth Callahan

More than 12,000 years ago a bargain was struck between two species that not only benefited both parties, but changed their futures drastically. Whereas wolves and humans had once been independent hunters in competition with each other, now they were partners who shared the kill and helped each other survive in the harsh environment. We will never know which side initiated the pact, but the wolf was the first animal to cast its lot with humans and the evolutionary advantages that came with this choice were tremendous.

Introduction

It is known that wolves were the ancestors of dogs but how the process of domestication began has long been debated. The partnership between humans and dogs, which was established more than 14,000 years ago, proved to be a powerful combination. Today, modern dogs can be found living with humans in every corner of the earth. The strong forces that were at work during this early time can be better understood if one is aware of the sequence of events that have been traced by archeologists as they studied hunter-gatherer societies of the distant past. This paper will consist of three related parts that begin on a global scale and narrow to a selected region of North America.

First, two separate theories will be presented on the history of wolf domestication, the approximate date when dogs began to show up in the archeological record worldwide, and the changes that occurred in the species as they became domesticated. Turning to the New World, further evidence will be introduced to show the long time association between dogs and humans. Finally, dogs and their use by Indians on the Great Plains will be examined in greater detail.

Coming in from the Cold

There are two explanations on how the relationship between humans and wolves first began, and either one may be

the truth. The classic definition focuses on the belief that Stone Age hunter-gatherers intentionally domesticated wolves in order to have companions for hunting and guard dogs for their camps. In this scenario, young cubs were taken from their dens, raised by hand, and selectively bred for generations until a desired set of traits, which we now associate with dogs, were obtained. The long held assumption that domestication was strictly a human decision can be found in almost every culture in the world.

Old folk tales in Nigeria tell how a young boy found a wild-dog cub and took it back to his village so he could tame it. Once it was grown, the dog became a useful member of the family. When the other villagers saw the advantage of keeping dogs, they quickly followed the boy's example (Morey 1994; Budiansky 1992). In America, similar stories about the capture and taming of wolf cubs were also told by many Native tribes (Lowie 1922). In Victorian England, scientists thought animal domestication was an inevitable part of humanity's progression up the evolutionary ladder from primitive to civilized society. Even today, many anthropologists think it was a *human* decision to domesticate wolves (Morey 1994; Budiansky 1989).

A new group of anthropologists, known as "co-evolutionists", have suggested an alternative scenario, which says wolf domestication was part of an adaptive strategy by the animals. Darcy

Morey, an anthropologist who has done extensive study on dog domestication, says it was wolves, not humans, who made the first contact. It is not hard to imagine that leftover carcasses from human hunting forays and trash dumps near human living areas would be attractive to wolf packs, which would find the remains easy to scavenge (Morey 1994). Once the potential opportunities were realized, some wolves would be tempted to follow human bands in the hope of finding more scraps. This sort of opportunist behavior on the part of wild animals can be seen in any park or backyard today.

In many ways, wolves were "preadapted" to live with humans. Because of similarities in social structure, hunting strategies, nonverbal communication, and the hierarchy of the pack, it was easy for a young cub that had been raised around humans to perceive a human as an alpha wolf (Morey 1994). It is quite possible that the first scavenging wolves, after living near human camps for a while, would "... consider such camps as their home territory, and their warning growls toward intruders would also warn the human inhabitants of the approach of such intruders" (Olsen 1985:18).

Whoever made the first contact, whether it was human or wolf, and how long the process took to manifest itself, is beyond answering. What is understood is that the wolf recognized familiar patterns of social behavior in its human partners and was able to bridge that gap between wild and domestic life with relative ease (Olsen 1985).

Wolf Becomes Dog

Over time, as the wolf adapted to its new "ecological niche", a number of modern dog traits began to appear. Females reached maturity at an earlier age, six to nine months as opposed to two or three years for a wolf, and began breeding twice a year. The skeletons of both male and female dogs did not have time to reach full potential before the

onset of reproductive ability. As a result, juvenile features, normally associated with puppies, were retained into adulthood due to the faster rate of maturation. Other puppy traits, such as food solicitation and friendliness, helped the domesticated dog further manipulate its human environment. Co-evolutionists think these changes helped dogs exploit and populate the advantageous "niche" in which they found themselves (Budiansky 1989; Morey 1994).

With some minor variation, dogs the world over developed physiologically in much the same way and these changes were fairly consistent. The muzzle, which was shorter and slightly wider than those found in wild wolves, resulted in a smaller jaw area and caused crowding of the tooth rows. Subsequently, the teeth were smaller, having little room to grow to full size, and the mandible curved inward slightly at the midpoint. The front of the cranial vault angled upward at a steeper angle, while the posterior of the vault became broader. This feature is commonly seen in young puppies (Morey 1994).

Although traditional thought suggests that early humans found juvenile features in dogs endearing and selectively bred for these traits, this may be a bias influenced by present day ideals. It is not possible that all Paleo-human groups who inhabited different cultural and geographic regions across the world would have selected exactly the same traits, such as shorter muzzles and wider crania, for their dogs. A more reasonable suggestion would be that changes occurred due to evolutionary pressures, rather than human preference (Morey 1994; Olsen 1985).

An intriguing example of this selective pressure was discovered in Novosibirsk, Siberia. Demitry Belyaev, director of the Institute of Cytology and Genetics, began an experimental breeding program with silver foxes in 1959. Because captive foxes were unpredictable, aggressive and hard to handle, employees of commercial fur

farms were often at risk. Only a small number of the animals, perhaps ten percent, showed less aggression or fear toward humans. With this in mind, Belyaev selected these calmer individuals for his first test subjects. His intention was to produce a more manageable type of fox for the Soviet fur industry.

Out of the first litter, he kept only the kits that exhibited overt friendliness toward their handlers. Once they were grown, this select group was allowed to breed. Each succeeding generation was culled in the same way. Within a very short time, only five generations, the animals began to change remarkably. By 1979, twenty years after the experiment had begun, the foxes behaved like domesticated dogs. They approached people they recognized so they could lick their hands and faces. They actively sought attention from strangers by barking and wagging their tails. Juvenile patterns of play and food solicitation continued into adulthood (Budiansky 1992; Mestel 1994).

Physiological characteristics had changed, also. General body size tended to be somewhat smaller than a wild silver fox. In the wild state, the fox normally carried its tail horizontally to the ground. In the tamed group, over succeeding generations, this manner changed. The tail of the tame fox began to curl upward, sometimes over its back. Tail length changed also, with some individuals having tails that were significantly shorter than normal. The coat of a wild fox is usually consistent in color. The coats of the tamed foxes were often mottled or spotted with large white patches. A white blaze usually occurred on the face, one or more paws were white, and the ears would droop slightly. Even more important, the tame females entered heat twice a year, rather than the normal once-a-year pattern of their wild ancestors. Belyaev had only selected for tameness in his animals but, as a result, a whole new package of traits appeared and seemed to be tied directly to the act of domestication (Budiansky 1992; Mestel 1994). It is

fairly certain that this same process was at work when wolves began their evolution into dogs.

Oldest Dog Burials

Archeological sites in different parts of the world have turned up dog remains from the late Pleistocene and early Holocene. In some cases, identification of these remains is difficult due to morphological similarities between domesticated wolves and early dogs. In northern Israel, at the Ein Mallaha site, which is close to 12,000 years old, a Natufian burial contained a female human skeleton in a flexed position. Lying near her head was the skeleton of a puppy. Due to the fact that the animal was so young and certain critical markers had not fully appeared, it is not certain whether this animal was a true or a dog. Speculation has run the gamut, though (Morey 1994).

Other sites from this same time period, such as Palegawra Cave in northeastern Iraq, the Bonn-Oberkassel site in eastern Germany, northern Europe, and Japan, also contain canid remains that were identified as domesticated dogs (Turnbull 1974; Benecke 1987). In Siberia, on the Kamchatka Peninsula, a dog from the Late Ushki culture, dated between 10,860 to 10,360 B.P., had been buried in a sleeping position, with its muzzle laying on its paws. Included in the grave was a scraper and a knife (Dikov 1994).

In America, dog specimens from Danger Cave in Utah were dated at 10,000 to 9,000 B.P. and, so far, are the oldest yet to be found on the continent. At an Archaic site along Koster Creek in Illinois, four dog skeletons, which had been deliberately buried and showed no sign of modification, were dated approximately 8,500 B.P. (Morey 1992). In a Basketmaker site at Marsh Pass, Arizona, two dogs were interred with humans. One was a large collie-like dog that had been buried with a man and the other was a small black and white dog,

about the size of a terrier, that had been buried with a woman (Wormington 1968; Olsen 1974).

Obviously, dogs have been with us for a very long time and, as a few of the burial treatments show, some of them may have been considered companions or caretakers by their human owners. It is interesting to note that the first dog burials begin appearing across the world about the same time, plus or minus a thousand years. The late David Rindos, an archeologist at the University of Western Australia, thought the simultaneous domestication of wolves in different countries could indicate an adaptive response by the animals to climate upheavals that occurred toward the end of the Pleistocene era, or about 12,000 B. P. (Budiansky 1992).

Dogs on the Great Plains

There is very little information available about whether early Paleoindians on the Great Plains ever used dogs. Much of the archeological material seems to be aggregated toward the latter part of the period and only mentions evidence of canid activity on large animal bones or the occurrence of wolf bones in middens and near kill sites. Some of the wolf bones showed signs of modification (Johnson 1987; Hofman 1989; Bemet 1994; Jodry 1992). Daniel Amick, in his paper on Folsom land use, *did* suggest that the "exceptionally high rates of mobility for Folsom groups could have been facilitated by dogs." (1996: 420).

The first concrete evidence that dogs co-existed with humans in North America was discovered at the previously mentioned sites in Utah and Illinois. By late prehistoric to historic time periods, dog remains are more easily identified in the archeological record due less time passing since their deposition. Other factors include a recognized consistency of the crania that points to domestication, and a larger population base, both of dogs and people, on the Plains (Morey 1985;

Bemet 1994). In more recent times, verbal histories from members of various tribes and written documentation from early European explorers and missionaries have shown how dogs were utilized by the Plains Indians.

Breeding and Behavior

During the prehorse days, most Plains tribes practiced selective breeding of their dogs. Only the larger, better tempered puppies in each litter were kept and the rest were killed or given away. Then, when the selected puppies were older, most of the males were castrated so they would be gentle, but one or two of the best ones were left for breeding purposes (Wilson 1924; Bozell 1988). In this way, the owners were able to control the size of their dogs and be assured of a continuous supply of animals that were strong and capable of pulling a travois. In the northern areas, it was not uncommon for wolves and female dogs to breed. Wolves came boldly into camp, even during the day, to mingle with the dogs. The Indians did not try to stop this because they felt infusion of wild blood kept dog breeds strong and prolific (Henderson 1994).

Two markedly different dog breeds existed during this time. One was termed a "Sioux Dog", which was wolf-like, large and grey, with sharp upright ears and a curved tail. This dog, found in the north-central Plains area, was so similar to its wild cousins that it could be mistaken for a wolf if it were away from camp. In the southern Plains, extending to Mexico, a slightly smaller dog was used by the people who lived there. This one, known as a "Plains Indian Dog", had shorter hair and was more akin to a coyote in size and coloring (Henderson 1994).

At times, camp dogs could be quite ferocious. Several early ethnographers and explorers wrote about their concerns in this area. Paul Kane, an artist who traveled through Canada in 1846, noted that the dogs he saw in Cree camps were "sometimes dangerous in

times of scarcity. I have known them to attack the horses and eat them" (1924:53).

Father Peter John De Smet was a missionary priest who traveled across the northern Plains from 1801 to 1840. In the journal he kept of his travels, he made references to confrontations he had had with Indian dogs in the camps he visited. On several occasions, he had to stare down a hungry dog that was eyeing his supper and, if given a chance, the dog would have stolen his meal at a moment's notice. One year, while traveling with a small band of Assiniboins, he had to barricade his tent each night or the dogs would get in and steal his shoes or chew up his leather clothes (Carriker 1995). The village dogs, which could be just as irritating to their owners as they could be to visitors, served as an important source of security for every tribe on the Plains. When strangers appeared near the village, the dogs would begin a deafening cacophony of barking that alerted everyone within hearing range. Many warriors, who had gone on raiding parties to obtain horses, mentioned the difficulty of avoiding the dogs in enemy camps. Great care had to be taken so the raiders' presence would not be revealed by a sharp-eyed dog (Aadland 1996).

During his visit to America, Prince Maximillian encountered what he considered an overwhelming number of dogs in a Crow camp at Fort Clark. He later wrote that he had seen five or six hundred of them running loose in the camp. All were quite wolf-like and their colors ranged across a broad spectrum. They would readily attack any strangers they encountered, so, as a life saving measure, newcomers had to throw stones at the dogs to chase them away (Lowie 1922). The fact that many of these animals were reported as being half wild and dangerous to strangers may indicate the fact that they were really domesticated forms of wolf-dogs.

Dogs as Draft Animals

For the people who lived on the Plains, both north and south, dogs were important as draft animals in pre-horse times. Buffalo Bird Woman, a Hidatsa born in 1840, explained that dogs were an excellent choice for hauling wood and helping with other daily chores (Morey 1985). A good dog could carry about 50 pounds on its back or pull between 70 to 100 pounds on a travois (Henderson 1994). This ability was critical when large meat supplies were being gathered for storage because a buffalo carcass could be quickly processed out in the field and then taken back to camp for drying. As for the constant need for firewood, a woman with the help of 15 or 20 dog travois could bring in enough wood to sustain the family for a month (Wilson 1924).

The ability of a dog to pull heavy weights depended on the time of year, the conditions, and the size of the animal. In the summer, tall grass or uneven terrain made going rather difficult, so extra water for the dogs had to be loaded on the travois. If the foraging group planned to be out for a longer period during hot weather, extra dogs and travois were added to the group and their main job was to carry all the water paunches that would be needed for the dogs. Because summer heat and thick grass could be so exhausting for a travois dog, rest and water breaks had to be scheduled at regular intervals to avoid tragic consequences. In winter, the situation was much different. More weight could be added to the travois because the pole ends that rested on the ground would ice over, making the travois easier to pull. Even though a dog may be required to carry a heavier weight during this time of year, it was not necessarily a hardship for the animal. The snow crust provided extra support for the dogs' paws, which compensated for the heavier weight, and the cold air kept the dog from overheating. Also, during the winter, the foraging group did not have to stop for many water breaks. A few bites of snow during travel

easily satisfied the thirst of any dog (Henderson 1994; Wilson 1924).

A travois, from the French word *travail*, or work, was usually 8 feet long and consisted of an A-frame made from aspen poplar that had been dried and stripped of bark (Henderson 1994; Schwartz 1997). This type of wood made the travois light, flexible, and strong. The frame was tied together with animal sinew or leather and the apex, which lay across the dog's back, was covered with a padded buffalo hide to prevent chafing. A harness, with two chest straps and a belly strap, held the travois in position (Henderson 1994; Wilson 1924). Two methods of cross framing could be used, depending on the type of load to be carried. The first design, consisting of a flattened basket shape about 36 inches long and 25 inches wide, was made from willow and woven with leather thongs. This was good for use on rough ground because the thongs would "give" slightly to the weight of the burden. The second design had simple wooden cross pieces tied to the side rails and created a flat rack. This rack was quite strong and rigid and was good for tying down large, bulky items (Henderson 1994). In the Hidatsa culture, all dog travois baskets were painted red, while horse travois baskets were left unpainted, but the informants did not know why this was done (Wilson 1924).

Daily Use

In most historic tribes, women were considered the owners of the family dogs. They were the ones who normally used them for daily chores and it was their job to train them. An average dog, which was chosen for its temperament and strength, took about four days to learn how to pull a travois properly. Over that time period, using a mixture of coaxing and encouragement, the woman would increase the weights until her dog could handle a full load (Schwartz 1997). When on a foraging trip to collect wood, hay, or other necessities, the travois dogs were

not put on a leash, but allowed to follow in any order they cared to. It was easy to see which dogs belonged to a woman because her dogs always followed behind her in single file as the group left the village. For a dog that got lazy and wanted to lay down, a simple encouraging chirp or a sharp word from its owner was usually enough to keep it moving. The dogs were allowed to drink as much water as needed but, if they were out most of the day, they were fed only a little food at a time to keep them from getting sick. Once they were back in camp, the dogs could be fed larger portions (Wilson 1924).

In his book, *Among the Indians*, Henry Boller commented on watching a group of Assiniboin women one winter day as they left camp to gather wood.

they shouldered their axes and led the van, followed by the dogs trotting demurely along in single file. Before long the woods resounded with the dull strokes of the axes, mingled constantly with the shrill voices of the women scolding their dogs, who very naturally liked to vary the dull routine of every-day life by getting up a little rough-and-tumble fight among themselves. When a dog had his full load he was led to the main pathway... [where] he started for his lodge, dragging his travee with great steadiness (1972: 199).

Although most dogs would be tempted to chew on any leather straps they could get to, Hidatsa travois dogs were strictly trained from puppyhood not to do so. This training also extended to any raw meat that might be carried on the travois. The dogs knew they would be fed as soon as they finished working and were back in camp. Mealtimes usually consisted of cooked meat and cooked corn. They also ate any food the family did not want and remaining bones from butchered carcasses (Wilson 1924).

Breaking Camp

During a move to a new camp site,

small children could be strapped securely onto a trusted family dog's travois and allowed to ride this way for several miles at a time. This was entertaining for the child and allowed the mother a short break from child care. Because the dog was cautious and faithful, little harm ever came to the children. In later times, after the Plains tribes had acquired horses, a steady, quiet mare would carry babies and small children in the same fashion (Aadland 1996; Wilson 1924).

Moving a family's possessions required a great many dogs. Therefore, each family, depending on its size, might have as few as 20 or as many as 40 animals to help with the work. An estimation of the dog population at a Pawnee village in 1835 determined that there were 4,000 dogs in the encampment. This number probably fluctuated widely over several years in accordance to outside factors, such as crop or hunting failures and harassment from enemy tribes (Henderson 1994; Weltfish 1965).

Before the acquisition of horses, the size of a typical family's lodge was small, about 10 feet in diameter. The small size of the prehorse lodge was necessitated by the imposed weight carrying limitations of dog use. A typical lodge cover, made of 8 to 10 hides, could weigh up to 300 pounds. A dozen or more poles, each averaging 30 pounds, made up the supporting framework for the lodge. When the weight of extra household items, food, water, and personal goods are factored in, the great number of dogs needed to move the family to a new camp is understandable. By the 1800s, when horses were more available and their greater pulling strength could be utilized, the family lodge could often reach a diameter of 30 feet or more (Reeves 1990; Bancroft-Hunt 1981).

Because of their critical role in the life of the Plains people, dogs were highly regarded and praised for their abilities. Favorite dogs were sometimes given heroic names that told of their deeds,

though the name could describe some peculiarity the dog possessed. The Crow thought so well of their dogs that they attached a single eagle feather onto the sacred pipes to represent the dog's tail. The feeling was "the dog is the protector and friend of every person in the world" (Bancroft-Hunt 1981:31) and should be recognized with this honor. Another example of this regard can be seen in a term that was frequently used after the introduction of horses on the Plains. The people affectionately called their horses "big dogs" because they were used as draft animals in the same manner that dogs had been used (Clay 1965).

Dogs as Food

It was not uncommon for some Plains tribes to eat their dogs, though the circumstances for this would vary across cultural lines. During the Rosa Phase in New Mexico (700-900 A.D.), a large number of dog bones were found in the rubbish heaps and show signs of having been eaten, although other bones appeared to come from dogs that were so old that the animal may have died naturally (Wormington 1968).

For migratory tribes during pre-horse times, it is reasonable to expect that most dog eating was periodic or conditional because dogs were much more valuable as draft animals. It would not bode well for a mobile people to foolishly eat up their means of transportation when plenty of other food sources were readily available. Large numbers of dogs were kept because of the service they provided to their owners and the village, but they were also an alternative "fresh" food that replicated itself and could be held in reserve for the lean times. Massive dog kills show up in the archeological record at the Burkett and Gray sites of the Lower Loup Phase Pawnee and are thought to be the result of one or more famines in the area. Dogs were also used in ceremonial or medicinal practices and, in later times, dog haunch or stew was served as a special treat to

honor prominent guests and show the host's respect (Bozell 1988; Bancroft-Hunt 1981).

Under normal circumstances, some tribes, such as the Pawnee, Kiowa-Apaches Cheyenne, Arapaho, and Sioux, liked to eat dog and considered it a tender delicacy. The Comanche referred to the Arapaho as "The Dog Eaters", but it is unclear whether this was simply a descriptive term or an editorial comment. Other tribes, the Shoshone and Crow in particular, refused to eat dog at all. Only in later years did the Crow begin eating dog for certain ceremonies (Bozell 1988; Carriker 1995; Aadland 1996; Wilson 1924; Thurman 1988).

In his study on dog eating, Melburn Thurman found that the practice was more common across the Plains during the 1800s than previously thought. Dog eating apparently originated in the northern regions of the Plains. When the tribes from dog-eating areas began to migrate southward, they took their practice with them. This was later picked up by some of the Southern tribes. The Southern tribes had always used dogs in a variety of ways and this was documented in numerous journals and reports since first Spanish contact during the 1500s. As a regular food source, though, the practice of eating dogs was not mentioned by visitors to this region until the 1800s. This may be evidence that dog eating was not a consistent practice in the South, or it may have existed but simply was not considered worthy of note by the Spanish (1988).

Conclusion

As can be seen, dogs have had a long and unique history with their human owners. They helped them move across the landscape, served as guards for the camps, and became food during special ceremonies or times of famine. In many Native American stories, a recurring theme centers on the relationship between dogs and humans. In an old Arikira tale, Dog followed the First People

when they came up from the underground world. Soon, the people began to sicken from a variety of diseases. In an effort to halt the decimation, Dog suggested that his body be used as a sacrifice so the people might survive. His spirit, he told them, would reside in the future generations of dogs. "I shall always remain with the people. I shall be a guardian for all their belongings" (Bancroft-Hunt 1981:30-31). What he offered was the greatest thing he could give: the gift of life.

Due to the fragmentary archeological record and difficulty in determining subtle key physical markers that separate wild wolves from protodog, many anthropologists are reluctant to make a statement as to when dogs may have arrived in North America. Stanley Olsen and Darcy Morey, who have spent part of their careers on canid study, addressed domestication in Europe, Asia, and America but stopped short of stating outright that dogs or wolf-dogs could have crossed the Bering land bridge, from Siberia to America, with their human companions.

Interestingly enough, in his book, *Prehistoric Indians of the Southwest*, H. M. Wormington made a bold statement about the Basketmaker dog mummies in Arizona. "Since these dogs are not related to coyotes or other doglike animals found in America, it is believed that they must have been domesticated in the Old World and accompanied their masters when they came to this hemisphere." (1968:46). A series of recent discoveries may prove this line of reasoning to be correct.

In the past, scientists thought the Beringia land bridge sank beneath the ocean 14,500 years ago, long before humans could have arrived in North America. In 1997, the April issue of *Earth* magazine presented recent findings that proved Beringia sank around 12,000 years ago (Elias 1997). This date falls more readily in line with the archaeological evidence of human entry into America. In

Siberia, the oldest human occupation is on the eastern side of Kamchatka Peninsula and has been dated at 14,300 years ago. Another site near the Siberian arctic coast has been dated to 13,400 years ago. Directly across the Bering Strait, on the Alaskan side, short-term camps have been found that date to these periods.

During June of 1997, a new study of dog antiquity by an international team of geneticists and evolutionary biologists opened up more avenues for consideration. The study, which looked at the mitochondrial DNA of canid species across the world, showed that the wolf was the dog's only ancestor and that domestication processes seems to have begun as early as 135,000 years ago. This revelation should spark reams of discussion during the coming years. Robert Wayne, UCLA team leader for the research project, admitted there could be a plus-minus factor to this date but, even if it were off by several thousand years, it still shows a much older domestication for dogs than was originally thought (Morell 1997).

In light of the Beringia evidence from Scott Elias, the dog burial that occurred on Kamchatka Peninsula (see Oldest Dog Burials above), and the new genetic study at UCLA, it may not be too speculative to think that dogs (or wolf-dogs) could have crossed the Bering land bridge with their owners.

On the matter of Paleoindians, little is ever said about dogs or wolf dogs being associated with Clovis or Folsom cultures and this may be a reluctance on the part of many archaeologists to commit themselves to an issue where complete data is difficult to obtain. Daniel Amick was one of the few who was willing to suggest that Folsom's high mobility rates may have been the result of dog use but even this acknowledgment was a comment made in passing, with no further attempt to expand on the subject.

In Eileen Johnson's book, *Lubbock Lake*, nothing is said about the presence

of dog remains, even in the historic levels. It is a well documented fact that tribes who lived in the Texas panhandle, and those who passed through it, did have dogs with them during this time. Johnson does mention the presence of *Canis lupus* at Lubbock Lake and her charts reveal that this animal first made an appearance during the Folsom period. Were these animals simply wild wolves who were scavenging leftovers at the site or were they something else?

After reading the findings at the Texas site and studying Darcy Morey's work on the difficulties of determining physiological differences between wild wolves and domesticated wolves, one begins to wonder if an important clue has been overlooked. Many canid bones found in early sites, classified as *Canis lupus*, may actually be the evidence of a protodog. Robert Wayne, leader of the DNA research project at UCLA, voiced this same line of reasoning in 1997 in the June 13 issue of *Science* magazine. The pronounced morphological distinctions that are used as markers of domestication to separate dogs from wolves in the archeological record may not have occurred until humans settled down in agricultural communities. (Morell 1997:1648). Until then, the general "wilder" form would have prevailed.

Perhaps the data at Lubbock Lake and other sites across the Great Plains need to be re-evaluated with this thought in mind. It is quite possible that important evidence of an early association between tamed wolves and humans could have been missed because the data is difficult to interpret and certain long held assumptions that domestication occurred at a much later date.

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