What is a dog?

Dogs are widely known as man's best friend. They act in many capacities from furry lap warmers to skilled hunting companions. Like cats and people, dogs are also mammals – warm-blooded animals giving birth to live young which are then nourished with milk secreted from mammary glands. Dogs are also an excellent example of what I like to call "unnatural selection".

It is instructive to understand this "unnatural selection" or selective breeding to better understand the phenomena of natural selection.

Humankind has selectively bred dogs that first enhanced the replication of human genes. The results of this breeding ranged from dogs ideal for herding to dogs able to assist on the hunt or serve as sentries for an encampment. Today we see these breeds at shows grouped as "working" dogs. Later human culture took the selective breeding of dogs in new directions. Some of these dogs were bred as symbols of wealth and privilege while others were bred to act as simple companions.

The selective breeding of dogs has generally benefited the "fitness" of both humans and dogs. Without the intervention of humans, dogs would surely be far less numerous than they are today.

If one observes a pack of feral dogs over a number of generations, it is possible to see natural selection at its most extreme. In very few generations the characteristics of the breeds we know are quickly weeded out of the gene pool in favor of genes that work in the feral dogs' environment. Some characteristics fancied by human breeders are highly impractical in the wild. For example a short muzzle like that found in Pekingese isn't going to be as effective during the hunt or when competing for access to a female in estrus. A curly outer coat of fur is also a liability compared with coarse straight guard hairs. Again, this is evident in feral dogs. Within very few generations a pack of feral dogs will almost all have straight coarse outer fur. The same applies to coloration. A white dog could hardly be expected to stealthily stalk prey. This is true even among feral dogs in Alaska which trend toward that stealthy combination of dark above and light below. Because white is not stealthy under most circumstances, genes for white dogs are at an extreme disadvantage in a feral pack and quickly disappear from the pack gene pool.

So man the breeder somehow maintains the difference between the generic feral dog and all the breeds with features which man the breeder likes. How does he maintain the difference? Through selective breeding.

Wild dogs have a social structure which benefits their gene pool through increased hunting success. This social structure is a collection of "good tricks." It is part of a larger set of "good tricks" which are "hardwired" in the canine brain and is the result of many generations of natural selection.

Initial contact with early man may have created a new selection pressure: dogs that could better interact with early man as additional members of the "pack" could benefit from the technologies of early man. "Animal Rights" activists would argue that mankind has cruelly exploited dogs. However it is not that simple from a strictly scientific viewpoint. Dogs exist in many habitats in which they could not survive except in concert with humans. The most obvious example would be the "huskies" associated with the Yupik and Inupiat peoples of the far northern latitudes. Other habitats have less obvious restrictions on the type of animals which may survive there. For example most humans take drinking water for granted. However availability of surface water limits animals in many habitats. One of the technologies which helped man and his useful animal companions is the digging of wells. Add to that dam building and creation of artificial ponds to store water for the dry season and suddenly it is not so clear whether man has truly exploited the dog more than the dog has exploited man.

It is likely that dogs have unintentionally exerted a selection pressure on mankind. Certain characteristics might have been favored in people who were exploiting dogs as hunting companions, herding animals, or for guarding an encampment. For example puppies trigger an almost instinctive desire to feed and nurture. Giving resources to a dog which could have been given to one's own offspring does not fit a strictly Darwinian model. However, if genes which blueprinted a primate which could better cooperate with and benefit from the presence of dogs, then we would anticipate some characteristics in the primate to accommodate the dogs. This slight reproductive advantage applied generation after generation would have favored humans with "dog friendly" characteristics – and thus skewed the human gene pool. In this case one would conclude that a genetic predisposition for treating dogs and puppies as additional children rather than food is such a characteristic.

Then one must consider whether or not the presence of dogs imposed a selection pressure for humans which were able to breed dogs with more useful or pleasing characteristics. That is to suggest that "better" dogs benefited humans smart enough to figure out selective breeding – and in so doing improved the reproductive "fitness" of those humans. Again always consider that small advantages multiplied generation after generation can result in a large change in a gene pool. When one considers this possibility then the line between natural selection and selective breading becomes less of a sharp distinction and more a part of a continuum. It may be more accurate to

conclude that selective breeding isn't really unnatural selection, but should be more accurately understood as a special case of natural selection.