

Dog Minds and Dog Play (draft copy)

Alexandra Horowitz
Hunter College
Department of Psychology
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[from M. Bekoff, Ed. (2004). *Encyclopedia of Animal Behavior* (pp. 835-836). Westport, CT: Greenwood Press]

A Great Dane, at its shoulders the height of a small horse, spots his target across the lawn: a six-pound Chihuahua almost hidden in the high grasses. With one languorous leap, his ears perked, the Dane arrives in front of the trembling Chihuahua. He lowers his head and bows to the little dog, raising his rear end up in the air, and wagging his tail. Instead of fleeing, the Chihuahua mirrors this pose in return, and she leaps onto the head of the Dane, embracing his nose with her tiny paws. They begin to play.

My video camera catches it all. With their play bows, these improbable dog playmates joined my other research subjects as data in my search to understand the mind of the domestic dog (*Canis familiaris*). How does this social interaction succeed? How does the little dog know that the big dog wants to play? What--if anything--does the Great Dane, or the Chihuahua, need to understand about the perspective of each other, for play to erupt and succeed?

While much science takes place in controlled environments, ethologists believe that careful observation of the natural behavior of animals, including domestic animals, can also reveal intriguing, sound data about the cognition of animals. The natural environment of a domesticated animal like a dog is among dogs and people; as a result, I pursued research into what they understand about each other not by bringing a dog into the laboratory, but by looking at pairs of dogs interacting in dog parks near San Diego, California.

Any interaction a dog has with other dogs--straining on leashes toward each other on the sidewalk; while running in fields; competing with others for food--could potentially provide information about what each dog knows about other dogs. I examined how dogs negotiated during rough-and-tumble play, which involves rambunctious wrestling, biting, leaping, and chasing. This kind of play is a fertile source because it requires coordination: each dog needs to tailor his play to match the other, or he risks losing a playmate or even being attacked.

Such coordination might involve the ability to take the perspective of the other animal: what in humans we call having a "theory of mind." Theory of mind is the explanation of the behavior of others by reference to their mental states--particularly belief, desire, and knowledge. Do the Great Dane and the Chihuahua understand something about each other's minds?

My research indicated that yes, they do. How to determine if an animal has a theory of mind has been much debated among psychologists. In my research I identified behaviors that are tailored to the attitude or perspective of others--and, thus, might establish if an animal has a theory of other animals' minds. In particular, I focused on communications--the play signals--and the opportunity to use or manipulate attention. For instance, did a dog desiring play ensure the other dog was watching before play-bowing, or did he start playing outright?

After hundreds of hours of observation, 39 play bouts were translated into a sequential listing of each dog's posture and actions, through slow motion videotape playback, often frame (1/30th of a second)-by-frame. An astonishing wealth of brief behaviors and glances is visible in slow playback, but invisible in "real time." What I found is that these dogs used attention skillfully in communicating. The dogs signaled requests for play almost exclusively to present, attentive audiences, and when attention was away, they moved to get attention, persistently and creatively. They used attention-getters which were tailored to their audiences: more forceful (a nip) if looking away or playing with others, more subtle (running into the dog's field of vision) if less distracted. These behaviors indicate that the dogs understood that in order to communicate successfully, one must take the attention--the mind--of the recipient into account: a kind of "rudimentary" theory of mind.