

# Both Ends of the Leash

## Speak Up: If your dog could talk, what would she talk about?

Patricia B. McConnell

One of my earliest memories is of myself as a five-year old riding in the car and being stunned – physically taken aback – by the realization that everyone we passed had an internal mental life, an entire world of consciousness, similar to mine. It had never occurred to me until then that what happened inside my head also happened inside the heads of others. Scientists call this understanding “theory of mind,” or the knowledge that others have an entire reality show going on in their brains, just like you do.

That night, I cuddled up beside our family dog and pondered what was going on inside her head. Was it like what was happening in mine? Even at the tender age of five, I wondered what life was like behind those liquid brown eyes. I've spent much of my life since then trying to answer that question.

Though we're unlikely ever to know for sure, we're getting closer. The mental life of animals is a hot topic in science right now, and popular magazines are full of articles about the animal mind. Most encouraging to dog owners, interest in canine cognition has finally hit the big leagues, as researchers all over the world are beginning to take dog behavior as seriously as that of primates or parrots. There is even an annual conference in Europe that began last year, the Canine Science Forum, that focuses primarily on cognition in dogs. Here's a bit of what we've been learning.

One of the questions we're beginning to answer relates to what is motivating our dogs to twitch their paws during sleep. Are they dreaming? And if so, what are their dreams like? Do they contain visual images as ours do? Research by Louie and Wilson on other animals has shed light on this question; though most of this work has been done primarily with rats, there is no reason to doubt that it could relate to dogs as well as other mammals. The researchers trained rats to run a maze and recorded their brain-wave responses as they did so. This



allowed them to map the areas of the rats' brains that were active as the rodents moved through tunnels, turning right or left as the situation required. And guess which areas of the brain “lit up” in exactly the same way when the rats were in the REM – or dreaming – phase of sleep? Paws paddling and noses twitching, the rats appeared to be running the maze in their sleep, a suspicion confirmed by the fact that their brains showed activity in exactly the same places, and in the same sequence, as when they ran the maze in their waking hours. The researchers could even say, “She's a third of the way through, about to make that 120 degree turn to the left...”

We have every reason to believe that the same thing goes on when our dogs' paws start twitching when they are asleep. They may not be chasing the proverbial rabbit (perhaps they've never met a rabbit!), but they are probably replaying an activity in which they've engaged in the past. As do all discoveries, this brings up another question: Are some of these dreams aversive? Can dogs have nightmares? I'd guess yes based on my observation of dogs whining and crying plaintively while asleep – sometimes even looking panicked and frightened upon waking. We'll have to wait for more research on that one, though. Stay tuned.

Another aspect of the mental life of our dogs is their ability to solve problems that require strategic thinking. Scientists don't really care if your dog can figure out how to open the kitchen cabinet to get the food (although those of us with dogs care deeply about such questions), but they *are* interested in what an animal's ability to solve a problem can tell us about that animal's cognitive capability. Lately, there

has been an explosion of studies on the problem-solving abilities of animals, and the results are impressive. A rook named Christopher Bird, (rooks are crow-like birds) figured out that if he picked up stones and placed them inside a container, he could raise the water level high enough to get a drink. He even chose the biggest stones first. Representing the mammals of the world, hyenas needed just two minutes to figure out that they could only get the food set up by a researcher if they each pulled on one of two dangling ropes in unison.

So far, dogs don't seem to do as well as primates, social birds and wild canids in the problem-solving arena, but it's hard to know what this says about their cognitive ability. If you set up a situation in which a dog or a wolf has to strategize to solve a problem, the wolf tends to work it out for herself, while the dog turns to her human and asks for help. Since for a domestic dog, that's an effective strategy in almost all situations (ever retrieved a toy for your dog from under the couch?), one can't conclude that dogs are incapable of complex problem-solving – perhaps they have just found a quicker, more effective solution.

What about knowing what others know? Having a sense that another individual has knowledge that you could use to your benefit is surely a useful skill. It also speaks to a variety of issues related to animal cognition, including self-awareness, the ability to understand abstractions and the comprehension that others have minds that operate somewhat like your own. Studies on this issue have been conducted with many species, and once again, dogs score lower than some others. In a few species of birds and primates, individuals have been shown to change their behavior based on the behavior of an “informed” compatriot. Say, for example, Bird One watches Bird Two be shown where food is hidden. Bird One (the “uninformed” one) couldn't see where the food was himself, but could see enough to know that Bird Two (the “informed” bird) had been provided with that information. In subsequent tests, Bird One will follow Bird Two, clearly indicating that he understands that Bird Two has useful knowledge. No so with dogs. In a similar test, the “uninformed dog” always randomly searched the test location for food, never following the “informed dog” as a way of finding the goodies.

Dog lovers can take heart, however, in work that shows that dogs can indeed understand abstract concepts like “bigger” or “different.” Rico, the now-famous Border Collie, was even able to “fast map,” or understand that a word he'd never heard must represent a toy he'd never seen out of dozens of other objects in the room. And individuals in Ádám Miklósi's lab at Eötvös Loránd University in Hungary even taught a dog to imitate the actions of his owner, a feat far more complicated than one might think.

Of course, the gold standard of cognition studies is to teach an animal to use words to communicate, as Irene Pepperberg did with the African Grey parrot, Alex. His verbal ability gave us a window into his brain, and made it clear that he could discriminate between objects, materials and colors and understand abstract concepts like bigger/smaller and same/different. However, perhaps his most compelling use of words was when Irene had to leave him at the vet clinic, and he said, heart-breakingly, “I'm sorry, I love you.” I almost wish I'd never known that – it has made it much harder to leave my dogs at the clinic if I have to. Sometimes, ignorance really is bliss.

This raises what might be the most important question of all. If dogs could talk, would we want them to? Sure, it would be great if they could tell us that it's their left hind leg that hurts, not their right. Sean Senechal's book, *Dogs Can Sign Too*, suggests that we can come close to that. However, it seems to me that enhanced communication with our dogs would be a two-edged sword. I'd give anything to be able to explain to my dogs that an impending medical procedure will be brief and will make them feel better in the long run. But surely much of what's special about our relationship with dogs is that it is nonverbal, and as such is more primal and pure than other relationships. Besides, if dogs could talk, I know what I'd hear all night long: WANT MORE CHICKEN!

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