http://www.utdailybeacon.com/opinion/columns/ask-a-scientist-are-animals-right--or-left-/article_9b582a16-8ce2-11e7-aee1-7b6ca4a529a4.html

Ask a Scientist: Are animals right- or left- “pawed”, like people are right- or left-handed?

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Courtesy of The University of Tennessee, Knoxville.

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If you’re left-handed, you know firsthand just how much handedness has impacted human culture. Evidence of right-hand preference is present across the globe, even making its way into languages. the Latin word “sinister” means “left” as well as “unlucky,” while the English word “right” indicates both a direction and correctness. In French, “gauche” means both "left" and "awkward/clumsy," while droit(e) means both "right" and "straight," as well as "law" and the legal sense of "right." These lingual phenomena provide evidence that there was discrimination against left-handedness long

before the Catholic church started oppressing left-handedness in the 15th century. Today, right-handedness is assumed for many common tools like scissors, school desks, computer keyboards and mice (the mouse is always on the right), cameras and musical instruments. As any left-hander knows, handedness is very important in our culture.

One reason why handedness is so culturally important is that for centuries, people assumed that handedness was a uniquely human attribute that could be linked to a person's inherent qualities – good or evil, skilled or unskilled, intelligent or stupid, lucky or unlucky. Now we know that left-handed people are not necessarily any different than right-handed people. In fact, we know that left-handedness and right-handedness are not even separate categories, but are actually on a continuum. Some people are mixed-handed, preferring to do some tasks with their right and some tasks with their left hand, while some people are ambidextrous, able to do everything with both hands. However, there's still some confusion about whether or not it's only humans that show handedness. Do other animals also prefer to use one hand (or paw!) over the other?

To answer that question, we need to know what actually causes handedness. Handedness is often due to the asymmetrical development of the nervous system, which means that the left and right halves develop differently. This happens because it facilitates an efficient use of resources. Think about it: to flip a pancake, you only need a spatula, not your entire kitchen. Your body works the same way. Rather than try to make multiple parts of your body good at the same thing, you develop so that different parts excel at specific things.

Now you might be wondering, "If this division of labor causes handedness, then why are most people right-handed? Why isn't it an even 50/50 split?" Originally, scientists thought this was because of how the human brain works. Humans have very complex languages – more complex than almost any other species on the planet. For most of us, all this complexity is processed in the left side of the brain, which is why bogus left brain/right brain theories exist. Since both speaking and writing rely on complex motor skills, people thought that the left side of the brain became more devoted to motor skills than the right side. This seems backwards, but it is because the brain's connections to your body are crisscrossed, so the left side of your brain actually controls the right side of your body.

This explanation perfectly fit our preexisting thoughts about handedness. Since only humans have such complex languages, we are probably the only animals that have such a skewed division of motor skills. Left-handedness is just caused by a switch in the side of the brain that controls

language, which only happens in five percent of people, right? Well, actually, 10-12 percent of the population is left-handed, and not all of them process language in the right side of the brain, which throws a wrench in the whole idea that language processing causes handedness.

The truth is, scientists have noted handedness, or “pawedness,” in apes, monkeys, kangaroos, dogs, cats, horses and even mice and rats! Scientists have now shown that the asymmetrical development of the nervous system is genetically controlled. An article published this year found that human fetuses start to prefer sucking on one thumb over the other before the spinal cord is connected to the part of the brain that controls movement, meaning it is not brain development that produces handedness.

Your genes start producing the nervous system asymmetries that will decide what hand you prefer before your brain even has the ability to control your movements!

Also, since brains aren’t really involved in handedness, everything with an asymmetrical nervous system probably prefers one side of its body over the other and all animals have asymmetrical nervous systems, so it’s possible that even the bugs in your yard move around with a preference for one side of their body over the other. Pretty crazy, right? The idea of handedness being unique to humans couldn’t have been more wrong.

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