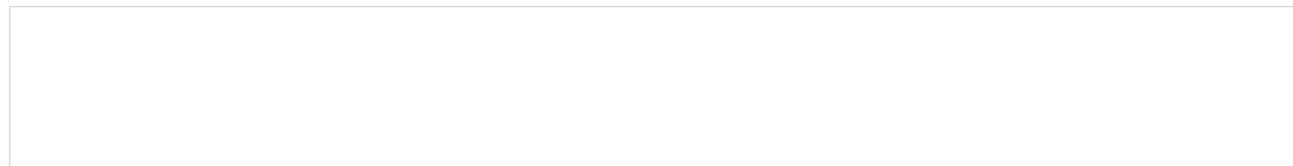🏛 *Guest Blog*

Can Animals Acquire Language?

Despite claims that this is possible, the evidence says no

By Hanoch Ben-Yami on March 1, 2017

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Human intelligence, even in its most basic forms, is expressed in our language, and is also partly dependent on our linguistic capacity. Homer, Darwin and Einstein could obviously not have achieved what they did without language—but neither could a child in kindergarten. And this raises an important question about animal intelligence. Although we don't expect a chimpanzee to write an epic or a dolphin to develop a scientific theory, it has frequently been asked whether these or other animals are close in intelligence to young children. If so, we must wonder whether animals can acquire a language.

In the last half century, much effort has been put trying answer that question by teaching animals, primarily apes, a basic language. There have been some limited successes, with animals using signs to obtain things in which they were interested, for instance. But no animal has yet acquired the linguistic capability that children have already in their third year of life.

"Why?"

This is a question children start asking by the age of three at the latest. No animal has yet asked anything. "Why?" is a very important question: it shows that those asking it are aware they don't know something they wish to know. Understanding the why-question is also necessary for the ability to justify our actions and thoughts. The fact that animals don't ask "why?" shows they don't aspire to knowledge and are incapable of justification.

"No!"

Children start saying no before they are two years old. No animal has yet said no. In order to master basic logic, one must understand negation. The inability of animals to use negation shows they lack basic logical abilities.

If a person knows that either A or B, and later learns that A isn't the case, he'll infer that B holds. This is called a disjunctive syllogism or inference. Are animals capable of such an inference? In 2001 Watson, Gergely et al. published the results of the following study, conducted on dogs and on four- to six-year-old children (Journal of Comparative Psychology. The dogs and children were first shown a desirable object in a container; next, a person holding the container passed behind three screens; and then the container was shown to be empty. The dogs and children were then allowed to search for the object behind the screens.

While children tended to increase their speed of checking behind the third screen after failing to find the object behind the first two, dogs tended to significantly decrease their speed of checking behind the third screen after thus failing. We know that children of this age are capable of a disjunctive inference, and this explains their search pattern. The contrasting dogs' search pattern is explained if the dogs did not think logically but were motivated by mere association, and then each failure to find the object amounted to an extinction trial for the association. 'There is as yet no compelling evidence for successful logical reasoning using the disjunctive syllogism in nonhuman animals' (Mody & Carey, Cognition 2016).

Another essential characteristic of our language is its normativity — namely, the fact that there are right and wrong uses of a word or phrase. We understand, for instance, that we used a certain word wrongly, or

that we don't yet know how to use it. Animals' use of language does not have this aspect. An animal might use a sign the way we intended it to be used, or it might not yet use the sign that way. But the animal itself cannot understand that it doesn't know how to use the sign or that it has used it incorrectly. Understanding the idea of a mistake or of normativity depends on the ability to understand that something is not right, and since animals cannot understand negation they cannot understand normativity.

Since normativity is essential to our language, animals don't have a language in the sense we do. Animals produce sounds that express their emotions, and some can use signs in a Pavlovian way, as a result of an association between previous uses and succeeding events. But without "Why?" and "No!" there's nothing resembling human language.

And the distinctions don't stop there. To ascribe a mistake to another is to ascribe him a belief which is not true. Accordingly, the inability to understand negation makes animals incapable of understanding that someone has a false belief. Indeed, a study recently published in Science claimed apes can ascribe a mistake to others. But empirical issues, as well as faulty analysis of the findings (see my response in Science) make the study's conclusions unsupported.

Some emotions also depend on the understanding of negation, possibility, and other logical concepts. For instance, you hope that something will happen if you want it to happen but understand that it might not happen. And since animals cannot understand the notions of negation or of possibility, they cannot hope. Your dog expects you to take it out for a walk when you take the leash off the hook, and that is why it gets excited. But when you take a nap it cannot hope that you will take it out once you get up.

Ethics involves normative concepts, of what is right, just or fair to do, and of their contraries. And since animals do not understand such concepts, they are incapable of anything like human moral behaviour or related feelings. For instance, if Alice clearly gave Bob more than she did Charlie, although it was equally clear that Bob did not deserve more, Charlie will get upset: it's not fair! Such moral emotions, the result of injustice or lack of equity, are beyond the purview of animals.

Several studies have been conducted in order to show that animals do have such emotions, the best known probably being that of <u>Frans de Waal and his colleagues</u> with capuchin monkeys. One monkey gets furious when it continues to receive cucumbers after it sees the other monkey receiving grapes for the same task. However, the monkey gets upset not because it thinks it was treated unjustly, but because it expects grapes and receives cucumbers. The monkey doesn't initially get upset when it sees the other receiving a grape after it received a cucumber; Charlie, by contrast, will remonstrate when he sees Alice giving Bob more than she earlier gave him. Rather, the monkey gets upset only later, when it doesn't receive what it expects. It cries in frustration, not with moral indignation.

We shouldn't immediately interpret behaviour that with us would be the result of a specific feeling or belief as resulting, in similar circumstances, from the same feeling or belief in animals. We should rather first examine the animals in other circumstances as well, to determine the limits of their capacities.

Animals can suffer, enjoy, be angry, surprised or afraid. Some are also sad when they lose their young. These and similar feelings bring us to love them, pity them and try to prevent them from suffering. But their resemblance to humans stops there. Human beings, as Aristotle observed and Descartes reiterated, are animals with a language. And

language here is also logos, that is, logic or rationality. And experience teaches us that these are absent from the rest of the animal kingdom.

The views expressed are those of the author(s) and are not necessarily those of Scientific American.

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