

Are animals as smart, or as dumb, as we think they are?

October 29 2013, by Clint J Perry



Measuring animal intelligence is extremely complex, yet some animals may be smarter than we think. Credit: Rader of Gin

Does my dog only think of eating, sleeping and chasing squirrels? Does my girlfriend's cat really have the capacity to plot my accidental death? Are cows just walking hamburgers and pigeons intent on world domination?

Opinions vary on the answers to these questions. But where do we get our opinions on animal intelligence?

Our understanding of, and feelings for and against different [species](#) seem to be linked to our cultural and personal prejudices. We have compassion for those closely related to us. Mammals are viewed smarter than birds and reptiles, while we think of less related species, like insects, as non-thinking machines.

The reality is intelligence is a complex concept, difficult to define and hard not to base around our own abilities.

Measuring intelligence is even more difficult. With humans we can converse or give them a written test. But the lack of language and opposable thumbs makes it extra tricky to measure intelligence in [animals](#).

So how are researchers changing their approach to measuring animal intelligence? Today, animal cognition scientists avoid viewing humans as the apex of intellect and look at animals not as dumb furry humans, but as intelligent species that view the world in fundamentally different ways.

Tool-use is a form of intelligence long thought to be exclusive to humans. Examined in many species, only few have succeeded. When [elephants](#) were first tested, experimenters gave them a stick and placed food just out of reach. In this setup, elephants failed. Elephants knew where the food was placed and could grab the stick, but would not use it to obtain the food.

Later, researchers realised a species bias in the experimental design. Grabbing the stick with its trunk inhibited the elephant's ability to smell and feel; senses that elephants rely on much more than vision. So

researchers tried [something different](#). They added a box to the experiment. The result? Elephants kicked the box until able to stand on it to reach the food.

A less widely studied cognitive capacity is empathy. For a very long time experiments seemed to show that non-human primates were selfish. Monkeys were allowed to either take food or push food to a companion. Monkeys would more often take food for themselves suggesting general selfishness. But perhaps the [monkeys](#) didn't understand the experimental setup.

In a recent [study](#) monkeys learnt that two different types of tokens would exchange for food: one type would gain food for them only while the other token type provided food for both monkeys. This set-up proved successful. Monkeys preferred tokens that rewarded both individuals.

These are two simple examples among many where animals seemed void of a certain type of intelligence. But in reality they only failed solving a task the way we expected a [human](#) would. Negative findings tell us only so much. By designing a test for the specific species in mind, researchers were able to reveal the animals' true [cognitive capacities](#).

As tough as it is to define intelligence and to measure animals' cognitive capacities, research has provided ample evidence that animals across many different species have complex intelligence.

Squirrels [fake](#) hiding seeds when they know others are watching. Crows can [construct](#) hooks out of wire to use as tools. Chimpanzees have [better short-term memories](#) than humans.

Bumblebees [can](#) solve some problems faster than computers. Rats [feel](#) empathy for their species companions. Honey bees can [recognise](#) faces. [Magpies](#) are self-aware.

And *Caenorhabditis elegans*, a worm with only 302 brain cells, can [learn and remember](#).

For some, hearing that animals are intelligent is enthralling. But for many, losing their exclusivity on intelligence is discomforting.

Several studies have shown that we rate animals' intelligence much lower [if](#) and [when](#) we eat them, a form of denial that may help us feel less guilty.

Even harder to take for some is that humans may not be as smart as we once thought. [More](#) and [more](#) research is showing that the seemingly complicated logic and intellect we routinely use to solve problems relies heavily on short cuts known as heuristics. Put simply, this comes very close to what we consider instincts.

All this means is that we should remind ourselves that we are animals living in a world with other animals. All species are of course different from each other. But we're really not so dissimilar. What we once thought was restricted to humans is showing up not only in animals like us, but also in organisms much different from us.

From our closest relatives, like other primates and mammals, to animals far from us on the evolutionary tree, like birds and insects, all biological organisms have some level of [intelligence](#). To be successful, they all need to solve the problems they face in life.

Finding out how they solve these problems will take clever problem solving of our own. And along with it, a change in perspective.

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