

Do animals think like humans?

A. Some pet owners believe that their animals understand them when they speak, but how much do animals really understand of what we say? To what extent is their thinking a reflection of ours? Recent experiments have begun to throw light on the matter.

An Austrian dog researcher calls her Betsy - has a vocabulary of more than 300 words. Even our closest relatives, the great apes, can't do what Betsy can do - hear a word only once or twice and know that the acoustic pattern stands for something," says cognitive psychologist Jutlane Kaminski. Dogs' understanding of human forms of communication is something new that has evolved," she says. "something that's developed in them because of their long association with humans." Scientists think that dogs were domesticated about 15,000 years ago, a relatively short time in which to develop language skills.

But how similar are these skills to those of humans? For abstract thinking, we employ symbols, letting one thing stand for another. Betsy, in an experiment, was shown a picture of a Frisbee, a picture she had never seen before, and told to find it. She brought the Frisbee from among other toys in another room.

B. Other animals also have skills similar to those of humans. 'People were surprised to discover that chimpanzees make tools.' said Alex Kacelnik, a behavioural ecologist at Oxford University, referring to the straws and sticks chimpanzees use to pull termites out of their nests. 'But people also thought Well, they share our ancestry - of course they're smart. Now we're finding these kinds of exceptional behavior in some species of birds. But we don't have a recently shared ancestry with birds. Their evolutionary history is very different: our last common ancestor with all birds was a reptile that lived over 300 million years ago. This means that evolution can invent similar forms of advanced intelligence more than once - that it's not something reserved only for primates or mammals.

C. Kacelnik and his colleagues are studying one of these smart species, the New Caledonian crow, which lives in the forests of the Pacific island of the same name. New Caledonian crows are among the most skilled of tool-making and tool-using birds, forming probes and hooks from sticks and leaf stems to poke into the palm trees where fat grubs hide. Since these birds, like chimpanzees, make and use tools, researchers can look for similarities in the evolutionary processes that shaped their brains. Something about the environment of both species favored the evolution of tool-making neural powers.

But is their use of tools rigid and limited, or can they be inventive? Do they have what researchers call mental flexibility? Chimpanzees certainly do. In the wild, a chimpanzee may use four sticks of different sizes to extract the honey from a bee's nest. And in captivity, they can figure out how to position several boxes so they can retrieve a banana hanging from a rope.

D. Answering that question for New Caledonian crows - extremely shy birds - wasn't easy. Even after years of monitoring them in the wild, researchers couldn't determine if the birds' ability was innate, or if they learned to make and use their tools by watching one another. If it was a genetically inherited skill, could they, like the chimps, use their talent in different creative ways?

To find out, Kacelnik and his students brought 23 crows of varying ages (all but one caught in the wild) to the aviary in his Oxford laboratory. Four hatchlings were raised in captivity, and all were carefully kept away from the adults, so they had no opportunity to be taught about tools. Yet soon after they fledged, all picked up sticks to probe busily into cracks and shaped different materials into tools.

E. Birds can cheat too. Other studies by the same researcher show that western scrub jays can know another bird's intentions and act on that knowledge. A jay that has stolen food itself, for example, knows that if another jay watches it hide a nut, there's a chance the nut will be stolen. So the first jay will return to move the nut when the other jay is gone.

Such deceptive acts require a complicated form of thinking, since you must be able to attribute intentions to the other individual and predict that individual's behaviour.

F. One school of thought argues that human intelligence evolved partly because of the pressure of living in a complex society of calculating beings. Chimpanzees, orangutans, gorillas and bonobos share this capacity with us. In the wild, primatologists have seen apes hide food from the alpha male or steal his females. Kacelnik's study is the first to show the kind of ecological pressures, such as the need to hide food for winter use, that would lead to the evolution of such mental abilities. Most provocatively, his research demonstrates that some birds possess what is often another uniquely human skill: the ability to recall a specific past event.