



I THINK THEREFORE I AM?

On our way to talking with non-human animals

Continued from cover.

Wouldn't it be great if we were all like Dr. Doolittle and could have two-way communication with animals? Some scientists believe it's possible if we understood certain animal species' cognition.

For example, Dr. Irene Pepperberg's now deceased African gray parrot, Alex, had a vocabulary of over 100 English words and was able to identify objects, colors, shapes, quantities and much more. Dr. Denise Hezing, who has spent the last 27 years swimming with a pod of Atlantic spotted dolphins in the Bahamas as part of the Wild Dolphin Project, is currently trying to "create a joint form of communication."

Bird Brain

Imagine an animal that could communicate as "a result of reasoning and choice," according to The New York Times, but had the ability to tell its scientist handler, Dr. Pepperberg, what "it" was — like Alex, the African gray parrot, at least until his death in 2007.

While working on her doctoral thesis in theoretical chemistry at Harvard University in 1973, Dr. Pepperberg saw a NOVA program that changed her life; she decided to leave chemistry and study the avian mind. She went to a Chicago pet store in June 1977, had the shop owner choose an African gray parrot from his

collection and she began her studies on the Avian Learning EXperiment, or Alex, according to the Alex Foundation.

Dr. Pepperberg, with the assistance of graduate students, spent countless hours training Alex to learn and understand. At the time of his death he was able to correctly identify 50 different objects; count objects up to six — he was working on seven and eight; distinguish seven colors and five shapes; understand "bigger," "smaller," "same," "different," and was in the process of learning "over" and "under," according to the Alex Foundation. He was also able to correctly identify objects based on the shape, color and the material they were made from. "Dr. Pepperberg said she frequently changed objects to make sure Alex wasn't just memorizing things and that she structured experiments to avoid involuntary cues from examiner," said Dinitia Smith, a writer for The New York Times.

The night before his death, he said to Pepperberg, "You be good. I love you. See you tomorrow."

Even in death, Alex continues to amaze. His final experiments, those where he was trained to count objects, were published in February of this year in Animal Cognition. According to an article in Scientific American, the published papers show that Alex could

accurately "add two Arabic numerals to a sum of eight and the total number of objects under three cups..."

Don't Blowhole It!

Dr. Herzing is a behavioral and marine biologist who has spent a large portion of her adult life swimming with dolphins — wild Atlantic spotted dolphins just off the coast of the Bahamas.

She explained to Discover magazine that "dolphins are like icebergs — what you see on the surface is only a small part of the activity underneath." The Wild Dolphin Project's website states that Herzing's overall feelings toward the research are that "discoveries in dolphin cognition will serve to further elevate the status of all animals on the planet, and help us define our relationship with them."

In order to achieve two-way communication between humans and dolphins, Herzing and her team needed to develop a light and portable communication system. Therefore, they developed an underwater keyboard called Cetacean Hearing and Telemetry (CHAT), and used it from 1997-2000, with good success, according to the Wild Dolphin Project's website.

But she wanted more. Dr. Herzing then partnered with Georgia Tech and

developed a newer, smaller computer that could be "strapped to a diver's chest and connected to two underwater recorders, or hydrophones. The computer will detect and differentiate dolphin sounds, including the ultrasonic ones we cannot hear, and use flashing lights to tell the diver which animal made the call," Discover magazine reported.

According to Herzing, this device is not a translator, but a way for both species to communicate, assuming that all participants will be invested in the project, namely the dolphins. Her hope is that CHAT will tap into the "natural propensity" that dolphins have "for creating common information when they have to interact," she was quoted in Discover magazine.

"It may be our best training ground for exploring cosmos for other life, for if we can't understand and interact with life on this planet then there is no hope for our exploration of the galaxy," according to an excerpt in her book Dolphin Diaries, a Ground Breaking Glimpse Into how Dolphins Communicate and Live.

LOTS OF SMART ANIMALS

Many scientists believe lots of animals throughout the world are intelligent because of their animal cognition. In fact, NOVA did a piece on "Your Favorite Smart Animal" and had experts explain

why they liked a particular animal and why. Here are some examples of animal cognition:

Bonobos

Vannessa Woods is the author of *Bonobo Handshake*, and is a research scientist at Duke University. She specializes in bonobos' and chimpanzees' emotions and cognitions.

She found bonobos smart because they are able to "maintain peace in their group" where chimps, who are "wonderful" also have a "dark side" because they "hunt each other; they kill each other; they have war; they beat their females; they kill their infants. So they're a reflection of ourselves." She feels that we should learn "more about the psychological and emotional lives of bonobos so that we can learn how to (maintain peace in our lives as well)."

Cats and Dogs

Nicholas Dodman is the Director of the Animal Behavior Program at the Tufts Cummings School of Veterinary Medicine. He focuses on the behavior of domestic animals — in particular dogs and cats. His view of dogs is based on their sense of smell: "They live in this incredible olfactory world. They would wonder why we would get lost in the woods. They'd wonder why we can't

smell these things they can smell." Cats, on the other hand, "are able to be trained, though many people think they can't." They are "capable of learning things, capable of acting on what they learned, capable of solving puzzles."

Crows

Nicky Clayton is a professor of comparative cognition at Cambridge University in the Department of Experimental Psychology. She specializes in the intelligence of the crow family, which includes crows, jays and ravens. According to Clayton, "Members of the crow family are as clever as the great apes" ... because "they have similar challenges or similar problems to solve. Crows are also able to remember the past, including where and when. Additionally, crows are capable of experiencing projection, putting themselves in another birds' shoes."

Honeybees

James Nieh is a professor of biology at the University of California, San Diego. He specializes in animal behavior, animal communication and behavioral ecology. Bees "can forage up to 11 miles away" without getting lost and "have excellent memory about what types of flowers they visited, were they were and whether they were rewarding or

not. They can store them for the rest of their adult lives."

Hyenas

Christine Drea is an associate professor of evolutionary anthropology and biology at Duke University. She specializes in the social behavior of carnivores and primates. She says that hyenas are "the most successful social hunters in Africa." She explains by stating, "We see their social intelligence at work in the wild in the manner in which they hunt. You can catch prey alone, but you can catch a bigger, tougher prey, such as a zebra, if you do it in cahoots with another animal."

Octopuses

Roger T. Hanlon is a senior scientist at the Marine Biological Laboratory in Woods Hole, Massachusetts. He specializes in the behavior of cephalopods, including octopuses. He says that octopuses have "short-term and long-term memory, just like we do." He also explained that they are able to "assess a visual background and implement a very elegant pattern that achieves camouflage. This is not a simple reflex; it is a very complex neural and behavioral system."

By: Gwen Myslinski

Sources:

- Wild Dolphin Project: <http://www.wilddolphinproject.org/index.php/>
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