

# The Five-Minute Linguist

Bite-sized Essays on  
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## Do animals use language?

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*Do animals talk among themselves? If so, how? Do they have anything like human language?*

Parrots talk. So the answer is yes, animals use language, right? Well, not so fast. There are two issues here, both interesting from a linguistic point of view. One is whether animals use language among themselves; the other is whether animals can learn human language. Before addressing them, we have to decide what should count as language.

Human languages have well-defined characteristics. First, they are *systematic*; that is, they all have rules that we call grammar. ('Chased dog the nasty a cat' is made of English words, but it isn't an English sentence—the words have been thrown together randomly, rather than according to the rules of English syntax.)

Human language is also *innate*. Children are born hard-wired to acquire language. No one needs to teach them. This ability depends on the plasticity of the infant brain, though: a child not exposed to accessible language by the age of five may never fully acquire it.

A third striking characteristic is what linguists call *displacement*—humans can talk about objects that aren't present, like the man in this sentence: 'The weird man you followed last week told me he's considering writing an exposé of existentialism.'

Still another feature of human language is its ability to talk about *abstract* notions—like 'weirdness,' 'exposé,' and 'existentialism.'

Finally, the 'weird man' sentence is one I never used before I wrote it just now. You probably never heard it before, either. All human languages have the ability to *create* new expressions.

Animals communicate with one another in ways that meet some, but not all five, of those criteria. Most language researchers agree that this means animals don't use language.

Bees have elaborate dances to tell other bees the location and quality of food sources. The paths and speeds of these dances clearly follow rules—the orientation of the dancer's head and the vigor of its waggle are significant. They are about food that isn't present (so we have displacement) and about how good the food is (so we have abstraction). And dancing appears to researchers to be innate. But creativity is lacking; the amount of information bees can pass on is extremely limited. They can't communicate, for example, that a new food source is near another well-known one, or that other bees are already approaching the source so that the hive had better hurry if they want any.

Birdsong has also rules. Robins, for example, use motifs that have to occur in a certain order (a kind of grammar) or other robins will find them unintelligible. The ability to sing is innate, and birds not exposed to song within the first several months of life never develop typical courtship-territorial song. Birdsong does convey emotion, so to that extent it refers to abstractions. We have no evidence, however, that birdsong allows displacement (birds never seem to tell each other that something scary happened to them on the other side of the barn, for example); nor do they make up new songs. Still, there are many species of birds and few of them have been studied.

Whales and dolphins sing and whistle. The form of their songs follows rules (the complex songs of some whales can go on all day long), and they can convey limited meaning (distress or warning calls), but there's no evidence of the novelty or creativity characteristic of human language.

Chimpanzees use grunts, barks, pants, wails, laughs, squeaks, hoots, and calls to alert others to the location of food sources, to announce a successful kill, to express alarm or danger, to identify

themselves, or to express satisfaction. Their postures, facial expressions, and limb gestures play an even greater role in communication. But nothing so far has indicated that any of this follows grammar-like rules.

Turning to the second question, there have been many attempts to teach human language to birds, sea mammals, and primates. Alex, an African grey parrot that Dr. Irene Pepperberg of the University of Arizona worked with for thirty years before its death in 2007, had an extensive vocabulary. He could identify objects with English words, by their material, color, shape, and number. He could ask for food that wasn't present. He apologized when he misbehaved. He was facile at language and clearly understood the meaning of some words. But his verbal behavior was erratic in ways unlike even a very young human.

Dolphins have been taught to respond to hand gestures and are able to interpret new utterances correctly. For example, dolphins who learned that the sequence of gestures PERSON SURFBOARD FETCH means 'bring the surfboard to the person' easily understood SURFBOARD PERSON FETCH as 'bring the person to the surfboard'—they recognized a system and used it.

Chimpanzees, gorillas, and bonobos have been taught to use and respond to sign language. The famous chimp Washoe, who learned a simple sign language from her trainers, adopted a baby named Loulis and reportedly taught him to sign. A gorilla named Koko is reported to have amassed a vocabulary of over a thousand signs. A bonobo named Kanzi learned to communicate using a keyboard with about two hundred symbols that represented words and actions. We are told he could understand over five hundred spoken English words.

And, most recently, border collies have been reported to respond appropriately to language, some showing recognition of over a thousand words.

Such experiments suggest that in laboratory settings or with rigorous training some animals can learn language-like behavior to some extent; but there's no sign that their real-world communication with each other makes any significant use of this capacity.

Could we be missing something? Could there be animals that achieve five-featured language-like communication with exotic means like seismic thumping, olfactory spraying, or electrical signaling? Nothing is impossible, but decades of research have not found anything among animals that is comparable to human language in terms of systematicity or creativity. Language remains the most profound distinction between animals and humans.

#### About the author

Donna Jo Napoli, trained at Harvard and MIT, is Professor of Linguistics at Swarthmore College. She publishes widely in theoretical linguistics, primarily on the structure of Italian and of American Sign Language. Her books include *Humour in Sign Languages: The Linguistic Underpinnings* (with Rachel Sutton-Spence, 2009), *Language Matters* (2003), and *Linguistics: An Introduction* (1996). She also writes fiction for children: [www.donnajonapoli.com](http://www.donnajonapoli.com).

#### Suggestions for further reading

##### *In this book*

Chapters discussing grammar as a distinguishing feature of human language include 13 (grammar in general), 14 (universal grammar), and 25 (language deprivation).

##### *Elsewhere*

Anderson, Steve. *Dr. Doolittle's Delusion: Animals and the Uniqueness of Human Language* (Yale University Press, 2004). Clarifies the distinction between communication and language, and argues that while animals have the former, they do not have the latter.

Bradbury, Jack and Sandra Vehrencamp. *Principles of Animal Communication* (Sinauer Press, 1998). Discusses the range of communication between animals across the various senses.

Hausser, Marc and Mark Konishi, eds. *The Design of Animal Communication* (Massachusetts Institute of Technology, 1999). Studies how animal signals and responses to them develop, including methods of communication and ontogeny.

McGregor, Peter, ed. *Animal Communication Networks* (Cambridge University Press, 2005). Applies a network perspective to communication between groups of animals, with discussions of many group behaviors, such as chorusing and, in particular, eavesdropping.

[www.cwu.edu/~cwuchci](http://www.cwu.edu/~cwuchci). The site of Central Washington University's Chimpanzee and Human Communication Institute, where scientists use ASL with chimps.

[www.thegenieslamp.com/fun/alex.htm](http://www.thegenieslamp.com/fun/alex.htm). An article by Kenn Kaufman about Alex the parrot and his communication with humans.

<http://polarization.com/bees/bees.html>. About bee dances.