

Chimp Talk Debate: Is It Really Language? George Johnson, 1995.

PANBANISHA, a Bonobo chimpanzee who has become something of a star among animal language researchers, was strolling through the Georgia woods with a group of her fellow primates -- scientists at the Language Research Center at Georgia State University in Atlanta. Suddenly, the chimp pulled one of them aside. Grabbing a special keyboard of the kind used to teach severely retarded children to communicate, she repeatedly pressed three symbols -- "Fight," "Mad," "Austin" -- in various combinations.

Austin is the name of another chimpanzee at the center. Dr. Sue Savage-Rumbaugh, one of Panbanisha's trainers, asked, "Was there a fight at Austin's house?"

"Waa, waa, waa" said the chimpanzee, in what Dr. Savage-Rumbaugh took as a sign of affirmation. She rushed to the building where Austin lives and learned that earlier in the day two of the chimps there, a mother and her son, had fought over which got to play with a computer and joystick used as part of the training program. The son had bitten his mother, causing a ruckus that, Dr. Savage-Rumbaugh surmised, had been overheard by Panbanisha, who lived in another building about 200 feet away. As Dr. Savage-Rumbaugh saw it, Panbanisha had a secret she urgently wanted to tell.

A decade and a half after the claims of animal language researchers were discredited as exaggerated self-delusions, Dr. Savage-Rumbaugh is reporting that her chimpanzees can demonstrate the rudimentary comprehension skills of 2 1/2-year-old children. According to a series of recent papers, the Bonobo, or pygmy, chimps, which some scientists believe are more humanlike and intelligent than the common chimpanzees studied in the earlier, flawed experiments, have learned to understand complex sentences and use symbolic language to communicate spontaneously with the outside world.

"She had never put those three lexigrams together," Dr. Savage-Rumbaugh said, referring to the keyboard symbols with which the animals are trained. She found the incident, which occurred last month, particularly gratifying because the chimp seemed to be using the symbols not to demand food, which is usually the case in these experiments, but to gossip.

In a book to be published later this year, "Apes, Language and the Human Mind: Philosophical Primatology" (Routledge), Dr. Savage-Rumbaugh and her co-authors, Dr. Stuart Shanker, a philosopher at York University in Toronto, and Dr. Talbot Taylor, a linguist at the College of William and Mary in Virginia, argue that the feats of the chimps at the Language Research Center are so impressive that scientists must now re-evaluate some of their most basic ideas about the nature of language.

Most language experts dismiss experiments like the ones with Panbanisha as exercises in wishful thinking. "In my mind this kind of research is more analogous to the bears in the Moscow circus who are trained to ride unicycles," said Dr. Steven Pinker, a cognitive scientist at the Massachusetts Institute of Technology who studies language acquisition in children. "You can train animals to do all kinds of amazing things." He is not convinced that the chimps have learned anything more sophisticated than how to press the right buttons in order to get the hairless apes on the other side of the console to cough up M & M's, bananas and other tidbits of food.

Dr. Noam Chomsky, the M.I.T. linguist whose theory that language is innate and unique to people forms the infrastructure of the field, says that attempting to teach linguistic skills to animals is irrational -- like trying to teach people to flap their arms and fly.

"Humans can fly about 30 feet -- that's what they do in the Olympics," he said in an interview. "Is that flying? The question is totally meaningless. In fact the analogy to flying is misleading because when humans fly 30 feet, the organs they're using are kind of homologous to the ones that chickens and eagles use." Arms and wings, in other words, arise from the same branch of the evolutionary tree. "Whatever the chimps are doing is not even homologous as far as we know," he said. There is no evidence that the chimpanzee utterances emerge from anything like the "language organ" Dr. Chomsky believes resides only in human brains. This neural wiring is said to be the source of the universal grammar that unites all languages.

But some philosophers, like Dr. Shanker, complain that the linguists are applying a double standard: they dismiss skills -- like putting together a noun and a verb to form a two-word sentence -- that they consider nascent linguistic abilities in a very young child.

"The linguists kept upping their demands and Sue kept meeting the demands," said Dr. Shanker. "But the linguists keep moving the goal post."

Following Dr. Chomsky, most linguists argue that special neural circuitry needed for language evolved after man's ancestors split from those of the chimps millions of years ago. As evidence they note how quickly children, unlike chimpanzees, go from cobbling together two-word utterances to effortlessly spinning out complex sentences with phrases embedded within phrases like Russian dolls. But Dr. Shanker and his colleagues insist that Dr. Savage-Rumbaugh's experiments suggest that there is not an unbridgeable divide between humans and the rest of the animal kingdom, as orthodox linguists believe, but rather a gradation of linguistic skills.

In a forthcoming book, "The Engine of Reason, the Seat of the Soul: A Philosophical Journey Into the Brain" (M. I. T. Press), Dr. Paul Churchland, a philosopher and cognitive scientist at the University of California at San Diego, says linguists should take Dr. Savage-Rumbaugh's experiments as a challenge. He argues that the jury is still out: the rules for constructing sentences might turn out to be not so much hard-wired as a result of learning -- by people and potentially by their chimpanzee relatives.

Animal language research fell into disrepute in the late 1970's when "talking" chimps like Washoe and the provocatively named Nim Chimpsky were exposed as unintentional frauds. Because chimpanzees lack the vocal apparatus to make a variety of modulated sounds, the animals were taught a vocabulary of hand signs -- an approach first suggested in the 18th century by the French physician Julien Offray de La Mettrie. In appearances on television talk shows, trainers claimed the chimps could construct sentences of several words. But upon closer examination, scientists found strong evidence that the chimps had simply learned to please their teachers by contorting their hands into all kinds of configurations. And the trainers, straining to find examples of linguistic communication, thought they saw words among the wiggling, like children seeing pictures in the clouds.

In a widely quoted paper in the journal *Science*, "Can an Ape Create a Language?" Nim Chimpsky's trainer, Dr. Herbert Terrace, a Columbia University psychologist, reluctantly concluded that the answer was no.

A chimp might learn to connect a hand sign with an item of food, skeptics like Dr. Terrace argued, but this could be a matter of simple conditioning, like Pavlov's dogs learning to salivate at the sound of a bell. Most importantly, there was no evidence that the chimps had acquired a generative grammar -- the ability to string words together into sentences of arbitrary length and complexity.

As a young veteran of the original animal language experiments, Dr. Savage-Rumbaugh decided to try a different approach. To eliminate the ambiguity of hand signs, she used a keyboard with dozens of buttons marked with geometric symbols.

In elaborate exercises beginning in the mid 1970's, she and her colleagues taught common chimpanzees and bonobos to associate symbols with a variety of things, people and places in and around the laboratory. The smartest chimps even seemed to learn abstract categories, identifying pictures of objects as either tools or food. Dr. Savage-Rumbaugh reported that two of the chimps learned to use symbols to communicate with each other. Pecking away at the keyboard, one would tell a companion where to find a key that would liberate a banana for them both to share.

Most impressive of all was a bonobo named Kanzi. After futilely trying to train Kanzi's adopted mother to use the keyboard, the researchers found that the 2 1/2-year-old chimp, who apparently had been eavesdropping all along, had picked up an impressive vocabulary on his own. Kanzi was taught not in laboriously structured training sessions but on walks through the 50 acres of forest surrounding the language center. By the time he was 6 years old, Kanzi had acquired a vocabulary of 200 symbols and was constructing what might be taken as rudimentary sentences consisting of a word combined with a gesture or occasionally of two or three words. Dr. Savage-Rumbaugh became convinced that exposure to language must start early and that the lessons should be driven by the animal's curiosity.

Compared with other chimps, Kanzi's utterances are striking, but they are still far from human abilities. Kanzi is much better at responding to vocal commands like "Take off Sue's shoe." In one particularly arresting feat, recorded on videotape, Kanzi was told, "Give the dog a shot." The chimpanzee picked up a hypodermic syringe lying on the ground in front of him, pulled off the cap and injected a toy stuffed dog.

Dr. Savage-Rumbaugh's critics say there is nothing surprising about chimpanzees or even dogs and parrots associating vocal sounds with objects. Kanzi has been trained to associate the sound "dog" with the furry thing in front of him and has been programmed to carry out a stylized routine when he hears "shot." But does the chimp really understand what he is doing?

Dr. Savage-Rumbaugh insists that experiments using words in novel contexts show that the chimps are not just responding to sounds in a knee-jerk manner. It is true, she says, that Kanzi was initially aided by vocal inflections, hand gestures, facial expressions and other contextual clues. But once it had mastered a vocabulary, the bonobo could properly respond to 70 percent of unfamiliar sentences spoken by a trainer whose face was concealed.

None of this is very persuasive to linguists for whom the acid test of language is not comprehension but performance, the ability to use grammar to generate ever more complex sentences.

Dr. Terrace says Kanzi, like the disappointing Nim Chimpsky, is simply "going through a bag of tricks in order to get things." He is not impressed by comparisons to human children. "If a child did exactly what the best chimpanzee did, the child would be thought of as disturbed," Dr. Terrace said.

The scientists at the Language Research Center are "studying some very complicated cognitive processes in chimpanzees," Dr. Terrace said. "That says an awful lot about the evolution of intelligence. How do chimpanzees think without language, how do they remember without language? Those are much more important questions than trying to reproduce a few tidbits of language from a chimpanzee trying to get rewards."

Attempting to shift the fulcrum of the debate over performance versus comprehension, Dr. Savage-Rumbaugh argues that the linguists have things backward: "Comprehension is the route into language," she says. In her view it is easier to take an idea already in one's mind and translate it into a grammatical string of words than to decipher a sentence spoken by another whose intentions are unknown.

Dr. Shanker, the York University philosopher, believes that the linguists' objections reveal a naive view of how language works. When Kanzi gives the dog a shot, he might well be relying on all kinds of contextual clues and subtle gestures from the speaker, but that, Dr. Shanker argues, is what people do all the time.

Following the ideas of the philosopher Ludwig Wittgenstein, he argues that language is not just a matter of encoding and decoding strings of arbitrary symbols. It is a social act that is always embedded in a situation.

But trotting out Wittgenstein and his often obscure philosophy is a way of sending many linguists bolting for the exits. "If higher apes were incapable of anything beyond the trivialities that have been shown in these experiments, they would have been extinct millions of years ago," Dr. Chomsky said. "If you want to find out about an organism you study what it's good at. If you want to study humans you study language. If you want to study pigeons you study their homing instinct. Every biologist knows this. This research is just some kind of fanaticism."

There is a suspicion among some linguists and cognitive scientists that animal language experiments are motivated as much by ideological as scientific concerns -- by the conviction that intelligent behavior is not hard-wired but learnable, by the desire to knock people off their self-appointed thrones and champion the rights of downtrodden animals.

"I know what it's like," Dr. Terrace said. "I was once stung by the same bug. I really wanted to communicate with a chimpanzee and find out what the world looks like from a chimpanzee's point of view."

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