

# Does Man Alone Have Language? Apes Reply in Riddles, and a Horse Says Neigh

*The communicating apes have a message.  
But does it refer to them or to us?*

*There was never a king like Solomon  
Not since the world began;  
But Solomon talked to a butterfly  
As a man would talk to a man.*

—RUDYARD KIPLING

*If a lion could talk, we could not understand him.*—LUDWIG WITTGENSTEIN

A group of several hundred people, psychologists, linguists, and a handful of magicians, met at the Roosevelt Hotel in New York last month in honor of a horse.

Not a mythical horse, like the winged Pegasus, or a political horse, like the steed Caligula made a Consul, or even a horse accorded divine honors, like Cortes' by the Mayas, but a plain, down-to-earth, turn-of-the-century German horse who belonged to a retired school teacher named Wilhelm Von Osten.

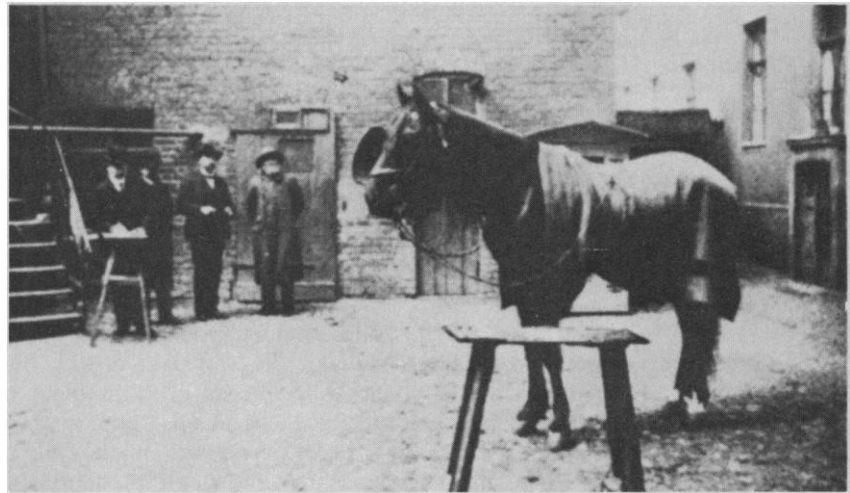
The horse was named Clever Hans, because he could apparently count by tapping out numbers with his hoof. He has acquired immortality because his equine spirit returns from time to time to haunt the laboratories of experimental psychologists, announcing its presence by ghostly laughter which its victims are almost always the last to hear.

Clever Hans owes his celebrity to his master's innocence. Von Osten sincerely believed he had taught Hans to solve arithmetical problems. What he didn't know was that he was involuntarily jerking his head as Hans reached the number of hoof-taps corresponding to the correct answer. Perceiving this unconscious cue on his master's part, Hans stopped tapping. According to Oskar Pfungst, the indefatigable psychologist who unraveled the phenomenon, Hans could detect head movements as slight as one fifth of a millimeter. The case has come to epitomize unconscious cueing in particular and experimenter self-deception in general.

Last month's resurrection of Clever Hans was the work of Thomas Sebeok, a linguist who believes that the horse has a lot to say to those who study ape language. So convinced is Sebeok of this

fact that he structured the conference—held under the auspices of the New York Academy of Sciences—as a celebration of deception in all its varieties. The multicolored spectrum of performers ranged from experts on the training of circus animals, to psychologists of various sorts, to the protean personage of the Amazing Randi, a professional magician whose sideline it is to encourage psychics in the

whom he expected would develop the same abilities in sign language as those claimed for Washoe and other chimps. Chimpsky was raised with the use of diapers, high chairs, and so forth, "pretty much like any other middle-class chimpanzee," Terrace explained to the conference. Chimpsky learned signs, like the other apes, and also started using them in strings. But were the strings of



*Clever Hans. [From Speaking of Apes, edited by T. A. Sebeok and J. Umiker-Sebeok, Plenum Press]*

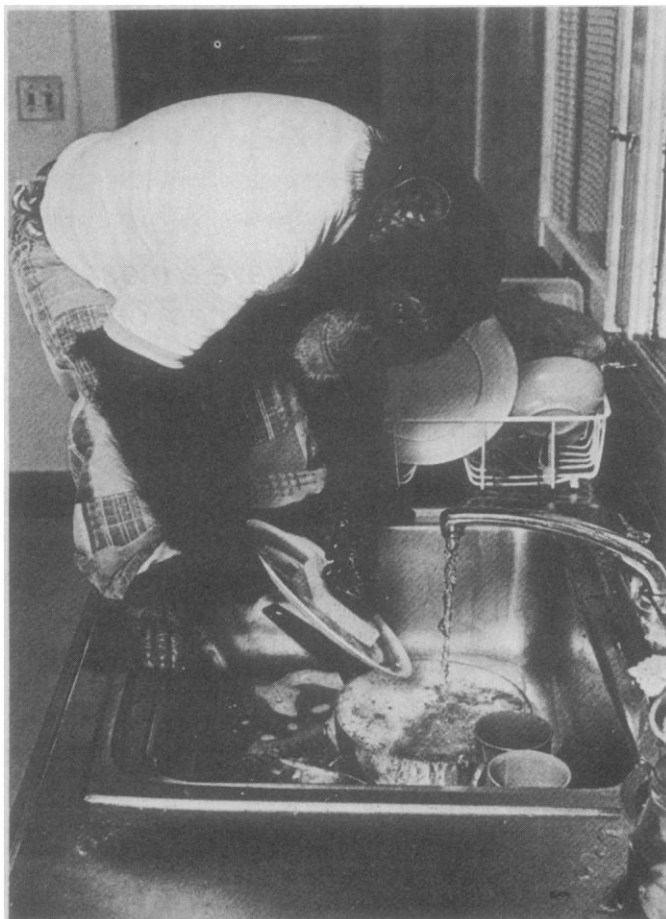
same manner as Saul of Tarsus did the early Christians.

It was amazing that any of the ape language researchers should even have considered stepping into such a lions' den. The very framework of the conference implied that their work fell into the category either of circus tricks or of self-delusion. Nevertheless, Allen and Beatrice Gardner, who pioneered the teaching of signs to their chimpanzee, Washoe, accepted an invitation to speak but withdrew at the last moment. Only the Rumbaughs, foster-parents to chimpanzee Lana, appeared in New York to defend the faith. The one other chimp-raiser present was ape language apostate Herbert Terrace.

Terrace's loss of faith (see *Science*, 21 March 1980) has dealt a serious blow to ape language research. In brief, Terrace's nemesis was Nim Chimpsky,

signs proper sentences? Or were they just a routine which the crafty ape had learned would induce some appropriate action in its human entourage? Terrace, after a crisis of doubt, decided that Chimpsky, and indeed the other pointing pongids, were not using the signs in a way characteristic of true language. Rather, they were probably making monkey keys out of their keepers by imitating or Clever-Hansing them. This conclusion, published by Terrace last year, was only the latest in a series of mutual criticisms among ape language researchers which have made the War of the Roses look like a teddy-bears' picnic by comparison. With animal trainers and linguists having their own reasons for skepticism, ape language researchers have suddenly found themselves under attack from outside as well as within.

The first stone at last month's confer-



*Nim Chimpsky washing up. [From Nim by Herbert Terrace, copyright © 1979 by Herbert Terrace. Reprinted by permission of Alfred A. Knopf, Inc.]*

ence was cast by Heini Hediger, a University of Zürich zoologist who is a leading expert on zoo animals. Common both to the Clever Hans case and to the signing chimpanzees, in Hediger's view, is the "age-old, burning desire of mankind to take up language contact with animals." Clever Hans had many imitators, cats and dogs as well as horses. By 1937 there were more than 70 of these so-called thinking animals. The claims made for dolphins in the 1950's were a continuance of this trend and, in Hediger's view, the last decade's work with apes falls squarely in the same tradition.

In any case, even if animals could speak, what could they talk about? Apes, dolphins, and horses have no interest at all in things that are of general interest to humans. Apes, for instance, have no notion of work. We could teach an ape a sign for work but he would never grasp the human conception behind it, Hediger averred. Proof of which is that despite the alleged intelligence of apes, no one in any zoo or laboratory has ever persuaded apes to undertake the household chores necessary for their own upkeep. "Paradoxically," said Hediger, warming to his theme, "in zoos as well as in laboratories, *Homo sapiens* still is the servant of the ape."

The assertion gave the ape researchers

their first point of the match. "Our apes clear up their cages and help with household chores," retorted Duane Rumbaugh. They are issued with brushes, soap, and a pail every morning and instructed to clean up. "You can give them trash and silverware and they will put the trash in the trash can and the silver in the drawer," said Rumbaugh, evoking images of a strangely gracious standard of chimpanzee living.

The next speaker, Paul Buissac, an expert on circuses, talked about the "dialectic of misunderstanding" on which some circus performances are based. Take the circus trick known as the Kiss of Death. A skimpily clothed girl is lashed to a bed. Then a large bear, released from its cage, ambles menacingly toward her. The audience's minds are seized with apprehensions of ravishment and bestiality. The bear looms over the girl, seems to kiss her and then, defying the onlookers' worst fears, shuffles back to his cage. In contrast to the human observers' lurid interpretation of the scene, the thoughts in the bear's head are quite simple: he is retrieving a carrot which he knows the girl has hidden in her mouth.

Another evocative instance of how participants can interpret a scene in rather different ways was provided by Martin Orne. It's the classroom trick of

lecturer training. Lecturers like to have students hang on their words. They find it gratifying to see a class of people taking notes, an emotion that renders them vulnerable to what animal psychologists call positive reinforcement. By taking notes only when the lecturer moves toward a certain spot, the students can influence his movements. Within just a few minutes, in favorable conditions, a skilled class can position their professor so that he is teetering over the edge of the far left corner of the platform. The lecturer believes he is teaching, but he is being trained.

People's propensity to "misframe" a situation, particularly when they have some preference or expectation as to the outcome, is all the stronger when other species enter the scene as vehicles for human imaginings and projections. Critics of ape language like to cite the now discredited claims of dolphin communication which were rife in the 1950's. Karen Pryor suggested how the mystique of dolphin communicative abilities may have come about. It lies in the circumstance that there exist no punitive methods for training dolphins. You can't use a choke chain, a cattle prod, an elephant hook, or even a fist on a dolphin. It's an animal whose behavior can be influenced only in positive ways. And these, it turns out, are remarkably effective. Dolphin trainers, Pryor noted, are rumored to have beautifully behaved children.

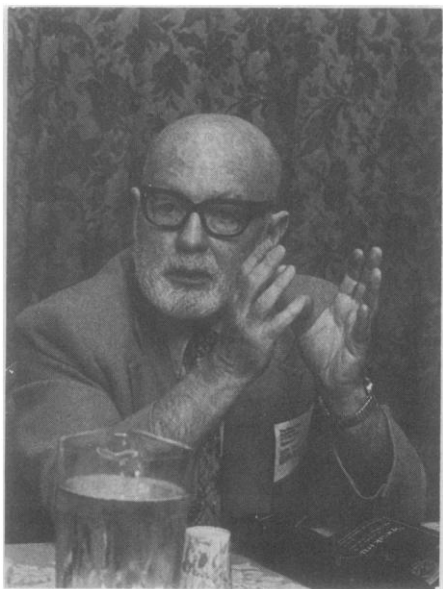
It is widely believed that police dogs are excellent trackers, capable of following a stranger's trail as soon as they have picked up the scent. But in one study of this phenomenon, says Sebeok, it turned out that the police dogs' handler was providing unwitting cues to the animals about his own expectations, and that the dogs were moving in the direction he indicated: a case of man guides dog.

So what is really going on in the ape laboratories between the apes and their human associates? Particularly evocative evidence of ape language lies in the instances when the creatures seem to use the signs they have been taught in apposite novel combinations. Gorilla Koko is reported to have described a zebra as a "white tiger"; Washoe is said to have designated a watermelon as a "drink fruit" and a swan as a "water bird." Suzanne Chevalier-Skolnikov described to the conference an occasion on which she watched Koko persistently misperform an action demanded of her. Finally her teacher, Penny Patterson, signed to her in exasperation, "Bad gorilla." To which Koko responded with the signs for "Funny gorilla," and laughed.

The critics will allow none of these ap-

pealing instances. The conjunction of signs may be accidental, they say. Few of the apes execute properly formed signs, as used in American Sign Language, a deficiency that may allow for ambiguities. (The Rumbaugh's chimps make use of symbols on a computer console.) As for instances such as that of Koko protesting that she's not bad but funny, the critics scoff that mothers notoriously overinterpret their children's utterances and that ape language researchers are no different.

A special feature of ape language research as a field of study is that the raw data—unedited films of the animals using signs—cannot easily be published. The



Thomas A. Sebeok [photo by Bonnie Freer/Kinesis Report]

inaccessibility of the data allows the attention of some of the researchers and their critics to wander occasionally from the apes to each other. The conference was enlivened by a vigorous mixed doubles match which pitted Duane Rumbaugh and Sue Savage-Rumbaugh against Thomas Sebeok and Jean Umiker-Sebeok. Unfortunately the spectators could only catch the vexed expressions on the players' faces without ever seeing the ball—in this case a 100-page unpublished manuscript\* which the Sebeoks had sent the Rumbaughs before the conference began.

"Vituperative criticism," "Replete with errors, both technical and logical," was Sue Savage-Rumbaugh's opinion of the Sebeoks' paper. "The Sebeoks don't understand our methods and their critical comments in this regard embarrassingly reveal their incompetence,"

\*To appear as the first chapter of *Speaking of Apes*, Thomas A. Sebeok and Jean Umiker-Sebeok, Eds. (Plenum, New York, in press).

huffed Savage-Rumbaugh chillingly.

"I am very saddened by Sue Savage-Rumbaugh's polemics," said Thomas Sebeok in returning the volley. But in reading the Sebeoks' manuscript even a chimp could see why the Rumbaughs thought the Sebeoks weren't playing cricket. "Thus we find the ape 'language' researchers replete with personalities who believe themselves to be acting according to the most exalted motivations and sophisticated manners, but in reality have involved themselves in the most rudimentary circus-like performances," write the Sebeoks, a remark hardly best calculated to brush their colleagues up the right way. More tail-tweaking follows: "The principal investigators themselves, of course, require success in order to obtain continued financial support for the project, as well as personal recognition and career advancement. . . ."

At a press conference the next day the question of fraud was raised. "In my opinion," said Sebeok, "the alleged language experiments with apes divide into three groups: one, outright fraud; two, self-deception; three, those conducted by Terrace. The largest class by far is the middle one." Two psychologists who study deception, Robert Rosenthal and Paul Ekman, said that they expected the level of fraud in ape language research to be the same as in any other field of research. All refused to answer the question of whether they possessed any positive evidence of fraud by any of the handful of ape language researchers.

A chimpanzee who asked not to be quoted by name told *Science* that among his species it is regarded as childish to make general accusations without supplying specific evidence, which the accused may then have the opportunity to refute. "Those who live in the academic jungle shouldn't ape the law of the jungle," he said with a touch of asperity.

The final performance at the conference was a lecture by magician James Randi. Randi first began his campaign against the supernatural by dogging the footsteps of Uri Geller and duplicating all Geller's supposedly psychic feats by plain legerdemain. He has turned his attention to parapsychologists because a magician's eye, he believes, is often sharper than a scientist's in spotting when claims of paranormal events are mere trickery on the part of the claimants. Randi offered the assembled scientists an impressive demonstration of the magician's skills. He urged everyone to come up to the front rows so as to observe him more closely. Two strong experimental psychologists were picked

from the audience and urged to rope up Randi's hands with unlooseable knots. "Pull harder! Tie me tighter!" the elderly conjurer kept exhorting them, and his hand would appear briefly in gesture from the massive knot of rope in which it was supposedly entrapped.

"I mean to get across the point," Randi explained, "that serious researchers who attempt to investigate so-called paranormal events and claims are considerably out of their depth when they are unprepared to examine the evidence from the point of view of the Clever Hans principle as well as other similar pitfalls."

All very well, but could the Clever Hans principle be as much of a delusion as Randi's *trompe-l'oeil*? Unconscious cueing is a phenomenon that reaches to the foundations of experimental psychology and yet, as Hediger mentioned, Oskar Pfungst's investigation of Clever Hans is an experiment that has never been repeated.

That has not been for want of subjects. As noted by Sebeok, Clever Hans had a French imitator called Clever Bertrand. Clever Bertrand could do everything that Clever Hans could do. There was only one difference between the two horses: Clever Bertrand was totally blind.

—NICHOLAS WADE

AP Photo

