

THE LAST DISTINCTION?

Talking to the animals

By Benjamin Hale



Human beings have long sought a definite marker between themselves and “the animals.” In the 1960s, tool-making was considered such a uniquely human behavior that when

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Jane Goodall witnessed chimpanzees modifying twigs to root for termites, the naturalist Louis Leakey responded, “Now we must redefine *tool*, redefine *Man*, or accept chimpanzees as human.” Since then, other animals—crows, most recently—have been seen making and using tools. Etho-

logical observation has similarly eroded other distinctions humans have claimed for themselves. But there remains a tradition—in literature and philosophy as much as in science—of treating language as the Rubicon that only humanity has crossed. In *Paradise Lost*, when Satan,

disguised as the serpent, begins talking to Eve, she says in astonishment, "What may this mean? Language of man pronounced/ By tongue of brute, and human sense expressed?" Animals do not talk. The idea is unnatural, satanic.

Speculation on the origin of human language was long discouraged among linguists; inquiry into the subject was formally banned by the Société de Linguistique de Paris in 1866, and the taboo thereby established persisted for nearly a century. The moratorium, a famous incident in the history of linguistics, began in the earliest days of Darwin's influence, after the publication of *On the Origin of Species* but a few years before the publication of *The Descent of Man*, in which Darwin first explicitly discussed human evolution—including the evolution of language.

Of modern history's important thinkers, Darwin may be the most chronically oversimplified. Distortions of his thinking began not long after his death. He treated humanity as a part of nature rather than over and above it, upsetting Europe's philosophical tradition of the Great Chain of Being: the hierarchical ordering of all creation, rising in increments toward man's perfection. This model of life was so firmly accepted that it survived even among those who accepted Darwin's work, leading to a widespread misunderstanding illustrated by a graphic so elegant (and so reductive) that it's become a pop-semiotic stand-in for the theory of evolution: the left-to-right single-file march of an ape morphing into a man, with its implication that evolution is a teleological progression and *Homo sapiens sapiens* the goal. The illustration does less to explain evolution than to reinforce the inaccurate (and specifically Western) idea of a radical break between humans and other animals.

Descartes, who wrote extensively on the philosophical problem of animal consciousness, argued that all nonhuman animals are instinctual automata, whereas humans alone think—*cogitant ergo sunt*—and therefore possess souls. The impulse to draw a circle around humanity underlies the question "What makes us human?" The way we phrase the question—which presupposes that the answer must be a definite *thing* we possess—

tends to make language the most satisfactory answer.

Hence our fascination with feral children—the Wild Boy of Aveyron, Kaspar Hauser, Genie, and so on—cases of human beings isolated and deprived of language during the crucial early acquisition period. What would it be like to have a consciousness but be unable to think in articulate language? For most people, to imagine the experience of inhabiting such a consciousness is close to impossible. The animal scientist Temple Grandin has written much on this subject, asserting that her autism lends her a unique insight into the way animals—cows, in her line of work—experience the world: wordlessly. "I think in pictures," she writes in the opening pages of her memoir.

Words are like a second language to me. I translate both spoken and written words into full-color movies, complete with sound, which run like a VCR tape in my head. When somebody speaks to me, his words are instantly translated into pictures. Language-based thinkers often find this phenomenon difficult to understand, but in my job as an equipment designer for the livestock industry, visual thinking is a tremendous advantage.

It would be absurd to suggest that because Grandin does not think primarily in language she isn't conscious, but the importance of language as a distinct marker between the human and "the animal" mind is still lodged in the Western models of consciousness.

In the Thirties, the psychologists Winthrop Kellogg and Luella Kellogg briefly raised a chimpanzee named Gua alongside their own infant son, Donald. They aborted the project after nine months, because Donald seemed to be picking up more behaviors from the chimp than vice versa. In a longer and more involved experiment that began in 1947, another psychologist couple, Keith Hayes and Cathy Hayes, attempted to raise a newborn female chimp named Viki as a human child. After seven years of home rearing and intensive vocal training (including speech-therapy techniques such as physical manipulation of the mouth), Viki could articulate, in a breathy and almost inaudible voice,

four words: "mama," "papa," "cup," and "up."

These early experiments focused on language production over comprehension. But ape anatomy does not readily allow articulations of the kind necessary to speak. The human vocal apparatus consists of the larynx, the throat, the nasal cavity, the tongue, and the lips—all of which are shaped differently in nonhuman apes. Chimps' vocal tracts are shorter and straighter than ours, with higher larynges. When humans speak, moreover, we accomplish what's called a velopharyngeal closure by briefly blocking off air to the nasal cavity with the soft palate, allowing us to articulate hard consonants. Apes do not have this capability.

Even as far back as the 1920s, scientists wondered about the possibilities of gestural communication. "I am inclined to conclude from the various evidences," wrote Robert Yerkes, an early American pioneer of primatology, "that the great apes have plenty to talk about, but no gift for the use of sounds to represent individual ... feelings or ideas. Perhaps they can be taught to use their fingers, somewhat as does the deaf and dumb person, and thus helped to acquire a simple, nonvocal 'sign language.'" Recognizing that nonhuman apes, though physiologically unable to produce the same range of sounds as humans, often communicate gesturally, another psychologist couple, Allen and Beatrix Gardner, of the University of Nevada, Reno, began experimenting with sign language in 1966, using as their subject a female chimp named Washoe. The focus on sign language, which resolved the main problems of the Hayes experiment, was also influenced by Jane Goodall's and Adriaan Kortlandt's ethological reports that chimps in the wild have systems of gestural communication that are highly complex and cultural, varying from one social group to another.

The Gardners housed Washoe in a trailer in their back yard and enlisted a small staff of graduate students to help teach her American Sign Language. Allen Gardner, a strict experimentalist, began the study with Skinnerian conditioning techniques, which are undeniably useful in any animal training. For example, they would wait for Washoe's "hand-babbling" to form something that looked like an ASL sign,

then reward her with food or such displays of approval as clapping, smiling, and tickling. They would refine the sign with further rewarding and try to condition her to use it in correct contexts. They abandoned these methods not long into the experiment because Washoe had learned only one sign: “funny.” Roger Fouts, who worked closely with Washoe her entire life, writes in his memoir, *Next of Kin*, that after the first year of the experiment Washoe picked up signs almost entirely from watching humans use them.

The methodological trickiness of the Gardners’ experiment plagued it and other sign-language experiments to come. ASL is a fully developed language, with movements and facial expressions that work together to create meaning; what Washoe learned was not ASL per se, but a collection of modified ASL signs that were fluid and subjective. Their interpretability became a major problem. At the outset of the experiment, the Gardners kept records of every sign—or near-sign—Washoe made, marking the time she made it, and in what context. As Washoe’s vocabulary grew and she began signing more frequently, data collection became difficult; soon the experimenters would record only her use of new signs. In order for a sign to be added to her theoretical vocabulary, three independent observers had to document that she made a “spontaneous, well-formed, and appropriate use of the sign.” That sign then went on the official list of Washoe’s working vocabulary only once she had used it spontaneously, articulately, and appropriately every day for fifteen days. By this measure, in 1970, four years into the experiment, Washoe had an active vocabulary of 132 signs. Although the Gardners tried to be strict with their data collection, skeptical linguists accused the experimenters of interpreting their data too generously. “Spontaneous,” “well-formed,” and “appropriately used” are in the eyes of the beholder—even three independent ones.

How does one determine whether an ape has made an ASL sign? Neither the Gardners nor the graduate students who worked with them were fluent in the language. “Each week I attended ASL classes at the Gardners’ house,” writes Roger Fouts, “but most of my learning came on the job with Washoe and her

other student companions.” Being non-fluent, the experimenters were probably poorly equipped to teach ASL to a chimp—or anyone, for that matter. They were learning signs at the same time Washoe was, which meant they were also probably poorly equipped to interpret them. “Often the project directors themselves were uncertain about how a particular sign should be made,” writes Arden Neisser about Washoe in her book on sign language and the deaf community, *The Other Side of Silence*. “By the time it was taught to the chimp, ‘It lost something in translation,’ said a deaf friend ruefully.”

The Gardners’ experiment was a direct precursor to the Columbia University psychologist Herbert Terrace’s whimsically named Nim Chimpsky project, which was beset by many of the same problems, as well as new ones, mostly of Terrace’s making. The most ambitious and publicly visible of several sign-language experiments with apes throughout the 1960s and ’70s, Terrace’s Project Nim is the subject of a 2011 documentary of the same name, directed by the Academy Award-winning filmmaker James Marsh. Following upon Elizabeth Hess’s 2008 book, *Nim Chimpsky: The Chimp Who Would Be Human*, the film chronicles the chaotic life of Terrace’s subject.

Noam Chomsky, the punny namesake of both the project and the chimp, is never mentioned in the film, which focuses on the human elements of Nim’s story rather than the scientific controversies surrounding it. This is an odd absence, since Chomsky more than any other thinker upheld Descartes’ torch of human exceptionalism in the twentieth century. Chomsky’s theories of transformational grammar, universal grammar, and the innateness and human uniqueness of language defined the debate over language for decades. These theories rest on the “poverty of the stimulus” argument: language is so complex, and infants learn it in such relatively little time, that it can’t possibly be learned entirely through external stimulus; there must be an innate language-acquisition “device” or “organ” in the human brain. We were told to look for it somewhere in the left hemisphere.

Prior to recent scientific advances, neural anatomy was a dark frontier, and there was no clear evidence for or against the language-acquisition device. All we had was Chomsky’s promise that it must exist and that it must govern our understanding of grammar and syntax. Rather than argue with Chomsky’s anthropocentric definitions, some researchers aimed to prove that an animal could communicate in ways that filled out Chomsky’s checklist of what makes language—principally, that an animal could come to understand and use grammar. Proving that an animal could be “taught” to communicate using language—as narrowly conceived by Chomsky—became a holy grail for language researchers. Herbert Terrace sought this prize by way of Nim Chimpsky.

There is something glib and thoughtless about bestowing on another conscious being a pun for a name. Glibness and thoughtlessness, as one sees in the documentary, are just a couple of Terrace’s winning traits, and Nim Chimpsky’s name was only the first indignity in a life full of indignity and suffering, which is the main subject of Marsh’s film.

Terrace, who still conducts research at Columbia, planned to raise a chimpanzee in a human home, with no contact with other chimps, and immerse him in sign language from infancy. Just days after his birth in Norman, Oklahoma, in 1973, Nim was taken from his mother—who had previously had six infants taken from her for experiments. Terrace turned him over to Stephanie LaFarge, a former student (and a former lover) of Terrace’s, who had generously and perhaps recklessly volunteered her own New York home and large family to take in baby Nim as a foster child. The LaFarges were supposed to begin speaking to Nim in ASL within months, though not a single member of the household knew the language. Stephanie’s husband, W.E.R., was a poet with a ponytail and a patrician pedigree; they lived with a swarm of children from previous marriages in a brownstone on Manhattan’s Upper West Side; and everyone in the picture seems to have been smoking a lot of pot. Now add to this environment one infant chimpanzee. As Stephanie’s daughter, Jenny Lee, says in the film, “It was the Seventies.”

Herb Terrace comes across so negatively that one wonders how much thought he gave before consenting to filmed interviews. Disliked by every other interview subject, Terrace appears irresponsible, smug, careless, cowardly, disloyal, vain, and given to having sex with his students. During the experiment, Terrace had an affair with Laura-Ann Petitto, who was an eighteen-year-old undergraduate when she began working on the project and who became one of the most involved of Nim's early caregivers. Petitto worked with Nim while he was still living with the LaFarges (Stephanie LaFarge calls her, with jealousy and a sniff of classism, "a cute little thing from Ramapo"), persisting in her work as the chimp ripped apart the LaFarges' curtains, books, and marriage, and moving with him when Terrace secured for the experiment a sprawling Georgian estate in the North Bronx that was owned by Columbia and had been sitting empty for years.

Terrace's affair with Petitto is noteworthy mostly because it interfered with the project. In Petitto's words, Terrace "abruptly" ended their romantic involvement—a diplomatic phrasing that sounds like the shutting of a cellar door. Whatever happened, she left the experiment, upsetting the balance of Nim's emotional life yet again. "It's the humans I wanted to leave," says Petitto, "not the chimp."

Terrace's participation in the experiment was by all accounts fairly minimal. He showed up for photo ops and his name was of course listed first on the resulting paper, but he left the bulk of the work to his students. Bill Tynan, another of Nim's early caregivers, describes Terrace as "an absentee landlord" who only occasionally put in an appearance at the mansion where Nim was imprisoned in luxury like a mad aristocrat out of some gothic novel.

After four years, Terrace abandoned the experiment, largely because Nim's increasingly violent and unpredictable behavior—he was, after all, a growing chimpanzee—had created insupportable liabilities. "I was probably worried that she would sue me," Terrace says—with characteristic bluntness and lack of self-awareness—of an incident in which Nim grievously injured Renee Falitz, a sign-language interpreter who was the only person fluent in ASL ever

to work on the project. So Terrace called an all-hands-on-deck meeting at which he shocked and angered his staff by announcing that the experiment was now over. Terrace had Nim tranquilized and flown back to his birthplace. Nim went to sleep in his palace and woke up in a hellish place now infamous among captive-ape researchers for its inhumaneness.

"It turned out to be a surprisingly more primitive facility than I remembered," Terrace says of the compound run by University of Oklahoma psychologist and animal breeder William Lemmon, which served as a sort of chimpanzee-research hub in the 1960s and '70s. Electric fencing, metal cages, guns, and cattle prods were Lemmon's tools of subjugation; this was a place where chimps were treated like animals—or rather, prisoners—not like spoiled human children. (In his memoir, Fouts claims that Lemmon wore a ruby ring that he had trained his chimps to kiss. But that's another story.) Nim entered this environment having never met another chimpanzee other than, however briefly, his mother. In the most affecting moment of Marsh's film, Terrace visits Oklahoma a year after leaving Nim there. Nim recognizes Terrace and erupts with jubilant relief, shrieking and rushing to hug him. Bob Ingersoll, who worked at Lemmon's facility, infers Nim's thoughts on seeing Terrace again: "Holy shit! I'm going back to New York!" Terrace left that day, and Nim never saw him again. After Terrace's departure, Nim lay still in his cage, refusing food.

Raspy and long-haired—he wouldn't look out of place in a Santa Cruz head shop—Bob Ingersoll was the last and most enduring force for good in Nim's life at a time when everyone else, including Terrace, seems to have given up on him. Ingersoll rallied to get Nim out of the medical-research facility to which an insolvent Lemmon had sold him and many other chimps, and again came to Nim's aid after he wound up sequestered at the Black Beauty Ranch, a rescue home for horses in Texas run by an activist with good intentions and no clue about how to care for a chimp. There is footage of Nim alone in a concrete room, maniacally shoving a metal barrel around on the floor. These images are capable of testing the empathy of even the most rigid human exception-

alists. Don't call it anthropomorphism; the emotions this animal displays are unmistakable: sadness, bitterness, loneliness, betrayal, rage.

Marsh's documentary avoids the depths that lie beneath Terrace's bizarre, tragic experiment—things that could be said about linguistics, the imperfect nature of science, and some of the most interesting areas of philosophy. (Making a film about animal language without mentioning Noam Chomsky is a bit like writing a book on the French Revolution that neglects to bring up Louis XVI.) One of the narratives that remains largely untold is the devastating effect the experiment had on the future of research in the field.

Terrace made himself one of the most powerful enemies of such research when he declared, in a 1979 paper in *Science* entitled "Can an Ape Create a Sentence?" and in a related book, that Project Nim and by extension *all* animal-language experiments were bunkum—the wishful thinking of sloppy scientists deceived by their subjects' clever and complex ways of begging for treats. Ape-language research has yet to recover from Terrace's public surrender to Chomsky—a turnaround that felt especially treacherous considering the inexactitude of Terrace's own science.

Many of the problems of Project Nim arose from Terrace's faithful acceptance of Chomsky's syntax-based definition of language, and from a resulting methodology rooted in the familiar techniques of second-language instruction. The word itself, *instruction*, is indicative of a wrong-headed way of thinking about the acquisition of a first language. Human infants do not really need to be "instructed" in their first language to pick it up—this was at the heart of Chomsky's argument in the first place. When Terrace decided that the environment surrounding Nim was too chaotic, he resolved to have Nim instructed in a "classroom" at Columbia. The classroom was small, windowless, and whitewashed, with nothing in it except for Nim, the person working with him, and some drab, minimal furnishings. The idea was to hone Nim's

concentration by isolation. We see his caretakers struggling to maintain his restless attention. Joyce Butler, one of his keepers, tells of her realization that Nim was making the “dirty” sign—indicating that he had to use the bathroom—simply in order to get out of there. Such an environment makes little sense for what Terrace and his staff were trying to do: help a conscious being acquire a first language. Decontextualizing language from the everyday in order to foster its acquisition is like putting a seed in a sealed jar to help it sprout.

The case of Kanzi is a helpful counterexample. Beginning in the mid-1970s, Duane Rumbaugh and Sue Savage-Rumbaugh, who had also worked with Bill Lemmon at the University of Oklahoma, began a series of language experiments with chimpanzees and, later, bonobos—a cousin species about which relatively little was known at the outset of their research—employing a table of invented lexigrams: arbitrary, non-representative pictures signifying certain things (actions, foods, places, the names of apes and people involved in the experiment, and so on). One reason for their creation of the lexigram system was to help alleviate the data-gathering problems of the sign-language experiments. Whereas both the Washoe and Nim experimenters struggled with ASL and its interpretation, Rumbaugh and Savage-Rumbaugh had only to decide whether an ape was touching a picture that was neatly blocked off from others in a little square, which is a much more objectively measurable datum. In the early 1980s, the couple were trying to get Matata, an adult female bonobo, to understand and use the lexigrams. Matata had recently stolen an infant named Kanzi from a bonobo in captivity. Kanzi was either close by or clinging to his adoptive mother while the research was going on. They never had much luck getting Matata to understand the lexigrams, but later realized that her son had picked up many of their meanings—spontaneously, and with no deliberate instruction. That is, in the same way one acquires a first language.

Since then, the experiment has expanded along with the group of bonobos involved in it. It is the only ape-language experiment still active, and is currently based at the

Great Ape Trust’s research facility in Des Moines. Many of the bonobos understand not only the lexigrams but also a great deal of spoken English. One can view online videos of Kanzi carrying out simple tasks at spoken request. The experimenter—wearing a welding mask to help prevent unintentional facial cueing—might say, for instance, “Put the snake on the ball,” and Kanzi responds by placing a toy snake on top of a plastic beach ball, suggesting comprehension of verb, word order, and preposition. The room is strewn with these various artifacts—balls, soap, stuffed animals, water pails, plants—resembling far less Nim’s stark isolation chamber than, say, a nursery: a space including not only words, but things to talk about.

Researchers who conduct language experiments with animals—especially complex, social, intelligent ones like great apes—sometimes draw the public’s interest, but after Project Nim they have had a hard time persuading the scientific community to consider their work anything more than wishful thinking. Few have done more to aggravate animal language’s respectability problem than Herb Terrace himself. For ape language’s skeptics, he provided the voice of the disgruntled inside man. In 1980, shortly after Terrace published his paper denouncing the project in *Science*, Indiana University linguist Thomas Sebeok organized a conference on the “Clever Hans phenomenon.” The term refers to humans anthropomorphizing animal behavior in such a way as to assume cognitive or communicative processes that aren’t really occurring. (Clever Hans was a horse who, his trainer believed, could answer simple mathematical equations, among other things, by stamping out solutions with his hoof; by isolating the horse from his owner, researchers found that Clever Hans was determining his “answers” by picking up subtle subconscious cues from his human—still impressive, to be sure, but the horse was not doing arithmetic.) Sebeok invited Herbert Terrace to the Clev-

er Hans conference, during which he stridently pronounced that “the alleged language experiments with apes divide into three groups: one, outright fraud; two, self-deception; three, those conducted by Terrace.”

“The combined effect of Sebeok’s Clever Hans Conference and Terrace’s *Science* paper,” Sue Savage-Rumbaugh later wrote,

was ... to instigate an extremely rapid and violent swing of the pendulum. Ape-language research went from being a field of perceived intellectual excitement and public acclaim to one that, at best, should be viewed askance. Suddenly, it became extremely difficult to have research papers reviewed, let alone published. And funding for most of the major projects virtually dried up.

The end of Project Nim marked the end of an incautious but intensely curious open-mindedness in the culture of science that was probably reflective of a change in culture at large: free-spiritedness was out, and the skeptical, cynical Eighties were in. Jenny Lee’s remark (“It was the Seventies”) not only calls attention to the look of the film—all the grainy and garishly colorful footage of chimp caretakers, knee socks, bell-bottoms, and sideburns—but also suggests that this story could not have happened in the way it did at any other time. The backdrop of hedonistic abandon behind this story may strike a viewer today as humorous or appalling. One wonders how much serious scientific inquiry was going on in an environment in which everyone was in bed with everyone and Nim was plied with booze and pot right from infancy. To watch a chimpanzee puffing on a joint is disquieting, in equal measures funny and disturbing. We enjoy mocking that sliver of biological difference between us and chimpanzees. Yet anyone who has ever looked with curiosity and respect into the face of a chimpanzee has seen a presence there. If we abandon the notion that language is necessarily the bedfellow of consciousness, we get a better understanding of ourselves, while our relationship to the other beings we share this planet with becomes more enlightened, more humble, and more humane. ■