

WHY CHIMPANZEES CAN'T LEARN LANGUAGE AND ONLY HUMANS CAN

(HERBERT S. TERRACE)

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When I was growing up in the 1980s, a staple belief of socially-correct thinking was that many non-human animals, not only apes but also dolphins, whales, and elephants, had, if we could only understand, minds functionally indistinguishable from ours. Children were told constantly about Koko the gorilla, who could supposedly speak, albeit in sign language. But all this was false, part of the Left project to convince us mankind is nothing special. Herbert Terrace, who has devoted his entire career to ape cognition, here puts the spike into the lies of my childhood, demonstrating that no ape (or any animal, primate or otherwise) can communicate in any way similar to humans.

This is really a book in two parts, each of which could stand on its own. The first part shows, through the author's own experimental knowledge, that apes cannot learn language. They cannot communicate with sentences—that is, they completely lack the ability to string words together using syntax, a grammar. More surprisingly, perhaps, apes also lack the even more basic ability to use words at all, because they cannot understand that words have meaning. The second part of the book is Terrace's theory of how humans, in contrast, did acquire language. This part is more speculative, though interesting enough in its own right.

During the first half of the twentieth century, the mainstream position was that apes could not communicate with humans only because they could not articulate words. Experimenters therefore tried techniques such as manually manipulating a chimpanzee's mouth into positions designed to encourage articulation. Then, in the 1960s, researchers hit upon teaching apes sign language, and then argued that combinations of signs made by apes constituted sentences. The most famous example of this is the claim that a chimpanzee, Washoe, signed "water bird" when she saw a swan, and that this combination was a sentence.

Terrace, a behavioral psychologist by training and a student of the famous B. F. Skinner, and in the early 1970s a young up-and-comer, was familiar with Washoe, and himself completely agreed with mainstream

opinion about ape communication. He wanted to make ape language experiments more robust (and no doubt to make a name for himself). In 1973, Terrace therefore began a new experiment, one where an ape would be taught from birth, since earlier experiments had used mature apes, and one where all teaching interactions would be documented with videotape, since none existed for Washoe or other prior ape experiments.

There is more background to Terrace's experiment, however. He wanted to resolve a scientific dispute that reached far beyond the use of language by apes. At the time, an argument raged between Skinner and Noam Chomsky, who has had a long career as perhaps the most famous scholar of human language formation, along with his parallel career as an Israel-hating Commie. Skinner believed language was psychological in basis, the result of conditioning, which would suggest apes could be taught. Chomsky believed, and pioneered the idea, that language was innate and biological, and limited to humans.

Skinner created the field of "instrumental conditioning," where new behaviors became associated with arbitrary stimuli, through the technique of reward (as opposed to Pavlov's dog, where only old behaviors were generated, though through new stimuli). In 1957 he wrote *Verbal Behavior*, in which "he argued that language was simply a collection of verbal habits that children learned by trial and error and/or by imitating their caretakers' utterances." Language was therefore merely conditioned responses.

In 1959, Chomsky savaged *Verbal Behavior*, pointing out several crucial areas of language that Skinner's theory could not explain, including an infinite number of meanings from a finite vocabulary and the existence of grammatically correct but meaningless sentences (contra Skinner's claim that what mattered was the relationship between words next to each other). Most of all, Chomsky pointed to demonstrated rapid development of language by children using none of the mechanisms by which Skinner said children learned. Chomsky claimed not only that language was biological, an innate feature limited to humans, but that there was no Darwinian explanation for the evolutionary development of human language. Rather, he argued that humans have a neural component, unique to our species, a genetic quirk suddenly developed a mere 80,000 years ago, that allows us to learn language. He called this our "Language Acquisition Device." In short, human language sprang

fully-formed into being; its existence was not the result of evolution or any type of learned behavior.

In 1972, Terrace set out to rebut Chomsky, by conducting an experiment with a chimpanzee, whom he named Nim Chimsky. (He chose the name as a slap against Chomsky.) This was the most ambitious experiment to date, an attempt to raise an infant chimpanzee as a human. “If I could teach Nim to produce sentences in sign language, I would have refuted Chomsky’s view that only humans could learn language. Specifically, I would have shown that the ability to create new meanings by combining words—an ability that Chomsky claimed was the defining feature of language—could be found in another species.”

It appears that Terrace wrote this book late in his life (he was born in 1936, and published this book in 2019), in response to a hit-piece on him. In 2011, James Marsh (who had earlier released the better-known *Man on Wire*), released a documentary, *Project Nim*. Terrace says the film ignores the science and is merely an ad hominem attack on him. I haven’t seen it, though from descriptions it does ignore the science and is tendentious, treacherously emotional manipulation, based on the assumption Nim deserved to be treated no different than a human being. What Terrace doesn’t mention, however, is that he apparently made a regular practice of sleeping with attractive young female researchers on the project. No doubt much of the animosity and resentment on display from others in the film sprang from that, or from other negative personal attributes Terrace displayed.

Anyway, at first, after assembling many hours of footage and Nim learning scores of symbols (that is, shown an object, he was taught to make a sign for it), Terrace concluded that the experiment had definitively shown what he wanted to show. He was reviewing videotapes, about to, in 1978, publish a paper arguing that he had confirmed Nim could “speak” in simple sentences. To his shock, he suddenly realized that he was completely wrong—Nim could not generate any sentences at all. All Nim ever produced was “a sequence of prompted signs, [never] a spontaneous sentence.” In other words, Nim’s “sentences,” his “grammar,” were a modern example of the Clever Hans effect—the nineteenth-century German horse which supposedly could count, but was merely reacting to subtle, unconscious cues given to him by his trainers.

Digging deeper into the videotape, Terrace discovered that Nim could associate words (and other lexigrams) with objects, but only in order to get rewards, and without even any understanding that those words were names. Nim wasn't signing to name objects, much less combining signs to create new meanings from words. He was signing to obtain a reward, and the signs that he needed to sign to get that reward were always prompted by the "teacher." The combinations of signs were meaningless.

This was not the conclusion Terrace wanted, but in those days, when science was less corrupt, and scientism had not largely replaced science, he naturally felt compelled to publish his unpopular results. It's not that Terrace became a Chomsky fanboy, though. He decided Chomsky was wrong, in part—because he ignored that words necessarily precede grammar, something to which he turns in the second part of this book.

Before we get there, Terrace addresses various criticisms of his conclusions as regards Nim, and the capabilities of apes more generally. He specifically rebuts later experiments testing ape language where the experimenters claim contrary results (though few later experiments have been done), such as experiments begun in the 1980s with a bonobo named Kanzi. He shows that there, just as with Nim, sequences that appear to be sentences are merely rote learnings to obtain a reward—all things that dogs can do as well as apes. Terrace claims that despite decades of his challenging his critics, no scientist has produced any recorded example of a non-prompted ape signing a "sentence." All apes do is use imperatives to obtain a reward, the result of behavioral conditioning. They never use words "declaratively: that is, conversationally." Both language and words are strictly human.

The animal world is just different. The sounds animals make are instinctual, not conversation. Birdsongs, for example, do not change; all animal sounds (and other communicative actions, such as bee dances) are immutable, and are very limited in number in all species. Responses animals make to stimuli, whether words, sounds, or other (such as "Fetch!") show comprehension, but not production, of words. A dog does not associate "Fetch" with anything other than a reward; he has no concept of "fetching," or for that matter "ball," or anything else as a name.

Terrace is not without his present-day critics; the vile Peter Singer is one of them. These critics make vague claims such as that apes must

absorb language if raised in a family-type environment (as Nim was), without any proof or even evidence. For Singer, of course, the need to deny what Terrace found is ideological, because Singer's main claim to fame is rejecting that humans are unique (which is why he advocates for infanticide and for granting rights to animals). Judging from the hand-waving responses his critics offer to points Terrace has made consistently for decades, along with the emotional/ideological freight his critics invariably display, and their inability to point to any reason why Terrace would falsely argue that Nim could not speak (as Terrace points out, he'd be a lot more famous if he had found that Nim could communicate with language), it seems pretty clear that Terrace is right about ape inability to use language, and his critics are wrong.

Then Terrace switches gears, to talk about "Recent Human Ancestors and the Possible Origin of Words." By "recent," he means within the past six million years, roughly when we are supposed to have diverged from chimpanzees, and since when quite a few species under the genus *homo* have existed on this planet. Terrace's aim is to, using paleoanthropology, sift members on the human family tree and try to figure out which one developed language, due to "brainpower and the necessary environmental pressure." He settles on *homo erectus*.

Terrace's purpose is to give a plausible evolutionary theory of words. He leaves vague exactly how he thinks this production of words resulted in grammar, and thus complete language. He does not reject Chomsky's belief in a "Universal Grammar," but he thinks it could have been a gradual process, and in any case dependent on the earlier origin of words (Chomsky thought how words came about was a "mystery"). That is, Terrace argues that language, a whole language, can develop evolutionarily, incrementally, if one recognizes that words are "a separate stage in the evolution of language." Terrace claims that millions of years ago words gave an new evolutionary advantage to *homo erectus*, in order to engage in "confrontational scavenging," collecting friends to beat off other predators from carrion. This required "an unprecedented degree of cooperation and trust that would allow sharing of mental events," and words were what made this possible. Sure, maybe, I guess.

How did words come to exist at all, in order to then confer evolutionary advantage? Terrace builds on the generally-agreed theory that bipedalism, and a consequent reduction in pelvis size, combined with

an increase in human brain size, resulted in human children being born more dependent on their mothers than other primates. They must be cradled for six months, whereas other primates can crawl around within a month. Terrace proposes that it is this cradling stage, in which mother and infant regard each other and the world around them, sharing joint attention with respect to external objects, that created words.

Only humans cradle. Cradling means the mother and her child's eyes are close together—they share each other's gaze, called "intersubjectivity." From immediately after birth, mother and child engage in a complex interaction, in which the child imitates the mother, and vice versa, sharing affect. This leads to "joint attention," where they share perceptions of objects in the world other than mother or child, with their intersubjectivity making it possible for them to communicate they are seeing the same object. (This is different from "gaze following," which does happen in other species.) This leads to the ability to "share intentionality," that is, to cooperate. (Apes cannot cooperate or share to achieve joint objectives.) From this flow words, to name the subjects of joint attention—such as free meat, making this capability useful in a Darwinian context.

Words are voluntary and flexible, with direct cognitive effect aimed at sharing information, including gradations of emotion unknown in animals. It is "social engagement" with the mother, followed by other forms of social engagement as the infant matures and moves beyond cradling, that drives the creation of words in every individual. Words are not innate—as shown by that neglected children in orphanages, and the autistic, do not properly develop words. If cradling stops, so do words.

I suppose this theory is plausible, though I claim no expertise. I don't think it really matters for the world if we know how humans developed language. (If Chomsky is right, maybe the granting of language to men was when God divided Adam from the animals.) I do note that Terrace is an old man, otherwise he would realize this entire line of thought is forbidden, because the idea that the mother is something different to an infant than the father is heretical. (He's at least aware enough of this, or his editors were, to drop an endnote ludicrously claiming that by "mother" he really means "all of an infant's caretakers.")

There is no reason to conduct more experiments like Project Nim; we already have the answers. We should realize and acknowledge that

animals are sentient, but also recognize that they are qualitatively different from men. We should neither use animals as substitute children (a sad product of modernity) or abuse animals. Misplaced love and cruelty are both vices. Rather, we should exercise our dominion over animals with recognition that each animal is different, and that we owe different duties to it as a result. Yes to killing the mosquito; no to killing the gorilla or the elephant—not because they can talk to us, or think like us, but because we should only kill, or harm, sentient beings with good reason, and the higher the sentience, the better the reason needs to be.