

*Ask No Questions**

PETER JENKINS

I recently visited Oklahoma for the purpose of interviewing chimpanzees. This may sound like a fool's assignment of the "man bites dog" variety but in fact I was engaged in serious scientific inquiry. For the chimps in question were reputed to have broken through the language barrier which divides the realms of animals and men. A series of revolutionary experiments by behavioral psychologists in the United States, in which apes have been instructed in the rudiments of human language, are casting new doubt upon the exclusive claims of *homo sapiens*. The controversy which so fascinated the philosophers of the eighteenth century—and inspired Swift to reverse the rules between the language-using Houyhnhnms and the Yahoos—is alive again within the scientific community, which is fiercely disputing whether the competence in nonverbal communication acquired by the chimps can properly or usefully be called language.

The most famous of these primate guinea pigs, Washoe, a female chimp aged around eight, now lives among her peers in captivity at the Institute of Primate Studies at the University of Oklahoma. But for four years, from 1966 to 1970, Washoe (named after a Nevada Indian tribe) was the first and most distinguished pupil of Professors Allen and Beatrice Gardner at the University of Nevada who revolutionized the whole study of nonverbal communication by teaching her to converse in American Sign Language.

Until that time much futile energy had been expended on trying to teach chimpanzees to speak. The most strenuous of these attempts was made by the Hayes in the late forties with the chimpanzee Viki. Viki lived with them *en famille* and learnt to do many interesting things. For example, she could sort photographs into piles and would place a photo of her chimpanzee father in the animal pile with the cats and dogs, and her own picture in the human pile with Dr. and Mrs. Hayes. But the one thing Viki certainly couldn't do was talk. After six years of her specially devised head-start program, the best she achieved was four grunt-like sounds which roughly approximated human exclamation.

The Gardners were the first to perceive that inability to speak did not necessarily demonstrate in chimpanzees an incapacity for language. They tried again with a nonverbal language. American Sign Language (ASL) is a human language which serves among deaf people for normal communication and conversation. At Gallaudet College in Washington, D.C., it is used at the level of degree courses. It is not to be confused with the "deaf and dumb language" commonly used in England, which is a finger alphabet. ASL is a language of manually-produced signs and has its own grammar which is different from the grammar of English. Some of the signs in ASL are iconic but the majority are symbolic. Most linguists concede that ASL is a language; their dispute is over the degree of competence in chimpanzees to employ it syntactically in the way that humans command verbal language.

Washoe was born wild, but from the age of somewhere between 8 and 14 months she was brought up in a carefully controlled human environment. She lived in a two-and-a-half room caravan with all modern conveniences, where she was confined at night and took her meals separately, as in an old-fashioned nursery; otherwise, she was treated as far as possible like a human. She progressed through nappies to toilet training, from bottle and high chair to using utensils at table. She was given toys to play with and books to look at. She was taken on car trips and visits to other people's houses. Before bed she brushed her teeth in her own bathroom. But it was a laboratory upbringing, not a normal family environment. By day she was in the constant company of scientists working in shifts. They conversed with her and each other exclusively in sign language, although names were also permitted. Later it was discovered that

* *The Guardian*, July 10, 1973.

exposure to human speech has no effect on a chimp's ability to learn ASL.

The results were remarkable. By the time she left Reno in 1970 Washoe had a vocabulary of around 140 signs. The Gardners observed her to use 294 two-sign combinations such as "more food," "give me drink" and "come open." It was discovered that in the vast majority of these combinations a small number (in fact a dozen) of "pivot" words was employed. These were "come gimme," "please," "you," "go," "me," "hurry," "more," "up," "open," "out," "in," and "food." The Gardners correlated these uses with the findings of child psychologist Roger Brown, and reported that 78 per cent of Washoe's two-sign combinations were the same as two-word combinations used by very young children.

Washoe picked up a few signs without being taught them, for example, "smoke"; the scientists were always asking each other for cigarettes. She invented her own sign for "bib" and it coincided with the approved ASL sign. She showed ability to use her vocabulary in context, for example, "sorry dirty" after wetting the carpet and "sorry hurt" after biting too hard. She put together a few more elaborate constructions such as "you me go out hurry." She used what seemed to be semantic constructions of the kind which in small children mark the early emergence of syntax, for example, distinguishing correctly between "me tickle you" and "you tickle me."

In 1970 Washoe moved to the University of Oklahoma with Dr. Roger Fouts, a research assistant of the Gardners. There for the first time since her early infancy she was put back among members of her own species. One day on the island where the chimps run loose and swing in the trees, a gopher snake appeared. Three of the chimps fled but one very young one remained. Washoe was observed to sign "come hurry hurry." The baby chimp did not understand and Washoe dragged him by the arm to safety. Her use of language to communicate with a member of her own species in a stress situation was considered significant.

I interviewed Washoe through the bars of her cage in distracting circumstances. The chimps were filling their mouths with water, blowing out their cheeks and ejecting it with considerable force, range, and accuracy at their human visitors. Washoe asked me for a cigarette, always the first request on prison visits. She made the sign "smoke" which is two fingers held to the mouth. She moved away and lay down on her back to puff at the cigarette and twice again, talking to herself, made the sign.

I was making notes of our interview and Washoe was interested in my pen. I asked her in sign language "what's that?" She gave the correct answer. The sign for pen is the first finger of one hand drawn along the open palm of the other. She correctly identified my shoes and my glasses. I showed her a flower and she signed "flower gimme." I showed her an open pot of the oil which is used for lubricating chimps' feet. The sign for oil is within her vocabulary but after sniffing the pot she signed "smell, smell food" and repeated the remark three times rapidly. By this time she wanted another cigarette. I insisted she should say please. The sign for please is literally "ask like a lady." After some reluctance she signed "please Washoe smoke." She studied the cigarette and made the sign for "pencil." When she had finished her second cigarette I showed her my pen again and she signed "pencil please." That was the extent of our conversation.

Unlike Washoe, Lucy was reared like a human child from the day of her birth. Her language instruction did not begin until Dr. Fouts came to the University of Oklahoma, by which time she was five. His work with Lucy has confirmed the Gardners' experiment, and her language ability now approaches Washoe's. Lucy is part of another experiment, nothing to do with language, conducted by Dr. William Lemmon, the director of the Institute of Primate Studies. Dr. Lemmon is a clinical psychologist who lives in his ape colony and gives the impression of regarding all primates, human and ape, with the same detached curiosity.

Dr. Lemmon has boarded out four female and two male chimps in species isolation. The idea is to study the effects of human environment upon them. Lucy, when she is old enough (that will be between the ages 8 and 12) will be artificially impregnated, if that can be done for the first time with a chimpanzee, and Dr. Lemmon after long years of waiting will observe how her maternal behavior is affected by her human upbringing.

Lucy's "mother" is Mrs. Jane Temerlin, wife of Dr. Maury Temerlin who is also a psychologist and who keeps a house full of exotic birds. Unlike Washoe, Lucy was brought up to understand spoken English, and Mrs. Temerlin says that she and her husband sometimes have to spell words if they don't want Lucy to understand, for example, if they are discussing a trip in the car the mention of which would overexcite her. Lucy sleeps in her own bed in the Temerlin's bedroom. According to Mrs. Temerlin she seldom wets it. She shares their bathroom. She eats with the family at table. Only when mother and father are out at work is Lucy confined to a 600 square foot duplex cage built onto the side and roof of the Temerlin's house. Apparently she regards it not as a place of confinement, but as her own playroom where she can do as she likes.

Until quite recently the use of tools was considered another uniquely human attribute. Dr. Jane van Lawick-Goodall exploded that theory with her observations of wild apes in Africa. Lucy certainly has no difficulty with tools. If she can lay her hands on a screwdriver she will dismantles the electric plugs around the house. She was once caught having half removed a wheel from the Temerlin's car. But in her quieter moments she plays with toys, which have to be specially strong, looks at books and pictures, does drawings and abstract paintings using colours, which she can identify, or amuses herself in such childlike ways as scribbling on mummy's cheque book or ringing up on the telephone to listen to the recorded announcements. However, life with Lucy isn't exactly a bowl of bananas. Mrs. Temerlin, who has a grown-up human son, evidently loves Lucy like a child and winced when Dr. Lemmon described her as like "a hyperactive retarded infant." Nevertheless she admitted that rearing a chimp was a long, long business and explained: "It means changing your way of life in all sorts of ways that you don't immediately realize when you start with that extremely appealing infant in your arms. For the first two years the only way to treat them is like a human infant, but by the time they are three they're too strong and impulsive."

Dr. Fouts took me along with him to Lucy's regular morning lesson which took place in the Temerlin's living room. The only unusual feature of the room was that the windows had no curtains; there were pictures on the wall and plants around the place. He went to fetch Lucy and carried her in like a very large child. She had her arms around his neck and was giving him big wet kisses on the mouth. Lucy was inordinately interested in me, which meant that what I observed was not her typical classroom behavior. She put her face very close to mine and stared at me in the manner of a rude child. She felt me up and down, frisking my pockets, exploring the buttons on my suit and shirt. She appeared to be about four feet tall in a standing crouch; according to Dr. Fouts she weighs 80 pounds. I was a little scared of her; what are intended by chimps to be playful bites can be extremely painful for humans; chimps themselves have very thick skins and, for the purpose of administering the equivalent of a disciplinary slap, the Temerlins keep an electric cow prod.

Lucy was unpredictably boisterous. Suddenly she would vault over the sofa. She disappeared into the kitchen, reentered flying through the air, and did triple somersaults on the carpet to finish at my feet. She was too excited for much serious conversation. She and Dr. Fouts exchanged some signs, but many of hers were meaningless chimpanzee gestures. They were hard to distinguish. "What's she saying now?" I asked. "->he s just picking her nose," he said. She was very interested in my shoes and when I asked her what they were signed "shoe" clearly enough.

Dr. Fouts took her to the bathroom where she sat on the lavatory ^d on instruction flushed it when she was done. Lucy's toilet training, earned, was still somewhat unreliable, but chimps

are naturally clean. Dr. Goodall observed them in their wild state wiping their bottoms with eaves. While Dr. Fouts was filling in his data sheets (Lucy's every authentic sign is recorded) she was off into the kitchen and came back, a bottle of pickle which she spilt on the carpet. In response to his chidings she signed "Dirty me" and "Sorry me dirty Lucy." He wrote that down. Then she curled up for a snooze on the sofa and he told me that her use of the word dirty was interesting. It had been taught to her to mean feces or as a noun for anything dirty such as dirty clothes. But she had adapted the sign for herself as an adjective and for example when cross with him for refusing to take her out might sign "dirty Roger." He compared this with the colloquial English usage of the word shit.

Lucy was soon on the go again, wanting to be tickled. According to Dr. Fouts she is capable of simple transformations such as "you tickle me" and "me tickle you." But she preferred to be tickled. One of the limitations of chimps seems to be that their interest in language is largely instrumental and inordinately concerned with food. Lucy will oblige by answering "what's that?" questions but has not been observed to display the curiosity found in small children who incessantly ask "what's that?" Lucy found his comb. "What's that?" he asked, and she signed correctly. She indicated, without signing, that he should comb his hair. "Whose?" he asked. "Roger," she replied.

I did not see Lucy at her linguistic best for, according to Dr. Fouts, she has invented some interesting constructions. When tasting a radish for the first time and not liking it she called it a "cry hurt food." She called a watermelon a "sweet drink food." She christened a stick of celery "pipe food." There appeared to be some logic or application of rule in her usages of the generics "food" or "fruit" and specifics within her vocabulary such as "banana." One day when watching at the window as her mother drove away to work she was observed to sign to herself "cry me" and "me cry." Dr. Fouts says cautiously: "She does seem to follow rules. She uses the word 'you' before verbs or the pronoun 'me' in a way which at least looks like syntax."

Dr. Fouts has succeeded in teaching very young chimpanzees, both home-reared and wild, to use ASL and there is no longer serious doubt that language ability, if that is what it is, up to Washoe's and Lucy's levels can be imparted relatively quickly and easily. The findings of the Gardners, confirmed and supplemented by Fouts, have also been reinforced by another experimenter using an entirely different method. Professor David Premack of the University of California constructed a synthetic written language consisting of colored metal-backed plastic shapes which his chimpanzees manipulate on a magnetic slate. The shapes are abstract; for example "banana" is neither yellow-colored nor banana-shaped. Premack's chimp Sarah has performed some remarkable feats on her slate. He claims that she can cope with plurals, the interrogative, and the logical connective "if . . . then." She can answer yes or no questions such as "? X same X" and solve problems such as "? banana name of apple" by choosing between the symbols for "yes" and "no" and substituting them on the slate for the interrogative symbol. Premack also reports that Sarah can do conditional constructions such as "Sarah take apple then Mary give Sarah chocolate" and make very simple transformations of such constructions.

The use of this synthetic language, not unlike symbolic logic, although intellectually more demanding than the rudiments of ASL, is at the same time creatively more restrictive: Sarah can only manipulate the pieces she is given. It has the advantage of enabling performance to be scored with great exactness, but is open to suspicion that the chimpanzee can manipulate the symbols according to rules without comprehending the linguistic meaning of the manipulations. Premack has done his best to isolate external stimuli, but discovered that Sarah's scores are consistently lower when a stranger acts as teacher, and her interest in her slate dwindles dramatically when no human is present at all.

Premack's experiments might be open to all sorts of objections were not his findings upholding those of Gardner and Fouts using a more natural form of language. His work reveals a remarkable level of cognitive ability in Sarah and, whether or not she is using language with

purpose or understanding cognitive ability, could in large part (we do not know) determine capacity to master syntax. And if syntactical skill, whether innate or acquired, is the secret of what we call human language ability, then Sarah stands somewhere near the threshold. One school of behaviorist thinking on the subject believes that the structure of language, like any other form of learning, is acquired through cognitive ability. If so, the limit upon the linguistic development of the chimpanzees would be the limit set by their intelligence rather than any innate inability of the Chomskyan kind. It may be a coincidence, but the brain size of the chimpanzee correlates neatly with the brain size found in primitive man, *homo erectus*.

The answer to the question "Can apes use language?" depends, as Dr. Joad would have said, on what you mean by language. On this none of the experts can agree. As Dr. Fouts pointed out while we were in the company of Lucy: "If you really want to exclude chimpanzees you could define language as 'the mode of communication used by *homo sapiens*.' Until the scientific community agrees on a definition of language we are just floundering around."

Definitions available range from one low enough to include Washoe, Lucy, and Sarah to Professor Noam Chomsky's high concept of language, which has led him to assert that "human language appears to be a unique phenomenon, without significant analogue in the animal world." In Chomsky's view man's creative command of transformational grammar derives from his innate (genetically acquired) knowledge of the Properties of all human language. He sees more linguistic ability in a imbecile than in any superior problem-solving ape. At the other end of the scale the psychologists Hebb and Thompson define language merely as putting two or more noises or gestures together on purpose for a single effect and using the same noises or gestures in different combinations for different effects. This minimal definition clearly embraces our chimpanzees and admits a good many birds also into the exclusive circle of *homo sapiens*.

Among themselves the linguists differ on the origins of language but for the most part, behaviorists and Chomskians alike set a standard too high for the chimpanzees. There is virtually no evidence to support an evolutionary theory of language, and therefore no reason to suppose that chimpanzees will acquire the language ability of man simply with the passage of millennia. Some biologists, notably F. H. Lennenberg, contend that language derives from physiological properties unique to man.

We might speculate on the strength of the experiments with the chimpanzees that they are capable of crude telegraphic communication at around the level of small children aged two or three. But as we observe the first signs of syntax in children we do so in the knowledge that they are capable of it and will grow up to possess language in the Chomskyan sense. Hints of syntactical ability in chimpanzees cannot be approached with the same assumptions, and support only the most speculative and tentative conclusions.

The Gardners applied stringent scientific modesty to their results with Washoe: "The program we have described avoids the question of whether an animal other than man can acquire language. As comparative psychologists we must reject this question. It is like the question of whether an animal other than man can have thoughts. It depends on the definition of language rather than on what the animals do."

Premack goes further and claims: "We feel justified in concluding that Sarah can understand some symmetrical and hierarchical sentence structures and is therefore competent to some degree in the sentence functions of language." He asserts that Sarah "acquired a language competence apparently comparable in many respects to that of a two to two-and-a-half-year-old child." He adds "man and chimp may conceivably attain comparable limits."

As a layman I shall follow the agnosticism of the Gardners, who say: "Those who have a taste for such questions can decide for themselves whether or not Washoe achieved language." And,

for those who identify strongly with *homo sapiens*, Premack has the consoling thought that "Since man is required to teach the chimp language and not vice versa, we may continue to claim uniqueness."