

WHEN CHIMPSKY SPEAKS — PEOPLE LISTEN

By EDWARD EDELSON

Science Editor

Nim Chimpsky is 2 years old and is learning sign language. Nim lives on a 13-acre estate in Riverdale. Every weekday, he is driven into Manhattan, where he spends about seven hours in a classroom at Columbia University. Nim now has a vocabulary of about 40 words, and is picking up one new word every week, a reasonable rate of progress for a 2-year-old.

Yes, Nim is a chimpanzee, but that is not the most unusual fact about him. Other chimps have lived with human families, other chimps have been trained to talk — although "talk is not the right word, since chimpanzees do not have the vocal apparatus that would allow them to speak; they communicate by using symbols or sign languages for words.

The unusual thing about Nim, according to Herbert Terrace, the Columbia University psychologist who conceived this project, is that Nim's experience could prove crucial in the effort to prove that at least some of man's close animal relatives can think well enough to use language the way that humans do.

The answer, says Terrace, will come when — and if — Nim starts putting together individual words to form meaningful sentences that represent an underlying pattern of thought.

With the fervor of a parent fondly watching the development of a child, Terrace believes he can see Nim making excellent progress.

Good chance of success

"For the first time, this last month, I think I have a good chance of succeeding," he said. "Nim has made over 600 combinations of words in the last six months. Within the next six months, I hope to have strong evidence that a chimpanzee can create a sentence."

But there are doubters. Nim was named only half-jokingly after Noam Chomsky, the great authority in linguistics today, who believes that chimpanzees simply do not have the brain power — the fine organization of brain nerve cells — that would enable them to think well enough to use language meaningfully.

That was the universal opinion of scientists up to a decade ago — pessimism based on repeated failure of attempts to teach chimpanzees to speak. Despite intensive efforts, the most experimenters had been able to get out of any chimpanzee was a few word-like grunts.

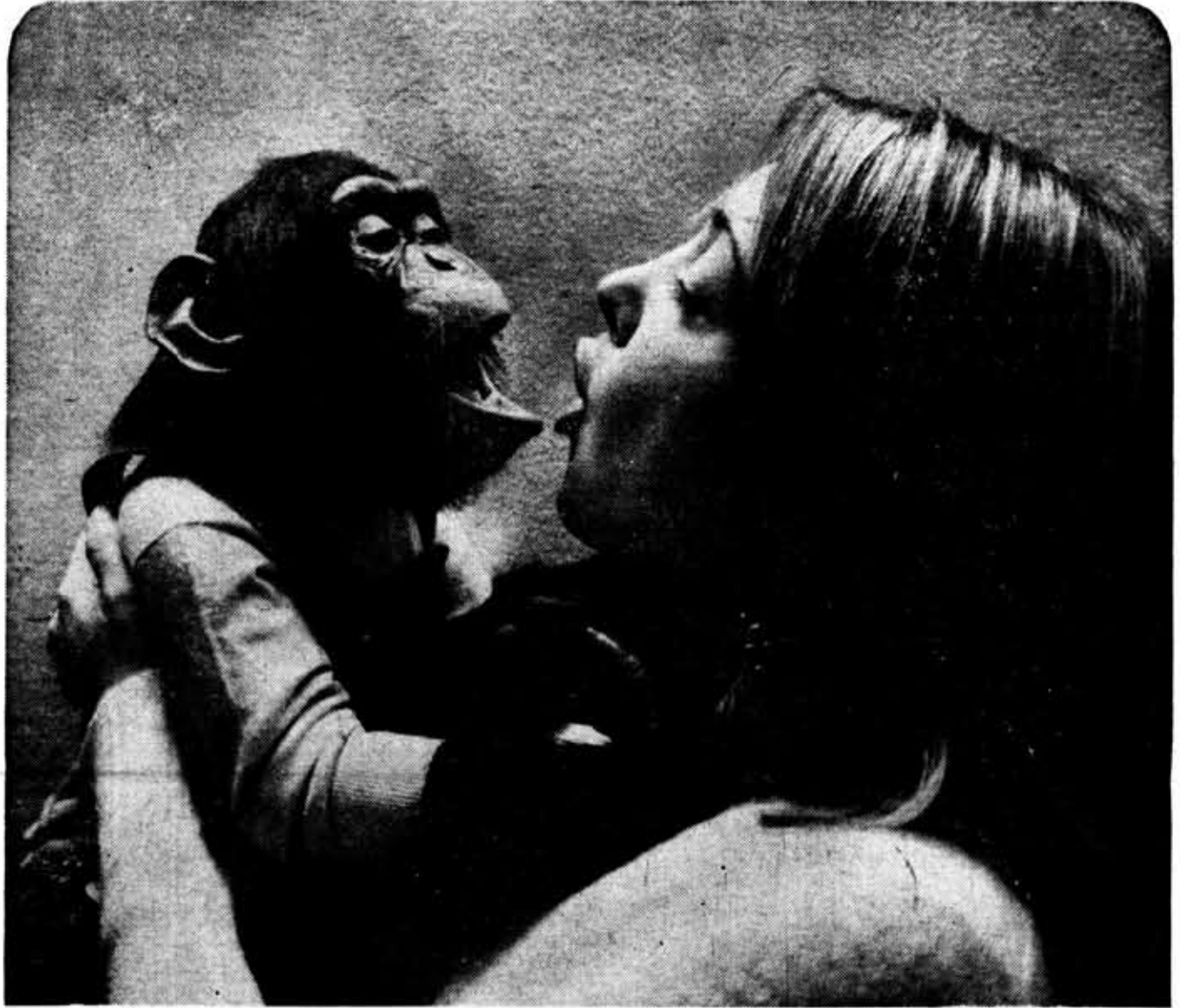
That changed when someone realized that trying to teach a chimpanzee to speak was rather like trying to teach a horse to fly: the spirit might be willing, but the physical apparatus of the beast simply would not allow success. In chimps, the vocal cords are inadequate for anything resembling human speech.

Allen and Beatrice Gardner, psychologists at the University of Nevada, were the first to sidestep that difficulty. They trained a female chimpanzee named Washoe (after a Nevada county) in Ameslan, the standard American sign language used by deaf humans.

The Gardners started when Washoe was a year old. By the time Washoe was 6, she had a vocabulary of more than 150 signs, each standing for a word — still the record for a chimpanzee vocabulary. What's more, Washoe often put two symbols together into a phrase, such as "give me sweet" as a request for candy.

Other experimenters, following the Gardners' lead, have tried such variations as teaching a chimpanzee to use varicolored plastic chips of different shapes to represent words, or even trying to teach a chimp to "talk" to a computer.

Lana, a chimpanzee in Atlanta, has produced such sequences of symbols, in



Laura Petitto and Nim: He's not a chimp and he's not a child.

News photo by Mel Finkelstein

a "conversation" with a computer, as "Please machine give Lana a piece of raisin." If the sequence is correct, the machine comes through with the requested goody.

And that, according to Herb Terrace, is the rub. In his opinion, the other talking-chimp experiments so far haven't really proved that a chimpanzee can create sentences. It's still not clear, Terrace says, whether these experiments show more than that a chimpanzee can be trained to go through a complex series of actions by the promise of a reward.

Not in human sense

By that interpretation, Washoe and Lana are not really using language in the human sense. Their performance may be an elaborate version of trick-learning such as can be seen in performing chimps in the circus.

Enter Nim, who is being raised as much like a human as his ape nature allows, in an effort to make him learn language like a human child. Personal relationships are one key to language use, Terrace believes:

"All the ingredients for human language are present in other species—they might not become language until an animal learns that it can refer to itself symbolically," he wrote recently.

And so here is Nim, living with humans from his earliest weeks of life, learning—Terrace hopes—all the things that humans of the same age learn.

Most of that learning comes from Laura Petitto, a research assistant who lives in the same house with Nim, feeds him and spends the greater part of the day teaching him sign language. Whatever impact Laura has made on

Nim, Nim has certainly made an impact on Laura.

"I'm trying not to develop an emotional attachment," Laura said. "I'm trying to see Nim as a research animal, not as a person, but that's not always easy."

In fact, Nim seems to be something of each. "He's not an animal and he's not a child," Laura said. "He's Nim. He's very clever and manipulative, with a great sense of humor. He's always playing jokes on me."

Chimps play rough. Nim came equipped with a fine, strong set of teeth, and he doesn't hesitate to use them. "I've got marks all over my arms," Laura remarked.

A typical day starts with Nim's awakening, at about 9:30 a.m., in his third-floor bedroom. He goes to the bathroom (alas, like a human 2-year-old he is only partially toilet trained), is dressed (diapers, underwear, shirt, jumpsuit), eats breakfast—all the while using the symbols he has learned so far; the pat on the chest for "me," two fingers on the mouth for "vitamin," and the like.

Comments on scene

Then Laura drives Nim to Columbia. He sits quietly in the passenger seat of her car, having a marvelous time and occasionally commenting on the scene (he has a special grunt for "motorcycle"). Passing drivers often come close to losing control when they glance over and do a double-take, Laura said.

Then it's classroom—most of the day learning symbols, with gym time to work off Nim's animal energy and walk around Columbia as a treat.

In the classroom—a bare, small room with a two-way mirror for observation—

Laura patiently shapes Nim's hands into symbols and teaches him the meaning of the symbols. It isn't always easy, because Nim's ape nature is never far from the surface. He can be paying attention one moment, capering around the room wildly or standing on his head the next.

Progress was slow at first, Terrace says; it took at least a year to get Nim into the mood for learning symbols. Now advances are coming quickly. Laura says that Nim is learning at least one new word a week. "He's like a ripe flower opening," said Terrace. "It's a joy to see."

Long-range goal

A long-range goal is to make Nim the best chimp sign-language user in the world.

"The first barrier in this field was words," said Terrace. "That was overcome. Now there's the second hurdle, the sentence. But skeptics will not be satisfied. They will ask for a chapter and then a book."

"We're not going to make a chimp into a human; that would fail, because we are different.

"But if we succeed, our concepts of what it means to be human and to be an animal will have to be revised. We would no longer be the only inhabitants of the planet who can use language, so our perspective would be changed."

Terrace is already looking past the time when Nim can really use language to the prospect of training another chimp in the same way. His voice grows rather dreamy:

"Imagine two chimpanzees communicating with one another. We would have a chimp miniculture..."