

## Week 3 Tuesday Morning Session

- Issues in Ape Language Research: Animal Language, Animal Mind
- Break
- Video: *Can Chimps Talk*
- Video: *Ape Genius*
- Discussion

## **Brief History of Ape Language Research**

→ 1980 + Signing Chimps (Washoe, Nim)

mid 1980s → Bonobo Research (Kanzi)

1990→ Animal Cognition, Theory of Mind  
Research: Cheney and Seyfarth

## **Remarks on Wittgenstein and Language**



Washoe 1965?-2007



*Our beloved friend [Washoe](#) passed away Tuesday evening, October 30, at 8:00, after a brief illness. At the time of her passing she was at home at [CHCI](#), with her family and closest friends.*

# HOUSE OF REPRESENTATIVES

## R E S O L U T I O N

HOUSE RESOLUTION NO. 4672, by Representatives Warnick, Dickerson, Hinkle, and Hankins

WHEREAS, Washoe was known throughout the world as the first nonhuman to acquire a human language, American Sign Language; and

WHEREAS, Dr. Roger Fouts and his wife Deborah came to Central Washington University in 1980 and created a sanctuary for Washoe and her family at the Chimpanzee and Human Communication Institute; and

WHEREAS, Washoe, the only chimpanzee at the institute who was born in Africa, was the matriarch of the chimpanzee family; and

WHEREAS, Washoe opened a window into the cognitive workings of a chimpanzee's mind and added a new dimension to our understanding of communication among both humans and nonhumans; and

WHEREAS, Those who met Washoe learned from her and her family the connections shared between humans and our fellow creatures and came to understand the importance of being responsible stewards for all life; and

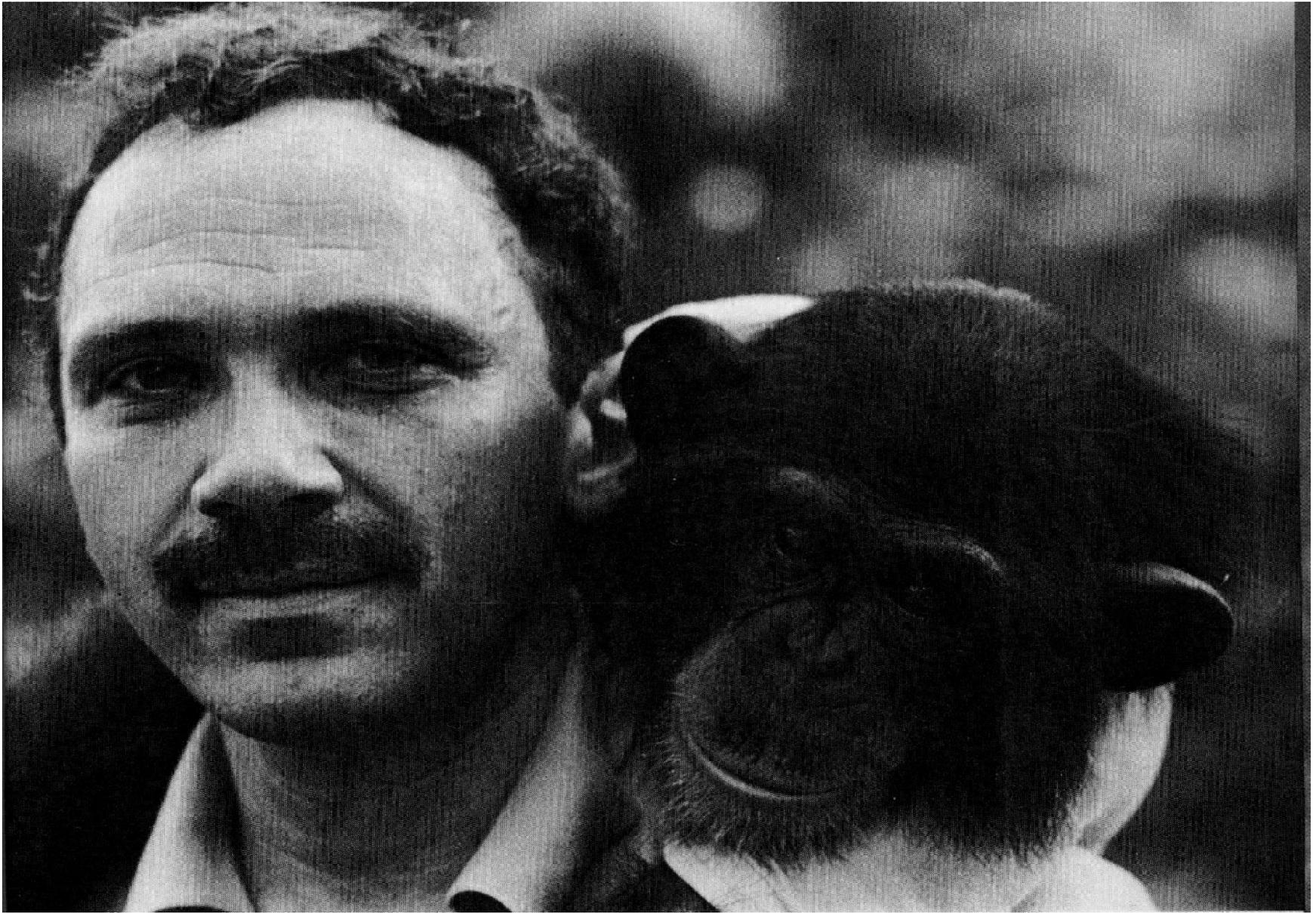
WHEREAS, Washoe, born in 1965 and a dear friend to many, passed away on October 30, 2007;

NOW, THEREFORE, BE IT RESOLVED, That the House of Representatives extend its deepest sympathy to Roger and Deborah Fouts for the loss of Washoe, a beloved friend; and

BE IT FURTHER RESOLVED, That the House of Representatives thank Roger and Deborah Fouts and Central Washington University for their passionate dedication to providing the highest possible quality of life to Washoe and her family and for enhancing the world's insight into the complexities and wonders of communication among living creatures, including humans and nonhumans; and

BE IT FURTHER RESOLVED, That copies of this resolution be immediately transmitted by the Chief Clerk of the House of Representatives to Dr. Roger Fouts, Deborah Fouts, Dr. Stephanie Stein, Dr. Martha Kurtz, Dr. Wayne Quirk, and Dr. Jerilyn S. McIntyre.

Washington State  
House of  
Representatives  
Feb. 2008



Nim Chimpsky with Herbert Terrace

Having read the publications of the Gardners, Premack, and Rumbaugh, I was convinced that the state of the art of teaching chimpanzees to use language had advanced considerably by using nonvocal languages compatible with the physical nature of a chimpanzee. There was an abundance of evidence showing that a chimpanzee could learn to acquire a respectable vocabulary of words whose form had no obvious relationship to the objects they symbolized. I remain skeptical, however, about the evidence the Gardners, Premack, and Rumbaugh presented that implied that a chimpanzee should create sentences or that their motivation to use language was sufficient to allow them to engage in conversations about things other than their basic needs. At the same time. The achievements of Washoe, ...the high degree of intelligence in chimpanzees, and the degree to which humans seemed to be able to figure their feelings and moods (and vice versa) gave me hope that chimpanzees could be taught to use language in a humanlike manner. That hope prompted me to start Project Nim

Herbert Terrace, *Nim*, 1979

# “Can an Ape Create a Sentence?”

*Science*, 23 Nov. 1979 H.S. Terrace, L.A. Petito,  
R.J. Sanders, T.G. Bever

*Summary.* More than 19,000 multisign utterances of an infant chimpanzee (Nim) were analyzed for syntactic and semantic regularities. Lexical regularities were observed in the case of two-sign combinations: particular signs (for example, more) tended to occur in a particular position. These regularities could not be attributed to memorization or to position habits, suggesting that they were structurally constrained. That conclusion, however, was invalidated by videotape analyses, which showed that most of Nim's utterances were prompted by his teacher's prior utterance, and that Nim interrupted his teachers to a much larger extent than a child interrupts an adult's speech. Signed utterances of other apes (as shown on films) revealed similar non-human patterns of discourse.

## CONCLUSION

In sum, evidence that apes create sentences can, in each case, be explained by reference to simpler nonlinguistic processes. Sequences of signs, produced by Nim and by other apes, may resemble superficially the first multiword sequences produced by children. But unless alternative explanations of an ape's combinations of signs are eliminated, in particular the habit of partially imitating teachers' recent utterances, there is no reason to regard an ape's multisign utterance as a sentence.

For the moment, our detailed investigation suggests that an ape's language learning is severely restricted. Apes can learn many isolated symbols (as can dogs, horses, and other nonhuman species), but they show no unequivocal evidence of mastering the conversational, semantic, or syntactic organization of language.

Now that there are strong grounds to dispute Descartes' contention that animals lack the ability to think, it is appropriate to determine just how an animal does think. In particular, how does an animal think without language? Learning the answer to that question will provide an important biological benchmark against which to assess the evolution of human thought.

Terrace, 1985 article “Animal Cognition: Thinking without Language”

Terrace is at the Primate Cognition Lab at Columbia University



Kanzi

Terrace says Kanzi, like the disappointing Nim Chimpsky, is simply "going through a bag of tricks in order to get things." He is not impressed by comparisons to human children. "If a child did exactly what the best chimpanzee did, the child would be thought of as disturbed," Dr. Terrace said.

The scientists at the Language Research Center are "studying some very complicated cognitive processes in chimpanzees," Dr. Terrace said. "That says an awful lot about the evolution of intelligence. How do chimpanzees think without language, how do they remember without language? Those are much more important questions than trying to reproduce a few tidbits of language from a chimpanzee trying to get rewards."."

New York Times, 1995

"If higher apes were incapable of anything beyond the trivialities that have been shown in these experiments, they would have been extinct millions of years ago," ... Chomsky said. "If you want to find out about an organism you study what it's good at. If you want to study humans you study language. If you want to study pigeons you study their homing instinct. Every biologist knows this. This research is just some kind of fanaticism

New York Times, 1995

Kanzi along with 7 other Bonobos moved to the Great Ape Trust in Des Moines Iowa in 2005

<http://www.greatapetrust.org/bonobo/meet/index.php>

## Great Ape Trust Research Program

Dr. Sue Savage-Rumbaugh is a *scientist with special standing* at Great Ape Trust of Iowa – a world-class research center dedicated to studying the behavior and intelligence of great apes. The first and only scientist to conduct language research with bonobos, Savage-Rumbaugh joined Great Ape Trust in 2005 following a 30-year association with Georgia State University's Language Research Center (LRC). In 2008, she retired from the administrative and laboratory duties in the Great Ape Trust bonobo facility to focus exclusively on research, writing and lecturing

## Paul Grice on Meaning 1957

“A means<sub>NN</sub> something by x” is roughly equivalent to

“A intended the utterance of x to produce some effect in an audience **by means of the recognition of this intention**”

“x meant<sub>NN</sub> something” is roughly equivalent to

“Somebody meant<sub>NN</sub> something by x

mean<sub>NN</sub> = non-natural meaning, unlike natural meaning such as “smoke means fire” or “Those spots meant measles”

## Chaney and Seyfarth, *How Monkeys see the World*

Following philosopher Daniel Dennett : a v erdet monkey is (or might be) an intentional system

Zero-order explanation: Alarm call because they are frightened,  
**No beliefs or desires**

First order explanation: Alarm call because they belief a leopard near by or because they want others to run to the trees  
**Beliefs and desires, but no beliefs about beliefs**

### **Theory of Mind enters Here**

Second order explanation: Alarm call because he wants others to believe that there is a leopard nearby **beliefs about beliefs**

Third order, Alarm call because he wants others to believe that he wants them to run into the trees **beliefs about beliefs about beliefs**

Linguistic communication requires at least third order intentionality.

Research continues the theory of mind in children and in non-human primates.

Baboons' theory of mind might best be described as a vague intuition about other animals' intentions. Although they do not attribute mental states like ignorance and knowledge to others, baboons and other monkeys do seem to have a rudimentary sensitivity to others' motives... We do not yet know whether baboons, like young children, have an implicit understanding of intentions as mental states or whether they simply recognize other individuals' intentions to behave in a certain way

Dorothy Cheney and Robert Seyfarth, *Baboon Metaphysics: the Evolution of a Social Mind*, 2007

Wimmer Perner Test—children predicting behavior of others

Children shown a puppet, Maxi, put chocolate into a blue cabinet. Maxi leaves. In his absence another puppet moves the chocolate into another, green cabinet. The children are asked where Maxi will look for the chocolate when he returns.

Children under 4 consistently say the green cabinet—where they know the chocolate now is. Older children in contrast said that Maxi would look in the blue cabinet. The younger children's errors were not due to faulty memory, because they could remember where Maxi had placed the chocolate.

Conclusion: Younger children were apparently not able to represent two incompatible beliefs

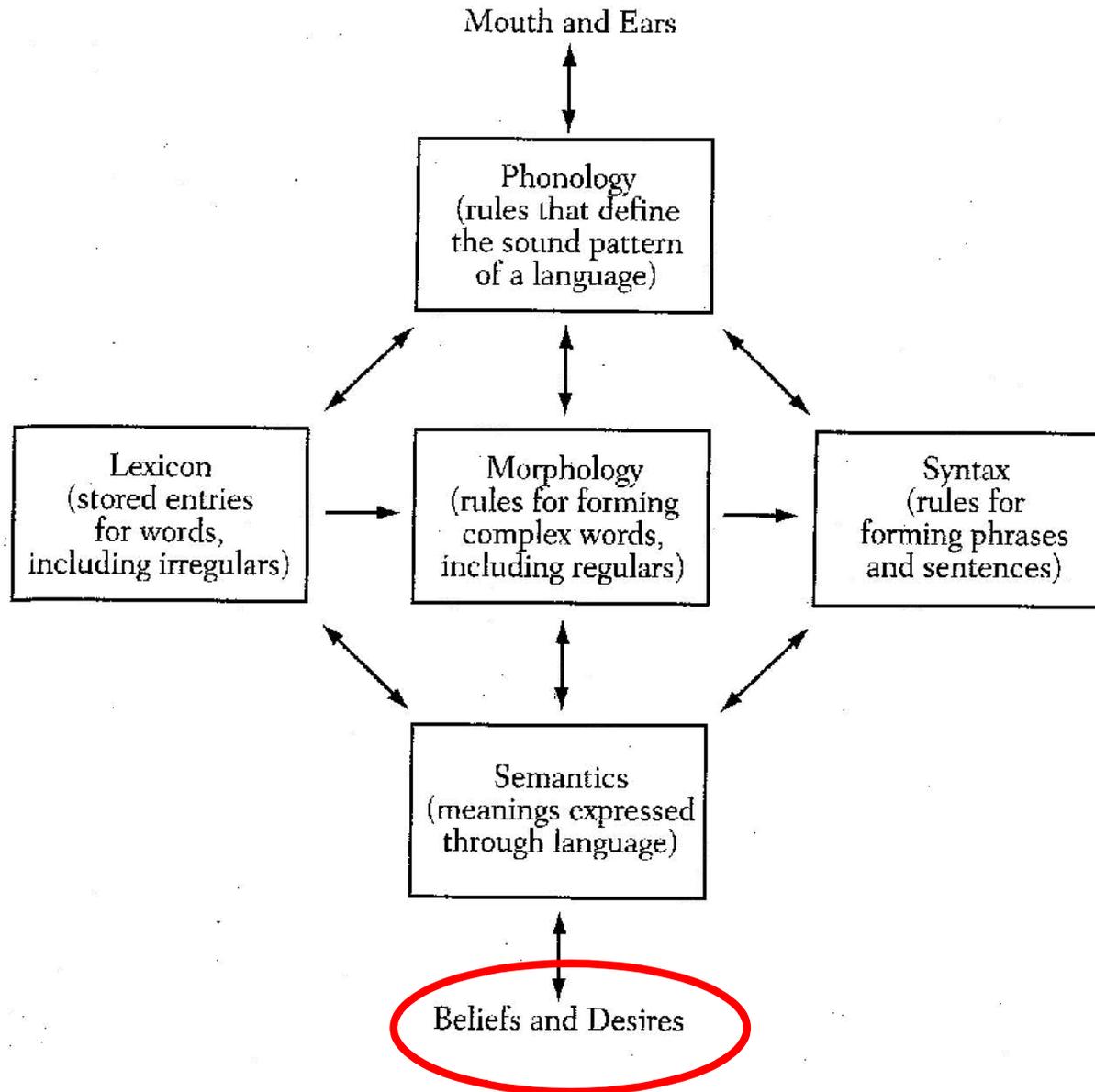
An implicit version of a theory of mind emerges around 18 months....A more explicit awareness of beliefs and knowledge, and the role played by mental states in behavior, does not appear until much later, at around four years.

If a two-year old can distinguish between an ignorant and knowledgeable parent, why can't she solve the false belief task?

The traditional false belief task "Where will Maxi look for the chocolate?" requires children to make an explicit verbal assessment of another person's beliefs

# Diagram from Pinker

Dissection by Linguistics | 23



## Ludwig Wittgenstein. (1889-1951)

Account of meaning in terms of language-games

PI 43 “for a large number of cases, but not for all the meaning of a word is its use in language. Uses can bear a family resemblance to each other.”

Philosophy aims to eliminate confusions cause by the misuse (illusions) of language

He attacked (implicitly) the Cartesian notion of special access to our own minds (and what we mean)

(Philosophical) Grammar is not abstract. It is situated in a regular activity or a practice

PI23 “...the term “*language-game*” is meant to bring into prominence the fact that speaking a language is part of an activity, or form of life.

If one goes back to the debate over the nature of pigeons’ “mental representations,” one sees the critics’ argument—that pecking consistently at different sizes of round shapes does not constitute possession of the concept of a circle—is grammatical, not empirical. Their point is not that there is insufficient evidence to know what a pigeon is thinking ; it is rather that this behavior does not satisfy the criteria for describing an organism as possessing the concept of circle. (*Apes*..p. 130)

That's All Folks