Michele Lanan

Communication & Language: Is language necessary to think?

Communication in animals

One animal influences the behavior of another animal, using signals

Communication in animals

Sex, aggression, predators, food

Communication in animals

What about language?
**What is Language?**

Many definitions: Linguists, philosophers explore this question

Merriam Webster Dictionary:
the words, their pronunciation, and the methods of combining them used and understood by a community

audible, articulate, meaningful sound as produced by the action of the vocal organs

a systematic means of communicating ideas or feelings by the use of conventionalized signs, sounds, gestures, or marks having understood meanings

**Humans use language.**

What are its important characteristics?

- **Unbounded Signal Set:** unlimited possibilities
- **Reference and Situational Freedom:** things that aren’t here
- **Communication and intention:** responding to the audience

**Unbounded Signal Set**

Signals reliably refer to an idea

**Reference and Situational Freedom**

I’m very angry.
Reference and Situational Freedom

Signals reliably refer to an idea
Signal can be unrelated
Receiver responds appropriately

Vervet Monkeys have three alarm calls for different predators

Each call has a different response

How do we know if these calls have meaning?

Two "words" for approaching group

If they are habituated to Wrrr, will they respond to chutter?

If they are habituated to starling ground alarm, will they respond to "leopard"?

Do you think the prairie dogs identified the silhouettes?

Is there potential for cultural transmission of calls?
Situational freedom or displacement:

Yesterday a human followed me with a video camera!

How dreadful.

Can animals lie?

Reference and Situational Freedom

Prairie dogs

Video!

Reference and Situational Freedom

Situational freedom or displacement

Refers to something displaced in either space or time

Reference and Situational Freedom

Situational freedom or displacement

Refers to something displaced in either space or time

Reference and Situational Freedom

Situational freedom or displacement: Honeybee dance?

Reference and Situational Freedom

Situational Freedom: honeybees

Can animals lie?
**Communication and intention**

Language is used with the intent of changing the cognitive state of the receiver.

**Will animals respond to their audience?**

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**Chickens**

Aerial predator!

Ground predator!

Roosters call more if they have an audience, especially if it is a hen.

Roosters use the "mother hen" food call when courting mates.

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**Why teach animals human language?**

Snowdon (1993): ethologists are to psychologists as anthropologists are to missionaries

What aspects of language can they acquire?

Is language a general skill or a specialized module?

What does it tell us about human development and evolutionary history?

And… wouldn’t it be cool to talk to animals?

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**Teaching animals human language**

Kellogg and Hayes, 1930s: Gua and Viki.

Chimpanzees do not have the equipment for spoken language

Terrace et al. 1979: Nim Chimpsky

Can chimpanzees create new sentences?

How much behavior is language, and how much is copying?

If human children also copy, why does it matter?

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**Teaching animals human language**

Gardners, 1969: Washoe

Learned ASL, 100+ signs
Teaching animals human language

Terrace et al. 1977: Lana
Computer keyboard used for communication
Sherman and Austin also used keyboard

Savage-Rumbaugh et al.: Kanzi the Bonobo
Learned English (similar to a 2-year old human)
Learned the keyboard from his mother.

Why don’t language abilities progress, as they do in human children?

Human Language

Does human language reflect general learning ability? (Skinner)
Or- do we have a specialized language module? (Chomsky)

Noam Chomsky
Linguist: studied language in humans. Hypothesized that children are born with an innate “Universal Grammar.” All that is necessary for language acquisition is vocabulary and parameter settings.

Univ. Pennsylvania & Harvard. Teaches at MIT.
Generative grammar: a rule set for a language.
Politics: authority is illegitimate until proven otherwise.

References:
Logical Structure of Linguistic Theory (1955, 1979)
Syntactic Structures (1957)
Aspects of the Theory of Syntax (1965)
Topics in the Theory of Generative Grammar (1968)
Studies on Semantics in Generative Grammar (1972)
Language and Thought (1993)

Is language necessary to think?
What do we mean by ‘think’, anyway?
Do you always use language when thinking?

Amanda Baggs: Autism, language, and thought

“low functioning”
Amanda Baggs: Autism, language, and thought

“My viewpoint in the video is that of an autistic person. But the message is far broader than autistic people. It is about what kinds of communication and language and people we consider real and which ones we do not. It applies to people with severe cognitive or physical disabilities, autistic people, signing deaf people, the kid in school who finds she is not taken seriously as a student because she does not know a lot of English, and even the cat who gets treated like a living stuffed animal and not a creature with her own thoughts to communicate. It applies to anybody who gets written off because their communication is too unusual.”