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Linguistic: Final Presentation

Animal Language

Animal Language

No matter how eloquently a dog may bark, he cannot tell you that his parents were poor but honest.

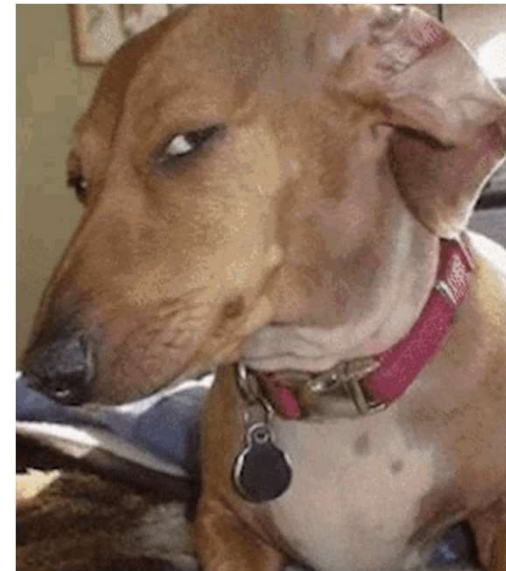
Bertrand Russel



To tell = to pronounce the string of sounds
« my parents were poor but honest »



To tell = to convey the idea that “his parents
were poor but honest”



Side eye dog meme

Animal Language



GET OUT OF HERE

I was walking back to my place when suddenly...

I (Baptiste) receive 2 types of information:

- Sounds (the dog is barking)
- Visual Language (he is showing me its teeth and he's heading toward me)

Can this dog have a conversation with another one ?

- ▶ Animal Language can take many forms (sounds, visual...)
- ▶ What are the theme / content of an animal communication
- ▶ It seems the degree of accuracy and abstraction can be different for animals

Purpose of the presentation:

- Give insights about the 4 types of animal communication
- Discuss the topics of conversation in animal communication with elaborated examples
- See the capacity of animals to use grammatical systems

The 4 characteristics of Language

The 4 characteristics of Language

Discreteness:

There is a set of individual units (sounds, words...) that can be combined to communicate some ideas

Grammar:

There is a set of rules that explain how to arrange the previous individual units

Productivity:

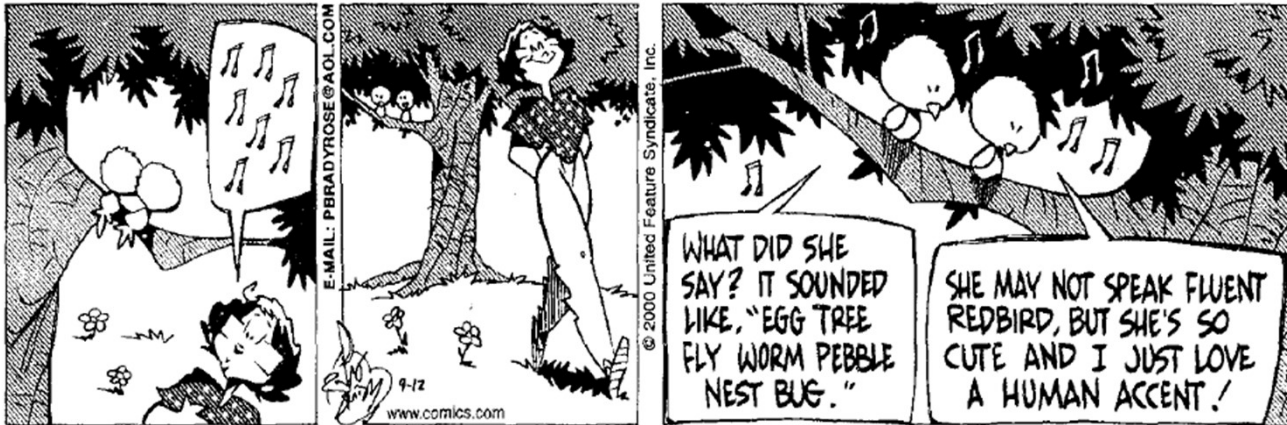
Ability to create a large number (close to infinite) of different messages

Displacement:

Ability to talk about something that is not just in front of us (past, future, fictional events)

Types of Animal Language

Types of Animal Language



« Rose is Rose »
2000,
United Features Syndicate

4 main types of Animal communication:

- Auditory Communication
- Visual Communication
- Chemical Communication
- Tactile Communication

| | Discreteness | Displacement | Productivity | Grammar |
|----------|--------------|--------------|--------------|---------|
| Auditory | | | | |
| Visual | | | | |
| Chemical | | | | |
| Tactile | | | | |

Types of Animal Language

Chemical communications

- Usually amongst insects

Theme of the communication

| | |
|--------------------------|---------------------|
| Food-seeking | Reproduction |
| Recruitment | Alarm / Survival |
| Recognition of congeners | Territorial marking |

Example:

Ants release pheromones to mark paths to food sources, guiding colony members efficiently.

Tactile communications

- Can be observed in many different species (insects, wolves, birds, primates, Elephants...)

Theme of the communication:

| | |
|----------------------|---------------------|
| Socialize | Reproduction |
| Conflicts Resolution | Group Coordination |
| Parental Care | Warning and Defense |

Example:

Primates use grooming to build social bonds, reduce stress and reproduction.

Types of Animal Language

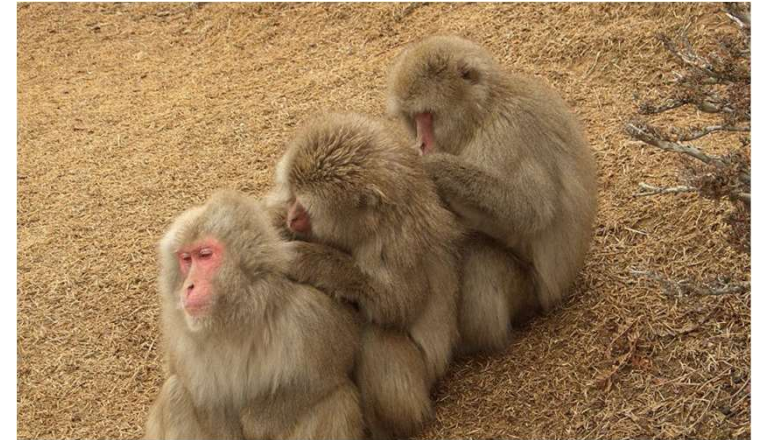
| | Discreteness | Displacement | Productivity | Grammar |
|----------|--------------|--------------|--------------|---------|
| Auditory | | | | |
| Visual | | | | |
| Chemical | ~ | | | |
| Tactile | ~ | | | |

When it comes to chemical and tactile communications, we see that we are rapidly limited in term of analysis.

The main reason is that these communication **are usually combined** with other kind of communication.

The message conveyed **are usually simple** and stems from basics needs (**food, reproduction, danger...**)

We can however highlights socializing effects of tactile communication among mammal as primates or elephants



Types of Animal Language

Visual communication

► Can be observed in many different species (insects, dogs...)
→ Rules with tails of dogs, showing teeth
(Body Language for humans)

Theme of the communication:

Indicate location,
Precise distance,
Warning,
Marking territory
Coordination movements
Reproduction

Example: Waggle dance of bees

Bees movement can indicate precisely the location of food provision in varying the speed, duration and the intensity of their wings
(distance, direction, richness...)

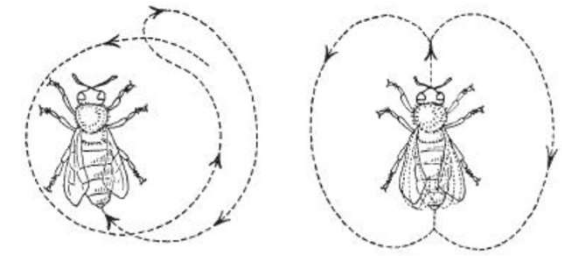


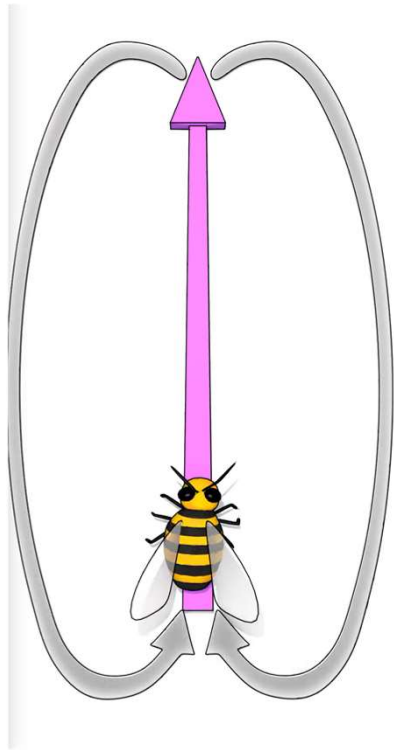
Figure 1.
Round dance

Figure 2.
Waggle dance

The Round dance and Waggle dance, as described by Karl Von Frisch,
1976

| | Discreteness | Displacement | Productivity | Grammar |
|----------|--------------|--------------|--------------|---------|
| Auditory | | | | |
| Visual | ? | ? | | |
| Chemical | ~ | | | |
| Tactile | ~ | | | |

Types of Animal Language



Waggle of bees: basic movement to indicate food

Researches showed the waggle dance of bees is much more complex that we thought.

Left Figure:

Bees are able to describe the richness of food and the distance / travel times from the nest

→ **Displacement**

Details are given through the distance, the time and the intensity of the waggle dance

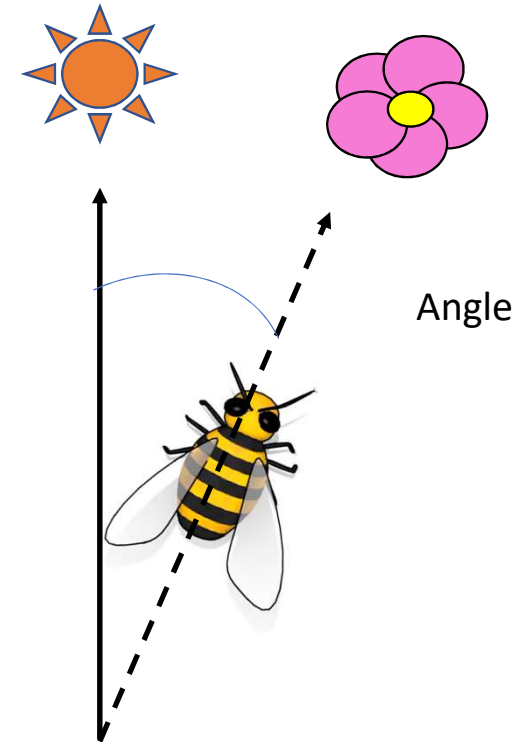
→ **Discreteness**

Right Figure:

Precise direction is given by the angle the bees takes in its dance.

Reference points for bees is **always the sun**

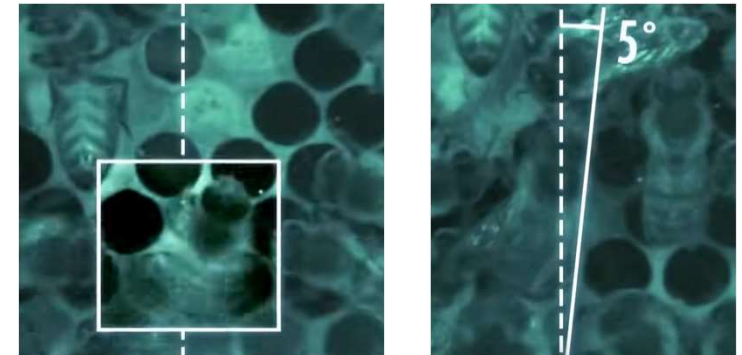
→ Waggle dance varied from one part of the world to another, showing social learning



Waggle of bees: angle illustration

Types of Animal Language

| | Discreteness | Displacement | Productivity | Grammar |
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| Auditory | | | | |
| Visual | x | x | | |
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The waggle dance of bees is one of the **most elaborate** visual communication of animals.

It is possible to identify small units of movements (**discreteness**) that transcripts food location, sometimes very far away from the nest, with indications of possible danger and food richness on the journey (**Displacement**).

However, the topic of conversation is almost always about **getting food**.



I am a kawaii
bee

Types of Animal Language

Auditory communication

(Birdsongs, dolphin clicks, elephant rumbles, dogs barking...)

Theme of the communication:

Defend territory

Reproduction

Group Coordination

Warning and Defense

Call mates by names

Designate gender

Describe a predator

Example:

► Dolphin use clicks and special sounds to design names, age or location of other individuals or gender.

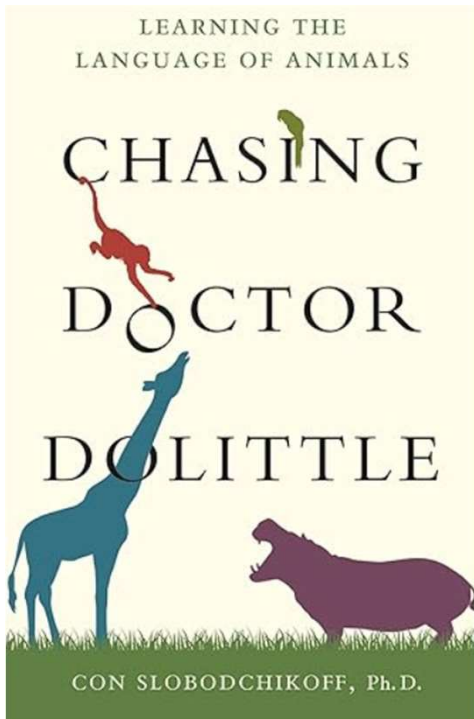
► Prairie dogs can tell their mates about predator size, shapes, speeds.

For human, the appearance, if they carry a gun or not

One experience with the same human coming several times with / without a gun showed that the prairie dogs remember that person used to have a gun

| | Discreteness | Displacement | Productivity | Grammar |
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| Auditory | ? | ? | ? | ? |
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Types of Animal Language



Chasing Doctor Dolittle,
Con Slobodchikoff, 2012

In his book, Dr Con Slobodchichoff analyses animals communication to decide whether one can call it a language or not, in the sense of linguistic.

He insists on the idea that animal language depends on **ecological pressures**.

→ **Animal Language is ecologically determined**

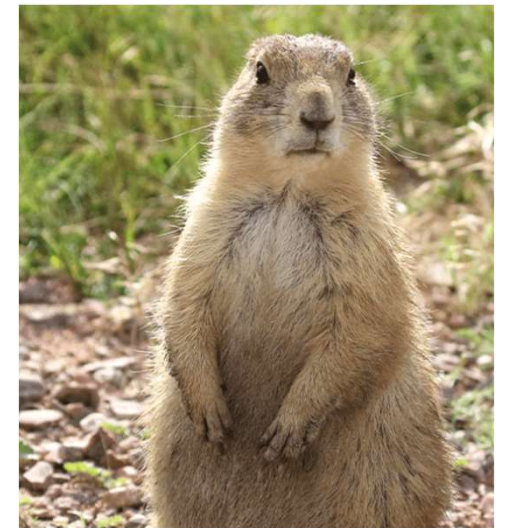
In this regard, he studied the behaviors of prairie dogs, especially the sounds they produced thanks to data analysis that innovations in computer sciences made possible.

The main results of his research:

- it is possible to identify units of sounds in the prairie dogs language (**Discreteness**)

- Prairie dogs can discuss about a predator appearance that is not in front of them, and even about the past appearance of this predator (**Displacement**)

- In showing shapes that prairie dogs don't know (square, triangle), new sounds appeared in the measure of prairie dogs sounds (**Productivity**)



Types of Animal Language

| | Discreteness | Displacement | Productivity | Grammar |
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| Auditory | x | x | x | |
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These 4 communications are not independent and **can be frequently combined** (chemical + visual for bees for instance). I think there are two elements that we can highlight from this part

Grammar:

Until today, no grammatical systems have been identified with certitude in animal communication system even if some of them are very elaborates (as prairie dogs, dolphin or primates).

Topics:

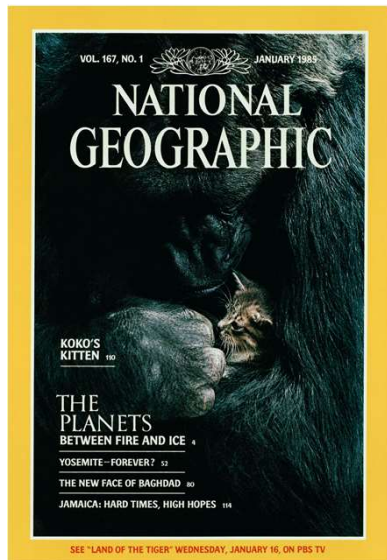
As we see, topics are usually purpose driven (get food, reproduction, signal a danger...)
The communication are thus very repetitive and make abstraction very hard to reach.

Grammar for animals / Animals communicating with humans language

Some well known cases

Regarding Chimps and Gorilla, some have learned a modified sign languages.

Koko, a female gorilla, understand more than 1000 signs and more than 2000 words of spoken English, could make references to a dead kitty she used to pet



Koko (originally named Hanabi-ko) in the national Geographic magazine

For Dolphin, researches showed that in creating a gesture language with grammatical rules, dolphin are able to learn and understand Grammar to communicate with humans

Parrots are able to mime humans language and associate meanings to sounds they produce without knowing the semantics of it
→ Also purpose driven (eg: food)



Conclusion

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4 main types of Animal communication:

- Auditory Communication
- Visual Communication
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- Tactile Communication

| | Discreteness | Displacement | Productivity | Grammar |
|----------|--------------|--------------|--------------|---------|
| Auditory | x | x | x | |
| Visual | x | x | | |
| Chemical | x | | | |
| Tactile | x | | | |



One can talk about animal language but have to highlights that **no examples of grammatical** systems has been found in the natural world.

However, animals are able to understand grammar as the case of Koko shows. However, it only applies to human languages. **Grammar is not seen in the natural world.**



Movie recommendation



The Wild Child (1970), directed by François Truffaut, is based on the true story of Victor, a feral child found in the forests of 18th-century France.

Discovered living in isolation without human contact, Victor is taken to a Paris institute for the deaf and mute. Dr. Jean Itard, a compassionate physician, takes him under his care, aiming to teach him language, social behaviors, and empathy.

Through painstaking efforts, Itard attempts to bridge the gap between nature and nurture, highlighting themes of humanity, education, and the essence of civilization.

The film reflects on whether Victor can truly integrate into society or if his primal instincts will prevail.

« The wild child », François Truffaut
French New wave movie

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