

# **Linguistics**

## **Animal and Human Languages**

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# Overview

**1. Introduction**

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# Introduction

All living creatures are capable of communicating with other members of their species. Thus, there are certain similarities between human and animal languages, like:

- **Social phenomena:** Language is a social phenomenon. Both humans and many species of animals are social beings.
- **Communication:** The main purpose of language is to communicate. Both animals and humans use language for this purpose.

# Introduction

- **Use of sign:** Communication is not complete without the use of signs. Both animals and humans use signs to communicate.
- **Language is systematic and symbolic:** Communicating successfully (letting others know what we want them to know) is systematic. There are systematic rules that govern how to tell/communicate something. The way animal/human let other know something is by using symbols. Symbol incorporates large corpus of endeavor: sound, gesture, movement, and even silence.

# Properties of Human Language

1. **Displacement**
2. **Arbitrariness**
3. **Productivity**
4. **Cultural transmission**
5. **Duality**

# Displacement

When your pet cat comes home and stands at your feet calling meow, you are likely to understand this message as relating to that immediate time and place. If you ask your cat where it has been and what it was up to, you'll probably get the same meow response. Animal communication seems to be designed exclusively for **this moment, here** and **now**. It cannot effectively be used to relate events that are far removed in time and place.

However, humans can refer to **present, past,** and **future** times. This property of human language is called **displacement**. It allows language users to talk about things and events not present in the immediate environment. Indeed, displacement allows us to talk about things and places (e.g. angels, fairies, Santa Claus, Superman, heaven, hell) whose existence we cannot even be sure of. Animal communication is generally considered to lack this property.

# Displacement in Honeybee

Among Honeybees, a fascinating exception comes into play: when one of these bees locates a new source of nectar and returns to the hive, it engages in a remarkably complex dance routine. This dance serves as a method of conveying the precise location of the discovered nectar to the other members of the hive.

Nonetheless, it's crucial to highlight a restriction in this communication system. The information conveyed through this dance is applicable solely to the most recent food source encountered by the bee. Consequently, this unique communication method of Honeybees reveals a highly specialized and limited form of communication and lacks the expansive range of expression found in human language.

# Arbitrariness

It is generally the case that there is no “natural” connection between a linguistic form and its meaning. The connection is quite arbitrary. We can’t just look at the Arabic word **كلب** and, from its shape, for example, determine that it has a natural and obvious meaning any more than we can with its English translation form dog.

The linguistic form has no natural relationship with that hairy four-legged barking object out in the world. This aspect of the relationship between linguistic signs and objects in the world is described as **arbitrariness**.



# Arbitrariness: Onomatopoeia

There are some words in a language with sounds that seem to “echo” the sounds of objects or activities and hence seem to have a less arbitrary connection. English examples are **crash**, **boom**, **meow**, or **buzz**. However, these **onomatopoeic** words are relatively rare in human language

For the majority of animal signals, there does appear to be a clear connection between the conveyed message and the signal used to convey it. This impression we have of the non-arbitrariness of animal signaling may be closely connected to the fact that, for any animal, the set of signals used in communication is **finite**.

# Productivity

Humans are continually creating new expressions and novel utterances by manipulating their linguistic resources to describe new objects and situations. This property is described as **productivity** (creativity) and essentially means that the potential number of utterances in any human language is **infinite**.

This limiting feature of animal communication is described in terms of **fixed reference**. Each signal in the system is fixed as relating to a particular object or occasion. Among monkeys, there is one danger signal **CHUTTER**, which is used when a snake is around, and another **RRAUP**, used when an eagle is spotted nearby. These signals are fixed in terms of their reference and cannot be manipulated.

# Cultural Transmission

While we may inherit physical features such as brown eyes and dark hair from our parents, we do not inherit their specific language. We acquire a certain language in a culture with other speakers.

An infant born to Korean parents in Korea, but adopted and brought up from birth by English speakers in the United States, will have physical characteristics inherited from his or her natural parents, but will inevitably speak English. A kitten, given comparable early experiences, will produce meow regardless.

# Cultural Transmission

This process whereby a language is passed on from one generation to the next is described as **cultural transmission**. It is clear that humans are born with some kind of tendency to acquire language in a general sense. However, we are not born with the ability to produce utterances in a specific language such as English. We acquire our first language as children in a culture.

The general pattern in animal communication is that creatures are born with a set of specific signals that are produced instinctively. There is some evidence from studies of birds as they develop their songs that instinct has to combine with learning (or exposure) in order for the right song to be produced. If those birds spend their first seven weeks without hearing other birds, they will instinctively produce songs or calls,

# Duality

Human language is organized at two levels or layers simultaneously. This property is called **duality** (or “double articulation”). In speech production, we have a physical level at which we can produce individual sounds, like **n**, **b** and **i**. As individual sounds, none of these discrete forms has any intrinsic meaning. In a particular combination such as **bin**, we have another level producing a meaning that is different from the meaning of the combination in **nib**.

So, at one level, we have distinct sounds, and, at another level, we have distinct meanings. This duality of levels is, in fact, one of the most economical features of human language because, with a limited set of discrete sounds, we are capable of producing a very large number of sound combinations (e.g. words) that are distinct in meaning.

# Duality

Among other creatures, each communicative signal appears to be a single fixed form that cannot be broken down into separate parts. Although your dog may be able to produce woof (“I’m happy to see you”), it does not seem to do so on the basis of a distinct level of production combining the separate elements of w+oo+f.

If the dog was operating with the double level (i.e. duality), then we might expect to hear different combinations with different meanings, such as oowf (“I’m hungry”) and foow (“I’m really bored”).

# Talking to Animals

A lot of spoken languages are directed by humans to animals, apparently under the impression that the animal follows what is being said. **Riders** can say **Whoa** to **horses** and they stop (or so it seems), we can say **Heel** to **dogs** and they will follow at heel (well, sometimes), and a variety of circus animals go **Up**, **Down** and **Rollover** in response to spoken commands is.

Should we treat these examples as evidence that **non-humans can understand human language?** Probably not. The standard explanation is that the animal produces a particular behavior in response to a particular sound stimulus or noise, but does not actually “understand” what the words in the noise mean

# Chimpanzees and Language

The idea of raising a chimp and a child together may seem like a nightmare, but this is basically what was done in an early attempt to teach a chimpanzee to use human language. In the 1930s, two scientists reported on their experience of raising an infant chimpanzee together with their baby son. The chimpanzee, called **Gua**, was reported to be able to understand about a hundred words but did not “say” any of them.

In the 1940s, a chimpanzee named **Viki** was reared by another scientist couple (Catherine and Keith Hayes) in their own home, exactly as if she was a human child. These foster parents spent five years attempting to get Viki to “say” English words by trying to shape her mouth as she produced sounds. Viki eventually managed to produce some words, rather poorly articulated versions of **mama**, **papa**, and **cup**.



# Washoe (Chimpanzee)



Washoe (1965 – 2007) was a female common chimpanzee who was the first non-human to learn to communicate using **American Sign Language** as part of a research experiment on animal language acquisition.

This American Sign Language has all the essential properties of human language and is learned by many deaf children as their natural first language. Sign language was always used when Washoe was around and she was encouraged to use signs, even her own incomplete “baby-versions” of the signs used by adults. Washoe was raised like a human child in a comfortable domestic environment.

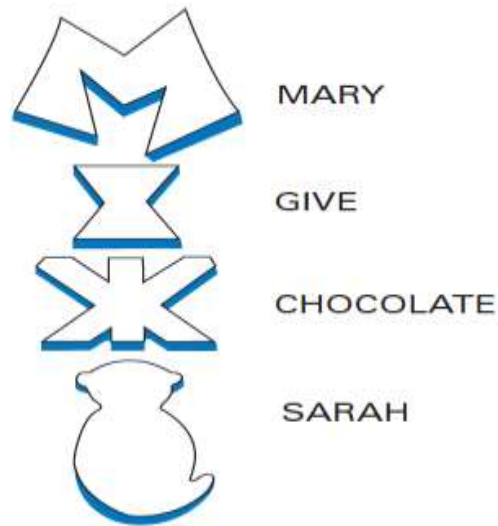
# Washoe

In a period of three and a half years, Washoe came to use signs for more than a hundred words, ranging from **airplane**, **baby**, and **banana** through to **window** and **woman**. Even more impressive was Washoe's ability to take these forms and combine them to produce 'sentences' of the type **gimme tickle, more fruit, and open food drink** (to get someone to open the fridge).

Some of the forms appear to have been inventions by Washoe, as in her novel sign for **bib** and in the combination of **water bird** (referring to a swan), which would seem to indicate that her communication system had the potential for **productivity**. Washoe also demonstrated an understanding of a much larger number of signs than she produced and was capable of holding elementary conversations, mainly in the form of question–answer sequences.

# Sarah

Another chimpanzee called **Sarah** was being taught to use a set of **plastic shapes** for the purpose of communicating with humans. These plastic shapes represented “words” that could be arranged in sequence to build “**sentences**” (Sarah preferred a vertical order). Sarah was systematically trained to associate these shapes with objects or actions. She remained an animal in a cage, being trained with **food rewards** to manipulate a set of symbols.



# Sarah

Once she had learned to use a large number of these plastic shapes, Sarah was capable of getting an apple by selecting the correct plastic shape (a blue triangle) from a large array. Notice that this symbol is arbitrary since it would be hard to argue for any natural connection between an apple and a blue plastic triangle.

Sarah was also capable of producing “sentences” such as **Mary give chocolate Sarah** and had the impressive capacity to understand complex structures such as: If Sarah put red on green, Mary give Sarah chocolate. Sarah got the chocolate.

# Animal and Human Languages

We may look at the behavior of a two-year-old human child interacting with a caregiver and observe very similar behavior from chimpanzees when they are interacting with humans they know. It has to be fair to say that, in both cases, we observe the participants “using language.”

However, there is a difference. This child has the capacity to develop **a highly complex system of sounds and structures that will allow him to produce an infinite number of novel utterances**. No other creature has been observed “using language” in this sense. It is in this more fundamental or abstract sense that we say that language is **uniquely** human.