

# Language

Wednesday, October 6, 2021 11:12 AM

## Language as an Evolutionary Process

- language evolves like organisms
  - ↳ needs to be learned quickly/effectively, or else it will die out
  - ↳ adapts to environment
    - example: in open plains, birds speak in short notes; in forest, birds speak in long notes due to degradation of signal due to winds in plains

## Human Communication

- gestures (sign language, etc.) → efficient distance signaling in open plains
  - used by indigenous North American Plains people w/ spatial grammar (location, movement, shape, orientation of palms)
  - evoked cultural taboos for speaking: close female relatives after man's death in Waripiri Aborigines
- vocals (grunts, whistles, etc.)
  - whistle languages in mountain societies: short, high, freq. sounds carry further
    - ↳ Sylbo (Spanish Canary island), Turkey, Mexico

## Sonority

- the relative loudness of speech that is determined by how open the mouth is
  - ex. vowels more sonorous than consonants
  - warmer climates: languages more sonorous than cold climates (more often outside, further away from others) → Hawaiian more sonorous than Polish.

## Language Reproductive Success

- languages are documents of history that reveal cultural similarities, families
  - ↳ origins of words ⇒ word more important in that language/culture

### Origin of Indo-European languages:

- southern Russian steppe Yamnaya culture
- mobile army tactics (horses, wheeled vehicles, archers of all genders)
- wiped out indigenous populations of Europe, British Isles, N. India

## Adaptive Radiation:

- 'Small-scale Societies': small lexicons (3-5000 words), but more non-written/multilingual
- 'Americans': 40,000 - 70,000, 11 basic colors vs. 5 or 2 in smaller societies
- 'Numbers': universal 1, 2, many; only some cultures have more

## Reproductive Success of Words:

- radiation of new forms (lexical replacement) - becomes unrelated in different languages (leg tail) ⇒ not very successful word
- slow evolution - similar standards in many languages (e.g. two)
  - disadvantages to mess with common words (mutations "lethal")

→ also seen in grammatical rules: old English had more past tense representations, which have mostly gone extinct other than some commonly used, irregular verbs.  
 More common = more irregular (177 → 145 → 98 irregular verbs, ad → middle → modern)

## Language must be learnable

- acquisition bottleneck
  - must be learned by children
  - selection for regularity, ease of use
  - less common words go extinct



## Origins of Language

Unanswered question: did tools or language come first?

### Language appeared in genus Homo

- possible need for accelerated learning for tool making
- selection for left hemisphere function, precise imitation
- analogous to tool making
  - becomes another tool
  - same strengths as hierarchical planning
  - unique cultural, genetic predisposition

### Language in other species

Money bees: dances to convey location of flower patches (Waggle dance)

Monkeys: males give alarm responses corresponding to predators

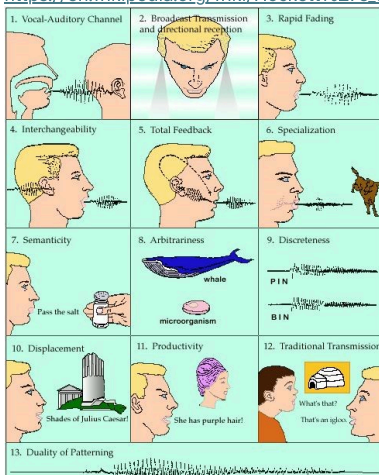
Artificially taught: border collies identifying toys, bonobos taught use of keyboard, dolphin recognized novel sentences

↳ most successful: social species w/ collective brain      ↓ social tolerance (teaching another chimp)

## Characteristics of Language

Language consists of an infinite number of combinations of signals.

[https://en.wikipedia.org/wiki/Hockett%27s\\_design\\_features](https://en.wikipedia.org/wiki/Hockett%27s_design_features)



Humans have all 13 features; other species have a few

Dolphins - recognize novel sentences  
 Bonobos - symbol use  
 Bees - waggle dance

