

Communication, Language, and the Design Features That Make Us Unique

Unit 1, Class 4, Part 2

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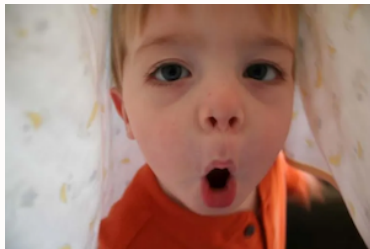
Section 1

Big question



Is human language special?

Are we just fancy animals with better sounds and signs?



Why? Why not?



Communication vs Human language

- Communication: Conveying message/information/signals (broad)
- Language: A *system* with sets of symbols + rules (grammars) + creativity + abstraction + ...

All language is communication, but not all communication is language.



Animal communication vs Human language (comparison)

Feature	Animal Communication	Human Language
Creativity	Fixed signals	Infinite ideas
Displacement	Here & now only	Past/future/imaginary
Learning	Mostly innate	Culturally transmitted
Symbolic (arbitrary)	Rare	Core feature



Human language is clearly different from animal communication.

What are the features that make it different/unique?

Charles Hockett proposed a list of features of human language that makes human language special (Hockett, 1960).



Section 2

What makes human language... language?



- Unique distinctive properties of human language that separates it from animal communication



Full list of Hockett's design features

Feature	Feature
Vocal-auditory channel	Displacement
Rapid fading (Transitoriness)	Productivity
Interchangeability	Cultural/traditional transmission
Total feedback	Duality
Specialization	Prevarication
Semanticity	Reflexiveness
Arbitrariness	Learnability
Discreteness	Broadcast transmission and directional reception



- Talking about things not here or now
 - “I saw a snake on my way to the park the other day.”
- Bees do a little displacement; monkeys don't

Make up a sentence showing displacement.



Create endless new sentences from finite elements

- khana khanchhu, jhola lanchhu, ghar gachhu vs janchhu
- "You killed a mosquito detonating an atom bomb that was built in a peaceful fish market while the earth was whirling towards the old dying sun emitting yellow undetectable infrareds that somehow *comed* under my radar."
- Animal comparison: Animal signals = fixed calls only.

Make up a crazy sentence that's never been said before!



No natural connection between word and thing.

- Eg., “Water” doesn’t look, flow, or solve like water.
- Animal comparison: Most animal signals are tied closely to emotion or context.



Two layers/levers: (i) Small number of meaningless sounds (phonemes) combine to form (ii) meaningful words and sentences

- Eg.: /k/ /æ/ /t/ + [s] -> “cats”
- Infinite words built from limited sounds.



- Language is teachable, learnable.
- A speaker can learn a second/third/nth language, just as a child learns their first language.
 - There are constraints of critical period.



Language is passed down by learning, not genes.

- Eg., Children learn any language they are exposed to.
- Animal comparison: Monkey calls = mostly genetic; human languages = learned.

If a human baby was raised by wolves, would it invent language?
(Candland, 1995)



- Reflexiveness: Using language to talk about language.
("What does 'meaning' mean?")
- Prevarication: Lying! Using language to say things that aren't true.

State a few lies that you've heard about yourselves from others.



What feature do you consider is uniquely human, if you had to pick only one? Why?



Section 3

Special cases: Humanising the Chimps



👤 Raised like a human baby by the Kelloggs (Kellogg & Kellogg, 1933)

🐾 Goal: Could a chimp learn human behavior and language by environment alone?

🧩 Result:

- Gua learned human-like behaviors (opening doors, using spoons).
- But no speech, no language development.
- Donald (human baby) started imitating Gua's chimp sounds!

Key lesson 📖

- Behavior can be learned.
- Language cannot emerge just from raising environment.



🗨️ Raised by Hayes family; trained directly to produce speech sounds (Hayes & Hayes, 1951)

🗨️ Viki learned to roughly say 4 words: “Mama”, “Papa”, “Cup”, “Up”.

⚙️ Heavy speech therapy (moving lips/mouth manually).

Key lesson 📖

- Anatomy matters.
- Chimps' vocal tracts are not built for human speech sounds.



Washoe (1960s-70s)

👉 Taught American Sign Language (ASL) by the Gardners
(Gardner & Gardner, 1969)

👉 Learned over 100+ signs.

👉 Used signs creatively (e.g., “water bird” for “swan”).

Key lesson 📖

- Symbols and basic communication possible without speech.
- But still no complex grammar like human children naturally acquire.



Conclusion: What Makes Human Language Unique?

- Environment alone? See Gua
- Anatomy? See Viki
- Symbolic communication? See Washoe

It requires:

- Biological capacity (vocal tract, brain structure and function)
- Social and cognitive readiness (ToM, joint attention)
- Innate language learning

Big Takeaway: Human language is more than imitation or symbols—it's a complex, structured, and uniquely human system.



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