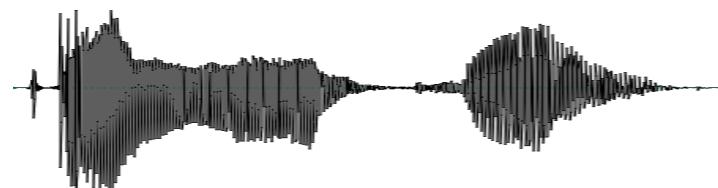


Language

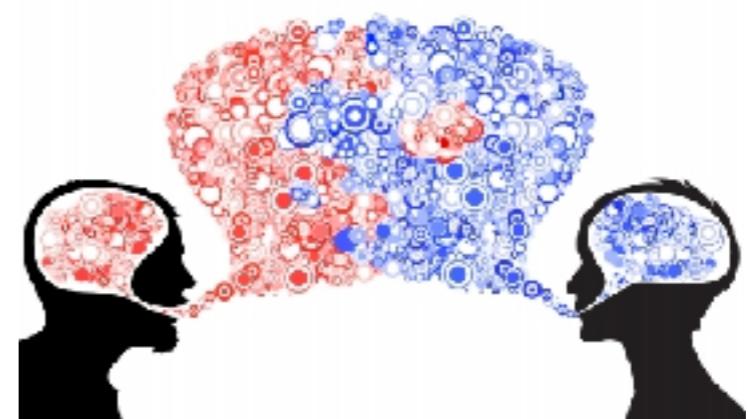
Psych One
Fall 2017

A light blue speech bubble containing the word "Hello" in four different languages: English, Spanish, French, and Chinese. The text is arranged vertically within the bubble.

Hello
¡hola
Bonjour
你好

Plan for today

- What's so special about language?
- How does language learning get started?
- What do we use language for?



The uniqueness of human language

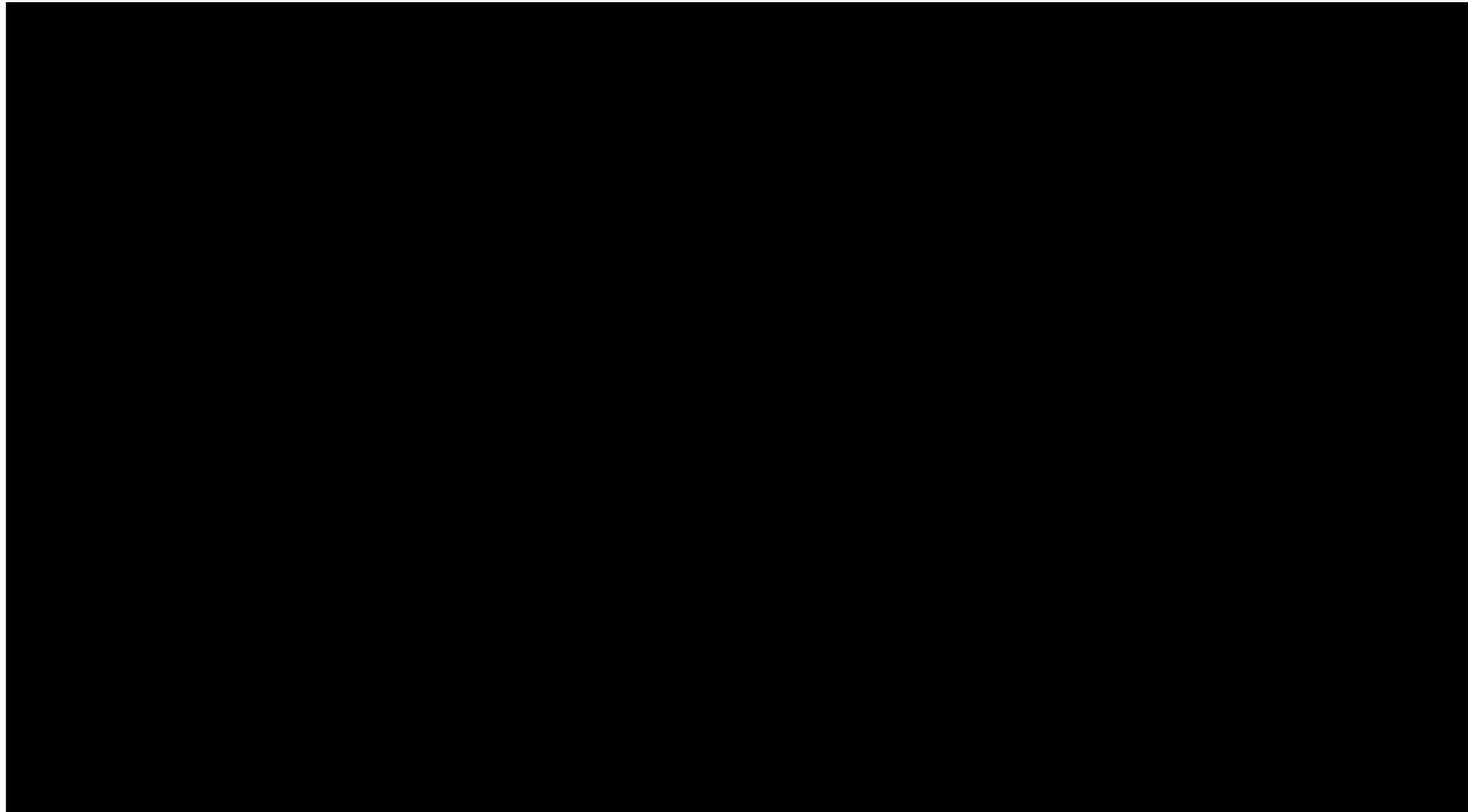
“The one great barrier between man and brute is *Language*. Man speaks, and no brute has ever uttered a word. Language is our Rubicon, and no brute will dare to cross it.”

- Max Muller, Lectures on the Science of Language (1861), p. 360



But, what about animal communication?

Nova Science Now: How Smart Are Dogs?



https://www.youtube.com/watch?v=mTTUiE1_Oe8

Animal communication systems

Vervet monkeys have 3 distinct alarm calls



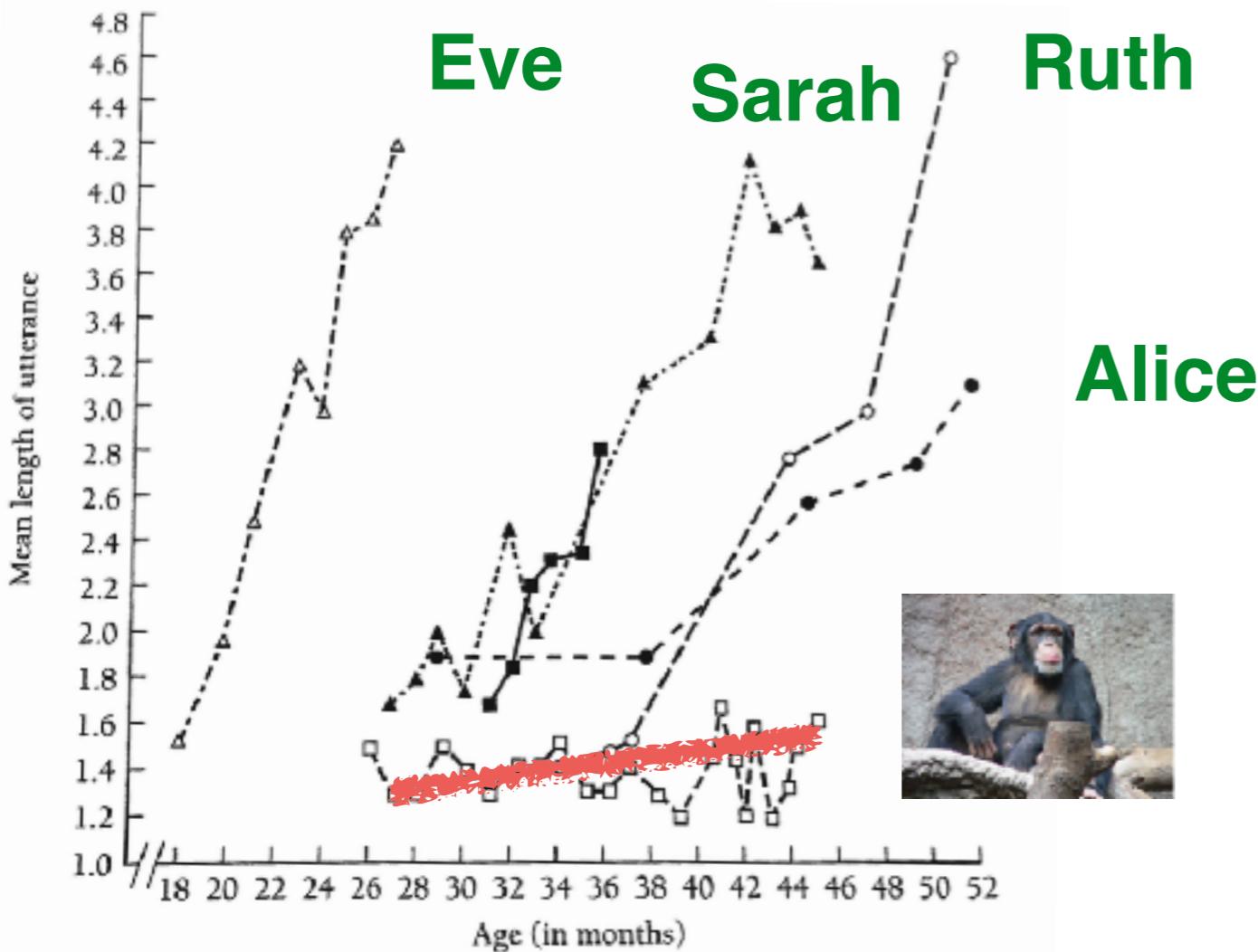
Songbirds require exposure to adult models to learn



So what makes language different?



Nim's language compared to human children



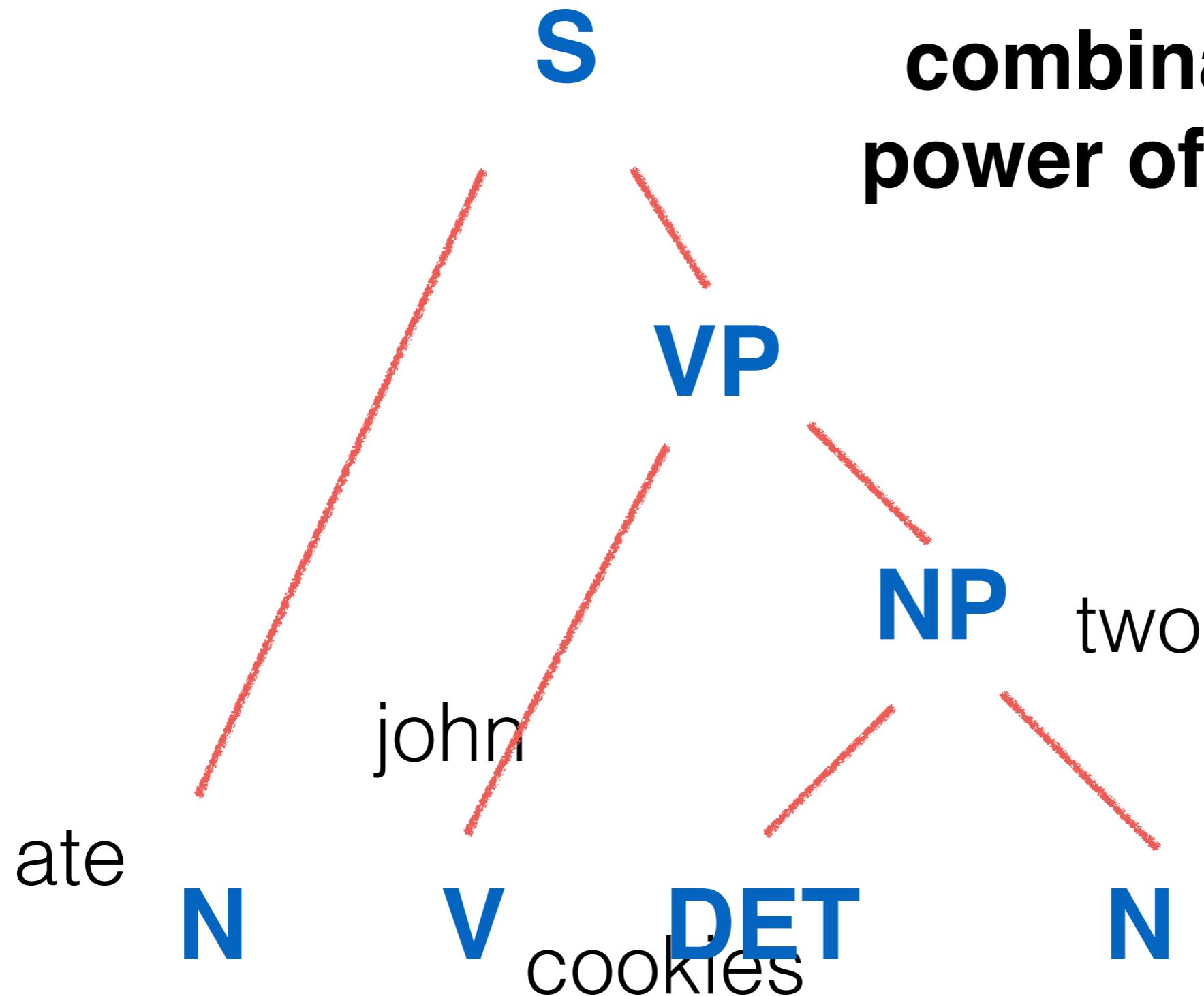
Examples of Nim's sign combinations

2-signs	3-signs
play me	play me Nim
more eat	eat me Nim
eat drink	me Nim eat

What makes language unique?

- **Reference** — flexible use of symbols to stand for things [arbitrariness of the mappings]
- **Syntax** — a productive system for combining symbols to express new meanings [generativity]
- **Intentionality** — produce utterances to modify mental state of another person [connect with others]

The combinatorial power of syntax



Syntax independent of meaning



“furiously sleep ideas dream colorless,”

Syntax independent of vocab

Buffalo **buffalo** **buffalo** **Buffalo** **buffalo.**

(bison from Buffalo bully other bison from Buffalo)



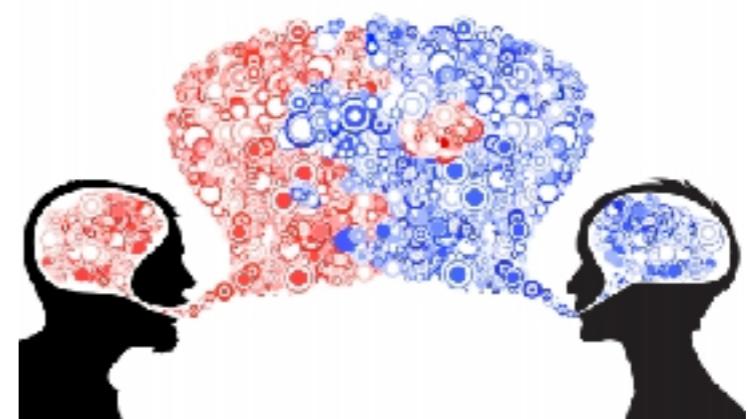
Buffalo **buffalo** **Buffalo** **buffalo** **buffalo**
buffalo **Buffalo** **buffalo.**

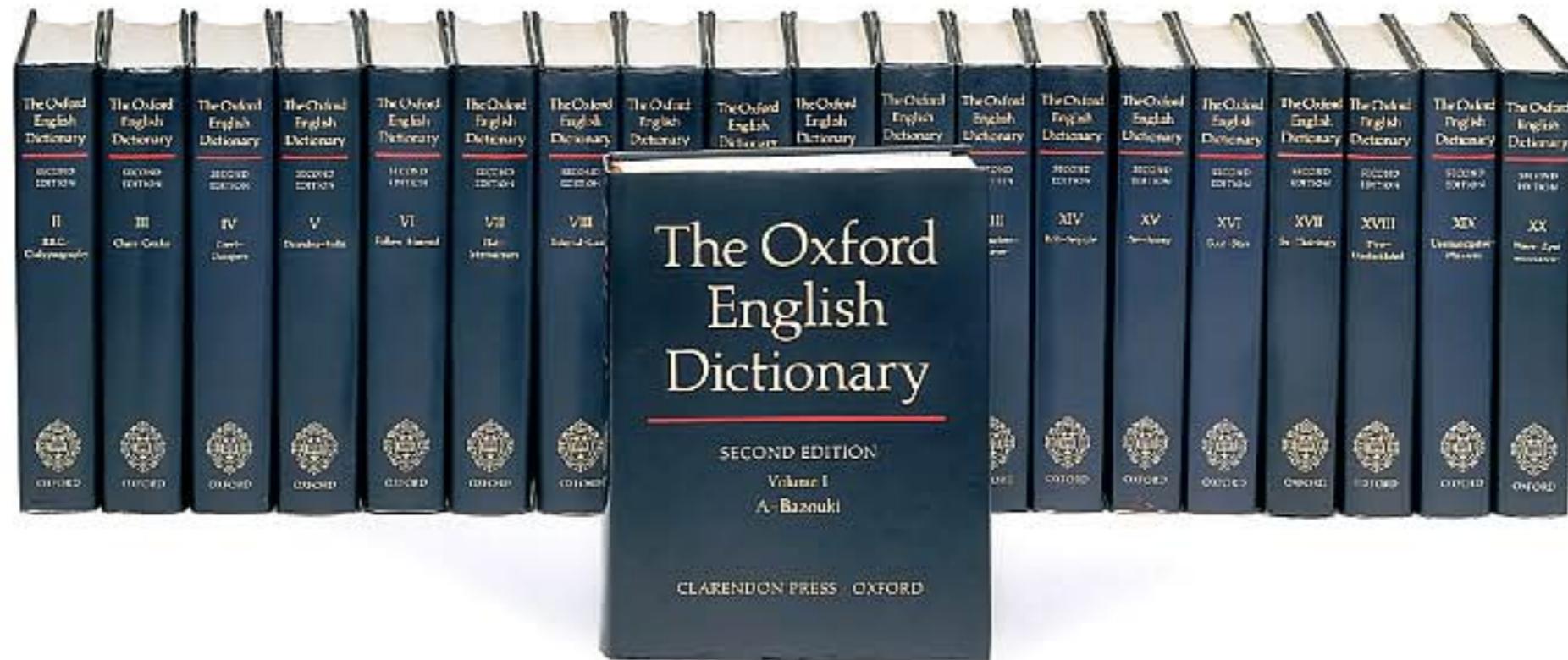
(Buffalo bison who other Buffalo bison bully, themselves bully other Buffalo bison)

Plan for today

- What's so special about language?
- How is language learned?
- What do we use language for?

A flexible communication system that allows us to express an infinite number of meanings





**trivia question:
how many words do you know?**

How do you measure the words a child knows?



Ask their parents!

PART I EARLY WORDS

A. FIRST SIGNS OF UNDERSTANDING

Before children begin to speak, they show signs of understanding language by responding to familiar words and phrases. Below are some common examples. Does your child do any of these?

	Yes	No
1. Respond when name is called (e.g., by turning and looking at source).	<input checked="" type="radio"/>	<input type="radio"/>
2. Respond to "no no" (by stopping what he/she is doing, at least for a moment).	<input checked="" type="radio"/>	<input type="radio"/>
3. React to "there's mommy/daddy" by looking around for them.	<input checked="" type="radio"/>	<input type="radio"/>

B. PHRASES (28)

In the list below, please mark the phrases that your child seems to understand.

understands	understands	understands
Are you hungry? <input type="radio"/>	Don't touch. <input type="radio"/>	Open your mouth. <input type="radio"/>
Are you tired/sleepy? <input type="radio"/>	Get up. <input type="radio"/>	Sit down. <input type="radio"/>
Be careful. <input type="radio"/>	Give it to mommy. <input type="radio"/>	Spit it out. <input type="radio"/>
Be quiet. <input type="radio"/>	Give me a hug. <input type="radio"/>	Stop it. <input type="radio"/>
Clap your hands. <input type="radio"/>	Give me a kiss. <input type="radio"/>	Time to go night night. <input type="radio"/>
Change diaper. <input type="radio"/>	Go get _____. <input type="radio"/>	Throw the ball. <input type="radio"/>
Come here/come on. <input type="radio"/>	Good girl/boy. <input type="radio"/>	This little piggy. <input type="radio"/>
Daddy's/mommy's home. <input checked="" type="radio"/>	Hold still. <input type="radio"/>	Want to go for a ride? <input type="radio"/>
Do you want more? <input checked="" type="radio"/>	Let's go bye bye. <input type="radio"/>	
Don't do that. <input checked="" type="radio"/>	Look/look here. <input type="radio"/>	



MacArthur-Bates CDI
Words and Sentences

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Wordbank demo

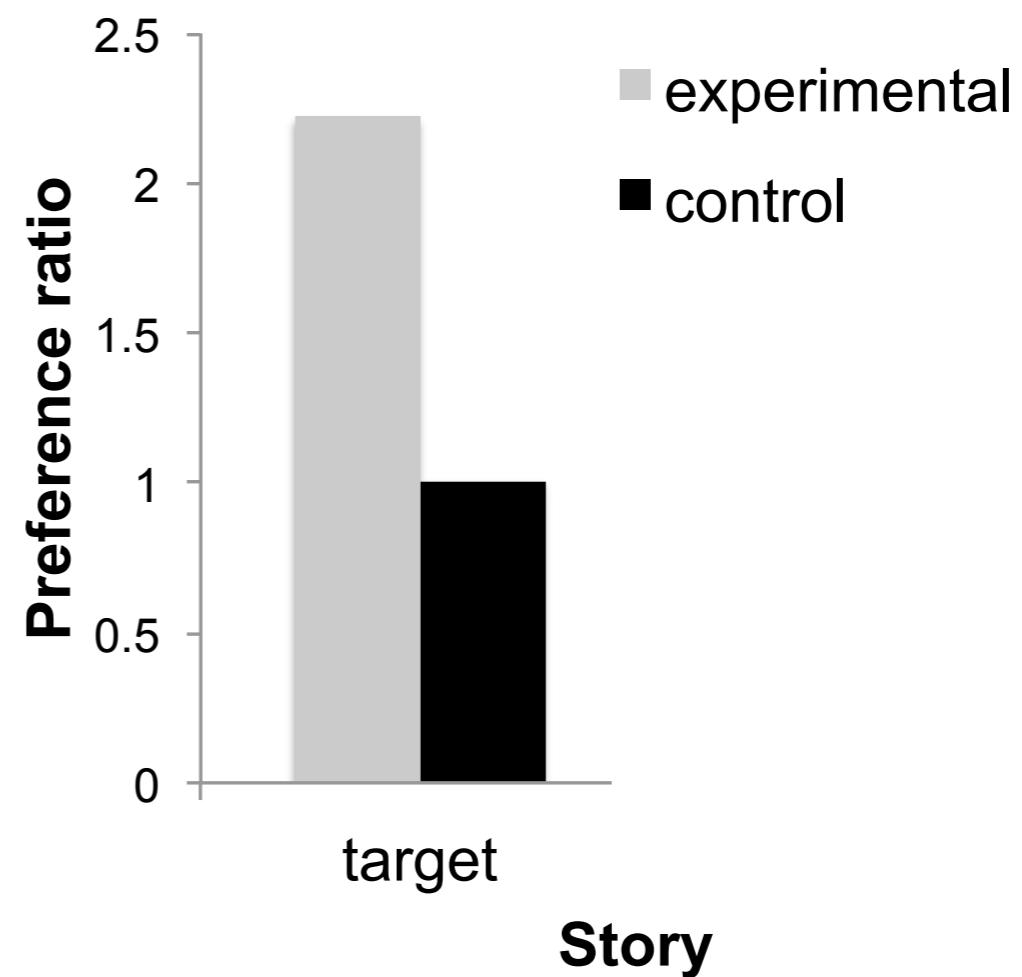


<http://wordbank.stanford.edu/>

Mechanism 1: Early vocal learning (pattern detection)

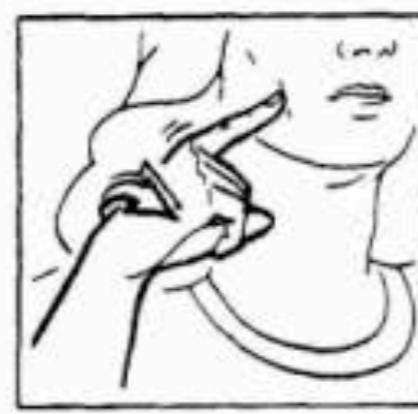
Mothers read “The Cat in the Hat” to their babies over the last 6 weeks of pregnancy, then newborns were tested on their preference for the target story

High Amplitude
Sucking Procedure



Mechanism 2: perceptual narrowing (selective perception for native speech sounds)

- Phoneme: Smallest unit of a language that can lead to a change in meaning
- Minimal pairs:
 - Spoken language: “pin” vs. “bin”
 - American Sign Language



CANDY



APPLE

Universal vs. language-specific phonetic contrasts

- /b/ vs. /p/ is close to universal
- But many sound contrasts are language-specific
(Any Hindi speakers here?)



Beat



Branch

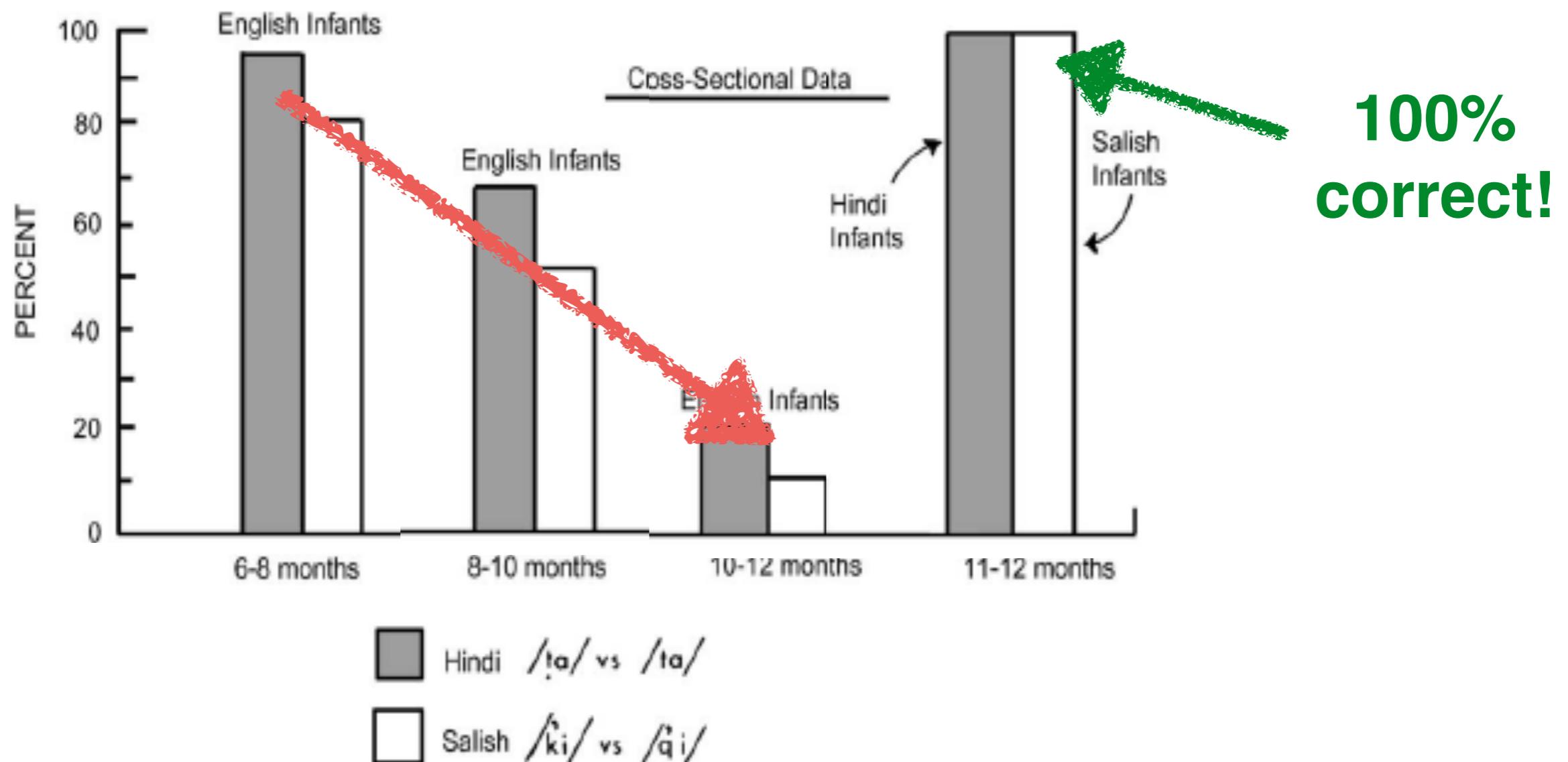


Lentil



Shield

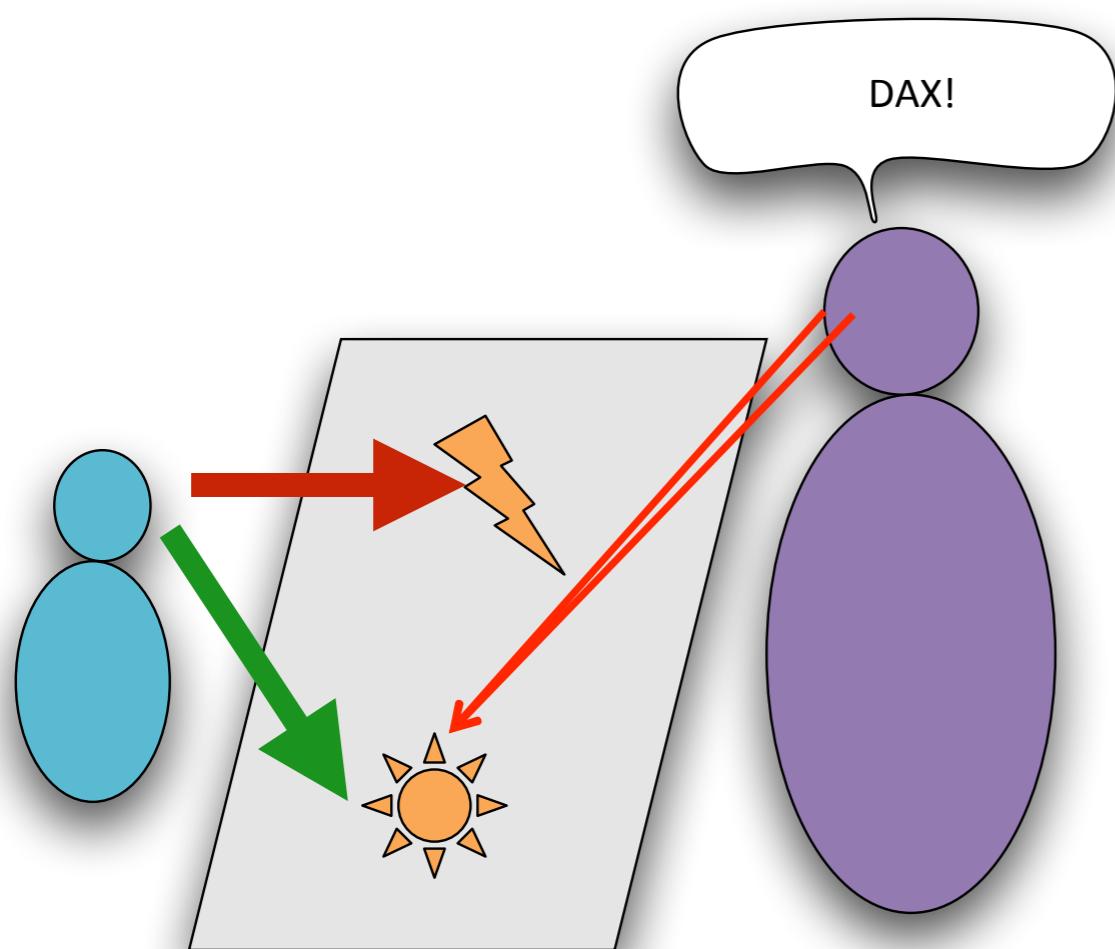
Changes in speech perception over the first year



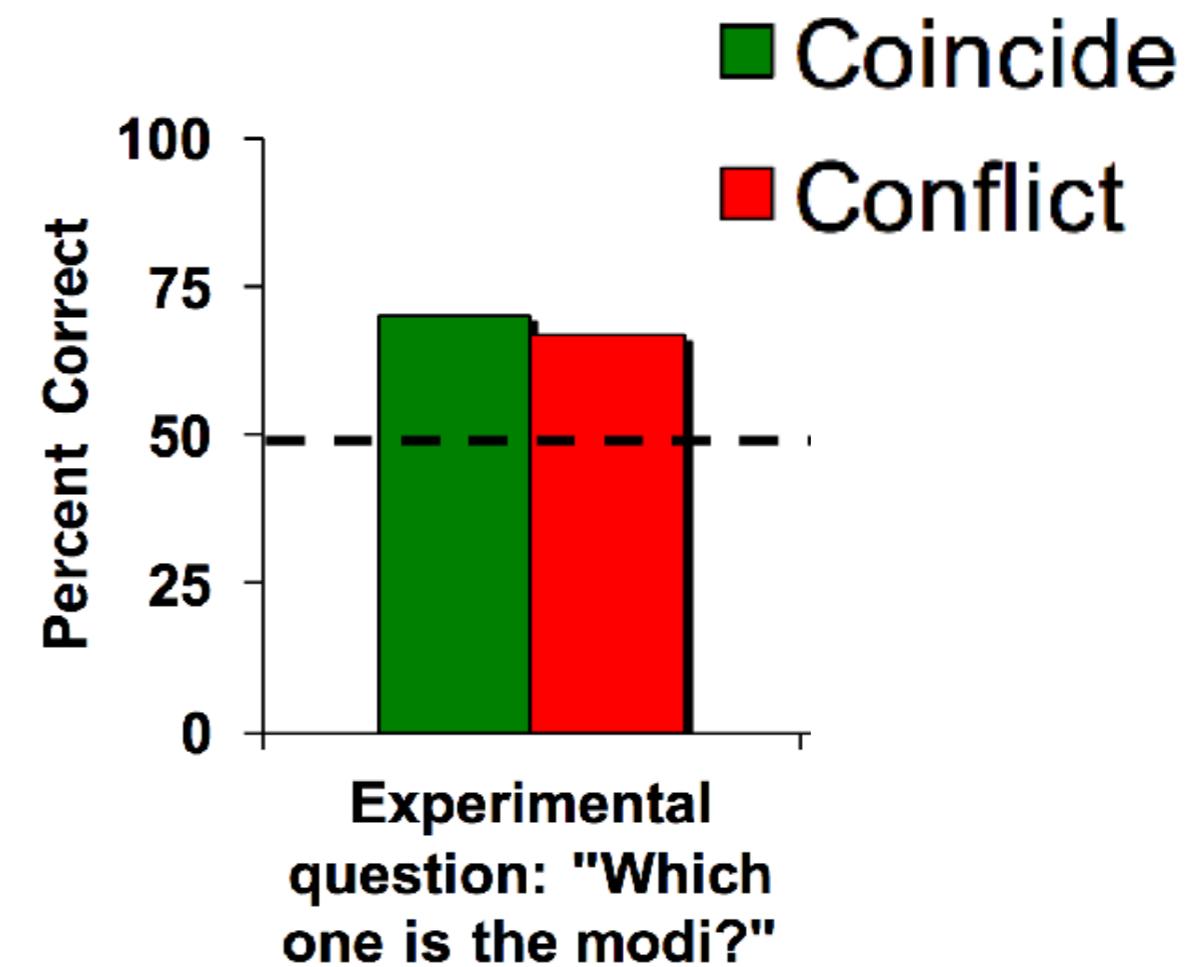
http://www.learner.org/vod/vod_window.html?pid=1630

Werker & Tees (1984)

Mechanism 3: social reasoning (inferences about intentions)

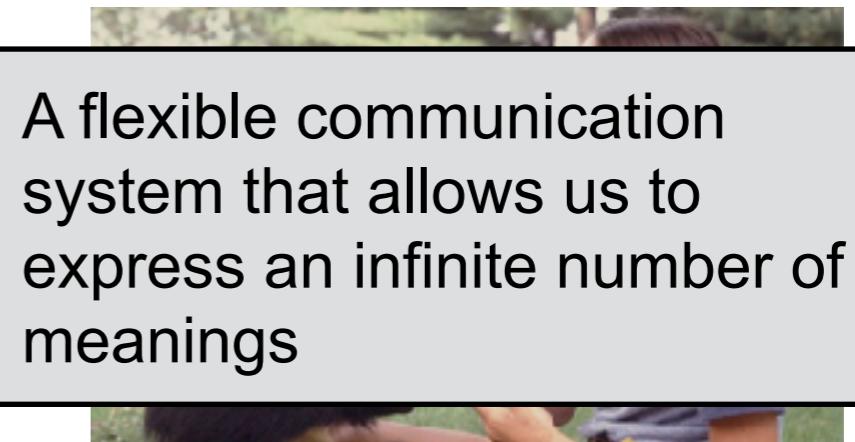


16-month-olds

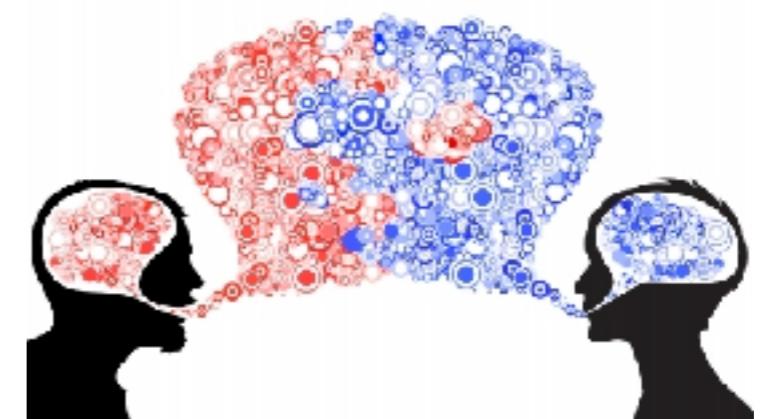


Plan for today

- What's so special about language?
- How does language learning get started?
- What do we use language for?



Language learning builds on sophisticated learning mechanisms: e.g., pattern detection, perceptual narrowing, and social reasoning



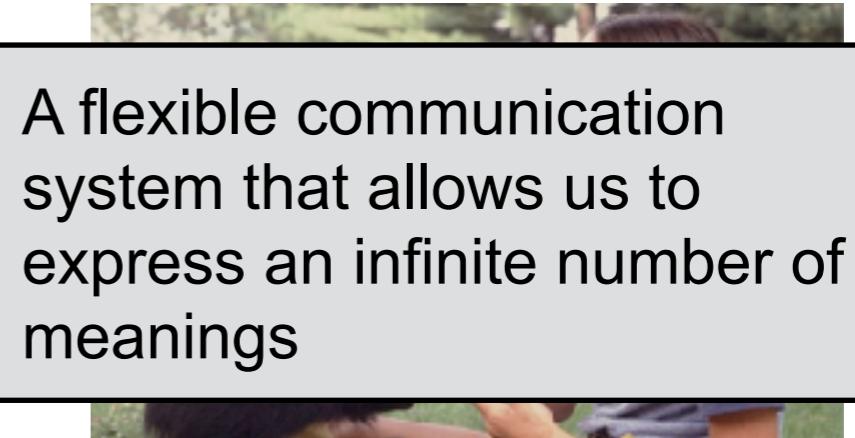
Stretch break

[3 minutes]

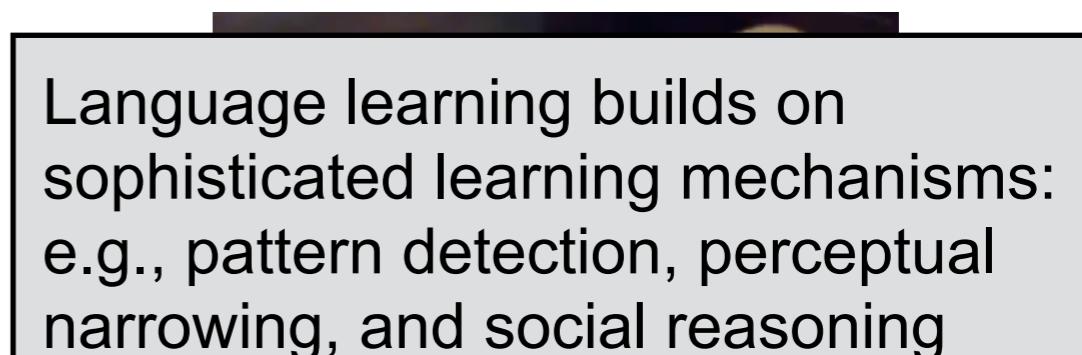
Song: Word up! by Cameo

Plan for today

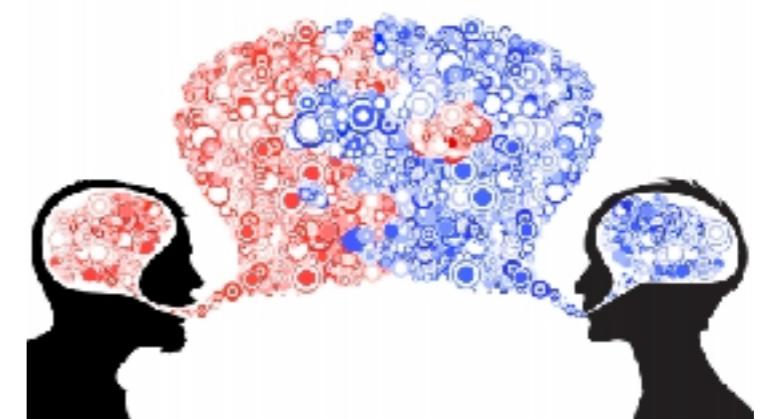
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A flexible communication system that allows us to express an infinite number of meanings



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Nicaraguan Sign Language (NSL)

(a case study in language creation)

- A sign language spontaneously developed by deaf children in a number of schools in western Nicaragua in the 1970s and 1980s.





How did language get here?

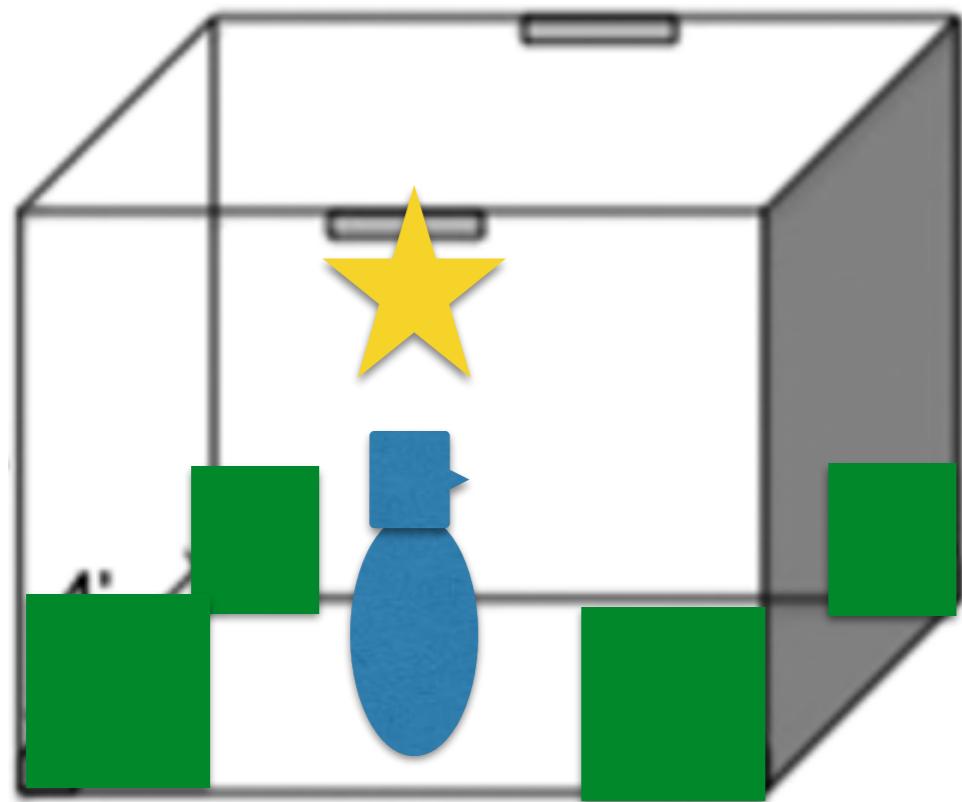
NSL: language emerges to connect with others

The birth of a language

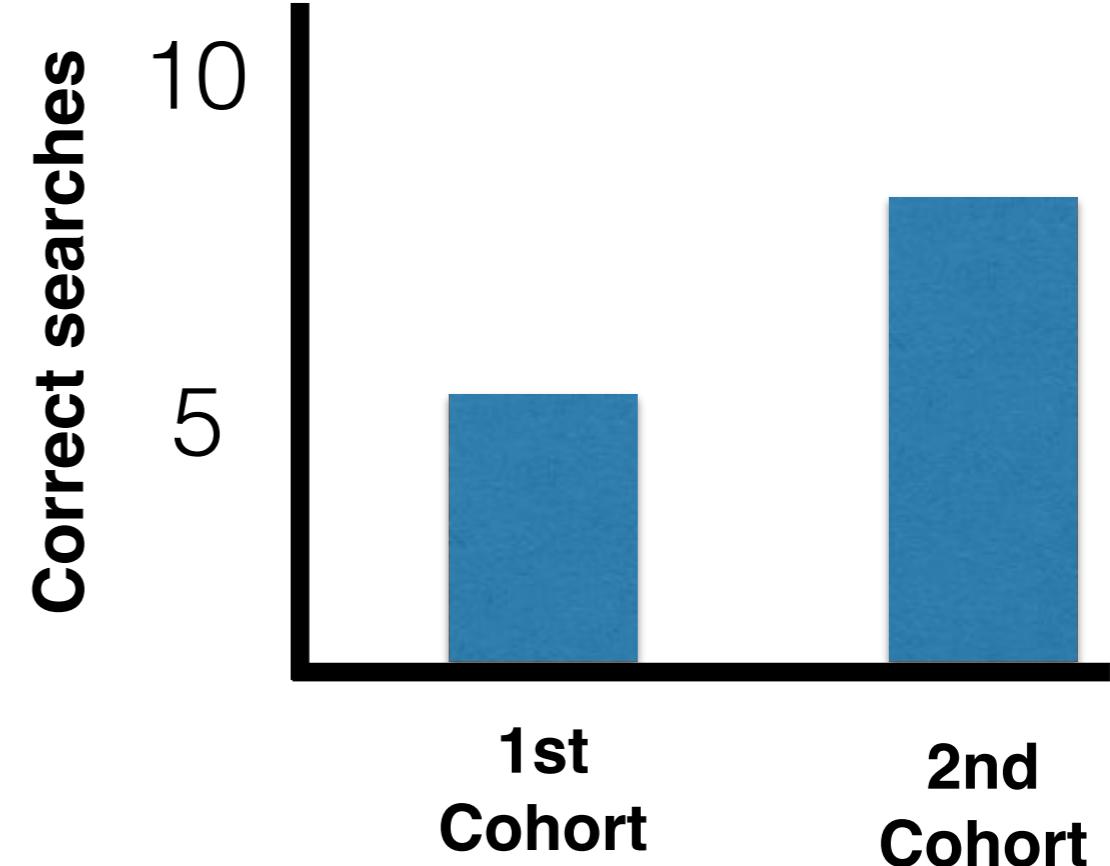


- language-like systems develop in the absence of input
- but, complex language emerges as soon as there is a social group to use it

Language as a tool for thinking



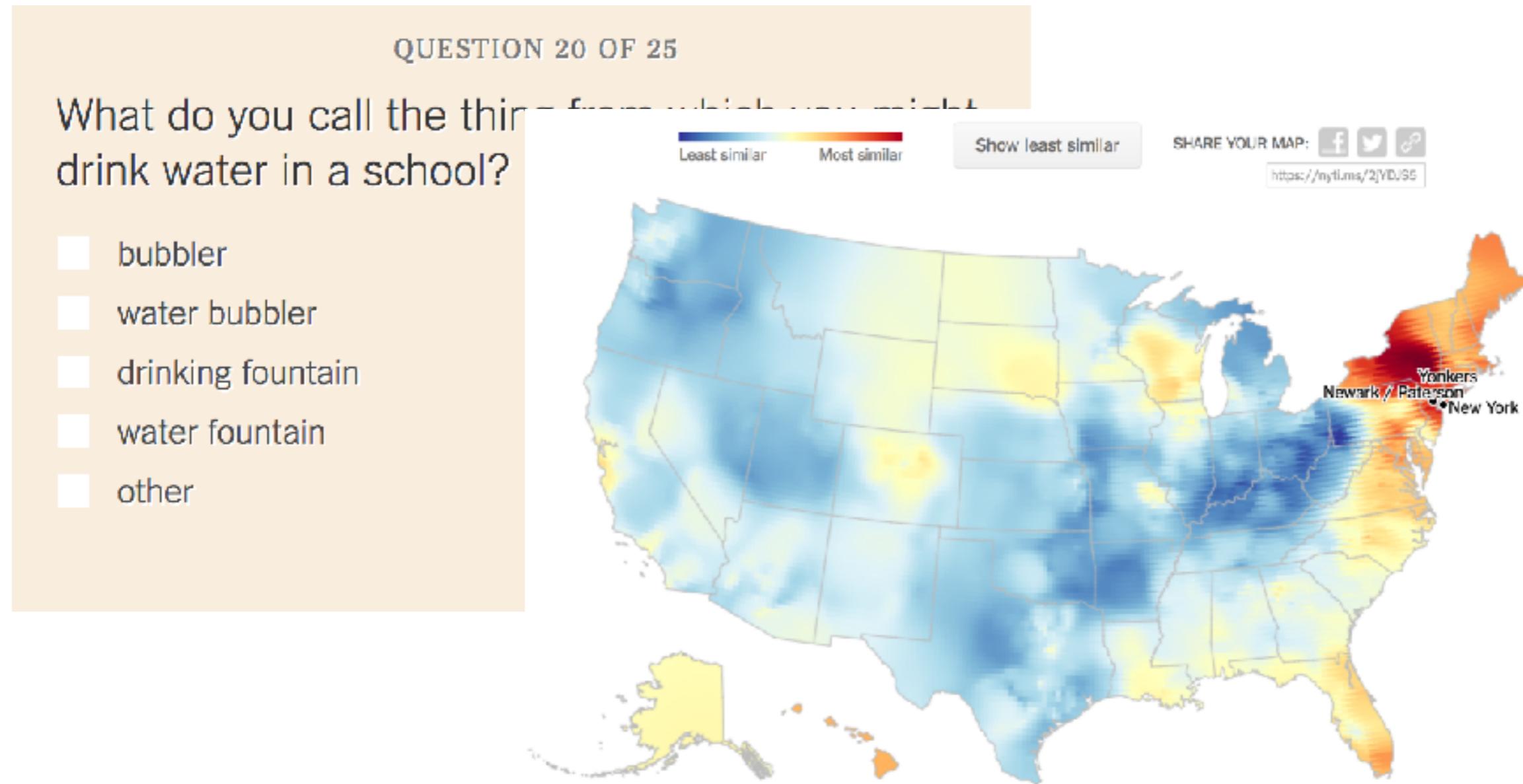
Find the hidden toy!



More use of “left-right” language → better spatial memory

How Y'all, Youse and You Guys Talk

What does the way you speak say about where you're from?



Takeaway points

- Language is a flexible communication system that allows us to express an infinite number of meanings



- Language learning is remarkably fast and builds on a set of powerful learning mechanisms



- Language provides a way to connect with other people, a tool for thinking, and way to identify relevant social groups

