LSci 51/CogS 56L: Acquisition of Language

Lecture 4

Biological bases of language acquisition I

Announcements

Review questions for biological bases of languages available

Be working on HW2 (due 10/20/25) – remember that collaboration is highly encouraged

Language as a human universal

Language as a human instinct

Fish pretty much always swim.

Birds pretty much always fly.

Humans pretty much always….talk.

More than culture

Language is more than simply a cultural habit that one generation copies from previous ones.

If there is no language model to learn from, humans will spontaneously *create* language.

pidgins & creoles

homesign systems

the case of Nicaraguan Sign Language

Pidgins

Pidgin: language created by adults from different language backgrounds who need to communicate with each other

Example:

Hawaiian Pidgin English: created by immigrant workers from Japan, Korea, and the Phillippines who worked for English speakers

Ifu laik meiki, mo beta make time, mani no kaen hapai.

If like make, more better die time, money no can carry.

"If you want to build (a temple), you should do it before you die - you can't take it with you!"

(More than 100 pidgin languages currently in use)

Creoles

Pidgins tend to be structurally simple (often just nouns and verbs). However, sometimes children are born into a community where a pidgin is the only language. If they acquire that pidgin as their native language, they create a *creole*.

Creoles

Creoles are grammatically more complex, containing structures that are not in the pidgin language the children had as a model such as consistent word order, tense marking, and multi-clause sentences. Creoles often share the same features.

http://en.wikipedia.org/wiki/Syntactic_similarities_of_creoles#Syntactic_similarities

Put simply: children add something that wasn't already there!

PIDGIN	HAWAIIAN CREOLE ENGLISH
Building—high place—wall part—time—now-time—and then—now temperature every time give you.	Get one [There is an] electric sign high up on da wall of da building show you what time an' temperature get [it is] right now.
Now days, ah, house, ah, inside, washi clothes machine get, no? Before time, ah, no more, see? And then pipe no more, water pipe no more.	Those days bin get [there were] no more washing machine, no more pipe water like get [there is] inside house nowadays, ah?
No, the men, ah—pau [finished] work—they go, make garden. Plant this, ah, cabbage, like that. Plant potato, like that. And then—all that one—all right, sit down. Make lilly bit story.	When work pau [is finished] da guys they stay go make [are going to make] garden for plant potato an' cabbage an' after little while they go sit down talk story ["shoot the breeze"].
Good, this one. Kaukau [food] any kind this one. Pilipin island no good. No more money.	Hawaii more better than Philippines, over here get [there is] plenty kaukau [food], over there no can, bra [brother], you no more money for buy kaukau [food], 'a'swhy [that's why].

PIDGIN AND CREOLE versions of identical sentences illustrate the structural differences between pidgin and Creole in Hawaii. Pidgin, which is spoken only by immigrants, varies widely from speaker to speaker. Although one can probably say anything in pidgin that can be said in English or Creole, the structure of pidgin is extremely rudimentary. Pidgin sentences are little more than strings of nouns, verbs and adjectives, often arranged to place old, shared information first and new information later in the sentence. Creole arose in Hawaii only among the children of immigrants, and it is much richer in grammatical structure than pidgin. Moreover, the rules of Creole grammar are uniform from speaker to speaker, and they resemble the structural rules of other creoles. English versions of words and phrases are given in brackets.

Derek Bickerton (*Scientific American*, July 1983)

Pidgins & Creoles

Pidgin and Creoles: https://www.youtube.com/watch?v=Fjd5rj9Ata8

+discussion: http://www.thelingspace.com/episode-37

Up through ~8:09

[Extra] Pidgins & Creoles

http://www.youtube.com/watch?v=O7X9AAeDCr4

A detailed look at the development of a pidgin in Hawaii

(start around 0:57)

http://www.youtube.com/watch?v=_VFXoqfoi6I

A detailed look at the development of a pidgin in Suriname

[Extra] Pidgins & Creoles

http://www.sciencedaily.com/releases/2013/11/131104092730.htm

http://apics-online.info

Atlas of Pidgin & Creole Language Structures

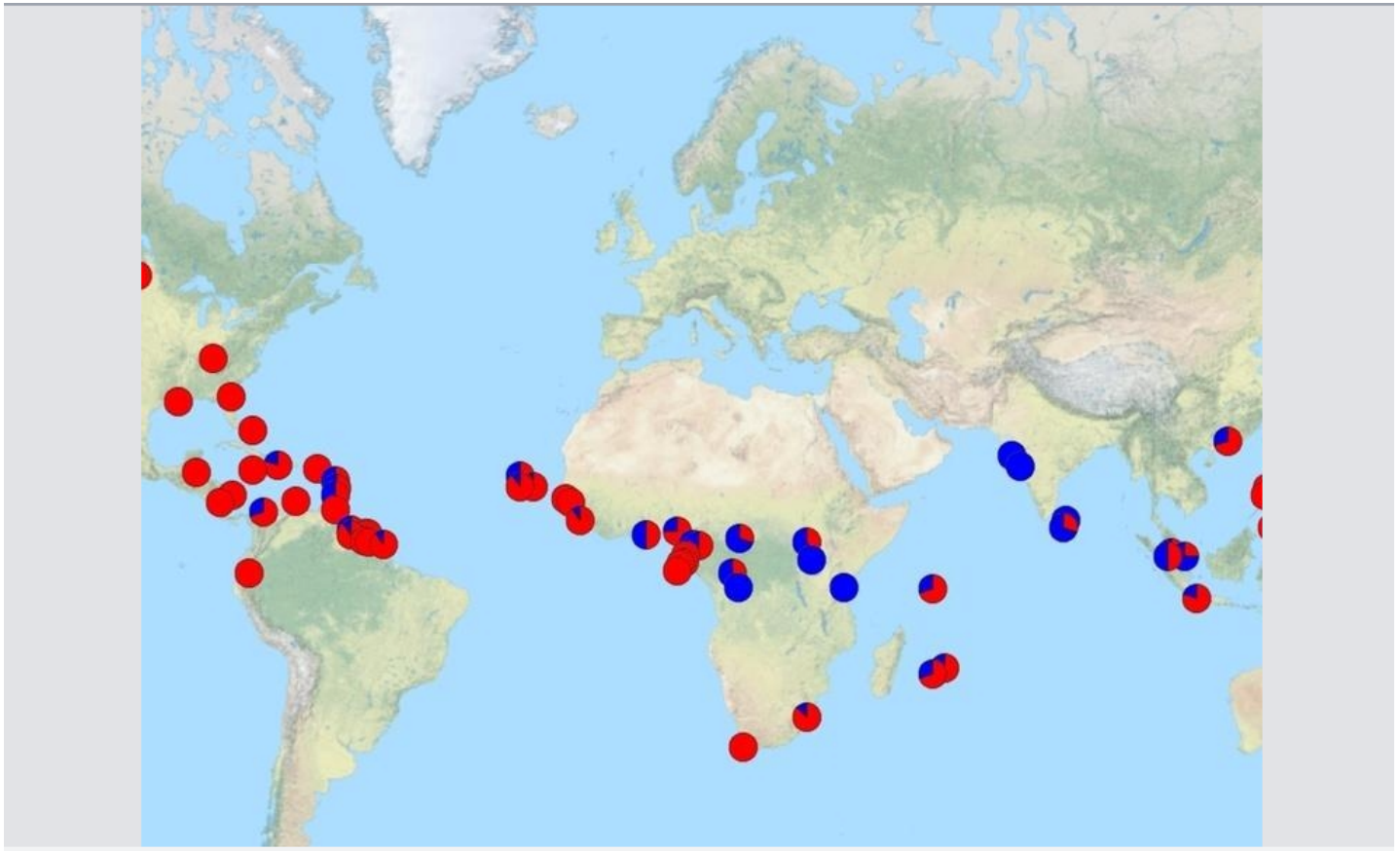
> "The *Atlas of Pidgin and Creole Language Structures (APiCS)* provides expert-based information on 130 grammatical and lexical features of 76 pidgin and creole languages from around the world."

Atlas of Pidgin & Creole Language Structures

[Extra]

In-class demo

http://apics-online.info



Position of question-words in 76 mixed languages around the world (red: fronted, e.g. What do you see?, blue: not fronted, e.g. You see what?)

What creoles tell us

(1) The existence of language in a community does *not* depend on someone importing a language for a community to learn. (Vocabulary may be borrowed, structural knowledge seems not to be.)

(2) When children acquire language, they sometimes add *something extra,* which is sometimes thought to be universal to human languages and part of children's innate endowment for language (e.g., Universal Grammar).

(3) Creoles *tend to share the same features* - which suggests human minds may tend to construct languages the same way.

Homesign systems

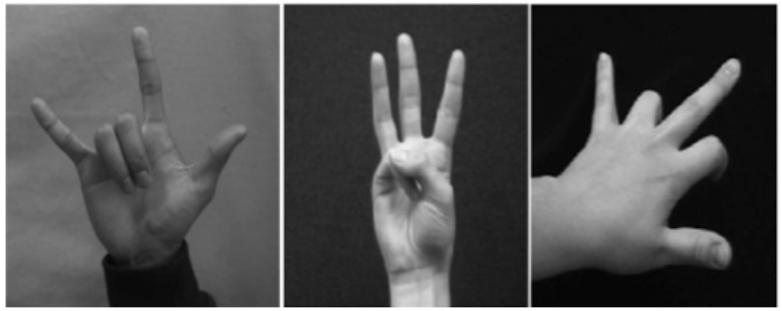
Homesign: A basic communication system created within a family that involves at least one linguistically, but not socially isolated, deaf individual. These deaf individuals use gestures to communicate with the people around them, devising a method for communicating through gestures that becomes systematic, and for the deaf individual, it is their primary means of communication.

(Brentari & Coppola 2012)

Homesign systems

Low complexity finger groups

Medium complexity finger groups



High complexity finger groups

A language bias shared by adult signers and homesigners:
They use higher complexity finger groups in handshapes representing properties of the object (ex: *tasty*) and lower complexity finger groups in handshapes representing how objects are handled (ex: *eat*) (Brentari & Coppola 2012)

Homesign systems

A language ability shared by adult signers and homesigners:
They use combinations of linguistic elements like nouns (“bird”), demonstratives (“this”), and possessives (“my”) in a productive manner (Goldin-Meadow & Yang 2016). This means they can and do create novel expressions.

Homesign systems

Note: The gestures from caretakers of homesigners do not form the basis of child home sign systems (Goldin Meadow & Mylander 1983, Flaherty, Hunsicker, & Goldin-Meadow 2021). Homesigners seem to innovate on their own.

(1) Homesigners distinguish nouns (*kitty*) and verbs (*sleeping*), even if the signs of their caretakers do not (Goldin Meadow & Mylander 1990).

(2) Homesigners do not use the word order of their caretakers: Homesigning children in Taiwan and the US use an order like "jar twist you" instead of "you twist (the) jar". (Goldin Meadow & Mylander 1998, Goldin Meadow & Zheng 2002)

Homesign systems

Note: The gestures from caretakers of homesigners do not form the basis of child home sign systems (Goldin Meadow & Mylander 1983, Flaherty, Hunsicker, & Goldin-Meadow 2021). Homesigners seem to innovate on their own.

(3) Homesigners distinguish between nouns (*bird*) and demonstratives (*that bird*), even when the signs of their caretakers do not (Hunsicker & Goldin Meadow 2012, Flaherty, Hunsicker, & Goldin-Meadow 2021)

Homesign systems

Note: The gestures from caretakers of homesigners do not form the basis of child home sign systems (Goldin Meadow & Mylander 1983, Flaherty, Hunsicker, & Goldin-Meadow 2021). Homesigners seem to innovate on their own.

(4) Homesigners produce more sentences with multiple clauses (like *soldier marches and soldier beats drum*) than their hearing family members do (Flaherty, Hunsicker, & Goldin-Meadow 2021)

What homesign tells us

1. Homesigners are not merely copying the gestures of the hearing caretakers around them. Instead, they are creating their own systematic uses of gestures.

2. There seem to be some biases in the way these systematic gestural systems develop, suggesting that the human mind naturally imposes some order on the linguistic system it uses. These biases reflect the way human languages encode conceptual information in the linguistic signal (Rissman, Horton, & Goldin-Meadow 2023)

https://www.sciencedaily.com/releases/2023/03/230303105313.htm

Creating a language: Nicaraguan Sign Language (NSL)

In 1978, the Nicaraguan government opened the nation's first public schools for the deaf. The deaf children who entered had no common sign language, but did have their own individual homesign systems.

Once the children were in contact with each other, a new common sign language emerged: Nicaraguan Sign Language.

http://www.pbs.org/wgbh/evolution/library/07/2/l_072_04.html

Creating a language: Nicaraguan Sign Language (NSL)

Pidgin and Creoles: https://www.youtube.com/watch?v=Fjd5rj9Ata8

+discussion: http://www.thelingspace.com/episode-37

~8:10 to end = NSL + summary of pidgins and creoles

Creating a language: Nicaraguan Sign Language (NSL)

Ann Senghas (Senghas & Coppola 2001) studied the language of children who arrived to the school at a young age vs. children who arrived when they were older (after age 10).

Language of younger children: structurally complex (more like creole)

Language of older children: structurally simpler (more like pidgin)

Creating a language: Nicaraguan Sign Language (NSL)

Use of spatial modification: if two signs are made in the same spatial location, it indicates that one sign modifies the other (ex: “tall” in same location as “king” = “tall king”)

Language of younger children: more spatial modification
(the younger they were, the more they used it)

Language of older children:
less spatial modification

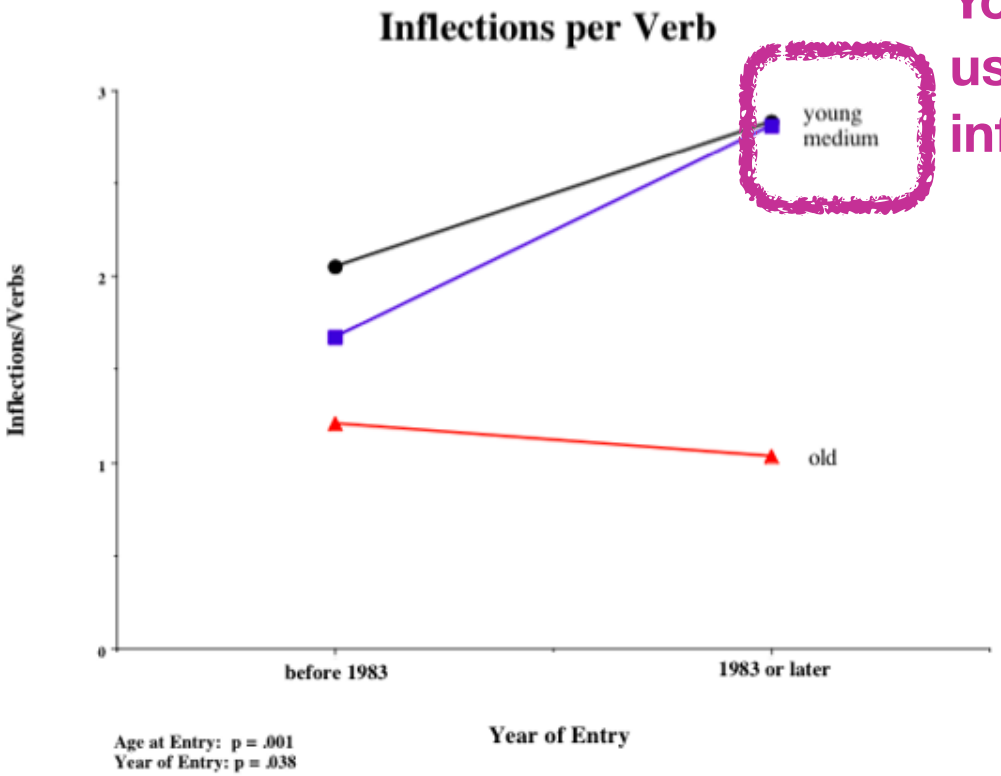


Figure 2. The number of inflections per verb is greater overall for signers who entered the community in 1983 or later, and for signers who were exposed to the language at a *young* or *medium* age. The *young* and *medium* Age at Entry signers are particularly affected by a later Year of Entry.

Younger children use more inflections.

Inflection:

He likes me.

(as opposed to "he like me")

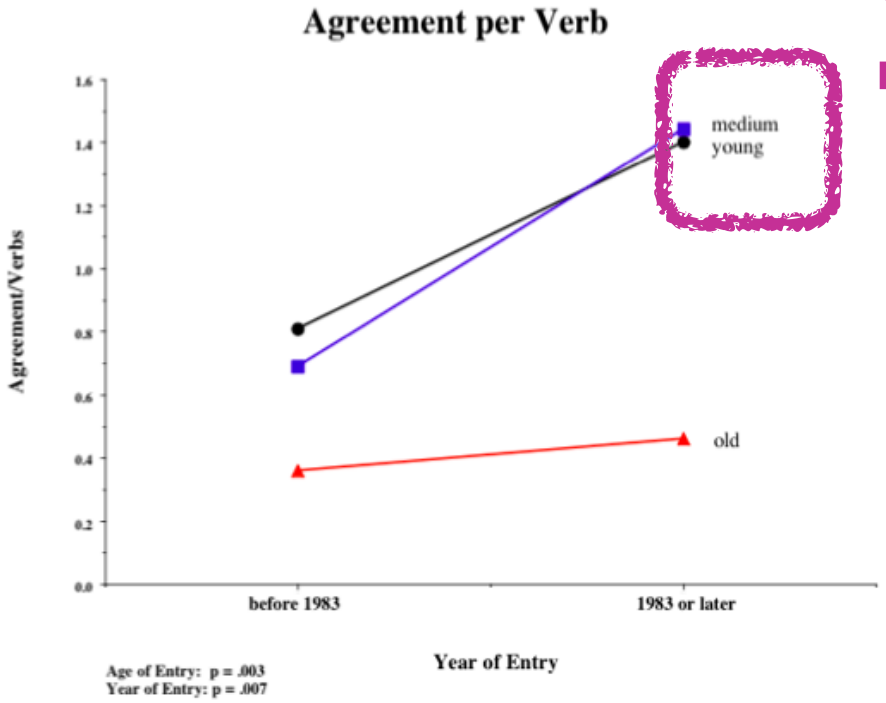


Figure 3. The number of inflections showing agreement per verb is greater overall for signers who entered the community in 1983 or later, and for signers who were exposed to the language at a *young* or *medium* age. The *young* and *medium* Age at Entry signers are particularly affected by a later Year of Entry.

Younger children use more agreement markers

Agreement:

He is smiling.

(as opposed to "he are smiling")

Creating a language: Nicaraguan Sign Language (NSL)

Implication: (young) children are the driving force of language creation here. They are the innovators and the ones who retain the more complex structures that result from these innovations.

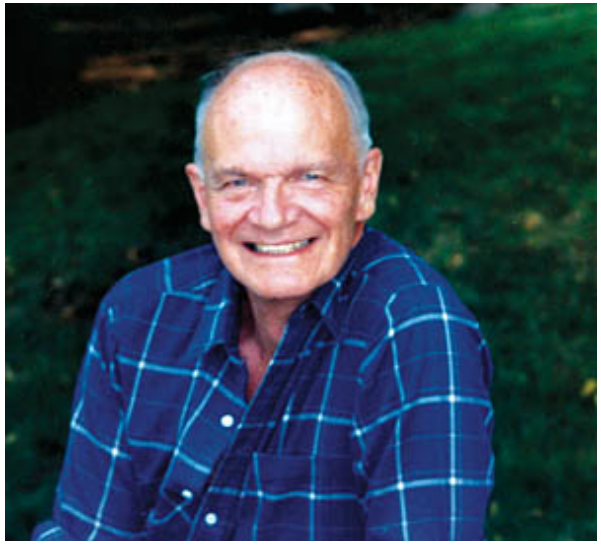
Language Bioprogram Hypothesis

Proposed by Derek Bickerton: the capacity for language creation seen in creolization, homesign, and the development of NSL is the same capacity that underlies language acquisition.

Humans have an innate core knowledge about the structural properties human languages have.

(innate domain-specific knowledge)

In accord with the generativist (linguistic nativist) approach to language acquisition.



Language Bioprogram Hypothesis

Proposed by Derek Bickerton: the capacity for language creation seen in creolization, homesign, and the development of NSL is the same capacity that underlies language acquisition.

But this ability may not be language-specific! It could be chunking, statistical learning, or pattern analysis abilities, among other things. (innate domain-general knowledge or abilities)

non-linguistic nativist response

Elizabeth Bates

Support for differences between children & adult generalizations (sometimes depending on input consistency or quantity): Hudson Kam & Newport (2005), Hudson Kam & Newport (2009), Hudson Kam (2017), Hendricks, Miller, & Jackson (2018)

Recap

Evidence from pidgins & creoles, homesign, and Nicaraguan Sign Language suggest that language is something that human children can create even in the absence of language input.

The Language Bioprogram Hypothesis suggests that this ability is due to children's innate domain-specific knowledge about language.

An alternative view is that there may be non-linguistic innate knowledge or abilities that lead to the creation of language structure in the absence of input.

Questions?

You should be able to answer up through question 9 of the bio bases review sheet, and up through question 6 on HW2.