



Language acquisition, perception and production

Lecture 2 – Language change

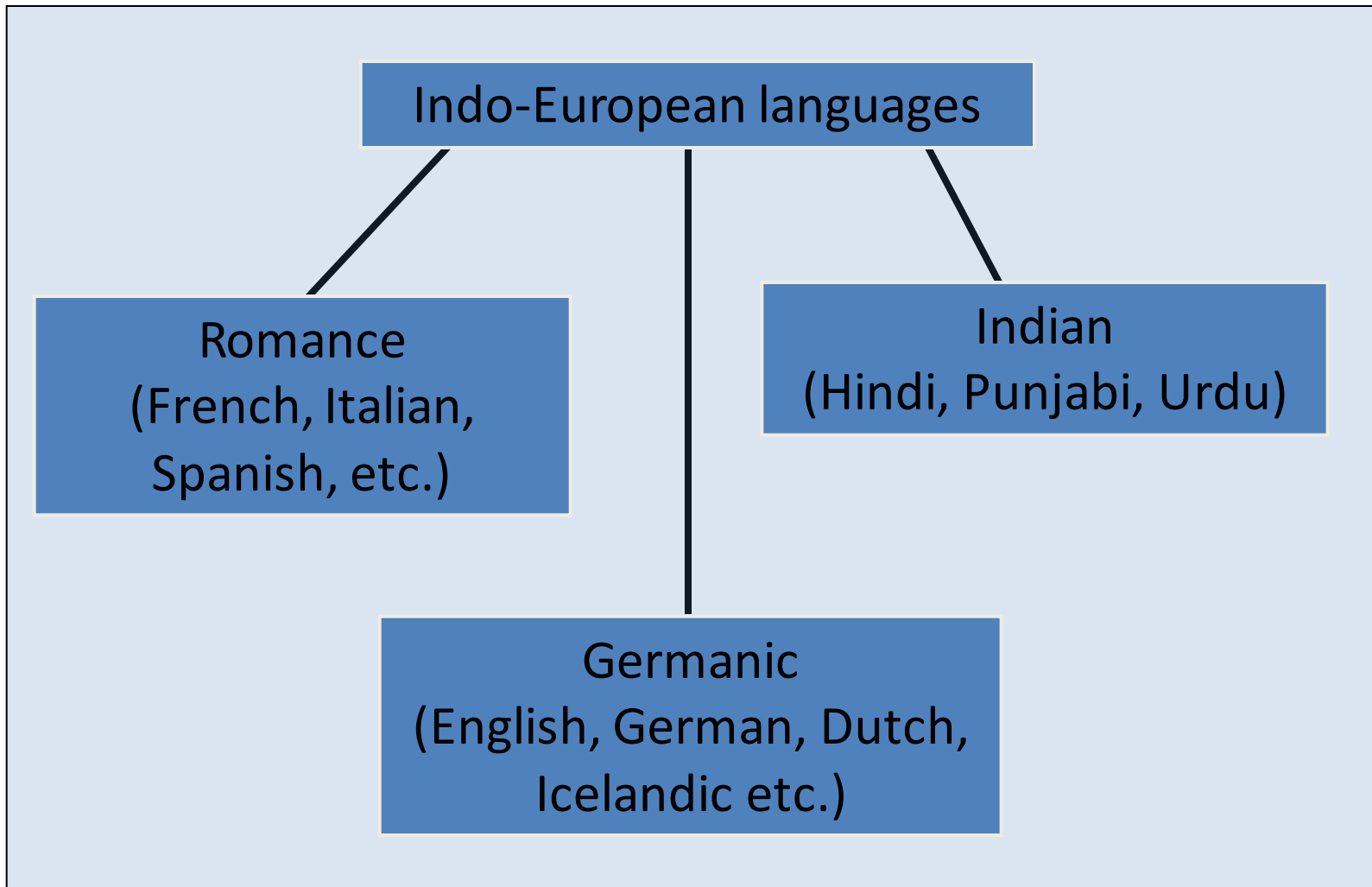
Plan for today

- **Language change**
 - Language tree
 - Historical changes
 - Current changes
 - Dialects
 - Language evolution

Language change

- Languages change a lot over time
- 5000-6000 languages in the world
- How are these languages related?
 - Mother (English)
 - Mutter (German)
 - Moeder (Dutch)
 - Mere (French)
 - Madre (Spanish)

Language change



Language change



Language change

- Tocharian



Language change

- **What is the original language?**
- **Much speculation:**
 - Greeks and Romans thought it was...Greek or Latin, the rest (Barbarians) “merely stuttered, not speaking language at all”
 - 7th century, Irish grammarians thought it was Gaelic
 - 14th century Mercurius van Helmont “Alphabeti veri naturalis Hebraici brevissima delineatio” argued that Hebrew was the most natural language in the world, deaf-mute people could understand immediately.
 - 1569 Goropius Becanus said it was Dutch (particularly the dialect of Antwerp!)

Language change

- **1866 The linguistic society of Paris banned all research on this topic**
- **Unanswerable**

Language change

- Language change over short time spans
 - "fax machine"
 - "internet"
 - "google"

Dialects



- Besides languages, there are dialects

Dialects

- **What is the difference between a language and a dialect?**
- **“A language is a dialect with an army and a navy” – Max Weinreich.**
- **It’s a political issue – everybody speaks a dialect.**

Language boundaries

- How do you decide language boundaries?
 - Mutual intelligibility.



Language boundaries

- **Theoretical problem with this:**
 - People speak two different languages, but they can understand each other perfectly well
 - People speak the same language, but they cannot understand each other

It is mostly political...

Animal communication

- **Animals have language?**
 - Focus on what we mean by "language"
 - It informs us about whether language is innate
 - It tells us which other cognitive processes are necessary for language to develop
 - Maybe one day we can "talk" to animals!

Animal communication

- Many animals communicate with each other
 - Do we call that language?

Animal communication

- **Hockett (1960) Design Features of language**
 - Rapid fading (once spoken, signal fades)
 - Interchangeability (users can be both speakers and hearers)
 - Semanticity (signals mean something)
 - Arbitrariness (symbols are abstract)
 - Displacement (system can be used to refer to absent things)
 - Openness (ability to invent new messages)
 - Duality of patterning (combine elements into meaning)
 - etc

SEMANTICS

Bird song

- **Black capped Chickadee**
 - video



Bird song

- **Characteristics of Chickadee Birdsong:**

- Individuals always produce four notes: A, B, C ,D
- Most common are AD, and BCD
- There is repetition: AADD, BCCDD
- Some patterns do not occur, D always at end.

Bird song

- **Properties of bird "language":**
 1. There are units of sounds (notes)
 2. There are constraints on their order and appearance
- **Is that the same as human language?**

Bird song

- Just like human language!



El coche verde

💣 El verde coche 💣

Bird song

- **Complexity**

- Four notes in birdsong
- 50,000 words in human language

- **Semantics/Syntax**

- Words have meaning, and different orders of words can mean different things

Bird song

- Syntax



"dog bites man"



"man bites dog"

Bird song

- **Also true in birdsong?**
 - AADD means something else than AAD?
- **How would we know?**

Bird song

- Is birdsong language?
- Probably not



Monkeys and Primates

- Look at (non-human) primates
- Live in social groups



Monkeys

- **Capuchin Monkeys**

Video here

Monkeys

- **Capuchin Monkeys**
- **Communication is socially based**
 - Calls for contact seeking – avoiding, aggressive – submissive
- **Compound calls – combine other calls**
 - Combine, two, three or four sounds
 - Indicate compound situations [grooming+aggression]

Monkeys

- **Do not make long series of calls – no real syntax**
- **Have a small vocabulary**
- **Displacement?**

Primates

- Our closest (phylogenetic) relative:



Pan paniscus (bonobo)

Primates

- **Can chimps learn language?**
 - No vocal system
- **Use signs or computer**
- **Can chimps learn that words stand for things?**
 - Arbitrariness, displacement

Kanzi

- **Kanzi learned vocabulary of > 400 words**

Kanzi video

Kanzi

- **Kanzi can learn "reference"**
- **Started to produce "speech" spontaneously**
- **Resembled child with "me-me" attitude**

Kanzi

- **What about productivity?**
 - Is Kanzi creative with language?

- **Kanzi understands spoken English**

Kanzi

- **Kanzi understands spoken English**

Kanzi video

Kanzi

- **This was controversial for two reasons:**
 - 1. No other study had achieved this. Perhaps because Kanzi was born in the lab and learned before a “critical period”**
 - 2. No other study had shown that apes can use sign language in syntax-like way**

Kanzi

- Understood sentences like:

“can you throw your ball in the river?”

“can you pick up the towel under the table?”

Kanzi

- Controversial results:



Kanzi

What we say:

“can you throw your ball in the river?”

What they hear:

“bla bla ball bla bla river?”

Kanzi

- However,

"Can you throw a potato at the turtle?"

"bla bla throw bla bla potato bla bla turtle?"

Kanzi

- **Kanzi's language system**
 - Reference (large vocabulary)
 - Word order

- **Evidence for a fairly complex system**
 - Resembles that of a young child (proto-syntax)

Animal communication

- **Animal language**
 - communication
 - Meaningful to some extent
 - Displacement
 - Tradition

Animal communication

- **Some criticisms of Kanzi**
 - **Syntax less complex than 3yr olds**
 - **No function words**
 - **No morphology**
 - **Syntax?**
 - **Can he say that "the cat chased the dog" is related in structure to "the dog was chased by the cat"?**
 - **Evidence for recursion?**

Animal communication

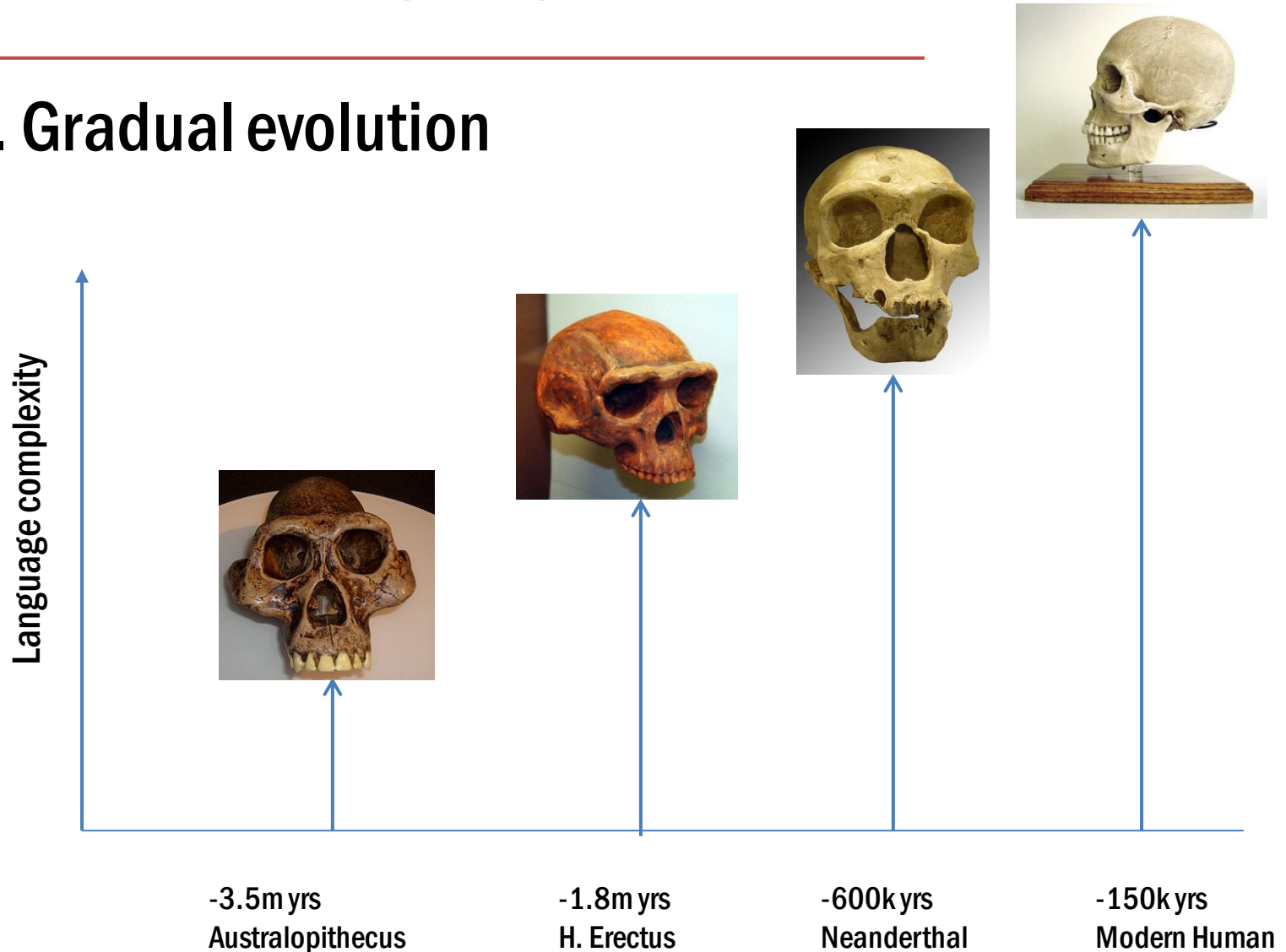
- **Human vs animal language**
 - Complex versus less complex
- **Are we unique?**
 - Human language *fundamentally* different? (qualitative)
 - Or is it a matter of degree? (quantitative)
- **Language evolution**

Language evolution

- **A. Language evolution was gradual**
 - Became increasingly complex
- **B. Language evolution was not gradual**
 - A sudden mutation caused language

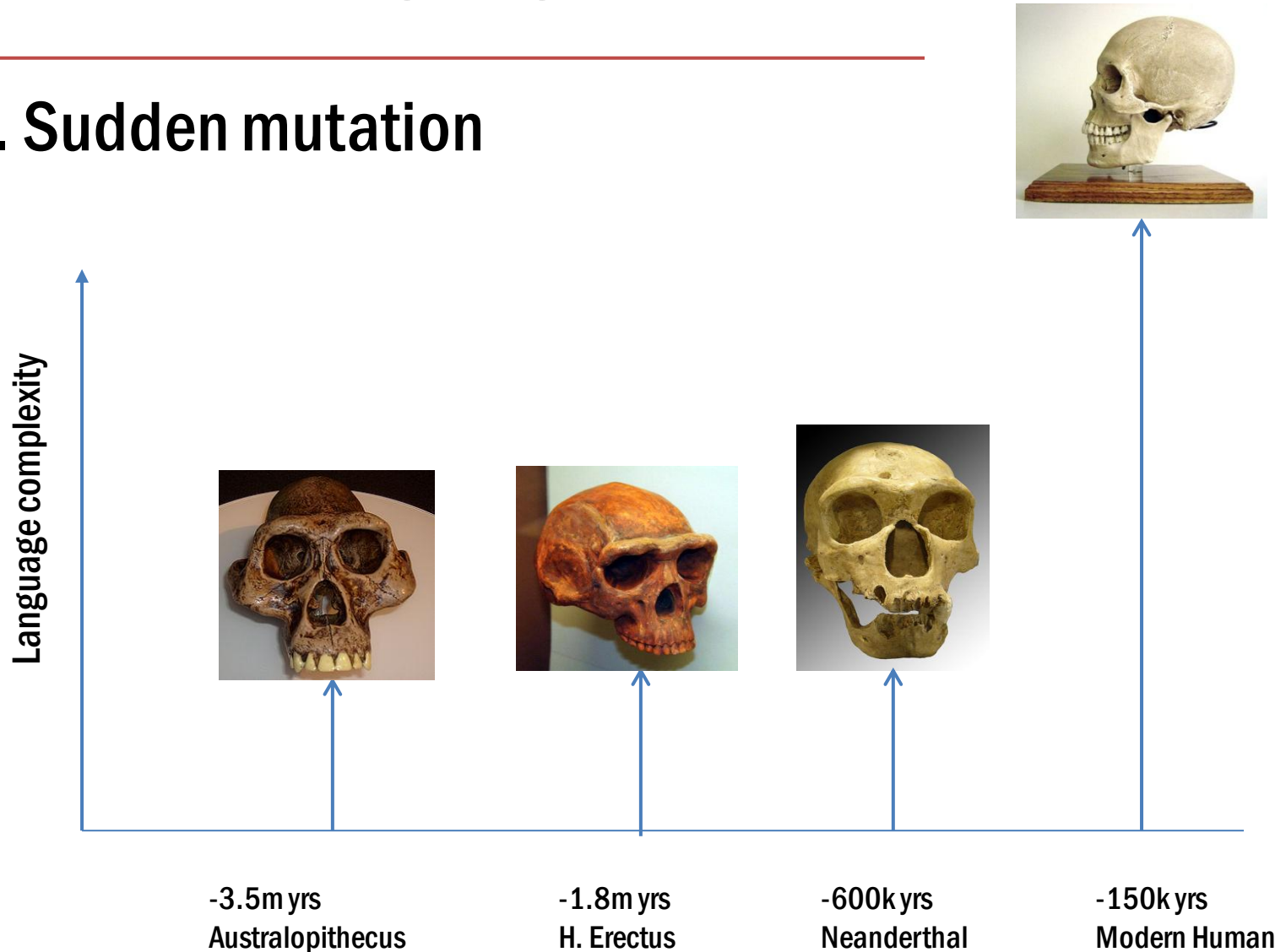
Language evolution

- A. Gradual evolution



Language evolution

- B. Sudden mutation



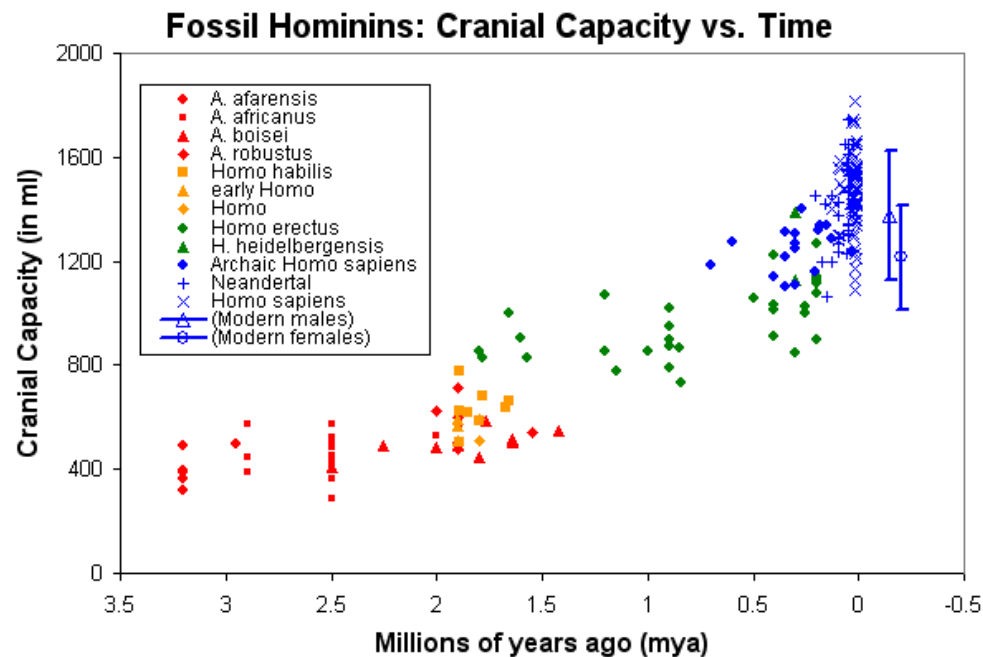
Language evolution

- **How to decide between A and B?**
 - Language does not fossilize!

- **Brain size?**
 - Language complexity increases gradually, this causes gradual increase in brain size

Language evolution

- Changes in brainsize



Dataset: All measurements of hominin cranial capacity available in the literature as of September 2000, for skulls older than 10,000 years old. Adult specimens only. Average is presented where multiple measurements were made. N = 214 points.

Data source: C. De Miguel and M. Henneberg (2001). "Variation in hominid brain size: How much is due to method?" *Homo* 52(1), pp. 3-58. Data copied into Excel from Appendix: "From Lucy to Boskop" (pp. 20-49). Figures for modern humans from McHenry et al. (1994). "Tempo and mode in human evolution." *PNAS*, 91:6780-6.

Chart by **Nick Matzke** of **NCSE** (www.ncseweb.org). Free to use for nonprofit educational use (with acknowledgement). Version 1.1, September 30, 2006.

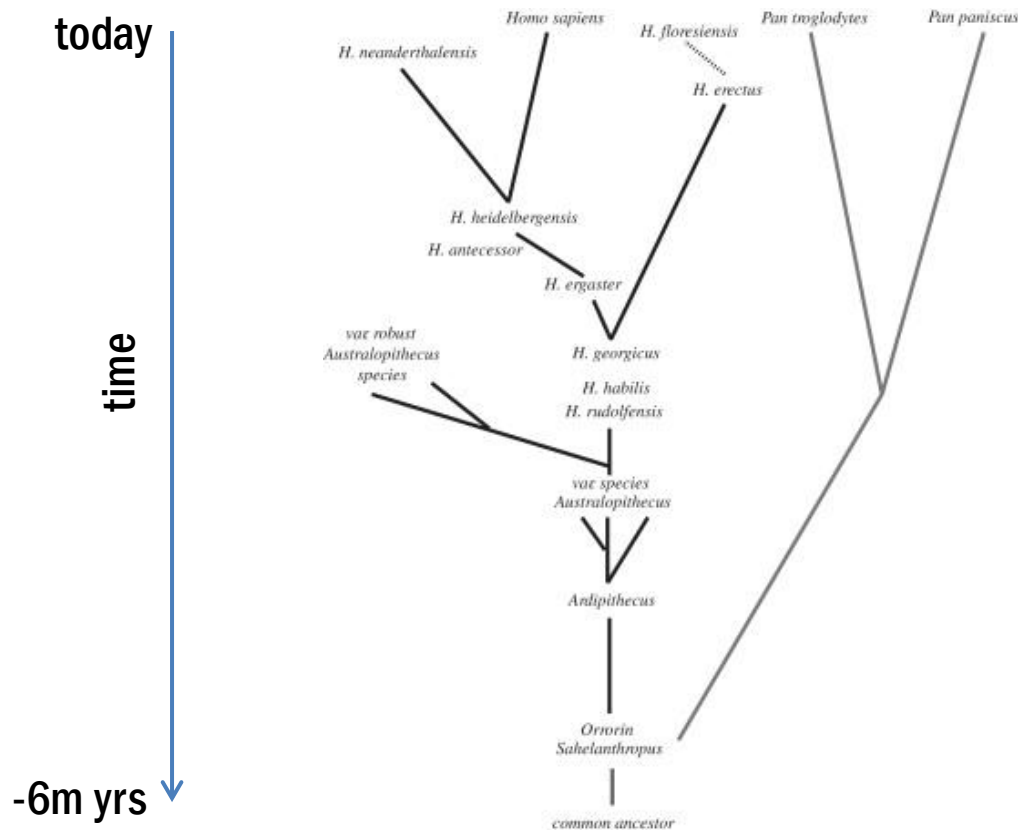
Language evolution

- **So what?**
 - What does this say about the evolution of language?
- **Brain size might increase gradually for reasons unrelated to language**
- **Perhaps look at language areas of the brain?**

Language evolution

- **Phylogenetic method**

- compare species based on phylogenetic trees

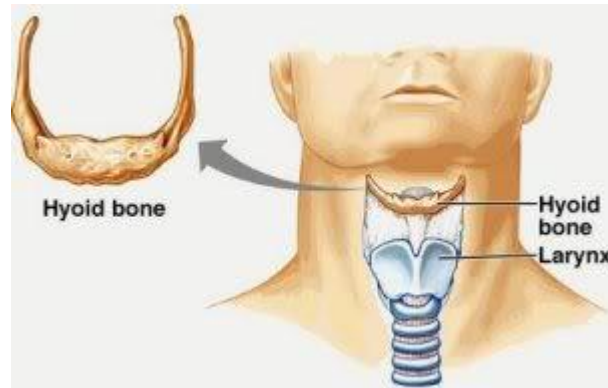


Language evolution

- **Chimps (*pan paniscus*) have capacity for learning some aspects of language**
 - See Kanzi evidence
- **This means many of our forebears had capacity to learn part of language**
 - However, this does not mean they used it!

Language evolution

- **Best evidence to date**
 - **Hyoid bone in Neanderthals**



- **Important for production of speech**

Summary

- **Animals have language?**
 - Focus on what we mean by "language"
 - It informs us about whether language is innate
 - It tells us which other cognitive processes are necessary for language to develop
 - Maybe one day we can "talk" to animals!

Pidgin and creole

- **Other evidence that has been used to look at question of language innateness**
- **What happens with speakers of different languages come to live together?**

Pidgin and creole

- **Pidgin = a system of communication among people who do not speak the same language.**
- **Creole = a pidgin that has developed into the mother tongue of a community.**

Pidgin and creole

- **Pidgin = a system of communication among people who do not speak the same language.**
 - Limited vocabulary
 - Reduced syntax
 - Often based on European language

Pidgin and creole



From Philippines, speaking pidgin of Spanish and local language Chabano

Pidgin and creole

- **Creole = a pidgin that has developed into the mother tongue of a community**

Pidgin and creole



Papiamentu, spoken in Dutch Caribbean and is a Creole of Spanish, Dutch, and Portuguese.

Pidgin and creole

- **"Filling in the gaps" in creole suggests that innate components play a role**
- **Evidence is not so clear**
 - **real isolated cases are rare**

Summary

- **What is language?**
- **Different languages, dialects**
- **Hockett's design features**
 - **Comparison with other animals**
- **Language evolution**
- **Pidgin and creoles**