

# The Evolution of Hierarchy: Language, Tool Use, and Planning in Early Hominids

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# The Plan

- Why do we care?
- Tool evolution and experiment
- Cultural transmission
- Evolution of the brain with food sources
- Broca's area
- What now?

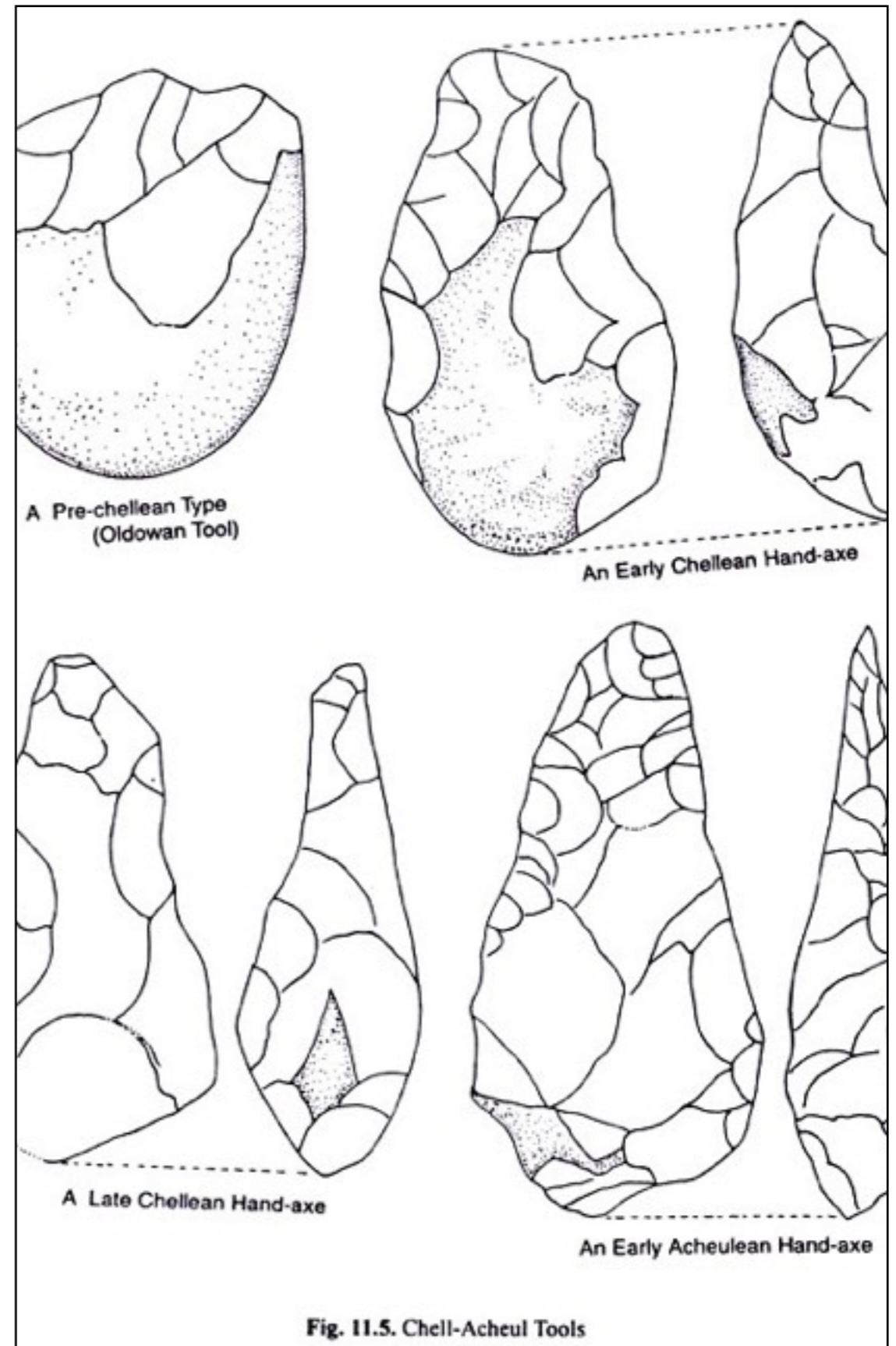
# Why do we care?

- What makes us 'human', cognitively speaking?
  - episodic future thinking: (Atance & O'Neill 2001; based on ideas by Tulving 2001 and Donald 1991)
  - language (Fitch 2010)

# Tool Evolution:

## The Oldowan vs. Acheulean Toolkit

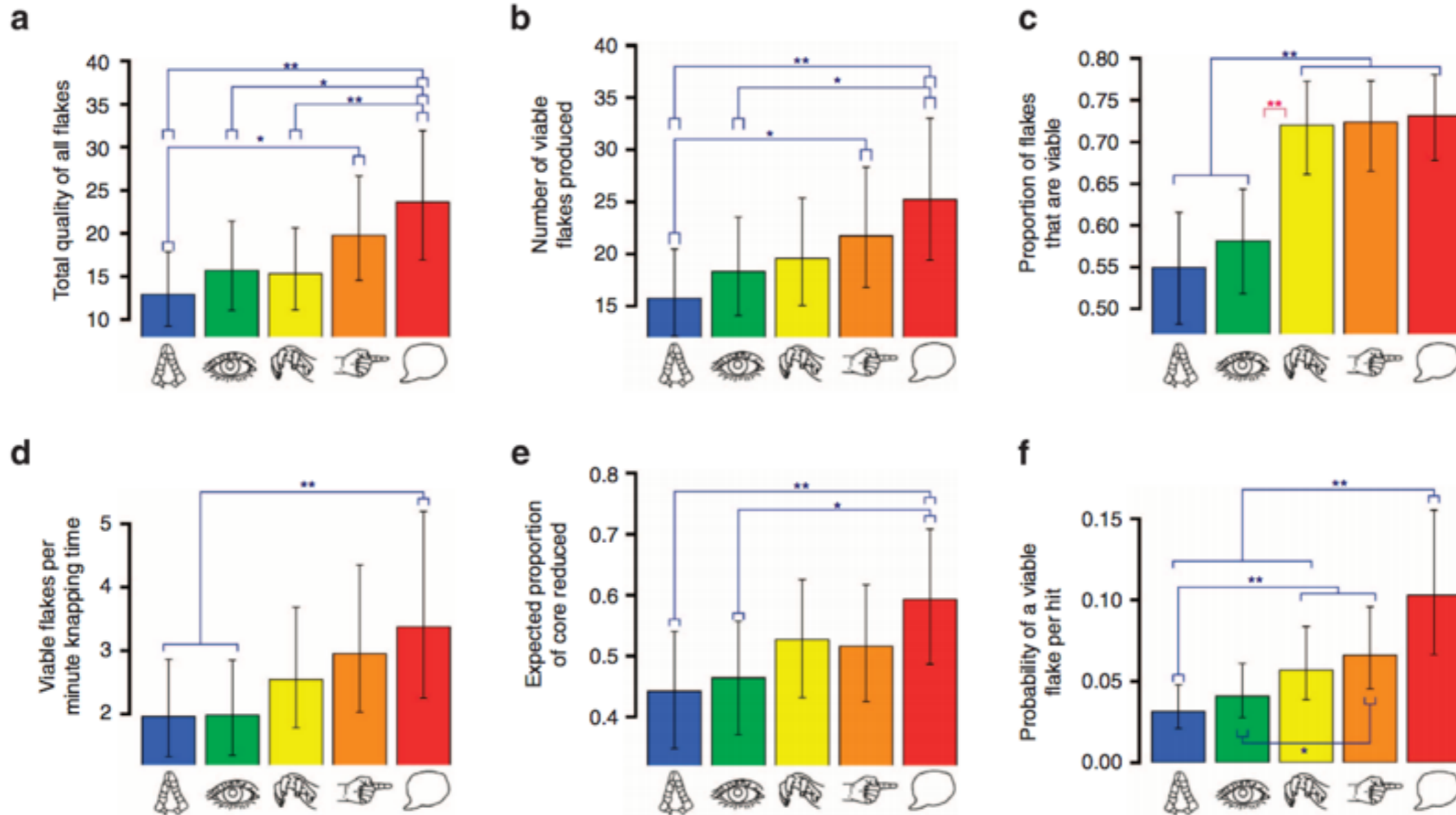
- Oldowan: 4-2 MYA, Late *Australopithecus*/Early *Homo*
- Acheulean: 1.5-1/2 MYA, *Homo Erectus*
- How are they different?
- What are the advantages?



Fitch 2010

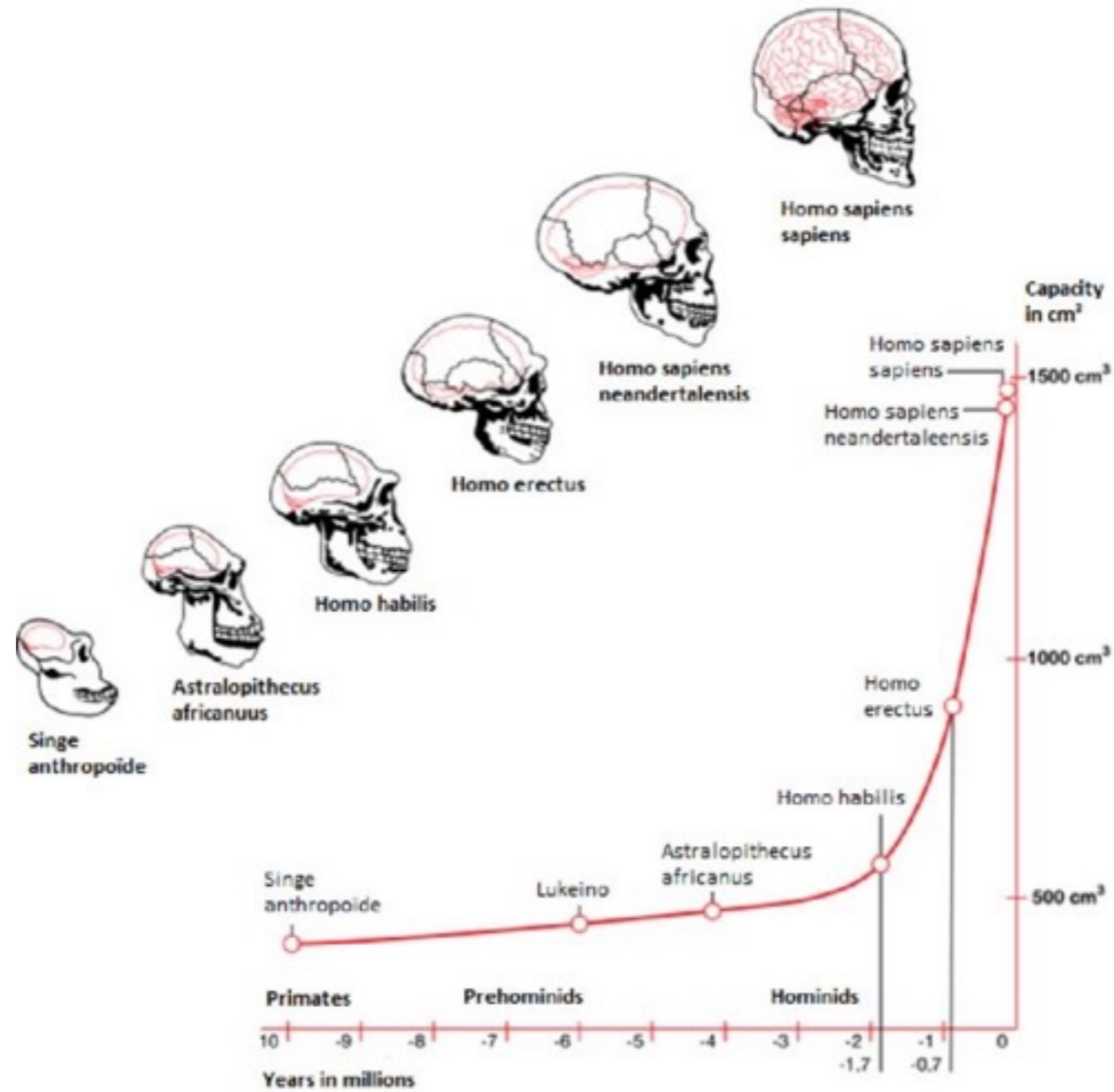
Image Source: [www.historydiscussion.net/ages/palaeolithic-period-lower-middle-and-upper-paleolithic-period/1821](http://www.historydiscussion.net/ages/palaeolithic-period-lower-middle-and-upper-paleolithic-period/1821)

# Experiments in Tool-Making



The importance of cultural  
transmission in tool-making

# Evolution of the Brain



van Ginneken et al. 2017

# Broca's Area

- Broca's Aphasia: Paul Broca, 1861
  - Patients exhibit motor skill deficits, syntactic difficulties, and impairments in ability to recognise signs, gestures, and pantomimes (Fadiga et al. 2009)
  - What do these all have in common?



# Where does this take us?

- What can all of this tell us about our linguistic capabilities, and how and why they came to be?

Thank you

# References

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