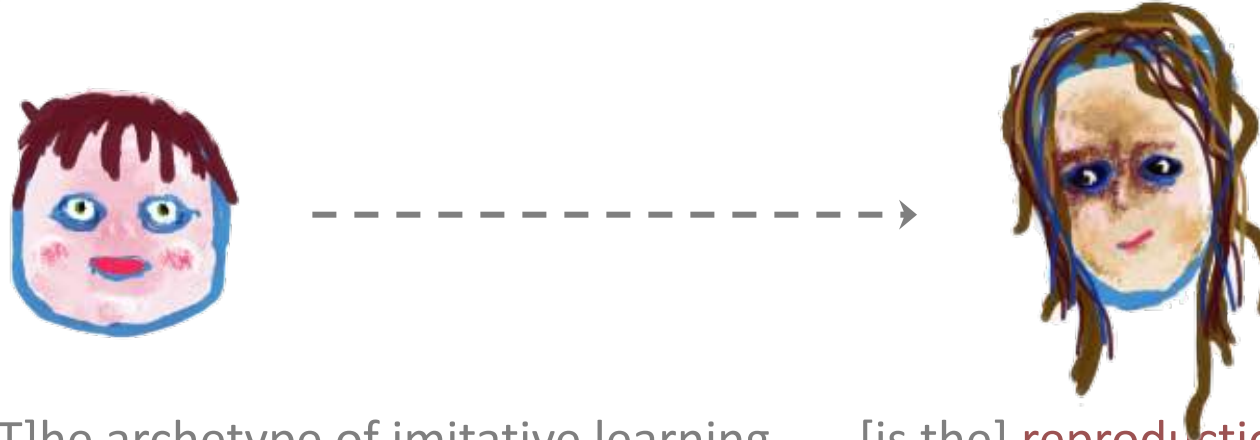


Why Do Humans Alone Acquire Language?

Imitation and social attention

What is imitation?



“[T]he archetype of imitative learning . . . [is the] reproduction of both behaviour and its intended result.” (Boesch & Tomasello 1998, p.599)

- High fidelity behaviour copying, present only in humans (Tennie, Call & Tomasello 2009)
- Copying intentional actions in pursuit of same underlying goals

What is imitation?

Imitation \neq emulation (Boesch & Tomasello 1998):

“[A]n individual observes and learns some dynamic affordances of the inanimate world as a result of the behaviour of other animals and then uses what it has learned **to devise its own behavioural strategies**” (p. 598)

- Emulators **may not reproduce observed strategy**



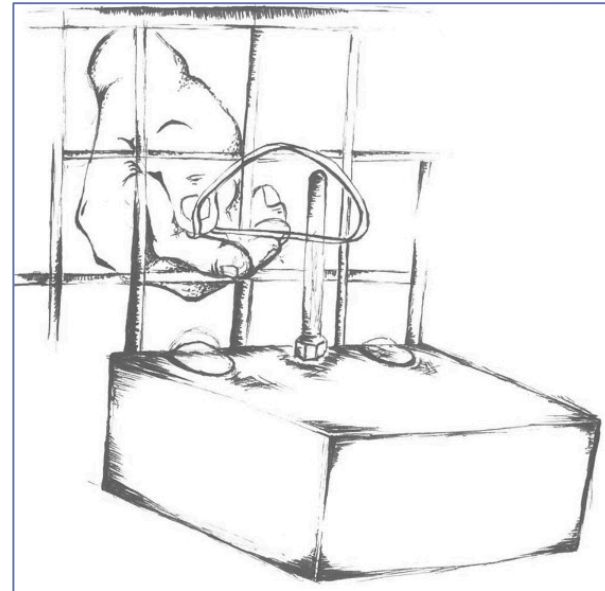
High fidelity copying in children

- Nagell, Olguin and Tomasello (1993):

Two-year-old children but not chimpanzees reproduced the precise technique with which human observer used a rake.

- Tennie, Call & Tomasello (2009):

Children but not chimpanzees could construct a straw loop with which to lasso and reel in an out-of-reach reward.



Imitation and human culture

- Chimpanzees either **unable or unmotivated** to imitate (Tomasello, Savage-Rumbaugh & Kruger 1993)
 - emulation and social highlighting (Moore 2013b)
- Non-verbal mechanism, present in infants
 - → **explanatory powerful** in ontogeny and phylogeny
 - e.g. necessary for natural language acquisition (Moore 2013a)

Imitation: a summary

Humans but not great apes imitate

- Great apes emulate
- → Learn about world by attending primarily to *it*

Adaptive explanation is influential but probably wrong (week 2)

- Imitation is **substantially learned**



Are imitation and communication mechanistically related?



- Chimpanzees can learn to imitate (Pope et al. 2017)
- Imitation recognition in chimpanzees is **correlated with socio-communicative competence** (Pope, Russell & Hopkins 2015)
 - consistent with common underlying cognitive abilities



References

- Boesch C, Tomasello M (1998) Chimpanzee and human cultures. *Current Anthropology*, 39(5):591-614.
- Moore R (2013) Imitation and conventional communication. *Biol & Philos*, 28(3):481-500.
- Moore R (2013b) Social learning and teaching in chimpanzees. *Biol & Philos*, 28(6):879-901.
- Nagell K, Olguin R, Tomasello M (1993) Imitative learning of tool use by children and chimpanzees. *J Comp Psychol*, 107(2):174-86.
- Pope SM, Russell JL, Hopkins WD (2015) The association between imitation recognition and socio-communicative competencies in chimpanzees (*Pan troglodytes*). *Frontiers in Psychology*, 00188.
- Pope SM, Tagliabue JP, Hopkins WD (2017) Changes in mirror region connectivity following Do-As-I-Do training in chimpanzees. *Journal of Cognitive Neuroscience* 30(3):1-11.
- Tennie, C, Call, J & Tomasello, M (2009) Ratcheting up the ratchet. *Philosophical Transactions of the Royal Society B*, 364(1528):2405-2415.
- Tomasello M, Savage-Rumbaugh S, Kruger A (1993) Imitative learning of actions on objects by children, chimpanzees, and enculturated chimpanzees. *Child Development*, 64(6):688-705.