

Joint Action in Great Apes

The Evolution of Cooperation

Cooperation and human uniqueness



“If we are to understand the ultimate origins of human communication ... we must look outside communication itself and into human cooperation more generally. It turns out that human cooperation is unique in the animal kingdom in many ways, both structurally and motivationally.” (Tomasello 2008)

What is joint action? (Tomasello 2008 via Bratman 1999)

Joint action implies (at least):

1. A plural number of agents acting in pursuit of a common goal g .
2. Agents *act intentionally* to support one another's contributions to the achievement of g –
 - e.g., by investing time and effort (i.e. paying a cost) to help one another's attempts to achieve sub-goals of g .
3. Common knowledge of (1) and (2) among agents.

Joint action central to human uniqueness

Tomasello (2009, 2014): Joint action is foundational to:

(1) 'Gricean cooperative communication'

- Success in **Stag Hunts** → meat → bigger brains
- **Language** → new forms of thought and reason

(2) Cumulative culture

(3) Social norms - including ethics – and human institutions

- “This is how we do things here”

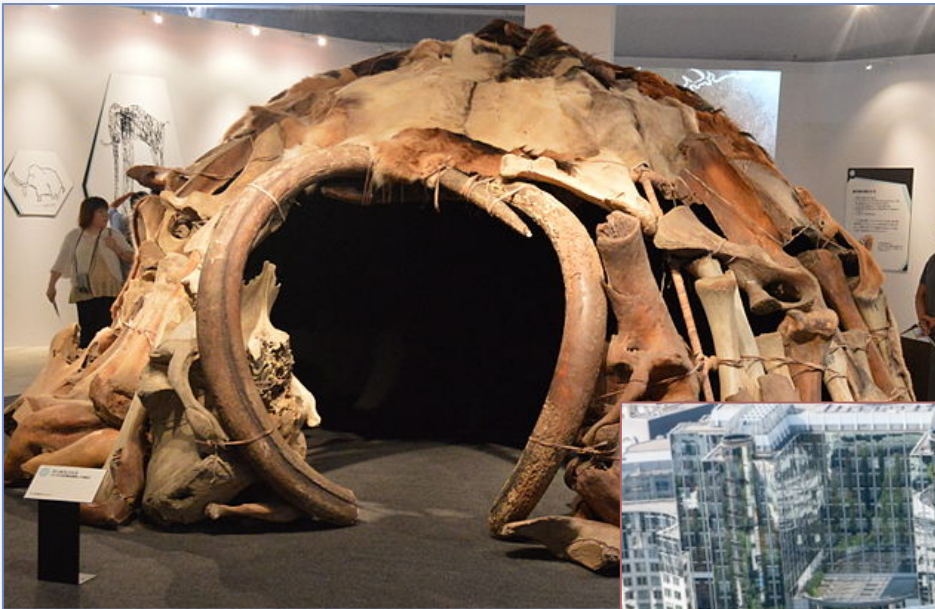
Cooperation and human uniqueness



“Human infants’ **unique social-cognitive skills** are almost certainly **adaptations for life in a cultural group**, that is, life in which individuals must coordinate, communicate and learn from one another in myriad ways ... “ (Tomasello 2020)

individualism → mutualism → altruism

Cooperation and cumulative culture

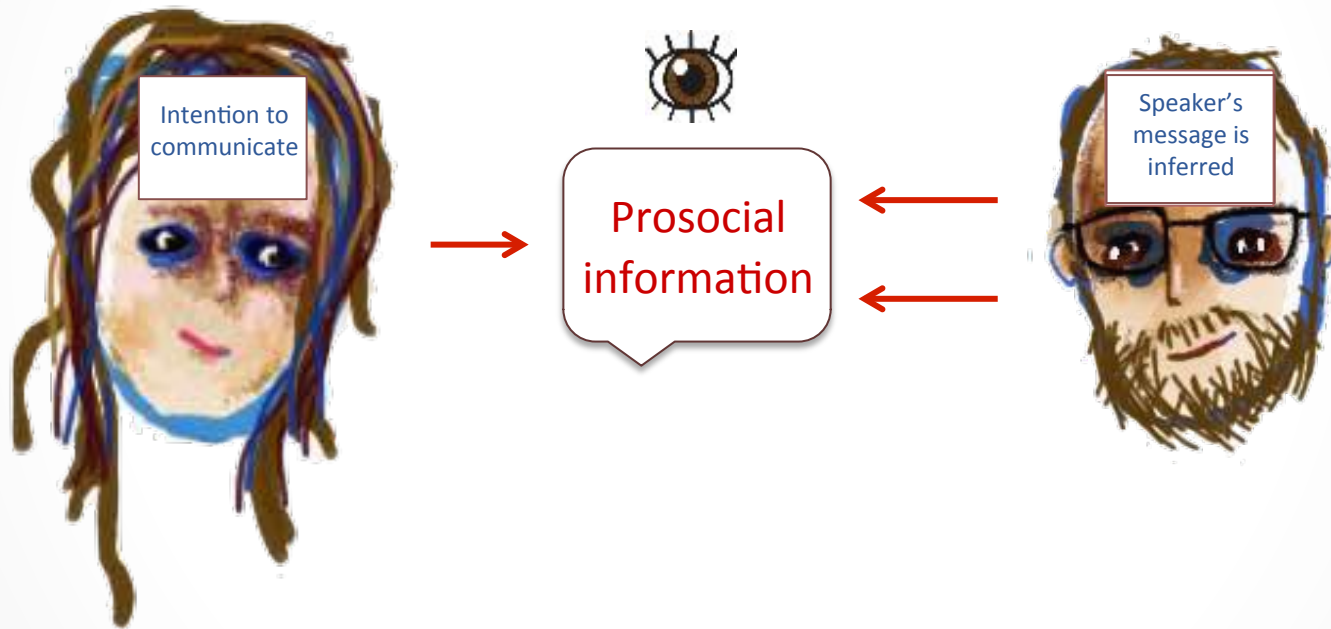


Gravettian hut
(reconstruction)
Ukraine, c30kya

Paul Henri Spaak
building
Brussels, 1993



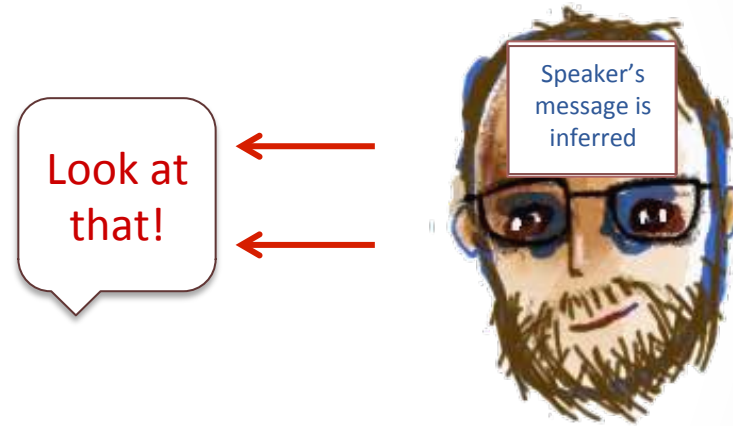
Cooperative communication (Tomasello 2008, Moore 2018)



- *S* volunteers prosocial information

- *H* motivated to interpret iff expected reward

Why is communication a joint action?



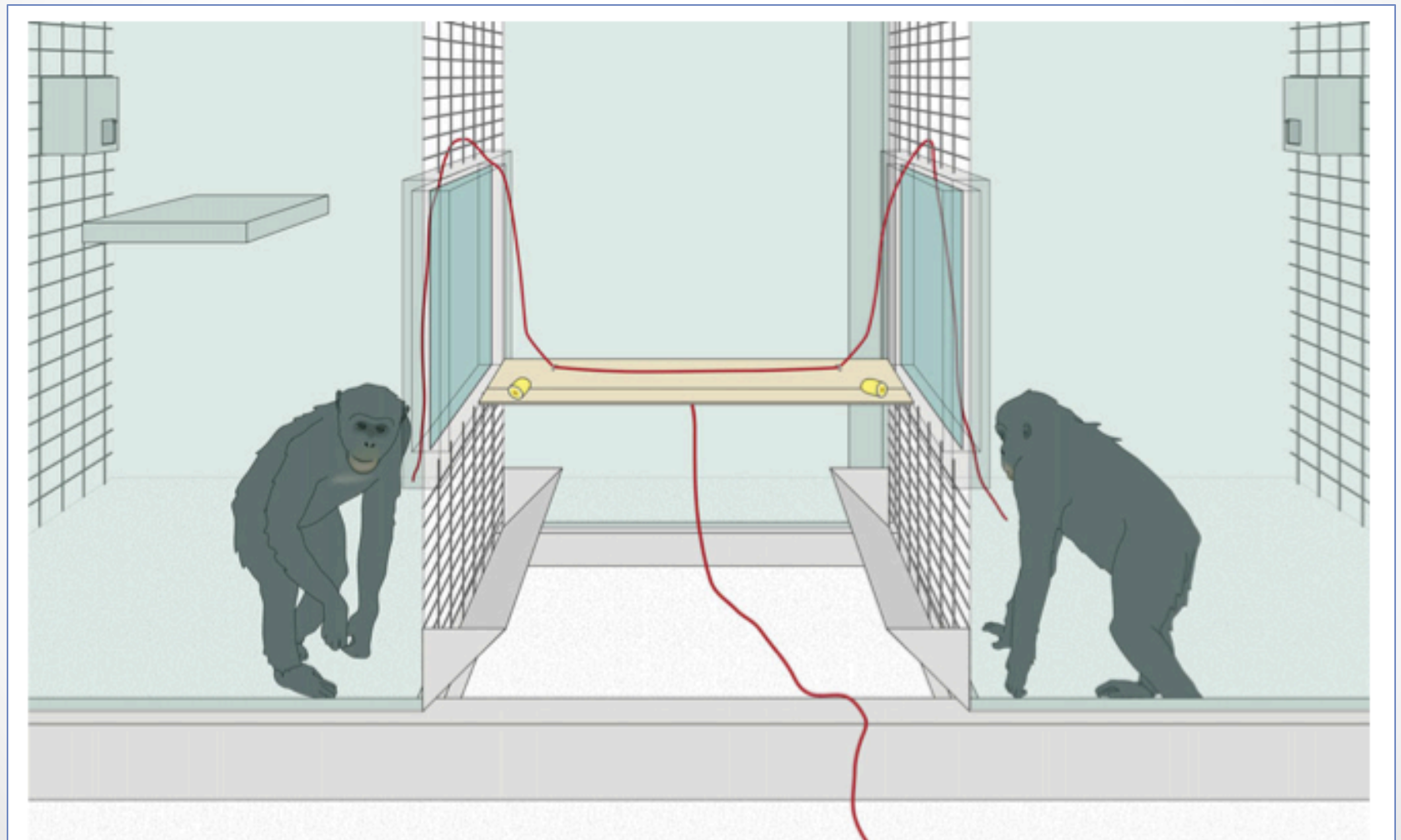
“This process occurs because both participants know together and trust together the cooperative motivations involved.”

(Tomasello 2008, p.90)

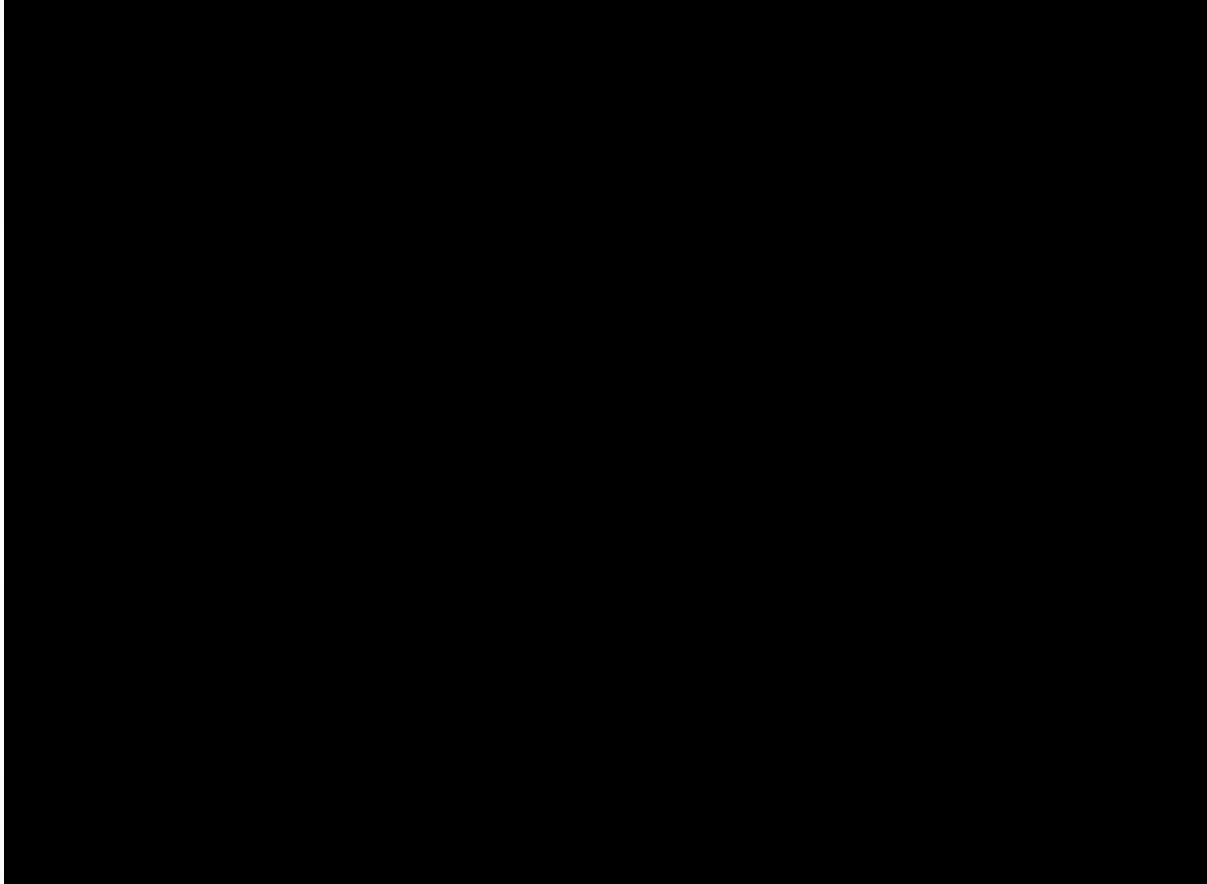
Stag Hunts: The origin of cooperative communication?



The Stag Hunt (Bullinger et al. 2011, Duguid et al. 2014)



Sandra and Ulla coordinate (Bullinger et al. 2011)



The Stag Hunt

Stag Hunts

- **low stakes** (Bullinger et al. 2011; Duguid et al. 2014):
 - 4-yr-old children and chimpanzees coordinate
 - post-movement communication
- **higher stakes** (Duguid et al. 2014):
 - children alone succeed
 - prospective communication



What explains children's success?

Tomasello's view (e.g. 2008, Tomasello et al. 2012):

- Humans alone can engage in 'Gricean cooperative communication'
 - recursive mindreading (see next week)
 - joint action
 - cooperative reasoning
- Great apes lack both mindreading and cooperative motives needed; just react to other's movements



Chimpanzees communicate to coordinate (Yamamoto et al. 2012)



- Chimpanzees sometimes behave cooperatively

A puzzle

- If cooperation is present in great apes, what underwent selection?
 - Is 'shared intentionality' uniquely human?
 - What mechanisms are implicated?
 - Are relevant differences just motivational?



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