Ritualized commitment displays in humans and non-human primates

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Commitment

Living in groups poses challenges ranging from simple coordination difficulties, over increased resource competition, to downright risk of free-riding and conflict between individual interests. How can cooperators assort to reap the benefits of joint action? We suggest that ritually signaling commitment to joint action is one such assortment mechanism.

Human ritual signals

Repetitive and rigid performance of formal acts, postures, utterances, and markings

- Similarity signals aim to indicate genetic relatedness between the signaler and the receiver.
  - mimicry and collective dance
- Coalitional signals aim to indicate membership in a specific group/collaborative ensemble.
  - group-specific gesture or vocalization or application of visual mark
- Commitment signals aim to indicate obligation toward a particular social contract. Costly gestures referring to future cooperative action
  - shedding one's blood as a commitment to help in warfare

Non-human primate rituals

Ontogenetic ritualization utilized for cooperative communication?

- Similarity signals – no close analogue, chimpanzee pant-hoot chorusing
- Coalitional signals – innate, no socially learned group-specific signals (chimpanzee high-arm grooming?)
- Commitment signals – vulnerability as a signal of dyadic commitment. Guinea baboons genital fondling as a risky reassurance of the stability of dyadic bond. Chimpanzee testicle handling.

Different cognitive mechanisms

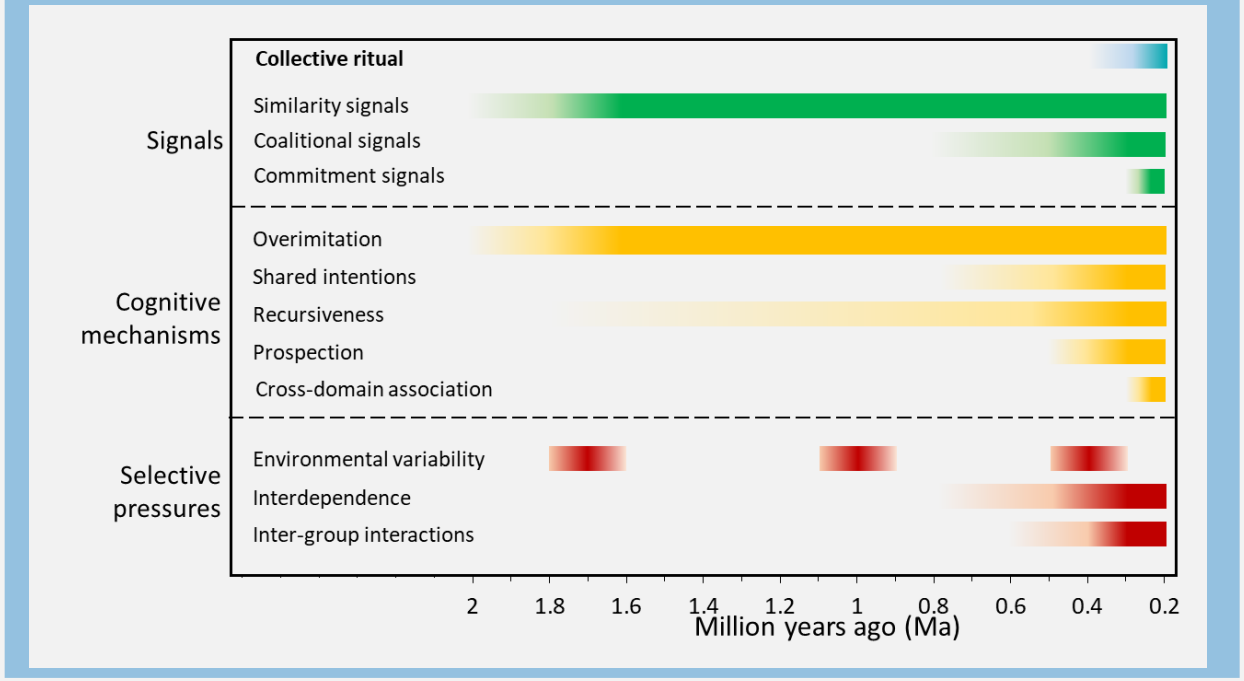
Differences in human and non-human ritualized commitment signaling due to different selective pressures on cooperative communication and related cognitive mechanisms

- Intentional imitation of others' subactions (overimitation)
  - medial prefrontal cortex as part of human mirror neuron system
- Recursion and shared intentions - shared communication code through associative learning and representation of individual roles in joint action
  - third-level theory of mind
- Prospective thinking and internal simulation of future events
  - mental time travel allowing to associate current display with commitment to future cooperative action

Summary

Collective ritual is virtually omnipresent across past and present human cultures, and absent in non-human primates. However, little is known about the evolution of ritual in the hominin lineage. We argue that ritual evolved to facilitate collective action through signaling similarity, coalitional membership, and commitment to joint action. The presence of signals is extrapolated from the synthesized evidence of the presence of underlying cognitive mechanisms and selective pressures. The conjecture of this model is that collective ritual as a trait might have emerged around 400 ka as a regular performance of the three ritualized signals.

Figure 1. Time of the evolution of ritualized commitment displays and their underlying cognitive mechanisms in humans



Our work

Lang, M. & Kundt, R. Forthcoming. The evolution of human ritual behavior as a cooperative signaling platform. Available upon request. ■ Lang M, Kundt R. 2020 Evolutionary, cognitive, and contextual approaches to the study of religious systems: A proposition of synthesis. Method Theory Study Relig. 32, 1–46. ■ Lang M. 2019 The evolutionary paths to collective rituals: An interdisciplinary perspective on the origins and functions of the basic social act. Arch. Psychol. Relig. 41, 224–252.

Poster design idea by Jan Krátký

Thank you!

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