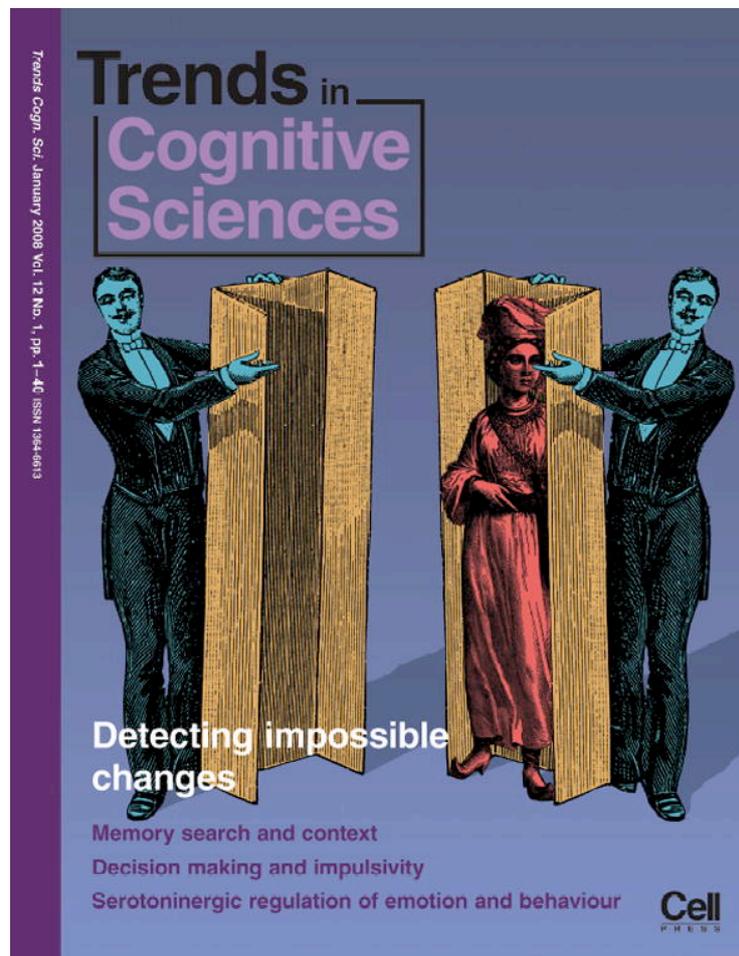


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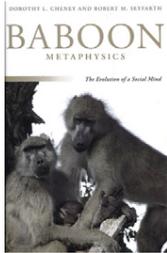
Book Review

Interpreting the baboon

Baboon Metaphysics: The Evolution of a Social Mind by Dorothy L. Cheney and Robert M. Seyfarth, University of Chicago Press, 2007. \$27.50 (hbk) (358 pp.) ISBN 978-0-226-10243-6

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Family feuds, social climbing and power struggles are the stuff of a 19th century novel of manners. They are also the stuff of 21st century primate societies, according to *Baboon Metaphysics: The Evolution of a Social Mind*, the new book by Dorothy Cheney and Robert Seyfarth. From 15 years of behavioral observations, playback experiments and hormonal analyses, Cheney and Seyfarth have com-

compiled a portrait of baboon social life as an egoistic attempt to win friends and influence people – not unlike the vervet monkeys we met in their last book [1]. The posturing and intrigue needed to navigate successfully a complex social milieu require sophisticated cognitive equipment, and Cheney and Seyfarth support the view that general cognitive abilities evolved in primates primarily to meet such demands.

The view that high-level cognition is an adaptation to social pressures has been part of evolutionary psychology at least since Nicholas Humphrey introduced the social intelligence hypothesis, which describes the social world as a complex game in which success means being several steps ahead of your opponent [2]. Social creatures must engage in repeated bouts of one-upmanship, and Humphrey suggests that this sort of evolutionary arms race led humans to develop mental state concepts and a corresponding logic to make better predictions of behavior. It is a common presumption that these structures subsume a theory of mind – the ability to attribute beliefs and desires to others.

Although Cheney and Seyfarth agree that social complexity leads a species to develop greater cognitive sophistication, they think that the game can be played without a full-blown theory of mind. They suggest that all that is needed are mental representations of the relations among individuals and a communication system that can be used to manipulate the behavior of others. Both features are seen in baboon societies; baboons seem to understand rudimentary mental states, such as intentions and emotions, and the social causes of behavior. Baboons can also simultaneously categorize their conspecifics according to group rank and matriline membership. Following Jerry Fodor [3], Cheney and Seyfarth claim that representing such information requires a language of thought. The syntactic structures they see in baboons and other social animals include representation, open-ended rules and

hierarchically structured nests (but not recursion), and hence the structure of cognition in social animals is quasi-linguistic. Social animals, they claim, are 'pre-adapted' to developing language.

It is this claim that leads to the contribution of Cheney and Seyfarth to the current debate on language origins. Given observations and experiments demonstrating that baboons respond differently to a call depending on the calls that precede or follow it, they claim that baboons perceive the syntax of call sequences. However, across species, and including enculturated animals raised in a human-language context, Cheney and Seyfarth see no evidence that sensitivity to syntax extends to production. Why should animals show sensitivity to syntax in comprehension but not demonstrate it in production? Cheney and Seyfarth suggest that animals lack motivation for providing information to others, because they do not realize that others might not know what they know. It is the development of a theory of mind that provides the motivation to develop language, and only humans have it.

To defend this last claim, Cheney and Seyfarth review the current literature on empathy, imitation and belief attribution. They conclude that because 'behaviorist interpretations dog almost every experiment and observation that suggests a form of mental state attribution in animals' (page 153) monkeys and apes have an 'inability to attribute beliefs to others' (page 181). The worry about this conclusion is that for any experimental or behavioral result, there is a possible explanation in terms of behavioral contingencies. Indeed, in some cases Cheney and Seyfarth explicitly accept a mentalistic interpretation, despite admitting that there is an alternative behaviorist explanation (e.g. they hold that baboons seem to understand intentions, emotions and dispositions of others). Although Cheney and Seyfarth are right to conclude that the very existence of a behaviorist explanation does not entail the truth of that explanation, what emerges from their review is that there is no standard method for making inferences from behavior to mechanisms. This problem is not unique to Cheney and Seyfarth but plagues animal cognition research more generally.

According to the theory of language evolution of Cheney and Seyfarth, only language users have a theory of mind. This claim is difficult to defend. Decades of field research on baboons have taught us much about what they do, but on the basis of the chapters discussing consciousness, metacognition and theory of mind, it is clear that we are

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still not sure why baboons and other animals do what they do. That the cognitive mechanisms underlying animal behavior remain elusive suggests that the methods of interpretation need to catch up with the impressive empirical research. To adapt the Darwin quote that inspired the book's title, while he who understands the baboon might do more towards metaphysics than Locke, perhaps to understand the baboon we must first do more towards epistemology.

References

- 1 Cheney, D.L. and Seyfarth, R.M. (1990) *How Monkeys See the World: Inside the Mind of Another Species*, The University of Chicago Press
- 2 Humphrey, N.K. (1976) The social function of intellect. In *Growing Points in Ethology* (Bateson, P.P.G. and Hinde, R.A., eds), pp. 303–321, Cambridge University Press
- 3 Fodor, J.A. (1975) *The Language of Thought*, Crowell Press

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Erratum

Corrigendum to: "Towards single-trial analysis in cognitive brain research"

[Trends in Cognitive Sciences 11 (2007), 502–503]

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The author regrets that there was a mistake with the affiliation addresses in the above article. The correct affiliation details are:

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The author sincerely apologizes for any problems that this error may have caused.

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