DISCUSSION

Cognitive and Evolutionary Foundations of Superstition and Paranoia

A Reply to Planer and Sterelny

Manvir Singh

Institute for Advanced Study in Toulouse, Université Toulouse 1 Capitole, 1, esplanade de l'Université, 31080 Toulouse Cedex 06, France (manvir.singh@iast.fr).
This paper was submitted 14 IV 22 and accepted 14 IV 22.

I appreciate Planer and Sterelny's thoughtful reply to my paper. I proposed that beliefs in witchcraft, sorcery, and other sources of mystical harm are shaped by three interacting cultural evolutionary processes: a selection for intuitive magic, a selection for plausible explanations of misfortune, and a selection for demonizing narratives (Singh 2021). Planer and Sterelny are skeptical of two features of the account.

First, they doubt whether magic has been explained. They ask how beliefs in magic can be beneficial given their clear costs. In fact, they postulate, the social costs of sorcery and witchcraft beliefs should select against such beliefs. They acknowledge that a cognitive bias might predispose us to believe in magic but write that I did not make that case and that, even so, "this would be a nativist evolutionary psychology theory, not one based on cultural evolution."

Planer and Sterelny misunderstand. Indeed, my argument was that adaptive features of human psychology, likely the products of natural selection, underlie magical beliefs (see also Singh 2018:4). A sizable empirical and theoretical literature suggests that people adopt ineffective goal-oriented behaviors ("superstitions") because of psychological mechanisms that are, on average, beneficial (Foster and Kokko 2009; Johnson et al. 2013; McKay and Efferson 2010; Vyse 2014). These psychological mechanisms must optimally balance the costs of two errors: (1) the costs of adopting ineffective actions (superstitions; akin to type I error) and (2) the costs of failing to adopt effective actions (misses; akin to type II error). If the mechanisms were designed to avoid any superstitions, this would increase the likelihood of costly misses, such as failing to avoid rotting pig meat when one is pregnant. These psychological mechanisms, like any systems that detect signals in a noisy world, must be designed to favor less costly errors over more costly ones, sustaining superstition.

I respectfully disagree that this cognitive explanation of magic is inconsistent with cultural evolution. Our psychology predisposes us to adopt low-cost actions to influence highly beneficial outcomes. But cultural evolution crafts those actions to be maximally effective seeming. People have a slew of intuitions about which magical practices are most effective (Apicella et al. 2018; Hong 2022). Brazilian and American subjects, for instance, reported that spells with more steps are more effective than spells with fewer steps and that magic involving a religious icon is more effective than magic without one (Legare and Souza 2012). As people produce and selectively retain the superstitions they evaluate (erroneously!) to be most effective, they drive the evolution of compelling magic, including magic for harming others (Singh 2020).

Planer and Sterelny's second point is about hypervigilance. They doubt my account of adaptive paranoia—that natural selection has endowed us with a predisposition to suspect distrusted group mates after suffering a misfortune (see also Raihani and Bell 2019). They provide two reasons for their skepticism:

1. Adaptive paranoia is costly. It "destroys friendship and goodwill and generates enemies." I agree. The question is, of course, whether these costs were substantial enough to outweigh the benefits of successfully identifying malicious actions. I suspect that they were not—that adaptive paranoia was net beneficial in ancestral conditions—but this remains an open question.

2. Adaptive paranoia, they claim, was not useful in the kinds of small-scale societies in which our ancestors lived. "The danger of hidden enemies—as well as the potential benefits of any tendency toward hypervigilance—is a danger of social complexity," they write. "It depends on social scales and organizations that make it possible for someone you do not know well to markedly influence your life prospects."

Putting aside debates about whether our ancestors mostly or exclusively lived in small-scale societies (Bird et al. 2019; Singh and Glowacki 2021), this comment reflects a misunderstanding. Adaptive paranoia does not require that our ancestors interacted with people they "did not know well." How well they knew their tormentors matters little. Rather, adaptive paranoia requires that our ancestors suffered misfortune, that it was caused by other people, and that there was uncertainty about what caused it. The uncertainty matters. Consider a couple that has been arguing. One night, the husband strangles his wife yet claims that she died in her sleep. Adaptive paranoia pushes her parents and siblings to suspect the husband more than they would have otherwise.

The important question is thus: Did our ancestors suffer person-caused misfortune yet have incomplete information about who or what caused it? I suspect that they did. I suspect that, in ancestral conditions, food was eaten, tools were broken,

  Published by The University of Chicago Press for The Wenner-Gren Foundation for Anthropological Research. https://doi.org/10.1086/720418

owned resources were defaced, family members were killed, and people were attacked or molested at night—often in secret. Take, for instance, the Mbuti orphan Pepei, who, as Turnbull (1962:120–121) remarked, frequently pilfered food and materials and was often suspected for it. Even in small and intimate social worlds, people engage in surreptitious wrongdoing.

In short, natural selection seems to have endowed humans with psychological mechanisms that, while useful on average, predispose us to adopt erroneous practices and beliefs. Cultural evolution can then shape these practices and beliefs to be maximally psychologically compelling, resulting in sophisticated spells to harm rivals and explanations of misfortune that blame distrusted neighbors and kin.

References Cited

Apicella, Coren L., Paul Rozin, Justin T. A. Busch, Rachel E. Watson-Jones, and Cristine H. Legare. 2018. Evidence from hunter-gatherer and subsistence agricultural populations for the universality of contagion sensitivity. *Evolution and Human Behavior* 39(3):355–363, https://doi.org/10.1016/j.evolhumbehav.2018.03.003.

Bird, Douglas W., Rebecca Bliege Bird, Brian F. Codding, and David W. Zeanah. 2019. Variability in the organization and size of hunter-gatherer groups: foragers do not live in small-scale societies. *Journal of Human Evolution* 131:96–108, https://doi.org/10.1016/j.jhevol.2019.03.005.

Foster, Kevin R., and Hanna Kokko. 2009. The evolution of superstitious and superstition-like behaviour. *Proceedings of the Royal Society B* 276(1654):31–37, https://doi.org/10.1098/rspb.2008.0981.

Hong, Ze. 2022. A cognitive account of manipulative sympathetic magic. *Religion, Brain and Behavior*. Forthcoming, https://doi.org/10.1080/2153599X.2021.2006294.

Johnson, Dominic D. P., Daniel T. Blumstein, James H. Fowler, and Martie G. Haselton. 2013. The evolution of error: error management, cognitive constraints, and adaptive decision-making biases. *Trends in Ecology & Evolution* 28(8):474–481, https://doi.org/10.1016/j.tree.2013.05.014.

Legare, Cristine H., and André L. Souza. 2012. Evaluating ritual efficacy: evidence from the supernatural. *Cognition* 124(1):1–15, https://doi.org/10.1016/j.cognition.2012.03.004.

McKay, Ryan, and Charles Efferson. 2010. The subtleties of error management. *Evolution and Human Behavior* 31(5):309–319, https://doi.org/10.1016/j.evolhumbehav.2010.04.005.

Raihani, Nichola J., and Vaughan Bell. 2019. An evolutionary perspective on paranoia. *Nature Human Behaviour* 3:114–121, https://doi.org/10.1038/s41562-018-0495-0.

Singh, Manvir. 2018. The cultural evolution of shamanism. *Behavioral and Brain Sciences* 41:e66, https://doi.org/10.1017/S0140525X17001893.

———. 2020. Subjective selection and the evolution of complex culture. *PsyArXiv*, https://doi.org/10.31234/osf.io/4t2ud.

———. 2021. Magic, explanations, and evil: the origins and design of witches and sorcerers. *Current Anthropology* 62(1):2–29.

Singh, Manvir, and Luke Glowacki. 2021. Human social organization during the Late Pleistocene: beyond the nomadic egalitarian model. *EcoEvoRxiv Preprints*. https://ecoevorxiv.org/vusye/.

Turnbull, Colin M. 1962. *The forest people*. New York: Simon & Schuster.

Vyse, Stuart. 2014. *Believing in magic: the psychology of superstition*. Oxford: Oxford University Press.