

## COMMENTARIES

# God is not in the Mirror

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In response to my paper on possible phylogenetic divergence in the case of theistic percepts, Gallup and Maser argue that an alternative — and more heuristic — approach to studying religious phenomena can be found in neuroanatomical mapping of cognitive functions that seem to play some role in this category of thought. On the one hand, the argument is sound and will probably come to be prescient; cognitive neuroscience should begin to emerge as an increasingly important player in the newly overlapping fields of cognition and comparative religion. Indeed, initial strides have already been taken in just this area (Shaver & Rabin 1997). But on the other hand, it is somewhat misguided in that it implies that neurological methods are *alternative* rather than *complementary* ways to go about seriously studying the cognitive foundations of religion.

The representational systems outlined in my article are inherently brain-based, and there is, as Gallup and Maser point out, reason to assume some degree of localization of the general aspects associated with them. Until comparative neuropsychologists are able to discern the seemingly subtle differences in the brains of humans and our closest living relatives, however, we can produce only admittedly speculative hunches as to the unique adaptive functioning of the neuroanatomical regions in question. However, it is worth pointing out that there are considerable morphological differences between humans and chimpanzees in precisely the area of the brain that is presumed responsible for allowing the attribution of mental states. The human prefrontal cortex has expanded substantially over the past 5-8 million years, is significantly larger than homologous structures of the African great apes, and occupies more of the cerebral mantle (Povinelli

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& Preuss 1995). While size alone does not present a compelling case for mentalistic competencies, and, indeed, can be taken to mean that the cerebral organization of great apes is just a smaller version of our own, it is also possible that such human encephalization houses specialized neural systems and that the swelling reflects ancestral selection pressures that favored unique cognitive operations for representing minds.

Yet, even if this proves correct, we must be exceedingly careful when applying neuroanatomical reasoning to the area of religion, else we shall find ourselves promoting the right frontal cortex as something like the modern-day pineal gland as the rightful holder of the soul. It must be remembered that no definitive consensus has been reached in relation to the correspondence between cognitive modules and their regionalized appearance in the brain; organized, rule-based structures of information-processing have been postulated as arising through either extraordinarily complicated networks of neural pathways or via compartmentalized bundles of neurons devoted to specific domains. Not surprisingly, there is evidence to support both sides (see contributions in Gazzaniga 2000).

Given the current state of affairs, then, it is questionable that neuroanatomical mapping is any more heuristic an approach to studying the cognitive underpinnings of theism than the behavioral framework I have outlined. Nevertheless, this does not reduce to a competition between cognitive neuroscience and comparative behavioral studies for preeminent status in investigating the evolutionary origins of theistic percepts and religious behaviors. As a true interdisciplinary enterprise, the explanatory toolkit of modern cognitive science should include an eclectic array of important research findings from diverse fields. Because religious categories impinge upon everyday psychological processes, this is particularly essential for theorists interested in tracking the emergence and rampant transmission of religious phenomenology in the human species (see Barrett 2000).

In focusing primarily on the former, I selected findings from work done in developmental psychology and cognitive primatology for my analysis because of these fields' strong potential to inform us of the evolution of modularized cognitive processes seemingly involved in representation of causal agency. These core processes, I argued, serve as the grindstone upon which all non-natural agent concepts are initially processed and sharpened. Other than gracefully caviling that I have resurrected the spirit of Descartes

in my attempts to deny chimpanzees the ability to attribute mental states, Gallup and Maser chose not to take head-on any of the specific arguments I made. While it is fashionable, of course, to label Cartesian anyone who goes against the grain by suggesting that chimpanzees and other great apes might lack the cognitive circuitry necessary for explicitly representing minds, the authority for making such claims lies in the data itself. Unlike the clear evidence of mental state attribution in human children, rigorously controlled experimental studies of theory of mind in other primate species have not produced similarly incontrovertible findings. To the contrary, there *is* evidence that chimpanzees, for example, are sophisticated general learners and are more sensitive to behavioral cues than comparative psychologists have been willing to realize (for review, see Tomasello & Call 1997). This is not something that Gallup and Maser directly address, but instead rely strongly upon findings from mirror self-recognition studies. By doing so, however, the authors are painting themselves into a tight corner. To propose that mirror self-recognition is diagnostic of a psychological self-concept, which is in turn diagnostic of empathic cognition, which is in turn diagnostic of theism amounts to making a giant inference; if the theoretic scaffolding supporting this model begins to weaken under the blows of current empirical results from related studies, the model inevitably collapses.

The first and biggest hurdle faced by this model is the interpretive problem to be found in classic mirror studies. What, precisely, does it mean when a chimpanzee or orangutan reaches up to touch a bit of unexpected dye on its eyebrow ridge when a mirror is put in front of it? Gallup (1982) argues that such behavior proves that these species are capable of becoming the objects of their own attention, and are mapping their online mental experiences onto their images in the mirror and thereby realizing the correspondence of psychological states between the self and the self's reflected actions. But this is not the only explanation, nor, it is becoming apparent, is it necessarily the best one. Other authors more sparingly credit these species, as well as 18-24 month-old human toddlers who pass a variation of the test but who lack a full-blown theory of mind, with a kinesthetic-proprioceptive self-concept (which involves representation of states associated with self-produced movements and touch sensory schemes and the causal relations between these states and their effects upon the

environment), but are skeptical of claims that successful performance has much to do with an introspective awareness or an ability to impute mental states to other agents (e.g., Povinelli 1995). According to this view, the “I” of chimpanzees and orangutans is not a function of the recursive self. It reflects a theory of physical and bodily states instead of a theory of mental states.

The second problem Maser and Gallup’s original model of theism faces is the centrality of fear of death as the major motivational force behind god beliefs. “The organism, which is aware of itself, and bearing witness to the demise of its associates, should be able to take the next logical step and conceive of a nonself, or its death” (1990, p. 525). On this point I fully agree. The problem arises only when the organism in question is not aware of itself, but claims are made that it is. “Chimpanzees have minds. They may even be able to conceive of a God, but without foreknowledge that they will die, there is no great motivational reason for the notion of God to be a paramount feature in their lives” (1990, p. 526). The statement begs the question: If fear of the finality of one’s own death is a direct outcome of a psychological self-concept, and if chimpanzees possess a psychological self-concept, then why do they lack foreknowledge of their own deaths? Unlike Maser and Gallup, I argued that although chimpanzees do not possess a self-concept in the style of humans, they nevertheless evidence an implicit understanding of their own deaths, as do a host of other social species. Fear of death, however, is neither sufficient nor necessary for entertaining notions of non-natural agency; its behavioral manifestations in the human species are merely the straightest portals for religious scholars into human theistic concepts.

The argument I have advanced is best portrayed as the ontological argument revamped. It is based on a modular system dependent upon maturational influences both endogenous and socio-cultural, but built primarily upon an intuitive groundwork laid out by evolutionary forces (Bjorklund & Pellegrini 2000). My argument rests not upon instinct theory, as has been indicted, but rather upon contemporary modular theories devoted to explaining humans’ affinity for making mental-physical causal assumptions (e.g., Baron-Cohen 1995; Leslie 1994). Understanding the core module that is dedicated to finding intention in the communicative displays of other agents will, I am confident, go a long way in helping us

to answer weighty questions at the intersection of philosophy, theology, and psychology. Although attempts at answering such questions through science got off to a bad start (of which Descartes was in no small part responsible), it is time to bring them out of retirement and put them under the microscope of modern cognitive science. They have enjoyed sacred status for far too long.

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