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Many religious rituals, including rituals of technology (e.g., rituals of divination and protection) and rituals of therapy (e.g., rituals of witchcraft and curing), are intended by their practitioners to invoke supernatural *causes* to generate natural *effects*. This presents a basic and obvious question for scholarly inquiry: *do religious rituals actually work?* In other words, is there in fact a causal link between alleged paranormal forces and observed normal effects? (The terms *paranormal* and *supernatural* are essentially synonymous, although they may have slightly different connotations—both refer to putative phenomena that purport to be exceptions to the natural laws revealed by scientific inquiry).

Many scholars involved in the study of religious rituals dismiss the question of whether religious rituals actually work, because they consider the question to be unanswerable. In *Theories of Primitive Religion*, the anthropologist E.E. Evans-Pritchard (1965:17) offers a classic formulation of the argument in support of this position: “He [the anthropologist] is not concerned, *qua* anthropologist, with the truth or falsity of religious thought. As I understand the matter, there is no possibility of his *knowing* whether the spiritual beings of primitive religions or of any others have any existence or not, and since that is the case he cannot take the question into consideration.”

Within cultural anthropology, the discipline that is most concerned with the cross-cultural, comparative study of religious rituals, it is probably fair to say that most contemporary scholars are sympathetic to Evans-Pritchard’s point of view. Indeed, the notion that the supernatural realm falls beyond the bounds of scientific investigation is widely embraced outside anthropology as well. The evolutionary biologist Stephen Jay Gould (1942-2002), for example, argues that science and religion constitute “nonoverlapping magisteria,” or domains of teaching authority. According to Gould (1999a:58), “The net of science covers the empirical realm: what is the universe made of (fact) and why does it work this way (theory). The net of religion extends over questions of moral meaning and value.”

The Skeptical Alternative

Although Gould’s argument is extremely popular, it is not universally accepted. Those scholars who identify themselves as scientific skeptics maintain instead that science and religion *do* overlap to a considerable extent, and they maintain that the principles of scientific inquiry *can* be applied to supernatural claims. The evolutionary zoologist Richard Dawkins (1941-) is a prominent proponent of these views. Dawkins contends that religions make many claims about the existence of various beings and forces, and those claims are clearly amenable to scientific scrutiny. The Virgin Birth of Jesus, the bodily Assumption of the Blessed Virgin Mary, and the Resurrection of Jesus are all factual claims, however ambiguous the historical evidence might be. “A universe with a supernatural presence,” Dawkins (1999:64) observes, “would be a fundamentally and qualitatively different kind of universe from one without. The difference is, inescapably, a scientific difference.”

For scientific skeptics such as Richard Dawkins, the question of whether religious rituals *actually* work is an essential question that must be addressed and resolved before any satisfactory explanation of religious rituals could be developed. An anthropologist who wanted to explain why a particular group engages in rain

dances, for example, would need to know first whether or not the rain dances were actually effective. The explanation of why people engage in rain dances *that had actual meteorological effects* would be very different from the explanation of why people engage in rain dances *that had no actual meteorological effects*. (Among other things, the explanation of why people *believe* in the efficacy of rain dances would be very different in the two cases.) The question then becomes whether it is possible, using the principles of scientific inquiry, to determine if paranormal causality is operative in religious rituals. Scientific skeptics answer in the affirmative.

Scientific Skepticism Defined

In the traditional philosophical sense of the term, *skepticism* refers to the contention that reliable knowledge is impossible. Those contemporary scholars and investigators who identify themselves as scientific skeptics reject this total, negative meaning of skepticism and embrace instead a selective, positive form of skepticism. Scientific skeptics regard skepticism as a methodological principle of inquiry. They affirm that reliable knowledge is possible, but they believe that the only claims to knowledge that are warranted are those that are supported by compelling evidence. They believe that the epistemology of science provides the best means for obtaining factual information about the universe and everything in it, and they reject the contention that supernatural claims fall beyond the purview of rational investigation.

The Fundamental Principles of Scientific Skepticism

In the investigation of any paranormal or supernatural claim (which would include claims for the efficacy of religious rituals of technology and therapy), scientific skeptics would apply the following five principles to the evaluation of the claim:

1. *The claim must be testable.* The fundamental principle of the skeptical approach to knowledge is that claims should be accepted when they are supported by compelling evidence and rejected when the evidence is insufficient or contradictory. Many religious claims, however, are framed in a manner that makes them immune to testing against the evidence. When rain dances fail to produce rain, for example, the ritual practitioners rarely abandon belief in the efficacy of their rituals. Instead, they typically assert that it failed to rain because the gods were angry or the dancers' hearts were impure. Whether it rains or not, the ritual practitioners will cling to their belief in the efficacy of their ritual. In contrast, scientific skeptics insist that factual claims must be vulnerable to the possibility of refutation by contradictory evidence.

2. *Arguments adduced in support of the claim must be logically consistent.* The fundamental rules of logical reasoning are an essential element of the epistemology of science. Thus scientific skeptics demand that arguments be sound, and scientific skeptics are alert to common errors in logical reasoning, such as begging the question, posing a false dilemma, or appealing to authority, ignorance, or fear. The arguments offered by religious believers in support of the efficacy of religious rituals typically contain logical fallacies.

3. *There must be a comprehensive examination of all evidence relevant to the claim.* It would obviously be unreasonable to consider only the evidence that appears to support a claim while ignoring the evidence that contradicts it. The fact that religious rituals of technology and therapy *sometimes* achieve their intended effects, for example, is not evidence for the causal efficacy of paranormal forces, because religious rituals also frequently fail to achieve their intended effects. Scientific skeptics would seek a consistent explanation of religious rituals that accounts for *all* observed effects.

4. *The burden of proof for any claim falls upon the claimant.* Religious believers sometimes attempt to justify their beliefs by claiming that their critics have not disproved those beliefs. There is a logical flaw in that reasoning, however: the absence of disconfirming evidence is not the same as the presence of confirming

evidence. If it were, anything that could be imagined could be “proved.” The intellectual obligations rests with the proponent of any claim to either adduce the evidence confirming the claim or to withdraw the claim.

5. *Extraordinary claims demand extraordinary evidence.* Paranormal and supernatural claims are inherently improbable by their nature, because they purport to be exceptions to well established scientific knowledge. Thus the evidence presented to overthrow established scientific knowledge would have to be proportional to the certainty attached to that knowledge. In the investigation of paranormal claims, scientific skeptics maintain that appeals to authority and appeals to testimony can never be sufficient in themselves to justify belief in paranormal claims, because the probability of human error (or human mendacity) is always greater than the probability that a well-established scientific law has been violated.

Skeptical Organizations

The goals and assumptions of contemporary scientific skepticism are clearly evident in the various skeptical organizations that have been founded since the fourth quarter of the 20th-century. Prominent among those organizations are the Committee for the Scientific Investigation of Claims of the Paranormal, the Council for Secular Humanism, and the Skeptics Society. These organizations provide an excellent starting point for further inquiry into the nature of contemporary scientific skepticism.

The Committee for the Scientific Investigation of Claims of the Paranormal. CSICOP, as the organization is known, was founded in 1976 by the philosopher Paul Kurtz (1925-), who also founded Prometheus Books, the leading publisher of skeptical books. Kurtz continues to serve as Chairman of CSICOP, which counts among its Fellows a number of prominent scholars and other professionals from a wide variety of fields.

CSICOP’s stated mission is to promote science and scientific inquiry, critical thinking, science education, and the use of reason in examining important issues. The organization encourages the critical investigation of paranormal and fringe-science claims from a responsible, scientific point of view and disseminates factual information about the results of such inquiry to the scientific community, the media, and the public. CSICOP publishes a bimonthly journal, *Skeptical Inquirer*, and maintains a website on the internet at <www.csicop.org>.

The Council for Secular Humanism. Like CSICOP, the Council for Secular Humanism is a nonprofit educational organization devoted to the promotion of reason in human life; Paul Kurtz is its Founder and Chair. The Council’s fundamental convictions are expressed in a document entitled “The Affirmations of Humanism: A Statement of Principles,” which includes the following declarations: “We are committed to the application of reason and science to the understanding of the universe and to the solving of human problems. We deplore efforts to denigrate human intelligence, to seek to explain the world in supernatural terms, and to look outside nature for salvation. We are skeptical of untested claims to knowledge, and we are open to novel ideas and seek new departures in our thinking.” The full text of the document can be found in every issue of the Council’s quarterly journal, *Free Inquiry*, as well as on its internet website at <www.secularhumanism.org>.

The Skeptics Society. Like CSICOP, the Skeptics Society conducts investigations and research into controversial claims and provides information to the media and the public on paranormal topics. As envisioned by the Society, the “key to skepticism is to continuously and vigorously apply the methods of science to navigate the treacherous straits between ‘know-nothing’ skepticism and ‘anything goes’ credulity.” The Skeptics Society publishes a quarterly magazine, *Skeptic*, and maintains a website on the internet at <www.skeptic.com>.

Conclusion

From the point of view of scientific skeptics, no paranormal or supernatural claim in the history of the world has ever withstood critical scrutiny under the epistemological guidelines outlined in the section on *The Fundamental Principles of Scientific Skepticism*. After applying those principles to all available evidence collected to date, scientific skeptics conclude that there is no supernatural component to the universe. This conclusion has fundamental implications for the study of religion and religious rituals.

If the supernatural realm were real, then a host of other questions requiring explanation would be raised, such as why different groups of humans perceive the supernatural realm so differently, and why no human group has figured out how to use supernatural forces to produce the desired natural effects on a consistent basis. On the other hand, if the supernatural realm is an illusion, then the universality of religion becomes the fundamental question that needs to be explained (which is what Pascal Boyer and Steven Pinker attempt to do in their books *Religion Explained* and *How the Mind Works*, when they argue that humans are susceptible to religious belief because of certain adapted features of the human mind).

Since any explanation founded upon the assumption that the supernatural realm is real would have profoundly different implications from an explanation founded upon the assumption that the supernatural realm is an illusion, scientific skeptics maintain that any satisfactory explanation of religious rituals must begin with a determination of whether the rituals actually work. That determination would not preclude the investigation of other aspects of religious rituals (including their social, psychological, and ecological functions), but would instead provide the necessary foundation for those investigations.

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