

THE NEW SCIENCE OF RELIGION AND WHAT IT MIGHT MEAN FOR FAITH

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Incorrigible religiosity

Human beings are incorrigibly and promiscuously religious. The belief in supernatural agents—gods, angels, demons, souls, spirits, and their ilk—is cross-culturally and historically ubiquitous. As far as we know, in all times and in all places, people have believed in such beings; they have worshipped them, often at great cost, sometimes perversely and perplexingly so. Gods are evidently terribly inconvenient things in which to believe. They often require risky rituals, including onerous pilgrimages and ecstatic acts of self-mutilation; they often mandate material sacrifices, from tithes and taxes to the mass slaughtering of livestock; they often demand deprivative devotion, such as abstinence from food and sex. Furthermore, such costs are neither phenomena of a primitive past, nor statistically abnormal aberrations.

Every 12 years, millions of Hindus from all over the world gather in India for the *Maha Kumbh Mela* pilgrimage. In 2001, 70 million people showed up, purportedly making it the largest gathering of people in history. Every year, three million Muslims undertake the annual Hajj pilgrimage to Mecca. These great pilgrimages come at proportionally great

individual and institutional cost and risk. Even with the availability of commercial travel options, they are heavily energy- and resource-intensive endeavours. Furthermore, they pose enormous health risks, especially from bacterial and viral infection; some pilgrims even get trampled to death by fellow worshippers. Striking closer to home, Christians, too, undertake such pilgrimages, albeit at smaller scales and to multiple locations—travelling around the world, visiting the Vatican and Lourdes and the Holy Land, Israel. Granted, the life of the urban Western Christian seems respectably bourgeois, and if so, they are the anomalies; but not even we are exempt

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from seemingly senseless sacrifices. We too give up our material resources, with our weekly tithes and regular trips to Christian bookstores. Besides money, we give up our time and effort, attending church services and seemingly endless and interminable committee meetings. We give up reproductive opportunities—particularly perplexing from an evolutionary perspective—by abstaining temporarily and, in some cases, even remaining permanently celibate. Of course, our sacrifices may seem mundane to us, but our attempts to please or appease our god would appear peculiar to outsiders looking in, just as we find

foreign expressions of religious devotion unusual, even draconian.

That religion remains a ubiquitous feature of human society despite these costs is remarkable, but it is more remarkable still once we consider the recurring efforts to quash religion by acutely antagonistic, persecutory political regimes and the protestations of public intellectuals. The demise of religion has been prophesied since the Enlightenment, and yet it shows no signs of waning at a global level. If history is any guide, then contemporary attempts to eradicate religion, associated with the New Atheists, are doomed to failure. But why should this be? Why are human beings so

incorrigibly religious? Why is religion so pervasive, given the internally-incurred and externally-imposed costs associated with it? Everyone—lay people and scholars alike—seems to have pet theories about this; the history of ideas is replete with attempted explanations of religion. But these ideas have largely remained speculative and untested until the last decade and a half. More recently, there have been concerted inter-disciplinary attempts—among psychologists, anthropologists, biologists, historians, religious studies scholars, and philosophers—to formulate testable theories about the psychological and evolutionary

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underpinnings of religious affect, belief, and behaviour. As it is the job of science to bring order to oddity, the aim of this nascent ‘cognitive science of religion’¹ (CSR) is to explain the puzzling set of phenomena we call ‘religion’. Of course, talk of ‘explaining religion’ is presumptuous hyperbole. Despite the publication of such books as *Religion Explained*,² *How Religion Works*,³ and *Why Would Anyone Believe in God?*,⁴ the CSR research programme is far from over. There are still fundamental disagreements among scholars over, for example, whether religion is an evolutionary adaptation or a by-product of evolutionary adaptations. At a more proximate level of analysis, we are only now beginning to uncover the psychological processes behind religious belief and behavior. However, the last decade or so of inter-disciplinary, piecemeal, and theoretically and methodologically pluralistic research has led to some valuable insights toward this goal of explaining religion. Different researchers are bound to diverge somewhat over what these key insights of the field are, but in my estimation four inter-related ideas stand out: *hypersensitive agency detection*, *theory of mind*, *minimal counterintuitiveness*, and *inferential richness*.

Seeing agents everywhere

We see faces in clouds, and hear voices in the wind; we believe that our pets have rich mental and emotional lives and behave as though our computers and vending machines are sentient, even accusing them of malice and incompetence.⁵ We are, in the jargon, hypersensitive detectors of agents. This simply refers to our ability and tendency—which we share with many, many other species—to quickly infer the presence of self-directed, volitional beings in our proximity. This tendency is thought to be ‘hypersensitive’ because it doesn’t take much for us to think that there’s some living thing—a person or animal, perhaps—nearby; the creaking of a house, the snapping of a twig, the rustling of

branches all trigger this mechanism. As a result, we detect non-existent agents more than we miss present ones.⁶

A trigger-happy cognitive mechanism hardly seems like optimal design, but the ability to infer the presence of potential threats and prey under evidentially ambiguous situations is actually very useful. After all, it is better to mistake

minds—when we ‘detect’ agents in our proximity, and attribute mental states to them. Immediately, we have, at least, an invisible person; and the context in which we detect the agent provides additional ‘theological’ content (as it were) to our newborn god. That is, the same cognitive tendencies that keep us safe from predators; that allow for social



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a boulder for a bear than a bear for a boulder; the former error merely leads to the unnecessary expenditure of energy as one runs away from a harmless rock, but the latter may lead to death by mauling and mastication. And so, we readily infer agency from sparse information. But that’s not all, we also readily attribute *mental states* to the agents we detect. We make sense of their behaviours by reasoning—consciously or otherwise—about their beliefs and desires. Again, that this tendency to infer mental states from little bits of behavioural information—such as facial expressions, tone of voice, and words and actions of various other kinds—is supremely useful is undeniable, as anyone familiar with autism can attest. To have, as we certainly do, a *theory of mind* enables us to engage in such crucial human activities as conversation, commerce, and courtship.

So, we see agents everywhere, and as a by-product, we see *supernatural agents* everywhere. It is not difficult to see how this works. Gods are born—in our

interaction; that lead us to see faces in clouds and hear voices in the wind; that lead us to believe that our pets have rich emotional lives and that our computers are out to get us; these cognitive tendencies are also responsible for generating supernatural agent concepts. Put another way, the same tendency that leads us to see art and artefacts as products of a human agent’s beliefs and desires (as opposed to, say, the mindless splashing on of paint by a machine) lead us also to see (rightly or wrongly) crop circles, bacterial flagella, and rainbows as products of supernatural agents’ beliefs and desires. But just having a supernatural agent concept—an invisible person, for example—is a long way from a deity to which we would sacrifice our possessions and even our lives. Individual people hearing voices in the wind, does not a religion make. Time and time again, stories about gods have spread to dozens, hundreds, thousands, and even millions of people, but what makes these stories so memorable and transmissible?

Spreading the word

For starters, these stories are interesting (and we will look closer at what being ‘interesting’ means in a moment), without being bizarre. The technical term for this is that they are ‘minimally counterintuitive’. Cross-cultural anthropological and psychological research strongly suggests that all human beings share some basic, unreflective, intuitive ‘beliefs’ about different classes of things like physical objects and animals and persons.⁷ I say ‘beliefs’ in scare quotes, because these are not necessarily beliefs that are consciously held or propositionally formulated in the way that we usually suppose. We ‘believe’, for example, that multiple physical objects cannot share space; ergo, even very young children are surprised to see physical objects passing through one another. That violates our *folk physics*. Similarly, we ‘believe’ that animals produce like offspring; we ‘believe’ this even when it comes to animals we know very little about. So, as cross-cultural research has consistently found, even very young children readily infer information about an animal’s parents from facts about their offspring and *vice versa*.⁸ In other words, we would be surprised to see puppies hatching out of chickens’ eggs. Now, such violations are what make a concept *counterintuitive*.

A *minimally* counterintuitive concept, therefore, is just one that minimally violates our basic intuitions. This implies, of course, that something can be more or less counterintuitive. A



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chicken that lays eggs with puppies in them, but is otherwise normal, violates a single categorical expectation; a chicken that can walk through walls and also happens to lay eggs with puppies in them (but is otherwise normal) violates two, and is thus more counterintuitive. Taking it a few steps further, a chicken that is made of metal, walks through walls, speaks fluent Dutch, grants wishes, turns into a werewolf during full moons, and lays eggs with puppies in them (but is otherwise normal) violates many expectations, and is very counterintuitive indeed. Perhaps unsurprisingly, even if such maximally counterintuitive beings were just as plausible, they are far less memorable (and therefore transmissible, for we have to be able to remember a story in order to retell it) than so-called minimally or optimally counterintuitive beings that only violate a few expectations.⁹ More interestingly, recent research suggests that minimally counterintuitive concepts are also more memorable than simply intuitive concepts.^{10,11} This might seem obvious, but the consensus from the psychological research used to be that familiarity conferred massive memory

advantages, and since intuitive concepts are more familiar than minimally counterintuitive ones, they should be more memorable. As it turns out, the *interestingness* derived from violations of our basic intuitions confer even greater memory hooks. But what has this got to do with gods?

Gods, or at least culturally successful gods, are often—so it is claimed—minimally counterintuitive agents.¹² Ghosts and other spirits, for instance, are just like regular persons, except that they are often invisible and immaterial in a way that would allow them to walk through walls.¹³ And the gods of the world religions are just powerful spirits. Now, this may not be true if you ask *theologians* in their ivory towers, but there is now increasing evidence that even religious intellectuals constantly fall back on crude, anthropomorphic conceptions of God.¹⁴

Relevance: From memory to belief

Minimal counterintuitiveness is one aspect of what it means for a concept to be interesting (but not bizarre). The fact

that gods are minimally counterintuitive agents might help to explain why they are so memorable and transmissible, but not why they're believed in and worshipped. After all, there are many conceivable minimally counterintuitive agents that do not occur in religious traditions. Sentient, talking trees occur in religious mythologies, but rarely do we get silent, inanimate humans (except insofar as they are made thus by angry gods). Disinterested deities have been speculated about in religious philosophies and systematic theologies (e.g. Enlightenment-style deism), but have never really caught on. And there's never been a religion based around a god who lives in an alternate reality, who has never had and

existential concerns—for example, the need for meaning¹⁶ and the fear of death¹⁷—can increase religious belief, at least at an implicit level, even among those who purport to be non- or anti-religious. Indeed, such concerns even increase religious belief in foreign gods.¹⁸ To wit, humans readily believe in gods partly because we find inferentially rich concepts plausible, and god concepts are inferentially rich concepts.

All together, these tendencies—to detect agents and infermentation, to remember and transmit minimally counterintuitive concepts, and to believe in inferentially rich ideas—go quite a long way to explaining the ubiquity and nature of religion.¹⁹

explain is not, just by virtue of explaining, to explain away.

That said, contemporary theories of religious belief are interestingly different from well-accepted theories of visual perception: unlike theories of visual perception, which refer to light bouncing off the objects being perceived in our eyes and so forth, contemporary explanations of religious belief do not refer at all to the objects of religious belief: gods. The suggestion is that we would believe in gods regardless of whether they actually existed; to wit, the existence of gods is not necessary for the widespread worship of gods. Like Laplace, the cognitive scientist of religion has no need for the God hypothesis.²⁰

There are at least two ways of responding to this charge of redundancy. The first is to point out that while CSR can explain why we have a predisposition to believe in gods, it does not necessarily explain any particular individual's beliefs. While this is a valid point, it is also trivial. Scientific theories are rarely absolute and exhaustive, and psychological theories about religion are no exception. It is universally acknowledged that to explain any particular phenomenon—be it a large scale natural disaster or a single individual's religious beliefs—requires multiple theories that deal with various different aspects of the phenomenon in question. But this is beside the point. Contemporary psychological science shows us how religious beliefs can be formed, maintained, and transmitted

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never will have anything to do with anything in our own world. Irrelevant beings don't become gods, only relevantly interesting ones do.

This aspect of what it means for gods to be interesting is captured by what researchers call 'inferential richness', which not only makes concepts more memorable for transmission, but also makes them more believable.¹⁵ A concept is inferentially rich if it can be invoked usefully in many different domains, and especially if these domains are subjectively emotionally significant to us. Sex, death, and morality are clear examples of such existentially significant domains, and so it is no surprise that gods are often deeply concerned with such matters. The concept of an invisible person (e.g., an ancestral spirit), for example, can easily be invoked as a moral policing agent; the concept of a powerful invisible person (e.g. a god) can additionally be invoked to explain natural phenomena and appealed to for help against aversive events, such as crop failure and illness.

So, relevance matters; relevance motivates belief. Recent research in experimental psychology has shown that

Is religion (un)reasonable?

The scientific investigation of religious belief is still considered, in some circles, to be taboo, and it is not difficult to see why. Attempts to explain religion look suspiciously like attempts to explain religion *away*. They seem to compete with and contradict traditional accounts of religious belief, in which Yahweh speaks directly to Moses or Allah speaks through the angel Jibreel to Muhammad. But we should not be too quick to leap to such conclusions.

We should be careful not to confuse explanation with refutation.

It is uncontroversial that a successful explanation of how visual perception works does not call into question the accuracy of our visual experiences. To think otherwise is clearly absurd. This move, from 'explaining' directly to 'explaining away' is illegitimate regardless of whether the phenomenon in question is visual perception or religious belief. So, that's the first and easiest step: to



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without special divine intervention just as contemporary meteorological science shows us how thunderstorms can occur without special divine intervention. Of course, perhaps some thunderstorms are special acts of divine intervention, but one would have to make one's case that this was so. Similarly, if we accept that, all else being equal, religious beliefs can arise without divine intervention, then we have to provide positive arguments for the belief that in *our* case, our religious beliefs (or, perhaps more importantly, those of our prophetic forebears) are

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products of divine self-revelation. That is, we have to argue that things are *not* all equal, such that a miraculous explanation is required.

The second response is to argue that while the psychological and evolutionary explanations reveal the proximate mechanisms by which religious beliefs are formed, the *ultimate* cause of our religious beliefs—indeed, the ultimate cause of all things—is divine. This is, of course, consistent with Christian beliefs about creation: that it is utterly contingent and continuously reliant upon God. But consistency with Christian doctrine is insufficient if there is no reason to believe in them. So, this second response requires positive arguments for the belief in a God who is the ultimate cause of all things,

including human beings with minds predisposed to believe in supernatural agents. But insofar as there are good reasons to believe in such a God, naturalistic explanations of religious belief pose no difficulty. In both cases—whether we prefer the first or second route—arguments about revelation and doctrines of creation are the proper domain of philosophers and theologians, and I shall leave it to them to pick things up from here. The upshot is that the cognitive science of religion does not, simply by putting forward the kinds of theories that it does, have very much to say about the truth or falsity, reasonableness or irrationality of religious belief. It is, after all, the study of a specific, albeit complex, set of human psychological facts. It is therefore the study of human persons, not divine ones; the study of people's concepts of gods, not the gods themselves. As such, the question of whether or not any given god exists simply goes beyond our field.

Watch this space

The cognitive science of religion is exciting, not just because its subject matter has been shrouded in taboo for centuries, but also because it is still in its infancy and there is still so much to discover. The theories retold here are severely underdetermined by data, and may well be proven false—overturned by other theories yet to be conceived. As is often the case, the challenges are proportional to the promise, not just because empirical research on people's cherished beliefs is difficult (though it is!), but also because we are constantly faced with philosophical and theological issues. As such, interdisciplinary engagement and intellectual humility are necessary, if we are to avoid pitfalls in the road between science and religion. ©

ENDNOTES

- 1 The origin of the term 'cognitive science of religion' is uncertain, but it first appeared in print in two papers by Justin Barrett [J. L. Barrett, 'Exploring the natural foundations of religion'. *Trends in Cognitive Sciences*, Vol.4, 2000, pp29-34] and E. Thomas Lawson [E. T. Lawson, 'Towards a cognitive science of religion'. *Numen*, Vol.47, 2000, pp338-349] respectively.
- 2 P. Boyer, *Religion explained: the evolutionary origins of religious thought* (New York, NY: Basic Books, 2001).
- 3 I. Pyysiäinen, *How religion works: towards a new cognitive science of religion* (Leiden, Netherlands: Brill, 2003).
- 4 J.L. Barrett, *Why would anyone believe in God?* (Walnut Creek, CA: AltaMira Press, 2004).
- 5 S.E. Guthrie, *Faces in the clouds: a new theory of religion* (Oxford, UK: Oxford University Press, 1993).
- 6 *Ibid.*
- 7 L. A. Hirschfield & S. A. Gelman (Eds.), *Mapping the mind: domain specificity in cognition and culture* (New York, NY: Cambridge University Press, 1994).
- 8 S. Atran, D. I. Medin & N. Ross, 'Thinking about biology. Modular constraints on categorization and reasoning in the everyday life of Americans, Maya, and scientists'. *Mind & Society*, Vol.3, 2002, pp31-63.
- 9 P. Boyer, *The naturalness of religious ideas: a cognitive theory of religion* (Berkeley, CA: University of California Press, 1994).
- 10 P. Boyer & C. Ramble, 'Cognitive templates for religious concepts: cross-cultural evidence for recall of counter-intuitive representations'. *Cognitive Science*, Vol.25, 2001, pp535-564.
- 11 A. Norenzayan, S. Atran, J. Faulkner & M. Schaller, 'Memory and mystery: the cultural selection of minimally counterintuitive narratives'. *Cognitive Science*, Vol.30, 2003, pp531-553.
- 12 Boyer, *Religion explained*, *op.cit.*
- 13 The existence of invisible gods is much harder to disconfirm. Usually, we pick up on our false positives in agency detection when we, for example, take a closer look and realize that the large brown object is a boulder, rather than a bear. In the case of invisible gods, such straightforward disconfirmations are unavailable. This might help to explain why invisibility is a cross-culturally recurring feature in religious belief.
- 14 J. L. Barrett & F. C. Keil, 'Conceptualizing a nonnatural entity: anthropomorphism in God concepts'. *Cognitive Psychology*, Vol.31, 1996, pp219-247.
- 15 Barrett, *Op.cit.*, 2004.
- 16 A. C. Kay, D. A. Moscovitch & K. Laurin, 'Randomness, attributions of arousal, and belief in God'. *Psychological Science*, Vol.21, 2010, pp216-218.
- 17 J. Jong & J. Halberstadt, 'Death and deities: a social cognitive perspective'. *The Inquisitive Mind*, Vol.15, 2012.
- 18 A. Norenzayan & I. G. Hansen, 'Belief in supernatural agents in the face of death'. *Personality and Social Psychology Bulletin*, Vol.32, 2006, pp174-187.
- 19 To this, evolutionary *adaptationist* theorists add that once there are *some* people or groups of people who believe in supernatural agents, natural selection can do its work. Religious belief and behaviour, it is claimed, conferred some reproductive advantages, say in terms of health benefits or sex appeal or group social cohesion, that made religion increasingly common to the point that it became virtually universal. Due to limits of space, I shall go no further into such adaptationist accounts of religion here.
- 20 According to a popular, albeit potentially apocryphal, anecdote, when asked by the Emperor Napoleon why God did not feature in his book on planetary motions, the French mathematician and astronomer Pierre-Simon Laplace quipped that he had no need for that hypothesis.