

Why Is Religion Natural?

[Pascal Boyer Volume 28.2, March / April 2004](#)

Is religious belief a mere leap into irrationality as many skeptics assume? Psychology suggests that there may be more to belief than the suspension of reason.

Religious beliefs and practices are found in all human groups and go back to the very beginnings of human culture. What makes religion so 'natural'? A common temptation is to search for the origin of religion in general human urges, for instance in people's wish to escape misfortune or mortality or their desire to understand the universe. However, these accounts are often based on incorrect views about religion (see table 1) and the psychological urges are often merely postulated. Recent findings in psychology, anthropology, and neuroscience offer a more empirical approach, focused on the mental machinery activated in acquiring and representing religious concepts.^[1]

Do not say...	But say...
Religion answers people's metaphysical questions	Religious thoughts are typically activated when people deal with concrete situations (this crop, that disease, this new birth, this dead body, etc.)
Religion is about a transcendent God	It is about a variety of agents: ghouls, ghosts, spirits, ancestors, gods, etc., in direct interaction with people
Religion allays anxiety	It generates as much anxiety as it allays: vengeful ghosts, nasty spirits and aggressive gods are as common as protective deities
Religion was created at time t in human history	There is no reason to think that the various kinds of thoughts we call "religious" all appeared in human cultures at the same time
Religion is about explaining natural phenomena	Most religious explanations of natural phenomena actually explain little but produce salient mysteries
Religion is about explaining mental phenomena (dreams, visions)	In places where religion is not invoked to explain them, such phenomena are not seen as intrinsically mystical or supernatural
Religion is about morality and the salvation of the soul	The notion of salvation is particular to a few doctrines (Christianity and doctrinal religions of Asia and the Middle East) and unheard of in most other traditions
Religion creates social cohesion	Religious commitment can (under some conditions) be used as signal of coalitional affiliation, but coalitions create social fission (secession) as often as group integration
Religious claims are irrefutable; that is why people believe them	There are many irrefutable statements that no one believes; what makes some of them plausible to some people is what we need to explain
Religion is irrational/superstitious (therefore not worthy of study)	Commitment to imagined agents does not really relax or suspend ordinary mechanisms of belief formation; indeed it can provide important evidence for their functioning (and therefore should be studied attentively)

Table 1: Do's and don't's in the study of religion. Table 1 is taken from Boyer P. Religious thought and behavior as by-products of brain function. *Trends in Cognitive Sciences* 2003. 7(3): p. 119-124.

The first thing to understand about religion is that it does not activate one particular capacity in the mind, a “religious module” or system that would create the complex set of beliefs and norms we usually call religion. On the contrary, religious representations are sustained by a whole variety of different systems, of which I will describe some presently. A second important point is that all these systems are parts of our regular mental equipment, religion or no religion. In other words, belief in religion activates mental systems involved in a whole variety of non-religious domains. These two points have important consequences for our understanding of why there is some kind of religion in all human cultures, why religion is so easy to acquire and transmit.

When thinking about religion, one can make a number of very tempting mistakes, some of which are summarized in table 1. Here I want to discuss one particular view of religion, popular among skeptics, that I call the “sleep of reason” interpretation. According to this view, people have religious beliefs because they fail to reason properly. If only they grounded their reasoning in sound logic or rational order, they would not have supernatural beliefs, including superstitions and religion. I think this view is misguided, for several reasons; because it assumes a dramatic difference between religious and commonsense ordinary thinking, where there isn't one; because it suggests that belief is a matter of deliberate weighing of evidence, which is generally not the case; because it implies that religious concepts could be eliminated by mere argument, which is implausible; and most importantly because it obscures the real reasons why religion is so extraordinarily widespread in human cultures.

Religion as the “Sleep of Reason”

There is a long and respectable tradition of explaining religion as the consequence of a flaw in mental functioning. Because people do not think much or not very well, the argument goes, they let all sorts of unwarranted beliefs clutter their mental furniture. In other words, there is religion around because people fail to take prophylactic measures against beliefs, for one of the following reasons:

People are superstitious, they will believe anything. People are naturally prepared to believe all sorts of accounts of strange or counter-intuitive phenomena. Witness their enthusiasm for UFOs as opposed to scientific cosmology, for alchemy instead of chemistry, for urban legends instead of hard news. Religious concepts are both cheap and sensational; they are easy to understand and rather exciting to entertain.

Religious concepts are irrefutable. Most incorrect or incoherent claims are easily refuted by experience or logic but religious concepts are different. They invariably describe processes and agents whose existence could never be verified and are consequently never refuted. As there is no evidence against most religious claims, people have no obvious reason to stop believing them.

Refutation is more difficult than belief. It takes greater effort to challenge and rethink established notions than just accept them. Besides, in most domains of culture we just absorb other people's notions. Religion is no exception. If everyone round about you says that there

are invisible dead people around, and everyone acts accordingly, it would take a much greater effort to try and verify such claims than it takes to accept them, if only provisionally.

I find all these arguments unsatisfactory. Not that they are false: religious claims are indeed beyond verification. People do like sensational supernatural tales better than banal stories and they generally spend little time rethinking every bit of cultural information they acquire. But this cannot be a sufficient explanation for why people have the concepts they have, the beliefs they have, the emotions they have. The idea that we are often gullible or superstitious is certainly true; but we are not gullible in just every possible way. People do not generally strive to believe six impossible things before breakfast, as does the White Queen in Lewis Carroll's *Through the Looking-Glass*. Religious claims are irrefutable, but so are all sorts of other far-fetched notions that we never find in religion. Take for instance the claim that my right hand is made of green cheese except when people examine it, that God ceases to exist every Wednesday afternoon, that cars feel thirsty when their tanks run low, or that cats think in German. I could make up hundreds of such interesting and irrefutable beliefs that no one would ever consider as a possible belief.

Religion is *not* a domain where anything goes, where any strange belief could appear and get transmitted from generation to generation. On the contrary, there is only a limited catalogue of possible supernatural beliefs. Even without knowing the details of religious systems in other cultures, we all know that some notions are far more widespread than others. The idea that there are invisible souls of dead people lurking around is a very common one; the notion that people's organs change position during the night is very rare. But both are equally irrefutable. So the problem, surely, is not just to explain how people can accept supernatural claims for which there is no strong evidence but also why they tend to represent and accept *these* particular supernatural claims rather than other possible ones. We should explain why they are so selective in the claims they adhere to.

Indeed, we should go even further and abandon the credulity-scenario altogether. Here is why: In this scenario, people relax ordinary standards of evidence for some reason. If you are against religion, you will say that this is because they are naturally credulous, or respectful of received authority, or too lazy to think for themselves, etc. If you are more sympathetic to religious beliefs, you will say that they open up their minds to wondrous truths beyond the reach of reason. But the point is that if you accept this account, you assume that people *first* open up their minds, as it were; and *then* let it be filled by whatever religious beliefs are held by the people who influence them at that particular time. This is often the way we think of religious adhesion. There is a gate-keeper in the mind that either allows or rejects visitors, that is, other people's concepts and beliefs. When the gate-keeper allows them in, these concepts and beliefs find a home in the mind and become the person's own beliefs and concepts.

Our present knowledge of mental processes suggests that this scenario is highly misleading. People receive all sorts of information from all sorts of sources. *All* this information has some effect on the mind. Whatever you hear and whatever you see is perceived, interpreted, explained, and recorded by the various inference systems I described above. Every bit of information is fodder for the mental machinery. But then some pieces of information produce the effects that we identify as 'belief'. That is, the person starts to recall them and use them to explain or interpret particular events; they may trigger specific emotions; they may strongly influence the person's behaviour. Note that I said *some* pieces of information, not all. This is where the selection occurs. In ways that a good psychology of religion should describe, it so happens that only some pieces of information trigger these effects, and not others; it also

happens that the same piece of information will have these effects in some people but not others. So people do not have beliefs because they somehow made their minds receptive to belief and then acquired the material for belief. They have some beliefs because, among all the material they acquired, some of it triggered these particular effects.

A Limited Catalogue of Concepts

Do people know what their religious concepts are? This may seem an absurd question, but it is in fact an important question in the psychology of religion, whose true answer is probably in the negative. In most domains of mental activity, only a small part of what goes on in our brains is accessible to conscious inspection. For instance, we constantly produce grammatical sentences in our native tongue with impeccable pronunciation, often without any idea how this is done. Or we perceive the world around us as made up of three-dimensional objects, but we are certainly not aware of the ways in which our visual cortex transforms two retinal images into this rich impression of solid objects out there. The same goes for all our concepts and norms. We have some notion of what they are, but we certainly do not have full access to the way our minds create and sustain them. Most of the relevant mental machinery that sustains religious concepts is not consciously accessible.

People's explicitly held, consciously accessible beliefs, as in other domains of cognition, only represent a fragment of the relevant processes. Indeed, experimental tests show that people's actual religious concepts often diverge from what they believe they believe. This is why theologies, explicit dogmas, scholarly interpretations of religion cannot be taken as a reliable description of either the contents or the causes of people's beliefs. For instance, psychologist Justin Barrett showed that Christians' concept of God was much more complex than the believers themselves assumed. Most Christians would describe their notion of God in terms of transcendence and extraordinary physical and mental characteristics. God is everywhere, attends to everything at the same time. However, subtle experimental tasks reveal that, when they are not reflecting upon their own beliefs, these same people use another concept of God, as a human-like agent with a particular viewpoint, a particular position and serial attention. God considers one problem and then another. Now that concept is mostly tacit. It drives people's thoughts about particular events, episodes of interaction with God, but it is not accessible to people as "their belief." In other words, people do not believe what they believe they believe. [2]

A systematic investigation of these tacit concepts reveals that notions of religious agency, despite important cultural differences, are very similar the world over. There is a small repertoire of possible types of supernatural characters, many of whom are found in folktales and other minor cultural domains, though some of them belong to the important gods or spirits or ancestors of "religion." Most of these agents are explicitly defined as having counterintuitive physical or biological properties that violate general expectations about agents. They are sometimes undetectable, or prescient, or eternal. The way people represent such agents activates the enormous but inaccessible machinery of "theory of mind" and other mental systems that provide us with a representation of agents, their intentions and their beliefs. All this is inaccessible to conscious inspection and requires no social transmission. On the other hand, what is socially transmitted are the counterintuitive features: this one is omniscient, that one can go through walls, another one was born of a virgin, etc.

More generally, we observe that most supernatural and religious concepts belong to a short catalogue of possible types of templates, with a common structure. All these concepts are

informed by very general assumptions from broad categories such as *person*, *living thing*, or *man-made object*. A spirit is a special kind of person, a magic wand a special kind of artifact, a talking tree a special kind of plant. Such notions combine (i) specific features that violate some default expectations for the domain with (ii) expectations held by default as true of the entire domain. For example, the familiar concept of a *ghost* combines (i) socially transmitted information about a physically counterintuitive person (disembodied, can go through walls, etc.), and (ii) spontaneous inferences afforded by the general person concept (the ghost perceives what happens, recalls what he or she perceived, forms beliefs on the basis of such perceptions, and intentions on the basis of beliefs).

These combinations of explicit violation and tacit inferences are culturally widespread and may constitute a memory optimum. Associations of this type are recalled better than more standard associations but also better than oddities that do not include domain-concept violations. The effect obtains regardless of exposure to a particular kind of supernatural beliefs, and it has been replicated in different cultures in Africa and Asia.

To sum up, we can explain human sensitivity to particular kinds of supernatural concepts as a by-product of the way human minds operate in ordinary, non-religious contexts. Because our assumptions about fundamental categories like *person*, *artifact*, *animal*, etc., are so entrenched, violations of these assumptions create salient and memorable concepts.

Exchange, Morality, and Misfortune

We can understand other aspects of religious concepts as by-products of these ordinary, non-religious mental systems that organize our everyday experience. For instance, consider the fact that in all human cultures, a great deal of attention is focused, not so much on the characteristics of supernatural agents, as on their interaction with the living. This is visible in the constant association between moral judgments and supernatural agency, as well as in the treatment of misfortune and contingency.

Developmental research shows the early appearance and systematic organization of moral intuitions: a set of precise feelings evoked by the consideration of actual and possible courses of action. Although people often state that their moral rules are a consequence of the existence (or of the decrees) of supernatural agents, it is quite clear that such intuitions are present, independent of religious concepts. Moral intuitions appear long before children represent the powers of supernatural agents, they appear in the same way in cultures where no one is much interested in supernatural agents, and in similar ways regardless of what kind of supernatural agents are locally important. Indeed, it is difficult to find evidence that religious teachings have any effect on people's moral intuitions. Religious concepts do not change people's moral intuitions but frame these intuitions in terms that make them easier to think about. For instance, in most human groups supernatural agents are thought to be *interested parties* in people's interactions. Given this assumption, having the intuition that an action is wrong becomes having the expectation that a personalized agent disapproves of it. The social consequences of the latter way of representing the situation are much clearer to the agent, as they are handled by specialized mental systems for social interaction. This notion of gods and spirits as interested parties is far more salient in people's moral inferences than the notion of these agents as moral legislators or moral exemplars.

In the same way, the use of supernatural or religious explanations for misfortune may be a byproduct of a far more general tendency to see all salient occurrences in terms of social

interaction. The ancestors can make you sick or ruin your plantations; God sends people various plagues. On the positive side, gods and spirits are also represented as protectors, guarantors of good crops, social harmony, etc. But why are supernatural agents construed as having such causal powers?

One of the most widespread explanations of mishaps and disorders, the world over, is in terms of witchcraft, the suspicion that some people (generally in the community) perform magical tricks to “steal” other people’s health, good fortune, or material goods. Concepts of witches are among the most widespread supernatural ones. In some places there are explicit accusations and the alleged witches must either prove their innocence or perform some special rituals to pay for their transgression. In most places the suspicion is a matter of gossip and rarely comes out in the open. You do not really need to have actual witches around to have very firm beliefs about the existence and powers of witches. Witchcraft is important because it seems to provide an “explanation” for all sorts of events: many cases of illness or other misfortune are spontaneously interpreted as evidence for the witches’ actions. Witchcraft beliefs are only one manifestation of a phenomenon that is found in many human groups, the interpretation of misfortune as a consequence of envy. For another such situation, consider the widespread beliefs in an “evil eye,” a spell cast by envious people against whoever enjoys some good fortune or natural advantage. Witchcraft and evil eye notions do not really belong to the domain of religion, but they show that, religious agents or not, there is a tendency to focus on the possible reasons for some agents to cause misfortune, rather than on the processes whereby they could do it.

For these occurrences that largely escape control, people focus on the supernatural agents’ feelings and intentions. The ancestors were angry, the gods demanded a sacrifice, or the god is just cruel and playful. But there is more to that. The way these reasons are expressed is, in a great majority of cases, supported by our *social exchange* intuitions. People focus on an agent’s reasons for causing them harm, but note that these “reasons” always have to do with people’s *interaction* with the agents in question. People refused to follow God’s orders; they polluted a house against the ancestors’ prescriptions; they had more wealth or good fortune than their God-decreed fate allocated them; and so on. All this supports what anthropologists have been saying for a long time on the basis of evidence gathered in the most various cultural environments: Misfortune is generally interpreted in *social* terms. But this familiar conclusion implies that the evolved cognitive resources people bring to the understanding of interaction should be crucial to their construal of misfortune.

Social interaction requires the operation of complex mental systems: to represent not just other people’s beliefs and their intentions, but also the extent to which they can be trusted, the extent to which they find us trustworthy, how social exchange works, how to detect cheaters, how to build alliances, and so on. These mental systems are largely inaccessible, only their output is consciously represented. Now interaction with supernatural agents, through sacrifice, ritual, prayer, etc., is framed by those systems. Although the agents are said to be very special, the way people think about interaction with them is directly mapped from their interaction with actual people.

Precaution, Ritual, and Obsession

Magic and ritual the world over obsessively rehash the same themes, in particular “concerns about pollution and purity [...] contact avoidance; special ways of touching; fears about immanent, serious sanctions for rule violations; a focus on boundaries and thresholds.” [3]

Anthropologists have long documented, not just these particular themes of magical and ritual thinking, but also the more abstract principles that organize them: (1) dangerous elements or substances are invisible; (2) any contact (touching, kissing, ingesting) with such substances is dangerous; (3) the amount of substance is irrelevant (e.g., a drop of a sick person's saliva is just as dangerous as a cupful of the stuff). [4]

People spontaneously apply these principles in situations of potential contact with sources of pathogens and toxins: dirt, faeces, rotten food, bugs, diseased or decayed organisms. The three principles are particularly apposite when dealing with such situations, as most pathogens are invisible, use diverse vectors for transmission, and there is no dose effect. So it may be that "magical" thoughts are an extension of non-magical inferences about possible sources of contagion. [5] In this sense, many intuitions about magical "pollution," "defilement," etc., simply hijack, as it were, cognitive resources used in non-symbolic, non-religious domains.

More generally, rituals are usually performed with a sense of urgency, an intuition that great danger would be incurred by not performing them. These themes are also characteristic of obsessive-compulsive disorders (OCD). As many anthropologists and psychologists have noted, the themes of ritual, as summarized above, and those of personal pathological obsessions are almost exactly similar. The particular emotional tenor of rituals might derive from their association with neural systems dedicated to the detection and avoidance of invisible hazards. Neuro-imaging studies of OCD patients generally show a significant increase of activity in cortical and limbic areas dedicated to the processing of danger signals. [6] So the pathology might consist in a failure to inhibit or keep 'off-line' a set of normal neural reactions to potential sources of danger. We are still far from understanding to what extent this network is also involved in the production of "mild," controlled, socially transmitted notions about purity and the need for magical ritual. But it seems that the salience of a particular range of ritual themes to do with hidden danger and noxious contact [7] and a susceptibility to derive rigid, emotionally vivid sequences of compulsory actions from such themes, may be spectacular cultural byproducts of neural function.

What Makes Religion "Natural"

For lack of space, I cannot pursue this list of the mental systems (usually activated in non-religious contexts) that sustain the salience and plausibility of religious notions. To be exhaustive, one should also mention the close association between ritual participation and group affiliation, the role of our coalitional thinking in creating religious identity, the specific role of death and dead bodies in religious thinking, and many other aspects of religion. Psychological investigation into these domains reveals the same organization described above. A variety of mental systems, functionally specialized for the treatment of particular (non-religious) domains of information, are activated by religious notions and norms, in such a way that these notions and norms become highly salient, easy to acquire, easy to remember and communicate, as well as intuitively plausible.

The lesson of the cognitive study of religion is that religion is rather "natural" in the sense that it consists of by-products of normal mental functioning. Each of the systems described here (a sense for social exchange, a specific mechanism for detecting animacy in surrounding objects, an intuitive fear of invisible contamination, a capacity for coalitional thinking, etc.) is the plausible result of selective pressures on cognitive organization. In other words, these capacities are the outcome of evolution by natural selection.

In other words, religious thought activates cognitive capacities that developed to handle non-religious information. In this sense, religion is very similar to music and very different from language. Every normal human being acquires a natural language and that language is extraordinarily similar to that of the surrounding group. It seems plausible that our capacity for language acquisition is an adaptation. [8] By contrast, though all human beings can effortlessly recognize music and religious concepts, there are profound individual differences in the extent to which they enjoy music or adhere to religious concepts. The fact that some religious notions have been found in every human group does not mean that all human beings are naturally religious. Vast numbers of human beings do without it altogether, like for instance the majority of Europeans for several centuries.

Is religion “in the genes,” and could it be considered a result of natural selection? Some evolutionary biologists think that is so, because the existence of religious beliefs may provide some advantages for individuals or groups that hold them. The evidence for this is, however, still incomplete. It may seem more prudent and empirically justified to say that religion is a very probable byproduct of various brain systems that are the result of evolution by natural selection.

Can We Reason Religion Away?

Taking all this into account, it would seem that the “sleep of reason” interpretation of religion is less than compelling. It is quite clear that explicit religious belief requires a suspension of the sound rules according to which most scientists evaluate evidence. But so does most ordinary thinking, of the kind that sustains our commonsense intuitions about the surrounding environment. More surprising, religious notions are not at all a separate realm of cognitive activity. They are firmly rooted in the deepest principles of cognitive functioning. First, religious concepts would not be salient if they did not violate some of our most entrenched intuitions (e.g., that agents have a position in space, that live beings grow old and die, etc.). Second, religious concepts would not subsist if they did not confirm many intuitive principles. Third, most religious norms and emotions are parasitic upon systems that create very similar norms (e.g., moral intuitions) and emotions (e.g., a fear of invisible contaminants) in non-religious contexts.

In this sense, religion is vastly more “natural” than the “sleep of reason” argument would suggest. People do not adhere to concepts of invisible ghosts or ancestors or spirits because they *suspend* ordinary cognitive resources, but rather because they use these cognitive resources in a context for which they were not designed in the first place. However, the “tweaking” of ordinary cognition that is required to sustain religious thought is so small that one should not be surprised if religious concepts are so widespread and so resistant to argument. To some extent, the situation is similar to domains where science has clearly demonstrated the limits or falsity of our common intuitions. We now know that solid objects are largely made up of empty space, that our minds are only billions of neurons firing in ordered ways, that some physical processes can go backwards in time, that species do not have an eternal essence, that gravitation is a curvature of space-time. Yet even scientists go through their daily lives with an intuitive commitment to solid objects being full of matter, to people having non-physical minds, to time being irreversible, to cats being essentially different from dogs, and to objects falling down because they are heavy.

In a sense, the cognitive study of religion ends up justifying a common intuition, best expressed by Jonathan Swift’s dictum that “you do not reason a man out of something he was

not reasoned into.” The point of studying this scientifically is to show to what extent we can expect religious notions to be stable and salient in human cultures, not just now but for a long time to come.

Passages in the first part of the article are modified from Chapter 1 of Boyer, P., *Religion Explained: Evolutionary Origins of Religious Thought*, 2001, New York, Basic Books.

Notes

1. Boyer, P. 2001. *Religion Explained: Evolutionary Origins of Religious Thought*. New York: Basic Books, 403.
2. Barrett, J.L., and F.C. Keil. 1996. Conceptualizing a nonnatural entity: Anthropomorphism in God concepts. *Cognitive Psychology* 31(3): 219-247.
3. Dulaney, S., and A.P. Fiske. 1994. Cultural rituals and obsessive-compulsive disorder: Is there a common psychological mechanism? *Ethos* 22(3): 243-283.
4. Nemeroff, C.J. 1995. Magical thinking about illness virulence: Conceptions of germs from “safe” versus “dangerous” others. *Health Psychology* 14(2): 147-151.
5. Cosmides, L., and J. Tooby. 1999. Toward an evolutionary taxonomy of treatable conditions. *Journal of Abnormal Psychology* 108(3): 453-464.
6. Rauch, S.L., et al., 2001. Probing striato-thalamic function in obsessive-compulsive disorder and Tourette syndrome using neuroimaging methods. *Advances in Neurology* 85: 207-24.
7. Fiske, A.P., and N. Haslam. 1997. Is obsessive-compulsive disorder a pathology of the human disposition to perform socially meaningful rituals? Evidence of similar content. *Journal of Nervous & Mental Disease* 185(4): 211-222.
8. Pinker, S. 1995. *The Language Instinct*. 1st HarperPerennial ed. New York: HarperPerennial, 494.

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