

The naturalness of weird beliefs

Stuart Wilson on why scepticism is so cognitively taxing

Everyone knows that religious ideas are pervasive and robust, but what is it about our minds that make them so attractive? Even when traditional religious concepts have been rejected, many people are still drawn to the notion that there may be 'meaning' and 'purpose' to existence and find it odd if others don't share these beliefs.

Are we hardwired to believe in weird things? Recent theoretical and empirical work has started to inform us that such beliefs may be a natural feature of our evolved minds, making belief the default and scepticism a cognitive effort.

questions

Why is it so difficult for many people to conceive of a universe without any supernatural agents, or without any meaning? Human minds seem to be resistant to this, but does this tell us more about our minds than it does about the nature of reality?

resources

'The existential theory of mind' (Jesse Bering): <http://bit.ly/dCXJc4>
Boyer, P. (2001). *Religion explained*. London: Vintage.

Psychologists are a sceptical bunch. We are the least religious of all scientists (Gross & Simmons, 2009).

We know all about the cognitive biases that can lead us astray in our reasoning (e.g. Gilovich, 1991), which means we can easily explain away many of the odd experiences or beliefs that many people report. I'm sure I'm not the only psychologist who has received quizzical looks, been labelled a killjoy or even shunned when professing not to believe in fate, destiny, or an overarching purpose to existence.

So scepticism is not sexy, but there's something else. It often feels as though I'm fighting an uphill battle when discussing these issues with non-psychologists (and with some psychologists too, I must say). Perhaps the difficulty we experience in conveying a sceptical message tells us something about the way humans are hard-wired to think about the world. Scepticism may be in direct contrast to default modes of thinking: it might be unnatural. Recent theorists and researchers have suggested that, by looking to mental systems that are the result of evolutionary processes, we might begin to understand the natural mechanisms that compel us to believe some very strange things.

Religion

By far the most pervasive cultural belief systems that exist are religious ones. This fact alone suggests that there is something interesting and important about religious belief. Even in Western culture, religion is still so ubiquitous that even the most

ardent disbelievers would admit to a slight pang of anxiety when announcing their scepticism in the company of a large social group unknown to them, lest it result in some social friction. Regardless of what the 'New Atheist' movement would like to be the case (Dawkins, 2006; Harris, 2004, Hitchens, 2007), it would appear that religion is here to stay, regardless of how strong or compelling the arguments against its main tenets might be. Although it is possible to give up on religious beliefs, doing so might be more difficult compared to continued belief. Religion, we might say, is natural. On first glance, this might appear odd. Many religious concepts are far from natural. Statues that can hear your prayers, invisible agents that monitor your actions and superhuman beings that are omnipotent and omniscient are the very definition of 'supernatural', so what does it mean to say that religion is natural?

Over the last 20 years, a number of researchers and theorists have been piecing together an account that has religious cognition and behaviour as the product of various mental systems which are universal throughout the human species. These accounts generally dispense with the notion that there exists a system explicitly devoted to religion in our minds, as well as the idea that there might be a religion gene or some other 'magic bullet' accounts of religion, instead favouring an approach that takes into consideration the entire system of human cognition and its various idiosyncrasies (for a more comprehensive account, see Atran, 2002; Barrett, 2004; Boyer, 2001; Pyysiäinen, 2001; Pyysiäinen & Anttonen, 2002). Such accounts see religion as a natural feature of the human mind, although debate remains over whether it serves an adaptive function or is purely a 'by-product' of other things (see Boyer & Bergstrom, 2008; Sosis, 2009). The theoretical framework is that adopted by evolutionary psychologists, holding that the mind is a collection of information processing systems that exist to carry out content-specific operations (Cosmides &

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Tooby, 1994). By considering the mind in this way, we might be able to explain why religious cognition seems so natural to so many people.

The first question relates to why religious concepts are entertained by human minds at all, and whether there are any commonalities in the myriad of religious ideas that exist. Although religious ideas themselves differ from culture to culture, when we strip away the idioms and the 'dressing' associated with specific religions and focus on the way the concepts are structured, we find that they can be grouped fairly easily, regardless of which religious system is under study. This insight was formalised by anthropologist Pascal Boyer (1994, 2001). Starting from the position that religious ideas are mental representations that are shared between members of a group (cf. Sperber, 1996), Boyer suggests that there are five basic categories of thought that were important in our ancestral development: persons, animals, plants, artefacts and inanimate objects. For a religious concept to be successful within a population, it has to be memorable, attention-grabbing and easily transmittable to other members of the population. Religious ideas achieve this by being ideas that are similar to those that are processed within one particular domain of thought, but with one or two 'tweaks', which are violations of what we would normally expect of a concept belonging to that domain. Concepts consisting of the requisite tweaks are said to be 'counterintuitive' in the sense that they

violate our intuitive expectations concerning the properties of a stimulus belonging to that domain.

Take the example of a statue that listens to your prayers. This is an 'artefact', has all the properties associated with such an object, and activates all of the normal intuitive expectations that go along with that domain (we don't expect it to move of its own accord; we wouldn't be surprised to see it smash if it fell to the ground, and so on). However, it also has properties that violate what we normally expect of artefacts as we usually understand them (i.e. the cognitive functions associated with listening to prayers and, presumably, doing something with this 'information'). These violations are what allow a concept to be attention-grabbing, memorable and transmittable.

When supernatural concepts in disparate religions are classified, they are found to correspond to this basic structure (see Boyer & Ramble, 2001). Indeed, Boyer has developed a taxonomy of religious concepts based on the five

categories of thought and three possible 'tweaks' (violation of psychological expectations; violation of physical expectations; violation of biological expectations). This allows for a wide variety of religious concepts to be classified under one theoretical tenet, and further indicates that they are a natural feature of human psychology.

Boyer has also suggested that there is a 'cognitive optimum' that determines the viability of candidates for successful religious concepts. This is the point at which a counterintuitive concept is most likely to

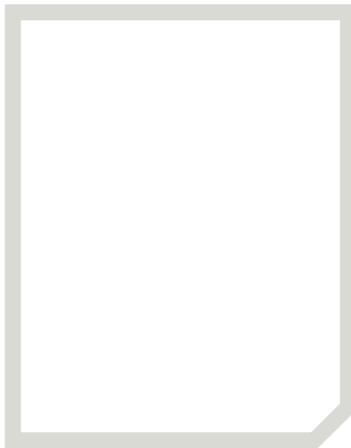
permeate throughout the social group, in that it is attention-grabbing (by virtue of its 'counter-intuitiveness'), learnable,

transmittable to others and allows for maximum inferential potential. (A counterintuitive concept that doesn't allow for inferential reasoning beyond what is stated, such as a tree that disappears in the moonlight, is fairly useless as a religious idea. Likewise a counterintuitive concept that has too many 'tweaks' is not maximally memorable. This is why, when praying to a statue, people do so within earshot of it: the notion of an artefact that listens *and* can do so at all places at all times is a little bit too complex to become widespread (Boyer, 2001).)

Detecting agency

The cognitive optimum partly explains why only certain ideas become religious ones and why some ideas spread widely throughout a population. Conceptualising religious concepts according to a small number of templates sets the foundation for explaining how other aspects of an evolved human mind might collectively give rise to some further facets of religion, making such phenomena a natural part of our thinking.

As stated above, most religious concepts activate expectations about 'persons' (or 'agents'). We have an impressive evolved mental system that exists to detect agency (see Guthrie, 1993), which probably evolved to detect potential predators and to find prey. As a result, our agency detector is 'hyperactive' due to it being less costly in both scenarios to tolerate false alarms (e.g. 'predator' detected when there is none) than to expose oneself to false negatives (e.g. no predator detected when it is actually there). As a result, the agency-detector system is susceptible to a number of inputs and will effortlessly and relentlessly detect agency from such disparate stimuli as shapes on a screen (which may happen as early as 12 months; see Gergely et al., 1995) to the shapes that clouds make in the sky. This tendency may be even more pronounced in conditions of uncertainty. Anyone who's ever exclaimed 'Who's there?' in response to an unexpected noise



It would appear that religion is here to stay

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in the immediate vicinity will be familiar with this. Agents (of the supernatural variety) are central to just about every religion, and so it's not hard to see why an overactive agency-detection device that is overly keen to inform us that an agent is active in our immediate environment might be implicated in religious cognition. Given Boyer's classificatory system and the observation that most successful religious concepts involve agency, then it is perhaps inevitable that our minds enthusiastically seize upon those counterintuitive, attention-grabbing concepts that suggest the existence of an agent (see also Barrett, 2004).

Once agency is implicated, the next system that is brought into play concerns the ways in which we socially interact with agents. As humans, we are constantly navigating a social world. It would not be surprising, therefore, to find that we had evolved a series of mental tools that were dedicated to this most important of domains, and these are easily extended to supernatural agents. It doesn't seem strange, then, to wonder what gods and spirits might be like, what their beliefs and desires are, and so on. We will think about them in terms of social interactions, because that is how we have evolved to think about other agents (e.g. people). When we do this, we will naturally begin to process information in terms of social and moral intuitions, most of which go on below the level of conscious awareness. As supernatural agents have counterintuitive properties, this makes them 'special' in terms of the social interactions we might have with them, which is a key feature of religious behaviour (Atran, 2002; Boyer, 2001). A supernatural agent might be thought of as being everywhere at once, watching what we do and having access to unlimited strategic information concerning human moral actions. This sets it apart from other social exchange partners, who inevitably have limited information concerning such affairs. For example, our moral intuitions might tell us that stealing is wrong. Given that our view of a supernatural agent will assume that the

agent shares this moral feeling (we assume that its mind is much the same as our own, barring any relevant 'tweaks' such as omniscience), then we will be acutely aware of how any stealing behaviour will be viewed by an agent with unlimited knowledge of our actions (and possibly our intentions). This makes them powerful actors in the social and moral sphere.

Again, we see that the naturally evolved systems that are central to human cognition can be projected upon a supernatural agent, with profound implications. The agent then becomes a very useful explanatory tool for our moral intuitions, most of which are unavailable to conscious reflection. Our moral instincts are explained by reference to a supernatural agent who has all the relevant facts to hand. Once the idea of a god that is involved in supervising the morality of the group is in place, then it will quickly become a powerful, memorable and socially relevant concept that group members would be reluctant to dismiss. It is also one of the main reasons why religious ideas matter so much in comparison to other counterintuitive but morally irrelevant concepts (such as Mickey Mouse, who is counterintuitive but whom nobody imagines is an interested party in the moral actions of any particular human group). These are some of the ways in which we might appeal to ordinary cognitive systems to explain some extraordinary beliefs. But religious ideas aren't the only weird ideas that might come naturally to us.

Why me? Belief in destiny, fate and existential meaning

Towards the end of last year, I had a bad week. In the space of six days my washing machine broke, I ripped my carpet, I caught a nasty cold, and my kitchen work-surface became detached from the wall. On the seventh day I went

to flush the toilet, only to find that the cistern wasn't filling with water and so wouldn't flush. In exasperation, I raised both arms to the sky and screamed 'Why me?' It seemed like the natural thing to do, although I quickly regained my composure and became fascinated by my response. According to the theory described in the previous section, my agency detector device was telling me that there was an unseen agent who was causing my misfortune.

According to Jesse Bering, however, I was processing information within an existential domain. Bering (2002, 2003) shares the evolutionary approach that serves as the theoretical framework for the work on religion described in the previous section. However, his sights are not set on religious belief *per se*. Rather, his 'existential theory of mind' attempts to account for those instances in which humans display a natural inclination towards attaching meaning to things, which may fall under the remit of religion, but doesn't have to. We've all heard (or

"Our minds may be hard-wired to be predisposed towards certain types of odd belief"

used ourselves) basic axioms such as 'Everything happens for a reason' or 'There's no such thing as coincidence'. When subjected to rational analysis, these statements are bizarre. Why should purpose be inherent in the universe? Bering's approach suggests that our evolved theory of mind capacities may have extended beyond the social realm, with applications that are pertinent to the way we ponder our very existence and the meaning that we attach to the life events that we experience. Again, our hard-wired abilities to detect agency have a key role to play, causing us to resist the unattractive notion that events are random. Instead, it is more satisfying to our minds to think in terms of causes initiated by agents, and if there is an agent, then there must also be a motivation for its actions: things happen for a 'reason'. According to Bering: 'Human cognition situates the random churnings of the cosmos into the same framework in which it has placed human behaviour. Mind is perceived to be the causal force behind both categories' (2002, p.12). In doing so, nature has provided for us a way to deal with the unpredictable world. Having achieved the ability to reflect upon our own experience, we then developed a means by which to make sense of it all, and to achieve this, we recruited a system that was already in our repertoire: that which reasons about the behaviour of others. Having already successfully employed a theory of mind as a causal explanation for social interactions, Bering claims that this was extended as a causal

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explanation in the non-social world, which he terms the 'existential domain'.

According to Bering, reasoning within the existential domain happens in three 'tiers': events, experiences and existence. The first of these deals with external events that we observe and subsequently attach meaning to. The grandfather clock that stops the moment its owner dies might be a relevant example. The experiential tier covers reasoning as applied to the things that happen to us. Some experiences will meet certain criteria that will lead us to ponder the 'bigger meaning'. Being in the 'right place at the right time', for example, is often interpreted as being more than mere coincidence. The final tier proposed by Bering involves reflecting on the self itself, and its place in nature. Again, we are all familiar with the 'Why am I here?' questions and the 'I was put on this earth to...' statements. These would be examples of reasoning within the existential domain, which again rest on an overextension of our reliance on agency as a causal explanation.

Although similar to the account of religion described previously, Bering's theory differs in one important respect. Rather than emphasising the importance of idea transmission, Bering holds that what we term 'gods' were already in our brains as a consequence of our natural tendency towards teleological reasoning, with culture's main role being one of attaching labels to them. Despite the minor disagreement between the approaches, again we see that our minds may be hard-wired to be predisposed towards certain types of odd belief.

Other weird beliefs

So far, I have outlined various ways in which our minds may be naturally inclined, as a result of our evolutionary history, towards thinking in ways that rational analysis would deem counterfactual. Can we apply this reasoning to any other strange beliefs? Yes. Recently, there have been attempts to explain a wide variety of superstitious, paranormal and supernatural beliefs in terms of the way our minds naturally reason.

Paranormal beliefs, for example, might also be explained by looking at our evolved information-processing systems. Marjaana Lindeman and her colleagues at University of Helsinki describe paranormal beliefs as being category errors relating to the core domains of physical, psychological and biological knowledge (where 'knowledge' refers to the intuitive understanding of the world that typically

Are we behaving naturally when we beg the computer not to crash?

develops in humans during the formative years of life; see, for example, Wellman & Gelman, 1998). Lindeman and Aarnio (2007) argue that paranormal beliefs are the result of instances in which there is conflation between core domains. For example, when intuitive psychology (thoughts, intentions) becomes conflated with intuitive physics, then a belief emerges that thoughts and intentions have an independent existence in the world and can have a physical influence outside of the brains in which they originate (i.e. telepathy and psychokinesis). When aspects of intuitive biology become conflated with intuitive psychology, the belief emerges that a personality might behave like a biological entity and thus be contagious (hence the reluctance to wear Hitler's sweater described by Nemeroff and Rozin, 2000). Additionally, paranormal beliefs may also emerge from an over-reliance on an explanatory style known as vitalistic causality (Inagaki & Hatano, 1999; Lindeman & Saher, 2007), which is thought to be indicative of an intermediate form of causal explanation (see Inagaki & Hatano, 2004). We have tentative data from our own lab that suggests adults may resort to 'vitalistic' causal reasoning in certain circumstances in which other causal explanations are not immediately apparent (Wilson et al., 2010).

Turning off the default

All of this is a welcome move away from conceptualising such beliefs as somehow dysfunctional or the result of poor cognitive ability (e.g. Alcock, 1981). That

is not to say that cognitive ability is not important. The role that our analytical reasoning system may play is in overriding the natural urges that give rise to the kinds of beliefs discussed in this article. Scepticism is not natural. It requires an active cognitive effort, which is actually quite difficult to achieve. It requires a commitment to engage in reasoning that challenges the ideas that seem so intuitive to us. Regardless of any individual differences in the analytical tools required to do so, many people just don't have the time, desire or inclination to go against the grain in such a way. As Bering notes when discussing resistance to Darwinian ideas: 'The unpopularity of evolutionary theory may have as much to do with its taxing cognitive demand of "turning off" a default appeal to intentional agency as it does with people's desire to believe in an intelligent creator' (2003, p.104). In that respect, those of a sceptical bent should not look down on those who profess such beliefs, as has been done so often in the past. Instead, we should recognise that they are acting in an entirely natural way. If nothing else, we can all use that to console ourselves as we beg the computer not to crash whilst saving an important document.



Stuart Wilson
is a lecturer in psychology
at Queen Margaret
University, Edinburgh
swilson@qmu.ac.uk