

## Religious Beliefs as Reflective Elaborations on Intuitions: A Modified Dual-Process Model

### 1. What sort of beliefs are religious beliefs?

Religious beliefs are, from a cognitive standpoint, a puzzling phenomenon. They are not empirically motivated and often contradict the believers' own assumption that the world obeys a set of stable rules. They are also apparently very different from one cultural group to another. Assuming that we have cognitive systems because these provide us with reliable information to navigate our environment, it would seem that being strongly committed to hugely variable, non-empirical beliefs is wasteful if not downright damaging (McKay & Dennett, 2009). While some evolutionary anthropologists and psychologists conjecture that such beliefs may actually have adaptive advantages (Bulbulia, 2004; Irons, 2001), others see them mostly as by-products of other, adaptive cognitive functions (Boyer, 1994b, 2001). This debate is orthogonal to the question, How do such beliefs occur in human minds? One possibility is that religious representations consist in *post-hoc* explicit elaborations on common intuitions (Boyer, 1994a, 2001). In this perspective, beliefs about ancestors are parasitic on intuitions about persons, as notions of contagious magic are on intuitions about pathogens, and beliefs about the afterworld are on intuitions about dead people (Boyer, 2001; Pyysiainen, 2001). But, if religious beliefs are derivative, what sorts of "beliefs" are they, and how do they get triggered and sustained in cognitive systems?

### 2. Intuitions come first, and reflections second

Dual process models distinguish between *intuitive processes* (often called System 1) that are quick, automatic and implicit, on the one hand, and *reflective processes* (called System 2 by contrast) that are slow, delib-

erate, explicit and general, on the other (J. S. B. Evans, 2008). The specific, quasi-dual-process perspective we adopt here implies that religious beliefs are reflective and serve to justify, comment and explain prior intuitions. Before explicating the processes engaged, let us consider a few illustrations:

*Threat-detection, contagion and magic.* Specific cognitive systems attend to potential threats in the environment, i.e. predator traces, signs of possible contagion and contamination, signs of enemy presence, etc. These trigger both emotional responses and a motivation for precautionary behaviors, i.e. avoidance or flight, washing, rubbing, etc. (Boyer & Lienard, 2006). Our pathogen-avoidance systems delivers the intuitions that [a] illness can be carried from one person to another, [b] any type of contact with a sick person is dangerous, [c] the amount of contact is irrelevant (Rozin, et al., 1986). But the system does not deliver a description of the vectors or modes of transmission. This creates a niche for reflective representations, e.g. to the effect that there are invisible vectors for disease, as we find in cultural theories of disease the world over, e.g. notions of tiny animals, or miasma, or bad air, etc.). This in turn creates the possibility reflectively to extend intuitions of contagion to other domains, which explains why people may want to touch relics, kiss saints or their statues. Notions of magical contagion, positive or negative, “hitch-hike” pathogen-directed intuitions.

*Synchrony and collective ceremonies.* Acting in synchrony, e.g. in a military parade, a rowing team or a religious ceremony, creates an endorphin surge (Cohen, et al., 2010), increasing social bonding and cooperation (Wiltermuth & Heath, 2009). Unaware of the origin of this pleasure and change in motivation, people often impute their experience to supernatural phenomena such as the actual presence of superhuman agents (Konvalinka, et al., 2011). These reflections are all the more plausible as synchronicity blurs self-other boundaries (Paladino, Mazzeurega, Pavani, & Schubert, 2010).

*Dead persons and afterlife notions.* Human beings’ cognitions of recently dead, personally known individuals are inconsistent. On the one hand, people since early childhood have a clear intuition about the cessation of agency (H. C. Barrett & Behne, 2005). On the other hand, intuitive psychology is still activated by thoughts of a recently deceased person, who is represented as still having thoughts and feelings (Bering, 2002). This

discrepancy between two intuitive systems provides a context in which explicit, reflective notions about the “soul” and the dual nature of persons particularly relevant (Bloom, 2007; Boyer, 2001). Such reflections take the form of both idiosyncratic thoughts, e.g. that the dead person somehow “is still around”, and of specially transmitted theories of spirits and ancestors.

*Moral intuitions and penance.* Humans have principled moral intuitions, often not supported by explicit and accessible moral principles (Haidt, 2001). For instance, in cases when people have clearly diminished someone’s welfare without provocation, they (and most third-parties) feel that compensation is expected (Trivers, 1971). This makes evolutionary sense since the function of morality is to maintain fair relationships with others so as to get a good reputation and to be recruited in future cooperative interactions (Baumard, et al., 2013). However, when for some reason compensation is not possible, the working of moral intuitions makes people feel that their relation with the victim is now asymmetric, and therefore unfair. In this kind of situation, people may find it appealing to engage in self-inflicted suffering (by fasts, flagellations, or mutilations) or donations to third parties (orphans, churches or monks). In laboratory studies guilty people punish themselves if they have no opportunity to compensate victims (Nelissen & Zeelenberg, 2009) and pain reduces guilt (Bastian, et al., 2011). To people’s moral intuitions, these actions seem to restore some symmetry between the victim (whose interests have been hurt) and the wrongdoer (whose interests are now hurt as well). Yet, the reason why hurting oneself and giving to a third party would restore fairness remain mysterious, which gives additional relevance to reflective thoughts on e.g. divine justice (there are gods watching us and making sure we do not get away with misdeeds), immanent justice (what goes round must come round), or *karma* (your good deeds will offset your sins) (Baumard & Chevallier, 2012).

*Attentional processing and meditation.* In many cultures, people have created cognitive techniques such as mindfulness or meditation, aimed (among other things) at allaying anxiety by controlling attention and detaching it from immediate stimuli (Bronw, et al., 2007). People engaged in these practices have definite intuitions about their effects on mood, yet they cannot explain these effects as the workings of attention are impenetrable to conscious inspection. As a result, reflective understandings of these

techniques as, e.g. access to another world or detachment from an illusory reality, are particularly relevant to practitioners (Wallace & Shapiro, 2006).

Beyond these examples, anthropologists and psychologists have shown that intuitive expectations are at the origin of a range of religious beliefs: animacy and intuitive psychology systems make gods and spirits plausible (J. L. Barrett, 2004; Epley, et al., 2007), disgust reactions make taboos apparently sensible (Fessler & Navarrete, 2003), pragmatic intuitions about conversations feed notions of divine communication (Luhmann, 2005).

### 3. Why religious beliefs are similar, but not special

In many domains, reflective elaborations from different cultures often converge on similar themes, what anthropologists call cultural “attractors” (Sperber, 1996). That is because, as illustrated above, post-hoc reflective beliefs are strongly constrained by intuitive systems, in two different ways.

First, reflections are often triggered by the limitations or inconsistencies of intuitions, or by the need to provide to other agents a consistent account of one’s own intuitions. But intuitive systems are very similar in human beings the world over, so that intuitions are likely to trigger similar reflections. For instance, all over the world, people are puzzled by conflicting intuitions about death (Astuti, 2001) and people everywhere have to justify behaviors that depart from what is intuitively moral (Haidt, 2001). So we should expect recurrent spontaneous reflections about such matters. Or consider reflections on living things. People, including young children, cannot help but form the intuition that mouths serve to eat, eyes to see, and so forth (Kelemen, 2004). Now one common way of thinking about function is to recruit intuitions from our tool-making systems, describing function in terms of an agent’s prior goals. This may be why explanations of natural features in terms of a conscious designer are highly relevant, such that even adults taught about natural selection can inadvertently revert to notions of Nature’s goals and foresight (E. M. Evans, 2001).

Second, speculations in certain domains tend to go in particular direction (almost) no matter where one starts from. This is particularly obvious in beliefs in superhuman agents, which enjoy great cultural success, relative to other possible supernatural concepts, because humans are a social species, prone to use intuitive psychology to explain events (J. L. Barrett,

2000). As a result, imagined agents are likely to figure in reflections focused on extremely diverse kinds of phenomena – illness, accident, coalitional changes or moral behavior.

These processes of canalization are illustrated in Figure 1.

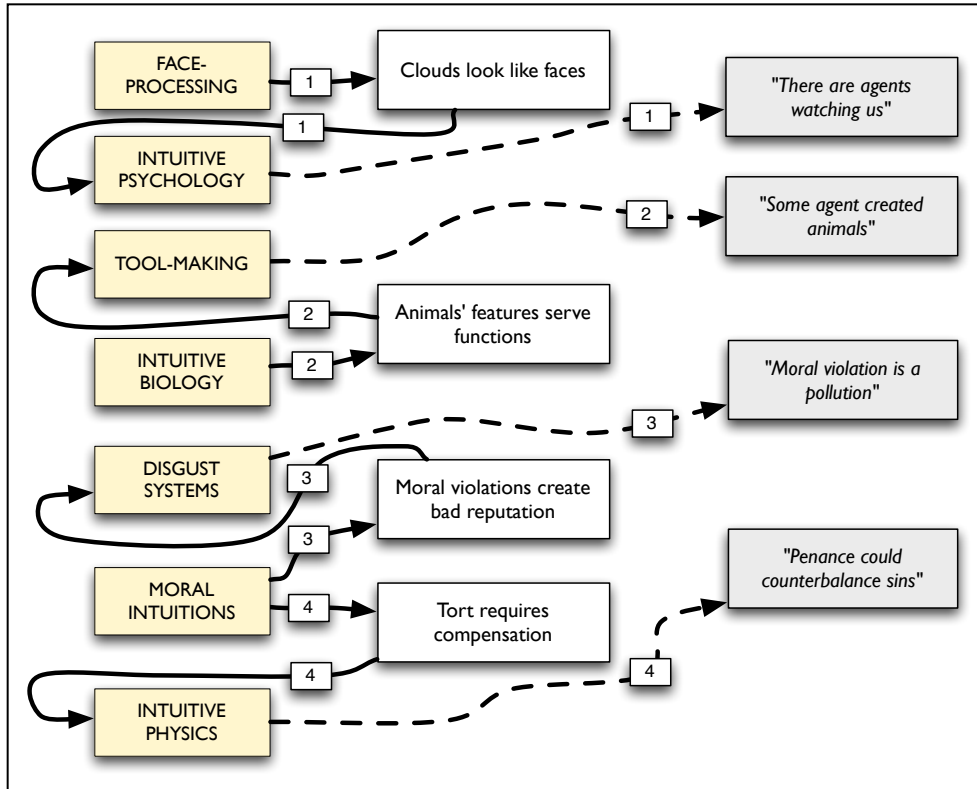


Figure 1. Examples of inferential paths from intuitive systems (in CAPITALS) that produce intuitions (black on white) to reflective representations (*italics*, black on grey), sometimes including re-elaboration by intuitive systems. Numbers identify specific inferential paths between systems. For instance, [1] identifies the information flow between a face-processing system which produces occasional false-alarms (faces in the clouds), activating an intuitive psychology system and potentially leading (dotted line) to the reflective thought “there are agents watching us”. Or, path [2] identifies the flow from intuitive biological and tool-making systems to potential (dotted line) reflective notions of teleology.

The dual process model also suggests that there is nothing special or *sui generis* to religion, as many anthropologists pointed out (Bloch, 2008). We commonly call religious those representations that include ancestors,

ghosts or angels. But, from a cognitive viewpoint, that is not a special domain. The intuitive systems that trigger religious beliefs also trigger non-religious ones – one can understand meditation as either access to a superior reality or as a journey inside one’s self. The fact that superhuman agents are included in some reflections does not imply any specific functional features. All the relevant features of the beliefs in question stem from the fact that they are included in the much broader domain of potential reflective beliefs (see Figure 2).

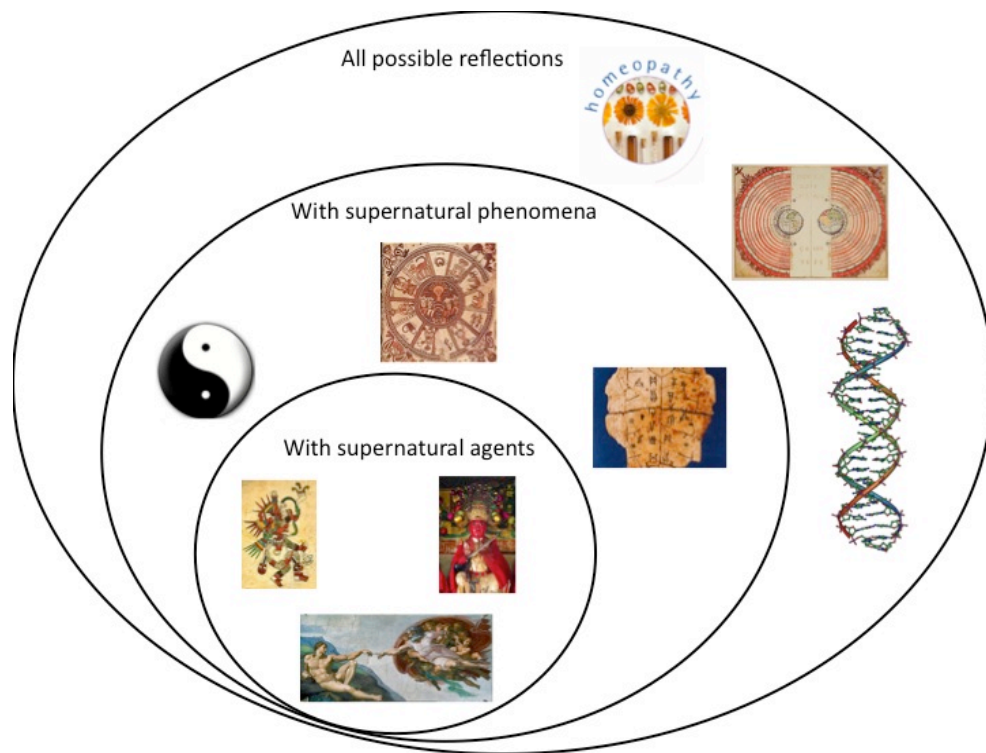


Figure 2. Religious beliefs are just a sub-set of mental representations focused on superhuman agents, which in turn are a subset of supernatural reflections, themselves included in reflective representations in general. This very large set comprises all our explicit, deliberate cogitations, including scientific and scholarly representations as well as all the supernatural ones.

#### 4. Intuitions and reflections in dual processing

Our model of religious beliefs is based on the distinction between intuitions and reflections. The former, sometimes called intuitive beliefs or architectural beliefs, are the output of specialized cognitive systems (Boyer & Barrett, 2005). They pop up without deliberation. Note that the output of some intuitive systems can serve as input to other such systems, as occurs when, e.g. intuitive physics and intuitive psychology are integrated in a predator's mind when stalking a prey. Reflections on the other hand are explicit, sometimes deliberate representations that explain intuitions, extend or restrict their scope, offer a comment on the intuitions or link them to specific sources. In logical terms, they are meta-representations of intuitions (Sperber, 2000).

This account is somewhat more specific than standard “dual-processing” models. In particular, there is no need to assume that cognition comprises two large systems. Both intuitions and reflections are likely produced by large numbers of domain-specific systems. Also, reflections are not just parallel to intuitions, as some dual-processing models imply. Reflections are triggered and constrained by the specific contents of intuitions.

Very different epistemic constraints apply to these two kinds of beliefs. Intuitive beliefs stably guide behavior in a fast and automatic way, tailored by natural selection to maximize fitness (Tooby & Cosmides, 1995). This implies, if not altogether true beliefs, at least a strong grasp on those aspects of environments that affect fitness. By contrast, reflective beliefs are highly unstable even within an individual and they may or may not impact on behavior. The main force that drives their occurrence is relevance, not truth. They are all the more stable, frequent, and culturally recurrent, that they either “fit” our intuitions or else contradict them in an attention-grabbing manner (Boyer, 1998).

This model makes sense of otherwise puzzling properties of religious beliefs, beyond their apparent variety and common themes. [1] In many cases, the believers do not seem to have a stable and specific interpretation of the beliefs (Sperber, 2000). For instance, people may state that “ancestors are watching us” but they are not sure that ancestors have eyes or heads – such details are either never considered at all, or else left to idiosyncratic interpretations. [2] Religious beliefs are quite immune to argumentative refuta-

tion (Legare & Gelman, 2008). Indeed, what makes the beliefs compelling is their grounding in intuitions (e.g. the experience of misfortune, a visceral reaction to moral violations). By contrast, the explicit refutation of beliefs does not usually have any relevant connection with intuitions. [3] Religious beliefs are favored more by intuitive than reflective individuals (Gervais & Norenzayan, 2012). Since religious beliefs emerge for intuitive reasons, people who are specially likely to listen to their intuitions and ignore reflective argumentations are specially likely to accept religious beliefs.

The modified dual-process perspective may help us address the question, Why do humans have religious representations? in a more tractable way. The model proposed here suggests that such representations are to be expected in a system that produces relective elaborations on intuitions. Religious notions are not special. Understanding why humans have religion, then, “only” requires that we understand why human cognition is often supported by dual-process mechanisms, or in our formulation, why human minds are motivated, as a result of evolution, to produce meta-representational comments on their own representations – a goal that is of course more ambitious than just explaining religion.

## 5. Recommended readings

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