Associating religion

A contribution from dual process theory to the naturalness of religion debate

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Abstract

In this article we wish to contribute to the naturalness of religion debate. Recently the cognitive scientists of religion claim that religious beliefs spring naturally from the ordinary human cognitive systems. A central presumption is the differentiation between intuitive and reflective beliefs. Intuitive beliefs influence religious thinking, impeding the acquisition of complex religious ideas and leading to ‘theological incorrectness’. This view is problematic from the perspective of dual process theory. It is not supported by empirical testing nor neuroscientific findings. Intuitive beliefs are automated, basic reactions to certain stimuli. Religious beliefs are far beyond these type of reactions. Based on the studies of Evans and Stanovich we argue that these beliefs are the result of ‘sloppy’ heuristics. This implicates that learning complex religious ideas is not impeded by the human cognitive architecture but by failure during the acquisition and incorrect use of these thoughts.

Keywords

Dual process theory, naturalness of religion, theological incorrectness, cognitive science of religion

The Cognitive Science of Religion

Over the last two decades the cognitive science of religion has emerged and developed its own theories and arguments using insights from the cognitive and evolutionary sciences. Religion is studied from the perspective of thoughts, beliefs and actions (Barrett 2007:768-786). One central argument is the naturalness of religion. In this argument cognitive scientists of religion claim that religion ‘springs naturally from the way ordinary human cognitive systems interact with ordinary human social and natural environments’ (Barrett and Landman 2008:109-124). A central presumption is the differentiation between intuitive and reflective beliefs. Based on cognitive and evolutionary studies of the mind, these scientists claim a natural tendency towards intuitive beliefs, resulting in ‘theological incorrectness’. In this contribution we wish to argue that the naturalness of religion is problematic especially when it comes to this tendency towards intuitive beliefs. In the second section we will elaborate on the naturalness of religion thesis and pose the problem of interaction between both types of beliefs. In the third section we will discuss the relevance of dual processing theories, and explain how the interaction between the intuitive and reflective mind can be thought of. We will argue that the tendency towards intuitive beliefs cannot be assumed. In stead it is our view that, what is seen as theological incorrectness is the result of serial associative thinking or heuristics, which is a way of reflective thinking but lacks its
careful analysis. In the last section we will conclude that theological incorrectness is a cultural rather than natural phenomenon involving problems during the acquisition and use of religious thoughts.

The influence of the cognitive architecture on religious belief

Cognitive scientists of religion argue that religious beliefs are natural by using empirical evidence of certain cognitive tools. Barrett (2004:4-5) describes the human cognitive architecture as a mental tool shed involving cognitive mechanisms better known as modules. The mind is described as a computer with many modules (Tremlin 2006: 44-77). Although not explicated, Barrett and Tremlin seem to presume massive modularity of the mind, such as can be found in the work of Dan Sperber (Mercier and Sperber 2009:149-170). They follow Sperber (2009:149-170; Sperber 1997:67-83) when he differentiates intuitive beliefs from reflective beliefs. They do not seem to follow Sperber’s understanding of this differentiation though, as we will explain below. For scholars such as Barrett, reflective beliefs are held consciously and deliberately after consideration. Intuitive or non-reflective beliefs are held automatically, are arrive at instantaneously and sometimes against better judgement. The non-reflective or intuitive beliefs are the direct product of the mental tools. The reflective beliefs come from a higher order or a meta-representational device (Barrett and Landman 2008:109-124; Barrett 2004: 2-7).

Intuitive and reflective beliefs not only co-exist; they also interact. Reflective beliefs use the intuitive beliefs as default. According to Barrett, if there is no reflective belief available in a situation where one is needed (for instance when someone is asked deliberately to give a well thought of answer) a person will develop a reflective thought, based on his intuitive belief. In addition, reflective beliefs become more plausible if they are in accordance with the intuitive beliefs. A proposition is more credible if you have a good feeling about it. It is also possible for reflective beliefs to become intuitive. McCauley (McCauley in Press) distinguishes between practiced naturalness and maturational naturalness. Practiced naturalness occurs when concepts and skills are acquired through intensive training and practice (Barrett and Landman 2008:109-124). Maturational naturalness develops ‘through the ordinary functioning of biological endowment in ordinary human environments’ (Barrett and Landman 2008:109-124). Maturationally natural cognitive systems and the non-reflective beliefs they produce, limit the possibilities of practiced naturalness because the systems determine what is easy to learn and achieve mastery of. In addition, if the concepts or skills to be acquired are too far off from the maturationally natural non-reflective beliefs, they are very difficult, even impossible to learn (Barrett and Landman 2008:109-124).

Several authors describe two maturationally natural systems or modules mostly relevant to religious beliefs: The (Hyper) Agency Detection Device (HADD) and the Theory of Mind (TOM). Experimental research has shown that humans have the innate capacity to distinguish between animate and inanimate objects. When a three months old baby sees a hand picking up an object, he reacts normally. When he is shown an object moving without the hand, there is a shock (measured by the pupil width of the eye) (Barrett 2004:114; Leslie 1984:19-32). This capacity is explained by a module called Agency Detection Device. Natural selection has changed this Agency Detection Device into a Hyper Agency Detection Device. When in doubt, the module will register the presence of an agent, because it is safer to assume the presence of an agent, if there is none, than the other way around (Barrett 2000:29-34). Theory of Mind is the human innate capacity to interpret someone’s thoughts and feelings based on his behaviour. The way a person acts, talks or even looks, makes us hypothesise the other's thoughts and feelings. We can even do this up to a very high level of abstraction: thinking that the other thinks that I think that he think that I, etc. The evolutionary explanation is that it decreases violence and enhances
success if we are able to predict the other’s reaction before we interact (Leslie 1994:119-148; Leslie et al. 1993:56).

These two modules, the Agency Detection Device and Theory of Mind, are relevant for religious beliefs, because they enable or even incline people to presume the presence of an agent, when in fact its presence is doubtful and they make us imagine the intentions of this agent. Presumptions and inclinations are not the same as beliefs. For the cognitive scientists of religion, religious belief is also dependent on a third trait. To believe in the presence of an agent and its intentions, the concept of this agent needs to be inferentially rich. This means that the content of this concept is not easily falsified. Although the existence of God cannot be proven, it surely cannot be proven that He does not exist. In addition, the agent needs to be relevant to the subject. Belief in an agent that can or will not interfere with our lives is not really relevant. People are less inclined to believe in the presence of such a God. Religious concepts that are easily believed in are called Minimal Counterintuitive agents. They are counterintuitive, which means that they violate our expectations of what is possible in this world. This makes them interesting and relevant. They can interfere in our lives. In addition, this counter intuitiveness is only minimal. This makes sure that the existence of the agent is plausible. Nobody believes in an agent, who violates all our normal beliefs (Barrett and Landman 2008:109-124; Barrett 2004:115-116). Beliefs in MCI-agent are also relevant when it comes to intuitive morality and intuitive social cognition. A significant portion of human morality is said to be based on intuition rather than reflective thinking. Certain practices are forbidden by morality or social convention across many cultures. MCI-agents reinforce this intuitive morality and social cognition, since they are able to see what is hidden and secret. A violation of the social mores can always be punished, if not by other people, it will be punished by the gods (Barrett and Landman 2008:109-124; Barrett 2004:47-49).

Harvey Whitehouse used the cognitive psychological differentiation between semantic and episodic memory in long term memory to explain differences and developments in religiosity. In *Arguments and Icons* (Whitehouse 2000:X, 204) he introduced his modes of religiosity, with on the one end of the spectrum a doctrinal mode and an imagistic mode on the other. The doctrinal mode focussed on the transmission of complex theological (cognitive costly) ideas for which frequent repetition of rituals and doctrinal policing is needed. Because of the high frequency of the rituals, the rituals are stored in the semantic memory allowing for a low level of arousal. If the level of arousal is high, the participants will become used to it because of the frequent repetition, which causes the tedium-effect, in which the sensory pageantry (McCauley and Lawson 2002:236) loses its effect (Whitehouse 2004:xiii, 191). On the other end we find the imagistic mode, in which rituals are infrequently or even seldom performed. In order to leave a lasting memory, the episodic memory needs to be triggered by a high level of arousal. Strong sensory pageantry and impressive experiences (which can even include torture) make people remember the ritual in detail. Only experiences can be stored, no doctrine. The experience is not explained officially, but demands of the participants Spontaneous Exegetical Reflection. The participants make sense of the experiences by interpreting these by themselves using analogical reasoning. It is important to see the modes of religiosity as two sides of a continuum between which all forms of religiosity find their place. Still, forms of religiosity tend to move to either end of the continuum and in this way Whitehouse can explain certain changes in religious traditions.

More important for our debate is Barrett’s observation that even in the doctrinal mode, the indoctrination or scaffolding as he calls it, is only partially effective (Barrett and Landman 2008:109-124). Based on research among different religious groups Barrett and Keil developed the concept of theological correctness (1996:219-247), which was developed more extensively by Slone (2004, 2005:187-206). Although believers are taught the official doctrine of their religious tradition, they tend to forget these teachings at certain moments and revert to more intuitive beliefs (in their study participants answered questions theologically incorrect during online tasks).
In sum, the argument from cognitive scientists of religion is that religious beliefs find their origin in natural outputs of the human cognitive architecture. The cognitive architecture produces intuitive beliefs, which puts restraints and anchors on religious concepts, because people tend to adhere to the intuitive beliefs rather than the ones they’ve acquired through religious learning (cultural transmission). This assumes an interaction between the cognitive mechanisms, which produce intuitive beliefs, and conscious thinking. How cognitive scientists of religion perceive this interaction, is left unexplained, with the exception of Tremlin (2005:69-84, 2006). He understands this interaction as the result of dual processing of the mind, distinguishing between explicit and implicit processing. Reflective beliefs are processed explicitly, intuitive beliefs implicitly. Furthermore, explicit processing does not allow people to have other thoughts at the same time (i.e. it only works offline). Implicit processing can be done without effort and while doing other things (i.e. online). ‘Offline’ processing involves explicit, reflective and learned representations, which are provided through cultural transmission. ‘Online’ processing involves implicit and tacit representations ‘acquired through innate inference-based construction’, leaving little room for the contents of cultural transmission (Tremlin 2006:177). When respondents are being questioned about their images of God, they consciously think about the questions and have access to learned information. While performing other tasks or with limited response time, ‘offline’ processing is inhibited and the mind resorts to online processing. According to Tremlin learned conceptions are not accessible during online thinking. The mind resorts to beliefs that originate in the cognitive architecture, i.e. intuitive beliefs. Tremlin bases his theory mostly on the research performed by Barrett and Keil (1996:219-247). They have studied people’s God concepts. While respondents indicate that they believe in an all knowing, all powerful and everywhere present God, their God images are far more anthropomorphic during online tasks.

From the perspective of dual process theory, both the work of Keil and Barrett and Tremlin's publications are problematic. Although there is empirical evidence for the cognitive mechanisms Agency Detection Device and Theory of Mind (Leslie 1984:19-32, 1994:119-148; Leslie et al. 1993:56), there is no evidence that these mechanisms influence religious beliefs. Barrett and Keil’s research only proves that anthropomorphisms occur when respondents have only two seconds to respond in contrast to their answers when they had a lot of time to reflect on their answers. In fact, it remains questionable whether religious beliefs can be intuitive at all. It is quite a large step from receiving the intuitive impulse that ‘something is out there’ and the concept of God being present or active. It is very unlikely that people interpret this impulse as God without the involvement of reflective thinking, unless their religious socialisation is so strong that God concepts are readily accessible. In that case, the beliefs do not originate in the cognitive architecture but are learned ideas.

The architecture of the mind

In this section, we will discuss dual processing in more detail based on the latest publications in cognitive science. This elaboration will have strong implication for the naturalness of religion debate and bring us to an alternative explanation for theological incorrectness.

The naturalness of religion thesis is based on the differentiation between intuitive and reflective beliefs. Barrett bases this differentiation on the work of Dan Sperber (1997:67-83). He explains the difference between reflective and non-reflective or intuitive beliefs as follows: Reflective beliefs are held consciously and deliberately after consideration. Intuitive or non-reflective beliefs are held automatically, are arrive at instantaneously and even against better judgement. The non-reflective or intuitive beliefs are the direct product of the mental mechanisms. The reflective beliefs come from a higher order or meta-representational device
(Barrett and Landman 2008:109-124; Barrett 2004: 2-7). Although Barrett’s and Landman’s definitions are quite close to Sperber’s and Mercier’s writings, the elaboration of intuitive and reflective ideas moves away from this understanding, especially when it comes to theological (in)correctness. Intuitive beliefs seem to come from the cognitive mechanisms, such as ADD and TOM, while reflective beliefs are acquired through learning, an elaboration also put forward by Tremlin (2005:69-84, 2006:177) Sperber however describes the difference between intuitive and reflective beliefs in a different way. In his 1997 article, he describes intuitive beliefs as a basic category of the human cognitive architecture, which our mind automatically treats as data. Reflective beliefs are meta-representations used for the development and transmission of cultural representations. The belief that there is a dog is directly based on the data passed from the visual system to the mind. This is an intuitive belief. Reflective belief would be the thought or expression that you believe/think or know that you see a dog. Sperber and Mercier explain this more in detail in their 2009 article ‘Intuitive and reflective inferences’. For them the contents between reflective and intuitive beliefs are basically the same, the intuitive beliefs being the direct output of the modules involved and the reflective ones the indirect output. The function of reflective thinking according to Sperber is a communicative one. It is evolutionary beneficial to reflect on beliefs in order to be able to express the arguments to convince others. This is only an a posteriori process. The belief itself was already held intuitively (Mercier and Sperber 2009:149-170; Sperber 1997:67-83). It is important to see the differences between the idea put forward by cognitive scientists of religion and Dan Sperber and Hugo Mercier. While the cognitive scientists argue that intuitive religious beliefs find their origin in the cognitive architecture consisting of modules such as ADD and TOM and reflective beliefs in processes of learning, it is Sperber’s and Mercier’s point that both come from the cognitive architecture. Intuitive beliefs are direct output and reflective beliefs are indirect output, passing the argumentation module.

The notion of intuitive and reflective beliefs as understood in the naturalness of religion thesis gets more problematic, when we explore the concept of the human cognitive architecture on which it is based. Although they often do not express it explicitly, they mostly cite Dan Sperber (1997:67-83), who indeed is a massive modularist. Tremlin (2006:56-57) mentions it without adhering to it explicitly. The case for the modularity of the mind was principally made by Jerry Fodor (1983), claiming that the human mind was made up by a number of special purpose ‘input’ and ‘output’ modules combined with a central and general purpose cognitive system. The modules are designed for only one purpose, saving time and energy to perform the specified actions. Because the human nerve system transfers information with a speed of only a few meters per second (for comparison: a computer microchip processes information at a speed ten million times faster), it is faster and less effortful to have several separate systems performing partially the same task than to have one central system performing all tasks. An important feature of ‘Fodor-modules’ is that they are encapsulated, i.e. isolated from other parts of the cognitive system and having internal operations that are inaccessible elsewhere. Tooby and Cosmides argue that the solution of the dilemma of either having a slow and vastly energy consuming general cognitive system or a limited domain specific module is to have a vast bundle of Fodor-modules (Tooby and Cosmides 1992:112-113). Their view can be seen as a rather extreme position and it has been critised a lot, mostly because such a massive modularity cannot account for the human capability of learning from experience (Evans 2010:240). Still, this does not close the case for massive modularity entirely.

In the Architecture of the Mind (2006:462) Carruthers takes up the argument for the massive modularity of the mind, but he rejects the idea that the modules are necessarily encapsulated and isolated. He uses an argument from design, from animals and most importantly from computational tractability. The design argument focuses on the fact that complex functional systems, particularly in biology, are built up hierarchically from dissociable subsystems buffering for changes in functionality and damage of individual parts. The argument derived from animals claims that animals have a broad scale of differing demanding tasks of the various learning
challenges and newly acquired desires they face. It seems impossible for animals to have one or even several general cognitive systems to meet these demands in order to adapt and increase their fitness for survival in new circumstances. Carruthers adds that there is of course a difference between animals and humans. Humans do have a general reasoning capacity, which he describes as cycles of operations and interactions between existing modular systems.

The most important argument is computational tractability. First, this means that cognitive processes involve a common language, accessible to all modules. Second, the amount of information to be processed is tractable; can be processed within a limited amount of time. Third, to make sure that the cognitive system does not overload, the modules need to be partially encapsulated, preventing the need for all modules to read all the information put out by other modules (Carruthers 2006:462).

In this way, Carruthers takes the argument for the modularity of the mind away from the Fodor-modules, making massive modularity plausible. Still, there is a problem concerning the way he deals with the general reasoning capacity. Within the discourse of dual processing, the duality between the cognitive processes, which are unique to the human species, and those we share with (other) animals is discussed. The former is often described as fast, automatic and unconscious, while the latter is seen as slow, conscious and controlled (Evans and Lynch 1977:391-407; Nisbett and Wilson 1977:231-295; Reber 1993). Later, authors attributed the two types of processing to two different cognitive systems. Stanovich coined them system 1 and system 2 (Stanovich 1999). Because the term system was very vague and can be seen at several levels, Evans pleaded for moving away from the system terminology and opted for the dual mind hypothesis. Mind stands for ‘a high level cognitive system capable of representing the external world and acting upon it in order to serve the goals of the organism’ (Evans 2009:33-54). Evans uses Carruthers’ massive modularity theory to describe the ‘old’ or intuitive mind, which we share with the animals. Human beings have developed a new mind, which is used for reflective thinking (Evans 2010:240). The difference between the massive modularity hypothesis and the two minds hypothesis is that in the former reflective thinking is not the product of a new mind but consists of cycles of operations and interactions between existing modular systems. The two minds hypothesis ascribes reflective thinking to a different, newly developed part of the mind. Besides empirical evidence of the two minds being in conflict, there is also both neuroscientific and evolutionary evidence for the latter hypothesis. Experiments, such as the Wason selection task, indicate that responses differ between respondents consciously reflecting about the right solution and those who respond intuitively (Wason and Evans 1975:141-153). In addition, Evans shows how the two minds can be brought into conflict with his research involving syllogisms (Evans 2005:321-339, 2007:321 – 339). Neuroscientific evidence was found through functional magnetic resonance imaging (fMRI), indicating that the frontal cortex is active in controlled mental processing (controlled versus automatic). In addition the frontal lobes are used when participants reflect on complex problems. Evolutionary psychology argues that the frontal and pre-frontal regions of the brain have developed during the development from the early hominids to the homo sapiens, increasing the brain from 440 grams to an average of 1400 grams. This all indicates that reflective thinking is indeed a late development of the human species in which the frontal regions increased dramatically (Evans 2010:240; Neys and Goel). We have the use of a new mind for reflective thinking in addition to the old mind for intuitive thinking.

If we accept the dual mind hypothesis instead of the massive modularity hypothesis, the concept of intuitive beliefs coming from the cognitive tools or modules such as TOM and ADD and reflective beliefs being the result of learning, becomes problematic. Following Barrett and Landman, we would like to locate the modules like Tom and ADD in the intuitive mind. The main question is, how religious ideas come from modules such as these. The intuitive mind is not designed for complex concepts. ADD would be able to give the impulse that an agent is present. TOM could make sure that some basic intentions are postulated onto that agent, but when it comes to the intuitive mind, that is as far as it goes. The intuitive interpretation of the impulses
‘agent is present’ and ‘agent has hostile intentions’ is confined to psychomotoric reactions such as fear, aggression, flight, freeze or fight. The interpretation of ‘God’ is perhaps possible, but we do not know what this could mean within the intuitive mind, other than superhuman agent. The intuitive mind is able to connect the modular impulses with concepts from a person’s religion, but only if these concepts are internalised to a large extent. The religious concepts need to be immediately available in order to be grasped by the intuitive mind. In fact associations would be a better term than ideas, just like any Westerner would associate a man with long dark hair, a beard and wearing a white gown with Jesus. Anything beyond these basic associations asks for the reflective mind, which can reflect on the reason for Jesus to appear, his message, the alternative interpretations, etc.

If religious beliefs cannot simply come from the intuitive mind, there must be some kind of interaction between the intuitive and reflective mind. In fact, Barrett and Lanman seem to assume this, when they explain how reflective beliefs use the non-reflective or intuitive beliefs as default and that non-reflective beliefs constrain the possibilities for reflective beliefs. In their view, even when people are culturally scaffolded to hold certain complex religious beliefs, the intuitive beliefs remain along side the reflective ones, where they still guide people’s reasoning and behaviour leading them to theological incorrectness (Barrett and Landman 2008:109-124; Slone 2004:119-121).

There is a lot more to say about the interaction between the intuitive and reflective mind than the statement that beliefs from the intuitive mind are the default beliefs and that they limit the possibilities of the reflective mind. Stanovich (2009:55-88, 2011:29-46) explains in detail how the two minds interact. In fact, based on his extensive research on human intelligence, he comes to a tripartite model of the mind, distinguishing between the intuitive mind, which he calls The Autonomous Set of Systems (TASS) and the reflective mind, in which he differentiates between the algorithmic mind and the reflective mind. TASS indicates that the intuitive mind is not made up out of one single system but many systems or modules. The algorithmic mind is what can be measured by intelligence tests, the ‘brain power’ or working memory. The reflective mind is the thinking disposition, which determines how open minded a person is. Human rationality is built up from a combination between brainpower and thinking dispositions.

In this tripartite model, Stanovich describes the different interactions between TASS, the algorithmic mind and the reflective mind. TASS can produce an automatic reaction to a stimulus, but under certain circumstances the algorithmic and reflective mind take over. Basically this is a process of cognitive override. The initiative for this override comes from the reflective mind, but the override function itself is performed by the algorithmic mind. In this process, the stimuli and the automatic response to the situation are decoupled. Our primary representation of the situation is copied into a secondary representation with which simulation is possible to reflect on the best possible response, on which the chosen action is based (Stanovich 2011:47-65).

Although it is the reflective mind that initiates the override, the reflective mind bases this initiative on impulses from TASS called preattentive processes (Evans 2009:33-54). Seeing, hearing, feeling and tasting often occur without conscious efforts to do so. It is after a particular stimulation of the senses, that our reflective mind takes the initiative to override the automatic process.

In addition, the override function is not always fully performed. Not every reflective thought consists of hypothetical thinking, in which the stimulus and automatic response are fully decoupled, followed by simulations of alternatives. The algorithmic mind can also engage in serial associative thinking, in which the model of the original stimulus remains intact but is used in a associative mode. Not all alternatives are explored. Only the alternatives associated with the original model are used. This is a much shallower way of thinking, but it is performed by the reflective mind (Stanovich 2011:62-65). Evans describes this as heuristics in stead of intuition (Evans 2010:240). It is far more likely that what Barrett and Lanman call intuitive beliefs are in
fact the result of serial associative processes. Both intuitive and heuristic processes can be performed quickly. Intuitive processing differs from serial associative processing in the fact that the former is parallel and automatic, using only mechanisms developed in evolutionary adaptation or notions internalised to the extend that they come up as an automatic response. Serial associative processing is serial, which means that it cannot be done while other processes are still running. Furthermore, it is not an automatic but a sloppy way of thinking in which stimulus and response are not fully decoupled. The rule that couples the stimulus and the response remains intact preventing a full simulation of alternatives and as a consequence a real rational reaction (Stanovich 2011). In the case of theological incorrectness, the religious beliefs are not the result of intuitive thinking taking over. It is not because of the Agency detection Device and Theory of Mind that someone has an anthropomorph image of God, even though catechism has taught him or her to believe in a transcendent God, which passes all understanding. Nor do these modules make you see the hand of God in a narrow escape from a disaster as described in Barrett’s Why would anyone believe in God (Barrett 2004:34-36). Anthropomorphic God images are the result of people’s associations with God images from their encounters with the religions around them. Although official Christian doctrine teaches that God is not a man with a white beard on a cloud, this image is invoked by the metaphor of God the Father in heaven, images in churches, books, etc. When someone experiences a narrow escape from a disaster as described by Barrett, the intuitive mind might deduce the presence of an agent, but it is serial associative processing that disconnects the impulse from the idea of a normal agent. It is out of the person’s associations that the idea of God comes to mind. Perhaps the reflective mind would come up with a fully rational explanation such as the person being in the right position, causing the air pressure from the explosion to press him out of the building into safety. The combination of the emotions connected to the escape from the accident and the immediate need to make some sense of the experience, hinders the person to engage in full reflective thinking.

Naturalness of religion

The idea of using cognitive science to explain religious ideas and belief is innovative and provides a rather new perspective on religion. It corrects the overemphasis of scholars in theology, religious studies and other humanities, on religion as a collection of cultural ideas, values and norms. This collection is passed on from one generation to another and from believer to non-believer. Theologians, scholars of religions, anthropologists and social scientists have focussed on this process and the consequences of the frustration of this process because of modernity and its individualisation (Berger 1980 ; Felling and Peters 2000) and secularisation (Bruce 2002 ; Taylor 2007). The cognitive science of religion tries to fill up this cognitive niche, arguing that every religious thought and belief needs to be thought using the possibilities and impediments of the human mind. Cognitive science sheds light on the influences of these possibilities and impediments on the religious thoughts and beliefs held by people. According to our perspective, the naturalness of religion-thesis is correct to this extent.

The naturalness of religion-thesis becomes problematic, when the influence of the cognitive architecture is overestimated. This overestimation consists of a leap from basic intuitive processes to religious beliefs, disregarding the evidence for a two minds architecture (in stead of pure mass modularity).

In this contribution, we have tried to explain why we think that religious thoughts are not the result of the interaction between learned reflective beliefs and intuitive beliefs from the cognitive architecture. The intuitive mind only produces basic reactions to impulses. Religious beliefs are far too complex for this mind. Religious beliefs are only processed in the reflective mind. The phenomenon called theological incorrectness is indeed not the result of sound
reflections about the doctrines of religious traditions. It is as in most cases of bias the result of a sloppy process within the reflective mind called heuristics or more precisely serial associative processing. Impulse and intuitive reaction are not fully decoupled nor are several alternatives simulated as in full reflective thinking. Serial associative processing involves associating other images and conceptions following the rule of the initial reaction. This process can indeed be faulty (although in everyday life serial associative processing produces results that are often close enough), but they are conscious and not outside of our control.

There is a lack of empirical evidence for serial associative processing\(^1\), especially in the field of religion. (The concept of theological incorrectness itself is only poorly substantiated by empirical evidence as explained above.) That is why we propose an empirical testing of the hypothesis that theologically incorrect beliefs are intuitive. While we are writing this article, we are preparing an experiment in which four groups of respondents are asked to affirm or reject certain basic religious statements. Half of the respondents are strongly religiously socialised; the other half is irreligious. Half of the religious and half of the irreligious respondents will be cognitively burdened while answering the questions. The other respondents will not be burdened. The cognitive burdening will impede any serial processing, making sure that the respondents can only answer the questions by using their intuitive mind. Respondents with a strong religious socialisation will have automated the religious answers, allowing for theologically correct answers. We expect no differences between the cognitively burdened respondents and the other respondents within the religious group. Differences should occur within the non-religious group. If the naturalness of religion thesis is correct, the cognitive architecture will make sure that the cognitively burdened irreligious respondents will give religious answers, whereas the other irreligious respondents will not. In this way we hope to add empirically to the theoretical contribution in this article.

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\(^1\) Serial associative processing is used as an explanation of certain forms of bias. Empirical evidence for this type of processing still needs to be found.


