

## NOTIONS OF INTUITION IN THE COGNITIVE SCIENCE OF RELIGION

### ABSTRACT

This article examines the notions of “intuitive” and “counterintuitive” beliefs and concepts in cognitive science of religion. “Intuitive” states are contrasted with those that are products of explicit, conscious reasoning. In many cases the intuitions are grounded in the implicit rules of mental models, frames, or schemas. I argue that the pathway from intuitive to high theological concepts and beliefs may be distinct from that from intuitions to “folk religion,” and discuss how Christian theology might best interpret the results of studies in cognitive psychology of religion.

In Cognitive Science of Religion (CSR), religious *concepts* and *beliefs* have been characterized as “intuitive” or “counterintuitive” by psychologists (Barrett 2004; Bloom 2004; Kelemen 2004) and anthropologists (Boyer 2001); and others (Pyysiäinen 2004, following Sperber 1997) have made use of a notion of “intuitive” *representations* in their accounts of religious cognition. The word ‘intuition’ and its variants are, of course, used in several different ways in ordinary language, and have also been used in multiple technical ways in philosophy, psychology, and other academic disciplines. I shall first examine recent uses of these terms in CSR, clarifying them in relation to existing usages in philosophy and psychology which contrast “intuitive” states and processes with those that are products of conscious, explicit reasoning. I shall then outline an account of how intuitions are produced in the mind via the rules of what have variously been called mental models, schemas, or frames. In Section 3, I shall examine a few possible implications of this model-based account of intuition for CSR—particularly, the possibility that a study of the cognitive processes that produce “high theological” or “theologically correct” religious views might (somewhat surprisingly) be undertaken separately

from the study of “folk” concepts and beliefs. Whereas the first three sections are explorations in the philosophy of a particular area of cognitive science, the final section will explore two questions from the standpoint of religious belief (and more specifically, Christian theology). First, what sort of religious epistemology enjoys the best fit with the theories in CSR discussed in the article? And, second, what sorts of further research questions are suggested, in turn, by this religious epistemology?

### *1. Overview of Usage*

One cannot read very far in the literature of contemporary CSR without encountering claims that particular concepts and particular beliefs are “intuitive” or “counterintuitive.” Indeed, it might seem that there is fundamental disagreement about whether particular concepts and beliefs—say, about the existence of disembodied spirits—should be deemed intuitive or counterintuitive. On examination, however, it will turn out that these apparent disagreements are *only* apparent, and that the parties to them actually share important assumptions about the nature of intuition, and about what makes a concept or a belief intuitive or counterintuitive.

#### *1.1 Kelemen, intuitive teleology and intuitive theism*

Boston University psychologist Deborah Kelemen argues that teleological understanding comes early to children, and indeed predominates their understanding of nature (Kelemen 2004). Young children prefer explanations of natural objects and phenomena in terms of what they are *for* to causal explanations. By age five, they understand that natural objects do not have human makers, but nevertheless view them in teleological terms (Kelemen 1999a, b, 2003, 2004). And evidence from six to ten-year olds suggests that they relate their assignments of purpose to non-human intentional causation (Evans, 2000, 2001; Gelman and Kremer, 1991; Kelemen 2004). She suggests that “these research findings tentatively suggest that children’s explanatory approach may be accurately characterized as intuitive theism” (2004, 199). What Kelemen seems to mean by this is that normal cognitive development includes an early-arising capacity and disposition to explain objects and events in teleological terms that imply a designer and/or fabricator, that these explanations persist in the absence of a perceptible candidate for such a role, and by mid-childhood dispose the child to attribute the causation of some natural objects and events to unperceivable agents.

### 1.2 Bloom and intuitive dualism

Yale psychologist Paul Bloom has argued in a similar fashion that children (and adults) are “intuitive dualists” (Bloom 2004, 2007). Bloom draws upon experimental evidence, accumulated by his lab and others, that young children do not seem to believe that humans or animals lose all psychological functions when they die. But his most original contribution is to link children’s understanding of the self to Core Knowledge Systems theory (CKS) in developmental psychology. (For a useful overview of this research, see Spelke and Kinzler [2007].) Proponents of CKS claim that infants possess several distinct systems for perceiving and reasoning about different kinds of domains: inanimate objects, agents, small and large numbers, and spatial geometry. These systems are *dissociable*, in the sense that one can be activated without another. In particular, a child can interpret a stimulus as an Agent (capitalized to indicate the proprietary usage associated with the theory) without the Core Object system being activated by the same stimulus, and vice versa. This would seem to imply that the child should find nothing “counterintuitive”—e.g., nothing that causes cognitive dissonance—in a thought about an Agent (that is, the kind of thing detected by Core Agency) but not an Object, or vice-versa. This would, at very least, provide conditions for the ready acceptance of concepts and beliefs about souls or other nonembodied Agents. More controversially, Bloom holds that children in fact understand human beings and animals to consist of *two things*, a body and a soul, and that this dualism of body and soul persists through adulthood.

### 1.3 Boyer, Barrett and minimally counterintuitive concepts

Pascal Boyer (1994, 2000a, b, 2001a, b, 2003, 2005, 2007, 2008) and Justin Barrett (2001, 2004a, 2004b, 2009) are similarly interested in the mechanisms underlying the formation of concepts of supernatural beings. They suggest that these are by-products of two much more general psychological mechanisms. First, most kind-concepts are *formed* by variation on very general conceptual templates such as ANIMAL or HUMAN, which Boyer calls *Ontological Categories*. In this respect, the concept SPIRIT (HUMAN without body) is much like, say, FIREMAN (HUMAN whose job is putting out fires), with the important exception that the denial of a body violates the rules of the Ontological Category HUMAN, whose default assumption is one of embodiment. This makes SPIRIT “counterintuitive” with respect to the Category HUMAN. Some rule-violations cause a new

candidate concept to be rejected. However, it turns out that new concepts that violate *just one* such rule (“*minimally* counterintuitive” concepts) turn out to be more memorable than those that violate none or many. The main classes of supernatural concepts, Bloom and Barrett argue, can all be seen as predictable results of violating particular default assumptions of such developmentally normal “folk” categories as HUMAN, ANIMAL, PLANT and INANIMATE OBJECT, so that it is *unsurprising* that notions of such things as ghosts, plants or objects endowed with thought, or humans with supernatural powers would occur and be remembered and transmitted with a wide variety of more particular variations among human cultures.

#### *1.4 Pyysiäinen and Sperber on the intuitive*

Ilkka Pyysiäinen (2001, 2004a, b) also makes use of the word ‘intuitive’ in his discussions of religious concepts and beliefs. In this, he follows Dan Sperber’s (1997) way of contrasting “intuitive” thoughts with those that are *reflective*. This usage suggests a distinction in *the processes producing the thoughts*, rather than in the *contents* of the thoughts. Sperber is a proponent of massive modularity, a view that goes beyond the thesis that there are multiple domain-specific systems of representation and inference by hypothesizing many of these to be “modular.” There is a great deal of discussion about what features should be constitutive of modularity; but in this case, the important features would seem to be *automaticity*, *encapsulation* and *cognitive impenetrability*. What these mean, in simplest possible terms, is that modular systems in the mind do what they do automatically, and that the conscious mind can neither inspect *how* they process information nor control their operation. A standard example of such a modular system would be some subset of the processes in early visual processing which build percepts of a world with solid objects, surfaces, depth and color out of retinal inputs. Introspection would never reveal the kinds of processing suggested by computational neuroscience of vision, and visual illusions show that the outputs of these modules cannot be changed by other information in mind and brain.

Sperber seems to identify as “intuitive” those thoughts that are the output of modules. We “just trust our own mental mechanisms and that we are disposed to treat as true their output without attending to reasons for this acceptance, or even without having access to such reasons” (Mercier and Sperber 2008, 155). The feeling of intuition, that unexplainable self-evidence that accompanies so many of our thoughts and beliefs, is the

phenomenological byproduct of our modular cognitive predispositions. Intuitive thoughts are contrasted with those that are products of *reflection*. Reflective thought is characterized by processes that represent a belief in relation to supporting beliefs in the form of an argument.<sup>1</sup> The intuitive/reflective distinction thus seems to mark a difference between those beliefs for which we know (or at least think that we know) the evidential basis that caused us to embrace them, and those for which the causal chain that produced them is hidden within the walls of a modular process.

### *2. A General Unifying Perspective on the Word 'Intuitive'*

While there are clearly significant variations in how the word 'intuitive' is used in CSR, each usage has important continuities with the use of the word in ordinary language and with a more technical usage familiar from early modern philosophy. *One* thing that is ordinarily meant when people describe thoughts as "intuitions" is that they *cannot give an account of why it suddenly occurred to them as plausible candidates for belief*. In early modern philosophy, "intuitive" thinking was generally contrasted with thinking by way of deductive argumentation, and hence "intuitive knowledge" or "intuitive belief" was knowledge or belief that was not the product of deductive inference. Of course, such discussions generally took place within classifications of types of *knowledge*, and not all beliefs produced by noninferential processes count as knowledge. For rationalists such as Descartes and Spinoza, both the apprehension of basic "truths of reason" and sense perceptions are produced by noninferential processes, but only the former count as knowledge. Locke similarly distinguishes "intuitive" from "sensitive" knowledge. If, however, we separate psychological questions from epistemological concerns (e.g., concerns about the possibility of *a priori* knowledge), we see a familiar pattern: most basically, that "intuitive" cognition is arrived at noninferentially. The Sperber/Pyysiäinen use of 'intuitive' is clearly in line with this characterization. The other uses have important relationships with it as well, though these are less direct.

#### *2.1 Intuitiveness and maturational normalcy*

All of these researchers would agree that concepts of supernatural beings are products of garden variety psychological mechanisms. At very least, their acquisition does not require rare and specialized forms of reasoning (unlike the concepts of modern science), and they need not be

regarded as peculiar by those who possess them or cause them cognitive dissonance (unlike the concept of a square circle). Moreover, their presence in thousands of human cultures suggests that the human mind is biased towards the formation of such concepts, and to their finding a lasting place in the cognitive economy. Unlike, say, some of the concepts involved in quantum mechanics, they do not so violate maturationally normal ways of understanding that people would find them abidingly strange.

Kelemen's use of the phrase "intuitive teleology" expresses the views that the appearance of teleological understanding in children is maturationally normal, and that it is independent of, earlier appearing than, and preferred to causal interpretation. Her "intuitive theism" seems primarily to reflect the view that children are developmentally biased towards positing unperceived agents as causes of natural phenomena on the basis of maturationally normal explanatory strategies. Bloom's "intuitive dualism" likewise seems to involve an assertion of maturational normalcy; but he also adds a stronger claim that even adults implicitly understand mind and body to be separate things, and his account of the genesis of the concept of the soul may also suggest additional overtones of his use of the word 'intuitive'. The "counterintuitiveness" proposed by Boyer and Barrett, however, is not a denial of maturational normalcy, as their account is indeed aimed at explaining how concepts of supernatural agents *can* be predictable byproducts of garden variety cognitive processes.

### *2.2 Relativity to a mental model*

Boyer's stipulation that "counterintuitiveness" is always *relative to* what he calls an *ontological category* (a highly general sortal class such as ANIMAL or HUMAN) is well taken. And this suggests that the conflicting *labels* of "intuitive" and "counterintuitive" may be misleading. A concept might be counterintuitive with respect to, say, the category ANIMAL, but not with respect to Bloom's Core Agency System, or for that matter, the more sophisticated understandings, developed somewhat later in childhood, which psychologists call "Folk Psychology" or "Theory of Mind." However, Boyer has an overly narrow view of the class of psychological types which respect to which a concept or thought can be counterintuitive. Some concepts, such as IMMORTAL FISH, are indeed counterintuitive with respect to what Boyer calls ontological categories. (In this case, mortality is assumed to be implicit in the superordinal category ANIMAL.) But other

concepts can be counterintuitive without violating the rules of such high-order categories. The idea of a fish with fur instead of scales is counterintuitive, not because it violates the assumptions implicit in the category ANIMAL, but because it violates the assumptions implicit in the concept FISH. Contrary to Boyer, it would seem that there can be judgments of counterintuitiveness that occur when the rules of lower-level categories are violated. Moreover, there would also seem to be cases of counterintuitive ideas whose counterintuitiveness cannot be traced precisely to any sortal kind, but to some other type of representational unit. The idea of a chess pawn that cannot be captured is counterintuitive (relative to standard understandings of the game of chess), but the source of the counterintuitiveness here seems to reside not so much in the concept PAWN, taken in isolation, but in something more general, such as the entire game of chess, or at least the rules of capture.

A more general way of conceiving the matter is to posit that human understanding is at least partially comprised of *mental models* of various content domains—of animality, of fish, of the game of chess, etc. Such models, and the categories and concepts that play a role in them, are rule governed. An idea (a concept or a concrete thought) is intuitive or counterintuitive by dint of its relation to such rules.

### 2.3 Counterintuitiveness and rule violation

Bloom, Boyer and Barrett all make use of psychological theories that posit multiple domain-specific mental models—for example, of Agents/Objects, or of Animals/Plants/Humans/Inanimate Objects. These are understood as rule-governed ways of representing particular content domains. For example, when we encounter a new type of animal and form a concept for it, the new concept inherits the default expectations of the Animal category, such as that animals are born from parents of the same species. The idea of a bird whose mother was an elephant would violate this expectation, and hence be (minimally) counterintuitive. A natural way to understand counterintuitiveness is thus in terms of rule-violation: *A concept C or a proposition P is counterintuitive with respect to mental model M if and only if it violates one or more rules of M.*

This understanding of counterintuitiveness suggests two other notions, each of which corresponds to a usage of the word ‘intuitive’. On the milder of these, *a concept or proposition is (weakly) intuitive with*



*respect to M just in case it is not counterintuitive with respect to M—that is, if it violates no rules of M.* For example, within the Core Agency system, there is no rule violated in thinking of an Agent as lacking a body, or a definite location, or as capable of moving in a discontinuous path. On the stronger usage, *a concept or proposition is (strongly) intuitive with respect to M if it is implied by the rules of M.* For example, the schema for intentional action evidenced by Kelemen’s six-year-olds seems to have a logical structure that requires that any fact or event interpreted through that schema must have an intentional agent as its cause. If the child finds the question “Who made this?” intelligible at all, she is primed by the question to assume there must be some agent whose intentions resulted in its creation and in at least some of its salient features. Likewise, once a child interprets a stimulus as falling within Boyer’s ANIMAL category, the rules of this category stipulate that (at least by default) it be assumed to have a characteristic diet and physiognomy, be the offspring of same-species ancestors, etc.

We thus have a logical space of three kinds of relationships a concept or a proposition might have with a model M:

- 1) It might violate rules of M, with this rule-violation causing some kind of cognitive dissonance or other “flagging” of the thought as illicit (counterintuitiveness)
- 2) It might be derivable from rules of M, and hence be employed routinely when M is operative and seem obvious upon inspection (strong intuitiveness)
- 3) It might be compatible with rules of M but not required by them, either logically or psychologically (weak intuitiveness).

Of course, each of these relations could also be established through explicit, formal methods such as deriving a proof or a contradiction. Since intuitive judgments are to be contrasted with those that are products of explicit inference, it follows that the status of a concept or a proposition with respect to a model M—whether it is counterintuitive, strongly or weakly intuitive with respect to M—is not a purely logical relation, but a matter of the kind of process by which it is judged to be necessary, impossible, or possible within the framework of M.



It is indeed generally assumed that intuitive cognition based in models (or, in alternative terminology, schemas, frames, and modules) requires some set of processes sensitive to the rules of the model which operate automatically and unconsciously.<sup>2</sup> But the kinds of processes and their relations to the rules might well be of diverse nature. In order for something to be registered by the mind as counterintuitive with respect to M, there must be some process related to M that can detect mismatches between a particular thought and the rules of M. Phenomenologically, the output of such a process might include a sense of cognitive dissonance. Strongly positive intuitive inferences, by contrast—say, the assumption that an animal must have a species-typical physiognomy—might take a very different form, such as automatic processes that create representations of individuals that have a particular data-structure that is copied from a categorical template (as suggested by Boyer). Both the operation of such processes, and also their outputs, may often lack any distinctive phenomenology. The representation produced simply has a form that bears the stamp of the model in which it was produced. For the third logical category—the weakly intuitive, defined in terms of consistency with a model—there may not be any distinctive *psychological* process. Representations are treated, by default, as consistent with a model unless they trigger a process that flags them as inconsistent with it. More specifically, there need not be any processes *internal* to the operation of a model that detect consistency as opposed to inconsistency. (This, of course, does not prevent the representations produced within a model from being examined for consistency by general-purpose explicit reasoning processes.)

#### *2.4 Implications of the model-relativity of intuitions*

The claim that the intuitiveness of a concept or thought is relative to a model is borne out by the wealth of psychological evidence that our intuitions are greatly influenced by context and priming. Indeed, model-based accounts supply an explanation of at least some such effects: priming activates particular models which are then used preferentially in interpreting subsequent stimuli. The intuitions associated with already-activated models are thus more likely to be activated than those associated with unactivated models.

This account also suggests that the psychological underpinnings of judgments of intuitiveness and counterintuitiveness are first and foremost

found at the level of particular models. When we experience an idea as counterintuitive, we are noting a dissonance between that idea and one or more particular models, even if the phenomenology of seeming-counterintuitive takes the form of a cognitive dissonance that does not indicate *what* the idea is dissonant *with*. If we then search for other applicable models, we may find some in which the same idea is strongly intuitive. For example, if something we observe suddenly moves upward, this may surprise us if we have been thinking of it as an inert Object; but if we recognize that it is a bird, it ceases to be surprising. The mechanisms underlying the implicit psychological calculus of interactions between different model-relative assessments of intuitiveness are, to the best of my knowledge, unexplored. We can, of course, construct more global notions of intuitiveness and counterintuitiveness from the model-based primitives—for example, there is a natural sense in which an idea is “globally intuitive” just in case there is no model in which it is counterintuitive—but such constructions probably do not afford much additional insight into the psychology of intuition.

Of greater interest, I think, is the fact that two models may generate conflicting intuitions about the same concepts or thoughts. And this is a phenomenon to be found with models found at all levels of sophistication, from Bloom’s observations about the effects of the dissociability of the infant’s Agent and Object systems to incommensurabilities between scientific theories (Horst 2007, 2011). This suggests important questions for research and reflection. One of these is whether there are factors, in addition to Boyer and Barrett’s “minimal counterintuitiveness,” that determine *which* of the concepts that are in some fashion counterintuitive are nonetheless remembered and learned, and which are discarded. It may be that the determining factors are not to be found solely in the degree of counterintuitiveness a concept bears with regard to a single model, but also in the fact that it is counterintuitive with respect to one model while consistent with or even strongly intuitive with another. That is, it may be that *paradox* is an important psychological force that can drive the formation and refinement both of individual concepts and of models themselves.

### *2.5 At least some models change*

While proponents of Core Knowledge Systems generally assert that these are retained in their original forms throughout the lifespan, it is clear

that we also build many additional models of various aspects of the world, from “folk theories” to scientific theories. Moreover, such models, understood as psychological entities, are built up through experience and are capable of change and adjustment. And as models change, their attendant intuitions change as well. The circular or elliptical motions of the planets were counterintuitive from the standpoint of pre-Newtonian mechanics (and hence required a separation of the sciences for terrestrial and celestial phenomena), but are the natural outcome of Newton’s laws, and can seem strongly intuitive to those schooled in Classical Mechanics. Unseen and disembodied agents may be counterintuitive from the standpoint of the Object system, but can seem almost commonplace once one has absorbed a particular religion’s pantheon. Likewise, specific religious models may create quite concrete intuitive expectations that otherwise would not exist: expectations that *this* kind of spirit will behave in *this* way but not *that* way, and hence that *that* kind of event cannot be the work of *this* kind of spirit.

The fact that most of our models are not innate, but acquired through experience, acculturation, and reflection requires that an idea’s being counterintuitive with respect to a model must not automatically result in the idea being unthinkable or rejected as impossible. Indeed, it is precisely the dissonances between a model and experience and between two models that drive the revision and integration of models. This seems likely to be a principle of our cognitive architecture that is at least part of the reason that Boyer and Barrett’s minimally counterintuitive concepts stand out as particularly memorable and salient, at least when there are also experiences that invite interpretation in terms of those concepts. Something that almost fits with our existing ways of thinking about the world, but not quite, stands a better than average chance of driving productive revisions of our existing models; as a result, it seems natural that it would trigger resources of memory and attention in ways that other experiences do not.

### *3. The Model-Based Account of Intuitions: Possible Implications for CSR*

Research in cognitive psychology of religion has focused principally upon “folk” varieties of religion rather than “high theology” or “theologically correct” religious thought, and indeed principally upon the possible origins of the concepts of supernatural beings based in the features of

species-typical modes of understanding such as Core Knowledge Systems that are manifested by early childhood. One research agenda that could build upon this foundation would explore how a common stock of cognitive resources found in developmentally normal children can, in combination with particular types of experience and acculturation, generate the many variations in the *particulars* of religious beliefs found in the “folk” varieties of the world’s many religions. For example, we might seek a way to measure the degree of bias young minds have towards spontaneously forming concepts of particular kinds of supernatural beings (plants or rivers that think and act, spirits of the dead, a self that can survive bodily death), and of forming beliefs in the existence of such entities when introduced to their concepts through acculturation. What kinds of concepts and beliefs about supernatural beings tend to persist in spite of their denial by the prevailing culture or the theologically correct beliefs of the local religion? To what extent do the various forms of religious experience play a role in fostering the acceptance of particular types of concepts and beliefs?

But there are also important questions about the relationship between species-typical forms of thinking and the characteristics of high theologies. It may be commonly assumed that these must be approached as reworkings of pre-existing folk religion. But this need not be the case. Indeed, the kinds of concepts of supernatural beings that children are disposed to entertain may well contain many of the intuitions upon which familiar forms of reasoning in high theology build upon through explicit argumentation.

Once our minds have acquired resources for higher-order reflection upon their own thinking, we are naturally drawn to try to resolve the puzzles presented by counterintuitive concepts and thoughts. “High theologies” are the result of such higher-order reflection. Indeed, many of the issues in a given theological tradition stem from the difficulties of accommodating the received assortment of religious beliefs that may initially be bound up with distinct models: for example, that Jesus is both human and divine, or that God is One, but Father, Son, and Holy Spirit are all God.

It has been noted, however, that “high theologies” often end up having a great deal in common with one another—certainly more than the “folk” varieties of religions have in common with one another, and perhaps even more than is shared by the “high” and “folk” varieties of a single religion. For example, while folk Hinduism presents us with an

enormous pantheon, Brahman theology asserts that the gods are all manifestations of a single source of all being—an idea surprisingly close to those found in the Abrahamic religions and in Greek philosophy. Likewise, the idea of some comprehensive teleology—whether in the form of Fate, Providence, or Karma—appears frequently. Why might this be, given the great variety found in the other sorts of claims made by the world’s religions?

One possibility is that a significant portion of “high theological” speculation is driven by reflection on the implications and the possible ways of developing intuitions that are shared by most human beings because they are products of maturationally normal cognitive processes. For example, if Kelemen’s “intuitive teleology” and its expansion into an “intuitive theism” are maturationally normal, people of different cultures should share a common foundation and a common set of intuitions to use as a basis for reflection upon purposefulness in the world. Likewise, if human children generally assume that, where purpose is found, there must be a designer, we share a set of intuitions that can, with the addition of more sophisticated analytic tools, be developed into an argument from design. And if the dissociability of the Agent System from the Object System (Bloom) and the special difficulties in conceiving of one’s own nonexistence (Bering 2002, 2006) are species-typical, there should be cross-cultural intuitions that can be developed into theories of a soul that exists independently of the body. Note that, if this hypothesis is sound, the route from the earliest intuitions about supernatural beings to high theological conclusions may largely bypass the particulars of different folk religions. That is, it may be that much of the high theology of any religion is based, not upon the particulars of its corresponding folk religion, but upon a species-typical set of intuitions about supernatural beings.

Another theme often found in high theologies is that of the “many names” or many attributes of the Divine. When we examine the abstract arguments of high theology, such as Thomas Aquinas’s Five Ways (*Summa Theologiae* Ia, q. 2, a. 3), we tend to find arguments to conclusions such as that there must be *some* first mover, *some* final cause, *some* original designer. But the relationship between each of these attributes and the others—much less the other attributes attributed to God—is not made clear by the arguments. Why couldn’t there be several *different* beings, each of whom occupies one of these roles, rather than a single being that

occupies *all* of them? Or better, since our questions are about CSR and not about God, why is there an apparent bias in the human mind to try to unite these different intuitions (and their argumentative extension) in a single entity? This strikes me as an interesting empirical question in its own right. But it also touches upon another: to what extent are our ideas of supernatural beings the products of *interactions* between intuitions rooted in different models? And if so, to what extent is there a bias towards combining particular projected attributes (knowledge, power, goodness, knowledge, etc.) in particular ways, and to what extent (conversely) is the resulting theology a result of the radical contingencies of the differences between the world's several thousand folk religions?

#### *4. Reflections on the Status of Intuitions in Religious Epistemology*

What I am always asked when I mention CSR are questions about the justification of religious beliefs: does CSR debunk religious belief? Confirm it? Or neither of the above? The answer to such questions is complicated. One reason for this is that theists and atheists disagree on what assumptions should be made in assessing them. If one begins with a metaphysically naturalist assumption that species-typical cognitive traits must be either adaptations or spandrels, it is tempting to view mechanisms that produce concepts of and beliefs about supernatural beings as artifacts that are accidental and indeed illusory. Of course, if interactions with supernatural beings played a crucial role in the evolutionary history of the species, such mechanisms could be products of selection; but this possibility is screened out by the naturalist assumption that there are no such entities. The circularity of the debunking argument is not very subtle, and clearly question-begging.

Conversely, if one begins from the assumption that human minds are a result of providential design by a God who desires that we know and love Him, it is unsurprising that human minds would possess resources that lead them to conceive of God and other supernatural beings, and likewise that our initial ideas of God would lead us to seek greater understanding and experience. Again, any argument of this kind is patently circular and question-begging. And it is hard to see how there could be any truly neutral standpoint from which to adjudicate the conflicting claims.

I do, however, think that there are a few epistemological lessons we might draw. The first is a general lesson about the status of intuitions. The

second concerns what kind of view of religious epistemology provides the best fit with the understanding of the human mind sketched here.

#### *4.1 How trustworthy are intuitions?*

If intuitions are basically the conclusions that can be “read off” of mental models we use to understand particular domains, what they tell us something *about*, first and foremost, is our own minds and not the world. The Core Knowledge systems give us at best a rough and ready approximation of the natures of “Objects” (basically, contiguous solids) and “Agents” (things that act for reasons). And the somewhat more sophisticated “Folk Physics,” “Folk Biology,” and “Folk Psychology” we acquire later in childhood are, from a scientific or metaphysical standpoint, little better. (Nothing we encounter with our senses, for example, fits the intuitive notion of solidity—i.e., absence of empty space in an object’s interior.) But even the history of science presents a progression from more- to less-inadequate models. And even the best scientific models we possess are partial, idealized, and prone to being inconsistent with one another. (To take the most important contemporary example, our best and most comprehensive theories—general relativity and quantum mechanics—are inconsistent with one another.) In each case, there are situations to which a model may aptly be applied; but when applied outside those boundaries, a model is likely to lead us into error and illusion. (Horst 2007, 2011)

There is little reason to think that our intuitions about supernatural beings should fare any better. Indeed, even within high theological traditions, there are strong arguments for the opposite conclusion: that our minds are better suited to understanding mundane things than heavenly things. And an investigation of the origins of our intuitions about religious matters only bolsters such caution. The rationalist optimism of Descartes, Spinoza, and Leibniz on theological questions was discredited by the failures of attempts to work it out in detail. And studies of the real psychological processes by which we come to have ideas of God make it clear that such processes do not produce ideas that are adequate to reflecting the divine nature.

However, it is not clear that the kinds of intuitions that lead to metaphysical naturalism fare any better. The basic progression of naturalistic thought has proceeded something like this: A way of thinking about some



particular domain (e.g., mechanical interactions) is discovered and proves extremely fruitful. We then imagine the possible ideal completion of a program of explanation in such terms, in which everything we know could be unified through a single model. And then we forget that this is an imagined ideal, and mistake it for a kind of rational norm: that it somehow *must* be the case that everything should fit into this mold. To be sure, there *are* sound *methodological* norms in this vicinity: if you have a fruitful way of explaining things, by all means try to explain other things in the same way. But to mistake methodological norms for metaphysical ones is an important if subtle error. It is, in fact, the sort of error to which Kant claimed Reason was prone in positing the Ideas of Pure Reason. The projection of an ideal conclusion of an explanatory program, and the intuition of “this is what we are after” is itself a kind of intuition, based not in particular concepts, but in the explanatory process itself. It is an intuition which has repeatedly proven to be illusory in particular cases, and is one we should always regard with a great deal of suspicion. (See Horst [2007] for a more extended discussion.)

In general, the intuitions spawned by a model are dependable only where the model may aptly be applied. And we discover where the boundaries of aptness lie only through experience and careful investigation. This is not to say that intuitions are a bad thing. We cannot do without them, as so much of our understanding is based in models, and is encoded in the very rules that produce intuitions. But the phenomenological sense of something being intuitive or counterintuitive is a product of the fact that the judgment is read off of a model, regardless of whether the model is apt in the current context.

#### *4.2 What kind of religious epistemology is suggested?*

If religious ideas have a basis in model-based intuitions, some of which appear early in normal cognitive development, then neither rationalist nor empiricist epistemologies seem appropriate as accounts of the formation of religious belief. The rationalist commitment to innate ideas seems *partially* supported by current research in cognitive psychology, as Core Knowledge Systems are evidenced too early to be products of learning, and the folk theories that appear later in childhood still appear to be strongly canalized. But the concepts and models contained therein are a far cry from what would be needed to provide what Descartes would deem

“clear and distinct” ideas of God or the soul. Theologically correct religious thought builds upon this maturationally normal foundation, but requires a good deal of conceptual bootstrapping and analysis, and at least some of the details are likely to be radically dependent upon the particulars of experience and acculturation.

On this last point, empiricism is partly vindicated. But contemporary cognitive psychology suggests that we start out not with a blank slate, but with default ways of interpreting the world; and researchers in CSR have plausibly argued that these result in strong biases towards conceiving of particular types of supernatural beings, independent of cultural context or personal religious experience. Indeed, if one combines empiricism with metaphysical naturalism, it becomes problematic that ideas of supernatural beings are so widespread, or even possible at all; and part of the appeal of CSR lies in its ability to render the ubiquity of religious belief intelligible on psychological grounds. So if neither a wholesale rationalism nor a wholesale empiricism will do, where might we look for alternatives?

A useful touchstone is Aquinas’s view that we (can) come to know of God’s existence and some of God’s attributes through *a posteriori* reflection on the world as known through the senses, but not through purely *a priori* means. This would seem to be at least a weakly empiricist view, as it denies *a priori* knowledge of God of the sort that requires Cartesian innate ideas. How strongly empiricist it is, however, depends upon whether our ability to conceive God through *a posteriori* means is viewed as dependent upon special features of human cognition that are biased towards producing particular types of ideas of supernatural beings. Is our ability to conceive of God like our ability to conceive of zebras (for which there is no special cognitive apparatus, but only the application of general-purpose mechanisms when presented with the right stimuli) or like our ability to conceive of Objects (which is ensured by our cognitive architecture)? Given the breadth of the Thomistic corpus, I suspect that Thomist scholars could say a great deal about which direction Thomas himself might have leaned on such questions, but I am no expert on that, and exposition of a particular writer is not my goal here.

I read Calvin’s (1599) speculations about a *sensus divinitatis*—a mental faculty whose function is to produce an idea of God—as falling into the latter category of hypothesizing that there is a human intellectual faculty that naturally produces ideas of God. And in its theological context,

such a faculty is naturally viewed as a product of providential design: God built human beings to be able to know Him. But the processes through which CSR researchers have suggested that children conceive of supernatural beings are not quite like this either. The point of their theories is in fact precisely that rudimentary ideas of supernatural beings like God and the soul can be generated out of the same mechanisms that are employed in everyday interpretation of the physical and social world. This is *compatible* with there *also* being a special-purpose *sensus divinitatus*, but certainly does not require it. But the theologian may nonetheless reasonably speculate that the bias towards forming such ideas on the basis of the same mechanisms employed in thoughts about mundane matters is an ingenious product of providential design. Indeed, if one shares Leibniz's sensibilities about how the grandeur and perfection of God are reflected in the world, this more parsimonious cognitive architecture might well be seen as all the more wondrous—a way of fleshing out a story of how God could start with “dust” and a few natural laws and build from them creatures capable of knowing and loving Him.

Both Aquinas and Calvin stand within a much broader Christian theological tradition that assumes that the combination of our cognitive architecture, experience of the world, and natural reasoning can produce *some sort* of conception and understanding of God, but only a very limited one. More adequate understanding requires several additional things: Divine revelation, religious experience, and the indwelling of the Holy Spirit. There is, of course, long-standing theological disagreement about whether any of our concepts of and beliefs about God can ever be fully accurate, much less jointly adequate to reflect the Divine nature. But Christian theology, in particular, stresses that there are religious truths—particularly those concerning salvation—that could not be known without special revelation.

According to this mainstream Christian theological tradition, our minds are so made that, through mundane experience and reflection, we are led to partial and imperfect ideas of God and of a spiritual world containing human souls and other spirits, but that this is not the totality of the spiritual knowledge we can acquire, nor even the most crucial part for the all-important matter of our salvation. Moreover, the partial and imperfect character of our “natural” understanding of God is evident to us upon reflection, and this leads us both to seek deeper understanding and to

embrace a humility in the face of God's incomprehensible greatness. How God then reveals Himself is at least partially accommodated to the understanding we have already achieved, but also forces the mind to go beyond the conceptions it can reach on its own. Let us call the family of views that bear these features "the propaedeutic tradition."

#### *4.3 CSR as seen by the propaedeutic tradition*

From the standpoint of a philosopher or theologian working within the propaedeutic tradition, the main themes of the CSR research discussed in this article should seem largely unsurprising. Indeed, these CSR theories could naturally be regarded as filling in the empirical details of one of the tenets long endorsed by the propaedeutic tradition: that human minds, through exposure to mundane experience, have a propensity to form partial and imperfect ideas of God and the soul which differ in important ways from the theologically correct ideas of the same. The empirical theories provide hypotheses as to what cognitive mechanisms, in combination with what kinds of stimuli, result in the formation of concepts of and beliefs about supernatural entities generally; and further, more culturally-specific research may in time yield details about how the folk ideas of more particular kinds of supernatural beings (ancestor spirits, demons, etc.) are formed. Divine revelation and the actions of the Holy Spirit, of course, fall outside of the scope of the cognitive sciences. But there are additional directions for research that stand out from the perspective of the propaedeutic tradition.

First, as mentioned in Section 3, it may be possible to do experiments or analyses of the psychology of high theological reasoning, and this may turn out to be at least partially independent of the formation of folk religious concepts and beliefs. Second, there are huge open questions about the relationship between personal religious experience and the formation, transformation, and entrenchment of religious concepts and beliefs. Some kinds of religious experience have received attention from another corner of CSR, dealing with the neuroscience of religious experience. (Persinger 1983; d'Aquili and Newberg 1993, 1999; Newberg and d'Aquili 2001) But the neuroscience of religion has largely proceeded independently from the psychology and anthropology of religion, and the bulk of the fundamental research in the cognitive psychology has been conducted with children and has not controlled for religious experiences. This is

therefore a large and fertile area for research, assuming that there prove to be experimental techniques suited to its investigation. Moreover, even the neuroscientists have studied only a few types of religious experience, and the ones that have been the most studied, such as mystical unitive experiences and meditative states, are perhaps among the least likely to play a role in shaping most people's religious concepts and beliefs.

This, I believe, provides a good perspective from which religious thinkers, or at least Christian theologians, may approach research in CSR: CSR explores the mechanisms by which human minds do things that advocates of the propaedeutic tradition already ascribe to them. The details of theories in CSR are unlikely to provide strong evidence either for or against particular religious views, but may shed a great deal of light upon the processes that lead to religious understanding, even as these are understood by the religious. Moreover, the propaedeutic tradition suggests particular lines of research as particularly promising approaches to fleshing out other aspects of religious understanding, such as the relationship between religious experience and religious belief.

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#### NOTES

1. This account is somewhat complicated by the fact that Sperber seems also to view reflective beliefs as involving a special module, the *argumentation module*, which is designed to assess the trustworthiness of communicated information by pairing it with reasons ultimately supplied by the receiver's knowledge base but that can be suggested or brought to attention by the communicator either in the form of logical or evidential premises or contextual or antecedent/historical considerations (Mercier and Sperber [2008], with some extrapolation.) The input of the argumentation module is communicated information, and the (direct) outputs are premises-conclusion pairings in which a given piece of information is assigned reasons for its truth or falsity. If the direct (intuitive) output of the argumentation module "consists in the representation of a relationship between a conclusion and reasons to accept it," then the actual acceptance of the conclusion embedded in that representation is the indirect output of the argumentation module (Ibid.). This process of accepting a conclusion on the basis of reasons is 'reflective' rather than intuitive.

2. I speak of "rules" and "rule governance" here in the weak sense that implies that processes are regular in ways that can be *described by* a rule, and not in the stronger sense,

sometimes found in cognitive science, that requires that the process is literally *following* rules, or using representations of rules to guide its behavior.

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