5 On Perceiving God

Prospects for a Cognitive Science of Religious Experience

Mark Baker and Dean Zimmerman

5.1 INTRODUCTION: A CSR ROAD LESS TRAVELED

In this chapter, we consider possible implications of research in cognitive science for perhaps the grandest metaphysical question of all: does God exist? The most obvious subbranch to consider is the relatively new discipline that calls itself the cognitive science of religion (CSR). CSR uses concepts from cognitive science and evolutionary psychology to explain, among other things, why people from essentially all cultures map ordinary human experiences of living in the world onto distinctively religious beliefs, including the belief that some supernatural agent(s) exist and interact causally with human beings (sometimes called the *consensus gentium*; see, for example, Goldman, this volume).

In practice, the explanations that CSR offers for the *consensus gentium* are often taken to reflect negatively on the possibility that the believed-in supernatural agents actually exist, because the beliefs in question are claimed to be spin-offs of cognitive processes that exist for other purposes. However, we wish to put forward the idea that some key features of a comprehensive account of this important explanandum actually make more sense on the hypothesis that (one or more) God(s) do(es) exist. By "god" we mean a supernatural agent that interacts causally with people. By "supernatural" we mean "has a kind of mental and/or causal powers that no other category of thing (human being, animal, artifact, natural object . . .) could have."[1] (See the end of section 5.3 and section 5.5 for more discussion.) In exploring this idea, we also borrow from a more venerable branch of cognitive science: the study of perception.

[1] Notice that this definition of "supernatural" can be understood as relative to the folk taxonomy of any given culture; it need not be our current scientific notion of what falls outside the scope of natural law. (Thanks to Brian McLaughlin for raising this issue.)

Toward this end, we focus on a weak spot in prominent CSR accounts. Although CSR aspires to account for the naturalness of religious belief in a wide range of cultures studied by anthropologists, it has some weaknesses when it comes to explaining the commonness and naturalness of belief in God in at least one culture of note, namely ours: twenty-first-century overeducated North America. Anthropologist T. R. Luhrmann (2012) has studied this exotic culture, specifically a contemporary branch of evangelical Christianity. She observes that, although standard CSR "describes the way our intuitions evolved and explains why claims about invisible agents seem plausible, and why certain ideas about God are found more often in the world than others," it "does not explain how God *remains* real for modern doubters" (xii)—an assessment that rings true from our own informal observations and discussions with religious believers. Their faith is often supported by religious experiences which happen in contexts very different from what CSR accounts suggest—in their bedrooms, rather than in the forest at dusk—and have very different contents from what CSR accounts might suggest. Similarly, Atran (2002, 195) concludes that "We know next to nothing about the neuro-biology of the vast majority of run-of-the-mill religious experiences and beliefs that sustain most people's faith," an assessment that still seems true today. Existing CSR accounts may thus need to be extended in some interesting ways, including ways that bear on whether they should have an undermining effect on religious belief.

More specifically, we are particularly interested here in a class of religious experiences that seem to those who have them to be perceptions of the presence of a deity. These experiences are perception-like in that they have a similar kind of directness and undeniability to the subject, and they can affect his or her beliefs in a similar way. We consider this subtopic out of intellectual curiosity, but also as people friendly to the possibility that theism is true, and that these religious experiences sometimes are what they seem to be. In focusing on this, we do not claim that current projects in CSR explain nothing, but only that there is a road not (yet) traveled: one that uses the tools of cognitive science to try to understand perception-like experiences that play an important role in generating and sustaining religious belief for adherents of Christianity and other contemporary religions.

In particular, from our theism-friendly perspective, there are at least two cognitive scientific hypotheses that could be extremely useful in accounting for perception-like religious experiences that CSR has neglected: the possibility that the concept of God is a simple one (not composed out of other concepts), and the possibility that there are specialized cognitive mechanisms for mapping special experiential states onto beliefs about God in a subpersonal, computational manner.[2] In contrast,

[2] By saying that the cognitive mechanisms in question output beliefs about God, we are (over) simplifying somewhat: more accurately, we should say that they produce *percepts* about God, or *candidate* beliefs about God, or *tendencies* to believe in God. We don't rule out the possibility that committed atheists might have religious experiences that tempt them to believe in God, but they reject the belief as inconsistent with their other, settled beliefs (see Bering 2011 for actual examples).

most existing CSR tries to do without any religion-specific cognitive resources of this sort, holding that the human mind naturally produces religious beliefs in a more or less "accidental" way, perhaps through a Rube Goldberg-y combination of mental tools properly used for other purposes (see McCauley 2011 for one recent example). We, however, are inclined to deny this deep-held assumption. Anyone who takes seriously the possibility that interactions with God have been a factor relevant to people's survival and reproduction throughout human history should find it plausible that human evolved psychology could include cognitive resources specific to the domain of those interactions.

If indeed domain-specific concepts and computations exist underlying some forms of religious experience, this could have two important consequences. First, it could provide the empirical basis for constructing an argument that the best overall explanation for why humans have these cognitive resources is because people have in fact been in causal contact with supernatural agents, a kind of inference to the best explanation. Second, it could bear positively on the epistemic status of the token beliefs that result from having the right sort of religious experiences. These beliefs may well be the outputs of a cognitive subsystem aimed at truth, operating in the sort of environment for which it was selected, not accidental byproducts of mental tools useful mainly for other purposes.

Our discussion develops as follows. First we call attention to a certain class of modern religious experiences and why they seem not to connect so directly with what CSR offers to explain (sections 5.2 and 5.3). Then we consider what would be involved in analyzing these religious experiences as perceptions (section 5.4). Here we explore a line of thought pioneered by Alston (1991), developing it in more current cognitive scientific terms. This leads us to the likely conclusion that this sort of putative perception depends on specialized cognitive resources. However, we do not find it at all incredible that there would be such resources, if indeed God exists and people's interactions with God have impacted their fitness over evolutionary time (section 5.5). We then close with some brief epistemological reflections (section 5.6).

5.2 MODERN RELIGIOUS EXPERIENCE CHARACTERIZED

Let us consider, then, to what extent recent work in CSR sheds light on how ordinary believers, throughout history and into the present day, have come to believe in God, and how they have sustained that belief. What are the most promising directions to look for cognitive scientific tools that might bear upon this sort of belief acquisition and sustenance, as opposed to that of hunter-gatherers?

This could be seen as little different from a person seeing a yellow-bellied sapsucker, but nevertheless not believing in the existence of such birds, for one reason or another. We maintain this simplification throughout. (Thanks to Brian McLaughlin for clarifying this point.)

Religious experience is of course not the only source of religious belief; much religious belief is picked up from testimony, broadly construed. One learns about God from "Granny," as Fodor might put it. And indeed some branches of CSR put heavy weight on the mechanisms of cultural transmission (Boyer 2001; Richerson and Newson 2009, applying the framework of Richerson and Boyd 2005; Wilson 2002; Norenzayan 2013). But this should not obscure the fact that virtually every robust religion that has staying power and an ability to renew itself across generations has included a role for some form of religious experience: either dramatic ones in the form of purported revelations experienced by the founders and made known to others via chains of testimony, or ongoing religious experiences that are meant to be available to all serious adherents, or some combination of the two. Mystic strands and subdivisions have existed in most if not all religions, and while the degree of emphasis on them and the range of people they are taken to be available to (everyone or a special class of priests/monks/saints/shamans) may vary significantly, this element of human experience is generally available for religious leaders to appeal to. For example, spiritual training within both Catholic and Protestant traditions typically includes instruction in how to "live in the Spirit" or to "practice the presence of God." Religious testimony frequently goes beyond "Our founder experienced so-and-so" to include "I experienced so-and-so, and if you do such-and-such you may too." Why does that testimonial gambit work for missionaries and revivalists as well as it does? How well does CSR do at explaining what goes on in both the full-blown religious experiences that are reported by many religious people, and the more subtle divine promptings that figure prominently in the spiritual lives of most of today's more devout Christians, for example?

Let us be more precise about the kind of religious experiences that we are most interested in. We focus on the experiences, great or small, which are described in perception-like terms. People "have a vision," although not necessarily with their eyes, they "hear a voice," although not necessarily with their ears, or they report a vivid sense of God's presence that seems direct and undeniable, even though it does not seem analogous to the deliverances of any of the usual senses. Alston (1991) points to a rich literature of Christian mysticism, emphasizing that many religious experiences are simultaneously experiential, direct, and taken to be of God (14ff). Here is one example from the many that he discusses, from James (1902, 67–68).

> All at once I . . . felt the presence of God—I tell of the thing just as I was conscious of it—as if his goodness and his power were penetrating me altogether. . . . Then, slowly, the ecstasy left my heart; that is, I felt that God had withdrawn the communion which he had granted. . . . At bottom the expression most apt to render what I felt is this: God was present, though invisible; he fell under no one of my senses, yet my consciousness perceived him.

Here is another, which emphasizes the fact that such experiences are not always expected or cultivated:

But as I turned and was about to take a seat by the fire, I received a mighty baptism of the Holy Ghost. Without any expectation of it, without ever having the thought in my mind that there was such a thing for me, without any recollection that I had ever heard the thing mentioned by any person in the world, the Holy Spirit descended upon me in a manner that seemed to go through me, body and soul. I could feel the impression, like a wave of electricity, going through and through me. Indeed, it seemed to come in waves and waves of liquid love. (James 1902, 250; Alston 1991, 14)

In a similar vein, here is a report of the experience of a Christian woman, Sarah, whom Luhrmann met in an evangelical church in California in the 2000s.

By the time I met her, Sarah was willing to tell me that when she was praying and she felt God's presence moving through her body or in her mind, she felt extremely close. "When I'm ministering to someone [i.e., praying for that person] and I know that the words that are coming out of me aren't mine, and I know that the pictures that I'm seeing aren't mine, there's a real intense closeness and oneness that you feel." . . . She was able to say to me, when I asked her how she was able to relate to a being she could not see with her eyes, that she did feel as if she "saw" him. "I feel like I do see him and I do see his face and I see his hand on what's going on around me. That is part of the experiential thing." (Luhrmann 2012, 97–98)

And again Sarah says:

Sometimes when I pray, I see his glory. There's what I call the throne room. . . . You can't really exactly see, but it's being in the presence of the Lord. . . . Sometimes I feel like I'm hearing the prayers that have gone before and the prayers that are going on now and the prayers that are to come, and I just sort of join in the chorus. (Luhrmann 2012, 99)

Such religious experiences are no rare or marginal phenomenon. Surveys show that between 25% and 40% of people polled in America and Britain report having had some kind of religious experience in their lives (Atran 2002, 195; David Yaden, personal communication). They are also found in children as well as adults; see Tamminen 1994 on experiences of God's closeness in Finnish children and adolescents, ages seven to twenty.

Indeed, there seems to be a spectrum of religious experiences to consider: some are more intense, some less; some are rarer, some more frequent; some have content more akin to normal perception, some are more internal or ineffable; some are sought via some kind of spiritual discipline, some come upon one unexpectedly; some come to trained religious experts, some to untutored laity, including

unbelievers; some are described more eloquently (even paradoxically), some less so. There seems to be a continuum of experience along all these dimensions. For this work, we focus on the less tutored, more spontaneous, more widespread ends of these spectrums, because here the similarities to ordinary perception are greater, and basic human cognitive machinery is more likely to be at work. However, the fact that there is a broad spectrum of experience in no way strains the analogy we develop with ordinary visual perception: any human being has the cognitive machinery to see a yellow-bellied sapsucker, for example, but we are not surprised that expert birdwatchers might recognize them more readily, see them more often, and describe them more accurately. Indeed, plenty of people will never even see a yellow-bellied sapsucker, for one reason or another. Nevertheless, the expert's experience and the lay person's are akin, built on the same cognitive foundations. We want to consider what those foundations might be, in the religious domain.

5.3 DOES CSR ACCOUNT FOR THIS SORT OF RELIGIOUS EXPERIENCE?

We ask, then, does current CSR help us understand experiences like those of Sarah? Two of CSR's most prominent tools for explaining belief in gods are the (hyperactive) agency detection device (HADD) and the theory of mind module/mechanism (ToM) (Guthrie 1993; Atran 2002; Barrett 2004; Bloom 2009; Bering 2011; Shermer 2011; McCauley 2012). These cognitive tools may help explain how mundane events, like glimpsing movement in one's peripheral vision when walking in the woods at dusk, might be mistaken for sensations of supernatural beings. It is much less clear how they illuminate the workings of a sense of God's presence, as reported by people like those quoted previously. Indeed, visions and "inner voices" with significant religious content can and frequently do occur without the interpretation of environmental sounds or sights as carrying divine messages. For these religious experiences, classic (H)ADD/ToM-type stories seem to miss the mark, in terms of both the context of the experience and the content of the experience.

With regard to context, it is true that modern believers might have a religious experience while walking through the woods, and the sense of motion, hence life, all around them as the wind blows in the trees might well have something to do with it, as (H)ADD predicts. But they are just as likely to have a religious experience when praying with their eyes closed in a quiet room, as many Christians are encouraged to do, where there is no startling stimulus at all.[3] If these potentially intense religious

[3] Of course, some modern religious experiences do involve particular kinds of stimulation, provided intentionally by some kind of ritual, ranging from congregational singing at an American church service to intense African or Melonesian initiation rites. The anthropological wing of CSR has more to say about these induced religious experiences, particularly Whitehouse (2000). We do not deny the importance of such experiences, but concentrate on the other sort, as better candidates for perception of God. Indeed, Greeley (1975) identifies music (49%) and attending group services

experiences are due to hyperactive agency detection, then it is agency detection run utterly amok, completely out of touch with the subject's environment.

With regard to content, it is also hard to see how to extend (H)ADD and ToM from their prehistoric role in evolutionarily significant activities like detecting predators and prey to illuminate the kinder, gentler experiences of "sensing God's presence" that people describe. What do the emotions of being startled by what might be a dangerous jaguar have in common with the experience of having "a wave of electricity, going through and through me . . . com[ing] in waves and waves of liquid love," or the experience of "hearing the prayers that have gone before and the prayers that are going on now and the prayers that are to come?" We see essentially no point of commonality here.[4]

Indeed, we find the (H)ADD-ToM-style theories somewhat incomplete in another way: they are a bit fuzzy about where the concept of God as a powerful incorporeal intentional agent comes from in the first place. Suppose that someone indeed detects a potential agent in the woods, but then looks more closely and does not see a normal agent (e.g., a jaguar). Situations like this are supposed to invite the belief that an *invisible* agent is present—some kind of ghost or spirit. But why is the concept of an invisible agent even available to a person who has no prior experience with such agents? Why do people *ever* draw the inference to a radically new category of being, rather than drawing a whole range of more mundane conclusions, such as "Wow, that jaguar is really well camouflaged" or "There goes another false positive from my overactive agency detector" (see also Murray and Goldberg 2009, 189–93)? We can see why the conclusion that there are spirits in the woods is tempting *if* one already has the concept of a spirit in one's cognitive repertoire, but not how the (H)ADD experience is the source of that concept in the first place.

The obvious potential answer to this challenge is to say that the concept of God is complex, combining independently available concepts of "agent" and "invisible." Indeed, it is plausible to typologize concepts as being either simple or complex, where complex concepts are those that are formed compositionally out of simple concepts by conjunction or other syntactic processes.[5] In addition, concepts are presumably either innate, or they are induced somehow out of experience with instances of the concept. This gives the following rough classification of concepts:

(41%) as two of the most important elicitors of religious experience, but private prayer is right up there with them (48%) (Atran 2002, 171).

[4] We acknowledge that Guthrie's (1993) and Barrett's (2004) use of the (H)ADD is broader than the domain of predation. But we think our point can be generalized to other plausible applications, and the domain of predation is particularly interesting because it is so clear why an "unreliable" system that generates many false positives would be useful in this domain.

[5] There may be other, murkier notions of the complexity of a concept that depend somehow on the intrinsic complexity of the things that the concept applies to, but we have only the precise structural-syntactic notion of complexity in mind here.

(1) Simple and innate
(2) Simple and induced by experience
(3) Complex and innate
(4) Complex and induced by experience

Whether all these types actually exist is controversial. Presumably at least (1) and (4) do exist. Whether (3) exists might be questioned; perhaps no theory makes heavy use of this type. Whether (2) is possible, and if so whether such concepts are common relative to (1), is part of what is at stake in debates between rationalists and empiricists.

Where then would the concept of God plausibly fit into this typology, according to CSR? The strain of CSR research that is most directly relevant to this is Pascal Boyer's (1994, 2001, 2003) influential notion of minimally counterintuitive concepts, adopted also by Barrett (2004) and Atran (2002), among others. Boyer's idea is that supernatural concepts come from recombining features that initially belong to different natural domains of knowledge, so as to create new combinations like "invisible agent." For example, one might import the feature "perceiver" from the cognitive domain of persons into the cognitive domain of plants to get a concept like ebony trees that record what happens around them (a belief of the Uduk people of the Sudan). In a broader sense, Paul Bloom's (2004) notion that beliefs about souls and spirits come from mismatches between our innate categories of "agent" and "physical object" can be seen as a hypothesis of this same general type, building new concepts and beliefs out of resources taken from two different cognitive domains. So too can invocations of Deborah Kelemen's (2004; Kelemen et al. 2005) work on "promiscuous teleology," where certain natural kinds like animals are spontaneously equated with artifacts, with the result that people naturally infer that they have a purpose and a creator-designer.

Indeed, naturalizing forms of CSR which do not make use of the hypothesis that God exists are heavily committed to this view, for the reason already alluded to. Saying that the concept of God is simple and innate would raise the question of why that concept would have occurred in the human mind in the first place, given that it is (some assume) of no direct use. Saying that the concept of God is simple and induced by experience raises the question of how that could happen on the naturalistic hypothesis; it cannot be simply by a form of demonstration, if there is nothing that the concept applies to. Our clearest cases of merely intentional objects are rather obviously constructed out of properties that are otherwise known to exist: a unicorn is a horse with one horn, a griffin is an animal with the front of an eagle and the back of a lion. The same is true for certain things that religious people actually believe in, including Boyer's (2001) recording trees and statues that hear prayer. So standard CSR is heavily committed to "God" being a concept of type (4).

But this strain of research has not made much progress in showing how this particular concept actually fits into the framework. It is not at all obvious that

"God" is a complex concept. Notice that it corresponds to a linguistically simple expression in English and many other languages, consisting of one morpheme rather than several (in contrast to *unicorn* [= "one horn"], *listening statue*, etc.). The word is also learned early in linguistic development, for children who are exposed to it. Boyer (2001, 2003) has proposed an allegedly restrictive and explanatory catalog of the kinds of religious concepts that can easily arise in human minds and cultures, but there is nothing much like the "God" concept to be found in this catalog. The closest he comes (2001, 63) is saying that an omniscient God is [PERSON + special cognitive powers]. But this does not elaborate what those cognitive powers are (involving special perception, knowledge, wisdom, etc.), nor does it even touch on gods' immateriality, or the special powers of causation that they are taken to have. Nor has anyone else adopting this framework filled in this notable gap, so far as we know; for example, Atran's (2002, 98) fifteen-cell typology also has no obvious box for God. Indeed, Barrett (2004, 29) acknowledges that common concepts of God are *massively* counterintuitive, not minimally so, and we think that is true also of the folk concept, even before one adds explicitly taught technical notions like God being triune. Therefore, there is no explanation in these terms of how the concept of God arises. Our best first-pass version is "nonphysical agent having great power and knowledge," but that already consists of at least four basic predicates, and it may well need further elaboration. A minimally counterintuitive analysis of "god" thus seems unlikely, and even a complex conceptual analysis would be challenging, not obviously consistent with the superficial linguistic and developmental evidence.[6]

Summarizing so far, we have considered a case of a modern religious believer praying in a quiet room and sensing something like "God is present to me as loving," and we asked what CSR contributes toward understanding this experience. We find the answer to be almost nothing: it does not elucidate the nature of the concept God that the belief contains (it is not obviously a combination of other concepts), nor the content of the belief (that God is present and loving), nor the context of the belief (in a quiet room, with no unexpected physical stimuli).

There are other important strains in the CSR literature. Some of these, like Norenzayan's (2013), assign a more prominent role to cultural transmission and cultural evolution (see also Richerson and Newson 2009; Wilson 2002; etc.). These accounts create more space for talking about how a complex concept of God might have developed over historical time and been transmitted as a piece of cultural technology, analogous to the development and transmission of complex techniques for making stone axes. One can make a case, then, that cultures with

[6] This argument is a special case of Fodor's classic point that it is hard to take a genuinely reductive approach to *any* concept that corresponds to a simple word in a natural language, but we apply the point only to this very particular case. Responses to Fodor that may work for artifacts of modern technology will not obviously work for this case.

a certain kind of god concept have done better than cultures without it through the vicissitudes of (cultural) evolution; for Norenzayan, this is because belief in a watchful and morally concerned God has value in preventing free-riding and other antisocial behaviors. However, this line of thought still strikes us as incomplete in that it has nothing special to say about how a nascent concept of a powerful immaterial agent got started in the first place, so that it could enter the process of cultural development at all. On this point, Norenzayan (2013, 15–19) simply relies on a standard ToM-type story. Moreover, where the concept of God comes from is the most that one will get from Norenzayan (2013) and similar accounts: they have nothing to offer toward explaining why people have experiences that they take to be caused by being in contact with God. Norenzayan tells us why the priestly class might put carvings with eyes of God around their city, to prime people toward prosocial behavior, but he doesn't tell us why contemporary believers have perception-like experiences of being in the presence of God when no such eyes are present.[7]

It is conceivable that contemporary spiritual disciplines of prayer and "listening" for God's voice do have some tenuous connection to the cognitive mechanisms posited by CSR. Perhaps, as an extension of a very general mental tendency to posit agents when other causes are not obvious, people's intrusive thoughts or sudden alterations in mood are attributed to an invisible agent. But this seems like a far cry from the kind of agency detection that would be useful in ancestral environments, extending it to a range of phenomena that are very different from the circumstances in which it is helpful to posit an agent on scanty input.

We conclude that experiences that purport to be perceptions of God deserve cognitive scientific scrutiny. This then raises questions like the following: What options are there for a cognitive science of religion that takes seriously the widespread reports of perception-like encounters with God, and tries to understand these methods of belief formation in terms of experiential inputs, algorithms, and representational outputs, in the style of cognitive science? How likely is it that the processes in question might constitute something like a "god-faculty," which could be delivering perception of God in some circumstances? And what are the metaphysical and epistemological implications, if a "god-faculty" turns out to be part of our cognitive endowment?

[7] Bulbulia (2009) takes a strong stand that CSR should explain religious experiences as (adaptive) confabulations: people don't really have such experiences, but they think that they do, so as to justify their religious beliefs to themselves. We do not deny that some confabulation happens, particularly in (sub)cultures in which having religious experiences is expected or grants prestige. But the claim that all religious experience is confabulation seems rather incredible to those who have had them, in the same way that Dennett's (1991) claim that we do not really have conscious experiences is to most people.

5.4 RELIGIOUS EXPERIENCE AS PERCEPTION: A NEO-ALSTONIAN APPROACH

In fact, one of the core contributors to CSR, Justin Barrett, is inclined to take some religious experiences at face value, as perceptions of God. Barrett and coauthor Kelly Clark (2010) describe (H)ADD and ToM as together forming a kind of "god-faculty"; and they allow that this "faculty" is probably an evolutionary "spandrel"—selected for survival-enhancing features that had nothing to do with production of beliefs about supernatural beings. However, they claim that this view is consistent with the god-faculty sometimes "operating under optimal conditions for producing reliable religious beliefs. . . . The development of the god-faculty through evolutionary processes prepares one for the acquisition of true religious beliefs when one has genuine religious experiences" (188). Their notion of a faculty is, however, highly malleable; their god-faculty is just whatever mental tools, in whatever circumstances, tend to produce belief in gods. We find perception-like reports of experiencing God to be sufficiently common and important to deserve exploration as a potential god-faculty in a narrower sense than Barrett and Clark have in mind. We are interested in the question of whether there may be an innate type of cognitive processing, defined in terms of inputs and outputs, that promotes belief in gods—a perception-like faculty that might not be a spandrel at all.

What is involved in spelling out cognitive scientifically a view in which certain kinds of religious experiences genuinely constitute perception of God? Though the analysis of perception is fraught with controversy, in at least some central cases of perceiving, the stereotypical early modern account seems to us to be essentially right. After the development of modern science and the widespread rejection of neo-Aristotelian accounts of perception, philosophers and scientists tended to make the following three assumptions about perception. (1) When an external object is perceived by means of some sense modality, there is a family of mental states associated with that mode of sensing. (2) These mental states are caused by perceptible states of the object in a reliable, counterfactual-sustaining pattern (so that some differences in the objects perceived will cause systematic variations in the sensory experiences). (3) Having these sensory experiences tends to cause their subject to believe that an object exists with the corresponding perceptible states.

Like Alston, we believe that the phenomenal aspects of sensory mental states cannot be adequately accounted for in purely representational terms—that is, by positing inner states that represent the world as containing things with the properties objects are perceived to have.[8] On the early modern model, words like *red* and *sweet* are sometimes used to describe an aspect of one's mental states—a phenomenal mode of appearing—and, more often, are used to describe properties of physical

[8] See Alston 1991, 57 n. 46. Alston mentions D. M. Armstrong and G. Pitcher, but we expect he would have been no happier with the views of Dretske (1997) or Tye (2009).

objects that typically appear by virtue of causing mental states of that kind—things that appear under that phenomenal mode. Reductive representationalists, like Dretske and Tye, identify the experience of phenomenal redness or sweetness with the occurrence of a brain state that represents the physical properties of red or sweet objects. There is no room, on their conception, for the idea that a fully systematic and stable swapping of phenomenal feels would result in two subjects with inverted phenomenal experiences but who represent the world as being the same with respect to physical color. We disagree: as Locke claimed,[9] it is possible (logically or metaphysically, at least) for one group of perceivers to experience marigolds as phenomenally yellow, another as phenomenally blue, with neither group misperceiving the colors of flowers. It is a contingent matter which phenomenal experiences are involved in the perception of the physical properties of external objects.[10]

Taking Locke's side in this dispute need not commit us to the irreducibility of "qualia," the phenomenal properties of experiences. There are materialist type-identity theories (Hill 1991) and forms of functionalism that allow for spectrum inversion by identifying differences in qualia with differences in the physical realizers of the qualia role (Shoemaker 1982)—though in fact we prefer a more dualistic account of the relation between the phenomenal properties of experiences and the physical properties of brains and bodies.[11] Adopting the early modern schema for perception need not cast doubt upon the explanatory power of cognitive science. If qualia are real, they must have an effect upon cognition, and they—or representations of them—will show up in cognitive psychology.

Suppose some purported experiences of God's presence involve a family of mental states that are caused by a divine being (in ways that are systematically correlated with properties of the divine being) and that they tend to cause beliefs about the properties of such a being. Such experiences would be good candidates for perceptions of God. We say "good candidates" because the analysis of perception is complex; there is much to be said about the exact way in which properties of the perceived object must be responsible for the experiential states, and about the way these inner states must cause beliefs (or tendencies to have beliefs) about the kind of object in question, in order for the experience to qualify as perception of the object. To constitute a sufficient condition for perception, these conditions have to be fulfilled in "the right way"—there are devious causal paths to be ruled out, and doing so is tricky even when focusing on the clearest cases of perception (see, for example,

[9] Locke [1689] 1975, p. 389; bk. II, chap. xxxii, sec. 15.

[10] Dretske and Tye are able to describe circumstances in which sensory modes are exchanged—e.g., an inversion of a subject's experiences of the spectrum of visible light relative to our experiences (see Dretske 1997, 72; and Tye 2000, 66); but they must say that one of the ways of experiencing light leads to false beliefs about the colors of objects. And that is what Locke denies. For criticism of Locke's argument, see Speaks 2011.

[11] Indeed, we prefer a more fully-fledged dualism of selves and bodies. For some dualistic hypotheses worthy of consideration, see Baker and Goetz 2011. We see no reason to think that dualism should prevent cognitive science from playing an important role in explaining the workings of the mind.

Goldman 1977). Still, if an experience satisfies these conditions, it is well on its way to being perceptual.

Alston (1991) is a model for us of one who claims that religious experiences can count as perceptions of God, on which knowledge of God can be based.[12] Although Alston rejects the stereotypical early modern analysis of perception, his discussion of perceiving God includes this model as a contender and provides resources for those of us who find this kind of view attractive. He asks, in effect: Why think that the conditions necessary for perception are not satisfied by religious believers who take themselves to be aware of God in various ways? Purported experiences of God do potentially fit the early modern perception framework: (1) there are analogues of sensory modes of experience present when subjects claim to be perceiving God, (2) God could well be causally responsible for the sensory experiences in question, and (3) such experiences do seem to generate beliefs about God directly. We discuss these three aspects of the perceptual schema in the next two subsections.

5.4.1 Modes of Experience for Perceiving God

What are the analogues of the sensory modes of experience that are relevant to religious experience as perception of God? At first, this may seem problematic, in that there are no special sense organs that are dedicated to perceiving God, as far as anyone knows. A failure to identify the modes of experience under which God is supposed to appear would make Alston's claims about perceiving God radically incomplete.[13] He thus offers three candidates for the experiential modes under which God might be held to appear—candidates that are suggested by typical descriptions of purported perceptions of God.

First, it is not out of the question that people's normal sense organs can be co-opted for perception of God. In full-blown mystical experience, God (or an angel, the Virgin Mary, etc.) is sometimes said to be seen and heard in a literal sense. Even if God is not colored or shaped or a generator of sound, Alston observes that "there is a long tradition that holds that secondary qualities like colors do not really characterize physical substances. Thus it is not inconceivable that God should appear to us as looking bright or sounding a certain way, even though He does not, in His own nature, possess any sensory qualities" (19).

Second, Alston shows that in much of the literature on mystical experience, God's presence is sensed by means of experiences that are said to be *akin* to those generated by the five senses, yet oddly different from them as well. Thus God is seen

[12] Alston himself calls them *mystical* experiences, to distinguish them from a broader class of experiences that could plausibly be deemed religious, like experiences of going to church or of loving one's neighbor.

[13] Plantinga seems to feel these doubts; he retreats from talk of literal perception of God to "something very like perception of God . . . that is epistemically on all fours with perception in that it . . . can be a source of warrant" (Plantinga 2000, 181–82).

or heard in a somewhat more extended sense (e.g., Sarah's experiences of "seeing" God, and "hearing" the prayers of heaven, quoted previously; this seems to be more common than visual or auditory experiences that seem, to the subject, exactly like seeing and hearing). Mystics talk as though there are families of what Alston calls "quasi-sensory" states—states that resemble, but are not quite the same as, the qualia found in auditory, visual, olfactory, and other forms of sensory experience. (Alston champions this model as evidence "that mystical perception involves distinctive, nonaffective phenomenal qualia" [51–54].) In cognitive science terms, we might tentatively think of this as being the effect of mental representations with religious content entering the information-processing stream within (say) the visual system without having the usual sorts of antecedent representations at a lower level of processing. For example, a religious vision might involve something that is present in the V4 area of the visual cortex that does not have an analogue at V1 or V2. This would make sense of a "vision" being like an ordinary visual experience in some ways but not others: for example, what one "sees" might have position and shape but no color or texture. We can perhaps compare this with visual imagery, which is said to make use of some parts of the visual cortex but not others. Then a divine vision would have something like the quasi-perceptual phenomenal character of visual imagery, but it would not be caused by the voluntary use of the visual imagination. Similar scenarios can be imagined within the auditory, tactile, and olfactory cognitive systems. This would give us an interpretation of the different sense-like modes of mystical experience, and how "having a vision" might be different both from literally seeing something and from "hearing God's voice."

Alston also mentions a third candidate for playing the role of a sensory mode of experience that may be involved in some putative perceptions of God. This is the possibility that emotional states are co-opted to play the role of the modes under which the divine appears to us—that certain kinds of feelings of awe, joy, and so on might serve as the modes of God's appearing. These emotions certainly have their characteristic qualia, even though they are not the qualia caused by the eyes, ears, nose, fingers, or tongue. Presumably distinctively emotional qualitative experiences come from proprioceptive sensors inside our bodies detecting associated physiological changes in heart rate, blood pressure, and so on. Although Alston does not consider this mode of experience especially promising (51), we do take it to be promising for at least two reasons: it shows how traditional sense organs need not be involved in something that is still perceptual, and it does justice to much of the experience of God's presence that is reported by ordinary believers; see, for example, James's anonymous informant who "felt the presence of God . . . as if his goodness and his power were penetrating me altogether." These seem to be nicely captured by a model of perceiving God in which God's presence is felt by means of striking changes in affect. So long as the second and third conditions for perception are appropriately satisfied, the change in affect can serve as the subjective side of a veridical perception. According to the early modern model, even in paradigmatic

perception there is a wholly subjective aspect to every sensation—for example, being appeared to redly, which can happen in veridical and illusory experiences as of a red object—but, when conditions are right, the experience is nevertheless an experience of an objective reality outside the subject's head. A sign of the directness of perception (at least a necessary condition of it) is that there is no conscious inference from the subjective state (perhaps no conscious noticing of it at all) to the existence of or the properties of the object perceived. Similarly, in the typical experience of God, the existence of the divine Lover is not inferred from a change in one's own mood; rather, God can be presented as loving, for example, by means of an overwhelming sense of one's being loved. We thus see no intrinsic obstacle to the idea that this experience of God is as direct and unmediated as ordinary perceptual awareness of external objects.

We also imagine that these emotional states might be combined and overlaid on one another in various ways that are distinctive of religious experience. For example, the experiences of fear and peace might be triggered by opposite sorts of situations in dealing with the ordinary physical world that evolutionary psychology routinely considers. But they might come together simultaneously in a kind of emotional "chord" in certain types of religious experiences (e.g., John Newton: "Twas grace that taught my heart to fear / and grace my fears relieved," perhaps simultaneously). This could produce a qualitatively different experience that might even be described as a new emotion, say of religious awe, despite being constructed out of familiar elements known to psychology. There could also be interesting combinations of the quasi-sensory states and the emotional states: for example one might "see" a vision of a bright humanoid shining like the sun five feet to one's left (although not with one's eyes) and simultaneously go into an affective state of unusual alertness plus quiescence. The point is that one can imagine a rich variety of religious experiences by combining ingredients like these in different ways. Indeed, the variety of subjective states capable of generating distinctively religious perception-like experiences might approach the variety of subjective states that are associated with a traditional sense mode like vision, which can be used to perceive a complex physical world.

We think that this is important because it provides a possible account of how religious experiences can lead to religious beliefs that have rich propositional content. Religious believers generally go well beyond a simple belief that God (or some supernatural agent) exists: they tend to believe that God is also loving, or holy, or uniquely awesome, or terrible, or some special combination of those qualities. They tend to think that God was angry with them when they did such and so, but forgave them when they offered a sacrifice, or did a good work, or appropriated Christ's atonement by faith. And it is very hard to see how a classical CSR story in terms of the (H)ADD firing when one walks in the woods, or in terms of our cognitive processes inferring an agent from observing certain kinds of functional complexity in nature, could yield beliefs with this sort of specific content. It seems that cognitive processing along those lines could give little more than a bare belief that something

else is out there; any more specific "theology" would have to come from somewhere else (from Granny, or the priestly elites). In contrast, the sorts of complex religious experiences we are sketching here could support religious beliefs with richer content. For example, an unusual experience of fear and peace simultaneously could lead to belief in an unusual being who is uniquely holy and loving at the same time. This then could lead to a CSR that does justice to richer systems of both religious experience and religious belief. Granny and the religious elites will no doubt still have their say on how this grist is elaborated into full-blown theologies in different cultures, but they have more grist to work with, and the richness of religious phenomenology provides more opportunities for there to be resonance between official doctrines and the experiences of ordinary believers.[14]

Those who report perception-like experiences of God describe the phenomenal or subjective aspects of their experiences in quite a number of ways. Some experiences have auditory or visual phenomenology that is relatively straightforward, while others leave their subjects struggling to find the right words to identify the sensory mode under which God seems to them to be presented. In ordinary modes of perception there is also a spectrum, from modes of experience in which the subjective vehicle is readily identifiable to ones in which it is extremely hard to describe.

At the one end, for example, is a rheumatic sufferer who experiences a familiar pain as the onset of a drop in atmospheric pressure. The pain is one thing, a very familiar experience that may not always have been associated with the weather, but that has now come to seem a perception-like awareness. As Goldman (1977, 271) puts it, the rheumatic "may not know enough to have beliefs about changes in atmospheric pressure. But he has beliefs like: 'Something is happening that will lead to rain.' The event that satisfies this belief, and also causes his ache, is the drop in atmospheric pressure. Hence, we say that he *perceives* such drops." Though the pain is very different from the drop in atmospheric pressure, once the pain has become a reliable, noninferential source of information about the environment, it becomes natural to describe the experience as a form of perception.

At the other end of the spectrum, there are kinds of perception in which the subjective vehicle—the mode of appearing—is highly elusive; in the extreme case, psychologists begin to talk of "sensationless perception." A famous example is "facial vision":

> Blind people (and sighted people while blindfolded, too, though less reliably) can detect obstacles—walls, chairs, and the like—without having any (conscious) sensation. In fact, they tend to think that they are picking up information somehow through the skin of

[14] Issues of the reliability of religious experience now arise of course: why have religious experiences in different cultural contexts given rise to what seem to be content-rich but contradictory (folk) theologies. We flag the issue as important, but have no space to take it up directly here.

the face (hence "facial vision"), when in truth the information is coming in through the ears as a subtle form of echolocation. (Lyons 2009, 52)

A cognitive process that typically leads to belief in God could be a form of perception whether or not the subjective aspect involved is easy to describe in itself, or easily recognized as distinct from the God purportedly revealed in the experience.

5.4.2 God Causing the Experiences

Continuing to take seriously the reports that a certain class of religious experiences feel like perceptions, we need to say that this belief production happens automatically, at a subpersonal level. "Mystics" (even everyday ones) report a difference between, on the one hand, an experience of feeling loved or feeling an overwhelming sense of peace and *inferring* from this that a loving God exists; and, on the other hand, a strong and direct feeling that one is in the presence of an infinitely loving being. In one case, the focus of attention is on one's own internal states; in the other, it is on the being perceived as outside of oneself, to such an extent that one may hardly even notice one's unusual emotional state—just as in visual perception one may be entirely focused on a basketball and not at all on one's sensation of an orangish round patch in one's visual field. Alston (1991, 20ff) finds this distinction clearly articulated by theorist and practitioner alike. He quotes theologian John Baillie (1962, 88–89): "Faith does not deduce from other realities that are present the existence of God who is not present but absent; rather it is an awareness of the divine presence itself, however hidden beyond the veils of sense" (26). But the distinction between direct and indirect experiences of God can be found in the writings of Christian mystics, such as Angela of Foligno (Alston 1991, 13). In a similar vein, Luhrmann's (2012, 97) interviewee Sarah clearly distinguishes times when she felt God's presence moving through her from times that she did not feel his presence, but still believed in a more conscious cognitive way that God was (omnipresent, and therefore) close to her.

This is a place where some additional cognitive science (CSR) should come in, then. Vision science seeks to give a step-by-step computational account of how a certain pattern of stimulation on the retina is mapped onto the percept of a basketball at such-and-such a location, with the information-processing algorithms performed automatically by the brain. A cognitive-scientifically respectable explanation will account for the fact that we automatically, inevitably perceive an object in the world, not a sensation on the retina. We might then want something analogous from a full cognitive science of religion: a step-by-step computational account of how a certain pattern of input from the proprioceptive receivers of the body (or activity in the higher visual centers, or whatever) produces the output that God is present to the person as loving (or angry, etc.), couched in terms of information-processing algorithms performable by the brain. Anything less than this is arguably failing

to live up to the goal of giving a cognitive scientific explanation of the observed facts about religious experience. But we find that CSR as it exists now does not offer us much of anything of this sort. In order to provide a more complete account of modern religion, CSR must take a deeper interest in the role of modern religious experience in generating and sustaining belief in God. And we see no intrinsic reason why it couldn't be developed so as to do so.[15]

How likely is it that a fuller account of the steps from experience to belief would be consistent with the hypothesis that the process constitutes perception of God? Very likely, we think.

In principle, the second and third components of the early modern perception schema should not be so hard for the religious perceiver to satisfy. Alston rightly assumes that the third component is unproblematic: the experiences religious people describe as perceptions of God obviously generate beliefs about God, or at least tendencies to believe (63–64). But he takes the second, causal component to be more problematic:

> It may well be pointed out, as I did earlier, that not every causal contributor to an experience is perceived via the experience. . . . Thus it is not enough that God figure somehow or other in the causes of the experience; He would have to make the right kind of causal contribution. But what is the right kind? (64)

This is a special case of the general problem of determining the "proper stimulus" of a sense modality, a problem Alston thinks cannot be solved by giving a "general answer applicable to all perceptual modalities" (64). We are not so pessimistic.[16] At least one very promising attempt at a general answer implies that there is a close connection between the second and third components in the early modern analysis of perception. It is not a coincidence that objects perceived tend to cause experiences which, in turn, cause beliefs about those kinds of objects. We thus take up the second and third condition together, in the context of discussing the proper stimulus question.

[15] There is, however, at least one practical problem: when studying visual perception it is easy to present a basketball to someone and to withdraw it at will, so as to see what differences in subjective report and brain states are correlated with the change in stimulation. In contrast, when studying perception of God, we cannot present God to the subject, and withdraw God at will, so as to isolate the difference.

[16] We are not, however, as optimistic as Richard Swinburne. Swinburne points out that, if God exists (and sustains everything, and is omnipresent), then "any causal processes at all which bring about my experience will have God among their causes; and any experience of him will be of him as present at a place where he is." From these two facts it is supposed to follow that "if there is a God, any experience which seems to be of God, will be genuine—will be of God" (Swinburne 1979, 270; see also Wainwright 1973). According to Swinburne, so long as God exists, it is impossible for there to be a failure of the appropriateness of the causal chain from God to an experience that seems to reveal God. We think it is not that easy.

In the case of vision, the proper stimulus question can be posed in this way: Why is it that we see surfaces of objects, rather than the light striking the retina, or the light traveling between an object's surface and the retina? The best answer we know of is due to Alvin Goldman; and it appeals to the kinds of beliefs typically caused by the mental states associated with a particular sense modality, and the proportion of those beliefs that are true (Goldman 1977). Thus it is a point of fact that experiences of redness, say, have a tendency to produce largely true beliefs (directly, noninferentially, presumably computationally) about the properties of the surfaces of objects, not about the wavelengths of light striking the eye or traveling between an object and the eye. And it is this fact that explains why red experiences, in normal conditions, are perceptions of the surfaces of objects and not of the properties of the retina or of the light itself—even though the experiences carry as much or more information about these other things.

On Goldman's account, to work out the proper stimulus of a sense, one looks at the relations typically holding between the perceiver and those things that uniquely satisfy beliefs that are generated by (or constituted by) the "percepts" belonging to that sense—whether it be smells, tastes, visual appearances, or some other kind of experience. Things that stand in these (broadly speaking, causal) relations to the experiencer are the *proper* objects of that kind of perceptual experience. Visual experiences tend to produce beliefs that provide a fairly accurate representation of the objects before one's eyes; these objects have surfaces that reflect light and are located in such a way that the reflected light strikes one's eyes; and so when things stand in that relation to our open eyes and generate experiences of color in us, we perceive those things (even if it happens that the usual beliefs do not accompany visual experiences on some occasions—for instance, in skeptical moods, or when distracted).

A notable feature of Goldman's account is that, had experiences of color tended to generate beliefs that were mostly true of *something else* in the causal history of those experiences, then the proper stimulus for perception by means of color would have been those other things. Color experience *could* have been a means of perceiving proximal stimuli—e.g., the light striking the eye—but instead it serves the much more useful function of allowing us to perceive distal objects. In Goldman's example of the rheumatic, a kind of experience that did not originally serve as the vehicle for perceiving anything external comes to be the sense modality for perceiving a drop in atmospheric pressure; among the many causes of the pain, the change in atmospheric pressure is selected as proper stimulus in virtue of most reliably satisfying the beliefs generated by the pain.

Many people come to have experiences in which they take God to be especially present in a perception-like way. In the previous subsection, we surveyed a number of modes of experience that seem, for some people at some times, to mediate the presence of God. What would it take for God to be, in fact, the proper stimulus

for such experiences—the object perceived by means of them? If Goldman is right, at least the following necessary conditions must hold: the experiences in question must typically generate beliefs that are uniquely satisfied by God, and there must be a causal relationship between God and the experiences. But what kind of causal relationship would suffice?

Alston considers two ways in which God could satisfy a causal condition on perception. (i) The experiences involved might "occur only because God intentionally presents Himself to the subject's awareness as so-and-so" (64) in a way that "involves some divine activity over and above that which is directed to everything else in creation" (65). On the other hand, (ii) "It may be that God satisfies the causal condition for being *perceivable* in a certain experience just by keeping that experience in existence"—in other words, by exercising nothing more than the kind of concurrence God is supposed to contribute to sustaining everything (65). Like Alston, we do not rule either possibility out of court.

Possibility (i) suggests a more interventionist picture: God occasionally interferes with the workings of our brains (or souls) in order to make his presence felt. This need not be the only account of God's causal activity that would make (i) true however. God could also perform a special, deliberate act of bringing about a religious experience without miraculous interference in the course of nature. Suppose God knew that, by some quirk of our evolved psychology, whenever a certain combination of emotional states occurs in human beings who antecedently have the concept of God, they have an experience that generates belief in God's presence. And then suppose that God providentially arranges the initial conditions of our universe so as to ensure that such experiences are frequently had. These experiences would, we submit, satisfy the conditions for being perceptions of God: a certain mode of experience is caused by the putative object of perception, and these experiences in turn cause true beliefs about their cause. This strategy for providing us with perceptual experience of God ought also to count as "divine activity over and above" God's general concurrence, but activity that does not involve directly fiddling with our neurons. However the mechanism of (i) is to be understood, it provides a model for the causation of religious experiences that easily explains the transient nature of ostensible perceptions of God, and the sense that they were not initiated by the perceiver.

In contrast, possibility (ii) might seem to be a nonstarter.[17] Since God stands in the relevant causal relation to every experience, it is natural to ask—as Alston does—why we do not "perceive God in every experience?" (65). How can (ii) be made compatible with the transient nature of ostensible perceptions of God? Alston proposes a model:

[17] Indeed, it seems so to Michael Levine (1990).

> Although God satisfies all the conditions on His side for being perceivable in every experience, there are various obstacles on our side that, most of the time, inhibit that perception. (65)

Although Alston does not say much about the nature of these obstacles, a little reflection on the solution to the proper stimulus problem removes any mystery there might be about how perception of God could be inhibited despite the ubiquity of God's causal contribution—and the inhibition need not come from inattention or cognitive malfunction. Why, for instance, do visual experiences not typically constitute perceptions of God, given God's involvement in causing them? For the same reason they do not typically constitute perception of the light traveling to one's eyes or the state of one's own retina. Visual experiences tend to generate beliefs about surfaces of objects in front of one's eyes, and it is in virtue of this fact that they constitute the internal, subjective side of the perception of physical objects—not the perception of other things causally implicated in generating the experience, including the light two inches before the eyes, the retina, or God.

So long as religious experience reveals things about God that are always true of God (e.g., God is powerful, knows exactly what you are doing, loves you, etc.), there need be no special contribution that God makes on some but not all occasions. Alston was worried that, if God's contribution is no more distinctive than that, then all perception will count as perceiving God. So long as normal visual, auditory, olfactory, and other sense experiences do not regularly generate beliefs about God, the fact that God is causally involved in their production does not transform them into modes of awareness of God. Conversely, so long as a special kind of experience does generate, typically and automatically, beliefs about God, then—since God is, indeed, among the causes of that experience—God is a perfect candidate to be the proper stimulus for a perception with that kind of experience as its sensory mode.

As Goldman's (1977) extended discussion shows, there are complications to be overcome in the full analysis of what it is for something to be the perceptual object of a sense modality. But the basic criteria seem easily satisfiable by God, as the object, and the kinds of experiences described in contemporary spiritual practices, as the mode of sensing.

One need not, then, suppose that God always acts directly upon the mind or brain in a way that bypasses natural processes in order to think that religious experience constitutes perception of God—though we are not particularly skeptical about how often God presents himself by means of some kind of special intervention. The evolutionary story about the development of a "god module" presented in the next section is consistent with many different ways in which such a module could be constructed. Different sorts of sensory, quasi-sensory, or affective states could constitute the experiential side of perceptions of God. And God's role in causing them might involve his setting up special circumstances that trigger such experiences; it

might involve direct intervention in our ancestors' brains; but it might involve something much simpler—God's general sustaining of everything in existence.

5.5 THE PROSPECTS FOR EVOLVED DOMAIN-SPECIFIC RELIGIOUS COGNITION: A NEW FABLE IN THE EVOLUTIONARY PSYCHOLOGY STYLE

The hypothesis that God is the perceptual object of some religious experiences strongly suggests that there must be some dedicated cognitive machinery at work in the human mind/brain which a cognitive scientist might look for. To use a controversial term, it strongly suggests that human beings have a god module. This modularity thesis (as we intend it) is basically just the view that there is a *specialized* algorithm to map (say) activity in the proprioceptive receptors onto (candidate) beliefs about the presence of God. What would the alternative be? It would have to be that some other algorithmic process of the human mind, which exists for other reasons, happens to perform this mapping. For example, the same visual processing algorithms that map some round orange patches onto basketball percepts would also map experienced states of arousal plus quiescence onto God percepts. Or auditory processing algorithms would do this, or orientation-in-space algorithms, or whatever. That possibility strikes us as very unlikely, given how different both the inputs and the outputs are. Unless more is said, this would be like inputting lines of Shakespeare into a program designed to calculate compound interest rates and expecting the program to produce a metrical scan of the lines: it is not going to happen. It is extremely rare for a computational system to do anything interesting with an input that does not meet the formal specifications for which it was explicitly designed. We think it would be almost as amazing in the case of religious experience.

Those familiar with the CSR literature may find this conclusion rather far-fetched. After all, pretty much the entire thrust of that literature has been to deny that there is any specialized god-module. And how could such a module have evolved? What would it have been good for in the human ancestral environment?

We would like to propose a novel but conceptually straightforward answer to these questions: a god module could have evolved because it was useful for interacting with God. Of course, this answer takes seriously the possibility that God actually exists, but we are happy to do so. Indeed the conceptual landscape around these questions could look quite different if one is open to the possibility that theism is true. If supernatural beings exist, it is entirely plausible that human beings would have acquired some specialized cognitive apparatus for thinking about them.

To see how this could come about, suppose that we combine theism with standard evolutionary psychological thinking (the intellectual background for CSR). Theism is simply the idea that a transcendent personal God exists, one who can and does act in the world. If God is personal, then one can talk to God (prayer), and if God acts in the world, then God can choose to do what is asked of him (answered prayer). This

is true by a very simple characterization of theism.[18] Now suppose that, as *Homo sapiens* was evolving, something entirely natural—a random mutation, an overactive agency detecting device, a wild hunch—caused a hominid to think, "There is a God" and to try praying to that God. For example, he (King David) might pray that he would escape from his enemies, or she (Hannah) might pray that she would finally bear a child. So far, this imagined scenario is not significantly different from standard CSR accounts. The distinctive step in our imagined evolutionary history is that God in fact heard the prayer, liked it, and decided to do something that caused the enemy to turn the other way, or a sperm to find a fertile egg. Obviously, God choosing to answer prayers of this sort increased the biological fitness of the people who prayed. According to the logic of population genetics, this result holds even if God only answered a fairly small percentage of such prayers (less than, for example, the 10% difference that Benson et al.'s [2006] study was designed to detect). Thus a cognitive architecture that, through suitable beliefs and desires, supports praying such prayers could perfectly well have developed, been elaborated, and fixed in the human species by evolutionary mechanisms.

As an aside, we acknowledge that some scientific studies are said to have refuted the theistic hypothesis that God answers prayer. In fact, the literature on this topic is somewhat mixed, some studies finding a positive effect of prayer, others not. The latter group includes Benson et al. (2006), the largest and most carefully designed study, discussed by Dawkins (2006), among others (see also Goldman, this volume). But these studies inevitably make tacit theological assumptions about how prayer works that are suspect. For example, these studies assume that prayer is additive, such that if more people pray for a certain outcome, God is more likely to grant that outcome. They also assume that prayers in which there is no personal connection between those who are praying and the one being prayed for—as in "properly done" double-blind experiments—have the same value to God as prayers in which there is a close personal relationship. But those assumptions about prayer might well be false (we think they are). Indeed, Benson et al. (2006, 941) explicitly note that their study imposed certain constraints on the pray-ers in the cause of standardization, and this forced people to pray quite differently from how they normally would. The Benson et al. study also made no attempt to prevent the subjects in their study from praying for themselves, or from receiving prayer from family, friends, and their religious community, correctly deeming that to do so would have been "unethical and impractical" (942). In fact, 95% of their test subjects said that they believed that people would be praying for them (937). Benson et al. (2006, 942) thus observe that "Our study subjects may have been exposed to a large amount of nonstudy prayer, and this could have made it more difficult to detect the effects of prayer provided by

[18] Here we understand theism as contrasting with deism, the view that God created the world but does not act within it. We also assume that if God acts in the world, God (probably) has acted in similar ways throughout human history. (We thank Joseph Corabi for suggesting these clarifications.)

the [anonymous, distant] intercessors." They conclude that "Private or family prayer is widely believed to influence recovery from illness, and the results of this study do not challenge this belief." Therefore, we do not see any compelling basis in this or similar studies for denying the experience of many that God sometimes answers prayer.

Note also that our evolutionary fable can account not only for why people have distinctive cognitive processes for producing God beliefs from certain subjective experiences, but also for why they have a concept of God at all. In section 5.3, we mentioned that standard CSR is committed to the god concept being a complex one, constructed out of features from other cognitive domains. This view has certain intrinsic weaknesses: no "minimally counterintuitive" version of a god concept has been proposed, it may not fit with the linguistic simplicity of the term and its early appearance in development, and it leaves it somewhat mysterious why (H) ADD experiences would ever have been interpreted in this way. In contrast, within a theistic version of evolutionary psychology, it is entirely possible that God would be a simple innate concept, just as "water" and "human being" and "snake" arguably are. Our account can thus support the representational resources needed to have beliefs about God as well as the computational resources needed to produce beliefs about God from certain kinds of experiences.

Note also that "God" in our fable would not necessarily have to be the omniscient, omnipresent, and omnipotent God of the monotheistic religions to play the role we have sketched, although that is the possibility we have most in mind. He/she/they would just have to be present and potent enough to cause experiential states and to answer a certain percentage of prayers. This account is thus neutral about just what supernatural agent people have acquired the ability to perceive: it could be Fang ghosts or Chinese ancestor spirits rather than the Christian God. This is presumably good, given the range of religious beliefs attested in the world. A Christian thinker might hold that a Fang tribesman has a genuine religious experience caused by the triune God, giving her the (true) belief that a supernatural agent exists, and also the more specific false (?) belief that ghosts exist. Monotheists might even hold that the invisible agent in their environment that most frequently satisfies the only true beliefs generated by their experience is God; and so, according to Goldman's account of what makes an object the proper stimulus of a perceptual modality, God is at least sometimes perceived by means of their experiences—albeit accompanied by much misperception. Their belief is, de re, about God; but it is, de dicto, about ghosts—as in familiar cases of mistaken identity. Conversely, of course, a Fang thinker might hold that a Christian has beliefs about supernatural agents that are, de re, about ghosts of dead people although, de dicto, they are about Jehovah. Choosing between these alternatives will require some combination of a finer analysis of the character and content of religious experiences and considerations of a different sort.

We emphasize that the type of account we have sketched, never considered in the literature, is straightforward evolutionary psychology when it comes to the internal

mechanisms by which evolution shapes the human mind/brain. God does not necessarily do anything to intervene directly in the formation of the human mind/brain itself. The view is simply that God was an evolutionarily significant feature of our ancestral environment, just as saber-toothed tigers and diseases were.[19] And any true theist believes that. From this perspective, it is no more incredible that the human mind would have specialized resources for perceiving and knowing God than it is that the mind has specialized resources for perceiving human faces, or natural language sentences, or contaminated food. This then could be part of the conceptual basis for a reformed CSR that can do justice to the widespread existence of religious experiences with the character of perceptions.

5.6 EPISTEMOLOGICAL REFLECTIONS

Finally, let us reflect briefly on the epistemological implications of our discussion for both current CSR and the "reformed" CSR that we have imagined.

First of all, a disclaimer: we do not doubt that CSR, even in its current embryonic state, should have some impact on the assessment of some arguments for the existence of God. The scientists involved in this new field are clever people with provocative and promising ideas; there is a decent chance they are converging upon the right sort of explanation for the ubiquity of belief in spirits, gods, and perhaps even belief in Big Gods. We agree that the plausibility of their explanations diminishes the positive force of the usual form of the *consensus gentium* argument (see Goldman, this volume).[20] We wonder, though, how much damage to this particular reason for believing in God affects the average believer, who may well not base her belief on the *consensus gentium* argument (and may not even know about it). Non-truth-tracking explanations for the widespread belief in gods and spirits will not make a major difference to one's judgments about God's existence for those whose beliefs are not based upon taking a survey of others.

Reaction to CSR has tended to be extreme. Some herald it as poised to strike the death blow to religion; others regard it as faith-friendly, confirming John Calvin's hypothesis that everyone has a built-in knowledge of God's existence. We find ourselves somewhere in the middle, and hoping for more results from a reformed CSR that takes perception-like religious experiences as an explanatory target.

[19] Whether this view violates a notion of "methodological naturalism" that is supposed to be constitutive of not only CSR but scientific endeavor more generally is a complex question. See Schloss 2009 and Plantinga 2009 for some relevant discussion.

[20] We seriously doubt, however, that CSR results will ever transform the *consensus gentium* into an argument against the existence of God, a possibility that Goldman considers near the end of his chapter. The credence assigned to God's existing will always be above .5 as long as widespread belief in God(s) is at least as likely given that God exists as it is given that God does not exist. We think this is a reasonable assumption. The contrary might only be true if God actively intervenes to mislead people to not believe in God—conceivable, to be sure, but not true on most existing theologies.

The work currently flying under the flag "cognitive science of religion" is a subfield of psychology/anthropology in the making, too new to claim great empirical successes or much unanimity among its small band of experts. This has not stopped some of its practitioners (Boyer, Bloom, Bering . . .) and popularizers (Dawkins, Dennett, Hitchens . . .) from drawing consequences from it that are dire for the rationality of contemporary religious belief. According to Jesse Bering, thanks to CSR, scientists finally "have God by the throat"; and Bering, at least, is "not going to stop until one of us is dead."[21] But, as many critics have pointed out, the precise way in which CSR is supposed to undermine belief in God is often left quite vague, or merely insinuated.[22]

When explicitly spelled out, the more extreme debunking arguments based on CSR allege that there are evident defects in the belief-forming processes that yield god-beliefs when they are based on, for example, (H)ADD and ToM firing in the absence of ordinary agents. They then claim that this defect in some way undermines current practices as well, rendering contemporary religious people either unjustified in their belief in God or unjustified once apprised of the relevant parts of CSR.[23]

On the other end of the spectrum from the debunkers is the reaction of Clark and Barrett (2011). They take it as established that belief in God or gods is natural to humans in normal human environments, and they assume that, within a broadly Reidian epistemology, the natural products of human cognition should be considered innocent until proven guilty. Not doing so would open the doors to a much more general skepticism regarding other objects of perception and cognition, and hence it would be self-defeating.

We find ourselves somewhere between these two poles. On the one hand, the claim that current CSR radically undermines the degree of justification that contemporary believers in God have is open to at least two objections. First, it assumes that the CSR accounts are more or less true and complete, whereas we have questioned their completeness here. The origin of the god concept does not seem to us to fit the paradigmatic pattern of minimal counterintuitiveness, and it may well be simple and innate. Moreover, the kinds of perception-like experiences that many believers report do not very obviously fit any pattern predicted by CSR; yet they sustain much ordinary belief, and stand at the origins of many religious revivals and movements. Second, it assumes that epistemologically dubious origins for a cognitive faculty mean that that faculty cannot be used synchronically in reliable ways, which is not necessarily the case (see Goldman, this volume, for very pertinent discussion).[24]

[21] Murray 2009, 169; Bering was quoted in the *Broward–Palm Beach New Times*, March 9, 2006.

[22] Thurow (2013a), for example, complains about the absence of arguments linking evidence from CSR and antitheistic conclusions in Bering (2011). Murray (2009) lodges similar complaints against many antitheistic deployments of CSR.

[23] See, for example, Braddock 2016; Wilkins and Griffiths 2012; Leben 2014; arguments along these lines are articulated and criticized by Murray (2009); van Inwagen (2009); Thurow (2013b); Barrett (2007); Barrett and Clark (2013).

[24] See also Murray 2009; van Inwagen 2009; and Barrett 2007.

On the other hand, the optimism expressed in Clark and Barrett (2011) may need tempering. Intuitively, it seems to matter what the actual mechanism for producing a given religious belief is—whether it is something relatively direct and straightforward, (e.g., a coherent cognitive module), or a highly gerrymandered system, the cognitive equivalent of a Rube Goldberg device (cf. McCauley 2011). And is it really true that we can go no further than accepting all of the "natural" results of our cognition in an uncritical way? (Again, see Goldman, this volume, for relevant discussion.)

Reservations about trust in our "god module" may boil down to a form of the generality problem for reliabilist epistemologies: what class of phenomena should be considered when evaluating whether a given belief is or is not formed by means of a reliable process? Clark and Barrett seem to be typing very broadly: human cognition as a whole is quite reliable, so the religious beliefs it produces are probably reliable too. This is an extremely coarse-grained approach to the categorization of belief-forming methods—arguably, too coarse-grained to capture the differences in justification that correspond to differences in reliability.

The approach we tend to favor on the generality problem is Jack Lyons's (2009): he individuates the faculties in terms of cognitive algorithms. The rough idea is to count all and only the beliefs that are produced by the same algorithmic computation when deciding whether a given faculty is reliable. This is much finer grained than Clark and Barrett's broad-brush Reidian approach, given that the mind contains many algorithms residing in its different (functionally defined) modules—and that seems appropriate. Lyons's approach to the analysis of knowledge and the generality problem implies a fruitful interaction between cognitive science and epistemology, something we should expect.

Now it follows from Lyons's view that the details of the cognitive architecture that produces religious belief matter a good deal. Is it true that the same cognitive algorithm that gives "possible predator nearby," computationally, from the sensation of "movement in my peripheral vision" when walking through the woods gives "Holy Loving God nearby," computationally, from the sensation of "perfect peace and joy" when praying in one's bedroom? Standard CSR accounts hope that it is, without filling out even the first detail in computational-algorithmic terms. In contrast, we have questioned the plausibility of that hypothesis here (while not denying that other instances of religious belief formation may be closer to being of a piece with the deliverances of (H)ADD—Fang villagers' beliefs about ghosts outside their village, perhaps). If the algorithm that produces this sort of religious belief is indeed a different one, then it should stand or fall on its own when evaluating reliability; the fact that (H)ADD arguably has evolutionary value without being very reliable does not come into the calculation. Moreover, it may well be that some algorithms that produce religious belief in fact do little else (if the massive modularity thesis of classical evolutionary psychology is true, this should be expected). In that case, whether a belief in God is reliably formed depends entirely upon whether God

exists. Lyons's criterion for determining reliability, plus massive modularity, together make it likely that Plantinga (2000) was right about the question of whether belief in God is justified, at least when it comes to "basic" beliefs (beliefs about God that are not inferred from other beliefs): the de jure question is deeply entangled with the de facto question.

Since we think there is a reasonable chance that God does exist, God's existence seems like a decent candidate explanation of why people would have a simple and innate (or at least easily acquired) concept of God, and why they would take God's presence to be directly felt when experiencing certain quasi-perceptual and affective states. The cognitive machinery for this could perfectly well have developed along evolutionary-psychological lines, if people have in fact interacted with God throughout their evolutionary history. It is then quite possible that this particular "God faculty" is reliable in the sense required for yielding justified beliefs, and that religious mystics—both professional and "every day"—really are perceiving God in a way that gives them knowledge. It also becomes readily imaginable that studying empirically whether there are in fact dedicated computational and representational resources for perceiving God using cognitive and neuroscientific techniques could provide evidence about whether we have been in serious causal contact with God over the course of our evolution, thereby raising our credence in the metaphysical claim that God exists.

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