Cognitive Science and the Naturalness of Religion

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Abstract

Cognitive approaches to religious phenomena have attracted considerable interdisciplinary attention since their emergence a couple of decades ago. Proponents offer explanatory accounts of the content and transmission of religious thought and behavior in terms of underlying cognition. A central claim is that the cross-cultural recurrence and historical persistence of religion is attributable to the cognitive naturalness of religious ideas, i.e., attributable to the readiness, the ease, and the speed with which human minds acquire and process popular religious representations. In this article, we primarily provide an introductory summary of foundational questions, assumptions, and hypotheses in this field, including some discussion of features distinguishing cognitive science approaches to religion from established psychological approaches. Relevant ethnographic and experimental evidence illustrate and substantiate core claims. Finally, we briefly consider the broader implications of these cognitive approaches for the appropriateness of 'religion' as an explanatorily useful category in the social sciences.

1. Introduction

One way to characterize the history of epistemology and metaphysics is to recount the penchant of philosophical speculation to spawn empirical sciences. The catch, however, is that as those sciences mature, they return to commandeer intellectual domains on which philosophy had previously presumed to possess a proprietary claim. Ironically, this process by which philosophy has managed to limit its own purview is a direct consequence of philosophers' insistence on rational, disciplined inquiry. We ask philosophical proposals for greater precision and detail and press them to square with, to organize, to illuminate, and, ultimately, to inspire new discoveries about the world. What the birth of modern science brought were means for meeting such demands that are far more systematic, more efficient, and more penetrating than any devised before. The collective accomplishments of communities of scientific experts fostering theoretical competition, discovering empirical evidence, and constantly monitoring the credibility of that evidence has proved far more effective at producing fruitful accounts of the world than isolated speculations in philosophy, where assessments, far too often, have turned on nothing more than appeals to common sense, suggestive anecdotes, and the canons of logic.

Religions involve presumptions about agents who allegedly possess counter-intuitive properties, i.e., properties that violate humans' automatic, universal ontological assumptions, such as a person possessing the ability to walk through walls or to live eternally or to hear prayers from all over the world. Traditional projects in metaphysics, epistemology,

and the philosophy of religion offer familiar means for handling such materials. They address questions about the properties of such agents, the plausibility of such configurations of properties in agents, the evidence for the existence of agents with such properties, and the status of linguistic usage pertaining to all of this. But, finally, most of these philosophical undertakings address aspects of religion's conceptual infrastructure rather than anything very directly connected with popular religious belief and practice.

In contrast, naturalists focus on explanatory theories of religion. Naturalism in philosophy demands that philosophical proposals exhibit a healthy respect for the methods and findings of the empirical sciences – especially when those philosophical proposals address the same domains those sciences do. Where, then, might a science of religion begin? *Prima facie*, religion looks like a topic for which the social sciences and cultural anthropology, in particular, are most appropriately suited, and dominant explanatory theories in these disciplines would serve as perfectly proper points of departure. The problem, however, is that, for the past 30 years, cultural anthropology has favored interpretive over explanatory approaches to culture. Suffice it to say, formulating empirically testable theories that address explanatory questions has not been a high priority. Those cultural anthropologists who have retained a vision of the discipline's scientific mission have suggested that students of culture look to its *psychological* foundations, where explanatory theorizing and experimental testing have thrived during exactly the same period. See, for example, Sperber's (1975). Subsequent research along these lines has indicated that the cognitive and psychological sciences offer valuable resources for explaining components of culture, including religion.

In this article, we explore the core theoretical assumptions of the new cognitive science of religion (CSR) and some of the resulting hypotheses. CSR has emerged in the past two decades as an interdisciplinary and explanatory approach to religion, focusing on the cognitive foundations of religious beliefs and practices, and, in particular, on recurrences and variations of patterns across cultures. We begin by contrasting the field with established approaches to the psychology of religion and specifying what is distinctive about CSR's empirical purview. The remainder of the article reviews both theoretical proposals that have been offered to account for the form and spread of religious belief and practice, and some illustrative case studies of empirical work in the area. For a complementary introduction to specific programs of research, we refer the reader to Justin Barrett's recent review of the empirical literature (2007).

2. Cognitive Science of Religion

At its core, religion seems to involve individual experience. Such individual-level phenomena appear to provide a natural opening for a psychology of religion. Yet, for a host of reasons having to do with their character, their eliciting conditions, their special cultural status, and more, religious experiences do not readily submit to the standard techniques of psychological experimentation. In the seminal text in the area, *The Varieties of Religious Experience*, William James takes a different approach. He catalogs an enormous assortment of experiences reported in the history of religions, examining and evaluating numerous explanatory proposals, and advancing hypotheses of his own. James' shadow has loomed over subsequent work on religion within experimental psychology. Sorting through materials like the immense collection James surveys has occupied and inspired generations of researchers. Much of that work, however, retains two features of James' approach from which contemporary cognitive *theories* diverge.

The first is James' presumption that religious experience is fundamentally affective:

... you suspect that I am planning to defend feeling at the expense of reason, to rehabilitate the primitive and unreflective...

To a certain extent I have to admit that you guess rightly. I do believe that feeling is the deeper source of religion, and that philosophic and theological formulas are secondary products. (James 1902/1929, 422)

Cognitivists diverge not because they reject these claims. Barrett and Keil (1996), Slone (2004), and Tremlin (2006), for example, suggest that the 'theologically correct' religious conceptions that people affirm during their offline, conscious reflection substantially differ from the much more anthropomorphic representations that they deploy in their intuitive, moment-to-moment, online reasoning. The former far exceed the latter with respect to both the number of counter-intuitive features that they incorporate and the inferential difficulties that they present. Nor do cognitivists hold that religious emotions are irrelevant. They do argue, however, that explanations that focus on emotion will be unable to make much sense either (i) of the religious convictions of the substantial percentage of religious people who have not experienced any *peculiarly religious* emotion, or (ii) of the forms that their religious representations take.

This leads directly to a second front on which contemporary cognitive theorists diverge more drastically from James' approach. At the outset of *The Varieties*, James declares:

I speak not now of your ordinary religious believer, who follows conventional observances... His religion has been made for him by others, communicated to him by tradition, determined to fixed forms by imitation, and retained by habit. *It would profit us little to study this second-hand religious life*. We must make search rather for the original experiences which were the pattern-setters to all this mass of suggested feeling and imitated conduct. (1902/1929, 7–8, emphasis added)

James holds that most everyday religious experience is but a pale imitation of the originating experiences of the religiously gifted. This may be true, but if it is so, then, cognitivists would argue, James himself has provided grounds for skepticism about the relevance of the originating experiences to an enhanced understanding of conventional religious patterns, which are 'communicated... by tradition, determined to fixed forms by imitation, and retained by habit.' On James' own account, it is those processes that shape and inform the *vast majority* of people's religious experiences, beliefs, and practices. James' strategy of studying the varieties of (*extraordinary*) religious experience constantly risks doing so at the cost of its relevance to studying (and explaining) *most* religious experience. In contrast to James' approach, then, cognitivists examine both cognitive and affective dimensions (as opposed to affective dimensions only) of commonplace (as opposed to extraordinary) patterns of religious experience, cognition, and conduct.

Taking inspiration from Sperber's (1996) proposals, first, that culture is usefully understood as a combination of distributions of public representations in the world and distributions of mental representations in populations of human minds and, second, that its study, therefore, can be usefully understood (at least in part) as an epidemiology of beliefs, cognitive scientists of religion examine the cognitive and psychological predilections of human minds that shape just those processes of cultural transmission to which James alludes but to which he gives much less attention. These researchers (such as Boyer 1994, 2001, 2003; Barrett 2000, 2004; Atran 2002; McCauley 2003) hold that religious forms are by-products of domain specific psychological capacities that have arisen on the basis of considerations that neither have anything to do with religion nor with one another (see also Pyysiäinen and Hauser 2010).

In contrast to Sperber's epidemiological model, some theorists have proposed straight-forwardly evolutionary accounts to explain religious beliefs and practices. Some (such as Bulbulia 2004 and Bering and Johnson 2005) argue that psychological proclivities for forming religious representations enhanced individual fitness in complex social settings. Others (Wilson 2002 and Sosis and Alcorta 2003) maintain that religion is an adaptation at the level of groups. Still others (e.g., Dennett 2006) maintain that religious ideas are best understood as memes and that it is a process of selection at the memetic level that determines religions' fates.

Although contributors to the CSR have advanced assorted theories about an array of religious phenomena and their origins, all champion the promise of the methods and findings of the cognitive sciences for enhancing our understanding of religion, and all maintain that religious thought and action turn overwhelmingly on harnessing perfectly *ordinary* forms of cognition available to all normally equipped human beings. Religious representations and practices rely on garden-variety cognitive capacities, which develop quite naturally in every normal human being. Thus, accounting for religious belief and conduct requires neither employing special methods nor postulating distinctively religious faculties.

Early works in this field looked to theoretical strategies from the various cognitive sciences, including cognitive psychology, linguistics, and evolutionary psychology, so as to formulate new theories about a wide range of religious materials.[1] Works exploring the consequences of those theories include new experimental research in psychology and anthropology[2] on religious cognition as well as examinations of these theories' abilities to make sense of a wide variety of materials from diverse religious systems in other places and other times.[3] Works advancing new cognitive hypotheses include proposals about sacred texts, about magic, about the connections between religion and morality, and about the character of theological variation.[4]

In contrast to well-established approaches in the psychology of religion, then, recent cognitive theories of religion concentrate

(1) on the similarities among the mental representations that people possess concerning religious materials,
(2) on cognitive explanations of those similarities, and
(3) on the implications of those cognitive theories for the explanation of religious belief and practice as well as features of religious systems.

3. How Religious Cognition Works

Cognitive theories of religion do not hold that the mind contains a specific module for religion. Instead, most hold that religion exploits a diverse collection of cognitive inclinations in the minds of human beings that enjoy neither a logical nor a psychological unity. The upshot of this analysis is that, *cognitively speaking*, religions are like a Rube Goldberg devices, which is to say that they are exceedingly complicated contraptions calling on all sorts of psychological propensities that are, otherwise, usually unlinked (McCauley 2003). The standard features of religious mentality and conduct are cobbled together from the susceptibilities of a disparate compilation of psychological dispositions[5] that typically develop in normal human minds for very different reasons – both from one another and from anything having to do with religion.

These psychological dispositions develop because the resulting mental dispositions they undergird served our ancestors well in dealing with a host of problems their physical and

social environments presented, just as they continue most of the time to serve us well when we deal with the same problems. These various mental capacities and their spontaneous operations conferred adaptive advantages on the organisms that possessed them. They include abilities to detect agents and recognize individual conspecifics, and to read their minds from the expressions on their faces. Whether or not these capacities begin as dedicated, task specific systems, many end up seeming to operate that way as a result of standard cognitive development. Comparatively early in human development, the mind responds to some stimuli (facial, social, linguistic, etc.) instantly, automatically, and unreflectively. The resulting knowledge is overwhelmingly intuitive and any underlying principles that might be guiding such behavior – if such principles there be – involve *implicit* knowledge, which is to say that they generally operate below the level of consciousness.

Frequently, the cuing of these systems and their mental dispositions engenders powerful feelings in human beings as well as characteristic intuitions and behaviors. Consider, for example, the feelings and behaviors associated with the perception of contaminated food or with the inability of an informant to make eye contact or with inequitable distributions of resources on the basis of self-interest. All other things being equal, the human beings in each of these scenarios typically experience distinctive feelings that can instantly propel them into characteristic behaviors – here, acts and attitudes of avoidance, suspicion, and complaint, respectively.

But how do such systems, abilities, and dispositions outfit human beings for *religion*? One core proposal, offered by Pascal Boyer and others (Atran 2002; Barrett 2004), is that systemic features of modern human cognition have rendered human minds susceptible to generating and retaining a variety of representations, beliefs, and practices that presume particular *counter-intuitive* arrangements. These concepts do not wholly conform to our instant, automatic, unreflective expectations, but rather violate these expectations in interesting and attention-grabbing ways. A person walking by may attract our attention. A person flying by is virtually guaranteed to do so. Such attention-grabbing representations include Smokey the Bear, talking wolves that can plausibly be mistaken for grandmothers, and Superman; beliefs in everything from Santa Claus, fairies, and leprechauns to ghosts, ancestors, angels, and gods; and practices such as theater and ritual. However normal it may seem, a moment's reflection reveals how striking it is that humans have no problem conceptualizing Mickey, Minnie, Donald, and Goofy talking, having pets, and going on picnics. Nor are the counter-intuitive representations that human beings readily process confined to non-standard agents. Not only could Mighty Mouse fly, he produced contrails, which could function like ropes to bind up bad guys (who, incidentally, were almost always cats who had five-o'clock shadows, wore dark clothes, smoked cigars, and drove cars).

We return below to the question of what makes these representations *religious*, but needless to say, not all counterintuitive concepts are religious (by any definition). They abound in folk tales and fiction as well as in cartoons, comic books, and commercials. They are also sometimes one of the marks of lunacy. So, as Boyer and others argue, this is not an exclusive or complete story about religious cognition, but it is an important part of it.

Although the limited catalog of templates that counterintuitive concepts exhibit recurs across cultures, the precise contents of particular counterintuitive representations is mostly a function of what is in the air locally. So, for example, representations of agents with counterintuitive psychological properties are recognizably widespread, if not universal, in human culture, and their emergence, stability, and spread are amenable to general explanatory accounts in terms of the generic features of human minds. Finer-grained cultural

particulars about the specific form the agent takes, and the precise nature of his or her counterintuitive psychology, biology, or physicality, are informed by social, historical, ecological and other factors and contingencies of the local environment. Explaining how these factors jointly contribute to patterns of cross-populational variation and recurrence of cultural forms is a major challenge for the emerging cognitive science of culture.

Cognitive theorists offer at least three complementary lines of analysis about how counter-intuitive representations that we regard as religious come about. The first two concentrate on their *origins*, the first and third on their *persistence*. Inspired, in part, by a long tradition of intellectualist theorizing in anthropology that holds that humans entertain religious beliefs because they help explain things, the first line of analysis[6] maintains that when humans confront anomalous phenomena, i.e., phenomena that violate their intuitive expectations, they generate counter-intuitive representations to make sense of these states of affairs. (Although plenty of theorists have made much of dreams, they are not the central issue here.) Surprising, unexpected experiences that resist ready explanation engender the construction of otherwise unexpected, counter-intuitive representations to make sense of them. Our default hypothesis for explaining unexpected sounds (especially in the dark) is that they have resulted from some agent's actions (and we begin searching for the agent responsible). The force of the associated emotions and intuitions is such that it is a very small step cognitively to explanations of the unsuccessful searches in terms of empirically undetectable agents. Representations of agents possessing counter-intuitive properties arise, in effect, as the result of such cognitive false alarms.

In supportive cultural settings, such experiences are just as capable of stimulating what we may come to deem *scientific* speculations as religious ones. Science, however, inevitably advances proposals that are much more counter-intuitive than those religion recruits (McCauley 2000). Science invariably traffics in representations that arise from genuinely extraordinary variations on our standard mental contents. So, for example, sooner or later, the physical and biological sciences have come to abandon appeals to the thoughts and actions of agents. One firm correlate of scientific progress has been its steadily increasing restriction of the domains in which appeals to the thoughts and actions of agents are acceptable explanatory tools.[7] To explain things, religions, in contrast, rely on the states of mind and actions of a variety of agents.[8]

The ranges of conditions capable of activating the mental dispositions we have been discussing do not infallibly correlate with the objective conditions that led to their development. The cues that trigger these systems' operations woefully underdetermine the inferences they automatically draw (whether those inferences are drawn consciously or not). An unexpected sound in the dark can prompt us to search for the agent that (we assume) made it. A picture of a pair of eyes pasted on a wall will suffice to improve participants' conformity to an honor system (Bateson et al. 2006). Permitting false positives, these systems are not perfect detectors; thus, they err on the side of liberality. Probably, the most obvious illustrations are the non-stop illusions we experience when watching films or television – from our effortless inferences about people, places, and things to our feelings of motion sickness on the basis of nothing more than how our brains routinely process the visual inputs that arise from changes in the illumination of a 2D surface before us. The second line of analysis[9] within the CSR highlights how religions the world over assume forms that capitalize on the fallibilities of such dispositions. Because every normal human being is susceptible to such emotionally compelling, cognitive misfires (in a variety of domains), persisting religions include all sorts of public representations capable of stimulating these false-positive responses by activating the relevant perceptual systems – from fashioning simple human-like objects that incorporate visual cues suggesting the

presence of additional agents[10] to producing glossolalia that includes auditory cues suggesting the presence of significant speech. Cohen 2007, for example, describes the fairly typical case of a member of an Afro-Brazilian religion whose religious journey began with the frequent sound of footsteps, which the adept described as 'like that of a man, a really tired man, who used to hang around me. But I never saw him, I only listened – just a child' (191). To this young mind, all evidence pointed to there being a person responsible for the noises that she readily identified as footsteps. As Cohen observes, 'The fact that, until then, her entire experience of persons indicated that the property of physicality was normal did not stop her from thinking that this person was factual. Indeed, since person-agency was so undeniable, only such a being *could* be responsible' (192).

Two general questions remain. First, why do only some of the representations that false alarms provoke get transmitted? And, second, why do some, but not others, among those that do persist, count as religious? We shall touch briefly on the second question in the final section, but, for now, we shall turn to the third line of analysis[11] in the CSR, since it focuses on the first of these two questions.

Cognitive scientists of religion explain the similarities among people's religious representations by focusing on how human cognition influences the ways that these representations emerge and spread. Those pursuing the third line of analysis, however, specifically examine the selection pressures that humans' cognitive dispositions and susceptibilities exert – particularly in the process of cultural transmission – on the forms and contents of religious representations. On this account, how such counter-intuitive representations originate is not the critical issue. The more important question is why some of these representations continue to get transmitted and why some are more faithfully transmitted than others. The answer, in short, is that selective forces operating in transmission hone religious representations' forms and cognitive appeal. Just as humans find some foods particularly good to eat, they find some cultural representations – as Claude Lévi-Strauss suggested – particularly good to think.

Humans tend to transmit representations when they have the following properties. First, as the second line of analysis stresses, appealing representations are readily *recognizable*. For example, physical structures that manifest symmetry along a vertical axis are rare in nature (outside of the animal kingdom) but abundant in culture.[12] Structures of this sort with two plausibly positioned spots resembling eyes seize humans' attention particularly effectively.

Second, Boyer has argued that representations are more likely to get transmitted if they achieve a balance between their ability to grab attention and to underwrite *cost-free inferences*. Representations with many counter-intuitive properties, for example, an invisible armchair that is the offspring of crocodiles, that can read people's minds, but that only remembers people's thoughts about gumdrops for more than a day, may attract attention but with so many violations of intuitive ontological assumptions, it is incapable of motivating many inferences. Learning, in contrast, that some agent controls the wind and the rain is attention grabbing, but it also automatically permits inferences that this agent has goals, desires, and preferences, that it can be persuaded to do things, that it finds some attitudes and behaviors offensive, that it is disinclined to help anyone who manifests such, and so on. Most popular religious representations often involve but a single violation of humans' ontological assumptions. This minimal counter-intuitiveness of cross-culturally widespread religious forms (in contrast to the radically counter-intuitive representations that the sciences and elaborate theologies trade in) approximates an ideal balance between the ability to seize humans' attention and the ability to authorize inferences for free (McCauley 2000).

Such an arrangement constitutes a *cognitive optimum* not only because it achieves this balance but because it *facilitates memory* as well. This is the third critical property. If a cultural representation is *easily remembered*, that will add to its cognitive appeal. Boyer and Ramble (2001) have provided cross-cultural, experimental evidence that indicates that the minimally counter-intuitive representations with which religions deal (such as gods who are invisible) are also more readily and more accurately recalled than ones that are simply unusual but not counter-intuitive (such as a chocolate table), or ones that are massively counter-intuitive (such as the psychic, gumdrop obsessed, crocodilian arm chair noted above),[13] or, we would add, representations such as those that the sciences routinely generate (from gravity, electro-magnetic fields, and anti-matter to implicit memory, change blindness, and distributed representation). McCauley and Lawson (2002) have argued that persisting cultural representations, especially in non-literate settings, provide important insights about the character of human memory (See Bartlett 1932). For example, people tend to remember rhythmic verbal formulae that rhyme[14] and culturally significant rituals that arouse the emotions.

Fourth, like some diseases, such representations are readily *communicable*. Frequently, the features that make a representation memorable will also make it easier to transmit. Usually, tunes are unforgettable precisely because they are so easy to sing, hum, or whistle. In contrast, representations like those in science or in formal theology that possess none of these features, that are complicated and detailed, and that trade in unfamiliar concepts are far less likely to get transmitted, let alone faithfully so.

Finally, these representations often *motivate* people to spend their time and energies transmitting them to other people. If we believe God is the secret to happiness and human fulfillment and we want those whom we care about to have happy, fulfilled lives, then we will tend to transmit representations about God to those whom we care about. Or if part of some idea is that rewards will accrue to those who propagate that idea, this will increase the probabilities that it gets propagated.

The crucial point, however, is that all three of these cognitive accounts presume that the eruption of religious representations in human populations relies neither on a uniquely religious set nor even on any integrated set of sensibilities or cognitive capacities. Instead, religion (along with such things as civil ceremonies and superstition, fantasy and folklore, and music and magic) largely results from the latent consequences of normal variation in the operations of fallible perceptual and cognitive heuristics enshrined in human minds that otherwise aid us in managing problems from a wide array of domains.[15]

All of the above points concerning the cognitive influences on the emergence and spread of religious representations are testable against experimental, ethnographic, and historiographical data. Evidence supports the claims, for example, that concepts that have readily recognizable components, that achieve a cognitively optimal balance between attention-grabbing novelty and cost-free inferences, that are easily remembered, that are readily communicable, and that motivate communication will have an edge in cultural transmission over concepts that fail to meet these criteria. Recent ethnographic and experimental work in the CSR has strengthened the empirical foundations of these claims. In Section 4, we offer a necessarily brief illustration of this work concerning a particular religious form that is both widespread and ancient in human culture – namely, spirit possession – with specific reference to Cohen's cognitively informed ethnographic study with Afro-Brazilian religionists. The ethnographic literature to which this study contributes testifies to the 'cognitive naturalness of religion' even for domains of thought and practice that are often categorized as 'ecstatic' and extraordinary. Careful analysis of

the everyday elicitation, use, and spread of different kinds of spirit possession concepts reveals that cognitively optimal concepts (according to the criteria outlined above) out-compete more complex concepts in cultural transmission.

4. An Illustration: Spirit Possession

The idea that disembodied agents possess the bodies of living human and animal beings recurs across cultures and historical epochs. Cultural universality and historical persistence strongly suggest that such ideas are 'good to think with' and readily communicable. Until recently, however, explanatory analyses of possession have focused disproportionately on the biological basis of trance behavior that often accompanies the eclipse of agency typically thought to occur in possession episodes. Some of the earliest anthropologists sought answers to *cognitive* questions about the generation and spread of such ideas of spirits, souls, soul flight, and possession, but at that time could only remark 'There has arisen an intellectual product whose very existence is of deepest significance, a "psychology" which no longer has anything to do with "soul"' (Tylor 2006, 501). As we have shown in the previous sections, the emergence of the cognitive sciences in the second half of the twentieth century has enabled anthropologists to return to such questions, applying new methods and a new set of conceptual and theoretical tools. So, why are possession concepts so persistent? Let us consider each of the five criteria mentioned above in turn.

4.1. SPIRIT POSSESSION CONCEPTS LARGELY EMPLOY READILY RECOGNIZABLE COMPONENTS

Fundamentally, widespread possession ideas concern configurations among familiar, everyday entities - bodies and agents. Typically, a bodiless agent, or spirit, effectively displaces an agent (the 'host') from his or her body and takes control of the body. The conceptual entities in possession – agents and bodies – and the notion that agents animate and act through their bodies are basic elements of everyday social cognition. Successful possession concepts capitalize on this familiarity by maintaining largely intact intuitive assumptions about agents, bodies, and the relationships between them.

4.2. SPIRIT POSSESSION CONCEPTS ACHIEVE A BALANCE BETWEEN GRABBING ATTENTION AND UNDERWRITING COST-FREE INFERENCES

The conceptual building blocks of successful possession concepts are intuitive and familiar and may effortlessly generate inferences that might be considered mundane in everyday social causal reasoning, e.g., about why the (possessed) person is walking over there, talking to that person, etc. Possession concepts also diverge from everyday normality, however, by positing the replacement of the usual host agent with another agent, and inferences must be drawn accordingly. The possibility that someone might *look like* the Tom or Mary we all know, but actually *be* a completely different person is powerfully attention grabbing and consequential for one's behavior (especially if Tom or Mary is one's spouse, boss, parent, etc.). Unsurprisingly, this specific element is particularly dramatized in popular portrayals of possession in film and media, and in fantastical thrillers and comedies about mind swaps and mind control (e.g., *Freaky Friday*). Alternative concepts of possession exist in the ethnographic record, entailing, for example, the merging of the spirit and the host within the host's body. Although there is little reason to suppose that these ideas attract less attention than more widespread alternatives (e.g., concepts entailing complete displacement of the host by the spirit), their ability to generate

cost–free inferences appears to be greatly inferior. The Afro–Brazilian participants in Cohen's research, for example, only ever attributed the behavior of a purportedly possessed person to either the spirit or the host (e.g., if possession was in doubt), and never to a fusion of both entities.

4.3. SPIRIT POSSESSION CONCEPTS ARE EASILY REMEMBERED

Cross-cultural survey, ethnography, and experimental evidence suggest that possession concepts are best remembered when they exploit intuitive assumptions about agents, and agent–body relationships. For example, Cohen and Barrett (2008b) have provided evidence suggesting that concepts that deviate from everyday assumptions about the nature of agents and the relationship between mind and body are more poorly recalled than concepts that are aligned with basic mind–body expectations; possession concepts that blend familiar assumptions about agents and bodies with a specifically *displacement* concept of possession (i.e., the host agent is effectively displaced by the possessing agent) are better remembered than alternative, more cognitively complex concepts (e.g., that host and spirit agencies fuse and/or simultaneously control the host's body). This experimental evidence is corroborated in Cohen's ethnographic research and in the ethnographic record generally.

4.4. SPIRIT POSSESSION CONCEPTS ARE READILY COMMUNICABLE

The ready communication and recall of concepts of agent-displacement appear to be facilitated by implicit assumptions that minds and bodies operate, at least in part, independently of one another, such that persons may change while bodies remain the same, and *vice versa*. Indeed, glib attributions of possession are commonly made and readily understood (even if not believed) outside of explicitly religious contexts, such as when a person acts out of character. Similar notions are implicit in phrases such as 'he's not himself today' or 'she's out of her mind'. Although some possession concepts (e.g., the 'fusion' version mentioned above) are not easily communicated, requiring repetition and the use of metaphor (whereby familiar concepts are elicited and likened to new concepts), cognitively optimal concepts literally seem to come almost for free, requiring little explicit communication. Revision of these concepts in favor of alternative cognitively cumbersome concepts requires considerable cultural support (see Cohen 2007 and Cohen 2008).

4.5. SPIRIT POSSESSION CONCEPTS MOTIVATE TRANSMISSION

That one's body is periodically taken over by another agent is not something that is easily concealed from relatives, friends, and even employers. Spirits in many possession religions have a habit of arriving unexpectedly and announcing who they are, and, like anyone, prefer to be addressed as themselves. The motivation to spend time and energy transmitting ideas about possession is not just bred of necessity, however. Possession concepts are often part of a broader ideology (theological, political, historical) that frames and enhances the significance of possession experiences. Possession, therefore, can *mean* many things, even within a single cultural context and across various phases of the lifespan, and these meanings variously motivate transmission in forms of personal testimony, proselytizing rhetoric, support for novice adepts, and so forth. Possessing spirits, for example, are often believed to assist hosts in the resolution of existential concerns having to do with health, safety, family, employment, etc. The cognitive simplicity of possession concepts

combined with their contextualization within episodes of profound existential significance fosters the successful transmission and persistence of these concepts in culture.

5. Whither 'Religion'?

Finally, and in conclusion, we consider the second question raised earlier. Why do some but not all persisting counter-intuitive representations count as *religious* representations? Perhaps, one of the most interesting implications of CSR for the study of religion is the suggestion that this query already begs a critical question, viz., whether there is, any longer, a principled basis for delimiting a subset of our representations as the 'religious' ones (See Cohen forthcoming). If, cognitively speaking, human religiosity is a Rube Goldberg device, what, then, are the *scientific* grounds for identifying specific socio-cultural phenomena as religious? Because human religiosity is a hodgepodge at the psychological level, are religions – construed at the socio-cultural level – comparable miscellanies? Is 'religion' a viable, analytical category for social science?

The cognitive approaches reviewed here suggest some grounds for skepticism about the conceptual glue that purportedly holds the outcomes of our diverse dispositions and susceptibilities together in distinct, socio-cultural systems that the term 'religion' denotes. It appears that theorists in the social sciences must bear the burden of demonstrating the respects in which 'religion' is an explanatorily useful category to stave off the suspicion that, like concepts such as 'weed' or 'constellation', it only delineates superficial (indeed, accidental!) patterns that reveal little or nothing about the phenomena it designates, but only something about the perspective humans are inclined to take on these things prior to reflecting about them *theoretically*.[16]

The piecemeal approach that characterizes the CSR is a direct consequence of the 'naturalness' thesis. This new explanatory approach develops from the recognition that features of human thinking and behavior that we commonly think of as religious have many divergent properties. Explaining religion is not a matter of accounting for a single trait, nor of accounting for divergent traits in terms of the same sets of underlying factors. An account of the persistence and spread of spirit possession concepts, for example, may thus tell us very little about the patterns of socio-political arrangements and coalitional dynamics that recur across organized institutions. The success with which the CSR explains such diverse phenomena in the coming decades will undoubtedly turn as much on the creative development of novel methodological and conceptual tools for a better science of society as on the continued borrowing of valuable resources from the cognitive and psychological sciences for the study of religious cognition.

Short Biographies

Robert N. McCauley is a philosopher of psychology and cognitive science whose work has focused on cross-scientific relations. He is also a cognitive scientist of religion, who has written primarily on religious ritual and the cognitive foundations of religion. In connection with the former projects, he has published papers in *Philosophy of Science, Synthese, Philosophical Psychology,* the *Blackwell Companion To Cognitive Science*, and the *Elsevier Handbook of the Philosophy of Psychology and Cognitive Science*. He has published work on cognition and religion in the *Journal of Cognition and Culture, Journal of the American Academy of Religion, Method and Theory in the Study of Religion,* and *History of Religions*. In their two books, *Rethinking Religion* (Cambridge, 1990) and *Bringing Ritual to Mind* (Cambridge, 2002), he and E. Thomas Lawson have argued for pursuing a CSR and

advanced a cognitive theory of religious ritual competence. Comparing the cognitive foundations of science and religion, he brings his two research profiles together in a new book nearing completion, to be entitled *The Naturalness of Religion and the Unnaturalness of Science*. He has received grants or fellowships from the American Council of Learned Societies, the National Endowment for the Humanities, and the Lilly Endowment. McCauley is William Rand Kenan Jr. University Professor and Director of the Center for Mind, Brain, and Culture at Emory University.

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Notes

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[1]   See Lawson and McCauley (1990), Guthrie (1993), Boyer (1994), and Whitehouse (1995).
[2]   See, for example, Astuti and Harris (2008), Barrett et al. (2001), Bering and Bjorklund (2004), Cohen and Barrett (2008a,b), and Malley and Barrett (2003).
[3]   See, for example, in anthropology, Abbink (1995), Cohen (2007) and Whitehouse and Laidlaw (2004) and from work in the history of religions, Vial (2004) and Whitehouse and Martin (2004).
[4]   Pyysiäinen (2004) and Malley (2004) discuss sacred texts. Sørensen (2007) offers a cognitive theory of magic. Hinde (1999) and Boyer (2001) treat the connections between religion and morality, and Slone (2004) addresses theological variations.
[5]   For a discussion of the relation between adaptive cognitive dispositions and their various latent susceptibilities, see Sperber (1996), 66–7.
[6]   See Barrett (2004) and Bering and Johnson (2005).
[7]   Churchland (1989).
[8]   These include ancestors, angels, cherubim, demons, devils, ghosts, gods, saints, seraphim, sorcerers, specters, spirits, sprites, warlocks, witches, and wizards, let alone golems or zombies or representations of animals, plants, objects, and places possessing counter-intuitive properties.
[9]   See Boyer (1994, 2001) and Burkert (1996).
[10]   Guthrie (1993).
[11]   Boyer (2001).
[12]   Atran (2002).
[13]   Exactly what counter-intuitiveness amounts to and whether or not it can be quantified with sufficient precision remain points of controversy. See Gonce et al. (2006), Tweney et al. (2006), and Norenzayan et al. (2006). Justin Barrett (2009) has provided the most detailed, systematic, theoretical account currently available.
[14]   Rubin (1995).
[15]   Consider, for example, Burkert's observation that: 'There is probably a cluster of factors in evolution and a cluster of functions served by new avenues of communication; functions may also be lost or altered. Nonetheless certain

persistent and permanent patterns emerge and even seem to control interactions, since all these events occur within a unique landscape to which they are adapted. What we discern are the tracks of biology followed by cultural choice (22–3).'

[16] Sørensen (2004) explicitly takes up this challenge.

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