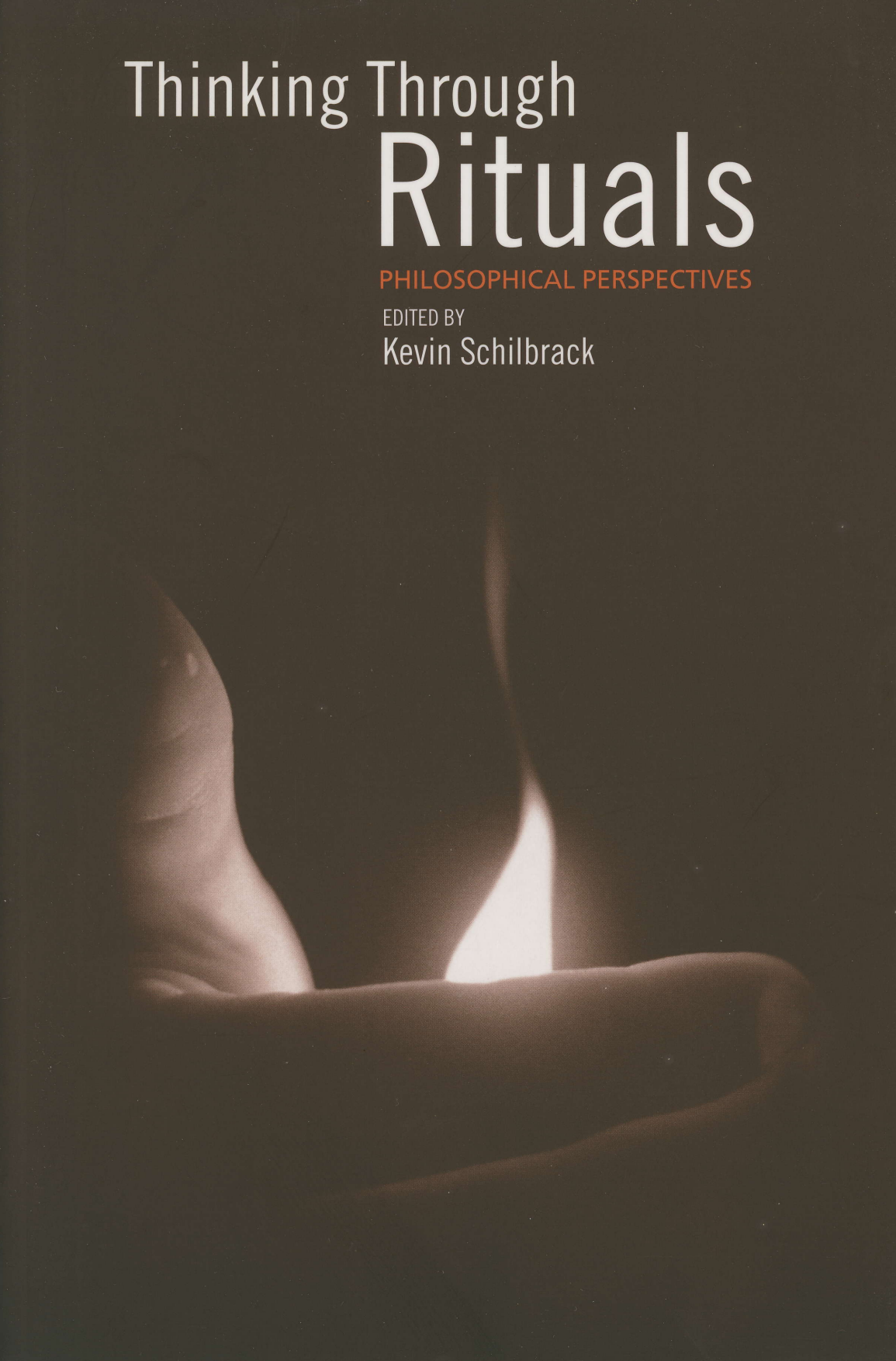
Thinking Through Rituals

PHILOSOPHICAL PERSPECTIVES

EDITED BY

Kevin Schilbrack



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7 Philosophical naturalism and the cognitive approach to ritual

Robert N. McCauley

I. Introduction

Naturalism in philosophy demands that philosophical proposals exhibit a healthy respect for the methods and findings of the empirical sciences, especially when those proposals address the same domains those sciences do. In the twentieth century, philosophers became a good deal more circumspect about their physical and biological speculations. If philosophy of science has not largely overshadowed metaphysics, then certainly science itself has become a fundamental constraint on credible metaphysical proposals. Instead of advancing grand metaphysical programs, many twentieth century philosophers have chosen to explore the broader implications of prevailing scientific theories and attempted to disentangle apparent conceptual snarls some seem to contain.

The number of domains where philosophers must heed scientific developments has only increased as modern science has progressed. At the outset of the twenty-first century, philosophers who pronounce about matters of mind and language without regard to the cognitive sciences do so at their peril. Some philosophical naturalists suspect that Kripke's pronouncements about the necessary properties of pains may suffer the same fate as Kant's assurances about the a priori truth of Newtonian mechanics, Fichte's insistence about the number of planets in our solar system, and Bergson's presumptions about the basis of life. When scientific research generates innovative schemes that both systematically organize the pertinent phenomena and supply new explanatory and predictive insights, philosophers' declarations about what is imaginable or about what our concepts demand often appear quaint in retrospect.

For the philosophical naturalist, little, if anything, distinguishes some legitimate philosophical endeavors from the theoretical speculations of scientists. Naturalists hold that philosophy enjoys no privilege. Typically, philosophers' only advantages arise from their wider views of things and their increased sensitivities to the structures and strengths of arguments. Certainly, philosophers' guesses are as good as anyone's, and, given that they are a comparatively intelligent lot, often their guesses are better. Too often, though, the flipside of having wider views of things is insufficient knowledge of the details, and the

suggestiveness of their guesses does not obviate in the least the advantages for philosophical proposals that manifest familiarity with the sciences.

Philosophical discussions of ritual might follow various paths. To the extent that religious ritual (on which I will focus) involves what appears to be repetitive transactions with agents who allegedly possess counter-intuitive properties, 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 some of the conceptual infrastructure of rituals rather than anything very directly connected with the performances of the rituals themselves.

Largely in response to the work of Peter Winch (1958), the most popular philosophical approach over the past four decades to what seems to be so transparently irrational conduct and belief is a broadly interpretive approach. On this approach, the crucial task is to figure out what these peculiar actions and anomalous utterances mean and, in the process, to clarify the forms of life they constitute. Ritual is just one symbolic form among many, but one that presents special problems, since it usually involves more than just beliefs and utterances about them. Rituals are actions. What do people – often large groups of people – take themselves to be doing, not only when they carry out such rituals but repeat them over and over again? And what do such actions mean when they do not seem to serve their alleged purpose? Rituals in which participants prepare and present foods daily to the ancestors end not with the ancestors consuming those meals but rather the people who presented those foods in the first place doing so (Whitehouse 1995: 66–78). What do such descriptions of actions mean when they stray so far from what is manifest? Why do people carry out actions that all of the empirical evidence suggests are thoroughly incapable of achieving the aims in mind? What is accomplished, for example, when baseball players move one of their hands vertically and then horizontally across their upper-bodies before they step into the batter's box?

Such questions not only invite interpretations of rituals, they reliably provoke additional conundrums. If the ancestors' survival and welfare no longer depends upon their consuming food, then why pretend that they have any interest in the food in the first place? Why must Muslim pilgrims scale Mt Safā and Mt Marwah? And if they must, then why more than once? And if more than once, then why seven times, not five? What is the meaning of all of this? Because of the special problems rituals present and because religions' conceptual schemes present plenty enough problems for them on their own, ritual has usually been something of a sideshow among theologians and philosophers of religion out to explicate religious meanings.

Clifford Geertz (1973) proposed that scholars simply focus on carefully portraying, i.e. thickly describing, participants' conduct and comments and ascertaining what can be made of them *in context* about how they hold

together. Philosophers and social anthropologists explored how adjudicating such questions of meaning and evaluating the truth of the resulting symbolic claims are connected with the conceptions of reason we deploy (see, for example, Wilson 1970 and Hollis and Lukes 1982). The emerging recognition of their intimate connections bestowed particular prominence on a set of approaches that suggested, in effect, that since the meanings of symbols turn on thick descriptions of their details and the details of their surroundings, the appropriate standards for assessing these special claims and conduct are always temporally and spatially *local* too. The most extreme relativists did not despair so much as celebrate the resulting renunciation of all-encompassing standards of rationality. By contrast, their critics saw such takes on these matters for the discussion-stoppers that they are. They reduce all inquiry about different cultural arrangements to travelogues.

In contrast to the prevailing interpretive mode of analysis, the philosophical naturalist's approach to ritual focuses on our explanatory and predictive interests. They consider such questions as why people perform rituals (especially in light of all the fuss and bother), why people repeat the rituals they perform, and why various rituals have the features that they do. This approach welcomes the interpretivists' thick descriptions, but since the naturalists' principal interests are in ascertaining causes rather than explicating meanings or reasons, those thick descriptions only provide data for explanatory theories to organize rather than touchstones for appraising conceptions of rationality. For science to proceed, causal theories must exhibit a good deal of stability in order for researchers to formulate empirical tests. Science cannot afford the conceptual luxury of thick description in which the semantic commitments of analytical frameworks can shift as often as do those frameworks' contexts of application. Consequently, for the philosophical naturalist a reasonable place to begin examining ritual is with scientific treatments.

Prima facie, ritual 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 for the philosophical naturalist. The problem, though, is that for the past thirty years cultural anthropology has been dominated by cultural interpreters and, more recently, by their post-modern descendants. Suffice it to say that formulating empirically testable theories that address such explanatory questions has not been a high priority within this discipline over the past few decades. So, it should come as no surprise that those cultural anthropologists who have retained a vision of the discipline's scientific mission (e.g. Sperber 1975 and 1996) have suggested that students of culture look to its psychological foundations, where explanatory theorizing and experimental testing have undergone an explosion of activity during exactly the same period. Subsequent research along these lines has indicated that the cognitive and psychological sciences offer valuable resources for explaining components of culture, including ritual.

The central assumption of what Dan Sperber calls an "epidemiological" approach to culture is that culture is constituted in part through distributions

of beliefs in populations of human minds. Humans have lots of beliefs. Every human mind contains various idiosyncratic beliefs. Human minds also probably come automatically equipped with some intuitive beliefs in common. (Recently, many scholars – e.g. Tooby and Cosmides [1992] – have suggested that the range and variety of this kind of intuitive belief may be far greater than previously suspected.) But human minds also contain other beliefs (both intuitive and reflective) that manifest striking similarities across individuals but that have arisen not as a part of our built-in equipment but rather on the basis of communication with other human beings. Cultures change, in large part, because the frequencies of those communicated beliefs change within populations of human minds.

That such regularities across individual minds should exist at all among these communicated beliefs is surprising at one level, according to Sperber, in light of the vagueness and the vagaries of human communication and the tendencies of human minds to misunderstand, to misremember, and – often just for the fun of it – to mess around with ideas. Sperber insists that communication usually does *not* result in the replication of beliefs but rather in their alteration. Consequently, among other things, this new psychologically grounded account of culture must explore the cognitive variables that influence the shape of these beliefs as well as their persistence, their proliferation, and their resulting distributions. The shift to the cognitive level is vital, since detecting such distributions of beliefs is not the same thing as explaining them. A pivotal question is how cognitive processes constrain both the forms of these beliefs and their transmission (see Sperber 1996: 106–12).

Nonetheless, the position entails no drastic psychological reductionism. That is because, first of all, it is not out to explain everything about culture. Second, these widespread, enduring, communicated beliefs are only a subset of the class of "cultural representations" (Sperber 1996: 25). An epidemiological approach to culture highlights the causal interactions between these beliefs and a second sort of cultural representation, which Sperber (1996: 61–2) calls "public representations." Public representations of culture basically come in two forms: objects and practices. The former are artifacts and include everything from clothing, icons, and architecture to tools, texts, and voting booths. They are the parts of the natural world that humans have intentionally altered to serve their own purposes. In and of themselves, these objects are not topics of psychological investigation, though, of course, human beings have plenty of states of mind and mental representations (that cognitive scientists may study) pertaining to such objects.

In fact, humans *must* have these mental representations for these objects to exist as public representations of culture. As Sperber (1996: 81) notes, public representations of culture "have meaning only through being associated with mental representations." At least currently, such mental representations are only readily accessible to the individuals who have them. By contrast, public representations of culture are accessible to anyone possessing the right communicated beliefs (i.e. the right mental representations about those public representations).

Typically, the mental representations and states of mind about objects that are public representations of culture are tied up with various *practices* associated with those objects. Such practices concern language, education, agriculture, politics, religion, art, science, and more. The connection between practices and mental representations is, perhaps, more transparent than it is in the case of objects. That practices are practices and that they are the specific practices that they are clearly depend at least as much upon people's mental representations as they do upon their publicly available properties. That the practices that constitute a wedding are the practices that constitute a wedding depends crucially upon the participants' beliefs about those practices.

Of course, prominent among such practices are the performances of rituals. The cognitive approach to the study of ritual concentrates (a) on the similarities among the mental representations that people possess about ritual actions, (b) on cognitive explanations of those similarities, and (c) on the implications of those cognitive theories for explaining a variety of rituals and ritual systems' features (see Lawson and McCauley 1990 and McCauley and Lawson 2002).

The strategy of attending to the mental representations that accompany cultural practices offers some important advantages. Approaching ritual or any other cultural phenomenon in this way increases the prospects for testing hypotheses experimentally, since the cognitive sciences generally and psychology especially have developed far more extensive and sophisticated experimental means for testing theories than have the social sciences. Moreover, minds and brains (even more so) are far more discrete, localized systems than cultural systems are. No area of scientific inquiry has undergone any more exciting developments over the last third of the twentieth century than have the cognitive sciences. These disciplines contribute both methodological and substantive assets to the project of explaining culture.

Further philosophical advantages of such an approach are that it can preserve as much of both a materialist account of culture and an ontological unity to science as can be had in tandem with a healthy respect for the multiple levels of explanation currently pursued in science (see McCauley 1986 and 2001a). Those positions rely on no more than the wholly plausible presumptions (1) that socio-cultural phenomena and, more specifically, the systems for interpreting public representations of culture, can be described and, in part, explained in psychological terms, i.e. in terms of individual participants' cognitive processing, and (2) that that cognitive processing, in turn, can be described and, in part, explained in terms of those participants' brain processes.

The next part of this paper briefly surveys the emergence of philosophical naturalism, pointing at the end to the crucial role that the development of the cognitive sciences has played in its contemporary incarnations. The final part examines the cognitive approaches to culture and to ritual in greater detail. In addition to reviewing some of their philosophically interesting implications, it will also examine some of the latter's salient explanatory achievements.

II. Philosophical naturalism

One way to characterize the history of modern epistemology and metaphysics is to recount the penchant of philosophical speculation to spawn empirical sciences, which, as they mature, return to commandeer intellectual domains on which philosophy had previously presumed to possess a proprietary claim. The growth of modern science over the past four centuries has been marked by groups of researchers explicitly adopting new terms ("physics," "chemistry," "biology," "psychology," "sociology," etc.) for designating the specialized inquiries that have resulted and for distinguishing those sub-fields from the whole of natural philosophy – a term which has, not coincidentally, fallen (except in historical discussions) into nearly total disuse.

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 in that process of pressing their conceptual resources, we expect them both to organize, illuminate, and square with our 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 rely far too often on nothing more than common sense, available anecdotes, and the canons of logic. Scientific standards encompass these considerations (at least if the common sense and the anecdotes can withstand critical scrutiny and theoretical progress) as well as the far more exacting demand that theories meet and pass empirical tests that scientists have developed systematically, employing experimental techniques of increasing sophistication.

In less guarded moments, some naturalists' enthusiasms about scientific progress have enticed them into entertaining the possibility of completely eliminating normative epistemology and the metaphysics that presently facilitates it (e.g. Churchland 1979: chapter 5). There are two problems here.

First, the metaphysics behind presumptions about our possessing (mental) attitudes toward contents that informs normative epistemology substantially overlaps, at least currently, with the metaphysical commitments of the psychological and socio-cultural sciences. Consequently, this especially fervent version of naturalism generates a paradox, since fulfilling its goals would – exclusively on the basis of its philosophical projections – jeopardize the status of entire sciences that have been up and running now for more than a century. This is paradoxical to the extent that all versions of naturalism aim, instead, to foster scientific initiatives and to restrain philosophical hubris.

Ultimately, this first problem of these fervent versions of naturalism is a function of their adopting an insufficiently fine-grained model of intertheoretic relations in science. Their models (e.g. Bickle 1998) are coarse grained,

because they handle all cases of intertheoretic relations the same way. More specifically, they treat cases of theoretical succession *within a science* and cases of relations of theories *across different sciences* at the same time as if they were the same (McCauley 1986 and forthcoming). Theory succession within a science sometimes does result in the sort of fell-swoop eliminations of theory and ontology that this fervent naturalism envisions. Lavoisier's explanation of combustion in terms of chemical reactions involving oxygen brought about the elimination of both Stahl's phlogiston based account and of phlogiston itself. By contrast, intertheoretic relations in cross-scientific settings, at least when the sciences in question have achieved much momentum at all, do not involve the eradication of theories and their ontologies. There the sorts of conceptual and ontological incompatibilities that provoke scientific revolutions within particular sciences over time, instead, elicit inquiries about how adjusting the theories in question might achieve some measure of theoretical reconciliation across explanatory levels. Patricia Churchland (1986: 374) has termed this "the co-evolution of theories" in science. The co-evolution of theories and research in cognitive psychology and computational modeling in neuroscience has not led to the elimination of either enterprise. On the contrary, scientists working at each level have readily exploited the conceptual, experimental, and evidential resources available at the other (McCauley 2001a). This is not to deny that eliminations of theories and their ontologies do not occur in either psychology or neuroscience, but rather to submit that such outcomes are the results of developing *within* each of those sciences superior alternatives that are overwhelmingly incompatible with the currently reigning frameworks.

The second problem with such fervent forms of naturalism is their failure to recognize that because the current conceptual framework in terms of which normative issues are formulated may not persist in the face of scientific progress in the cognitive and psychological sciences, it does not follow that the underlying normative concerns will disappear with them.[1] Philosophers may be able to distinguish facts and values easily enough in the abstract (and think that they can dispense with the latter), but on the hoof all forms of inquiry involve a swirl of both at every turn. If the pursuit of science enables us to devise increasingly better accounts of the way the world is or, at least, to manage things better than our predecessors, then philosophers' normative proposals risk irrelevance, if not irresponsibility, if they insist on employing categories that have become obsolete from the standpoints of explanation and prediction. Naturalists, however, must understand that those same sciences are basically mute about the implicit norms that pervade them and their associated practices. If naturalism is to include a robust picture of the scientific enterprise, then those norms are not just legitimate, but obligatory, targets for philosophical reflection. Although naturalists insist, contrary to traditional epistemology, that the sciences must rigorously constrain the categories from which we should expect to fashion our most compelling metaphysical and epistemological pictures, we can never create those pictures by simply doing more science. Getting better theories about the facts alone

will not make those implicit norms explicit. Naturalism as a *philosophical* position becomes both implausible and self-defeating, if its aim is simply to cheer the total usurpation of philosophy by science. Naturalism is not scientism. Its goal is not to put philosophy out of business. Philosophy still has plenty of jobs to do.

Questions remain, though, about how those jobs are best done. In the broadly transcendental tradition of Kant, philosophers such as Husserl (1970) and Thomas Nagel (1986) hold that some philosophical tool or insight provides philosophy with a unique form of analytical leverage with which it can explore such things as the very possibility of doing science. Other philosophers (e.g. Searle 1992) eschew the trappings of transcendental perspectives in favor of ordinary language and common sense (and even lay claim to a naturalistic orientation) but, nonetheless, pronounce no less confidently about the ways some things must be, either because our current concepts say so or – what is nearly the same thing – because common sense clearly shows that some scientific reductions are unthinkable (see Churchland and Churchland 1998: chapters 8 and 9).

But the history of science has, of course, quite regularly been a history of achieving what was once the unthinkable – prevailing conceptual commitments to the contrary, notwithstanding. As Popper argued, Kant, in effect, made two mistakes. First, he incorrectly concluded from the fact that many of our expectations about the world are both genetically a priori and (even) logically prior to observation that they are, therefore, a priori valid. Although many of his transcendentally oriented successors have hedged on Kant's full-blown ambitions for a priori validity, they persist in committing his second, lesser, but more subtle error. They, like Kant, presume that because we automatically find (our experience of) the world to be a certain way that we must be *successful* in our imposition upon nature of the constitutive expectations in question. Popper demurs: "When Kant said, 'Our intellect does not draw its laws from nature but imposes its laws upon nature,' he was right. But in thinking that ... we necessarily succeed in imposing them upon nature, he was wrong. Nature very often resists quite successfully ..." (Popper 1963: 48). That such cognitive dispositions come so naturally to us and that our presumptions about such dispositions do too, do not warrant any conclusions about their successful application to the world. They only possess a passable probability of success (as measured, ultimately, by our reproductive success) in our species' environment-of-evolutionary-adaptedness (Tooby and Cosmides 1992).

More often than not, in the last century the privileged expectations under debate have concerned our *inner* natures, i.e. our mental lives, rather than the external world. These include everything from traditional phenomenology's presumptions about pure, mental exercises gaining access to the contents and character of the mental representation undistorted by any theoretical commitments, to Nagel (1974) drawing epistemological conclusions about the character and limits of scientific objectivity on the basis of what he takes to be inescapable presuppositions about human subjectivity, to

proposed reductions of consciousness bemusing Searle, because he finds the proposed psycho-neural identities so obviously implausible on what are, basically, common sense grounds.[2,3]

For the naturalist, traditional philosophical tools and insights and attention to ordinary language and common sense are perfectly legitimate means for initiating inquiry and valuable propaedeutics to the formulation of more *systematic* theories. Moreover, the sheer inertia these means enjoy on the basis of their widespread appeal, their intuitive charm, and their long-standing philosophical service indicates that their counsel and influence should not be discounted nor even curtailed unless it is fairly clear how each of those apparent virtues can be explained away (on a case by case basis).

Even if they cannot be explained away, though, for naturalists these considerations neither guarantee anything nor are they always the whole story. The first sticking point is simply the relentlessness of human fallibility in the development and application of even what have proved to be our best tools and insights up to now (including those of science). Second, the interpretivists are right to affirm the thoroughly contingent character of even our most familiar conceptual commitments as they are embedded in our ordinary language, in our common sense, and in our everyday assumptions about both the world and its workings. On this count, naturalists simply highlight two related considerations: first, that those conceptual commitments' contingency is the best possible evidence that they are only speculations and, second, that those everyday assumptions about the world and its workings include assumptions about our minds and their workings.[4]

Finally, these standard philosophical tools neither supersede nor diminish our obligations as inquirers to press those more systematic theories – as rigorously as we can – for greater precision, for greater detail, and for a continuing ability to make sense of new features of the world. Why should simply sifting through the intuitions – even the intuitions of particularly thoughtful, intelligent people – that dominate at a particular time and place and checking them against what is, in effect, a comparatively casual project in the sociology of language exhaust the methods of philosophy? Not only do they not provide the whole story, in domains where means for systematic empirical inquiry have emerged, they no longer even provide the whole of the introduction to the story.

Suggestions that one of philosophy's most valuable contributions to human knowledge is its penchant for spawning sciences and that philosophers are obliged to square their proposals with the facts and, more specifically, with the scientific facts (where we have them) go back at least as far as Hume, arguably as far as Descartes, and even as far, perhaps, as the thirteenth century (Grant 1996). It was Quine, however, who was principally responsible for naturalism's revitalization in epistemology over the last few decades. Noting logical empiricism's inability to provide a compelling reconstruction of scientific rationality, Quine asked "why all this creative reconstruction, all this make believe? . . . why not settle for psychology?" arguing that it is "[b]etter to discover how science is in fact developed and learned than to fabricate a fictitious structure to a similar effect" (1969: 75, 78). Developing a useful philosophical account of scientific rationality will turn, in part, on gaining "an understanding of science as an institution or a process in the world . . ." (Quine 1969: 84). Therefore, pursuing the sciences of science at *multiple* analytical levels will prove a fundamental ingredient in the new, naturalized epistemology that Quine anticipated. A naturalized epistemology amounts to the sciences of science and normative epistemology standing in a relationship of "reciprocal containment" (Quine 1969: 83).

Consonant with his rigorous empiricism, however, Quine unfortunately restricted his own speculations to a pinched and narrow form of psychological investigation, namely, behaviorism. Of course, the crucial development since Quine sketched his account has been the emergence of the cognitive sciences, which have generated a much broader set of investigative techniques and yielded a far deeper and richer picture of the structure and operations of the human mind. It is also a picture that offers much greater promise of achieving fruitful integration with related sciences at adjoining analytical levels in science, both above and below.

III. The cognitive approach to ritual

As Quine hoped, one of the most carefully studied topics of the new sciences of the mind is scientific reasoning itself.[5] Cognitive scientists' research on scientific thinking and practice has simultaneously revealed

- well worn methods for provoking creative, promising solutions to scientific questions (e.g. Dunbar 1995 and 1997),
- recurring limitations and fallibility of individual scientific reasoners (e.g. Mynatt *et al.* 1981), and
- effective strategies that scientific communities have devised for compensating for those individuals' limitations and, as a result, for making sound global judgments, given the evidence available at the time (e.g. Thagard 1992).

Such scientific research on science has encouraged the development of more sophisticated and detailed epistemological proposals concerning the reasonableness of the sciences. Instead of advancing disembodied philosophical ideals formulated in isolation from actual scientific activity, naturalists' proposals aim to identify patterns and practices that underlie exemplary scientific achievements in order to understand just what humans are capable of doing (if not very often individually in the short run, then at least collectively over the longer run in a surprising number of cases). For the naturalist, though, even these newly proposed epistemological ideals must themselves inevitably undergo overhaul and revision in the light of both new empirical findings in the sciences of science and the emergence of new forms and methods of scientific research that invariably accompany theoretical innovations, especially in new domains.

The sciences of science and particularly the cognitive science of science are flourishing enterprises (see, for example, Keil and Wilson 2000 and Carruthers *et al.* 2002). But, as with most contemporary intellectuals, most cognitive scientists, until quite recently, have simply found topics like religion and ritual embarrassments. At one level this is no surprise. No topic – not sex, death, taxes, nor terrorism – can elicit any more quirky, unpredictable responses from intellectuals than can the topic of religion and its accoutrements such as ritual. On this front, cognitive scientists generally fly with the flock.

That they do so, though, is, at another level, a puzzlement. The cognitive processing that undergirds science is of interest to cognitive scientists, because it has proven reasonable and largely explicable. But on some fronts the cognitive processes involved in science are also comparatively unusual. Some of the cognitive tasks that doing good science requires are ones that humans usually find extremely difficult to do. This is one of the major reasons why, in the long expanse of human history, lasting traditions of empirical science are comparatively rare (McCauley 2000). By contrast, the cognitive processing that undergirds religion and ritual seems *less obviously explicable* (since it is much less obviously rational) yet far more *widespread*. Cognitive science has had a great deal to say about the generally rational, largely tractable, easily isolable, but comparatively uncommon forms of cognition associated with science, but, with a few welcome exceptions, next to nothing to say (until recently) about the unreasonable, sprawling, but ubiquitous forms of cognition associated with things like ritual and religion.

Happily, a small group of cognitive scientists (e.g. Barrett 2000) have turned to these topics over the past decade or so and advanced proposals that aim to substantially demystify religion and ritual – by no means the least for their fellow cognitive scientists![6] As is true with any scientific pursuit, these researchers advance diverging views about a dozen different matters, but their mutual subscription to at least two positions unites them. The first is that many recurrent features of religion and ritual turn, primarily, on the proclivities of the human mind, and that scholarship during the twentieth century, especially within cultural anthropology, has overestimated the contributions of culture – certainly, "culture" conceived as some super-individual force – to these patterns. Consequently, these researchers agree that the theories, methods, and findings of the cognitive sciences over the past three decades offer the study of symbolic forms (such as ritual) a wealth of resources. Their second joint commitment is that, appearances to the contrary notwithstanding, religion generally and religious ritual in particular involve relatively modest variations on everyday cognitive processing – variations that are themselves commonplace and not at all unique to religion. In the remainder of this section, I will explore some of the implications of this second commitment for a cognitive account of religious ritual.

All of these cognitive theorists maintain that, in large part, what makes religion what it is turns on perfectly ordinary variations arising and persisting in the course of the operations of comparably ordinary mental machinery.

Thus, contrary to the dominant assumptions of mainstream religious studies, accounting for religious belief and conduct requires neither employing special methods nor postulating distinctively religious or "spiritual" faculties or sensibilities (Lawson and McCauley 1993). Whether the modestly counter-intuitive representations characteristic of religion and religious ritual arise and persist in human minds

1 because of a need to explain anomalous (i.e. counter-intuitive) phenomena and various feelings associated with experiencing them, or
2 because of an overly sensitive agent detection device, convincing us, for example, that agents possessing counter-intuitive properties are what are always going-bump-in-the-night, or
3 because, however they arise, they prove particularly recognizable, attention grabbing, memorable, communicable, and motivating,

they certainly do not differ drastically from our intuitive understandings of the world. Reliably, these representations involve small irregularities in our standard assumptions about the world. So, although the gods, goddesses, and ghosts as well as the demons, angels, and ancestors, who populate religious ontologies and with whom the religious interact in rituals, possess abnormal physical, biological, or psychological properties (so that they can be everywhere at once, born of virgins, or capable of knowing our thoughts), they are otherwise perfectly normal agents with all of the standard sorts of interests, motivations, and states of mind we acknowledge in our conspecifics. Their few peculiarities make these representations easily recognizable, attention grabbing, and memorable (Jesus walked on water!), while their conformity with virtually all of our default assumptions about psychologies and social relations enable even the most naive participants to reason about them effortlessly. We can deploy the same folk psychology that we utilize in human commerce to understand, explain, and predict the gods' states of mind and behaviors. Most particularly, so far as ritual is concerned, they have the same sorts of interests and understandings of transactions with other agents that characterize the wide range of interactions that arise in every human society (Boyer 2001).

To describe these representations as "*modestly*" counter-intuitive presumes a contrast not only *with our standard assumptions* about the world (that, in fact, agents have bodies and cannot be everywhere at once, that members of sexually reproducing species arise as the results of the standard procreative acts, and that only the mentally ill think that they hear others' thoughts), but also *with far more radically counter-intuitive representations* that humans have proven capable of entertaining. The overwhelming majority of these sorts of representations have arisen not in fiction or in fantasy but rather in science. Over the history of science these have included representations of such things as the earth spinning at roughly a thousand miles an hour, of "solid" matter as mostly empty space, of light as both like particles and like waves, and of the contents of human consciousness as often largely disconnected with the

actual causes of human behavior. Sooner or later, traditions of scientific investigation reliably generate radically counter-intuitive representations. That it inevitably involves radically counter-intuitive representations is one of the reasons why science is so difficult to learn and so difficult to do (McCauley 2000). Most prominently, it is no coincidence that one way of describing the progress of science in human history is to note its increasing restriction over the centuries of those domains in which it is any longer legitimate to employ that ever-so-intuitively-appealing mode of explanation that relies on the concept of *agent causality* (Churchland 1989).

Nor has religion even cornered the market on modestly counter-intuitive representations. Representations of agents of similar sorts are the currency of folklore, fairy tales, comic books, cartoons, and, of course, mental illness. When the same sorts of counter-intuitive properties in which religions traffic are attributed to Superman, Mighty Mouse, or the Big Bad Wolf, we regard them as fantastical amusements that are childish, laughable, or silly. People who seriously claim to be able to interact first hand with such counter-intuitive agents (as most religious people do when they participate in ritual or in prayer) but who, crucially, are *unable* to enlist others in these speculations are quite regularly confined by their families, their friends, or the state.

These similarities among these various sorts of modestly counter-intuitive representations notwithstanding, religious representations clearly do present additional explanatory problems, since, unlike Superman, Mighty Mouse, and the Big Bad Wolf and unlike the imagined interlocutors of the mentally ill, religious representations elicit all sorts of special attitudes and behaviors from large numbers of individuals that give every indication of their seriousness and convictions about these matters. Even scholars of religion, no matter how cultivated their sensitivities, inevitably confront claims about particular features of someone else's deities – especially those of small religious groups that have yet to garner widespread followings – that they find nothing short of hilarious. Yet comparably incredible claims about the counter-intuitive properties of their own cultures' gods regularly elicit acquiescence, if not outright reverence and ritual participation.

Human beings' proclivities to carry out individual and collective rituals associated with their religious representations present further explanatory tasks. But, of course, religion is not unique on this front either. Some of what we commonly regard as non-religious representations are capable of generating such behaviors as well. Not only are representations of Santa Claus and the Tooth Fairy capable of eliciting such conduct from human beings too, but both representations of nation states (such as flags) and representations of Elvis do as well. In light of the number of domains in which representations of modestly counter-intuitive agents arise and on the assumption that veneration neither of the Tooth Fairy, nor of the state, nor of Elvis (Santa Claus may be a much closer call) should count as paradigmatic cases of religious ritual,[7] it seems fairly clear, at least from a cognitive standpoint, that religiosity exploits a variety of human cognitive endowments that have no logical or psychological unity. Cognitively speaking, religion is

an exceedingly complicated contraption calling on all sorts of psychological propensities that are, otherwise, usually unconnected. The standard features of religious mentality and conduct are cobbled together from the susceptibilities of a disparate compilation of evolved psychological dispositions[8] that typically develop in normal human minds for very different reasons – both from one another and from anything having to do with religion.

Religious ritual exploits at least one such disposition, namely, our possession of a cognitive system for the representation of agents and their actions. It is critical to humans' survival (and, surely, to many other animals' survival as well) that they are able to distinguish agents from other things in the world and actions from other events. (It is also critical to entertaining narrative accounts of the succession of events over time.) The key suggestion is that an inability, in species' environments-of-evolutionary-adaptedness, to make these distinctions reliably would guarantee them far too many opportunities to serve as their various predators' lunch (Tooby and Cosmides 1992). Psychologists (e.g. Leslie 1995) have offered a variety of proposals about the various features that cue agent-detection in human beings, attaching prominence to such considerations as some things' abilities not only to move themselves but to move themselves in irregular paths in the pursuit of various goals.

For comparatively sophisticated social creatures such as ourselves, the issue is not only one of detecting and avoiding predators. We also recognize a relevant class of agents in the world with whom we can interact and whose aid we might be able to recruit.[9] For most of us most of the time, some subset of our conspecifics exhaust this class of recruitable agents. Human goals and our abilities to communicate them are sufficiently complex that we develop and deploy what has become known in the literature (e.g. Wellman 1990) as "theory of mind" in calculating our own behaviors, others' reactions to our behaviors, and their calculations about both as well as about our own calculations. In order to manage in our complicated network of social relations, allowing not only for our own but other agents' goals and interests as well, we quickly develop the ability to "read" those agents' minds, a capacity that seems firmly in place by middle childhood.[10]

Tom Lawson and I have argued that participants' representations and knowledge of their religious rituals rely on garden variety cognitive capacities concerning the representation of agents and their actions, which develop quite naturally in every normal human being (Lawson and McCauley 1990 and McCauley and Lawson 2002). A wide range of evidence from developmental psychology indicates that human beings readily distinguish agents and actions at a very early age (see Rochat *et al.* 1997). At ages as early as nine months, children seem capable not merely of recognizing agents but of attributing goals to them (Rochat and Striano 1999). This cognitive machinery seems task specific, and it is – with only a few exceptions – pervasive among human beings (Baron-Cohen 1995).

These cognitive capacities are parts of what we have referred to as the human "action representation system" (Lawson and McCauley 1990: 87–95; McCauley and Lawson 2002: 10–26). Our cognitive system for the

representation of action imposes fundamental, though commonplace, constraints on ritual form. Attention to these constraints enables us to look beyond the variability of religious rituals' culturally specific details to some of their most general underlying features. The point, in short, is that religious rituals (despite what often seem to be their bizarre, inexplicable qualities) are conceived as actions too, and human beings bring the same representational apparatus to bear on them as they do with all other actions. Thus, our general system for the representation of action is also responsible for participants' representations of their religious rituals' forms. Postulating special machinery to account for the representation of religious rituals is unnecessary. That normal human beings readily grasp such features of actions intuitively is the first line of evidence that they possess such a system of representation. That these simple, basic distinctions about actions and, therefore, about rituals will provide a framework for systematically explaining and predicting many of religious rituals' recurrent features is an additional consideration suggesting that the human brain possesses such representational machinery.

Agents and their agency are clearly central concepts for the representation of action, but they are not the whole story. A representational framework for characterizing this special sort of event must also capture familiar presumptions about the internal structures and external relations of actions. Our theory of religious ritual begins with what have proven to be some relatively uncontroversial assumptions about that representational system. Specifically – without pretending to capture all of the nuances of action representation of which human beings are capable – it will suffice to note that the representation of actions will include slots for agents and for the acts they carry out as well as for the patients of those actions, and for the various qualities, properties, and conditions sufficient to distinguish them. Agents with particular properties do things, and, more often than not, they do things to other things (including other agents).

Rituals' basic structures are no different. They comprise the roles (agents, acts, instruments, and patients) that distinguish actions (and rituals) both from other events and happenings and from one another. They permit – as ritual elements – the various entities and acts, as well as their properties, qualities, and conditions, that can fulfill these roles in religious rituals.

The representations of ritual actions also manifest routine points of variability in actions, such as whether they involve the use of instruments as a condition for their success, and they accommodate the enabling relationships between actions, such as whether the performance of one act presupposes the performance of another. Rituals' action representations conform to the constraint that although any item filling the role of the agent may also serve as a patient, not all items that serve as patients may also fill the agent role. So, agents can do things to other agents, and agents can act on objects, but objects – except for some exceptional objects in religious ritual contexts – are not agents capable of action.

That last qualification provides a significant clue about what is distinctive about religious rituals. First, to reiterate, note, that from the standpoint of

basic action structure *nothing* is distinctive about religious rituals. It is not any transformation of the operations or the structures of the outputs of the human action representation system that sets religious rituals apart. Their distinctiveness, instead, turns exclusively on introducing entities with counter-intuitive properties into at least one of the slots of their basic action structures. So, when some inanimate object (e.g. a statue of a saint) is presumed to possess counter-intuitive psychological properties, such as the ability to hear prayers and, perhaps, the ability to refer them to other unseen agents for immediate action, the possibility arises of what we would otherwise regard as an inanimate object possibly serving in the role of an agent in religious ritual contexts.

The representations of religious rituals are no different from the representations of normal actions. Inanimate objects are incapable of agency. Within the conceptual schemes of religious systems, however, some things that we normally regard as inanimate objects (statues, paintings, mountains, the sun, etc.) are *not* classified that way. It is the insertion of these and other modestly counter-intuitive representations into the slots of religious rituals' action structures that is both distinctive and determinative.

Rituals' basic action structures and the roles attributed to agents with counter-intuitive properties, in particular, are the key considerations in the theory that Lawson and I have proposed for predicting a number of those rituals' features that recur across the wide array of religious ritual systems. Assuming our theory's principles describe, albeit quite abstractly, capacities that are psychologically real, they also constitute a first pass at an empirically testable, explanatory hypothesis about the cognitive mechanisms behind participants' facility at generating comparatively stable judgments about those features – both across subjects and within subjects over time (see, for example, Barrett and Lawson 2001).

Most participants' knowledge of their ritual systems is overwhelmingly implicit (Reber 1993). It is like their grammatical knowledge of the language that they speak or their knowledge of the basic etiquette and social conventions of their culture (concerning, for example, the constraints on appropriate bodily contact in various social settings). To call such knowledge "implicit" is to highlight the fact that under most circumstances, it is knowledge to which people have little, if any, direct, conscious access. So, although native speakers of a language have little difficulty understanding well-formed utterances of no more than moderate complexity and, usually, only slightly more difficulty producing such utterances themselves, they are often incapable of articulating even a single principle underlying those competences.

Their instant sensitivity to violations suggests that people have a mastery over these domains and a mastery that, in fact, involves both considerable knowledge and knowledge that is considerably detailed. If a lecturer chooses to position his or her face three inches from the face of someone sitting in the first row of the audience, everyone will immediately recognize the breach of etiquette involved. Moreover, they will be clear about the relevant variables, namely, that this is primarily a matter of a violation of personal space,

that it may be complicated somewhat by the genders of the lecturer and the unfortunate audience member, but that between the two inappropriate extremes the volume of the lecturer's voice is of relatively minor importance in this embarrassing and uncomfortable situation. In short, not only do participants in such symbolic-cultural systems immediately detect such violations, they are usually clear about the particular features of the violations that render them problematic.

Typically, participants in such symbolic-cultural systems (language, etiquette, religious ritual, etc.) do not receive explicit instruction about the principles underlying such competences, or, if they do, such *explicit* instruction is often partial, occasional, and not fully consistent. Participants appear to acquire their knowledge of these systems spontaneously on the basis of mere exposure. Whether this is the result of minds *innately* prepared to detect such patterns in the social environment, as Chomsky has so famously and so controversially maintained, or not, the necessary sensitivities to stimuli in the environment always presume the possession of tacit hypotheses that determine what count as *relevant* phenomena (see Elman *et al.* 1996).

Religious ritual is no different. The overwhelming majority of religious ritual participants in human history have acquired their knowledge of their rituals in just this way. Note that that overwhelming majority was either illiterate or non-literate, so any explicit instruction they had was delivered orally and, usually, itself retrieved from all too fallible human memories (as opposed to being retrieved from somewhat less variable texts) (McCauley 1999). It is not a coincidence that so much explicit religious instruction, even in *literate* settings, puts such a premium on *memorization*.

Similarly, participants in religious ritual systems are just as thoroughly and just as systematically sensitive to violations. Although they are normally incapable of laying out explicitly any principles that might organize the constraints on their religious rituals, let alone any mechanisms that might generate them, they possess powerful intuitions about those constraints on the acceptability and effectiveness of religious rituals when either confronted with violations or probed by experimentalists on the topic (Barrett and Lawson 2001). Participants in religious ritual systems have extensive implicit knowledge about their rituals that – on virtually all important theoretical fronts – is four-square with the implicit knowledge that native speakers have about utterances in their natural languages.

The decisive variable for predicting and explaining a wide array of religious rituals' properties concerns precisely where in participants' ritual representations, i.e. in which slots, they presume entry of agents that possess counter-intuitive properties. So, whether, through intermediaries or directly, they are implicated as the agents or the patients in the ritual at hand will determine many of a ritual's properties. When these counter-intuitive agents arise first in (or in connection with) the agent-slot of a ritual representation (e.g. in Christian baptism[11]), resulting in what Lawson and I (2002: 26) have dubbed a "special agent ritual," the ritual in question will typically be performed on each individual patient only once. This is the sense in which we describe these rituals as (normally) *non-repeated*. These rituals may permit substitutions for their instruments or patients, but rarely, if ever, for their agents.

Under most circumstances, participants will intuitively recognize the sufficiency of these special agent rituals to effect important, lasting changes in the ritual patients. Within any particular religious community, no rituals that participants undergo individually will involve any higher levels of sensory stimulation than these. The sensory pageantry associated within a particular religious community with such special agent rituals as initiations and weddings will reliably exceed that characteristic of rituals of purification, blessings, and sacrifices. Around the world, these special agent rituals regularly include such stimulants as music, dance, flowers, incense, and special foods and clothing, and, if these are not enough to reliably get the patients' attention, they often resort to more extreme forms of sensory arousal, such as torture. These rituals tend to produce critical moments in patients' lives that generate salient episodic memories,[12] especially when people throughout the patients' in-group continue to corroborate these rituals' importance, after the fact.

Oddly, their cultural significance notwithstanding, the effects of these rituals can be reversed. Sometimes, couples get divorced, priests get defrocked, and participants can be excommunicated. (Such reversals result in one of the few circumstances in which the original special agent rituals can be repeated with the same patient.) Although sometimes religious systems allow for the possibility of achieving some of these reversals ritually, it seems that at least as often the procedures are juridical. In any event, the procedures reliably involve no elevated levels of sensory pageantry, even though by parity of reasoning their effects would seem to be of comparable religious and cultural significance.

If, on the other hand, an agent with counter-intuitive properties first arises in a ritual's basic action structure in connection with that ritual's instrument or patient, it occasions a contrasting constellation of properties. These "special instrument" and "special patient" rituals, unlike their special agent counterparts, are capable of repetition (with the same instrument or patient) and can sometimes even involve what can seem like incessant repetition. So, for example, Christians celebrate the Eucharist time and time again, even though they are typically baptized only once. Many Jews participate in regular ritual baths, though they have but a single wedding ceremony.

Participants usually do not have memories for specific performances of these special instrument and special patient rituals (except, perhaps, for the very most recent ones), in contrast to their often quite salient memories for their performances of special agent rituals. Their knowledge of these rituals takes the form of what cognitive scientists call a "script" (Schank and Abelson 1977). Most special instrument and special patient rituals are the ones that participants perform so often that they become routine. Under such circumstances, their command of these rituals arises from the familiarity anyone gains with actions they carry out regularly. Their ritual performance becomes the exercise of a well-rehearsed skill in the way that driving does for experienced drivers. Consequently, participants are often said to perform these rituals "mindlessly."

Normally, the routine performance of skilled behaviors does not tend to be particularly arousing emotionally. Nor do special instrument and special patient rituals contain high levels of sensory stimulation, compared with the performances of special agent rituals within the same religious communities. This is true, even when participants do not perform these special instrument and special patient rituals often. This is perfectly possible, since participants may repeat these rituals but they are not usually obligated to do so. An example would be the hajj, the pilgrimage to Mecca that all Muslims are expected to make at least once in their lifetimes. Muslims are free to go on this pilgrimage more than once, if they choose and can afford to do so, but it is not necessary. Special instrument and special patient rituals with low performance frequencies are (like the hajj) often long, complicated, busy, and expensive to undertake, but any emotional stimulation they may involve is typically not a direct function of anything about their forms (McCauley 2001b).

Why are these rituals repeatable and, usually, so often repeated? Special patient rituals make this particularly easy to see. In these rituals, it is the ritual element in the patient slot of the ritual's action structure that, *ex hypothesi*, if not an agent with counter-intuitive properties itself, at least enjoys the most direct ritual connection to an agent with counter-intuitive properties. These are rituals, such as sacrifices, where humans do things to or for the gods (or ancestors or saints, etc.), usually for the purpose of influencing their states of mind and, consequently, of increasing the probabilities of favorable views of the participants and benign behaviors toward them. But humans' abilities and resources are limited, while (for example) the appetites of agents with counter-intuitive properties can be insatiable. Or, in the case of special instrument rituals, since humans' failures are unending, they are always in need of further help. Another blessing never hurts. Therefore, religious participants must perform most of these rituals time and time again. Because such obligations can consume considerable time and resources, many religious ritual systems permit substitutions for a wider range of ritual elements in these rituals in comparison to the allowable substitutions in special agent rituals. Specifically, since human beings are the agents in these rituals, these special instrument and special patient rituals can permit substitutes for these human agents. So, although because of their special, ritually established relationship with the relevant counter-intuitive agent, appropriate members of the church's ecclesiastical hierarchy are the only human agents capable of performing rituals of ordination, Roman Catholicism now permits lay substitutes to *administer* the Eucharist.

By contrast, in the case of special agent rituals (such as ordinations), where agents with counter-intuitive properties are most directly connected ritually with the proximal ritual's agent, it is the agents possessing modestly counter-intuitive properties who act – at least indirectly via their priestly intermediaries. In contrast to humans, the gods (usually) need do things only once. Since that is so often true, these special agent rituals need to incorporate features that will convince their patients that something profoundly important has transpired. This is why, comparatively speaking, these are the

rituals within any particular religious community that will come to include lots of sensory pageantry aimed at seizing the patient's attention and arousing his or her emotions. Religious systems around the world regularly manipulate these and additional variables to heighten the salience of these rituals and to increase the probabilities that they will constitute benchmarks in the participants' life histories. Other means range from performing the rituals on all of the members of an entire age cohort, to the revelation of *secret* knowledge, to direct confrontations with the counter-intuitive agents themselves (for example, as masked dancers or as skulls illuminated in caves or as entire mountains). These ritual episodes contribute fundamentally to participants' understandings of themselves. They become integral to participants' identities.

Needless to say, this is not the whole story. Whatever social, cultural, emotional, and motivational dynamics impinge on and are occasioned by religious ritual proceedings, participants' action representation systems automatically deploy to frame ritual arrangements. Participants' competence with their religious ritual systems turns on their abilities to represent agents, actions, and the relationships between them. What distinguishes religious rituals is the introduction of representations of agents possessing counter-intuitive properties into slots in the representations of these actions or of actions they directly presuppose that render such actions obligatory for the participant. I have outlined in this section some of the consequences of all of this for religious rituals' properties and participants' implicit knowledge about these properties. Not only has this outline inevitably involved appeal to other forms of tacit knowledge most human beings possess – beyond their bare abilities to entertain distinctive representations of actions and to operate with folk psychology – but so too will useful extensions of our theory.

Any fuller explication of those consequences will invariably traverse the terrain of human beings' intuitive understandings of their *social* relations. Sooner or later, religious rituals always involve presumptions about some very special agents – but the fundamental point is that simply construing them as *agents* is every bit as important to grasping the structure and character of religious ritual systems as anything about their special counter-intuitive properties. Religious ritual systems allow *transactions* with such agents that have import for participants' *quasi-social* relationships with those agents.

Religious rituals activate other sorts of automatic, instant, and mostly intuitive systems that pertain to human beings' knowledge of their *social* worlds. Normal human cognitive development results, again by middle childhood, in a sophisticated command – even if in little explicit knowledge – of a host of patterns and principles that constrain humans' social relations. The resulting implicit knowledge is capable, in the right circumstances, of generating strong intuitions and powerful emotions in those who possess it, yet they are often startlingly inarticulate about its underlying standards and contours. What they do know about unhesitatingly, most of the time, are such things as how social hierarchies are structured and what they require, how material and social exchange works and the implications of reciprocity, and how they can lay claim in a socially acceptable fashion to their "share" of available resources.

Religious ritual participants' transactions with the gods activate these systems too. They automatically enable participants to enlist all of these insights and more into their understandings of their religious ritual conduct and of their religious ritual systems overall. Religious ritual practices constitute social transactions with the gods that involve much of the same give and take that characterizes our relationships with our conspecifics.

Such forms of knowledge are remarkable in the light of our instantaneous, intuitive access to them, their psychologically compelling authority, and humans' comparative inability to articulate either their foundations or even their superstructures. It is precisely because these are the kinds of knowledge that the tools of traditional analytic philosophy have been hard pressed to illuminate that naturalism in philosophy was born. Over the past two decades, cognitive scientists have turned to the exploration of the natural history of such dispositions in our species (e.g. Tooby and Cosmides 1992) and the mechanisms underlying them (e.g. Elman *et al.* 1996). Advocates of a cognitive approach to religious ritual see promise in these inquiries for gaining insight not only about ritual but about a wide array of recurrent religious and cultural patterns.[13]

Notes

1 Paul Churchland's account (1989: 223) of "a virtuous mode of explanatory understanding" in terms of parallel distributed processing models of cognition signals growing moderation in his own version of philosophical naturalism about our interests in normative epistemology.
2 Searle fatally underestimates just how counter-intuitive scientific achievements can be (Churchland and Churchland 1998: 128; see also McCauley 2000).
3 For an account of the considerations that contribute to the plausibility of psychoneural identities, see Bechtel and McCauley (1999) and McCauley and Bechtel (2001).
4 The mistake that tempted so many interpretivists was to conclude that such sweeping contingency requires that we surrender our hopes for characterizing a compelling account of reasonableness. Pervasive contingency, however, requires no more than construing rationality as carrying out the best search we can for the most effective set of conjectures possible and recognizing that, in fact, we typically must settle for small improvements here and there (see Thagard 1992).
5 As but one illustration, consider the work of Paul Thagard and his collaborators. See, for example, Thagard (1988, 1992, and 1999); Holland *et al.* (1986); and Holyoak and Thagard (1995).
6 See, for example, Lawson and McCauley (1990) and McCauley and Lawson (2002); Whitehouse (1992 and 2000); Guthrie, (1993); Boyer (1994 and 2001); Hinde (1999); Pyysiäinen (2001); Pyysiäinen and Anttonen (2002); Andresen (2001) and Atran (2002).
7 I defend that assumption at length in McCauley 2003.
8 For a discussion of the relation between adaptive cognitive dispositions and their various latent susceptibilities, see Sperber (1996: 66–7).
9 We are, however, not the only species capable of such discriminations. See de Waal (1996).
10 Barrett *et al.* (2001), in effect, argue that children are able to represent (and read) the minds of agents with counter-intuitive properties at an even earlier age.
11 I will confine myself here to illustrations from religious systems with which, I presume, the majority of my readers have some familiarity. See Lawson and McCauley (1990) and McCauley and Lawson (2002) for discussions of Muslim, Hindu, Jain, Taoist, Zulu, Baktaman, Pomio Kivung, and Latter Day Saints' rituals and more.
12 See Tulving (1983) for an extended, systematic treatment of the distinction between episodic and semantic memory.
13 I wish to express my gratitude to Kevin Schilbrack for his helpful comments on an earlier draft of this paper.

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