Reverse Engineering Complex Cultural Concepts:

Identifying Building Blocks of "Religion"

Ann Taves

ABSTRACT: Researchers have not yet done an adequate job of reverse engineering the complex cultural concepts of religion and spirituality in a way that allows scientists to operationalize component parts and historians of religion to consider how the component parts have been synthesized into larger socio-cultural wholes. Doing so involves two steps: (1) distinguishing between (a) the basic cognitive schemas (e.g., part/whole, path, system, event) that structure definitions and (b) the specific features used to characterize the basic schemas as "religious" or "sacred" and (2) disaggregating these specific features into more basic cognitive processes that scientists can operationalize and that historians can analyze in situ. Three more basic processes that interact on multiple levels are proposed: perceiving salience, assessing significance, and imagining hypothetical, counterfactual content.
KEYWORDS: religion, sacred, magic, salience, significance, imagination

In a recent issue of *Scientific American* (June 2012), Henry Markram, director of the "Human Brain Project" at the Swiss Federal Institute of Technology in Lausanne, wrote: "Reductionist biology – examining individual brain parts, neural circuits and molecules – has brought us a long way, but it alone cannot explain the workings of the human brain… We must construct as well as reduce and build as well as dissect. To do that, we need a new paradigm that combines both analysis and synthesis." I want to echo Markram's point with respect to the study of religion, not to repeat tiresome cautions against reductionism, but to argue that to build effective bridges between the historical and scientific study of religion we need not only to break religion down into its parts but also to test to see if the parts can be reassembled into wholes.

Religion: The Parts and the Whole

In the new edition of *Discovering Complexity*, Bechtel and Richardson (2010) refer to dissecting and building in terms of decomposing and recomposing a biological system. They stress that "scientists must attend to the whole mechanism in its characteristic environment – not just its lower level constituents – to understand what the mechanism does, or even how its components make their contribution" (p. xxxviii). In making this point, they are assuming that complex biological systems are hierarchically organized, that multiple subsystems operate at the different levels, that the strength of the interaction between subsystems at a given level varies, and that highly coordinated subsystems -- common in living organisms – can give rise to emergent properties at various levels.

Approaching a complex cultural concept, such as religion, from this perspective poses numerous difficulties, starting with the problem of what we mean by the concept and, if we conceive of it as a whole, how it can then be broken down into parts. Most scientific studies of religion are premised on operationalized definitions of religion or aspects of religion. In general, however, the aspects or parts have not been sufficiently well specified to allow us to analyze how they are reassembled to create wholes. In the cognitive science of religion (CSR), researchers often rely on deities or spiritual beings (aka minimally counter-intuitive agents) to mark the distinction between religion and other things. In the psychology of religion, the sacred often plays a similar role. Both approaches present difficulties. CSR research on belief in counterintuitive agents has been pursued in isolation from research on paranormal, superstitious, and magical beliefs even though operationally they cannot be easily distinguished (Lindeman and Svedholm,

2012). As characterized within the psychology of religion (Pargament, 1997, 1999 a,b; Hill, Pargament, Hood, McCullough, Swyers, Larson et al., 2000; Pargament & Mahony, 2005; Pargament, Magyar-Russell, & Murray-Swank, 2005; Zinnbauer & Pargament, 2005), the sacred is a reified catchall category that is operationalized in different ways, while at the same time referred to in meta-analyses as if it were a singularity. These difficulties suggest that we have not yet done an adequate job of reverse engineering the concepts of religion and spirituality in a way that will be fruitful either for scientists, who need to operationalize component parts, or for historians and ethnographers, who want to consider how the parts have been synthesized into larger socio-cultural wholes.

Most fundamentally, researchers have not sufficiently grappled with the instability of the concept of "religion" at the cultural or individual level and the implications of this for decomposing it. The difficulties first became apparent to me in the context of my historical work on religious experience (Taves, 1999). In tracing the shifting contours of the debates over what should count as religious experience between and within traditions of interpretation over time, it became clear to me that believers themselves could not agree on whether experiences were religious or not on the basis of the phenomenology of the experience alone. The shape of the experience often had something to do with it, but they needed other criteria, such as the effects of the experience or how well it accorded with preexisting beliefs, to establish that it was truly religious and not a counterfeit or magic or mere superstition. This is the case not only with experiences, but also for events, beliefs, actions, objects, etc. If what counts as a religious belief, action, or event is contested on the ground within and between traditions, then researchers need to account for this instability.

When researchers stipulate definitions of religion rather than relying on more generic and at the same time more precise descriptors, they artificially stabilize the phenomena of interest. Doing so has several drawbacks. In stabilizing something that is inherently contested, stipulative definitions tell us more about what researchers think should count as religious than about what subjects think. It makes meta-analysis of psychological studies very difficult because what researchers mean by supernatural, magical, sacred, paranormal and so on differs from study to study (Lindemann & Svedholm, 2012). In the humanities, stipulative definitions reproduce cultural and disciplinary distinctions between art, literature, drama, ethics, and religion prevalent in modern, western cultures.[1] Reproducing these distinctions in our research not only makes meta-analysis more difficult, but also makes it more difficult to work across times and cultures where these distinctions do not hold. In stabilizing something unstable, we limit our ability to study how people determine what counts as religious where that category is operative and how they characterize similar phenomena when it is not.

Reflecting on the history of scientific inquiry, philosopher Paul Davies writes: "We make progress in our knowledge of natural systems to the extent we *analyze inward* and identify low-level systemic mechanisms and interactions that instantiate high-level capacities. We also make progress as we *synthesize laterally* across related domains of inquiry, as we look for coherence among taxonomies of mechanisms postulated in

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[1] When characterizing themselves, their departments, or their professional associations, self-identified scholars of religion often use the term "religion" casually to encompass the amorphous constellation of beliefs and behaviors that might be characterized as sacred, transcendent, spiritual, mystical, occult, esoteric, magical, superstitious, idolatrous, divinatory, fetishistic, demonic, and so on. The objection here is not to this casual and/or conventional usage, but to problems that stipulated definitions of religion can create in the context of research.

associated areas of study" (Davies, 2009, pp. 36-37, emphasis in original). As we embark on this process, Davies (pp. 32-33, 37) advises us to expect conceptual change. "For systems we understand poorly or not at all, expect that, as an inquiry progresses – as we analyze inward and synthesize laterally – the concepts in terms of which we conceptualize high-level systemic capacities will be altered or eliminated."

We need to recognize, in other words, that "religion" as a complex cultural concept doesn't exist at the psychological or neurological levels. At those levels, we simply find various processes that have been and are combined to create complex cultural phenomena that sometimes get labeled or categorized in cultural terms, some of which are "religion-like." Researchers who are working downward in psychology and the neurosciences can make their work maximally useful for (and/or less confusing to) those who want to build up by labeling the processes (aspects, building blocks) they are studying precisely, avoiding complex cultural concepts in so far as possible. They can also work to avoid or overcome research "silos" by watching out for similar psychological processes that others may be labeling differently.

A Building Block Approach

Although the definitional problem is relatively easy to avoid at the neuroscientific and psychological levels, the problems are more acute for those – especially ethnographers and historians – who want to build up from psychological and neuroscience research toward the comparative, cross-cultural study of the complex cultural constructions we see on the ground. If we eschew definitions of religion because they obscure processes that are of interest on the ground, how do we know what to look

for? How do we identify fruitful points of comparison across times and cultures? Here I will argue that a building block approach allows us to move beyond defining or not defining to generate a third option in which we conceptualize the features that interest us in terms of interacting processes. To be effective, the processes must be formulated in terms that allow us to bridge across levels of analysis (vertically) and across cultures (horizontally). They must make sense to researchers working downward (disassembling) and those working upward (assembling) in disparate cultural and historical contexts. The processes should capture the features of interest *before* they are culturally categorized and include the underlying processes that people use to generate those categories. If properly specified, the interacting processes, thus, can provide a dynamic platform from which researchers can both work down (disassembling) and work up (assembling).

Strategy

To envision a dynamic platform that is adequate to the task, we can't simply build upward from psychological and neuroscience research, since researchers trained in those fields are rarely aware of the complexity of the phenomena that ethnographers and historians face on the ground. Instead, we need to work downward from that complexity by reverse engineering the concept of "religion" into components that are recognizable across levels and cultures. Here the myriad definitions of religion and classical disputes over the origins and simplest form of religion familiar to scholars in the humanities and social sciences can assist rather than impede our efforts. If we do not assume – as they did – that "religion" is a thing that can be defined and has a simplest form, we can approach these debates as a rich source of components or building blocks that people use to generate phenomena that they sometimes characterize in religion-like terms.

As a first step, we can take some key definitions apart, differentiating between the basic cognitive schemas they employ and the more specific features that are used to characterize them as religious or sacred. We can set aside the basic cognitive schemas -- actions, events, paths, systems, part/whole, and so on – not because they are unimportant, but because they are already readily translatable across cultures and levels of analysis and explanation. We can then focus our attention on the features used to characterize the basic schema as religious or sacred in order to identify the underlying processes necessary to generate the features.[2]

Initial Findings

I've been working on this problem for a while (Taves, 2009, 2010, 2011, and especially, Taves 2013), so will summarize these efforts by focusing on three distinctly different definitions, which, when dismantled, can point us to three core processes that people draw upon when they perceive and categorize something as religious or sacred or occult or magical. More specifically, I will argue that, drawing inspiration from Durkheim's definition of the sacred as "things set apart and protected by taboos" as well as Tillich's definition of religion as "ultimate concern," we can overcome the vagueness of some conceptions of sacrality and identify two underlying processes: perceiving

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[2] I can distinguish what I am doing from two closely related projects. In the introduction to the new edition of the Paloutzian and Park *Handbook of the Psychology of Religion and Spirituality* (2013), the editors position religious meaning making as a subset of larger, more general processes of meaning making that operate at multiple levels in humans and other animals. These processes are not specifically religious or spiritual. In *The Believing Brain* (2012), Michael Shermer characterizes the brain as a "belief engine," which is a catchy way to refer to processes of meaning making. Like Paloutzian and Park, Shermer seeks to explain religious, magical, and superstitious beliefs as a subset of more general belief-making processes. In contrast, my goal is to tease out *the subset of meaning making processes* that people draw upon when they characterize things – whether beliefs, actions, systems, processes, feelings, etc. – in religion-like terms.

salience and appraising significance. We can use the controversies that arose in response to Tylor's minimal definition of religion as "belief in Spiritual Beings" as a basis for identifying a third underlying process: imagining, which we will consider in the dual sense of generating novelties (invention) and entering into 'pretend' worlds (pretense).

Before showing how the three processes can be teased from the specific features that characterize these three definitions, we need to analyze some definitions to show how we can distinguish generic schema from specific features.

Analysis of Definitions

Some simple definitions of religion, such as Tylor's (1873/1970) "belief in spiritual beings," identify a specific feature without attaching it to a generic process. Any "belief in" definition would be of this type, whether it referred to belief in astral planes, life after death, space aliens, or magical powers. In analyzing religious rituals, McCauley and Lawson (2002) followed Tylor's lead in defining *religious* rituals in terms of "culturally-postulated superhuman agents" (CPS-agents). They were immediately able to ground their work on ritual in cognitive processes because they defined ritual in terms of basic action structures.

Some definitions (e.g., Otto, 1923/1976) identify the distinctive feature of religion in terms of a noun, such as "the holy" and "the numinous" or "the sacred." These can be cast in attributional form by specifying what it is that someone views as holy, numinous, or sacred, that is, in the form of a person, place, or object deemed sacred. Any religion-like noun or adjective, e.g., spiritual, mystical, demonic, occult, magic, or superstition, can be recast in attributional form.

Other seemingly simple definitions, such as Paul Tillich's (1957) definition of

religion as "ultimate concern," are in the same format as "religious experience." In this case, "concern" is the generic and "ultimate" is the feature. Just as we can recast "religious experience" as experiences deemed religious (Taves, 2009), so we can recast "ultimate concerns" as "concerns people consider ultimate."

Still other definitions position the distinctive feature within a more elaborate framework. Thus, Pargament (1999, pp. 11-12) defines religion as a "search for significance in ways related to the sacred," where significance refers to "whatever people value in their lives … good or bad." Pargament distinguishes religious searches for significance from other such searches by linking them with the specific feature of "the sacred." He defines spirituality simply as "a search for the sacred." We can distinguish spiritual searches from other search based on the object of the search (the sacred).

In one of the most complex definitions, Durkheim (1912/1995, p. 44) characterized "a religion [as] a unified system of beliefs and practices relative to sacred things, that is to say, things set apart and forbidden—beliefs and practices which unite into one single moral community called a Church, all those who adhere to them." Here the generic element is "a unified system of beliefs and practices that unite all who adhere to them into a single community." It is modified by a specific feature, the sacred, which he casts in attributional form by defining the sacred as "things [people] set apart and forbid."

Finally, Paloutzian and Park (2013) characterize the psychology of religion "as a hard-to-define, probably inherently unstable, subset of the larger need to make meaning exhibited by humans and other animals." Here the generic process is meaning making and the specific features are left unspecified. They did so, because when it comes to reverse engineering religion, it is not the generic portions that are the problem. In most

cases, the generic portions rely on basic cognitive metaphors, such as SYSTEM, PART-WHOLE, PROCESS, CENTER-PERIPHERY, PATH, SCALE, which we can recognize fairly readily within and across cultures and levels of analysis (Slingerland, 2004; Taves, 2013).[3] It is specifying what is added to the generic portion in a manner that both accounts for the instability of the cultural concept and can be translated across cultures and between levels that is the challenge.

Processes

If we turn to the distinctive features, we find that many of the traditional distinctive features – the sacred, ultimate concerns, and spiritual beings – can be teased apart into more basic components or processes that are not specifically religious or religion-like. I'll take each in turn.

Salience and Significance

Durkheim has already helped us out with the sacred by defining "sacred things" as "things set apart and protected by taboos." I want to flag setting things apart as a basic process. We can think of setting apart as a behavior that generates salience.[4] Whether something is actively set apart from its neighbors or stands out for some other reason, things that are set apart do stand out and are salient. It is important, however, to

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[3] Cognitive linguists use SMALL CAPS to denote image schemas and basic (or conceptual) metaphors (Lakoff & Johnson, 1980/2003). The analysis in this section is premised on the idea that comparisons grounded in image schemas and basic metaphors that emerge through the interaction of our bodies with the physical environment provide a promising basis for setting up comparisons across times and cultures (Slingerland, 2004; Lindahl, 2011).

[4] Salience = "The protruding or jutting-out property of a physical structure; hence figuratively the prominence, conspicuousness, or striking quality of a stimulus" (Andrew M. Colman, ed. Oxford Dictionary of Psychology [3rd ed], online at www.oxfordreference.com, accessed March 2, 2013.

distinguish setting things apart from protecting their set apartness with "prohibitions and taboos." Setting something apart simply singles it out from the other things in its class. Prohibitions, however, do something more. According to Durkheim (1912/1995, pp. 36-38), the taboos in question are prohibitions against mixing the thing set apart with the things from which it has been set apart. The prohibitions create an absolute boundary between the thing and the set from which it was derived. As prohibitions against mixing, the taboos not only establish value but in this instance absolute value, insisting that the thing can no longer be compared to other things in its class. Taboos, thus, establish that the thing is not just set apart a little bit, but set apart absolutely, thus generating singularities and radical dualities. Those who honor the prohibitions convey the value of the thing, establishing and maintaining the credibility of the claims associated with it. Taboos, in other words, assert the value – in this case the absolute value – of the thing that stands out or is set apart.

This brings us to ultimate concerns. An ultimate concern is a concern that has been set apart from other concerns and marked as ultimate. As such, it is valued above all other concerns (Ferré, 1970). Prohibitions against mixing and claims of ultimacy both point to processes of valuation or appraisal, that is, to assessments of how valuable or important or significant something is. Appraisals, assessments, and processes of valuation have important entailments. First, they imply some level of decision-making or choice, whether conscious or not, and, thus, the possibility of alternatives and variability. At higher levels of awareness and conscious deliberation, appraisals take the form of attributions and claims. Second, appraisals and assessments are generally made in some sort of action framework, that is, relative to some sort of goal. They, thus, presuppose

position and point of view. I want to flag processes of valuation or appraisal as the second basic process we need to consider.

We can think of these two basic processes in terms of salience and significance. Things that are salient are attention grabbing; things that are significant are deemed *worthy of* attention.[5] Recent neuroimaging studies have distinguished between two networks that are coactivated during fMRI tasks, which they refer to as the salience and executive control networks (Seeley, Menon, Schatberg, Keller, Glover, Kenna et al., 2007; Menon and Uddin, 2010). The salience network identifies the most relevant stimuli among myriad internal and external inputs activated through a variety of processes. Input may acquire salience either through evolutionary or learning processes. The salience attached to one's own offspring, movement, faces, and novelty is rooted in evolutionary processes. At the same time, learning processes focus our attention here or there in order to become skilled at various things. Strong emotions are also highly salient and inputs are generally more salient if they are infused with strong emotion.

However they are generated, once something has grabbed our attention, we make an appraisal – asking consciously or unconsciously: What is it? How much does it matter? Do I need to act? The executive-control network operates on identified salience, "directing attention to pertinent stimuli as behavioral choices are weighted against shifting conditions, background homeostatic demands, and context" (Seeley, Menon, Schatberg, Keller, Glover, Kenna et al. 2007, 2354). Based on neuroimaging evidence,

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[5] The Oxford US English Dictionary defines significance as "the quality of being worthy of attention; importance." Online at http://oxforddictionaries.com/definition/american_english/significance, accessed March 2, 2013.

Seitz, Franz, & Azari (2009) suggest that "the medial frontal cortex … play[s] a critical role in linking the subjective valuation of percepts to the self-control of behavior."

In addition to assessing value, I am also suggesting that appraisal includes assigning things to categories. This may be a fast, intuitive process based on ontological folk categories that are presumably pan-human – animates, objects, persons, etc. – or it may involve learned cultural distinctions as, for example, between religion, magic, legend, and superstition or between art, literature, drama, and religion. These processes operate at various levels within and between individuals and groups. Both evolution and learning shape what people find salient and significant and I think we can presume that these processes interact in complicated ways at various levels.

Imagination: Inventing and Pretending

The idea of "spiritual beings" as the distinctive feature of religion has a robust history and many scholars in religious studies, anthropology, and sociology continue to adopt an animistic style definition, stipulating what they mean by religion in terms of spiritual beings (Spiro, 1966) or some variant thereof (Atran, 2002; Barrett, 1999, 2004; Boyer, 2001; Kirkpatrick, 2005; McCauley, 2011; Pyysiäinen, 2009). Despite its continued popularity, the idea that religion at its most basic should be defined in terms of gods and higher powers was widely rejected by early twentieth-century anthropologists and sociologists who felt that Tylor's (1873/1970) minimal definition of religion as "the belief in spiritual beings" was not minimal enough. Thus, the British anthropologist R. R. Marett (1914), the French sociologists Henri Hubert and Marcel Mauss (1904), the German sociologist Max Weber (1922), and the Dutch phenomenologist Gerhard van der Leeuw (1937) all argued that a belief in spiritual beings was premised on and, thus, could

be derived from a more fundamental *pre-animistic* belief in impersonal power, which they variously labeled as "mana" (Marett, Hubert & Mauss), "charisma" (Weber), or simply "Power" (van der Leeuw). Though they recognized that this sort of impersonal power was often characterized as magical, they nonetheless argued that religion (Marett, Weber, van der Leeuw) or the sacred (Hubert & Mauss) in its most basic form was rooted in power of this sort.

Durkheim (1914/1995, p. 202) agreed that religion should not be defined "by the idea of mystical personalities, gods, or spirits." Instead, noting the convergence of views on this point, he argued, "at the origin and basis of religious thought, we find not definite and distinct objects or beings that in themselves possess sacredness but indefinite powers and anonymous forces" (p. 202). All these thinkers, thus, agreed on several key points: (1) what we think of as religion and magic are derived from a religio-magical matrix of impersonal power; (2) this power can be attributed to anything animate and inanimate, natural and human-made; and (3) the powers in question are not ordinary powers, but powers that people perceive as non-ordinary, extraordinary, or special and, thus, add something unusual to the thing in question.[6]

Durkheim, however, took the belief in "quasi-divine" impersonal powers in a new direction. In contrast to Tylor (1873/1970), who theorized that people came to believe in souls and spirits through reflection on the differences between the living and the dead and

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[6] Minimally, what is added can be characterized in terms of the additional layers of meaning that Bellah (2011, p. 8) and others attribute to symbols, such that "even in the midst of daily life … something ordinary becomes extraordinary." In the context of Weber's action oriented sociology, this added dimension also *affords* something beyond the ordinary in a behavioral sense. For an attempt to specify this in terms of an ecological psychology of affordances, see Taves (in press). This note and portions of this and the previous paragraph were taken from Taves (2013).

the mental states associated with waking, sleep, and dreams, Durkheim (1914/1995) linked these powers to representations that become highly charged in the context of collective or group activities (collective effervescence). Theorizing that the "quasi-divine" powers in question were those that groups exert over individuals, he suggested that representations that express these collective influences have a "certain psychic energy" that distinguish them from more ordinary representations (pp. 207-209). The upshot in Durkheim's view was "two sorts of representations [that] form two kinds of mental state, and … are as separate and distinct as the two forms of life to which they correspond" (p. 214). As a result, he argued, "we feel as though we are in touch with two distinct sorts of reality with a clear line of demarcation between them: the world of profane things on one side, the world of sacred things on the other" (p. 214). Where theorists, such as van der Leeuw and Weber explored the range of ways that people attach non-ordinary powers to all kinds of things, including deities, the Durkheimian tradition explored the way that people generated and entered into non-ordinary worlds or realities.

The difference between the two definitional traditions corresponds to two different aspects of imagination: inventiveness, the capacity to generate novelty in response to different environmental circumstances, and pretense, the ability to operate mentally in a 'pretend' world (Whiten and Suddendorf, 2007, see also Bloch 2008). In discussing the evolutionary roots of imagination, Whiten and Suddendorf (p. 34) suggest that "inventiveness is the broader phenomenon, with pretense a more rarefied subcategory." They present evidence that inventiveness is widespread in animals, although primates and in particular great apes stand out in this regard. Pretense, however, depends on the ability to hold two representations in mind at once (primary and

secondary), the latter "specifically marked as 'pretend' and thus 'decoupled' … from the constraints involved in primary, faithful representations of reality" (p. 35). The capacity to entertain "multiple psychological models, rather than the single primary model of reality" gives rise to a range of cognitive capacities limited to great apes and humans (p. 35). The combination of inventiveness and pretense, Whiten and Suddendorf speculate, had "striking and beneficial behavioural outcomes" in relation to problem solving and maneuvering unpredictably in competitive social situations.

Here I want to highlight the connections between inventiveness and non-ordinary powers, on the one hand, and pretense and non-ordinary worlds, on the other. Inventiveness is a source of novelties. We can think of novelties as stimuli that violate our ordinary expectations. Novelties may do so by blending elements from different ontological categories (i.e., our presumably cross-culturally stable templates for objects, animates, persons, etc.) and/or blending elements from different cultural schema (for an overview of this literature, see Purzycki, 2010).[7] While novelties are presumably attention grabbing to some degree simply by virtue of being novel, they likely attract more attention when they are emotion-laden (Purzycki, 2010).

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[7] This paragraph adopts Purzycki's distinction between violations at the ontological or "template-level" and at the schematic level. His distinction parallels the distinction between "counterintuitive" (violations at the ontological level) and "counterschematic" (violations at the schematic level) noted in Hornbeck and Barrett (2013) and discussed below. In referring to ontological violations as violations at the template level, Purzycki is able to characterize violations at both template and schematic levels as "counter-intuitive" from the point of view of subjects. Although this use of the term may initially be confusing to those used to referring to MCI concepts, Purzycki's distinctions overcome the technical, albeit (schematically) counterintuitive use of the term "counterintuitive" in discussions of ontological or template level violations that has often confused those unfamiliar with the more limited, technical meaning of MCI.

Non-ordinary powers also violate ordinary expectations. People can ascribe non-ordinary powers to both ordinary and non-ordinary things. Amulets and relics are ordinary objects to which people ascribe non ordinary powers; deities are non-ordinary agents to whom people ascribe non-ordinary powers (the ability to read minds, bring matter to life, etc.).   When people view things as having non-ordinary powers, people envision them as having the power to effect what is happening or what will happen. We can think of these additional features as affordances (Taves in press). When these powers are perceived as non-ordinary, people view them as effecting things in non-ordinary ways. These non-ordinary powers can be conceptualized culturally as magical, religious, supernatural, occult, spiritual, etc. People may claim to perceive them at work in this world or may limit their action to other worlds that they may view as real or imaginary.

In contrast, pretense enables people to generate non-ordinary worlds. Pretend play allows humans to enter into specially marked spaces in which we co-create alternative realms and bind ourselves by agreed-upon rules specific to that space (Leslie, 1994). Some researchers speculate that pretend play is the context in which children first practice the skills that prepare them to negotiate complex cultural institutions (Rakoczy, 2008). In making up the rules that govern pretend play, young humans learn that specific rules govern particular spheres of activity and, by extension, how to play by the rules that govern particular cultural activities, institutions and domains. In the process of learning the rules that govern different activities, children implicitly learn to categorize representations by associating them with various cultural domains and ascribe differing values to them based on cultural criteria that operate within and between domains.

These definitional traditions, when teased apart, suggest three core processes that link cognition and culture and that, taken together, may be sufficient to account for the instability of a complex cultural concept such as religion. The three core processes are processes of imagination, which allow us to generate both novelties and alternate realities; process of setting apart, which single out some things as more salient than others; and processes of valuation, which assess their significance and oftentimes rank and order them. The three processes, considered individually, are not enough to account for the things that people tend to view as sacred, religious, magical, occult, and so on. Taken together they do not uniquely specify anything as religious or sacred or occult or magical. Instead, I am proposing that people draw upon these three core processes when they perceive and categorize things of this sort (the sort we think of as "religion-like") and that we (as researchers) can examine the interaction of these core processes at multiple levels from the neurological to the sociological to better understand how and why they perceive and categorize as they do.

Discussion

With these distinctions in mind, I'd now like to consider some central work in the cognitive science of religion (CSR) in order to get a clearer sense of what it has and has not accomplished and to illustrate how the processes I have just identified might help us to refine their work so that we can reduce downward and reassemble upward with more facility. CSR, as defined by Barrett (2011, 2013b) and McCauley and Cohen (2010), is primarily interested in identifying and explaining "how pan-cultural features of human minds … inform and constrain religious thought and action" (Barrett 2011, p. 230). Most CSR researchers are aware of the problems surrounding attempts to define religion and

have tended to sidestep the problem by focusing on beliefs or practices, such as those related to deities, that are both widely considered religious, widely disseminated, and, thus, potentially pan-cultural (Barrett, 2011, p. 232). In conceptualizing deities and other culturally postulated superhuman agents as (minimally) counter-intuitive, CSR researchers situated them within a larger class of representations that involve violations of pan-cultural ontological categories and offered a theory, based on the presumed memorability of such representations (Sperber, 1996), to explain why such concepts are so widely disseminated (Barrett, 1999, 2004; Boyer, 2001; Atran, 2002). Researchers have devoted considerable effort to refining and testing the hypothesis that MCI concepts are more salient and memorable than those that are more or less so, with mixed results (for reviews, see Barrett, 2008; Hornbeck & Barrett, 2013).

We can make several observations about this research. First, it has focused on pan-cultural features of human minds on the assumption that greater understanding of pan-cultural features is a prerequisite for understanding cultural differences. They have been analyzing downward in an attempt to decompose "religion." To account for the richness and complexity of what we see on the ground historically and ethnographically, we have to see if we can reassemble the parts into recognizable wholes. In this regard, we should note that in focusing on concepts that presumably violate pan-cultural expectations, they explicitly set aside research on concepts, sometimes referred to as counterschematic, that violate cultural or idiosyncratic expectations (Barrett, 2008; Hornbeck & Barrett, 2012). Other researchers, however, are focusing on the interplay between violations at the ontological (or template) and cultural (or schematic) levels

(Purzycki, 2010). Analysis of the interplay between concepts at these levels concepts promises to provide us with a better understanding of how cultural differences emerge.

Second, given their concern with explaining the *prevalence* of belief in deities, CSR research has focused on the presumed salience and memorability of MCI concepts, rather than with their generation (but note De Cruz, 2013; Guthrie, 1993). In keeping with this emphasis, MCI concepts are defined as "violations of cognitive expectations [with respect to ontological kinds]" (Barrett, 2004; Boyer, 2001; Lindeman and Svedholm, 2012). If we shift our focus to the processes whereby such concepts are generated, we could consider these violations in light of research on novelty, creativity, and inventiveness (De Cruz, 2013). From that vantage point, MCI concepts could equally well be characterized as novel conceptual *blends*, in keeping with work in cognitive linguistics (Fauconnier and Turner, 2002; Turner, 2007), rather than violations. Again, combining these lines of research, as many are already beginning to do (Slingerland, 2008), would allow us to reassemble as well as disassemble.

Third, as those who raised the Mickey Mouse (Atran, 2002; Atran & Norenzayan, 2004) and the Zeus Problems (Gervais & Henrich, 2010) pointed out, counter-intuitiveness doesn't explain why people believe in God but do not believe in equally counterintuitive figures, such as Mickey Mouse or Zeus. In the terms I've been using, the CSR research has focused on salience and memorability rather than significance. Credibility enhancing displays (Henrich, 2009; Gervais, Willard, Norenzayan, & Henrich, 2011) are an important means of signaling significance, but there are other dynamics at work as well. We not only need to ask why people believe in God but not Zeus, we need to understand why most North Americans put Mickey Mouse in the cartoon category,

Zeus in the myth category, and God in the real religion category. The underlying issue has to do with classifying and categorizing. How do we learn to distinguish, classify, and categorize things? Here I think the research on imagination as pretense has great potential to help us understand how we elaborate, distinguish, and then assign representations to various worlds, realities, and/or cultural domains (Tooby & Cosmides, 2001; Bulbulia, 2009).

To elaborate on this point briefly, we make distinctions in our culture between music, visual art, fiction, poetry, religion, and popular culture that other more traditional cultures do not (Bloch, 2008). Different rules and expectations govern these different cultural domains (Rakoczy, 2008), which we learn – along with our parents' attitudes toward them -- as we grow up. North American kids come to understand the status and significance of Mickey Mouse while watching cartoons on Saturday morning, Zeus while reading Greek mythology in school, and God while addressing God in prayer and devotion with others. At some level, conscious or unconscious, we appraise the more salient representations and fit them into categories (art, fiction, poetry, magic, religion) and, in doing so we implicitly weight them with distinct meaning and value for action in different cultural domains. Mickey Mouse is good for entertainment; Zeus is good for expanding our understanding of other cultures; God loves us and can be called upon in times of trouble. This is just one example. We can ask similar questions about concepts of immaterial identity, such as mind, spirit, and soul, within and between cultures (Roazzi, Nyhof & Johnson, 2013).

This suggests that the interplay between salience and significance does two things: determines the transmissibility of imaginative productions and differentiates and

stabilizes the imaginative productions within disparate cultural domains. In so far as researchers are interested in imaginative representations that people believe in, then the representations cannot simply be specified on the basis of objective properties, but must take into account people's subjective appraisals of them, whether conscious or not. We can extend this approach beyond imaginative representations that people *believe in* to those they claim to *experience*. Within traditions of belief people frequently make a distinction between those who simply profess belief and those who claim to have actually experienced that which they believe, whether salvation, god, or enlightenment. While the emergence of belief in and commitment to particular representations draws heavily on implicit learning processes, experiencing particular representations often relies heavily on more explicit, conscious processes as well. Thus, we can examine explicit learning process in which people cultivate experiences that they learn to associate with the representations (Lester, 2005; Luhrmann, 2012; Halloy & Naumescu, 2012) and processes whereby people explicitly reflect on and attempt to make sense of seemingly spontaneous experiences (Taves, in preparation). Recent work on natural pedagogy suggests a larger framework within which we can situate credibility enhancing displays and other forms of implicit learning involved in generating belief in and experience of imaginative representations (see Appendix).

Finally, we need to confront what I will call the Magic Problem. This issue surfaces in relation to claims regarding the naturalness of religion, which CSR researchers have advanced based on the ease with which children understand MCI concepts (Barrett, 2004, 2013a; Boyer, 2001; McCauley, 2011). CSR researchers have made little note, however, of the overlap between their arguments and those advanced for

the naturalness of magic and superstition (Bloom, 2010; Hood, 2008; Subbotsky, 2010). Even Sorensen's (2007) cognitive theory of magic, which links magic with novelty and argues that "magic plays a pivotal role in the development of all religious institutions and traditions" (pp. 3-4), upholds the value of the distinction without making a serious case for doing so. Like the Mickey Mouse and Zeus Problems, which prodded us to figure out how we learn to distinguish between different MCI agents, the Magic Problem challenges us to consider the seemingly similar claims made for the developmental naturalness of belief in religion, magic, and the paranormal.

In psychology, the theoretical difficulties created by the largely uncritical use of the terms paranormal, supernatural, superstitious, and magical by psychologists has been brought out in a recent meta-analysis of articles bearing those terms in their titles published in peer-reviewed psychology journals between 1990 and 2011. When they compared the actual object of study with the terms used to characterize the beliefs, Lindeman and Svedholm (2012) found extensive overlap in beliefs studied under these different rubrics. Although they found some slight differences in "the usage of the four concepts, [these differences, in their view] reflected the etymological histories of the concepts more than any theoretical underpinnings." The differences in usage, in other words, largely reflected the connotations embedded in the cultural concepts rather than phenomenological differences between the types of beliefs examined under the various headings, leading them to conclude that "the concepts denote the same thing." The largely independent lines of research associated with each of these terms has, in their

words, "maintained conceptual confusion and hindered us from advancing our understanding of the psychology of the beliefs."[8]

Subbotsky (2010, p. 5), whose psychological work on the naturalness of magic is not much discussed in CSR circles, argues that magical beliefs share two common features that should sound familiar to CSR researchers: "they violate physical causality and our intuitive expectations about objects, people, and animals." Subbotsky's definition of magic is premised on two broad forms of non-ordinary power: mind-over-matter and mind-over-mind. When we think about such powers in our culture, we usually think about them in relation to human minds, in which context we generally think of them as magical or paranormal. If following Subbotsky, we note that we also attribute these same powers to gods, spirits, and comic book heroes, but refer to the powers in those contexts as supernatural or superhuman, then the magic-religion distinction starts to dissolve.

In short, in many cases, terminological differences reflect embedded appraisal processes and, thus, tell us more about the point of view of the subject than that to which they refer. Thus, people tend to characterize the nonordinary powers that they attribute to their god(s) as religious, those that others attribute to their gods as idolatrous, and those that others attribute to themselves or other humans as paranormal or magical. Similarly

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[8] Lindeman and Svedholm suggest limiting the scope of PSMS beliefs to the violation of core knowledge categories, that is, the blurring of distinctions between categories of physical, biological, and psychological phenomena. Although I applaud Lindeman and Svedholm's efforts to consolidate disparate lines of research under a common theoretical rubric, I fear that in proposing the term "PSMS beliefs" and limiting its scope to confusions of core knowledge (p. 245) they are stipulating a definition of PSMS beliefs that will further contribute to the confusion they want to overcome by utilizing culturally laden terminology at the psychological level. Instead, we can simply refer to the beliefs in question as violations or imaginative blends of core knowledge. Doing so leaves the culturally laden terminology at the cultural level and allows us to investigate the blending of core knowledge domains at the psychological level without the added cultural baggage.

we refer to objects that we believe possess nonordinary powers as sacred objects and those that others believe have such powers as fetishes or placebos. We refer to actions or places that we associate with nonordinary powers as sacred and those that others associate with such powers as superstitions. These distinctions, in other words, often result from appraisal processes rather than meaningful scientific differences.

Research on natural pedagogy not only provides a potential framework within which to account for cultural differences in belief and experience, it may also help resolve the magic problem. If, as this research suggests, fast learning processes trigger assumptions about the communicator (the "pedagogue") that reflective adults and older children view as super-human, then this tendency may inform the attribution of such non-ordinary powers to deities and others, whether the powers are characterized as supernatural, magical, or paranormal (see Appendix).

Conclusion

In identifying three core processes – imagining hypotheticals, perceiving salience, and appraising significance -- that link cognition and culture and that, taken together, may be sufficient to account for the instability of a cultural concept such as religion, it has become apparent that what are often viewed as the distinctive features of "religion," e.g. supernatural beings and transcendent realms, fall under the heading of imagining hypotheticals. If, as I am suggesting, imaginative processes allow humans to generate myriad novel blends that violate ordinary expectations at both the template and schematic levels, then the importance of first perceiving such blends as salient and, if noticed, then appraising their significance is evident.

In so far as a complex cultural concept, such as "religion," is generated through

the interaction of processes, we can also see why traditional attempts to identify the distinctive features of religion have been misleading. If our goal is to develop a mechanistic explanation of a particular phenomenon, it is more crucial, as Bechtel and Richardson (2010, p. 39) point out, to identify the system that is responsible for producing that effect. This is what they refer to as "the locus of control," that is, "a system or a component of a system that carries out the processes relevant to realize the effect." The quest for distinctive features of "religion" has led to a focus on *what is imagined* rather than the processes that give rise to non-ordinary representations that are believed-in and/or experienced as real. I am suggesting that it is the interplay between salience and significance that provides the locus of control that differentiates and stabilizes the products of the imagination into these disparate cultural domains, thus, allowing us to generate complex cultural concepts, such as "religion."

In identifying these three processes, I sought terms that I think bridge reasonably well between cognition and culture. From a cognitive perspective, the processes are still too broad. Each encompasses a variety of disparate mechanisms that can and should be distinguished by those seeking to work downward. For those who work at the historical or ethnographic level, these processes are very generic and need to be instantiated in particulars. This intermediate level, however, allows us to build theory that can account for both the distinctive features and the instability of that which we refer to as "religion."

Appendix: Excursus on Natural Pedagogy

Research on natural pedagogy (Gergely, Egyed, & Kiraly, 2007; Csibra & Gergely 2009) may allow us to integrate several lines of research into a common framework, simultaneously helping us to understand the emergence of cultural differences and the mechanism underlying the apparent naturalness of belief in supernatural powers. NP, like the more common theory of mind approach, explains triadic communicative interactions between adults, infants, and novel objects. In contrast to the theory of mind approach, which postulates that infants learn to interpret adult's subjective mental states with respect to the object, Gergely, Egyed, & Kiraly (2007) offer experimental evidence to suggest that ostensive cues signal the adult's communicative intent and in doing so trigger a set of built in assumptions that have evolved to facilitate the rapid assimilation of vast amounts of cultural knowledge. The ostensive cues include eye contact, eyebrow raising, turn-taking, motherese, and being addressed by name. These cues signal the communicator's intent to "manifest new and relevant information 'for' them to acquire" about an object identified by "non-verbal referential cues (such as gaze direction or pointing)." Ostensive cues signal that the new information is to be connected to the object as an "essential property" (Gergely, Egyed, & Kiraly, 2007, 140). Credibility displays, in so far as they involve ostensive cuing, would also presumably convey the essential properties that the child is expected to connect with particular representations and practices, thus teaching them how to assess and categorize them.

Ostensive cuing triggers a number of assumptions in the learner that enable learners to absorb new cultural information quickly. Gergely, Egyed, & Kiraly spell these assumptions out in very academic language. We can paraphrase the assumptions as

follows: *This is a teaching event. Your focus should be on the object (not on me). You can trust me. I am "a benevolent, cooperative and reliable source of cultural information." What I will show you is relevant / important. You can just take it in without worrying about testing it or scrutinizing it. What you learn about the object is generalizable. Every knowledgeable person agrees.* Given this grand set of default assumptions, an NP perspective predicts that much of early social-cognitive development has to do with gaining "a realistic understanding of other minds" (Gergely, Egyed, & Kiraly, 2007, p. 145). Acquiring this more realistic understanding "involves learning about the specific conditions under which the build-in default assumption of universal knowledge and omniscient other minds must be suspended or inhibited."

This theoretical approach, if borne out experimentally, has important implications for how we learn about "other minds" and what we assume about the minds that trigger our natural pedagogical defaults. With respect to learning about other minds, NP suggests that we start with the assumption that all (knowledgeable) minds are the same, all (knowledgeable) minds agree, and knowledge is not perspectival. Gradually we learn through culturally varied experiences that minds differ, everyone does not agree, and people have different perspectives. But given differences in cultures and families, how and when we sort these things out is bound to differ. The assumptions we bring to those who trigger these pedagogical defaults – we can call them pedagogues – are also interesting. NP suggests that children's default assumption is that pedagogues have access to universal knowledge that is shared by all knowledgeable minds. We gradually learn through experience that not all pedagogues are equally reliable, informed, and well intentioned. We gradually learn, in other words, that most human pedagogues do not in

fact have access to universal knowledge shared by all knowledgeable minds.

Like other fast processing defaults, this default process most likely continues to inform much adult learning. We know from our own experience as teachers and learners how hard it is to develop slower, more labor intensive critical thinking processes and that even the most proficient critical thinkers continue to rely on fast processing for much of the cultural information they absorb. Among adults, NP may well provide a framework for explaining placebo, hypnotic, and what we might call guru effects, each of which involves a pedagogue (the doctor, the hypnotist, or the guru), a learner (the patient, the hypnotic subject, and the follower), and an "believed-in object" (the placebo, the hypnotic perception, or religious teachings).

NP not only provides a framework within which we can account for individual and cultural differences with respect to belief and experience, but also has the potential to solve the Magic Problem. We can see the overlap between "religion" and "magic" more clearly if we look at Subbotsky's list of magical beliefs alongside the religious beliefs to which children are biased. Viewed in tandem, Keleman's promiscuous teleology (Kelemen, 1999a,b) and Barrett's bias toward purposeful design (Barrett & Richert, 2003; Barrett, 2013), in so far as they are linked to a deity, rest on the belief that the deity has powers of "mind-over-matter" (i.e., the power to direct things toward a goal or think them into existence) that Subbotsky views as the core of magical thinking. Similarly, we find that Subbotsky considers animates that know everything, can see in people's minds, and attend to all tasks at once as "magical animate entities." Barrett and Richert (2003) view children's recognition that God and "special agents" know more than humans as a reflection of children's bias toward overestimating the information to which minds have

access. "Children begin reasoning about God, people, animals, ghosts, and other intentional beings using a flexible and general intentional agent concept that includes many default values that more closely approximate some theological notions of God than mature understandings of humans" (p. 310). They suggest that this "prepares" children to believe in God in contexts where God is culturally relevant. Rather than suggesting that children's minds are prepared to believe in God or in magical powers of mind, the apparent naturalness of belief in non-ordinary powers may arise from default assumptions about trusted pedagogues that older children and adults view as superhuman.

If this is the case, we may be able to subsume the processes through which children learn to distinguish between God and other nonphysical beings (Barrett, 2013), ordinary and magical reality (Subbotsky), and sensory and extra-sensory perceptions under a general process in which default assumptions about omniscient other minds are activated through natural pedagogy or suspended or inhibited through critical thinking and cultural learning. In light of this research, we may need to refine our folk ontology of persons to include a subcategory of "pedagogues," those who from a fast processing perspective are trustworthy sources of generalizable, universal knowledge.

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