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Religion in the History of European Culture.
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In this issue of «Historia Religionum» are published, thanks to the availability of Prof. Giulia Sfameni Gasparro, head of his organization, the talks given in the Plenary Sessions of the 9th EASR Annual Conference, held in Messina from 14 to 17 September 2009.
TOO MUCH MIND AND NOT ENOUGH BRAIN,
BODY AND CULTURE.
ON WHAT NEEDS TO BE DONE
IN THE COGNITIVE SCIENCE OF RELIGION

Armin W. Geertz

This article is based on work conducted at a research unit that I head at Aarhus University called Religion, Cognition and Culture (rcc). It was originally designated as a special research area by the Faculty of Theology at the University and has since been integrated as a full-fledged research unit in the Department of the Study of Religion. In a recent statement by the rcc, we claim that humans are simultaneously biological and cultural beings. In all of hominin history, human biology and culture have never been separate. Each newborn infant is both unfinished and uniquely equipped, biologically and cognitively organized to flourish in socio-cultural environments that its genes could never anticipate. So a perspective on minds not limited to brains is required. Thus we must approach cognition as embodied and distributed. We must analyze religion by studying the functional organization of the human brain, its interaction with the social and cultural worlds that it inhabits and modifies, and its developmental constraints and flexibility. The rcc is a European institution, obviously. It differs in its approach to cognition from the few institutions in the United States, England and Northern Ireland that deal with cognition and religion. Whereas the rcc is similar in approach to other European initiatives such as the cognition group in Groningen and the research project in Helsinki. Therefore it could be claimed that our programmatic insistence on causal links between religion, cognition and culture is a peculiarly European approach. In the following, I will explain how the cognitive science of religion can become more relevant to the comparative study of religion and to cutting-edge cognitive science by following this European approach.

Introduction

The recent success of and growing interest in the cognitive science of religion (CSR) indicates that it has a lot of potential not only for the comparative study of religion but also for the cognitive neurosciences. Despite these successes, we should not be blind to the fact that a number of challenges must be overcome in order to ensure future growth in the field. My own list of challenges, idiosyncratic as it may be, looks like this:

- accommodating current breakthroughs in the social neurosciences;

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1 This article is a highly edited version of my keynote lecture presented at the EASR meeting in Messina in 2009 entitled Religion, Cognition and Culture: A European Idea?

2 The rcc is closely integrated with the university-wide conglomerate in Aarhus, known as MindLab, as well as the Center for Functionally Integrative Neuroscience (CFIN), and the Cognition, Communication, and Culture (CCC) network, all consisting of researchers from the humanities, social sciences, natural sciences, health sciences, the university hospitals and the psychiatric hospital.
– bringing deficient methodological paradigms to terms with cutting edge philosophy of science;
– obtaining both cross-cultural and ecological validity of current psychological hypotheses;
– broadening perspectives and theories to accommodate the accumulated knowledge and breakthroughs in the comparative study of religion;
– broadening perspectives and theories to accommodate the accumulated knowledge and breakthroughs in semiotics, history, literature and linguistics;
– recruiting young scholars, especially women scholars, and encouraging exchange between the few cognitive science of religion centers and research units that exist in the world.

In a word, current cognitive science of religion is too much mind and not enough brain, body and culture. It is swiftly becoming esoteric in the sense that many studies are coming out now which are exclusively and narrowly concerned with proving the hypotheses of an earlier generation of CSR pioneers and are thus failing to pay attention to current trends in cognate sciences. A significant portion of the CSR is caught in a limbo, as it were, of its own choosing, by methodologically ignoring neural correlates on the one hand and cultural constraints on the other. Thus, many of its results are disembodied, disembrained and disenculturated.

I am firmly convinced, however, that we need more scholars of religion to participate in the cognitive science of religion. If we don’t, then psychologists, anthropologists and neurologists will do it for us. I, for one, am not satisfied with simply ignoring the challenges that the cognitive sciences present to the comparative study of religion. Our colleagues in the cognitive science of religion deserve a much more qualified response than they have been getting from some quarters.

Unfortunately, research on this perhaps most important aspect of the study of religion is seriously hampered on all sides for a variety of reasons. What one would assume to be the closest and most relevant discipline in the study of human cognition, namely psychology, has been of little assistance. Either religion is not considered to be a serious area of research or those who do pursue the psychology of religion often do so for religious or spiritual reasons which clearly influence the kinds of questions asked, the people studied and the conclusions drawn. Furthermore, the results are based on American and, when comparative, European,

mainly Christian and Judaic, populations. And, as Henrich and colleagues’ humorous title indicates, these are simply the WEIRDest people in the world (Western, Educated, Industrialized, Rich and Democratic).

On the other hand, cultural psychology and the social psychology of culture are still somewhat new, and their results, interesting as they are, do not address religion. Similarly, our anthropological colleagues who are interested in psychology (not counting cognitive anthropologists here because they are central actors in the CSR) are often not interested in religion. There are exceptions of course, such as the anthology on learning religion indicates.

The psychological discipline that comes closest to the interests and goals of the CSR calls itself the « empirical psychology of religion ». These studies tell us a lot about religious psychology, although oftentimes hampered by exclusive emphasis on American populations. Attempts are being made, however, to expand experimental populations to non-Western areas. These attempts have their problems, too, such as the exaggerated stereotyping of « Western » and « Eastern » psychologies.

In the cognitive sciences, there is little interest in religion. A growing interest, however, is occurring in the neurosciences. There are many problems with most of these studies. First, neuroscientists have a tendency to assume that religious thinking and behavior are monolithic. Their generalizations, furthermore, are often based on their own particular religious background or on the American context. A significant number of neurologists studying religion are often driven by a desire to find special areas of the brain dedicated to religious thought and behavior. These scientists clearly have religious or spiritual agendas. Often, one finds attempts at objectivity in their scientific articles, but these are blatantly offset by popularizing books claiming secure knowledge about the brain and religion, for which there is, of course, no empirical backing. A clear example of this is Andrew Newberg. Comparing his balanced and objective chapter Religious and spiritual practices: A neurochemical perspective with his

recent book *How God Changes Your Brain*, it is clear that in the latter, Newberg is pondering to the pop spiritual market in the U.S. Finally, many of the neurological studies are poorly designed and/or are based on such small numbers of participants that the results can at best only tell us something about those particular participants.

During the past few years, neurological studies on religion have increased significantly. Interesting as they may be, there are very few scholars of religion involved in them. There are never the less quite a number of interesting studies worthy of our attention.

It is quite clear from studies not restricted to religious ideas and behavior, that human cognition is embodied, embrained and encultured – deeply so on all three

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Thus the putative cognitive constraints, systems and domains proclaimed by many CSR researchers have a peculiar or even metaphysical ring to them. Is HADD, for instance, what Justin Barrett claims it to be, or are there several distinct brain processes with differing functions at play? We cannot know this until we identify the neural correlates and brain areas that might be active. There is a growing literature on the neural correlates of pattern recognition, theory of mind and movement response, which must be taken into consideration before the HADD hypothesis can be adequately tested. But even if we are more or less sure about the neural correlates, it cannot be said that we have discovered task-specific or dedicated systems. This is because brain regions are multi-purpose and the only proven modules of the brain are dedicated to the sensory-motor system.

Furthermore, what cultural mechanisms are involved in transforming these brain activations into ideas about religiously significant supernatural beings? Since Barrett’s research relies heavily on Pascal Boyer’s work, there is no clear answer to this question. Boyer speaks of the Mickey Mouse problem, but he has not solved it. He simply states that God is more important than Mickey Mouse because he is a strategic agent, which explains nothing much especially when the causal role of culture in cognition is methodologically denied, as in Boyer’s case.

Just because the standard cognitive science of religion is too mentalistic, computational, scientific, ahistorical and culture-blind does not mean that we should give it up. The standard study of religion is hardly any better, but we keep plodding away at it nonetheless. Our field is too textualistic, culturalistic, anti-scientific, anti-theoretical, mind blind and covertly speculative. Much of the history of the study of religion is also esoteric. It has often thrived on unenlightened notions of science and the scientific process of discovery. Furthermore, many scholars of religion ignore humans. They are more often interested in religious ideas and religious rituals, but not in what motivates people to think and act as they do in their everyday lives, as well as in ritual circumstances. It is simply assumed that they are motivated by religious intentions. But in order to understand human motivation, you need to understand human psychology and cognition. I am afraid that without the cognitive science of religion as a legitimate and important part of the general and comparative study of religion, then the comparative study of religion will remain a half science.

People feel, think, act and symbolize. Pascal Boyer noted succinctly in his first book *Tradition as Truth and Communication* that scientific disciplines dealing with cultural traditions need strong psychological hypotheses before they can compe-

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tently deal with tradition and the transmission of tradition.\(^1\) It strikes me as self-evident that the ideal approach is a combination of psychological, neurobiological and socio-cultural theories, methods and hypotheses. Furthermore, there are very good reasons for scholars of religion to take the lead. As I wrote in my contribution to the Online Conference on Religious Studies hosted by the Moscow Society for the Study of Religions, 2008:

If we don’t take up the challenge, then the cognitive science of religion will be run exclusively by neurologists (many of whom are asking for help from the human sciences), psychiatrists (with many disturbing and important observations), experimental psychologists (with interesting results in their dealings with people), anthropologists (our friendly competitors in the comparative study of religions), and philosophers (challenging us on our methodological ploys and theoretical assumptions). Furthermore, we will be leaving by default all the hard work of writing popularizing literature on this extremely important topic to authors like Daniel Dennett and Richard Dawkins (with the result that people who don’t like them, won’t like us either).\(^2\)

\section*{A better understanding of cognition}

The csr pioneers understand cognition as being more or less exclusively a mental phenomenon. Lawson & McCauley\(^3\) as well as Boyer\(^4\) are concerned with cognitive representations and how they are reproduced. Boyer speaks of cognitive constraints, intuitive domains and counterintuitive concepts. Whitehouse bases his work on types of memory and the role they play in cognitive representations.\(^5\) Dan Sperber in his epidemiological account is concerned with two types of representations, mental representations and public representations.\(^6\) Justin Barrett in some of his work, is concerned with counterintuitive representations or concepts.\(^7\)

As Paul Thagard has shown, there are six competing approaches to cognition

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that are based on computer analogies of the brain.¹ These ideas are based on
the «physical symbol system hypothesis» in artificial intelligence research which
basically assumes that the brain is analogous to a Turing machine. The latter is
not generally held by neurologists today. As Gerald Edelman argued already in
1992, brains possess far too much individual variation at various organizational
levels to be specified in the genome. The enormous ecological and environmental
variation at play here «makes it unlikely that the world (physical and social)
could function as a tape for a Turing machine».² A second problem is the fact that
human minds are characterized by having semantic contents, i.e. of producing
meaning, and not just mechanical syntax. In drawing on Searle, Edelman argues
that meaning is interactional. The environment in this context plays a causal role
in the production of meaning. Furthermore, the body plays a causal role in the
production of meaning. In other words, nervous system response patterns «de-
pend on the individual history of each system, because it is only through interac-
tions with the world that appropriate response patterns are selected».³ Many other
neurologists have also taken issue with the cognitivist analogy of human cogni-
tion as a computer, such as Terrence W. Deacon,⁴ Chris Frith,⁵ Joaquín M. Fuster⁶
and others.

In his book The Meaning of the Body (2007), Mark Johnson rejects the philosophies
of cognition and mind that build on a mental representational theory based on
concepts and propositions. He rightly argues that our cognition is radically embod-
ied in sensorimotor processes, and so is the process of meaning-making. «Meaning», he claims, «emerges, lives, and grows […] in the bodily processes […] Embod-
ied meaning […] emerges as structures of organism-environment interactions or
transactions».⁷ In this he has strong support from the work of Lawrence Barsalou,⁸
Vittorio Gallese⁹ and many others. Johnson argues emphatically: «Without a brain,
there is no meaning. Without a living, acting body – no meaning. And without
organism-environment interaction – no meaning».¹⁰

³ Ibi, p. 226.
⁸ Barsalou, Perceptual symbol systems; Lawrence A. Barsalou, Situated simulation in the human conceptual
Olseth Solomon, Ling-Ling Wu, Perceptual simulation in conceptual tasks, in Cultural, Typological, and Psych-
pp. 209-228.
⁹ Vittorio Gallese, A neuroscientific grasp of concepts: From control to representation, «Philosophical Trans-
actions of the Royal Society of London», 358, 2003, pp. 1231-1240; Vittorio Gallese, George Lakoff, The
brain’s concepts: The role of the sensory-motor system in conceptual knowledge, «Cognitive Neuropsychology», 22,
2005, pp. 455-479.
Our interactions with the world, especially the social world, has been forcefully argued by neuropsychologist Merlin Donald:

We are culture-mongers, driven by the very nature of our awareness to seek refuge and solace in community. We connect with and learn from others to a unique degree. Symbolic thought is a by-product of this fact, and so is language. Both result from the collision of conscious minds in culture. The evolutionary origins of language are tied to the early emergence of knowledge networks, feeling networks, and memory networks, all of which form the cognitive heart of culture.1

We cannot even use our brains without the help of culture. The whole heuristic exercise, therefore, of conceiving of human cognition without culture is, as Clifford Geertz long ago pointed out, senseless:

Undirected by culture patterns – organized systems of significant symbols – man’s behavior would be virtually ungovernable, a mere chaos of pointless acts and exploding emotions, his experience virtually shapeless. Culture, the accumulated totality of such patterns, is not just an ornament of human existence but – the principal basis of its specificity – an essential condition for it.2

There is, in other words, «no such thing as a human nature independent of culture».3 We were in fact culture-mongerers long before we appeared as a species.

We need an expanded view of what cognition is all about from the brain and body to mind and culture. As I have noted earlier:

During the past decade, a paradigm based on the biological metaphor perceives human consciousness as situated in a web of neurobiological processes, cultural symbols and social mechanisms. Here, culture is indispensable to the construction of mind, the ultimate cause of which is a mixture of genetic and epigenetic factors.4

The close evolutionary interdependence between cognition and culture has been overwhelmingly argued by various scholars.5 One can rightfully argue, as Jesper Sørensen has done, that many of the so-called cognitive constraints are oftentimes cultural constraints.6

So, what do scholars of religion have to do? Based on the central role that culture

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3 Ibi, p. 49.
6 Sørensen, Religion, evolution, cit.
plays in our cognition, we need to analyze in more detail the myriad techniques that every culture and religion uses as cognitive governance systems. As I wrote elsewhere:¹

Cognitive governance systems are used to gain access to individual and collective minds and influence the way they see the world and each other. Learning how to attune oneself to these systems is the basic bread and butter of socialization. The latter involves specific techniques to interlink the infant’s attentional system with those of others.² These techniques are universal and involve a range of facial, bodily, sonic and linguistic manipulations meant to entice the child into the intricate web of the cultural scaffolding system. The point is not to download the system – no one can do this – rather to gain competence in using the cultural matrix. This learning process is transmitted through pedagogy, generation after generation, which gives the child the ability to maneuver the labyrinths of cultural meaning. As Donald argues, any nuance of gaze, gesture, tone of voice or facial expression is pregnant with meaning.³ Thus, the earliest socialization techniques are important aspects for the study of religion, including styles of nursing,⁴ touch, gaze and so on. These psychological techniques stimulate basic human abilities such as moral sensibility,⁵ social intelligence,⁶ mindsight⁷ and filling the “information gap”.⁸

Furthermore, we must reevaluate the enormous amount of narratives that we have collected during the past 170 years. We need to redirect our analyses towards social psychological themes and processes, i.e. how do narratives construct identities, whether in terms of gender, ethnicity or nationality. These same construction activities are also used to determine the identities of minorities, foreigners and peripheral categories of people. Narratives are essential in transforming virtual, religious worlds into human, social realities.⁹ It is essential, I believe, that we systematically rethink our narrative sources.¹⁰ Narratives define the world models that

² Donald, A Mind So Rare, cit., p. 255. ³ Ibi, p. 256.
⁸ Geertz, The impact of the concept of culture, cit., p. 50.
directly or indirectly govern us all. These models are not inherent, they are inherited. They might not be rational, but they are assumed to be so. They might not even be cohesive, but even that is glossed over as we try to get on in the world. Like our brains, so our cultures are busy map-makers, working industriously to merge map with territory.

In order to produce, supplement, obtain and react towards this vast matrix of emotional and semantic networks, our cognition involves a great deal of activity outside the brain. Thus cognition is situated in these networks and social relations. It is distributed through the networks and extends itself into those networks. Recent work on cognition emphasizes these characteristics. Prominent names in this line of research, known as “situated cognition”, are Edwin Hutchins, Andy Clark and Mark Rowlands. Perhaps more interesting for historians of religions is the concept of “material anchoring,” prominent in cognitive archaeology. This research argues that material objects and symbols serve as cognitive anchors for the mind thus allowing minds to do things they would not ordinarily be able to do.


1 Donald, A Mind So Rare, cit., pp. 324ff.
Scholar of religion Matthew Day picked up on this theme, arguing that «the broad spectrum of rituals, music, relics, scriptures, statues and buildings typically associated with religious traditions may be more than quaint ethnographic window dressings». Furthermore:

Rather than thin cultural wrap arounds that decorate real cognitive processes going on underneath, these elements could represent central components of the relevant machinery of religious thought. By introducing tangible features of the world that can be physically manipulated and tracked in real-time, for example, the cognitive scaffolding that religious material culture affords seems tailor-made for allowing people to exchange the intricate “off-line” problems that arise from dealing with invisible, counter-intuitive supernatural agents for the kinds of “on-line” cognitive tasks they are naturally good at doing.

We surround ourselves, he notes in reference to Donald Norman, with «things that make us smart» and that help us break the boundaries of our brains. Day contends that religious rituals can be mind tools «that functionally extend the bare Darwinian brain’s aptitudes».

Thus the cognitive science of religion needs to deal with research on materiality, location, spatial organization, social organization and systems theories.

Tools for bodies and brains

Such tools and gadgets that extend and materialize our minds and help us do things smarter and more efficiently are, however, a two-way street. Merlin Donald, for one, is concerned with the fact that our enormously powerful external memory banks have an equal and potentially destructive impact back into our minds:

... the increasing number of potential foci, the higher turnover rates of information, and the speed with which we can shift time perspectives or change our locus in the memory stream have driven our conscious capacity to the wall. He calls it our «cerebral boxing match» with culture. At any rate, the patterns that emerge in culture «dominate the cognitive universe that defines what “reality” is.»

If it was all just a question of mental procedures and innate cognitive constraints, then culture would not be such a powerful factor. The former stance ignores the fact that culture isn’t just is, it’s used. Culture is acquired through socialization techniques, imitation and deliberate pedagogy. And, as already mentioned, the techniques for learning how to master cultural matrices can also be used the other way around. There are many ways that culture with or without active human agents, can invade our minds. Active cultural agents have a tendency to enforce cognitive management styles. It’s as if it comes with the package. Anything that has the potential of entrain-
ment, attunement, conformity and control will be used by people in power for various purposes. That is perhaps why politicians and priests – much like illusion artists – must by definition be adept illusionists. They tap into our natural moral sensibilities and belief in authority. Their main instrument is sincerity. When people discover they have been duped, they become extremely, almost viscerally, angry because they have been invaded and abused, thus reminding them how truly vulnerable they are. It makes sense, however, that for a collective system to work, individuals need to voluntarily mesh and intricate themselves into it. Donald calls it «deep enculturation».

This vulnerability is not just mental or emotional. It is very physical, and that is because we more or less wear our bodies and brains on our shirtsleeves. Forgive the pun, but our nervous system is constructed as one whole system connecting outside and inside in one entity. The system is also connected to our limbic system and executive control system, thus allowing for the physical manipulation of body posture or various forms of suggestion in order to influence our emotional and mental states.¹ As I noted elsewhere:

It can be rightly claimed that the ideas, values, and desires of other people can gain access to our brains and minds through manipulations of the nervous system. Rituals are one of the most dramatic ways to manipulate bodily and mental states and thus change and direct our minds. Techniques that often are used to manipulate bodies are:

– song, dance, clapping, swaying, jumping in place, hopping;
– diverse body postures such as bowing, strutting, prostration;
– other techniques such as torture and violence in initiation rituals, vision rituals, and mysticism rituals;
– use of specific techniques for changing mental states such as smoking, alcohol, drugs, fasting, extreme movement or immobility, and photic and sonic drive techniques

Music and rhythmic movement are extremely seductive methods.² They are clearly connected to early interactions between mother and child, involving stereotypy (simplification, formalization), repetition, exaggeration and elaboration, traits which in more expanded form are central to religious rituals.³ Thus ceremonies involving such techniques tug deeply at the existential foundations of each and every individual and have the ability to arouse, shape and form emotions and mental states.⁴

Lawrence Barsalou and his team in an article entitled Embodiment in religious knowledge⁵ argue that there are three main ways in which embodiment is at play: in religious beliefs and rituals:

⁴ Geertz, Brain, body and culture, cit., in press.
In religious visions, the process of simulation offers a natural account of how these experiences are produced. In religious beliefs, knowledge about the body and the environment are typically central in religious frameworks, and are likely to affect the perception of daily experience. In religious rituals, embodiments appear central to conveying religious ideas metaphorically and to establishing them in memory.¹

Thus we need to go back to our sources and look more closely at how religions «use the body in conveying knowledge, implementing values and producing or changing mental and emotional states».² We should pay more attention in general to body functions and the senses.³ Bodies are not just metaphors in religious texts, they are real, biological entities governed by sensibilities, values, norms and institutions. The way religions treat the body are highly indicative of the systems of thought and traditional assumptions behind such behavior. Such behavior is most often so tacit that scholars must pay special attention to the literature or contrive to conduct interviews in order to gain indirect access to those tacit assumptions.

Bodies are also manipulated in healing systems. Healing systems reflect the religious worldviews in which they are anchored. The rituals that are applied during healing sessions are often a combination of a variety of techniques such as narrative therapy, suggestion and physical modulation or manipulation of the body. A key factor in such techniques is placebo.⁴ Physician Ted J. Kaptchuk even argues that alternative healing rituals are “placebo dramas”, i.e. placebo is generated through performative efficacy which relies on «the power of belief, imagination, symbols, meaning, expectation, persuasion, and self-relationship».⁵

**The brain, body and mind in religion**

Thus we come full round to Uffe Schjødt’s call for a scientifically rigorous neurobiology of religion.⁶ Not everyone can do this, but the results of such studies should prove to be important for our understanding of religions as lived, embodied, situated and distributed systems of knowledge, emotions and memory. But it requires a critical reading of the methods and paradigms of such studies.

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¹ Ibi, p. 14.
² Geertz, *Brain, body and culture*, cit., in press.
A good example of how neurobiology can help us is the work of neurologist Quinton Deeley. In his article The Religious Brain: Turning Ideas into Convictions, he argues that there are two major strategies that religious rituals employ which, in drawing inspiration from Clifford Geertz’s famous definition of religion, «convey conceptions of the world and invest them with a heightened sense of reality and emotion». These two are a sensory route and a semantic route. I will come back to these routes in a moment. His point of departure is that we act on the basis of our assumptions, beliefs and convictions. These convictions have enormous power, but where do they come from? Surely, powerful convictions are not solely the result of conceptualization? There are two systems at play when convictions and salience are present: the limbic system and the monoaminergic systems. The limbic system is the essential foundation of our emotional and social competencies. It is in close contact with the prefrontal cortex (the area of executive functioning) and uses the endocrine system (hormones) as well as the sympathetic («fight or flight») and parasympathetic («rest and digest») nervous systems. The limbic system is modulated by the monoaminergic systems (such as neurotransmitters which are endogenous chemicals) of the brainstem. There can be no doubt that these are active during different religious experiences.

Quinton Deeley argues that these systems strengthen our convictions and persuade us that they are «uniquely realistic»:

Religious rituals, especially imagistic rituals, employ two major strategies to convey conceptions of the world and invest them with a heightened sense of reality and emotion: (1) a “sensory” route evokes salient thought and experience by orchestrating multiple reinforcing social-emotional signals and other stimuli, engaging attention, emotion, and arousal; (2) a “semantic” route uses enigmatic verbal and non-verbal symbols to engage an analogical/right hemispheric processing strategy to make sense of what is authoritatively presented as real but incompletely understood. Both routes are hypothesized to activate the mesolimbic dopamine system amongst other components of cognitive-affective processing, so that the “moods and motivations” evoked by the ritual performance seem “uniquely realistic”. These social, cognitive, and neural processes constitute ways in which religious ideas are turned into convictions.

Deeley draws on the «saliency hypothesis» whereby dopamine «mediates the conversion of the neural representation of an external stimulus from a neutral and cold bit of information into an attractive or aversive entity». Shitij Kapur, Deeley’s colleague, shows that especially the mesolimbic dopamine system is a critical component «in the “attribution of salience”, a process whereby events and thoughts come to grab attention, drive action, and influence goal-directed behavior because of their association with reward or punishment».

3 Here he is referring to Harvey Whitehouse’s modes of religiosity, i.e. the imagistic and the doctrinal.
4 Deeley, The religious brain, cit., p. 245.
6 Ibidem.
Neurologist V. S. Ramachandran describes in his book *Phantoms in the Brain* how some patients with temporal lobe epilepsy suffer from an overstimulation of «saliency pathways». These pathways recognize the emotional significance of events because they are connected to the limbic system. Patients who suffer from such conditions experience things that resonate with many religious traditions around the world:

*Every* object and event – not just salient ones – would become imbued with deep significance, so that the patient would see “the universe in a grain of sand” and “hold infinity in the palm of his hand”. He would float on an ocean of religious ecstasy, carried by a universal tide to the shores of Nirvana.¹

Ramachandran asks whether this is the origin of religious experience. It may not be the origin, but surely is at play in religious convictions and experiences! Whatever the connection may be, I am convinced that ecstatic ritual behavior somehow stimulates the saliency pathways which leads to an overproduction of meaning which in turn is supported and encouraged in many societies, even to the point of acknowledging the power and authority of those who experience vivid saliency (shamans, spirit possession priests, oracles, etc.). I am in good company on this with, among others, neurologist Fred Previc who argues that the origins of religion are linked to «an expansion of dopaminergic systems in humans».²

What about history?

This is all well and good, but what about history? History is, after all, what most scholars of religion work with. There is a rapidly growing literature on the origins of religion, cognition and culture,³ but it seems as if the focus of cognitive studies jumps from studies of the cognitive abilities of modern-day American psychology students to speculations, however informed they may be, on the cognition of Australopithecines. Furthermore, interest in the *Homo sapiens* line hardly extends further than the cave paintings of 25,000 years ago. Why aren’t there studies about what’s in between? There are, of course, a few such studies. The pioneers of the cognitive science of religion have demonstrated what can be done with sources that are typical in the study of religion. Lawson and McCauley applied their ritual competence theory and ritual form hypothesis on well-known examples as wide-ranging as Hindu rituals, the Christian Eucharist and Zulu initiations. Whitehouse based his modes of religiosity hypothesis on a recent millenarian movement among the Pomio Kivung of Papua New Guinea. Pascal Boyer’s examples of religious concepts and rituals are taken from modern indigenous tribes in Africa. Stewart

² Previc, *The role of the extrapersonal brain systems*, cit., p. 500.
Guthrie has applied his insights on Japanese village religiosity and modern American advertisements and media.

There are several scholars now working on historical topics such as Luther H. Martin,1 István Czachesz2 and Panayotis Pachis,3 but this is still uncharted territory. There are two problems in applying cognitive theory to historical topics. The first is that the cognitive science of religion has, as already mentioned, a methodological proclivity to delete the cultural equation, and it is therefore very difficult for cultural scientists to apply those theories. The second is that only a few theories seem to be useful to historical studies. Whitehouse’s modes theory has proven to be useful, as a number of publications indicate.4 Most of the other theories have only been of interest to cognitive scientists of religion who are pursuing psychological experiments.

A collection of studies on historical themes is in press at the moment,5 but what we also need is to develop hypotheses and theories that are both historical and experimental. The recent collection of essays in Natural Experiments of History, edited by Jared Diamond and James A. Robinson, may be a possible avenue for historically oriented scholars of religion.6 Simulation approaches, such as those being conducted by Donald Braxton, are another possible avenue. Braxton argues that despite the weaknesses of computer simulations, they allow us to formulate historical hypotheses that may be tested either by computer simulations or by other means.7 This exercise is quite valuable for historians of religions because it encourages them to think much more theoretically and much more empirically than usual. The exercise requires historians to think more formally about their hypotheses, whether these are implicit or explicit. Stark’s interesting attempts at applying sociological theories to early Christianity, weaknesses notwithstanding, should serve as an example of how cognitive theories and hypotheses might be applied to historical topics.8

A way forward

We need to develop constructive criticisms of results from the cognitive science of religion. We must test their theories, but we must also test our own theories. The

too much mind and not enough brain, body and culture

study of religion must develop a true comparativism and re-invent a true humanism by building bridges between disciplines.¹ If the academic study of religion won’t do these things, others, who are less competent in comparative religion, will.

To cognitive scientists of religion, I have no better comment than that expressed by Mark Johnson:

There are certain popular theories of mind and language that are incompatible with empirical evidence about the brain and cognition. If your favorite theory is at odds with this research, then you ought to be worried, and you ought to be asking whether you need to rethink some of your cherished hypotheses.²

One example of just such a cherished hypothesis is any theory of language that builds on neural modularity or similar claims about dedicated systems.

What is needed in the cognitive science of religion are more women scholars and more philosophers of science conversant with the cognitive sciences. Furthermore, we need more research on religion and... gender, children, socialization, violence, location, authority, healing, the senses, bodily manipulation, war, liberation, repression, identity and memory. More research on cognition and texts and on cognition and history. More research on embodiment and a critical revisiting of religious experiences. Furthermore we need better theories and creative hypotheses that are more resonant with what we know about human bodies and minds. And we need to deal creatively in developing natural experiments both in the wild and in the laboratory.

Can the comparative study of religion meet these challenges? I believe it can, mainly because of European sensitivity to cultural traditions. All we need to do is acknowledge that cognition is a combination of embrainment, embodiment and enculturation.

² Johnson, The Meaning of the Body, cit., p. 156.
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