

## COGNITIVE SCIENCE AND THE STUDY OF RELIGION

ARMIN W. GEERTZ

The academic study of religion is in trouble.<sup>1</sup> Why? Because it has been ignoring the most important intellectual approach to the study of religion of the past 20 years.

Until now, the cognitive science of religion has been practiced by a very friendly and lively, although esoteric, group of French, American and British anthropologists and psychologists with an interesting take on cognition and religion.<sup>2</sup> Only one of the pioneers in the cognitive science of religion is a scholar of religion.<sup>3</sup> The others admit a limited knowledge of religion. They are more than happy to have scholars of religion on board, but except for a few Americans,<sup>4</sup> Danes<sup>5</sup> and Finns,<sup>6</sup> two Hungarians,<sup>7</sup> a few other Europeans,<sup>8</sup> and a lone New Zealander,<sup>9</sup> there are hardly any scholars of religion actively engaged in the cognitive science of religion.<sup>10</sup> There is, fortunately, a whole host of doctoral students and post docs on their way.<sup>11</sup>

What about the educational situation? Well, believe it or not, there is no institution in the United States as far as I am aware that offers a full educational program in the comparative study of religion with master's and doctoral degrees in the cognitive science of religion. In Europe, the only place that has a full program in the context of the comparative study of religion is at my Department of the Study of Religion, Aarhus University, Denmark where we have a research

---

<sup>1</sup> This article is a slightly revised reprint of "Religion and Cognition: A Crisis in the Academic Study of Religion," *Bulletin of the Council of Societies for the Study of Religion* 37 (4), 2008, 91-95.

<sup>2</sup> Scott Atran, Justin Barrett, Jesse M. Bering, Pascal Boyer, Stewart Guthrie, E. Thomas Lawson, Robert N. McCauley (the lone philosopher), Dan Sperber, and Harvey Whitehouse.

<sup>3</sup> E. Thomas Lawson.

<sup>4</sup> Donald Braxton, Matthew Day, Douglas L. Gragg, Luther H. Martin, Joel Mort, D. Jason Slone, Richard Sosis, and Ann Taves.

<sup>5</sup> Dorthe Refslund Christensen, Jeppe Sinding Jensen, Bodil Klausen, Anita Leopold, Anders Lisdorf, Birgitta Mark, Kirstine Munk, Jesper Sørensen, David A. Warburton, and myself.

<sup>6</sup> Veikko Anttonen, Matti Kamppinen, Ilkka Pyysiäinen, and Tom Sjöblom.

<sup>7</sup> Tamas Bíró and István Czachesz.

<sup>8</sup> Aleš Chalupa, Lluís Oviedo, and Panayotis Pachis.

<sup>9</sup> Joseph Bulbulia.

<sup>10</sup> An association called the *International Association for the Cognitive Science of Religion* (IACSR) was established in 2006 at a conference in Aarhus and currently has 120 members world-wide. Until recently, the *Journal of Cognition and Culture*, edited by E. Thomas Lawson & Pascal Boyer (Brill Publishers), was the only journal which regularly published articles in the cognitive science of religion. Today, a new journal has appeared called *Religion, Brain & Behavior*, and an official journal of IACSR is in the offing. Two monograph series are devoted to the subject: the now defunct *Cognitive Science of Religion* Series, edited by Harvey Whitehouse & Luther H. Martin (AltaMira Press; now in the process of being reestablished by Berlin Academic Publishers), and *Religion, Cognition and Culture*, edited by Jeppe Sinding Jensen & myself (Equinox Publishers).

<sup>11</sup> Due to limitations of space, I cannot name these talented scholars, for which I apologize. Several of them have already become more established such as Emma Cohen, William L. McCorkle, Ryan McKay, Uffe Schjødt and Dimitris Xygalatas.

unit called “Religion, Cognition and Culture (RCC)”, integrated in a university-wide coalition of approximately 150 neurocognitive scientists called *MINDLab*.<sup>12</sup> Two places in Europe offer a full program in the context of anthropology: at Harvey Whitehouse’s Institute of Cognitive and Evolutionary Anthropology, University of Oxford, England and at Jesse M. Bering’s Institute of Cognition and Culture, Queen’s University, Belfast, Northern Ireland. At the University of Groningen in the Netherlands, a Centre for Religion & Cognition, directed by István Czachesz, was established and provides an electronic “Archive for Religion & Cognition” as well as an electronic *Bulletin for Religion & Cognition*. In Helsinki, the research project “Mind and Society in the Transmission of Religion,” directed by Ilkka Pyysiäinen, was supported by the Academy of Finland but not a department of comparative religion. That project is now completed. In Brno, a Laboratory for the Experimental Research of Religion (LEVYNA), directed by Aleš Chalupa was launched at the Masaryk University this year.

So the situation is this: if Americans want to pursue advanced study in cognitive science within the contexts of either comparative religion or anthropology, they have to dig up the money to live in Europe for 3-5 years. Now I’m not saying that this isn’t good for young people. What I am saying is much more serious. American scholars of religion, like many of their European colleagues, are laying low. They are hoping that this cognitive thing will just go away by itself. The United States employs leading scientists in evolutionary biology, neurobiology, artificial intelligence and psychology. Just imagine what leading scholars of religion could accomplish in the cognitive science of religion!

If we don’t take up the challenge, then the cognitive science of religion will be run exclusively by others. Furthermore, we will be leaving the hard work of popularizing 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).

*What’s so special about the cognitive science of religion?*

If there is anything “new” in the cognitive science of religion, it is that we are able to use new methods and new knowledge on old problems. In fact, many of the insights that great scholars of religion have produced the last hundred years or so are now being challenged (and some even vindicated!) in the cognitive sciences. Their insights, which were more or less intuitive, are now being tested by theoretically controlled empirical studies using new technologies.

During the past 20 years, fantastic advances in the natural and medical sciences, such as DNA analysis and neuroimaging, have given us for the first time in history a reasonably accurate idea not only about the evolution of our species, but also of all the other hominids. We can now trace the evolution of important cultural breakthroughs, such as the production of stone tools and the use of fire, before the appearance of homo sapiens. We can trace the development of what seem to be religious symbolic objects to more than 100,000 years ago. And with advanced techniques in DNA analysis and endocranial analysis, we are able to surmise a surprising amount of information on the kinds of brains our hominid ancestors had. With recent advances in neuroimaging, neurobiology, psychiatry and psychology, we can surmise startling insights on the kinds of minds hominids have had through a couple of million years. In brief, we are now able to put evolutionary theory back on the table as a respectable pursuit in the study of religion. And we can do this without all the messy ideology of the 19th century. In other words, the history of religions can come out of its solitary, idiographic confinement and start participating with the rest of humanity in figuring out how and why religion developed in the human species. And here comes the point: *All* of the pioneers in the cognitive science of religion (and many of the rest of us) are actively engaged in addressing the evolution of religious ideas and behavior.

---

<sup>12</sup> <http://www.mindlab.au.dk/menu0-en>.

*The main evolutionary theories of religion*

All of the theories in the standard cognitive science of religion adhere to what Pascal Boyer has called the Naturalness of Religion Hypothesis.<sup>13</sup> This hypothesis does not mean that religion is in-born or hardwired, as some cranks would have it, but that religious behavior and ideas in all their glorious cacophony thrive, survive, and are passed down through the millennia because they fit smoothly and naturally to intuitive, hardwired psychological mechanisms and processes. They are not directly selected for. They simply survive because they fit with evolutionarily selected features. This is called the By-Product Hypothesis. Religion and culture are sometimes described as cognitive spandrels: they fit nicely in between arches, but have no particular purpose. Others use the more onerous metaphor of a virus. Religion is a virus spreading through brain populations (called the “epidemiology of representations” by Dan Sperber) or a parasite thriving on brain functions not originally designed for religious thoughts (called “memes” by Richard Dawkins, which are information replicators that act like genes).

This hypothesis assumes certain theoretical commitments that have been systematized by Justin Barrett.<sup>14</sup> First, all humans have the same cognitive and psychological make-up no matter what culture they come from. Second, the brain is a highly complex organ consisting of highly specialized functional subsystems. Third, these subsystems shape and filter in-coming perceptions of internal and external worlds. Fourth, they constrain and inform human thought and action, including religious thought and action. And, fifth, recurrent features of religious thought and action can be explained and predicted with reference to the basic dynamics of the mind.

Pascal Boyer was the first to identify a series of cognitive systems that are essential to religious thought and behavior. He has described them in creative and entertaining publications dating from the 1990s to his book *Religion Explained*.<sup>15</sup> What is it, he asks, that is so remarkable about religious ideas that people remember them and are motivated to pass them on to younger generations? This is where his Minimal Counterintuitive Ideas Hypothesis comes in. Religious ideas fit well with our cognitive machinery. They draw on ordinary, cognitive dispositions and add one or two details that are counterintuitive to basic intuitive ideas about the physical world, plants, animals, humans and natural and constructed objects. Many colleagues object here, claiming that talking tigers and listening statues are not counterintuitive to the people who believe in those sorts of things. But, this is a misunderstanding. If these colleagues would ask their informants whether it is common that tigers fly around in the area or whether the doorpost can listen just as well as the statue, they would answer “No.” There are special circumstances surrounding these phenomena. People around the world know intuitively that if they jump off a mountain, they will most likely fall down very hard instead of turning into a vampire bat at the last moment. Most rocks don’t move either, unless they are trolls. Boyer’s point is not only do religious ideas contain one or two details that are cognitively salient, they are also and more fundamentally based on normal ideas and thus easy to remember and pass on.

One other set of ideas deserves mention, namely the basic human cognitive system called agency detection, which Stewart Guthrie drew attention to already in 1980.<sup>16</sup> Guthrie claims that

<sup>13</sup> Pascal Boyer, *The Naturalness of Religious Ideas: A Cognitive Theory of Religion*, Berkeley: University of California Press, 1994. For more details, see my introduction in A.W. Geertz “Cognitive Approaches to the Study of Religion,” in Peter Antes, Armin W. Geertz & Randi Warne (eds.), *New Approaches in the Study of Religion, Volume 2: Textual, Comparative, Sociological, and Cognitive Approaches*, 347-99, Berlin: Mouton de Gruyter, 2004. A book-length treatment co-authored with Joseph Bulbulia will appear in 2013 (*An Introduction to Cognition and Religion*. Aldershot: Ashgate Publishing Limited, in preparation).

<sup>14</sup> Justin L. Barrett, “Is the Spell Really Broken? Bio-Psychological Explanations of Religion and Theistic Belief,” *Theology and Science* 5 (1), 2007, 57-72, p.59.

<sup>15</sup> Pascal Boyer, *Religion Explained: The Evolutionary Origins of Religious Thought*, New York: Basic Books, 2001.

<sup>16</sup> Stewart Elliott Guthrie, “A Cognitive Theory of Religion,” *Current Anthropology* 21 (2), 1980, 181-203; and *Faces in the Clouds: A New Theory of Religion*, Oxford & New York: Oxford University Press, 1993.

this ability explains our tendency to see animate and human-like qualities in everything around us. Thus animism and anthropomorphism are the origins of religion. Justin Barrett has expanded on this theme by exploring experimentally why we “believe” those counterintuitive ideas described by Boyer. He claims that the mental tool discovered by Guthrie is characterized by being hyperactive or hypersensitive. So he calls it “Hypersensitive Agency Detection Device” (HADD). Together with the characteristically human ability called theory of mind, i.e. the realization that other people have minds and feelings just like us (an ability that every normal child above the age of four achieves), HADD *naturally* leads to god-beliefs.<sup>17</sup>

Evolutionary theories are not just concerned with ideas. The pioneering team of E. Thomas Lawson and Robert N. McCauley introduced a highly sophisticated account of how believers mentally represent ritual action.<sup>18</sup> Now, this gets a little tricky. They are not talking about believers *doing* their rituals. Inspired by Chomsky, Lawson & McCauley are interested in identifying whether believers carry around a kind of intuitive ritual grammar. How do they know that a ritual has been correctly carried out? In other words, how do they judge the rightness of a ritual? Like everyone else, believers have an inborn capacity to represent ordinary human action. By adding a religious filter through years of socialization, this Action Representation System is transformed and participants gain what Lawson & McCauley call Ritual Competence. In an interesting debate with Harvey Whitehouse, Lawson & McCauley explore other dimensions of ritual behavior in which sensory pageantry plays an important role together with frequency and ritual form.<sup>19</sup>

The other main ritual theory that has been circulating in the cognitive science of religion is Harvey Whitehouse’s Religious Modes Hypothesis.<sup>20</sup> Whitehouse claims that the frequency and types of ritual behavior that humans engage in stimulate evolutionarily selected memory systems, the episodic and the semantic memory systems. Rituals that are seldom performed but are highly arousing (for instance violent initiation rituals) stimulate the episodic memory in much the same way that flashbulb memory is stimulated during traumatic events. These are called *imagistic*. Rituals that are performed often but are much less arousing (like Sunday church services) stimulate semantic memory. These are called *doctrinal*. Both types of rituals and the way they stimulate our memory systems have causal influence on the way that people interpret their religious experiences and the kinds of social organizations that are built up around them.

### *The adaptationist approach*

It should be obvious by now that the main assumption of the standard cognitive theorists of religion is that causal explanations of human behavior and ideas are to be found in the mind. That’s why we call it a mentalistic approach. Furthermore, the main emphasis is on *individual* minds, and that’s why we call it an individualistic approach.

Other approaches, however, take foundational issue on two points. First, anything that is as costly and dangerous as religious behavior must have had adaptive features that were selected for during our evolution. And, second, the dynamics between culture and cognition are much more fundamental and causally interrelated than the standard cognitive science of religion would admit.

---

<sup>17</sup> Justin L. Barrett, *Why Would Anyone Believe in God?* Walnut Creek: AltaMira Press, 2004.

<sup>18</sup> E. Thomas Lawson and Robert N. McCauley, *Rethinking Religion: Connecting Cognition and Culture*, Cambridge: Cambridge University Press, 1990.

<sup>19</sup> McCauley & Lawson, *Bringing Ritual to Mind: Psychological Foundations of Cultural Forms*, Cambridge: Cambridge University Press, 2002 and Harvey Whitehouse, *Modes of Religiosity: A Cognitive Theory of Religious Transmission*, Walnut Creek et al.: AltaMira Press, 2004.

<sup>20</sup> Harvey Whitehouse, *Inside the Cult: Religious Innovation and Transmission in Papua New Guinea*, Oxford: Oxford University Press, 1995.

As for the first issue, the adaptationists relate their work to major advances in evolutionary biology and evolutionary psychology. Jesse M. Bering is half-way between the by-product approach and the adaptationist approach. He argues that religious belief is an *exaptation*, “a span-drel that turned out to be useful and so was subsequently selected for by evolutionary pressures”.<sup>21</sup> Bering, an experimental psychologist, has conducted interesting experiments with children and adults and has developed a novel theory of existential psychology.<sup>22</sup> Out of the conglomerate of human intuitions on causal attribution, moral judgment, theory of mind, concept acquisition and teleological reasoning, Bering posits what he calls an organized cognitive system “dedicated to forming illusory representations of (1) psychological immortality, (2) the intelligent design of the self, and (3) the symbolic meaning of natural events”.<sup>23</sup> This system evolved in response to the selective pressures of human social environments.

Joseph Bulbulia and Richard Sosis have become identified with the Costly Signaling Hypothesis. This hypothesis is borrowed from evolutionary game theory and the biology of animal signaling. In order for human societies to work, you need to depend on reciprocal altruism. But you also need to ensure that your partners are not cheating on you. One of the solutions to the problem is to develop a public and costly institution, like religion, where hard-to-fake god-fearing commitments ensure that people can identify who is trustworthy and who is not. Joseph Bulbulia in fact defines a religious deed as “a costly signal capable of authenticating religious commitment.”<sup>24</sup> Richard Sosis has tested this hypothesis in a number of empirical studies.<sup>25</sup>

On the second issue, biologist and semiotician Terrence W. Deacon makes a strong case for epigenetics as a significant factor in evolution, even for non-human animals.<sup>26</sup> Animals carve out niches in the environment which then put selective pressures on biological evolution. Deacon argues that we are a self-domesticated species that through social evolution, the transmission of symbolic communication and the elaboration of stone tools “created a radically different niche than that experienced by our non-symbolic ancestors, the australopithecines and other apes.”<sup>27</sup> “We are,” Deacon argues, “a ‘symbolic species’ in a deeply physiological sense,” and until we understand the complex, emergent dynamics between genetic, cultural and semiotic selection processes, “we will remain in a prescientific phase of cognitive and social science.”<sup>28</sup>

Developmental psychologist Merlin Donald argues that humans are evolved to live in cultural networks. Humans are incapable of using their large brains without a supportive cultural

---

<sup>21</sup> Jessie M. Bering, “The Cognitive Psychology of Belief in the Supernatural,” in Patrick McNamara, (ed.), *Where God and Science Meet: How Brain and Evolutionary Studies Alter Our Understanding of Religion. Volume 1: Evolution, Genes, and the Religious Brain*, 1:123-33. Westport & London: Praeger Publishers, 2006, p.125.

<sup>22</sup> Jessie M. Bering, “The Folk Psychology of Souls,” *Behavioral and Brain Sciences* 29, 2006, 453-98.

<sup>23</sup> *Ibid.*, p.453.

<sup>24</sup> Joseph Bulbulia, “The Cognitive and Evolutionary Psychology of Religion,” *Biology and Philosophy* 19, 2004, 655-86; p.669.

<sup>25</sup> Richard Sosis, “Religion and Intragroup Cooperation: Preliminary Results of a Comparative Analysis of Utopian Communities,” *Cross-Cultural Research* 34 (1), 2000, 77-88; Richard Sosis & E. Bressler, “Cooperation and Commune Longevity: A Test of the Costly Signaling Theory of Religion,” *Cross-Cultural Research* 37 (2), 2003, 11-39.

<sup>26</sup> Terrence W. Deacon, *The Symbolic Species: The Co-Evolution of Language and the Human Brain*, London: Allen Lane The Penguin Press, 1997.

<sup>27</sup> Terrence W. Deacon, “Multilevel Selection in a Complex Adaptive System: The Problem of Language Origins,” in Bruce H. Weber & David J. Depew (eds.), *Evolution and Learning: The Baldwin Effect Reconsidered*, 81-106, Cambridge & London: The MIT Press, 2003; p.93.

<sup>28</sup> *Ibid.*, pp.95 & 104.

trellis. The heuristic exercise of isolating human cognition from culture often practiced by standard cognitive scientists of religion is meaningless from this point of view, since humans have never been without culture, and their brains and cognition have been radically redesigned by culture. It's like trying to study cog-wheels as if they were smooth rings. Our evolutionary history, Donald claims, has released us from our animal solipsism, and we are not only able to hold internal and external models of the self-in-the-world, but also to draw on social connectivity and conventionality in order to do this.<sup>29</sup>

Following this line of argument, Jeppe Sinding Jensen and I argue that religious models of the world are essential elements of cognitive models of the self. Much of the work being done by us and our students is concerned with demonstrating the top-down, bottom-up processes of cognition and the ways in which these processes interrelate with religious worlds.<sup>30</sup> Jensen has encapsulated this dynamic in the term "normative cognition," at which religions excel.<sup>31</sup> Joseph Bulbulia is working on the dynamics of what he calls iReligion and eReligion, meaning the internal and external processes of religion, cognition and culture.<sup>32</sup>

#### *A whole bunch of other stuff*

It might strike some readers that cognitive scientists of religion are concerned with some pretty narrow stuff. What about religious experience, religious meanings, religious worlds, religious language, religious behavior and religious people? Isn't anyone doing anything on them? Yes, there are some wonderful studies being done by colleagues in a variety of disciplines, mostly experimental psychology, but also anthropology. There are studies about religion and fundamentalism, terrorism, child abuse, and war. There are exciting psychological studies on memory, false memory, suggestion, false beliefs, self-deception, mind control, socialization, group mentality, and so on. The burgeoning literature in what is now called social and affective neuroscience on emotions and the body are well worth careful study by scholars of religion. Then there is a large amount of literature on consciousness and cognition, the role of narrative, the development of persons and selves, and other interesting topics, all of which are highly relevant to the study of religion. We have only scratched the surface. Our colleagues in the empirical psychology of religion can already tell us a lot. Now all we need to do is relate it all to the cognitive science of religion and then get the rest of our colleagues in comparative religion interested.<sup>33</sup>

#### *The new kids on the block*

We are truly witnessing exciting times. Now that the pioneering phase of the cognitive science of religion is over, our students are already in the high-speed passing zone. We are having trouble

---

<sup>29</sup> Merlin Donald, *A Mind So Rare: The Evolution of Human Consciousness*, New York & London: W. W. Norton & Company, 2001; p.263.

<sup>30</sup> See Jeppe Sinding Jensen, "The Complex Worlds of Religion: Connecting Cultural and Cognitive Analysis," in Ilkka Pyysiäinen & Veikko Anttonen (eds.), *Current Approaches in the Cognitive Science of Religion*, 203-28, London & New York: Continuum, 2002; and A.W. Geertz, "From Apes to Devils and Angels: Comparing Scenarios on the Evolution of Religion," in Joseph Bulbulia et al. (eds.), *The Evolution of Religion: Studies, Theories & Critiques*, 43-9, Santa Margarita: Collins Foundation Press, 2008 and "Brain, Body and Culture: A Biocultural Theory of Religion," *Method and Theory in the Study of Religion* 22 (4), 2010, 304-21.

<sup>31</sup> Jeppe Sinding Jensen, "Doing It the Other Way Round: Religion as a Basic Case of 'Normative Cognition'," *Method and Theory in the Study of Religion* 22 (4), 2010, 322-29.

<sup>32</sup> See Joseph Bulbulia, "Religion as Evolutionary Cascade: On Scott Atran's *In Gods We Trust* (2002)," in Michael Stausberg (ed.), *Contemporary Theories of Religion: A Critical Companion*, 156-72, New York: Routledge, 2009.

<sup>33</sup> For details see A.W. Geertz, "Cognitive Approaches to the Study of Religion," in Peter Antes, Armin W. Geertz & Randi Warne (eds.), *New Approaches in the Study of Religion, Volume 2: Textual, Comparative, Sociological, and Cognitive Approaches*, 347-99. Berlin: Mouton de Gruyter, 2004.

enough just trying to keep in the slipstream of their eagerness, creativity, and dedication. A lot of young scholars are seriously testing the hypotheses and theories of the pioneers, not just on American undergraduate psychology students but also on non-Western or at least non-American populations. With the introduction of neuroimaging and controlled medical tests of religious persons, the cognitive science of religion is trying to identify the neural correlates of religious belief and behavior and thus trying to relate the cognitive systems that experimental psychologists are talking about to neural activity in the brain.<sup>34</sup>

### *Conclusion*

I hope that I have persuaded my readers to drop whatever they are doing and jump headlong into the cognitive science of religion. For those who are more reluctant, believe me, this is not a passing fad. You can ignore it, but it won't ignore you or your students.

---

<sup>34</sup> I am not, it should be noted, referring to neurotheology or religiously motivated studies on meditation. See A.W. Geertz, "When Cognitive Scientists Become Religious, Science Is in Trouble: On Neurotheology from a Philosophy of Science Perspective," *Religion* 39, 2009, 319-24, and Uffe Schjødt, "The Religious Brain: A General Introduction to the Experimental Neuroscience of Religion," *Method and Theory in the Study of Religion* 21, 2009, 310-39 for further details on this exciting development.