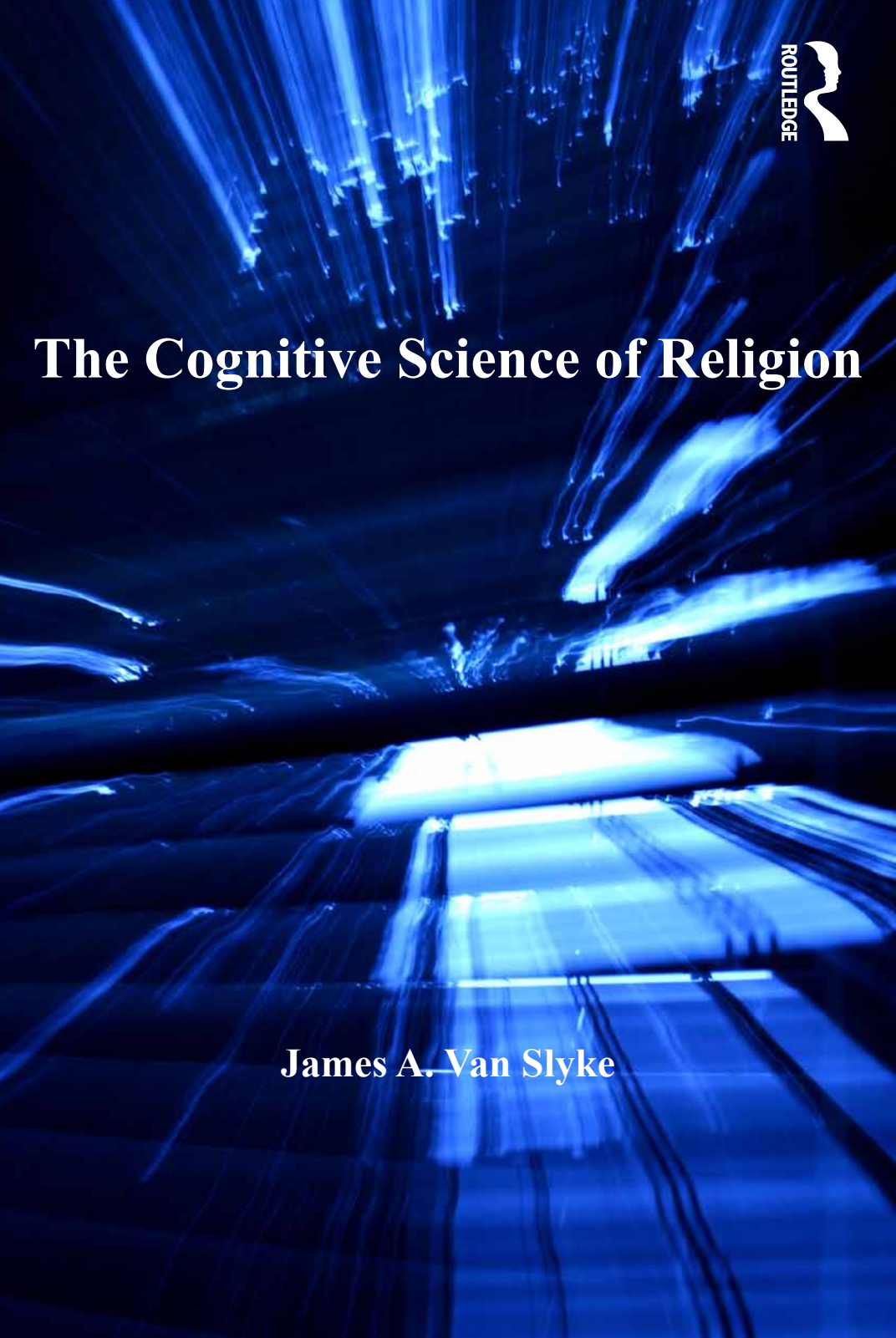
ROUTLEDGE
The Cognitive Science of Religion
James A. Van Slyke

THE COGNITIVE SCIENCE OF RELIGION

The field of study called the Cognitive Science of Religion provides interesting and informative theories about the cognitive and evolutionary origins of human religion. However, most of these theories include the unnecessary assumption that religion is "nothing but" the chance outcome of a random evolutionary walk. In this very useful book, James Van Slyke provides a thoughtful review of this field, while also arguing for a more balanced view of the human aspects of religion that takes seriously the embodiment of human nature and cognition, modern philosophy of mind, and theology.

Warren S. Brown, Fuller Graduate School of Psychology, USA

The cognitive science of religion is a relatively new academic field in the study of the origins and causes of religious belief and behavior. The focal point of empirical research is the role of basic human cognitive functions in the formation and transmission of religious beliefs. However, many theologians and religious scholars are concerned that this perspective will reduce and replace explanations based in religious traditions, beliefs, and values. This book attempts to bridge the reductionist divide between science and religion through examination and critique of different aspects of the cognitive science of religion and offers a conciliatory approach that investigates the multiple causal factors involved in the emergence of religion.

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The Cognitive Science of Religion

JAMES A. VAN SLYKE
Fuller Theological Seminary, USA

Routledge
Taylor & Francis Group
LONDON AND NEW YORK

First published 2011 by Ashgate Publishing

Published 2016 by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN
711 Third Avenue, New York, NY 10017, USA

Routledge is an imprint of the Taylor & Francis Group, an informa business

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British Library Cataloguing in Publication Data
Van Slyke, James A.
The cognitive science of religion. -- (Ashgate science and religion series)
1. Psychology, Religious. 2. Faith and reason. 3. Cognitive neuroscience.
I. Title II. Series
200.1'9-dc22

Library of Congress Cataloging-in-Publication Data
Van Slyke, James A.
The cognitive science of religion / James A. Van Slyke.
p. cm. -- (Ashgate science and religion series)
Includes bibliographical references and index.
ISBN 978-1-4094-2123-8 (hardcover)
1. Psychology, Religious. 2. Cognitive science. I. Title.

BL53.V283 2011
200.1'9--dc22

ISBN 9781409421238 (hbk)
ISBN 9781315614809 (ebk)

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Acknowledgments

This book is based on my dissertation, which I completed in June 2008 at Fuller Theological Seminary in Pasadena, California. So I would first like to thank my two primary mentors, Nancey Murphy and Warren Brown. My ability to write is really a result of many years of working with Nancey. Through discussion and critique (sometimes difficult but always filled with grace) Nancey made me the writer I am today. Plus, her clarity in philosophical method and analysis helped me to think much more clearly and incisively. Much of what I know about cognitive neuroscience comes from Warren. Through sitting in on his classes and many personal discussions, I learned the basics of neuropsychology, physiological psychology and cognitive science. Warren also has a way of parsing philosophical problems into the important ingredients that must be addressed, which helped me to figure out what philosophical problems to address in this book.

I also want to thank Wentzel van Huyssteen whose encouragement over a brief meeting one day helped me to focus on the task of getting the book proposal completed and pushed me forward towards completing the book. I owe a debt of gratitude to many scholars and scientists working in the cognitive science of religion for different discussions and disagreements over the nature of cognition and its ability to explain different facets of religion, which includes D. Jason Slone, Justin Barrett, Robert N. McCauley, Donald Wiebe, Luther Martin, Joseph Bulbulia, Edward Slingerland, and Ann Taves. Our discussions helped to clarify the relevant issues and helped me to understand the basics of the cognitive science of religion.

At a conference in Oxford, discussions with David Leech and Aku Visala were particularly helpful, as well as their comments on an early draft of the first chapter. Portions of Chapter 1 come from the article, James A. Van Slyke, "Challenging the By-Product Theory of Religion in the Cognitive Science of Religion," *Theology & Science* 8, no. 2 (2010): 163-180; and portions of Chapter 5 come from the article James A. Van Slyke, "Evolutionary and Cognitive Factors in the Emergence of Human Altruism," *Zygon* 45, no. 4 (2010): 841-860. My research would not have been possible without the support of a grant from the Cognition, Religion and Theology Project at the University of Oxford, funded by the John Templeton Foundation. The views expressed in this book are not necessarily those of the Cognition, Religion and Theology Project, the University of Oxford or the John Templeton Foundation.

Most of all, I want to thank my family. My daughters, Kail and Abby, who let me be away from home to work on this book and had to deal with a distracted father when I was contemplating some new theory. And to my wife, who is the sole person responsible for giving me the time, resources, and support necessary to complete this book. Thank you for 12 wonderful years together filled with love.

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Introduction

The cognitive science of religion is a relatively new academic field in the study of the origins and causes of religious belief and behavior. The focal point of empirical research is the role of basic human cognitive functions in the formation and transmission of religious beliefs. These cognitive functions are universal and applicable to the study of religious concepts, rituals and behaviors across cultural contexts and historical time periods. The cognitive science of religion is a highly interdisciplinary project composed of scholars from various fields including religious studies, cognitive psychology, neuroscience, philosophy, human anthropology, and evolutionary science. The field continues to expand across North America and Europe with centers and programs located at various universities such as the University of Michigan, University of Oxford, Aarhus University in Denmark, and the University of British Columbia.

The cognitive science of religion has received a mixed reception among religious scholars and theologians. Reduction is the primary issue of contention for many of the critics of this new area of study. Kelly Bulkeley, in a book review of *Religion Explained* and *How Religion Works*, describes the concern for reductionism that this new field seems to generate.[1]

> Beliefs, doctrines, practices, rituals, mystical experiences, moral systems, communal structures—everything about religion can be explained, according to Boyer and Pysiainen, by using the latest advances in evolutionary theory and cognitive science.[2]

As Gregory Peterson explains, religious scholars and theologians are concerned that explanations from religious studies, anthropology, sociology, and theology will simply be reduced and replaced with explanations from the biological sciences.

> Many scholars in the field understand that these biological explanations will also be exhaustive and consequently reductive, that is, showing that religion is

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[1] Pascal Boyer, *Religion Explained: The Evolutionary Origins of Religious Thought* (New York: Basic Books, 2001); Ilkka Pyysiäinen, *How Religion Works: Toward a New Cognitive Science of Religion* (Leiden: Brill 2003).

[2] Kelly Bulkeley, "Review of Religion Explained: The Evolutionary Origins of Religious Thought, by Pascal Boyer and How Religion Works: Towards a New Cognitive Science of Religion, by Ilkka Pyysianien," *Journal of the American Academy of Religion* 71, no. 3 (2003): 671.

> nothing but a result of biological pressures and therefore, in the words of Pascal Boyer, an "airy nothing" that has no proper domain and whose claims can be safely dismissed.[3]

The wide range of religious beliefs and behaviors can now simply be explained by some of the basic principles of human cognition and the evolution of the human species.

As demonstrated by Bulkeley's review, most of the criticism has been focused on Boyer's *Religion Explained*, which is the most identifiable trade book associated with the cognitive science of religion. Paul J. Griffiths contends that *Religion Explained* is not just an explanation of religion, but that Boyer intends to explain religion away.[4] John Haught expresses similar concerns over the apparent reductionism implied by Boyer's work.

> Not only does Boyer believe that we can dispense completely with ideas of God, revelation, and the sacred when trying to explain why people are religious, we can now also see that even cultural causes are secondary to biological factors in the genesis of our long affair with the gods.[5]

John Polkinghorne contends that Boyer has simply gone too far in his claims about religion; although there are many helpful insights to religion, religion has not been explained.[6]

This sentiment is very common in many circles investigating the relationship between religion and science. Yet, is Boyer's work representative of the cognitive science of religion as a whole? Is it possible to construct a cognitive science of religion without the reductionist baggage and apparent elimination of religion and theology as important areas of study? This book attempts to bridge the reductionist divide between cognitive/evolutionary science and religion/theological studies. Through examination and critique of different aspects of the cognitive science of religion, this book offers a competing, and yet conciliatory approach to the relationship between cognitive and evolutionary descriptions of religion and the corresponding descriptions offered by religious scholars and theologians.

There are several possible explanations for the causes and development of religious belief and behavior associated with the cognitive science of religion. Religion may have evolved as a by-product of cognitive adaptations that served

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[3] Gregory R. Peterson, "Theology and the Science Wars: Who Owns Human Nature?," *Zygon* 41, no. 4 (2006): 860.

[4] Paul J. Griffiths, "'Faith Seeking Explanation. Review of *Religion Explained: The Evolutionary Origins of Religious Thought*, by Pascal Boyer," *First Things*, no. 119 (2002): 53-57.

[5] John Haught, "The Darwinian Universe: Isn't There Room for God?," *Commonweal* 129, no. 2 (2002).

[6] John Polkinghorne, "Some of the Truth," *Science* 28 (2001): 2400.

an adaptive function in the evolution of the human species during the Pleistocene era.[7] The original adaptation caused a secondary, unintended effect in human cognitive systems, which promoted beliefs in supernatural agents and religious rituals. A by-product can be characterized as a kind of spandrel, which is the space created by two adjoining arches.[8] Although the spandrel has no direct function in the architecture of a cathedral, it can still have an artistic role that was not a part of the original design. Consequently, certain products of human evolution can fulfill a role they were not originally intended to fill, like a nose that can hold up a pair of glasses.[9]

Other explanations describe religion as a type of adaptation, which evolved as a consequence of its effectiveness in fostering communication and cooperation in early human groups.[10] The social brain hypothesis suggests that many of the cognitive advances in the evolution of the human brain are the result of the selection pressures created by living in groups.[11] Adaptive theories suggest that religious rituals, beliefs, or behaviors may have contributed to enhancing the formation of different types of social relationships. At the individual level, religious commitment serves as a proxy for ascertaining the reliability of potential cooperative partners.[12] At the group level, religion promoted beliefs and behaviors that allowed groups of early humans to outcompete with others.[13] For example, religious morality helps to unite a group for a common purpose and monitor individual behavior for possible benefits or detriments.

The cognitive science of religion is not necessarily hostile to the descriptions of religion offered by theology or other branches of religious study. My critique of the cognitive science of religion focuses on the standard model of human cognition used to describe the formation of religious beliefs and behaviors, which has been the dominate model used to describe religious cognition. The standard model primarily describes religion as a by-product of cognitive adaptations, which spreads in human culture because of the exploitation of default properties

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[7] Pascal Boyer, "Religious Thought and Behavior as By-Products of Brain Function," *Trends in Cognitive Sciences* 7, no. 3 (2003): 119-124.

[8] Stephen J. Gould and Richard C. Lewontin, "The Spandrels of San Marco and the Panglossian Paradigm: A Critique of the Adaptionist Programme," *Proceedings of the Royal Society of London* 205, no. 1161 (1979): 581-598.

[9] David Sloan Wilson, *Darwin's Cathedral: Evolution, Religion, and the Nature of Society* (Chicago: University of Chicago Press, 2002), 44.

[10] Richard Sosis and Candace Alcorta, "Signaling, Solidarity, and the Sacred: The Evolution of Religious Behavior," *Evolutionary Anthropology* 12 (2003): 264-274.

[11] R. I. M. Dunbar, "The Social Brain Hypothesis," *Evolutionary Anthropology* 6 (1998): 178-190.

[12] Joseph Bulbulia, "Religion as Evolutionary Cascade: On Scott Atran, *in Gods We Trust* (2002)," in *Contemporary Theories of Religion: A Critical Companion*, ed. Michael Stausberg (New York: Routledge, 2009).

[13] Wilson, *Darwin's Cathedral.*

of human cognition. Thus, the primary cause of religious belief and behavior is reduced to a by-product of evolved cognitive adaptations. This book attempts to offer evidence from cognitive neuroscience and philosophy that critiques some of the assumptions in the standard model while preserving and promoting others. My work attempts to enrich the picture of cognition offered in the cognitive science of religion and promotes a different model of religious cognition for further empirical investigation and analysis.

Philosophically, I introduce the concepts of emergence and top-down constraints in order to bridge the multitude of disciplines involved in the study of religion. This is not to say that these terms are merely of philosophical interest, for these concepts have seen an upswing in usage in a number of scientific disciplines. Rather the book focuses on two types of explanation: (1) how human cognition works based in the sciences of evolution, neuroscience, and cognition and (2) philosophical issues in regard to the causes and explanations for religious thought and behavior. These two types of explanation are not mutually exclusive but highly intertwined based on the interdisciplinary character of attempting to understand religion. Yet, the focus is primarily about how the cognitive and evolutionary sciences contribute to our understanding of religion.

Understanding religious cognition requires a multi-level approach that incorporates different facets of scientific explanation. Aspects of religious concepts and beliefs are by-products of certain features of human cognition, but the by-product theory is insufficient as a full explanation of religion. The role of emergent processes and top-down constraints presents a more dynamic and interactional picture of the formation and evolution of religious concepts, beliefs and behaviors. Religion is not simply an unintended by-product, but contains adaptive elements at the level of individual and group selection. As empirical investigation continues, the scientific explanation of religion will demonstrate multiple adaptive and nonadaptive processes that contributed to the evolution and formation of religion in the human species. Thus, multiple areas of investigation in science, philosophy, and the humanities are necessary to develop a clear picture of the scope and function of religion and theology.

Chapter 1
The Standard Model and the Problem of Causal Reductionism

The standard model in the cognitive science of religion defines religion as a by-product of cognitive adaptations that occurred during the evolution of the human species. Religious beliefs, rituals, and practices exploit different features of cognitive adaptations, which make them easy to remember and transmit to others based on a shared universal cognitive architecture. Although aspects of religious cognition are by-products of cognitive adaptations, this theory is insufficient as an explanation of religion for two reasons. First, evidence from a wide range of sources in the cognitive neurosciences demonstrates that the by-product theory is unable to account for a number of important causal processes in the formation and function of religious beliefs. The by-product theory characterizes religious phenomena from a causally reductive perspective that assumes that causation is primarily bottom-up from part to whole. However, an emergent view of cognition and top-down constraints provide a better account of the multiple causal factors involved in religion.

Secondly, the by-product theory is often assumed to indicate that any theological explanation of religious belief is invalidated through the process of eliminative reduction. Thus, the real explanation for religious beliefs is at the level of cognitive and evolutionary science, not higher-level descriptions offered by religious studies or theology. The problem here lies in a lack of discrimination between scientific and metaphysical statements. Metaphysical propositions about the existence or non-existence of gods are inherently multi-level, meaning that they rely on argumentation from multiple areas of knowledge, not just the empirical evidence offered by one level in the hierarchy of science. Thus, empirical evidence from the cognitive science of religion is insufficient to simply eliminate a theological explanation of religion beliefs. Theology is one option that can offer a competing perspective on the interpretation of findings from the cognitive science of religion.

Cognitive Science of Religion

During the 1990s, the success of the cognitive sciences and evolutionary biology led to a new research program in religion called the cognitive science of religion, which has flourished throughout the new century. This research program began in the work of several scholars including Pascal Boyer, Harvey Whitehouse, Stewart Guthrie, Scott Atran, Justin Barrett, Robert N. McCauley, and E. Thomas Lawson.

Since the year 2000, research and publication has significantly increased as well as the formation of several research centers and programs in Europe and North America such as the Institute for Cognition and Culture at Queen's University, Belfast and the Institute for the Biocultural Study of Religion at Boston University.[1] Popular books focused on the cognitive science of religion such as Pascal Boyer's *Religion Explained: The Evolutionary Origins of Religious Thought* and Scott Atran's *In Gods We Trust: The Evolutionary Landscape of Religion* have received a great deal of attention across several academic disciplines.[2]

From this perspective, religion is not an ineffable construct, experience, or feeling; instead it is a set of research questions that can be understood through cognitive and evolutionary science.

> … although bookshelves may be overflowing with treatises on religion, histories of religion, religious people's account of their ideas, and so on, it makes sense to add to this and show the intractable mystery that was religion is now just another set of difficult but manageable problems.[3]

The cognitive science of religion attempts to identify the aspects of cognition that are universal to the human species, which provide constraints on the way religious concepts are processed and transmitted.

> What unifies the various projects in CSR is the commitment that human conceptual structures are not merely a product of cultural contingencies but that they inform and constrain cultural expression, including religious thought and action.[4]

Based on this theoretical orientation, several hypotheses have emerged as the primary focal points for research on religious beliefs, rituals, and practices.

Current Hypotheses

Several years before the formation and popularity of cognitive approaches to religion, Stewart Guthrie introduced an anthropomorphic theory of religion, which was partially based on new research in the cognitive sciences.[5] Although

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[1] www.iacsr.com/CSR_Links.html.

[2] Scott Atran, *In Gods We Trust: The Evolutionary Landscape of Religion* (New York: Oxford University Press, 2002); Pascal Boyer, *Religion Explained: The Evolutionary Origins of Religious Thought* (New York: Basic Books, 2001).

[3] Boyer, *Religion Explained*, 2.

[4] Justin L. Barrett, "Cognitive Science of Religion: What Is It and Why Is It?," *Religion Compass* 1, no. 6 (2007): 768-786.

[5] Stewart Guthrie, "A Cognitive Theory of Religion, " *Current Anthropology* 21, no. 2 (1980): 181-203.

the work of Ludwig Feuerbach and Sigmund Freud had already introduced a view of the origins of religion based on anthropomorphism, Guthrie was one of the first to argue that cognitive science may provide evidence for this tendency in human beings.[6] Guthrie later developed this theory in *Faces in the Clouds*, which argued that certain aspects of a shared universal human cognitive structure predispose us to anthropomorphosize different aspects of the world, which is primarily seen in religion.[7] One illustration of this phenomenon is that persons often mistake the rustling of trees branches outside a window late at night as a potential burglar; persons assume some sort of agent is responsible for the rustling first, and then may later entertain a more benign explanation for the rustling.[8]

Based on Guthrie's theory, the detection of agency has been suggested as one of the primary cognitive foundations of belief in supernatural beings. Justin Barrett proposes that supernatural belief is a result of a hyperactive agency detection device (HADD), which is a cognitive default in human perceptual processes.[9] In the process of evolution it was adaptive to assume that unidentified movements or sounds were produced by potential predators and the organism should move quickly to avoid being attacked. Those who moved quickly were more likely to survive, while those who reacted slowly were much less likely to avoid being eaten. Thus, humans tend to find agents everywhere even if they are not actually present. Fritz Heider and Mary-Ann Simmel performed the classic psychological experiment that demonstrates this phenomenon.[10] Persons will use descriptions and narratives that assume some form of agency is present while watching movies of geometrical shapes moving on a screen.

E. Thomas Lawson and Robert N. McCauley developed a theory of different cognitive functions involved in religious practices called the ritual form hypothesis.[11] Religious rituals are processed by an "action representation system" that represents different aspects of the ritual such as agents, the action

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[6] Ludwig Feuerbach, *The Essence of Religion*, trans. Alexander Loos (Amherst: Prometheus Books, 1873/2004); Sigmund Freud, *The Psychopathology of Everyday Life*, trans. Anthea Bell (New York: Penguin Books, 1901/2002).

[7] Stewart Guthrie, *Faces in the Clouds: A New Theory of Religion* (Oxford: Oxford University Press, 1993).

[8] Benson Saler, "Anthropomorphism and Animism: On Stewart E. Guthrie, *Faces in the Clouds* (1993)," in *Contemporary Theories of Religion: A Critical Companion*, ed. Michael Stausberg (New York: Routledge, 2009).

[9] Justin L. Barrett, "Exploring the Natural Foundations of Religion," *Trends in Cognitive Sciences* 4, no. 1 (2000): 29-34.

[10] Fritz Heider and Mary-Ann Simmel, "An Experimental Study of Apparent Behavior," *American Journal of Psychology* 57 (1944): 243-249.

[11] E. Thomas Lawson and Robert N. McCauley, *Rethinking Religion: Connecting Cognition and Culture* (Cambridge: Cambridge University Press, 1990).

performed, and the objects used during the ritual.[12] The defining characteristic of religious rituals is that some type of supernatural agency is involved in the ritual. Since supernatural agency is difficult to directly observe it is often assessed by the intentions of the person performing the ritual, which is more of a product of cognitive programs that assess social information and relationships. Some religious rituals involve elaborate costumes and artifacts that serve as sensory pageantry and arouse different emotional systems, which convey the message that this particular ritual is especially important.

Harvey Whitehouse also analyses religious rituals but from a different cognitive angle. Whitehouse argues that rituals can be distinguished according to two different modes: the doctrinal and imagistic.[13] In the doctrinal mode, religious concepts and values tend to be more complex and difficult to transmit so there is a focus on repetition and routine where rituals and teaching occurs weekly (or more often) to facilitate the dissemination of larger chunks of information in semantic memory. In contrast, in the imagistic mode religious rituals are more focused on highly arousing experiences that occur less frequently but are so dramatic that they access flash-bulb memory systems, which are associated with highly emotional and often traumatic events. The best examples of the imagistic mode include initiation rites and ecstatic religious rituals, which may involve violent acts such as the evulsion of fingernails, whipping, burning with hot coals, mutilation, circumcision, or other acts of physical deprivation.[14]

One of the most important hypotheses in the cognitive science of religion is the counterintuitive hypothesis, which asserts that religious concepts are a combination of intuitive ontological categories about everyday objects in the environment and some *violation* of those categories, which contributes to their memorability.[15] For example, a ghost would be a combination of the person category plus the ability to walk through walls, which violates the intuitive properties of the person category or reincarnation, which is a combination of the person category plus no death and several future bodies.[16] Counterintuitive concepts will spread faster because they exploit certain default processing assumptions of intuitive categories in human cognition making them easier to process, understand, and transmit to others. Religious concepts that violate too

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[12] Justin L. Barrett, "Bringing Data to Mind: Empirical Claims of Lawson and McCauley's Theory of Religious Ritual," in *Religion as Human Capacity: A Festscrift in Honor of E. Thomas Lawson*, ed. T. Light and B. C. Wilson (Cambridge: Cambridge University Press, 2004), 207.

[13] Harvey Whitehouse, *Modes of Religiosity: A Cognitive Theory of Religious Transmission* (Walnut Creek: AltaMira Press, 2004).

[14] Ibid., 111.

[15] Pascal Boyer and Charles Ramble, "Cognitive Templates for Religious Concepts: Cross-Cultural Evidence for Recall of Counter-Intuitive Representations," *Cognitive Science* 25 (2001): 535-564.

[16] Boyer, *Religion Explained*, 63-64.