

THE NEUROSCIENCE OF RELIGIOUS EXPERIENCE

Recent technical advances in the life and medical sciences have revolutionized our understanding of the brain, while the emerging disciplines of social, cognitive, and affective neuroscience continue to reveal the connections of the higher cognitive functions and emotional states associated with religious experience to underlying brain states. At the same time, a host of developing theories in psychology and anthropology posit evolutionary explanations for the ubiquity and persistence of religious beliefs and the reports of religious experiences across human cultures, while gesturing toward physical bases for these behaviors. What is missing from this literature is a strong voice speaking to these behavioral and social scientists – as well as to the intellectually curious in the religious studies community – from the perspective of a brain scientist.

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To:
Ina Livia McNamara
On her first birthday, September 20, 2008

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Preface

Religion is a defining mark of humanity – as emblematic of its bearer as the web for the spider, the dam for the beaver, and the song for the bird. It is, at least partially, created by human beings, and we can learn much about ourselves by studying it as a product of our minds and bodies. Humanity not only creates religion but is also created by it. Religious beliefs and behaviors exert a profound impact on mental and physical health, dietary habits, mating preferences, and economic behavior. They sustain many lethal conflicts and help to heal many others. For billions of people the world over, religious experiences and beliefs influence who they marry, how they rear their children, whom they spend time with, and how they comport themselves in daily life. It may well be that we would not be as we find ourselves in the twenty-first century if our ancestors had not been intensely religious for most of the “life” of our species. It is high time that we have a real science of religion, and thankfully, breakthrough research on religion begun in the last decades of the twentieth century has culminated in the first decade of the twenty-first century in what is arguably the birth of a new science of religion rooted in detailed anthropologic, cognitive, and neuroscientific studies of the manifold features of religious experiences and in evolutionary approaches to religious experiences and behaviors.

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PREFACE

This new science of religion has built on work by previous anthropologic, sociologic, psychologic, and “religious studies” investigations conducted throughout the twentieth century by scholars in those fields. Cross-talk between the cognitive neurosciences and the religious studies field needs to increase, however, as most studies of religion by neuroscientists (mine included, I’m afraid) are too focused on the theistic forms of religion common in the West. We need to teach ourselves something about the richness and complexity of religious phenomena before we make any grand claims about its putative functions.

Although cognitive neuroscience has much to offer to the scientific study of religion or religion studies, religion, in turn, has much to teach the cognitive neuroscientists. As far as I can see, none of the extant cognitive or neuroscience models of human nature or of the Mind/brain can adequately account for the range of behavioral and cognitive phenomena associated with religion. The empirical facts with which religion scholars have been grappling for decades, or better, centuries, simply cannot yet be adequately handled by the current models of the Mind/brain in the cognitive neurosciences. I have, therefore, elected in this book to emphasize the empirical data before us in a few selected domains of religious phenomena. I have wherever possible quoted extensively from original sources so that readers and future investigators can get a feel for the kind of behavioral and experimental changes one sees in religious people and in religion-related disorders.

My overall aim in this book is a modest one: I wish to contribute to the emerging cognitive neuroscientific study of religious experiences and practices. Although I attempt to take some account of non-Western, non-theistic, as well as ancient and ancestral forms of religious phenomena, my focus is mainly limited to the theistic forms of religious experience common in the West. My only justification for doing so is my own ignorance of religious traditions other than my own. One has to start somewhere if one is going to make any progress. I have nevertheless attempted to bring into the discussion those aspects of non-Western traditions that I believe can be profitably illuminated by the cognitive and neuroscience perspective that I adopt in this book. I therefore review the available literature on the neurology and neurochemistry of religious experiences

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of individuals from East and West as well as more traditional forms of religiosity such as shamanism and ancestor worship. Although the range of variance in religious experiences across cultures and time epochs is unknown, I find that changes in religious experiences in the sample of subjects that have been studied with cognitive and neuroscientific techniques are, in fact, reliably associated with a complex circuit of neural structures. This, of course, is a remarkable fact. The fact that a particular circuit of brain regions is consistently associated with religious experiences may tell us something about the nature and functions of religion. Whatever else it is, religion is an integral part of human nature and thus religion is not mere delusion. The functionally integrated religion-related brain circuit involves a widely distributed set of neural regions (depending on particular religious behaviors) but nearly always includes the key nodes of the amygdala, the right anterior temporal cortex, and the right prefrontal cortex. Sometimes the subcortical amygdala is not part of the picture, but the hippocampus is. Sometimes one portion of the prefrontal cortex does not “light up” in association with religious practices, whereas another region of the prefrontal cortex will. Sometimes the parietal lobes are implicated, and so on. Nevertheless, in hundreds of clinical cases and a handful of neuroimaging studies, it is a striking fact that the amygdala, large portions of the prefrontal lobes, and the anterior temporal cortex are repeatedly implicated in expression of religious experiences.

Next, I examine the impact of religious practices on the “Self” and on self-consciousness. I define what I mean by the Self in Chapter 2. Interestingly, there is considerable anatomical overlap between the brain sites implicated in religious experience and the brain sites implicated in the sense of Self and self-consciousness. I then show that religious practices often operate to support transformation of the Self such that the Self becomes more like an “ideal Self” that the individual hopes to become. This hoped-for Self is a more centralized and unified sense of Self. Religious practices also help one to avoid becoming a “feared Self.” This combination of a positive “approach” motivational element toward a hoped-for Self and a negative “avoidance” motivational element away from a feared Self makes religion a powerful tool for processes of self-regulation more generally. In short, I argue that religious practices

contribute to the creation of a unified self-consciousness and an ideal “executive Self.”

Why create an executive Self? The executive Self is better able than a disunified Self to compete, to cooperate, to plan, to think, and to make war. The executive Self can also better process highly complex forms of information; thus it is a better “platform” than is a divided Self for development of various forms of intelligence.

Some might agree with the claim that religions help to construct an executive or centralized form of the Self but add that that is an unfortunate fact. They see the centralized Self as authoritarian, repressive, and intolerant and therefore not desirable. My demonstration that religion helps to create a centralized executive Self, these critics would argue, is just one more reason to dispense with religion altogether.

I do not agree with that assessment. Although some forms of religion undoubtedly do contribute to some form of the Self that might be dubbed “authoritarian,” I do not think that most forms of religion and religious practices do so. Instead, when religions are operating normally, they tend to create a healthy, unified, integrated sense of Self. Most religions aim at and are successful in creating mature, autonomous persons, capable of inhibiting their own impulses, planning wisely for the future, and extending service and kindness to others. Religions take as raw material the average man with all of his pettiness, selfishness, blindness, and violence and then create gold out of this unpromising raw material.

Religions accomplish this feat by promoting a cognitive process I call decentering. In this cognitive process, the “Self” (i.e., the Self-construct or the Self-concept) is temporarily taken “off-line” or decoupled from its control over attentional and behavioral goals of the individual while a search is conducted in semantic memory or a suppositional space (or in a “possible worlds” space) for a more ideal or complex Self-concept that can better match the needs and behavioral goals of the individual. When decentering occurs in religious ritual contexts, the ideal Self against which the old Self is compared may constitute a powerful ancestor, a saint, or a god. In these contexts, the old Self is replaced and integrated into a more ideal Self. Story or narrative grammars help to integrate the old into the new Self. New meaning is created, and the individual is enriched by

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the experience. I show throughout the book that this decentering process shapes many religious phenomena from healing rituals, to religious language, to possession states, and to prayer and religious experiences themselves.

The decentering process, however, can also go terribly wrong. One of the sequential steps in the process (e.g., decoupling, placing the old Self in suppositional space, the search in semantic memory for a more complex ideal Self, or integration into the ideal Self) can be blocked, damaged, or skipped, thus producing aberrant religious phenomena. Fanaticism or dedication to cult leaders, to take just one example, may result from failure to posit an ideal Self or from premature termination of the search process or fusion and integration into a cult leader's personality rather than an ideal Self. Negative spirit possession, to take another example, may involve fusion with a "feared Self" or identity and a failure to find, move toward, or integrate into an ideal identity.

Religious experiences are among the most powerful experiences that human beings can have. They can produce both awe-inspiring saintliness and horror-inspiring maliciousness. They can elicit the most profound pouring out of the Self for others in some people and the most abject self-absorption in others. They are often life changing and are certainly life-sustaining for those who profess them. The extremes produced by religion are all too obvious to require recitation here.

In the process of my work I have developed a fascination and respect for this most powerful of human experiences. I am not interested in debunking religion's supposed pretensions or calling it "nothing but . . ." Nor am I interested in becoming an ideologically motivated partisan for religion. Rather, I hope to offer readers a serious attempt to understand a wide range of religious phenomena and the powerfully transformative effects of religious experience.

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