

The Soul in the Brain

The Cerebral Basis of Language, Art, and Belief

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The Johns Hopkins University Press
Baltimore

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If you fear that opening your mind will cause your brain to fall out, then this book is not for you. If you are unhappy discussing neuroscience in the context of poetry, music, and, above all, religion, then again this text cannot be recommended. For what I have attempted to do is to understand how it is that the human species, so enamored with its own logical and critical facilities, has held strong religious beliefs and a reverence for the arts, apparently since the dawn of what we call civilization. The period of the Enlightenment, with its lifting of the veils on so many mysteries; the conceptual revolutions of Copernicus, Darwin, and Freud; and the past hundred years of astonishing development in all the sciences has seemingly not shifted the overall tone of human thought and behavior on these matters one iota. How did such faithful knowledge arise, and what might neuroscience have to contribute to such a question?

I was first driven to think on these matters by my patients, many of whom have epilepsy, mood disorders, or combinations of the neurological and the psychopathological, who would often either bring me some of their writings or regale me with their religious experiences. I should make it clear that epilepsy, bipolar disorder, and schizophrenia can be devastating human conditions, but we now accept them to be related to disturbed brain structure or function, as opposed to being the wages of sin, and in the past few years many people have benefited from treatments that have arisen from our understanding of how the brain works and how it may be disordered in such illnesses.

The path of knowledge over the past three hundred years has extended toward a deeper and more coherent picture of the nature of humankind and of the natural forces that drive behavior. The human brain has been central to this endeavor, but only in the past thirty years or so have newer techniques of investigation of brain structure and function become available, allowing further penetration of the mysteries of human feelings, thoughts, and emotions. Alongside these

methods, in medical practice, much more attention has been given to understanding what happens when the mind goes wrong as a consequence of either neurological or psychiatric illness. This has established the somatic nature of much mental illness, as a profusion of neural systems, neurotransmitters, and neuromodulators have become implicated in pathogeneses.

Religion, in a more general sense, has not generated much scientific interest until recently. The well-known Cartesian dualism idealized the split between *res cogitans*, things of the mind, including the soul, and *res extensa*, dimensional objects, extended in space, which could be measured. Science became a matter of measurement; the soul could rest peacefully, protected from the prying intrusion of progress.

An interest in religious practices and the meaning of, for example, religious rituals stems to a large extent from the anthropological studies of the nineteenth and twentieth centuries, when the predominant Judeo-Christian beliefs of the Western world became subject to comparison with a multitude of religious practices from around the world. Attempts to usurp the concepts of religion altogether, atheism by any other name, have an even longer history, although a careful line was drawn between skepticism, such as that promoted by the interesting Scottish philosopher David Hume (1711–76), and atheism, which was against the law, at least in England. However, these and related concepts should not be confused with a desire by scientists to understand human behavior and its meaning, in its complexity and entirety. Any question about the existence of God or the gods should be an empirical issue, seen in the same context as, for example, questions about the spherical nature of the world or the composition of the moon. In the same way that the seventeenth century gave the inquisitive investigator the appropriate methods with which to test hypotheses about the nature of the world, the twenty-first century allows for the study of human feelings and experiences in ways never before imagined. This book explores the ground of some of those feelings.

I have taken clinical observations and investigations of several neuropsychiatric disorders to launch an investigation into some aspects of the way the human brain modulates artistic and religious experiences. Many of the symptoms of people with the disorders I describe are not universal and, especially in the case of epilepsy, affect a minority of patients. Furthermore, although I am fascinated by the phenomena I am writing about, I hope my interest has never been intrusive for such patients, especially by my inquiries about their deeply held personal beliefs and practices.

The ideas in this book originated with a simple observation that, in the growing literature on the literary talents of people with epilepsy (from Dostoevsky on), few poets seem to be included. In fact, I came to the conclusion that writing effective poetry is probably incompatible with certain disorders, schizophrenia being one, and seems highly restrained by epilepsy. In contrast, there seem to be legions of poets with what used to be called manic-depressive illness, or cyclothymia. I agree with the sentiments of the neuroscientist J. Z. Young who noted that poets teach us to use words with special force. We may need their help finding new ways to talk about brains.¹

My neuroscientific interests have straddled the borders between neuropsychiatry, behavioral neurology, and biological psychiatry, and in the past few decades a wealth of information has become available about brain function and dysfunction in the kinds of disorder mentioned above. A central question then became whether a study of the alterations of language in these conditions might lead to an understanding of the cerebral representations and anatomical circuitry associated with poetry as opposed to, say, prose. The studies bearing on these issues are reviewed, and certain conclusions emerge, especially about the brain hemisphere contributions that relate to poetic expression.

Other fascinating features of some of the neuropsychiatric disorders discussed in the text are the associated change of religious behaviors and the often profound religious experiences reported in subgroups of patients. The term *hyperreligiosity* is often used to describe this phenomenon, and it has been the subject now of several investigations, which also hint at its possible relationship with neuro-anatomical circuits, giving us a handle on yet another distinctly human capacity that simply has to have cerebral counterparts.

A linking theme between poetry and religion is music. Many have argued that music is different from the other arts, especially in not having a representational capacity in the way that, for example, a painting of an apple has. Others maintain that music could or should be treated as a language in its own right. This is a controversial issue, but following on such lines of thought, my review of the literature suggests that areas of the brain that are involved in mediating poetry and religious experiences may also link, in part, to our capacity to respond to music.

Why do we cry when we listen to music? I suspect that music brings tears to people's eyes more often than any other art form, followed by poetry, with novels and the visual arts farther down the list. In one survey of emotional experiences to paintings, James Elkins, who admits never having cried before a painting, has found few people who did and notes that neither the art historian Sir Ernst Gom-

brich nor Leonardo da Vinci were so moved.² These observations take me into some speculations about the meaning of tragedy and lead me to ask, as have others, Why do we go to the theater to cry? Tragedy, poetry, music, religious feelings, and tears are all intertwined, but I would suggest that this coalescence reflects our biological heritage, starting with an evolutionary development of the brains of primates and leading up to *Homo sapiens*, where such behaviors become manifest.

The study of disorders of the brain can shed light on how the brain works, and clinical observation followed by attempts to reveal underlying anatomy, physiology, and pathology is a time-honored methodology. The path less taken has been to study the influence of disorders, especially neuropsychiatric disorders, on behaviors that relate to artistic expression or religiosity. This neglect has occurred in spite of a well-trod history of observations, which I suggest form solid enough stepping stones on which to venture forth. In part, this relates to a lack of interest in such topics on the part of practitioners and neuroscientists and an even greater lack of interest among those who fund research. It also reflects on the now-closing but still-present gap between neurology and psychiatry as academic disciplines, driven by an irrational attachment to a Cartesian dichotomy between mind and brain. Especially from the time of Freud, psychiatry took a psychological as opposed to a neurobiological approach to psychopathology, and it was eclipsed in terms of understanding the brain in relation to psychiatric symptoms by the success of a localizational approach to neurology. This became successful in predicting, in the days before adequate brain scanning, the sites of lesions in the brains of patients and was the basis of neurological clinical practice.

Many things have changed in the past thirty years, some of which are explored in this book. Not the least has been the resurgence of the discipline of neuropsychiatry, a parent of neuroscience, whose practitioners have an interest in the way brain disorders alter behaviors in their wider context. This embraces changes of personality and associations with psychiatric disorders such as depression, mania, and psychoses, in general, but must also embrace changes in a person's approach to cultural phenomena—hence the interest in hyperreligiosity and a related phenomenon, hypergraphia, the tendency toward extensive and often repetitive writing, seen in some neuropsychiatric conditions.

Advances in neuroanatomy, neurophysiology, neurochemistry, and brain-imaging techniques and a greater willingness to accept the primacy of the brain as the organ that controls and modulates our experiences and behavior have spurned new, though barely nascent, disciplines referred to here as neuroaesthetics and neurotheology. I suggest that explorations of patients with para-

digmatic neuropsychiatric conditions, such as epilepsy and bipolar affective disorders, are the key to unraveling some of the mysteries of the cerebral representations of our highest cultural experiences. These, however, like the discipline of neurophilosophy, are jealously guarded fields.

An earlier version of this manuscript was reviewed by an unknown reader, whose comments were helpful in allowing me to anticipate some of the criticisms that will emerge, especially about links between the brain and artistic activities. Sometimes a controversy is not labeled as such, and in medical science generally one can find nine papers that lead to a conclusion and one that does not. There clearly is a controversy, but the data lean in one direction; such leaning is important as long as one does not fall over.

I have taken an evolutionary stance to the whole subject. Anyone who chooses to ignore the fact that we, and our brains, are, at least for now, at the summit of a mountain of evolutionary development that is millions of years old simply has not got a grasp on reality. The paleopsychic processes embedded in the human central nervous system did not simply arrive a few thousand years ago; the drives and cognitions that have brought us this far have millions of years of selection and evolutionary pressure behind them. Furthermore, anyone who cannot work out that, far from our having descended from a golden age, a time before the Fisher King was wounded and when the Grail was here on earth, we have arrived at this point in time through an evolutionary progression from nature itself, red in tooth and claw, again simply has not got it.

In addition to the historical evolutionary context of the book, there is also a historical approach taken to several of the topics. This arises, in part, from a personal interest in the development of ideas that over the past two millennia have been rich and fertile, though in the neurosciences and in neurophilosophy they took off in the eighteenth century. This approach also emphasizes how ideas have accreted over time, giving due credit, I trust, to past masters. If I quote some poetry to enhance a text, it is because this book is, in part, about poetry, but it is also with the hope that those who hold little brief for poetry at present may be stimulated to read a little more.

Naturally, I have a task to maintain a view that poetry is different from prose, an argument developed in chapter 4, but I do not stand alone on such matters and have sought backers for my view. Of course, there is a point at which poetic prose may be referred to as poetry, and, I suppose, prose poetry may be referred to as prose. My point is not that there are always clear-cut differences between the two but that there are different reflections from their surfaces to which we re-

spond differently, and, in spite of the arguments about the borderlands (where all wars are fought), there are many creations that everyone would agree are pieces of poetry and many others that are clearly prose.

Similarly, I do not want to be seen to have adopted a simple right brain–left brain dichotomy in my view of brain function. I do urge investigators to take more interest in the functions of the right hemisphere of the human brain, and I am suggesting that there is something special about the way the right brain modulates language, unifying the languages of poetry, music, and religion. But our brains in health act holistically, in harmony, and only when that harmony is disturbed does one see disorders that clinicians refer to as neurological or psychiatric or neuropsychiatric.

In the final chapter the ideas developed in the first eight are summarized, but they spill over into other areas that have to do with our cultural experiences, including a return to considering tragedy and suggesting perhaps a new theory of why we go to the theater to cry. I say return, because some years ago I was awarded a university prize based, in part, on an essay on tragedy (mainly about the works of Thomas Hardy), which I turned to again while writing this book. I have chosen to quote quite a lot of Nietzsche, again in the hope that those readers unfamiliar with his writings will be stimulated to read more. However, he has so much to say about the topics in the book that I unashamedly quote him liberally.

Of course, having viewed the criticisms, I could have removed some sections of the text that my reviewer found unsatisfactory, but instead I have elaborated on such ideas, in hopes of making them clearer. If I have made a slip in my references to the structure or function of poetry, I can only apologize. My intention in this book is not to please the too-focused academic but to stimulate ideas.

No doubt many will take me to task for really believing that the brain is it—no brain, no sensations, no feelings, no movements, and no philosophy. Most neuroscientists now take such a view (there have been notable exceptions, such as the neurosurgeon Wilder Penfield or the neurophysiologist Sir John Eccles), but many writers, especially those wedded to folk psychology, including many philosophers, are resistant to it. So be it. But the neuroscientific explorations of human behavior and motives will continue, the conclusions may simply become facts of life (or death), and people will have to come to terms with them in their own perspectives, in the same way that they embrace or ignore Copernicus or Darwin or the ravages of dementia.

This book does not examine the issue of the existence of gods or God; such discussions can be found in countless other books, and they go beyond the neuroscience presented here. However, that question and related ones, such as the

basis of truth or morality, usually viewed as questions for theology or philosophy, are not immune from neuroscientific enquiry. I would venture to speculate that they cannot advance (beyond the speculations of the past two thousand or so years) without the implantation of a neuroscientific perspective. What we know and how we know it are topics that firmly cross the horizon of neurobiology, and only the naïve will continue to ignore that eventuality.

My first degree was in neuroanatomy, and it is still with a sense of awe and wonder that I view the human brain, when seen *in vivo* during anatomical dissection or reconstructed through one of the wonderful high-resolution brain scanners that we now have at our disposal. Dissect a brain and you will alter your perspective on the world and your place in it. If you open up a brain, the mind will, eventually, fall out.

Where Did It All Begin?

William Blake (1757–1827), visionary poet and poet of visions, possible madman but considered genius, beheld a world in a grain of sand, and God in anyone who could see the Infinite in all things.¹ And yet there are more stars in our galaxy than there are grains of sand on all the beaches of our world, and perhaps more galaxies in the universe than the number of those stars. Cosmologists study the fossils of the stars, those imprints of universal history, taking snapshots from the past as the first billions-years-old starlight echoes back to us the inchoate reverberations of that time when everything emerged from its dense beginning. We are told that the expansion of the universe, unfolding with the big bang from condensed gas, far hotter and denser than our sun's core, some 18 billion years ago spun those tiny fragments that were to become our earth into orbit, with its nearest sun to ours some 25 trillion miles away. Atoms, which developed from primordial material, coalesced and conjoined to condense into these planets, stars, and galaxies, forming, in our small microcosm, the intricate structure and nature of our solar system with its surrounding universe. We now know that planets are common and that ours is not unique. Our sun is a star in a galaxy that contains billions of stars. Many planets surround those stars—worlds, some like ours, fertile for life, in orbit around other suns as life enhancing as ours. The very hugeness of the universe is unimaginable, unless we revert to metaphor and, like Blake, can salvage a world in a grain of sand.

Poised between the atoms and the stars is our humble human scale. We are but one stage in the emergence of life on this planet, a process that has taken some 4.5 billion years. We simply do not know how or when life got started here, whether underground or in space, as part of a natural process or by accident, and we do not know whether the galaxy that enfolds us is teeming with life, similar to or unlike ours. Oxygen exhaled by primitive organisms for a billion years led to the development of multicellular life. The 550 million years of the Cambrian era saw the greening of the land and the explosion of life before mammalian de-

scient ushered in human development. The first mammals appeared about 50 million years ago; the earliest hominids, some 4 million to 4.5 million. With *Australopithecus*, *Homo habilis*, *H. erectus*,² and then *H. sapiens*, perhaps 50,000 to 150,000 years ago, evolution saw the rise of human culture, religion, myth, music, and madness.³

Myth

An appropriate starting point is myth. Myths, masquerading as the revealed truth of a religion or enjoyed as psychologically symbolic narratives, are to be read as metaphors, our inner world transformations of the outer world. We do not know where and when myths originated on our cultural time scale, but their purpose may be guessed. Myths frame for a group of people the intuited order of nature and help individuals navigate their way through the stages of life from birth to death and perhaps beyond. The earliest myths, with narrow horizons, were local and tribal and were bound into nature and the natural environment of the group.

Anyone viewing the religions of mankind with an unprejudiced eye must recognize the mythic themes they share, even if differently interpreted by individual societies. Carl Jung's archetypes are one reflection of this underlying structure; Joseph Campbell has called them "universals," albeit locally and socially conditioned. These were innate, immanent, archetypal creations of the early human psyche, embedded within the structure of the evolving human brain.

The metaphors employed in any mythology may be defined as affect-laden signs and symbols, derived from intuitions of the self and the community. These become revealed through ritual, prayers, poems, meditations, ceremonies, annual festivals, and the like in such a way that all members of the community may be held, both in mind and in sentiment, to a common understanding and thus moved to live in accordance with the structure of the myth. Out of the early individualized and collective myths emerged religion, but what I refer to as religious feelings must have preceded the development of any formal religion and their corresponding institutions.

The Origins of Religion

For little more than perhaps a million years out of the long, glorious evolution of life on this planet has one species, which became *sapiens*, regarded certain things as sacred. These things are set apart, revered, associated with veneration,

with ritual, and then with the divine. We have no access to the ancient mind, but we can assume that it was fundamentally different from our own, especially with regard to language.

This theme remains at the heart of the mystery of mankind. Our language not only distinguishes us from all other species of all evolutionary time but also, for each one of us, embeds our individual psychological expression and imprints for us our social and cultural boundaries.

When the concept of gods or a God established itself in the human mind is not known, but religious rituals have been traced back to at least the Neanderthal time, with evidence of the ritualized use of animal parts and human mutilation.⁴ The afterworld, or some kind of ancestor abode, was revealed to the individual through dreams, in which the dead were reanimated, the past revived, and the future revealed.

Burying the dead with some afterlife in mind implies a ceremony, which itself implies an emotional aura, the beginnings of grief and the contrasting joy of the wake.⁵ The dating of such epochal events will forever be only speculation. Some say that some kind of religious ceremonies have been practiced for more than a million years. Like everything in evolution however, things could only have graduated; there was no sudden enlightenment of the world's primates, only a progressive apprehension of the sacred.

The earliest rituals provide some clues. It is known that in Paleolithic times, some 100,000 years ago, the dead were buried with objects, presumably to help them on a journey or in some kind of afterlife existence. Tools and hunting weapons, food and flowers aided the preliterate Neanderthal on an ethereal way to a world that, if not known, was at least imagined. Later, the dead were buried with ornaments, necklaces, and beads, and the early semblances of religious art were observed. Cave art reveals a world perhaps haunted by spirits. The shaman appeared, and religious symbolism flourished.⁶

Cro-Magnon, an early modern human, handsome with a high, rounded forehead,⁷ swarmed over the planet in the middle Stone Age, some hundred thousand years ago. The genus *Homo*, by now *sapiens* and language fluent, provided the first examples of prehistoric art and developed a complexity of spiritual beliefs, which included some idea of the gods. They made fire from flint and fashioned clay figures of animals and humans, especially women with bulging breasts and backsides—so-called Venus figurines. The era saw a symbolic explosion. Cro-Magnon also made the first musical instruments.⁸

The Fragmented Mind

Sometime in the fourth millennium BC, writing and mathematical measurement emerged in human culture and with it the idea of cosmic order. With this magnificent intellectual achievement, ultimately leading to our twenty-first-century ability to use computers and at least try for the stars, came the rise of concepts of civil order, and allegorical identifications began to be taken seriously. Probably for the first time, mythology, which had coalesced with reality yet was immediate in its individual and communal interpretation, became codified with institutional agendas. A system was formed that took advantage of and enslaved the primitive by attempting to abstract the mental deities from their objects; as Blake has observed, “Men forgot that all deities reside in the human breast.”⁹ Thus began the priesthood. Metaphors were misread and misplaced, denotation trumped connotation, the messenger was mistaken for the message, and life and thought were thrown off balance.¹⁰

A further sundering of the cognitive structure of myth, as culturally divisive as the division itself, emerged with Zarathustra (628–551 BC), also known as Zoroaster, whose writings date back to the sixth century BC. With Zarathustra, the sacred also bore the profane. After receiving a vision from the Wise Lord, Zarathustra preached his monotheistic teachings to an essentially polytheistic Iranian society. The Wise, all-good Lord had an adversary, the principle of evil, and it was up to man to decide, out of free choice, whether to follow the good or the evil.¹¹ Thus the conception of an absolute distinction between good and evil emerged, giving birth to the catastrophes that ensued over the next three thousand years. Good gods were contrasted with the bad, and good people and their behaviors and rituals were juxtaposed against evil.¹² Mankind, acting from free will, became fallen; light was contrasted with dark, and life with death. Time became a significant component of eschatology as well, the past progressing to a future, the fall leading to resurrection and the old world to the new.

Dualism

Dualism is a doctrine that posits the existence of two opposing principles. In some versions these work together, bringing harmony, a yin-yang yoyo of cooperation; in others, the two elements at best tolerate and at worst destroy each other. Religious dualism as germinated from the teachings of Zarathustra is but one form of psychological dualism that has permeated the history of human

thought and culture. It contrasts with monism, and the religious counterpart of some ideals of monotheism, and with pluralism, the assumption of multiple realities and polytheism. Nevertheless, even monotheistic religions contain within them dualisms and pluralisms, and polytheisms have their dualisms.

The philosophical identification of dualism often distinguishes between two worlds, one knowable to the senses, the other transcendent, ultimately unknowable, as a Platonic ideal or as the *Ding-an-sich*.¹³ Whether the opposing elements are Seth and Osiris, matter and spirit, the sacred and the profane, or good and evil, the underlying myths that try to explain the origins and course of the universe also reflect the cognitive dualism of man: masculine and feminine, active and passive, body and soul, love and hate. Blake recognizes the necessity of such opposites for human existence: "Without contraries is no progression . . . From these contraries spring what the religious call Good and Evil. Good is the passive that obeys Reason. Evil is the active springing from Energy. Good is Heaven, Evil is Hell." But he goes on:

All bibles or sacred codes have been the causes of the following errors:

1. That man has two real existing principles, Viz: a Body and a Soul
2. That Energy, call'd Evil, is alone from the Body, and that Reason, call'd Good, is alone from the soul
3. That God will torment Man in Eternity for following his energies."¹⁴

The theme of dualism also pervades the work of the German philosopher Friedrich Nietzsche (1844–1900). He introduced his own version of Zarathustra in the form of a Rhadamanthine figure who confronts his listeners about their failure to examine their moral codes or faiths. In this celebration of individuality, of joyful self-sufficiency, Zarathustra, after ten years living alone on a mountain, descends to proclaim that God is dead and that man needs to overcome, to become an *Übermensch*.¹⁵ Nietzsche opposed the view that Judeo-Christian morality was a divinely inspired code and emphasized its pagan and secular background. He saw truth as a movable host of metaphors, discussed the arbitrary nature of words, and reoriented philosophy toward the ontological (having to do with the nature of being) as opposed to the epistemological (having to do with the nature of knowledge). Before Nietzsche, the goal of many philosophers was to prove the existence of God, but he shifted the ground of inquiry to ask how beliefs in God or the gods had arisen. His overthrow of metaphysics, especially Platonism, called for a reevaluation of all values, since once Platonic values are undermined then everything has to be repositioned, including traditional Christian

values and morality, Christianity being referred to by him as Platonism for the people.¹⁶ Zarathustra laments that no one listens to him.

Studies of Religion

Religion has been studied for hundreds of years in one way or another, yet finding a universal definition is difficult. In theory, the term must cover the natural and the supernatural, the theist and the polytheist, the holy texts, rituals, and beliefs of many cultures, the old established orders and the so-called new age cults. In fact, the assumption that religion is a unitary concept is hard to allow; many commentators simply will not be led to a limiting definition, and none is proffered here.

Spirituality has perhaps been segregated from the central concept of religion, the former being the more personal representation of the latter, with individual beliefs and values being contrasted with ritual and tradition. This distinction allows for another component of religion, the experience at the heart of spirituality, to be circumscribed.

The Varieties of Religious Experience

Published just over a hundred years ago, William James's collection of the Gifford lectures remains the most revealing investigation into the psychology of religion ever attempted.¹⁷ James (1842–1910) studied religious experience as he would study other psychological phenomena, accepting their reality but also their vulnerability to scientific enquiry. His definition of religion is pertinent to the theme of this book: "Religion, therefore, as I now ask you arbitrarily to take it, shall mean for us *the feelings, acts, and experiences of individual men in their solitude, so far as they apprehend themselves to stand in relation to whatever they may consider the divine.*"¹⁸

James was thus concerned with immediate personal experience, which he considered to be universal to humankind and which he placed at the forefront of the psychology of religion. Such experience, he opined, should have natural antecedents. Thus in first lecture, entitled "Religion and Neurology," he explores the potential psychophysical associations of religious feelings.

To understand the nature of religious experience, James emphasizes the need to study those for whom religion was "an acute fever" and not to dwell long on those whose commerce with the deity was "second hand"—religion determined in the believer by others. The ones to study were the geniuses of the religious line,

although, he warns, “like many other geniuses that have brought forth fruits effective enough for commemoration in the pages of biography, [they] have often shown symptoms of nervous instability.” He points out that “insane conditions” have a considerable advantage for studies of this kind because they isolate specific factors of the mental life, which become available for investigation. This theme is taken up again in a later chapter of this book, but for now it is interesting to note the emphasis that James gave to the melancholic temperament of such people, exemplified by George Fox, the founder of the Quaker religion: “Melancholy,” James notes, “constitutes an essential moment in every complete religious evolution.”¹⁹

James refers to the fixed ideas, trances, visions, and auditory hallucinations that accompany states of religiosity as pathological, and he notes that, in the right mind, such ideas and conceptions quickly pass into belief and action. “When a superior intellect and a psychopathic temperament coalesce . . . in the same individual, we have the best possible condition for the kind of effective genius that gets into biographical dictionaries.”²⁰

James never developed a neurology of religious experiences, in part, because of the rudimentary development of neurology at the time he was working and, perhaps, because he was not a neurologist. He did, however, note the possible epilepsy of St. Paul and touched upon links between *déjà vu* phenomena, dreamy states, epilepsy, and mysticism.

This book, following James, explores personal religious experience and has nothing to say about the development of any particular religion or about the existence or otherwise of God.²¹ It is the primordial sense of the awareness of another, ineffable world that draws my interest and guides the inquiry. The issue of God or gods does not necessarily come into it, in the sense that some religions, such as Buddhism, do not assume a god.

This feeling has been called a sense of the divine; others may prefer alternative expressions. The point is that such feelings, which may become attached to cognitive constructs such as that of a God, seem to be a universal feature of the psychological constitution of humankind and are therefore amenable to scientific enquiry. The concept of basic human instincts, and even of a human nature, has been under attack from various academic and political persuasions for some time. These views have led not only to a devaluation of the exploration of the human psyche (what is it that makes us tick?) but also to countless futile attempts to either suppress knowledge (by academics, who should know better) or to misguidedly try to direct human behavior without understanding the biological imperatives that drive such behavior (by politicians, who will never know better).

As James points out, the extent of religious feelings must be graded: things are seen as more or less divine, states of mind more or less religious. But at the extreme, rather as one knows a poem when one sees one (see chapter 4), there are other states of mind or behavior in which it is quite clear that the experience reported is religious and becomes, when hypertrophied, more than adequate for scientific investigation.

For James, a central characteristic of religious life is the belief in an unseen order, a Platonic reality that lies beyond that given to the senses. "The sentiment of reality can indeed attach itself so strongly to our object of belief that our whole life is polarised through and through, so to speak, by its sense of the existence of the thing believed in, and yet that thing, for purposes of definite description, can hardly be said to be present to our mind at all."²²

As for the basic psychology underlying the religious sentiment, James considered the normal healthy-minded temperament to be one of optimism, one that espoused goodness and eschewed sin, by confession, absolution, or purgation; evil is minimized. However, another temperament, one he refers to as that of the "sick soul," emphasizes evil as the essential part of the self; such reflections touch on what James refers to as the neurotic constitution, depression, and religious melancholy.²³ James observes that "the completest religions" are those in which pessimism has been best developed, citing especially Buddhism and Christianity. He notes that many saints have possessed the gift of tears, and he describes their moods as "melting" with "exalted affections."²⁴

In his attempts to understand the psychological developments of the religious mind, James opens up the theme of the heterogeneous personality and a fundamental dualism at the heart of human nature. In development, the self becomes "straightened out." St. Augustine struggled with two souls in his breast—two wills, as he refers to them—one carnal and one spiritual. For him, as for others, the resolution of the two brings happiness, in addition to some kind of relief. Such resolutions can come about suddenly or slowly, either through some altered action or intellectual insight or through mystical conversion.²⁵ Conversion, in particular, provokes ecstasies of happiness and indescribable pleasure.

Under his varieties of religious experience James includes the "mystical," and he suggests that religious experiences of the kind being considered in the present book, personal and idiosyncratic, have at their heart "mystical states of consciousness." Such states share several features, including ineffability—a noetic quality, a state of knowledge, transience, and passivity. James considers the power of words to stimulate this sense of mysticism. He refers to Martin Luther's conversion upon hearing a fellow monk repeat the words of the creed: Luther im-

mediately sees the scripture in an entirely new light; the doors of paradise have been opened up for him.

James notes especially the effects of musical sounds, odors, light on the land and the sea, and certain conjunctions of words for their mystical significance:

Most of us can remember the strangely moving power of passages in certain poems read when we were young, irrational doorways as they were through which the mystery of fact, the wildness and the pangs of life, stole into our hearts and thrilled them. The words have now perhaps become the polished surfaces for us; but lyric poetry and music are alive and significant only in proportion as they fetch these vague vistas of a life continuous with our own, becoming and inviting, yet ever eluding our pursuit. We are alive or dead to the eternal inner message of the arts according as we have kept or lost this mystical susceptibility.²⁶

These mystical states, which are brief, have much in common with those methodically cultivated by certain religions. James notes especially the prayer practices of Hindus, Buddhists, Muslims, and Christians. Yoga, the Hindu's *dhyana* (meditation), St. Teresa's orison of union, and the like all are characterized by detachment from outer sensations and verbal descriptions. James suggests the essentially hypnoid nature of these states but again notes their link to optimism.

Religious Feelings and Religion

James embraces the feelings elicited by the "eternal message of the arts" within the term *religion*. Formalized religion obviously grew from the impulses of religious feelings, and as already noted, these feelings must have been fore-runners for the myths and religious rituals and their related institutions that later developed.

Until relatively recently, studies of religion have been predominantly sociological. Anthropologists have studied the myths, rituals, and totems of diverse societies; but while their approach has been essentially evolutionary, it was never especially biological. Social evolution was seen as some kind of progressive rise of civilization, from the primitive to the present, and along with that went the evolution of myth and religion. The classic text of such a view was *The Golden Bough*, by James Frazer (1854–1941), which examines rituals and magic practices in a wide variety of cultures and concludes there has been a natural evolutionary progression of thought, from the magic to the religious to the scientific.²⁷

These Spencerian concepts were largely refuted by the sociologist Émile Durkheim (1858–1917). His main studies in this area concerned totemism, which he

held to represent the earliest form of religion, and his work was largely about the beliefs and practices of the Australian aboriginals. *Pace* Frazer, Durkheim did not find an evolutionary progression of such human thought and activity, and he opined that study of a primitive culture, such as that of the aboriginals, would cast light on modern religions. He considered that religion was a fundamental and permanent part of humanity, but unlike James, he was concerned with its sociological significance: "A religion is a unified system of beliefs and practices relative to sacred things, that is to say, things set apart and forbidden—beliefs and practices which unite into one single moral community called a church, and all those who adhere to them."²⁸ Mana, the totemic principle, gives divine power to plants, animals, and the like, or to representations of them, and through ritual, human beings themselves become transformed.

Durkheim refers to "religious forces" and to a collective "effervescence" that religious ceremonies evoke. Religious force was conceived of as embodied in the totemic emblem, external to individuals and endowed with a kind of transcendence. Yet from another standpoint, and like the clan a totem symbolizes, it can be made real only within and by individual consciousness: "It is immanent in individual members."²⁹ The effects of the effervescence are extended by the totem, which has the power to reactivate the original feelings, like the effects of a drug or, in Pavlovian terms, acting as a conditioned stimulus.

Durkheim argued against one popular theory by opining that religion derives not from the fear and misgivings about the world that terrified primitive man but from a view of gods as friends and protectors, endowing a "joyful confidence" that lay at the heart of totemism. Jealous and terrible gods did not make an appearance until later in the history of religion.

Although Durkheim viewed religion primarily from a sociological perspective (that is, that societies need religion to bind them together), he also believed that by studying religion he could get to the origins of human thought. In his analysis, religious beliefs are not inexplicable hallucinations and delusions but are founded in the social forces that tie the faithful to their gods, a god therefore being a figurative representative of society itself. However, he discussed effervescence as a kind of ecstasy, which in religious ceremonies leads to unleashed passions and to "hyperexcitement of physical and mental life." He continues, "Men of extraordinary religious consciousness—prophets, founders of religions, great saints—often show symptoms of an excitability that is extreme and even pathological; these physiological defects predisposed them to great religious roles . . . It can be said that religion does not do without a certain delirium."³⁰

With regard to the origins of religious thought, Durkheim suggested that

while sacred things exist only in the mind, they also exist in the collective mind. Religious beliefs, in fact, are only a special case of a general law, namely, that the whole of our social world is populated with forces that exist only in our minds. The mental life of humankind is a system of representations in which the most commonplace objects can become sacred and the totem becomes real. Feelings expressed collectively in a religious ceremony are dispersed soon after the event but can be kept alive in the individual by being inscribed on things durable, such as totems and symbols, to which should be added poetry and music. Magic was born out of religion—not vice versa, as suggested by Frazer.

Mircea Eliade analyzed the religious experience, starting out by noting the earlier work of Rudolf Otto, *Das Heilige*. In that book, Otto notes that religious feelings are a compound of terror before the sacred (the awe-inspiring mystery) and a fullness of being. The feelings are numinous, presenting as something *ganz andere* (wholly other). In other words, the sacred is a reality that is totally different from natural reality, and it is impossible to express the *ganz andere* in conventional language.³¹

Eliade contrasts the sacred and the profane and refers to the act of manifestation of the sacred as hierophany.³² Essentially, the history of religions is constituted by many such hierophanies in which the sacred is manifest in ordinary objects or more “supreme” reflections of them, such as, for Christians, the incarnation of God in Jesus Christ. The object or person becomes something else; reality is transformed, as is the whole cosmos. Archaic societies lived as close as possible to the sacred because there resided power, and a special type of power at that, one with constancy and permanence: “Religious man attempts to remain as long as possible in a sacred universe.” There are effectively two modes of being in the world, the sacred and the profane, and for the religious it is only in the sacred world that they have any true existence, the religious need expressing an “unquenchable ontological thirst.”³³ Myth fixes the paradigmatic models for all human rites and activities; a responsible man therefore needs to imitate the gestures of the gods.

With the development of agriculture and the change in the nature of societies that came with it, Eliade notes, the value of the sacred changed, and religious experiences became more concrete. “Man let himself be increasingly carried away by his own discovery; he gave himself up to vital hierophanies and turned away from the sacrality that transcended his immediate and daily needs.” However, a truly nonreligious man is difficult to find, even in modern societies, where so much is desacralized. Superstitions, taboos, “camouflaged myths,” and “degenerated rituals” abound, and countless “little religions,” sects, and schools, in-

cluding political and other social utopianisms, are saturated with myth and religious fanaticism. Profane man is a descendant of *H. religiosus*, and he cannot wipe out his own history—that is, the behavior of his religious ancestors, which has made him what he is today. This is all the more true because a great part of his existence is fed by impulses that come to him from the depth of his being, from the zone that has been called the “unconscious.”³⁴

Freud and Beyond

Another psychobiological theory invoking the unconscious nature and the mythological origins of religious feelings comes from the neurologist-turned-psychologist Sigmund Freud (1856–1939). The Oedipus complex, a cornerstone of his psychoanalytic theory, is central to his ideas on the development of religions. Oedipus, a prince of Thebes, killed his father and married his mother, events that Freud holds are psychologically replayed during infantile development. The growing male child becomes aware of his parents’ sexual relations, desires his mother, fears retaliation from his father, notes the lack of a penis in females, and fears castration. Healthy development demands resolution of these conflicts, with the eventual development of a superego. Freud argues that the Oedipus complex is central to the development of religious feelings both within the individual and within society. In *Totem and Taboo* he draws on much mythological material, including the works of Frazer, Durkheim, and Charles Darwin (1809–82). Primitive society consisted of bands of males driven away from a violent and jealous father who propitiated all the females. They retaliated, killed the father, ate him, and later felt guilt over these acts. The dead father became more powerful than the living one, the totem became a father substitute, and prohibitions and ceremonies were established around the totem to appease the ambivalence. The totem cannot be killed, except at specific ceremonies. Incest came to be forbidden; the totem had to be protected.

Freud argues that all later religions are attempts to resolve the same problem. In terms of the Oedipus complex, God is essentially an exalted father, and religion was founded on a longing for the father. He argues that totemism reflects a universal neurosis and that religious rituals protect against this by shielding individuals and societies from the latent forces of repressed Oedipal desire.

Two points stand out from Freud’s thesis. First, the original traumatic incident is somehow biologically incorporated into the future psychological history of mankind, a kind of archaic heritage driving human behavior. Freud refers to a collective mind, which has somehow adopted the mental processes of the indi-

vidual mind. This continuity he accepts, at least in part, as inherited, the result of biological and psychological necessities. Second, he unites his theory of the origins of religion with a theory of art and tragedy, especially ancient Greek tragedy. The hero suffers because he represents the primal father, and the tragic guilt of the chorus is relieved by his death and downfall. The hero becomes “the redeemer of the Chorus.” For Freud, in the beginning was the deed, not the word.³⁵

Interestingly, Freud tells us about his own conception of religious feelings. Responding to a friend who reproached him for not appreciating the true source of religious feelings, Freud replied, “This source is said to be a special feeling which (so my friend reassures me) never leaves him, the existence of which he finds confirmed by many others . . . It is a feeling which my friend is inclined to call ‘a sensation of eternity,’ a feeling as of something limitless and unbounded, as it were ‘oceanic’ . . . It is the source of the religious energy which is seized on by the various churches and religious systems.” Freud himself, however, did not share this emotion.³⁶

Although there were considerable differences between the theories of Freud and Carl Jung (1865–1961) on the origins of religion, Jung, too, in his elaboration of a theory of archetypes, refers to universal images of a collective nature that are “transmitted not only by tradition and emigration, but also by hereditary.”³⁷ For Freud, the mechanism of transmission was biological evolution, although he professed not to understand the mechanism. However, he regarded religion as fundamentally pathological, a form of universal obsessional neurosis.

Edward Wilson has written widely on the biological underpinnings of culture, embracing a holistic sociobiology. He considers that the emergence of civilization related to hypertrophy of preexisting structures, basic social functions of our ancestors, metamorphosing from environmental adaptations to elaborate social behaviors. Religion is no exception, being an ineradicable part of human nature; religious practices can be “mapped onto the two dimensions of genetic advantage and evolutionary change.” By “congealing identity,” religious practices confer biological advantages, confirming group membership: for the individual, “his strength is the strength of the group, his guide the sacred covenant . . . This key process . . . is sacralization . . . The mind is predisposed—one can speculate that learning rules is physiologically programmed—to participate in a few processes of sacralization which in combinations generate the institutions of organised religion.”³⁸ Belief in God is part of the human condition, which is ruled by myth.

Karen Armstrong, at one time herself a nun, has studied religions and their histories with meticulous curiosity. She writes this about her own experiences:

When I began to research this history of the idea and experience of God . . . I expected to find that God had simply been a projection of human needs and desires . . . My predictions were not entirely unjustified, but I have been extremely surprised by some of my findings, and I wish that I had learned all this thirty years ago, when I was starting out in the religious life. It would have saved a great deal of anxiety to hear . . . that instead of waiting for God to descend from on high, I should deliberately create a sense of him myself.³⁹

Of the several psychological defense mechanisms that led to the development of religions, Freud relies, in part, upon projection, hence the “illusion” in his title, *The Future of an Illusion*. Freud was not the first to consider such mechanisms as operative. The nineteenth-century philosopher Ludwig Feuerbach (1804–72), in his *Treatise on Christianity*, opines that the personality of God is nothing else than the projected personality of man, an illusion. It is not so much that God created man in his own image but that man created God in his. Consciousness of God is human self-consciousness, and religion therefore is a human rather than a divine construction.⁴⁰

Echoing Eliade, Armstrong notes that the images of God or the gods have shifted with time: “When one religious idea ceases to work for [people], it is simply replaced.” As humans who claimed direct contact with the gods faded into mythological reality, at the boundary with the divine, God could still be revealed and experienced through ritual and symbolism, though with an ever metamorphosing iconography.

By the time of the development of writing, religions were well developed, and the shift from naturalism to animism had occurred, with a belief that things other than man, including animals, possessed a spirit. It was a short step to endowing such spirits with human capacities,⁴¹ with the projection of the dichotomous identities of the bicameral mind. Talking to spirits probably evolved into prayer: the small tribe or clan elected a leader, who not only organized hunting but also was quite likely elected the “religious” leader. Spirits needed to be appeased and thanked, hence ceremonies evolved; and since ceremonies needed to be staged somewhere, there came the endowment of sacred places. Space was divided, some parts becoming qualitatively different—holy ground.

The development of agriculture almost certainly forged for *H. sapiens* the development of larger communities and a radical shift in the nature of what may by then be referred to as worship. Cro-Magnon individuals lived in houses, in quite large communities, and hunted and harvested. They practiced complex religious rituals and had a conception of god.⁴² The tribe had a priest, and the spirits be-

came worshipped as gods. Larger community groups brought with them problems of control of anarchic sections not found in smaller groups; hence laws, which, once written, became enshrined. The priest was all powerful, in direct communication with the gods or a servant thereof, a knower of the mysteries and a controller not only of human bodies but also of human spirits—souls. Transgression of the written (laws) became sin, as the priests became high priests. Rhadamanthine punishment followed transgression, the underworld became Hell, and the gates of Elysium, Paradise, or Valhalla were seen as available only to the few. The existence of the gods, whose own behavior portrayed all human desires and follies, succumbed to the myth of the one creator God as monotheism erupted, in our time dominated by three major religions, Christianity, Judaism, and Islam.⁴³

Religious experiences, however, are not solely the prerogative of believers in one or several gods. For many, the divine is interpreted as a not-existing being or even simply as a state of mind. Some hold that the human mind cannot grasp the ineffable essence of God and that beyond the intellectual comprehension is only that which is “speechless and unknowing.”⁴⁴ Pantheists would hold that God is represented in nature, echoed in the words of Albert Einstein, who refers to “cosmic religious feeling.” This was a state in which an individual “feels the nothingness of human desires and aims and the sublimity and marvellous order which reveal themselves both in nature and in the world of thought.”⁴⁵ In fact, though he did not accept an interventionist God, Einstein revered some entity, revealed through the magnificent harmony of the physical laws of the universe. He thought that traditional religions would have to abandon the idea of a personal God, especially in the light of advancing scientific knowledge, but he puts scientific discovery itself in these terms: the scientist should have a “rapturous amazement at the harmony of natural law, which reveals an intelligence of such superiority that, compared with it, all the systematic thinking and acting of human beings is an utterly insignificant reflection.” Such feelings are likened to the feelings of past religious geniuses, and even his cosmology contains within it unexplained factors, such as his concept of lambda, a cosmological constant, which allowed him to create in mathematical terms a coherent (hence spiritual) model of the universe.⁴⁶

There are clear links here with the mystical tradition; in fact, some kind of mystical experience and a belief in the supernatural—in other words, a suspension of belief in the laws of nature—underlie all faiths. God, as such, is not an essential component of such experiences, and belief in the paranormal is widespread. Extending Eliade’s list to a belief in UFOs, ghosts, the power of psychics, or the

fate within our astrological stars, it may be safely stated that the human mind is attuned to accept violations of physical reality. There is also a pervasive anthropomorphism, projections of our human selves onto objects and others in the world; but importantly, *ourselves* here also includes our minds.

Drawing on anthropological data, Pascal Boyer suggests that such attribution of agency is a common feature of the way the mind works generally and is not specific to religious experience. We hear a noise outside on a dark night and attribute it at first to a predator rather than a branch of a tree falling. Boyer points out that we constantly use such intuitions when interacting with others. Furthermore, attribution of minds to others is a stable feature of development and an essential component of human cognition, the so-called theory of mind. For Boyer, "Religious concepts are parasitic upon other mental capacities." However, "our capacities to play music, paint pictures or even make sense of printed ink-patterns on a page are also parasitic in this sense." In fact, Boyer points out that science, which offers an alternative to the religious explanation of why things are and why they happen in the world, represents an unnatural way of thinking, "a departure from our spontaneous intuitions . . . Scientific activity is both cognitively and socially very *unlikely*, which is why it has only been developed by a very small number of people, in a small number of places, for what is only a minuscule part of our evolutionary history . . . Science is every bit as 'unnatural' to the human mind as religion is 'natural.'"⁴⁷

Post-Kantian philosophy guarantees the limits of human reason, ensures that religious knowledge, as discussed by Eliade, is categorically different from empirical knowledge, and secures the religious experience as subjective, *ad hominem* but clearly compelling.⁴⁸

As William James attempted to explore in his writings, in this book I examine religious experiences as universal phenomenological events that can be traced at least back to early hominid history. My work here is not concerned with any particular religion and has nothing to say on comparative values of any particular religious behaviors. The biological basis of religious experiences and practices are suggested by their universality through time and place, and the close relationship of these behaviors to both myth and music are evident. The ancients knew (through dreaming) of another world where ancestors dwelled, and, with the rise of self-consciousness, they became aware of death. Fear of death emerged, attempts were made to achieve the other world; gods were projected from and into the human psyche, and powerful feelings became attached to belief systems. For James, the origin of the Greek gods suggests a sense of reality in human con-

sciousness, a sense of presence of something there, deeper than that given by our general senses. If this reality-feeling, as he calls it, touches on religious conceptions, they become believed. James relied on the existence of hallucinations as background evidence that such reality-feelings are a part of the human psyche, and he also discussed the feeling of a presence, localized but unseen, as part of this experience.

Objects of religious belief, then, become possessed by believers not as conceptions but as directly apprehended realities, Eliade's hierophanies. For Freud and the other authors quoted here, this was an illusion but a recognizable part of the normal human psyche. Although study of religious experience is best achieved by examining those with an ability to have feelings of unusual intensity, the underlying cerebral mechanisms involved are not seen as pathological but derive, in part or in total, from our evolutionary heritage.

Although James notes that fear is often held as a primary emotion underlying the development of religions, he doubly emphasizes joy, concluding that a person's religion involves both moods of contraction and moods of expansion of being. Joy, ecstasy, and melancholia are noted by several of the quoted writers as themes that underpin religious states and allow exploration of links between religion and mood disorders.

As should be clear from this introduction, religions have the potential, using the mechanisms of normal psychic activity, to hijack our primitive feelings and institutionalize them for the benefit not of the individual but of the high priests. Writing has been a potent instrument in this process. This brings us to at least one of the functions of art. Art and religious belief are close not only in terms of the huge amount of artistic expression that has an avowedly religious theme but also at the conceptual level. They both communicate through symbol and metaphor, they bring various special beliefs to a community, they use ritual, and they require an illusion, a suspension of reality. They represent a way of grappling with hidden connections in our lives and in our psyche. However, religion can usurp these processes, and "when religion becomes artificial, it is the prerogative of art to preserve its essence by means of mythical symbols, which religion would have us believe are literally true: however, it is through art that their symbolic value, and the profound truths they contain can be revealed . . . Myth is true for all time . . . and its content is inexhaustible for every age."⁴⁹