

Naturalism—as Religion, within Religions, without Religion

with Willem B. Drees, “Naturalism and Religion: Hunting Two Snarks?”; Ursula W. Goodenough and Jeremy E. Sherman, “The Emergence of Selves and Purpose”; Matthew D. MacKenzie, “Spiritual Animals: Sense-Making, Self-Transcendence, and Liberal Naturalism”; Curtis M. Craig, “The Potential Contribution of Awe and Nature Appreciation to Positive Moral Values”; Mark E. Hoelter, “Mysterium Tremendum in a New Key”; Charles W. Fowler, “The Convergence of Science and Religion”; Todd Macalister, “Naturalistic Religious Practices: What Naturalists Have Been Discussing and Doing”; Paul H. Carr, “Theologies Completing Naturalism’s Limitations”; James Sharp, “Theistic Evolution in Three Traditions”; Alessandro Mantini, “Religious Naturalism and Creation: A Cosmological and Theological Reading on the Origin/Beginning of the Universe”; and Willem B. Drees, “When to Be What? Why Science-Inspired Naturalism Need Not Imply Religious Naturalism.”

MYSTERIUM TREMENDUM IN A NEW KEY

by Mark E. Hoelter

Abstract. In 1917 Rudolf Otto concluded his search for a non-rational grounding for religion—not opposed to science but also not reducible to science. Reflecting on personal experience and engagement with world religions, Otto posited: all religions are rooted in a universal experience. He labeled this experience the *mysterium tremendum et fascinans*—an experience so fascinating that one cannot not attend to it, and, at the same time, so humbling and inspiring it also has both awe and terror about it. Now Iain McGilchrist’s *The Master and His Emissary* offers a neurological, “non-rational” grounding for that *mysterium*. Neuroscientist, Patrick McNamara, and philosopher-theologian, Wesley J. Wildman, expand, refine, and particularize McGilchrist’s work. All of this together, besides playing Otto’s original *mysterium* in a new key, holds implications for pro-social intragroup and inter-group work as well as for individual psychotherapeutic and spiritual growth and transformation.

Keywords: brain hemisphere; cognitive science; intense experience; *mysterium tremendum*; neuroscience; religious experience; religious naturalism; spiritual experience

Mark E. Hoelter is a Unitarian Universalist minister (retired) and a practicing, certified transformational coach, living in Washington, DC, e-mail: mark.hoelter@protonmail.com.

MYSTERIUM TREMENDUM IN A NEW KEY

If there is a vital truth to religion and spirituality, upon what bedrock does that truth stand, or out of what does it grow or emerge? And is it both cognitively true and existentially vital at all? Or are religion and spirituality entirely illusions, vestiges of minds from a prescientific age, better dispensed with?

Those questions had gained new force in the 1800s—the heyday of the so-called Age of Reason. The cultured intelligentsia were rather despising of religion then—its myths and fables posing as fact and history, its dogmatism posing as unquestionable reason, its miracles reflecting an ignorance of the basics of science, and its morality too constrictive. A young and brilliant theologian, Friedrich Schleiermacher, tackled those questions and gave an answer that was influenced by the Romantic movement (Oldmeadow 2010). The bedrock and soil of religion and spirituality, he decided, is none of what the cultured despisers despised. Rather, it is a particular “intuition,” a particular deep feeling (*Gefühl*) shared by every human; a profound feeling of limit to human power; a sensing ultimately of absolute dependence on something greater than themselves.

RUDOLF OTTO SEEKS TO DEEPEN AND EXPAND SCHLEIERMACHER

Just over a century later, on the cusp of modernity, near the end of WWI but still immersed in the turmoil, death, and havoc of that awful war, another German professor, Rudolf Otto, searched for and gave a somewhat different answer. Otto had himself been inspired by Schleiermacher, but he thought Schleiermacher’s answer veered too far into the irrational—irrational in the sense of mere feelings, mere emotions. At the same time, Otto agreed with some of Schleiermacher’s parameters. The bedrock had to be beyond rationality and science but not opposed to science. It did have to be *non*-rational (meaning also not scientific) but not *irrational* or overly emotional as, he thought, it tended to be in Schleiermacher. It had to be experiential, not just a woolly idea. It also needed to be *sui generis* to religion, not generally just psychological.

In 1911 Otto embarked on lengthy travel, long intrigued by religions other than his Christianity. In this he was in tune with interests that were arising in Europe. Early in this travel, at a synagogue Sabbath service in Morocco, during the *Kedusha* moment in the Jewish liturgy—a moment that is like an abrupt departure from the rest of the liturgy, includes the chanting of *Kadosh! Kadosh! Kadosh! (Holy! Holy! Holy!)*—he found himself physically shuddering with awe. That experience sowed the seed of “the idea of the holy” which would become the title of his most famous book (Oldmeadow 2010; Rosen 2021).

For much of the rest of 1911 and 1912 Otto traveled through North Africa, Palestine, India, China, Japan, and the USA, exploring and

comparing the places and people, engaging with and participating as much as he could in their rituals, and experiences—Jewish, Orthodox Christian, Muslim, Hindu, Buddhist, Daoist, Confucian, indigenous. To a degree that was exceptional for the time, even if imperfectly, he did not impose his Lutheran Christian presuppositions upon these engagements. He tried to just engage the experiences in their own terms. In 1917 Rudolf Otto sifted and distilled all these moments together, and he articulated what emerged for him as the fount and origin of all religion and spirituality. That distillation was still very much like his experience in Morocco, an experience which for him had clear echoes in the elegant architecture of a mosque in Palestine, in a Hindu cave temple in India, in an Eastern Orthodox liturgical moment, and a Zen Buddhist moment in a Japanese dojo (Oldmeadow 2010).

It was impossible to fully capture the character of that experience in words; therefore, in at least that sense, the experience was mystery. The experience had a felt sense, and yet it was not merely psychological, not *irrational* and merely emotional only, as he thought it tended to be in Schleiermacher. But it also was not scientific *per se*, was not rational by enlightenment standards, and therefore could be called *non-rational*. Yet it was quite real. The experience was captivating, fascinating, nearly impossible not to give it attention when it occurred. And it produced in one—certainly in Otto himself—a feeling of awe. It was an awe tinged with a sense of danger, even of terror. There was about the experience a profound sense of wholeness and, at the same time a sense of an otherness, including a sense of a capital-O “Other” standing over against one’s sense of self. He gave the experience a name in Latin to underline its specialness and essence: *mysterium tremendum et fascinosum* (Otto [1925] 1959). (Otto, translated by John W. Harvey, [1925] 1959)

Although one of Rudolf Otto’s parameters about the fount and origin of religion and spirituality was that it would be beyond science, he never intended that it would be against science. It just would have its own integrity and sphere. And it was inevitable that scientists would one day scrutinize this apparently special experience. For one thing, it became clear that it is impossible for any human experience to happen apart from the brain, so surely this *mysterium tremendum* also involves the brain. For another thing, certain brain maladies, such as temporal lobe epilepsy, are highly correlated with an emergence of hyper-religiosity. And, especially in the 1990’s, it became technologically possible to peer inside the brain as never before while individuals were having certain experiences. So, we turn now to three contemporary researchers—two scientists and a science-minded philosopher-theologian—whose research directly or indirectly bears upon the matter. They are: Iain McGilchrist, Patrick McNamara, and Wesley J. Wildman.

IAIN MCGILCHRIST, THE BRAIN'S HEMISPHERES, AND SPIRITUAL EXPERIENCES

Iain McGilchrist, a former Fellow at Oxford University and still a Fellow of the Royal Academy of Psychiatrists, is author of *The Master and His Emissary: The Divided Brain and the Making of the Western World* (McGilchrist 2018). McGilchrist began as a senior teacher of literature, and so had and has a refined sense of Shelley and Shakespeare, Dostoevsky and Dickinson, Nabokov and Neruda. But, tired of and disgusted with the whole postmodern “LitCrit” phenomenon and its effects on the field, he left the teaching of literature, ventured forth to study medicine, and specialized in psychiatry and neuroscience.

Awed and fascinated by the workings of the brain, McGilchrist has been studying those workings for the last two decades and was especially struck by the differences reported and that he himself saw between the right and left hemispheres of the brain. Medical friends and colleagues, remembering the old “left brain / right brain” debacle, warned him away from further such studies. “Too deadly toxic,” they said, more than suggesting that such studies would mark him, kill his reputation, and cripple or end his research career. But McGilchrist proceeded. And in proceeding he did not and does not repeat the old and discredited left brain / right brain theory, which sought originally to locate specific physical, mental, and emotional operations in specific parts of either the “left brain” or the “right brain.”

McGilchrist decidedly agrees that the old left-right, specific brain locations for specific aspects of human brain operations idea has been disproved. Both brain hemispheres participate actively in virtually all our thinking, feeling, behaving, and experiencing. And the neural activity is top to bottom, front to back, as well as left and right. At the same time, McGilchrist was struck and noted that the right hemisphere is always larger than the left, in humans but not only in humans, in left-handed people and right-handed people alike. And he asked why. What is the function of the differences in brain hemisphere size? What is the function of the hemispheres being linked together? In life and evolutionary development, what problem does this arrangement solve? What opportunity is afforded? (McGilchrist 2019a, in “Religion, Brain, & Behavior”)

The problem, McGilchrist has decided, is like this: an animal has come to a watering hole or a carcass and needs to drink or eat. To do so requires a particular kind of concentrated focus and the ability to manipulate its body and/or the carcass meal. But that sharp focused attention also leaves the animal wickedly vulnerable to being stalked and attacked while it drinks or eats. What is needed is another awareness system, a 360-degree global awareness system alert to signals of stalking and possible attack, and with a link to the entire neurosystem’s ability to sense, flee, fight, or freeze in an instant. (McGilchrist 2019a)

Reasonable speculation then: long ago in evolution's procession forward, those sentient organisms survived and thrived in which dual brain systems—both the sharp focus-calculate-manipulate system and the global-awareness-with-neuronal-links-to-body-sensing-and-reaction system—had become linked together, enabling them to co-operate with each other. That's the left hemisphere and its specialty and the right hemisphere and its specialty. And then, particularly in human animals, the two hemispheres are interactively connected through the corpus callosum.

Staying now with humans, the brain's right hemisphere has connections to an amazing number of neurons in the skin, around the gut, around the heart—all of which send and receive signals to and from the rest of the organism, from (and perhaps to) its surroundings, and to and from the right hemisphere. These connections are so intricate that it is possible to speak metaphorically of the "heart brain" and the "gut brain," at least so long as one stays aware these are metaphors. The left hemisphere has no such direct connections to those neurons; its only connection is indirectly from the right hemisphere through the corpus callosum. The right hemisphere likewise has links with the feelings-and-emotions parts of the brain; the left hemisphere does not. Simplified, the right hemisphere takes in and processes the world 3-dimensionally, globally; it is often what William James called a blooming and buzzing confusion, a riot and delight of colors, objects, and connections—a living, dynamic impressionist painting. (McGilchrist 2018, 32–93)

The right hemisphere takes in, registers, compares, and contrasts the whole world and its myriad contents like a profligate prodigal son. And when it comes to words and statements to portray what it experiences, if it is not speechless, the right hemisphere finds metaphors and paradoxes to be not fuzzy but rather most accurate; the left hemisphere not so. Said differently, simplified and metaphorically again to be sure, the right hemisphere goes out, engages with, and takes in the whole world around it, comparing and contrasting. If you will, it explores the *territory*, ever on the alert to what is new, what is different, what is dangerous, what is satisfying (McGilchrist 2018, 94–132).

And what about the left hemisphere? It is vital also. The left hemisphere receives and sifts the data, categorizes and boxes the particulars, creates grids and linear links, establishes norms, and generally creates a map of the territory. At one level the left hemisphere thus enables the human animal to manipulate itself and the parts of the world in which it lives and moves and has its being. At another level it allows a scholar like McGilchrist to marshal facts, think things through, and write his tome. Simplified, we need literal maps and figurative maps—to drink, eat, think, write—which the left hemisphere develops. And yet, still simplified, McGilchrist would remind us of what our mundane daily navigation experiences have well-taught us: that "the map is not the territory." Not even the best of maps,

not even a collection of maps. It is not a case of either/or—either the left hemisphere or the right—but of both/and. It is also a case, for McGilchrist at least, of which hemisphere we should allow in general to lead the dance, and which we should keep as follower of the lead (McGilchrist 2018, 133–175).

Iain McGilchrist more than suggests that intrinsic elements of spirituality and religion—global perspective, recursive and shifting gestalts, metaphor connections, paradoxes, stories—are definitive elements of how our brain’s right hemisphere approaches and processes the “blossoming buzzing” world in which we live. Some people deem those right hemisphere elements as irrational (connoting something close to anti-rational) and inferior to the left hemisphere elements. McGilchrist corrects that formulation to: the right hemisphere’s processing *is* inferior for grasping, manipulating, measuring, closely focusing—bringing food to mouth or mouth to water, literally or figuratively. But it is superior for global awareness, sensing, exploring, relating, being aware of danger or threat, and turning off the left hemisphere when rapid flight, fight, or freeze is necessary (McGilchrist 2018, 94–132, and McGilchrist, 2019a).

The right hemisphere simply processes differently than the left. And one can call its process “non-rational” (some say “supra-rational”) if we center and privilege the processing approach of the left hemisphere and call that “rational.” Insofar as religious and spiritual experiences particularly involve the brain’s right hemisphere processing, then, we could say such experiences as the *mysterium tremendum et fascinans* are indeed nonrational as Rudolf Otto desired.

In fact, as McGilchrist well knows, what has allowed human beings to thrive is the complementary work of both brain hemispheres. Left to itself, without any other input, that profligate right hemisphere can soar off “like gold to airy thinness beat,” to quote poet John Donne, and dissipate into chaos. By contrast, left to itself, the left hemisphere seems to have a strong tendency to and can contract into rigidity—a “my way or the highway” insistence (McGilchrist 2018, 133–75, and McGilchrist 2019a.)

An aside: UCLA psychiatrist and neuroscientist, Daniel J. Siegel, notes that patients who come to him for therapy are virtually always wrestling either with too much chaos or too much rigidity in their lives, minds, thoughts, and feelings. What is needed, and what nature continues to select for, is linkage and complementarity—a Goldilocks “just right” balance. We can get lost in the territory—forest or desert—if we don’t have a map to guide us. We can miss the richness and nurturance of the territory if our nose and focus are too much in the map (Siegel 2017).

Now let me set McGilchrist’s work to the side and focus on an ever-growing group of cognitive and neuroscientists. Since the 1990s they have been conducting brain studies of people undergoing religious and spiritual experiences, which, following the lead of Wesley Wildman, I am going

now to abbreviate to: *RSEs* (RSE = Religious and Spiritual Experience). These researchers have been working with ever more sophisticated methods and equipment, refined by failures as well as by successes. Their studies abound in PET scans (positron emission tomography), SPECT studies (single photon emission computed tomography), and fMRIs (functional magnetic resonance imaging), and now even metadata analyses of masses of data from these studies. They have tried to see what happens in a human brain when a religious or spiritual experience is occurring? The following summary accounts come with a large caveat: this kind of research is still in its very earliest stages and, therefore, subject to future changes.

ANDREW NEWBERG RECORDS SPIRITUAL EXPERIENCES LIVE

The more popular accounts of these studies, such as by Andrew Newberg, rooted in careful and peer-reviewed research, include different varieties of religious and ritual practices: mindfulness meditation, centering prayer, rhythmic physical movement such as Jewish *davening* or Daoist *tai chi chuan*, speaking in tongues (also called *glossolalia*). Increasingly the studies have been including practitioners from religions other than just the Abrahamic religions, and increasingly also including secular and atheist practitioners of such practices (Newberg 2009; Newberg and Waldman 2016, 2018).

The growing body of research of these cognitive and neuroscientists expands and adds other aspects to the phenomenon of RSEs, in addition to Rudolf Otto's. There is often indeed Rudolf Otto's awe with fear and trembling (*tremendum*), and also irresistible fascination (*fascinans*), to be sure. In addition there can be and often are other effects: profoundly deep calm and peace, which may last for weeks or longer; a sense of timelessness; a sense of ecstasy—standing outside oneself; a sense of the normal boundaries of oneself disappearing, and then of being one with—deeply interfused with—everything and everyone around one; a sense of being one with an “Other” if one also senses an “Other” during the experience; a felt pressure to be silent, or sometimes to speak, or sometimes to move one's body; a sense of practical wisdom combined with an ease in making key personal existential decisions; heightened empathy; heightened compassion.

PATRICK McNAMARA FINDS AN EXISTENTIAL IDENTITY FUNCTION OF SPIRITUAL EXPERIENCES

Where Andrew Newberg tends in his more popular books to focus on the research of his team, Patrick McNamara—neuroscientist, Associate Professor of Neurology at Boston University, and director of its Neurobehavior Laboratory—curates a broader scope of studies by many other

researchers. McNamara (2006, 2009) examines not only instances of RSEs but also case studies stemming from brain injury and, as well, case studies of “disorders” such as schizophrenia, multiple personality disorders (these days known as dissociative identity disorder), OCD (obsessive compulsive disorder), and the like (McNamara 2009, 59–79). He gives special but not exclusive attention to temporal lobe epilepsy since some people who experience temporal lobe epileptic seizures also develop hyperreligiosity and have decidedly religious experiences. In terms of brain hemispheres, McNamara, surveying and analyzing so many of these studies, concurs with McGilchrist and others that RSEs markedly—not exclusively but markedly—involve parts of the right hemisphere of the brain: the right temporal lobe, the right prefrontal cortex, the right amygdala, the right hemisphere’s connection to the limbic system, to the hippocampus, to the neural structures and processes around the heart, the gut, and in the skin (McNamara 2009).

Equally if not more interesting is how McNamara sees RSEs functioning vis-à-vis our sense of Self. As we develop in life, we develop a sense of Self in many details: gender, position in families, social roles, occupation, default moods, recurring hopes and fears. We develop a repeating story, or collection or series of internal stories, that reinforce that sense of Self. Likewise, we develop repeating behaviors—habits—that go along with those stories (or *vice versa*, stories that “explain” habits) as well as repeating sensations and feelings, most often outside of our default, everyday awareness. Further, as readers’ personal experiences in family and personal life probably will testify, we have a strong tendency to get locked into those details and stories, in a relatively inflexible way (McNamara 2009, 21–43).

Iain McGilchrist would say that “getting locked into” our stories about our Self is a function of how the left hemisphere operates—its “my way or the highway” tendency. As a result of the above, we spend a lot of time on automatic pilot, in a mental “comfort zone,” our nose in those left hemisphere maps of the territory of our experiences and of the Self. That is not automatically bad. Routines of behavior and thinking, good habits, save us a lot of time and effort, instead of being at the mercy of the blooming, buzzing confusion. At the same time, it can lead us to miss the broader, deeper, and richer territory. And that comfort zone can then turn into Henry David Thoreau’s “lives of quiet desperation.”

McNamara thinks that RSEs—which can come about spontaneously, or through practices such as meditation, or as a result of life crises or physical accidents—“de-center” that sense of Self; take it off-line; they take us out of our routines and comfort zones. The vivid experiences of the RSEs, then, can leave us not knowing who we are or what our boundaries are, what our identity is. This can be a frightful experience or a fascinating experience—or both at the same time—leading to an inner search for a new sense of Self, one that is larger, more complex, more encompassing,

more agile. This is true especially if an aspect of the RSE is the experience of “being one with” all around one (McNamara 2009, 44–58, 80–130).

Boundaries screen things out, and neurologically, with the old boundaries (stories, beliefs, rules, habits) that had defined but also narrowed one’s sense of Self suspended, we can newly become aware of details, connections, and possible (ideal) selves that had been hidden behind our more rigid, repeating Self-stories. McGilchrist would say, and McNamara would concur, that this is largely a function of how the right hemisphere processes life, versus how the left hemisphere processes life (McNamara 2009, 59–79).

In terms of human evolution, whether on an individual basis or a group basis, when old and familiar ways of functioning were no longer working, RSEs could open individuals to new—broader, deeper, more flexible—perspectives and personal or social organization. Individuals who, by virtue of such experiences, might prove to have more clarity, agility, and creativity, the better to meet the vicissitudes of various life situations. They might, as a result, become guides or leaders in a new prosocial direction. So, McNamara adds and emphasizes another dimension and effect of RSEs to McGilchrist’s: RSEs can be personally transformational and even socially transformational. They can lead from personal crisis to a new, personal agility. They can lead from *intra*-group cohesion to *inter*-group inclusion; from nomadic hunter-gatherer tribes to agrarian villages, and from agrarian villages to city states, and so on.

WESLEY WILDMAN: SPIRITUAL & RELIGIOUS & INTENSIVE EXPERIENCES AND EVOLUTION

Wesley J. Wildman—Professor of Philosophy, Theology, and Ethics at Boston University—is a colleague of Patrick McNamara, and they have collaborated on several projects (Wildman 2012; Wildman and Brothers 1999). He is not a neuroscientist or a cognitive scientist but is a close student of that research. Wildman, who identifies as a religious naturalist, mostly concurs with McNamara’s conclusions. Plus, he makes a stronger distinction between “religious experiences” and “spiritual experiences” in this way: “[R]eligious experiences...encompass the experiences that people have by virtue of being religious or being involved in religious groups.... [S]piritual experiences encompass all ultimacy experiences and some of the domain of religious experiences that are not of ultimate significance for people.” (The terms “ultimacy” and “ultimate” refer to those moments when people wonder about the purpose and meaning of their lives; from whence we come ultimately and wither we tend ultimately. An “ultimacy experience” is a vivid experience that causes people so to wonder or that gives a hint of an answer or even sometimes a clear answer to that existential question; Wildman 2011, 268).

This distinction by Wildman broadens the scope of things. By the definitions Wildman gives, McNamara tends to focus more on religious experiences. By including and highlighting the separate category of spiritual experiences, which can happen all apart from religiosity or any religious group, Wildman includes a broader range of people, including people who are not part of a religious group—the spiritual but not religious people, sometimes these days called “the ‘Nones.’”

He goes further still and includes other vivid experiences that some people might have, who themselves might not consider the experience to be either religious or spiritual—experiences of radically arresting beauty or interpersonal connection or internal feeling/emotion—that also cause people to wonder about ultimate meaning or that answer the question of ultimate meaning, sometimes that radically reorient people’s daily lives. Maslow’s “peak experiences” and Csikszentmihály’s “flow experiences” would be included as RSEs (Wildman 2011, 104–43).

Wildman develops a fascinating whole taxonomy of different extraordinary experiences, which, though different, have a family resemblance to each other. His taxonomy includes just strange experiences of no existential meaning, existential ultimacy experiences, religious experiences, spiritual experiences, and mystical experiences—all of them overlapping, intertwined, and sometimes interfused. He adds a special category—“intense experiences”—and with it adds a hypothesis (Wildman 2011, 77–103).

In the evolution of the neuro-systems and cognitive systems of human beings, a new development occurred or emerged about 50,000 years ago. That development was—or included—the neurological possibility of having extraordinary, intense experiences of self, of others, of self-other interactions, and of the natural world in which we live and move and have our being. Human beings before this were more purely reactive, the hypothesis goes on, much like their closest animal “cousins”—chimpanzees and bonobos. They did not have this ability to have such extraordinary intense experiences; not having them they could not explore, exercise, and refine them. And, suggests Wildman, that evolutionary mutation, that new neurological ability, those intense experiences are the fount and origin of RSEs, and therefore of religion and spirituality. And again, concurring with McNamara and McGilchrist, all of this particularly involves the neural flow and processing of the right hemisphere of our brains (Wildman 1999, esp. 389–416; Wildman 2019).

SUMMARY AND RECAPITULATION

It is time to summarize and draw some tentative conclusions. Rudolf Otto sought to give religion a firm foundation that was unique to religion, beyond science but not opposed to science, nonrational (beyond rational)

but not irrational in the sense of “merely emotive.” He found this foundation for himself in the experiences he had in religious situations, experiences that both fascinated and overwhelmed him and made him shudder in awe. He searched for similarities and thought he found their close equivalent in other religions around the world. Conflating them with his own, and making them singular, he named this experience the *mysterium tremendum et fascinans*.

Iain McGilchrist has discovered that the two hemispheres of the brain process the world around us and within us differently. The right hemisphere perceives and delights in receiving and exploring the chaos of the “blooming buzzing” world more fully, in greater detail, and responds to it all more globally—open to what’s new, to more details, more connections. Virtually an ongoing ineffable experience, the right hemisphere finds with satisfaction that the language with which to best to express or share its experience is the vivid and flexible language of metaphor, paradox, and story.

The left hemisphere gathers, categorizes, serializes, and files the data, enabling us to manipulate things and live practically in the “blooming buzzing” world. It also tends to fixate and insist on the categories it has established. The right hemisphere explores and takes in the territory. The left hemisphere makes maps of the territory. We need both, but the map is never the territory. Everything happens in and comes from the territory. So, to live most fully, with agility and flexibility rather than with internal rigidity or chaos, we need to find ways to let the right hemisphere lead us and train the left hemisphere to follow that lead. McGilchrist thinks that RSEs markedly and distinctively involve the right hemisphere.

Patrick McNamara—along with Andrew Newberg and a growing number of neuroscientists—and Wesley Wildman mostly concurring with McNamara, implicitly agree with McGilchrist. They probe the deeper brain and neuroscientific details. They find that RSEs are vivid experiences that can loosen the grip of the stories, feelings, and behaviors by which our left hemisphere enables us to navigate the myriad details of life, but then also by which we become blinded to many details and even trapped. The loosening of that grip by RSEs when it is too tight can be frightening, even terribly frightening; it also can return us from the map(s) of the left hemisphere to the richer territory of the right hemisphere, and thereby liberate us to live with more openness, flexibility, and agility—individually, with each other, and in the world at large.

From among several subcategories, Wildman focuses beyond RESs on the unique (as far as we know) possibility of “intense experiences,” which emerged through evolution perhaps 50,000 years ago, which overlap all other categories of RSEs, and which broaden the category of RSEs to include virtually everyone—even those who do not identify as religious or spiritual and who have no working concept of divine beings—in a religious

naturalist way. And these intense experiences are, for Wildman, the fount and origin of unique or personal spiritual experiences and of personal and communal religious experiences.

The combined research of these studies goes in the direction of affirming a basic soundness to Rudolf Otto's phenomenological description of what he called the *mysterium tremendum et fascinans* experience and its "nonrational" but very real quality. The ongoing studies add or emphasize even more aspects than the personal internal sense of awe and fascination, including an aspect of personal and even social transformation. They further begin to reveal a neurological substructure, neurochemical subprocesses (not discussed in this article), and neuro-cognitive processes, which generate—or from which emerge—what we have called, along with Wildman, RSEs. All of this is within the context of evolutionary theory and research, not least of all the hypothesis that unique-to-humans "intense experiences" were a natural, mutational part of the evolution of *homo sapiens sapiens*, and then derivatively of *homo religiosus*. They give Rudolf Otto's deep insight its due in an updated way—his original melody, if you will, in a new key, and perhaps also with some new harmonies.

A NEUROSCIENTIST'S BRAIN STROKE PUTS IT ALL IN COMMON PARLANCE

Fond as I've become of the research, books, and articles from which this article is derived, with the exception of some of those written by Andrew Newberg, they are not page turners. They are done and written by scientists and academicians for scientists and academicians. This is not inappropriate, and yet one grave deficiency of this article, and of those books, is that they come almost entirely from European-rooted, White male studies of other people's experiences; devoid of women's experiences and the experiences of Black, indigenous, and other people of color—the people of the global majority. So let me partially remedy that and recommend that the reader reads, if you haven't already, Jill Bolte Taylor's little book, *My Stroke of Insight*, as a partial balance to the drier academic style and to the burden of White male supremacy in all I've so far recounted (Taylor 2006). A somewhat similar first-person account can be found in Siegel (2017, 123–44).

Jill Bolte Taylor is a neuroanatomy researcher, a dedicated scientist. In 1996 she suffered a rare kind of stroke, involving a brain blood hemorrhage in the left hemisphere of her brain. It knocked out her left hemisphere, scrambling or erasing the self-sense boundaries and identity markers she had of "who Jill Bolte Taylor is." Because she is a scientist and had all the left hemisphere methodological habits of a scientist, and because she knows the brain well, she was amazingly able to follow and track the

whole process of her stroke to a great extent even as it happened, and then of her recovery process.

So, the kinds of things one might experience in an RSE, Jill Bolte Taylor had an intense experience of literally in a spontaneous life-or-death way (Otto's *tremendum*), with as much consciousness as she could muster. She recounts it all in down-to-earth language for both nonscientists and fellow scientists in her little book—a first-person “inside” account by a practicing scientist of one of Wildman's “intense experiences.” Just as an RSE experience allows many people who have one to also have the vivid experience of “feeling one with everything” (Otto's *fascinatum*) around them, so it did also for Jill Bolte Taylor. And, perhaps just because of being a practicing neuroanatomist, it also let her have, using her own right hemisphere metaphor (*a' la* McGilchrist), a conscious “big love-fest with the fifty trillion molecular geniuses making up my body.” The experience was personally transformative for her, and now, from her sharing of it in book and on social media, it has a social transformative aspect as well (*à la* McNamara).

It took Jill Bolte Taylor eight years to fully bring her left hemisphere back online, so she greatly respects and prizes the work of that hemisphere. She remains a scientist. And “the territory” absolutely needed and needs “a map.” But Taylor has not lost sight of the territory, of the intense experience the stroke allowed her to have—that pronounced right hemisphere experience. After her stroke, some of the neuroscience research that has informed this article, especially that of Andrew Newberg, helped Jill Bolte Taylor better understand what she experienced.

She has devised personal ways—little rituals and practices—to let her right hemisphere take the lead and her left hemisphere follow the lead, as per McGilchrist; to keep opening herself to the full territory of life, and then let the maps be made; but also always holding the maps lightly, always returning to the territory and letting the territory take the lead again. So, I conclude with one of those little rituals. It's the way that she now begins and concludes her days. Upon arising she religiously says to those, as she called them, fifty trillion molecular geniuses making up her body, “Good morning girls!” And she concludes her days, often saying it out loud because saying it out loud has an extra effect, “Thank you girls! Thanks for another great day!”

I don't have a better conclusion than that, and I think Otto and McGilchrist—perhaps also Newberg, McNamara, and Wildman—would smile and bow to Jill Bolte Taylor's ritual as to her experience.

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