

BRAIN SCIENCE AND THE BIOLOGY OF BELIEF: A THEOLOGICAL RESPONSE

by *Ilia Delio, O.S.F.*

Abstract. Exploration of brain pathways involved in religious experience has been the focus of research by Andrew Newberg and colleagues. Although the import of this work sheds new light on the human capacity to experience divine reality, the theological implications drawn from this research are vague and lack an appropriate methodology to provide critical distinctions. This paper offers a theological response to Newberg's work by highlighting several aspects of this research including the relationship between theological judgments and empirical observations, the uniqueness of human transcendence, and the appropriateness of measuring mystical experience.

Keywords: Absolute Unitary Being; consciousness; God; mysticism; reality; transcendence.

Of all the organs that constitute the human person, there is perhaps no more fascinating one than the human brain. With its billion-plus neurons and complex sections, the brain is the center of the human person. During the last thirty years, the late Eugene d'Aquili, a pioneer investigator in the area of neuroscience, developed a series of studies to explore areas of the brain involved in consciousness and religious experience. Andrew Newberg later joined d'Aquili in the investigation of the brain and religious belief, and their collaborative efforts resulted in the publication of *The Mystical Mind: Probing the Biology of Religious Experience* (1999), which won a Templeton book award in 2000. Although d'Aquili died in 1998,

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Newberg has continued this research and recently published a more popular book, *Why God Won't Go Away: Brain Science and the Biology of Belief* (Newberg, d'Aquili, and Rause 2001), which explores the relationship between the brain and religious experience for a general audience.

The basis of d'Aquili and Newberg's work centers on the ability of the brain to process reality, with a particular emphasis on the reality of religious experience. Striving to uncover the true nature of reality and how we relate to it, these two scientists have sought to identify brain areas and pathways that may be involved in religious experience. Their work corresponds to the rise of "neurotheology," a new discipline that considers theology from a neuropsychological perspective (d'Aquili and Newberg 1999, 15). Neurotheology seeks to know how biogenetic structuralism explains many aspects of religious experience, assuming that "there exists no reality intervening between the central nervous system and the environment" (Spezio 2001, 478). As d'Aquili and Newberg state in *The Mystical Mind*, "there is no manner in which we can come to *experience* or *know reality* other than through the functioning of the brain" (1999, 16; emphasis added). In this respect, they attempt to identify neuropsychological "structures" that explain religious experience, including unitive experience, as well as ritual and myth.

Although their research is fascinating insofar as it highlights physiological changes during periods of what is described as religious experience, I think the results must be carefully evaluated with regard to theological conclusions. In this paper I offer a theological response to research on the biology of belief by focusing on three areas of primary interest: (1) the feasibility of philosophical and theological judgments based on empirical observations, (2) the uniqueness of human transcendence in view of creation, and (3) the ability to measure the mystical.

FROM SCIENTIFIC DATA TO THE REALITY OF GOD

The research of Newberg and his colleagues has focused on particular areas of the brain that undergird the ability of the human person to experience pure consciousness during periods of prayer or meditation.¹ These areas involve some of the oldest parts of the brain such as the limbic system, responsible for emotional and motivational functioning, as well as areas connected to the autonomic nervous system and to neocortical areas involved with goal and orientation behavior (d'Aquili and Newberg 1999, 27–42). By measuring changes in blood flow in these parts of the brain during periods of intense prayer or meditation using single positron emission tomography (SPECT), d'Aquili and Newberg have shown that the areas of the brain involved with emotional, motivational, and sexual behavior are also involved with religious experience.

The experimental subjects of this research have included Buddhist monks and Franciscan nuns, all of whom have been long-term practitioners of

prayer and meditation. According to Newberg, both monks and nuns after prolonged prayer/meditation have reported intense religious experiences that include a consciousness of union. Since these levels of consciousness are neither wholly subjective nor objective, they have been described as *transcendent* experiences. He identifies the experiential transcendent state during prayer or meditation as Absolute Unitary Being (AUB), “a state of pure awareness, a clear and vivid consciousness of *nothing*. Yet it is also a sudden, vivid consciousness of *everything* as an undifferentiated whole” (Newberg, d’Aquili, and Raue 2001, 147). It is unclear throughout Newberg’s work exactly how AUB relates to “God,” especially because the experience of God reported by the Franciscan nuns connotes the personal God of the Judeo-Christian tradition. As Newberg writes, “for the Buddhist, the union consisted of a sense of timelessness and infinity, feeling part of everyone and everything in existence” . . . For the nuns, it was an awareness of the closeness of God and a “mingling with Him” (Newberg, d’Aquili, and Raue 2001, 2, 7). The lack of distinction between “God” and “Absolute Unitary Being” underscores the lack of clarity in this research with regard to interpreting the data (not to mention the use of the word *God* in the title of the book, which focuses in part on Buddhist monks as experimental subjects!).

The vague connection between God and AUB throughout this work could lead one to conclude that religious experience is nothing more than a state of consciousness that neither denies nor affirms the existence of God. On the other hand, AUB seems to be equivalent to the ground of Being, namely, God. For example, Newberg writes: “So, if Absolute Unitary Being truly is more real than subjective or objective reality—more real, that is, than the external world and the subjective awareness of the self—then the self and the world must be contained within, and perhaps *created by* the reality of Absolute Unitary Being” (Newberg, d’Aquili, and Raue 2001, 155; emphasis added). Because Newberg does not make a clear distinction between God and AUB, he leaves open the possibility that God and human consciousness are undifferentiated.

The capacity of the human person to experience divine reality permeates the research of Newberg and his colleagues, as they strive to sort out the fundamental basis of reality. How does the brain tell us what is real? According to Newberg, reality can occur in no other way than through the brain. He writes: “Nothing enters consciousness whole. There is no direct, objective experience of reality. . . . The idea that our experience of reality—all our experiences, for that matter—are only ‘secondhand’ depictions of what may or may not be objectively real, raises some profound questions about the most basic truths of human existence and the neurological nature of spiritual experience” (Newberg, d’Aquili, and Raue 2001, 36).

The question of reality has occupied the human mind for eons. Greek thinkers were especially inclined to probe the nature of reality. One has

only to consider the difference between Plato and Aristotle to appreciate the difficulty of the problem in assessing the true nature of reality. For Plato everything we perceive in the material world through the senses is an ersatz copy of the true form, which lies in a world beyond. Aristotle, on the other hand, maintained that what we perceive through the senses is indeed the true form of the thing and the basis of our knowledge of the world.

Newberg's work lies somewhere between Plato and Aristotle. While he reasonably contends that the human *experience* of reality is a biological construction, he struggles with the idea that reality itself may be more than a biological phenomenon. He writes: "There's little doubt that the transcendent states from which religions rise are neurologically real—brain science predicts their occurrence, and our imaging studies, as well as others, have actually captured them on film. Are these experiences merely the result of neurological function—or are they genuine experiences which the brain is able to perceive?" (Newberg, d'Aquili, and Rause 2001, 140). In other words, what is the "realness" of spiritual experience? Is it a series of neurobiological changes, or is it the intervention of divine reality? Although Newberg attempts to explore the question of reality, it is not undertaken as a philosophical or theological investigation but rather as a biological one (Newberg, d'Aquili, and Rause 2001, 142–56).² This approach causes Newberg and his colleagues to leave aside the philosophical exploration of reality and to speculate on the reality of religious experience according to scientific data. In a sense, Newberg makes a long-range jump from SPECT scans to the reality of God. In *Why God Won't Go Away* he writes,

If God does exist, for example, and if He appeared to you in some incarnation, you would have no way of experiencing His presence, except as part of a neurologically generated rendition of reality. . . . Even if He spoke to you mystically, without words, you would need cognitive functions to comprehend His meaning, and input from the brain's emotional centers to fill you with rapture and awe. Neurology makes it clear: There's no other way for God to get into your head except through the brain's neural pathways. Correspondingly, God cannot exist as a concept or as reality anyplace else but in your mind. (Newberg, d'Aquili, and Rause 2001, 37)

Newberg is somewhat amazed by the reported experiences of his subjects as "really real." He writes, "The realness of Absolute Unitary Being is not conclusive proof that a higher God exists, but it makes a strong case that there is more to human existence than sheer material existence. . . . As long as our brains are arranged the way they are . . . God, however we define that majestic, mysterious concept, will not go away" (Newberg, d'Aquili, and Rause 2001, 172). The constant interchange of God language and AUB reflects the difficulties, if not confusion, of interpreting this research. Although *that* which the subjects experience cannot be really measured, Newberg identifies *what* they experience as Absolute Uni-

tary Being (AUB) or God. His conclusions are based on SPECT imaging, elaborating interpretations that are composites of scientific observations and theological/philosophical assumptions. Describing the relationship between mind, brain, and God, for example, he writes, "God cannot exist as a concept or as reality anyplace else but in your mind . . . the mind is mystical by default" (Newberg, d'Aquili, and Rause 2001, 37). Theology and science, therefore, are merged through areas of the brain whereby God and mind are not two distinct entities but rather form a continuum through the biological mechanisms of the brain.

One's first impression of Newberg's work from the point of theology is that it conflates God and brain. One could ask at the most basic level, is the existence of God merely a neurological condition? That is, is "religious experience" nothing more than modified neural input to various parts of the limbic system? Undoubtedly this question is not new, and Newberg himself raises the idea, but the data cause the question to pop up almost immediately because of the way they are interpreted. In this respect, I would suggest that the language used to describe the data must be carefully weighed and cautiously used. God language is loaded with content (even in our postmodern era) and must be used carefully if it is to be meaningful. Although Newberg and his colleagues indicate that monks and nuns after prolonged meditation report experiences of "Absolute Unitary Being," which they describe as "really real," Newberg ultimately interprets these experiences as "God experiences," although he vacillates between AUB as a state of consciousness and the existence of a "higher God" (Newberg, d'Aquili, and Rause 2001, 140, 172).³ The relationship between neurophysiological changes and divine reality is positively affirmed in *The Mystical Mind*, where d'Aquili and Newberg describe the pathway of the *via negativa*, which is the apophatic dimension of mystical union:

We believe that this results in the subject's attainment of a state of rapturous transcendence and absolute wholeness that conveys such overwhelming power and strength that the subject has the sense of experiencing absolute reality. . . . We believe that these impulses determine the steady state of the limbic system during the period of AUB. They either reinforce the initial ecstasy by ultimately reinforcing the arousal hypothalamic discharge, or they switch balance from ecstasy to a deep and profound quiescence by allowing the quiescent hypothalamic structures to regain dominance. . . . We suggest that the first case tends to be interpreted (after the fact) personally, as the immediate experience of, or union with, God. (d'Aquili and Newberg 1999, 113)

The question is, What enables Newberg and his colleagues to make the claim that what is experienced is divine reality or God or Absolute Unitary Being? If the claim is made by the subjects themselves, it is likely made as a faith claim. For example, the Buddhist monk states, "It feels like I am part of everyone and everything in existence" (Newberg, d'Aquili, and Rause 2001, 2). In this respect, Newberg and colleagues appropriate a statement

from a religious person to describe scientific observations. If the researchers themselves based this claim on the data, the only basis for affirming a divine reality would be physiological changes in the brain. If the latter is indeed the case, how does one proceed from biological structural changes to the reality of God? In short, the evidence lacks an appropriate methodology for drawing theological conclusions. The interpretation of the data shifts from the reported experience of some-*thing* by the experimental subjects (which is neither wholly objective nor wholly subjective) to the existence of God (or Absolute Unitary Being). Theological judgments, therefore, are based on empirical observations.

Although the nature of reality is at the heart of this research, the question What is God? is never raised. Without any systematic examination of what *that* some-*thing* of the reported experience is, there remains a gap between that which is experienced and the reality of God (or divine reality). Is that which is experienced part of the self? transcendent to the self? personal? or wholly other? In short, what enables Newberg to name the some-*thing* of the subject's personal experience during an altered state of consciousness as God—or for that matter Absolute Unitary *Being*—and are these, indeed, the same?

I think that without making philosophical distinctions between the nature of reality and what God is in relation to reality, there is a tendency to conflate God and brain whereby God becomes brain and brain becomes God. In an interview Newberg claimed, "God won't go away because our brains won't allow God to leave . . . unless there is a fundamental change in how our brain works, God will be around for a very long time."⁴ Such an affirmation could lead to a "fallacy of misplaced contingency." The reality of God becomes dependent on one's experience of God. I for one would not want to maintain that the existence of God is contingent on the function of my brain. Such a God, confined to a three-and-a-half-pound brain, seems entirely too small for a 15-billion-year-old universe. Nor do I want to suggest that brain research has given rise to a new anthropic principle—that is, in order for God to exist, we must exist, because it is we humans who give a conscious voice to the existence of God. Again, such a contingency gives rise to nothing more than a tiny God in which one cosmic concussion may result in a completely a-theistic universe! Thus, Newberg's research may offer a biological explanation for the human *capacity* for God, but without any philosophical exploration of reality it is unreasonable to think that the experience of pure consciousness/transcendence can be correlated with God or Absolute Unitary Being or simply the ultimate ground of being.

HISTORY OF IDEAS

Newberg's research, as even he admits (Newberg, d'Aquili, and Rause 2001, 144), fits into the history of intellectual ideas. Throughout history schol-

ars have probed the question, What access do we humans have to God? There are many examples of thinkers throughout the centuries who have explored the path of human relationship to God. The renowned Franciscan philosopher Duns Scotus, for example, was philosophically intrigued with the way in which a finite human being could have access to some sort of inchoate knowledge of God. I think Scotus's question of access to God is reframed today in the language of science, but the question is essentially the same: How do we have access to knowledge of God and therefore to God's own being? Over the centuries of human existence, access to God or to the transcendent has been defined in several ways: (1) the God-has-spoken approach (the biblical approach) has emphasized the revelation of God to holy men and women; (2) the universal approach has recognized the revelation of God in creation whereby God is found by meditating on the world around us; (3) the infused-knowledge approach has claimed that God has provided us with a "natural desire" or "infused knowledge" of God so that the human search for God is in a sense made possible by God himself; and (4) the natural-use-of-human-reason approach searches for the common principle of all reality (Osborne 2001, 64–81).

Scotus himself was attracted to the last option as a philosophical approach to God. He claimed that everything that exists has a common factor, which he did not name as God but simply as "univocity of being" or what we might call "isness [or being]" (Osborne 2001, 74; Cross 1999, 33–39). Scotus then went through a series of reasonings to show how "isness" relates to the transcendentals of oneness, truth, and goodness; that is, everything that exists ("is") is one, true, and good. From here he explored isness with regard to the level of polar transcendentals such as infinity and contingency. Scotus concluded that nothing in this universe is necessary. Everything is contingent, relative, and finite (Wolter 1966, 90). Nothing is absolute. If everything in the universe is contingent, unnecessary, temporal, and finite, and there is no connection to an infinite, necessary, eternal being, then our universe is irrational in its totality (Osborne 2001, 79). Thus, only at the end of lengthy philosophical argumentation based on human reason alone did Scotus finally raise the issue of the reality of a first principle. That is, only when he inferred on a philosophical basis the actuality of a first principle or first agent did he name this principle *God*. It seems to me that a similar type of reasoning must continue today if the scientific data on brain and religious experience are to merit serious consideration.

The renowned theologian Karl Barth warranted against theological conclusions based on natural data. According to Barth, God cannot be known by the powers of human knowledge but is apprehensible and apprehended solely because of his own freedom, decision, and action. What the human being can know through his or her own power according to the measure of natural powers, human understanding, will be at most something like a

supreme being, an absolute nature, the idea of an utterly free power, of a being towering over everything. This absolute and supreme being, the ultimate and most profound, this “thing in itself,” has nothing to do with God. God, Barth claimed, could be known only through self-revelation, in Christ, the Bible, and the church (Tanner 2000, 111–26). This is a radical position and one, I believe, that undermines the relationship between God and creation; however, Barth’s position makes us pause before we utter any religious statements based on scientific observations alone.

HUMAN TRANSCENDENCE: HOW UNIQUE IS IT?

Prescinding from the theological/philosophical implications of Newberg’s research, I find it surprising that we are somewhat startled (or shocked) at the idea that we humans may have physiological structures and mechanisms for spiritual experience or religious self-transcendence. Newberg’s data suggest that we have not only the capacity for self-transcendence but underlying mechanisms of transcendence. We are not as surprised when we learn that we are “wired” for just about everything we do, from eating tacos to playing miniature golf. However, to learn that we may be wired for something we can’t quite put our finger on (or biologically measure)—namely, Absolute Being or God—is almost alarming, if not for some quite exasperating. Newberg himself does not quite want to concede that we humans may be “wired” for God, because such a claim is really a faith statement by which one already professes the existence of God. The manner in which he interprets his data, however, certainly points in this direction. In a recent interview he indicated that the term *hard-wired* suggests that we were purposefully designed for God or that religion may be genetically encoded and that neuroscience cannot answer questions of purposeful design.⁵ While it is true that neuroscience cannot *answer* questions of purposeful design, it can certainly *ask* questions of purpose and design. Indeed, such questions permeate d’Aquili and Newberg’s work.

To me, the interesting question of this research is precisely the question, Why do we experience transcendence? Why are human beings in their biological composition not self-sufficient, self-contained, and completely fulfilled entities? What makes humans “spiritual” beings? What impels us to seek relationship with an other outside and beyond ourselves? That is, why do we need or desire to meditate or pray at all? These are fundamental questions that cannot be entirely answered or entertained by the discipline of neuroscience alone.

The insights of evolutionary biologists and cosmologists today can help us to define the place of humans in creation—namely, that humans are not only part of the fabric of the universe but emerge from the evolving history of the universe. This means that whatever we are cannot be entirely different from what creation itself is. In this respect the question of why we

experience transcendence is a limited question unless we can ask how the human capacity for transcendence relates to the rest of creation. The very nature of an evolutionary creation suggests that transcendence is not unique to human beings but rather that the whole of creation is transcendent. As Saint Paul writes, “all creation groans and cries aloud for God” (Romans 8:22).

Theologians throughout the ages have noted a certain dynamism in nature that culminates in the human voice of the conscious person, and this we name God. The renowned Jesuit theologian Karl Rahner claimed that self-transcendence is an effect of [God’s] Spirit, which already dwells in matter (Rahner 1966, 161–68). Rahner’s notion of spirit within matter can be traced from patristic Fathers such as Irenaeus of Lyons to contemporary thinkers such as Pierre Teilhard de Chardin. The medieval Franciscan theologian Bonaventure described matter as having a spiritual potency, stating that matter cries out for perfection.⁶ In this respect, he suggested that matter is oriented to spirit and finds its completion in union with spirit. The human person according to Bonaventure is “spiritualized matter.” According to these thinkers, the progression from matter to spirit characterizes the whole of creation, culminating in the human person and, in particular, in Jesus Christ, who, as Irenaeus said, recapitulates creation (Minns 1994, 92–94).⁷ Rahner described the Incarnation as the fulfillment of humanity within an evolutionary world whereby the human’s self-transcendence and God’s self-communication are one (Rahner 1966, 171–72). The capacity for spiritual transcendence, therefore, that we see in humans already lies within creation itself. The transcendence of creation in its evolutionary progression leads to the human person and to openness to God.

The orientation of matter toward spirit needs further consideration, especially as scientists explore the mind-brain relationship and the relationship between brain and religious experience. Throughout their writings, d’Aquili and Newberg struggle with the question of the true nature of reality: Is it fundamentally material or spiritual? As Newberg points out, scientists begin with the primacy of the material world. His research, however, has pointed instead to the primacy of spiritual reality. Again, without any theological or philosophical considerations of the nature of reality, one seems forced to choose between the primacy of material or of spiritual reality. At one point Newberg writes, “Either the objective external world (the material world) or our subjective awareness of that world and the sense of self (spiritual world) must be the real reality—the primary, ultimate reality. By definition, ultimate reality must be the source of everything that is real, so subjective and objective reality cannot both be true. One must be the source of the other” (Newberg, d’Aquili, and Rause 2001, 144). But if indeed God *is* the ultimate source of reality and that reality is

fundamentally spiritual, then both objective and subjective reality are spiritual. In other words, the material world is not brute matter but fundamentally spiritual!

In Western thought, we still maintain a tension between matter and spirit emerging from the Enlightenment. Because modernity has so influenced our thinking with regard to matter and spirit, we are amazed when we discover that a material entity such as the brain has the capacity for self-transcendent or “spiritual” experience. Descartes prevails despite our protests! If we look to the East, however, we do not find this same tension between matter and spirit. Rather, according to Eastern thought, the whole material world is infused with spirit, which enlivens and vivifies the material world. One has only to consider Plato’s world soul, described in his *Timaeus*, which gives rise to order and harmony in the cosmos and is the moving force of a material world.

Contemporary Christian writers are again alerting us to the integral relationship between matter and spirit. We now understand the person to be spiritualized matter in an explicit way—that is, through development of subjective consciousness, as Teilhard averred (1959, 257–64). As part of the evolutionary trend, the human recapitulates the universe’s drive toward spirit. That is, what is observed in the human already exists potentially in the universe itself—namely, the capacity for self-transcendence. Theologically we profess that God is the ground of a self-transcending universe that comes to explicit consciousness in the human being. Since God is both source and goal of the universe, God is neither “outside” nor “inside” but immanent to creation while infinitely transcending creation, luring creation (as infinite transcendence) toward its ultimate fulfillment.

CAN THE MYSTICAL BE MEASURED?

I must admit that at the heart of it all I find it ironic that science wants to explain the “mechanisms” of mystical or religious experience. The word *mysticism*, as Newberg himself points out, means “hidden,” or that which cannot be articulated.⁸ However, the whole of his research highlights brain areas, pathways and possible mechanisms that give rise to mystical experience. In *The Mystical Mind* (1999) there is even a detailed schematic pathway of the *via negativa* as well as the *via positiva*. One wonders whether mysticism is somehow turned into mechanism and the hidden is vigorously sought out for its identification. Perhaps this is where the shoulders of science and religion rub together. Can scientists truly embrace the mystical? Can science truly allow mystery to be itself, hidden and unexplainable? It seems to me that as long as we can explain mystery, we are not really dealing with the mystical at all—we have not really accessed the reality of God; for the *essence* of such reality is truly beyond our finite, contingent, limited being, no matter how sophisticated our technology

and techniques. God is the fullness of mystery that lures us into the unknown, which, as the mystics claim, is secret and hidden.

The renowned sixth-century mystic (and the father of Christian mystical theology), the Pseudo-Dionysius, said that as soon as we name the mystery we can be sure that we have not yet touched it.⁹ The incomprehensible mystery of God lies beyond us to such an extent that language falters as it approaches mystery itself. According to the Dionysius, one who experiences the mystery of God cannot look back or speak or utter any type of word, for every word that is uttered betrays the mystery that we name as God. Our only choice, therefore, is to yield to the mystery in silence. Can scientists remain silent in the face of mystery, or does the discipline itself require a relentless pursuit of the hidden and unknown?

Newberg and his colleagues describe the reality of the mystery of God as integrally bound to the human brain. A philosopher-theologian like Duns Scotus would have no problem finding God in the neurons of the brain, for everything created by God bears a relationship to God. But God is much more than the circuits and pathways of the brain. From a theological perspective the mystery of God is incomprehensible and inexhaustible. Only when faith leaps across the “blood brain barrier” between science and religion, between what can be known by reason and what is known by faith, does one approach the mystery of God. In the language of Christian spirituality, self-transcendence is always a movement *toward* God, but God himself always remains infinite and beyond, as incomprehensible mystery, whose grace alone invites us—mere human finite, contingent beings—into the mystery. Thus, while changes in brain patterns may lure us to search for a “God module” in the brain,¹⁰ such data may also be deceiving in that they may lead us to conclude that the mystery of God is readily accessed by the human mind. But this mystery of the incomprehensible One lies beyond everything, including reality itself, and this mystery is ineffable.

NOTES

1. Newberg’s research was conducted on Buddhist monks and Franciscan nuns who have practiced meditation or prayer for approximately fifteen years.

2. In this chapter, “Realer Than Real,” Newberg admits that “brain science can neither prove nor disprove the existence of God, at least not with simple answers” (p. 143). Further on he changes to language of Absolute Unitary Being and states, “Again, we cannot objectively prove the actual existence of Absolute Unitary Being, but our understanding of the brain and the way it judges for us what is real argues compellingly that the existence of an absolute higher reality or power is at least as rationally possible as is the existence of a purely material world” (p. 155). The confluence of God and AUB (defined as a state of vivid consciousness, p. 147) parallels the confluence of God and brain throughout Newberg’s writings. In short, there is no adequate distinction made between these entities.

3. For example, in a section entitled “A Window to God?” Newberg asks, “Are these unitary experiences merely the result of neurological function—which would reduce mystical experience to a flurry of neural blips and flashes—or are they genuine experiences which the brain is able to perceive? Could it be that the brain has evolved the ability to transcend material existence, and

experience a higher plane of being that actually exists?" While these questions are interesting, it is unclear how they relate to the existence of God. My question is, could these same transcendent experiences be evoked through music or poetry or art? If so, what is the relationship to God? (See Newberg, d'Aquili, and Rause 2001, 140.)

4. www.andrewnewberg.com

5. www.andrewnewberg.com

6. This idea is found in Bonaventure's second book of commentary on the *Sentences*, where he writes: "*Sic cum posset statim perficere materiam, maluit tamen ipsam subquadam informitate et imperfectione facere, ut ex sua imperfectione quasi materia ad Deum clamaret, ut ipsam perficeret. Et hoc idem voluit per senarium dierum differre, ut in perfectione numeri simul ostenderetur perfectio universi*" (God created matter lacking its final perfection of form, so that by reason of its lack of form and imperfection matter might, as it were, cry out for its perfection. God chose to effect this gradual perfection over a course of six days because six, the sum and multiple of its integers, is the perfect number). See Emery 1983, II *Sentences* d. 12, a. 1, q. 2, concl. (II, 297a).

7. Irenaeus uses the term *recapitulation* to summarize the continuity between Adam and Christ, which itself demonstrates the unity of the divine plan. Just as the Word is the creator of the world who governs and disposes all things, so too Christ is crucified in the whole universe and imprinted in the form of a cross in the sense that his presence stretches throughout the whole of creation, holding every part of it in existence (Minns 1994, 93; see also Osborn 2001, 97–115).

8. On the meaning of the word *mysticism* see Johnston 1982, 16; Inge 1984, 4. The term *mysticism*, in its etymological meaning, suggests the limits of language, derived from the Indo-European root *mu* (imitative of inarticulate sounds). From this root are derived the Latin *mutus* (mute, dumb, silent) and the Greek verb *muein* (to close the eyes or lips), from which come the nouns *mysterion* (mystery) and *mystes* (one initiated into the mysteries) as well as the adjective/substantive *mystikos* (mystical, mystic). See Cousins 1992, 236.

9. For the Pseudo-Dionysius, God lies beyond being in hidden silence, as he writes: "my advice to you as you look for a sight of the mysterious things, is to leave behind you everything perceived and understood, everything perceptible and understandable, all that is not and all that is, and, with your understanding laid aside, to strive upward as much as you can toward union with him *who is beyond all being and knowledge*" (emphasis added). See Luibheid 1987, 135.

10. Although the term *God module* is not used by Newberg, it appropriately corresponds to the interpretation of his research. The term is found in Ramachandran and Blakeslee 1998, 188.

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