The God Spot: Spirituality and the Brain

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Hymns: "Ven, Espiritu de Amor,"
"Bring Many Names," "Glory, Glory, Hallelujah,"
"Come, Thou Fount of Ev'ry Blessing."

A Prayer for Mother's Day
(from the late Rev. Mary Harrington)

Reading

Piute Creek
by Gary Snyder

One granite ridge
A tree, would be enough
Or even a rock, a small creek,
A bark shred in a pool.
Hill beyond hill, folded and twisted
Tough trees crammed
In thin stone fractures
A huge moon on it all, is too much.
The mind wanders. A million
Summers, night air still and the rocks
Warm. Sky over endless mountains.
All the junk that goes with being human
Drops away, hard rock wavers
Even the heavy present seems to fail
This bubble of a heart.
Words and books
Like a small creek off a high ledge
Gone in the dry air.
A clear, attentive mind
Has no meaning but that
Which sees is truly seen.
No one loves rock, yet we are here.
Night chills. A flick
In the moonlight
Slips into Juniper shadow:
Back there unseen
Cold proud eyes
Of Cougar or Coyote
Watch me rise and go.

Sermon

According to studies, there's about a fifty percent chance you have had at least one profound spiritual experience in your lifetime. This is according to Barbara Bradley Hagerty, author of the book *Fingerprints of God: The Search for the Science of Spirituality*. Hagerty spent a year exploring this subject, interviewing doctors, scientists, philosophers, clergy of many faiths, and lots of ordinary people. Her goal was to learn whatever she could about the source of those mystical experiences that half of us describe. She wonders, are we responding to a source that is located outside of us, or are our experiences the result of chemical processes occurring in our brains? Are we interacting with divinity, or being influenced by neurology?

I admit to being biased. I have a background in the sciences, and my training leads me to believe that these kinds of experiences and apprehensions originate in our brains. I'm not particularly troubled by the fact that things happen that scientists can't explain. And yet, I recognize that our brains are finely tuned to pick up and interpret signals from our environment, signals that frequently come in well under our conscious radar. Sometimes I know things, and I don't know how I know them. And I have had experiences of mystical union, and received an out-of-the-blue "calling" into the ministry. If there was a call, doesn't it follow that there was a caller? So like Hagerty, I try to keep an open mind, but not so open that my brain falls out.

Speaking of the brain, let's go over some basics. If you look at a human brain, you see it is divided into a left and a right half, or hemisphere. Each hemisphere is divided into different regions. Mostly through studying brain injuries, scientists have learned that different regions, or lobes, of the brain do different things. I'm going to be talking

about three of our four lobes today: the frontal lobe, which is, surprise, located in front here, the parietal lobe, which is located behind the frontal lobe, and the temporal lobes, which are located along each side. We have another lobe, the occipital lobe, way back here, which we won't talk about today, it has to do mostly with interpreting vision.

Scientists have identified lots of complex structures within each of these lobes, but for today we are just going to talk in general about the frontal, parietal, and temporal lobes.

The temporal lobe is my favorite, because of family history. During my first year of college, I got a phone call that my youngest brother Duncan had had a seizure. He was later diagnosed with a "seizure disorder," which was the doctor's clever way of saying that he was having seizures and they didn't know why. He was put on a medication that mostly controlled them, but occasionally they would flare up. Once in a while he would fall over and convulse like you see in the movies, but more often than not, he would just start acting strangely. I remember once he was working in the yard with my father digging a ditch, and suddenly, instead of dumping his wheelbarrow full of dirt into the ravine, he rolled it into the living room. When he came around, he said that a voice told to bring the dirt in the house. Another time we were driving across the Golden Gate Bridge, and he asked my dad to stop the car. He got out and started running, again, because a voice told him to. I don't recall if he identified the voice as God's voice, but he did say he felt compelled to do whatever it was the voice told him to do.

My brother was seizure free for about twenty years, with medication, but last spring he began having seizures again. An MRI revealed that he has a small tumor in his temporal lobe, about the size of a grape. It looks like it is benign, and his doctor assures him that with medications, he can live a normal life. The lesion probably developed as he grew into adolescence, and is almost certainly the source of the seizures.

It turns out that my brother's experience of hearing voices is not uncommon in folks with temporal lobe epilepsy. Barbara Hagerty notes that some 2,500 years ago, Hippocrates wrote one of the first texts we have on epilepsy, naming it "the sacred disease." It was considered sacred because sufferers appeared to be possessed by demons, or blessed with divine messages and visions. Orrin Devinsky, who directs the epilepsy center at NYU told Hagerty that neurologists suspect that some figures in religious history may have been epileptics themselves. He wonders if Paul heard Jesus on the road to Damascus, or if he was actually experiencing an auditory hallucination like my brother. What about Joseph Smith, Muhammad, or Joan or Arc, or Moses, with his burning bush? Well, it could have been God's voice, or it could have been a seizure. And Devinsky is convinced that "whatever happened back in Sinai, Moses' experience was mediated by his temporal lobe."

The temporal lobe contains the limbic system, which handles sound, language comprehension, smell, and some vision, along with memory and emotion. When a seizure occurs in the temporal lobe, people describe hearing voices, snatches of music, or seeing faces, glowing light or visions of colors and shapes. Devinsky believes that these things are not gifts from a divine being, but are simply the combination of memories surfacing in response to stimulation, which are then imbued with emotion. But one could see how these things together, a light, a voice, a face, might leave the impression that one has had an encounter with an angel, or God.

Michael Persinger, a scientist who works at Laurentian University in Ontario, believes that spiritual experiences are a "trick of the brain." He does experiments that use weak magnetic fields to stimulate parts of the brain, particularly the right temporal lobe, which is more involved with emotions and sensations than the left lobe. He reasons that if you stimulate the right temporal lobe a certain way, the result can be what he calls a "'sensed presence': the feeling of another entity, another sentient being that has emotional, meaningful, personally significant, and expansive temporal and spatial properties."

To test his hypotheses, Persinger invented what he calls the "God Helmet." The God Helmet is a modified motorcycle helmet, containing eight electrodes that stimulate the right temporal lobe using weak magnetic fields. Persinger claims that 80% of the 2000 subjects who put on the God Helmet reported feeling a sensed presence of some kind. When Barbara Hagerty put on the helmet, she had visual hallucinations of a kind of "rolling darkness, a battle of darkness," and an image of a

face. Persinger's conclusion is that God and all spiritual experiences are products of the brain.

Sensing a kind of divine presence is fairly common in my experience, so I wonder, in the absence of diagnosed epilepsy, what kind of naturally occurring magnetic fields could cause such stimulation in the brain. It occurred to me that there are some physical locations in which I have this kind of sensation, along with the sense that I am one with the universe, like in Yosemite, or near Mount Shasta, or by certain rivers. I don't know what kinds of magnetic fields are produced by massive slabs of granite, or cubic miles of volcanic rock, or rushing water, but it seems as least as plausible an explanation as the presence of divine beings or spirits.

Another part of the brain that came up in Hagerty's work is the parietal lobe, located here just behind the frontal lobe. The parietal lobe is associated with visual-spatial perception, which is our sense of orientation in space, and our awareness of the boundaries of our bodies. Two University of Missouri psychologists have studied the parietal lobe at length, and they propose what they call "a neurophysiological model of spiritual experience" that explains what is happening inside the brain when people have feelings of unity and transcendence, that "all is one" perception that we heard in the reading.

The model "suggests that all individuals, regardless of cultural background or religion, experience the same neurophysiological/neuropsychological functions during spiritual experiences," to quote co-authors Brick Johnstone and Bret A. Glass. Their work, which was published in 2008 in the spirituality and science journal Zygon, builds on that of other researchers who conducted MRI scans of meditating Buddhist monks, and Catholic nuns engaging in contemplative prayer. It turns out that such activity is associated with *increased* activity in the frontal lobe, which is associated with thinking and concentration, combined with *decreased* activity in the parietal lobe. Remember, the parietal lobe is associated with our visual-spatial perception, in other words, the boundaries of how we see our bodies in space, and the demarcation of our selves as entities. So if activity in the parietal lobe is decreased, it stands to reason that we might perceive ourselves as being "one" with things we usually feel apart from.

To further investigate this theory, Johnstone and Glass looked at the spiritual experiences of people who suffered traumatic brain injuries. They asked 26 adults who had suffered such injuries about their personal spiritual experiences, the amount of time they devote to spiritual or religious practices and the degree to which they feel close to God or some other spiritual entity. And indeed, they *did* find that feelings of unity and oneness with the universe were associated with decreased activity in the right parietal lobe. People with injuries to this part of the brain reported experiencing higher levels of spiritual transcendence. According to Johnston, the ability to connect with things beyond the self … seems to occur more often for people with minimized right parietal functioning, which can happen through intense meditation or prayer, or because of a brain injury.

Those of you who have a prayer or meditation practiced probably know that the more you do it, the better you get at it, and the more you get out of it. In an article in Time Magazine from 2009, Jeffery Kluger reported that focused prayer or meditation can actually change your brain in as little as eight weeks. The frontal lobe, which is what we use to concentrate, can become thicker, and another structure, the hypothalamus, becomes asymmetrical. It stands to reason that as you power up your frontal lobe, your parietal lobe takes a break, and before you know it, you are one with the universe. And the more you do it, the better you get at it.

I mentioned this theory to my husband, a physician and atheist, and he had something else interesting to say. His first experience of transcendence came as a boy, looking up at the stars. He's an amateur astronomer, and he's always trying to get me to come out at night and look through his telescope. "Why?" I ask. "Did something change since last night?" I don't get it. To me, the stars are like a blanket covered with shiny diamonds. It's cool, but I've seen it. But when I mentioned this research with the parietal lobe, he told me that when HE stares up at the stars for more than a few seconds, he "sees" them in three-dimensional space. I can't even imagine that. And this is what happens next for him. "In an effort to orient myself to all those millions of objects, over those vast distances, my brain gets overwhelmed,

and suddenly, I'm out there, at one with the stars." This is what happens when his parietal lobe gets overloaded and gives up. He achieves transcendence. And he doesn't buy the whole electromagnetic field theory; he thinks that for me, staring at a wall of granite over a mile high has the same effect on my puny parietal lobe that the stars do on his. Sure, why not?

No sermon about spirituality and the brain could be complete without talking about psychedelic drugs. Now I'm sure no one in THIS room has ever taken psychedelic drugs, and you can be certain that I would never admit to such behavior, but I'm sure you've HEARD, as I have, that eating certain kinds of mushrooms or ingesting certain illegally purchased acids can bring you face to face with God. And it's true. I've heard.

The first major study of psychedelics and spirituality occurred in 1962, in the basement of Marsh Chapel at Boston University. Researchers from Harvard gave LSD to ten divinity students to see if they would then have a mystical experience. And indeed they did. For a few years, these kinds of experiments were done in many universities, as well as in frat houses, high schools, and suburban neighborhoods. Researchers learned that LSD, as well as the active ingredients in peyote and certain mushrooms, look a lot like our own natural neurotransmitter, serotonin.

Now if you aren't a biologist, a neurotransmitter is a chemical that allows a signal to be carried from one nerve ending to another. These signals are what animate and coordinate our bodies. Neurotransmitters work by detaching from one nerve ending and parking themselves on a receptor on another nerve ending, and that is how the signals are transmitted from nerve cell to nerve cell. The more neurotransmitter receptors you have, the faster the impulse travels. Barbara Hagerty says: "Think of the serotonin receptor as a bouncer at a nightclub. The party's a bit tame, and when the bouncer spots the fun chemical, like the active ingredient in psilocybin, he let's Mr. Fun into the club. Suddenly, the party picks up and the brain chemicals are burning up the floor."

Serotonin is crucial to mood and motivation. In fact, some of the most popular anti-depressive drugs work by increasing the levels of serotonin. It turn out that serotonin also has an impact on your spirituality. Since the experiments with LSD in the early sixties scientists suspected this, but now they have proof from brain scans. A team of Swedish researchers reported in the American Journal of Psychiatry that the density of serotonin receptors in the brain correlates with people's capacity for transcendence, and the ability to apprehend phenomena that cannot be explained objectively. Now the concentration of serotonin receptors normally varies markedly among individuals. Those whose brain scans showed the most receptor activity proved on personality tests to have the strongest proclivity to spiritual acceptance. So the more receptors you have, the more serotonin gets in. The more serotonin gets in, the more you experience transcendence. Their conclusion is that there is a biological underpinning for spirituality, and it is related to the neurotransmitter serotonin.

So what can we conclude from all of this research? Not much, says Hagerty. Nothing she heard could qualify as scientific proof that God exists or doesn't exist. "The science of spirituality is like a Rorschach test" she says, "you can look at the evidence and come to opposite conclusions. A materialist would say that a spiritual experience is just brain chemistry . . . and it's all explainable by material means. But someone else could look at the same evidence and say that people are wired to be able to connect with the divine, and that brain chemistry is a reflection of an encounter."

Devout believers are going to take issue with the materialists conclusion, and in fact, according to Hagerty, so do many scientists. She asked Orrin Devinsky, the director of the epilepsy center at NYU, if the fact that spiritual feelings can be pinpointed in the temporal lobe means that there is nothing spiritual going on. "No" he replied. "Think about a couple in love. They look at each other, and in all likelihood, something fires in their temporal lobes. Does that negate the presence of love between them? Of course not. When you get to spirituality, as a scientist, I think it becomes extremely difficult to say anything other than, 'it's possible.'"

In asking myself, where is the meaning in all of this, I recalled one of Hagerty's stories, about a man named Jeff Schimmel. This 49 year old Jewish writer from Los Angeles had never bought into the idea of God, until after he was "touched by a being outside himself." "Yeah," he says, "I was touched by a surgeon."

Ten years ago, Schimmel had a benign growth removed from his left temporal lobe. The surgery went well, but soon after that he began to suffer from mini-seizures, like the ones my brother has. He heard conversations in his head and saw visions of the Virgin Mary. “And you know, it’s funny. I laughed about it, because why would the Virgin Mary appear to me, a Jewish guy, lying in bed looking at the ceiling? She could do much better.”

But other things changed for him. He became more interested in spirituality, and “more compassionate, less ambitious.” He began to practice Buddhism. And he finds it hard to believe that his new faith, and love for his fellow man could come merely from a change in the electrical impulses in his brain. “I’ll tell you what the bottom line is for me,” he says, “I don’t care where it comes from. I’m just a happier person, and I’m a more decent human being because of it.”

So do our religious experiences come from our brains? Or do they come from a divine spirit? I have no idea. I do know that as humans, we are biologically wired to connect, and we are driven to make meaning, and we do those things with and without a belief in God. We find hope in the midst of tragedies. We offer compassion when we encounter suffering. We give everything we have for those we love, and sometimes even for those we don’t know. We lay down our lives for ideals that we believe to be true and good. We create life and Art. We join together to work for a just world.

Some of us look to God for the strength and inspiration to do these things, and some of us don’t. As long as we are healing the world, does it matter?

Let us end this morning with the words of the Islamic poet Hafiz. (#607)

Cloak yourself in a thousand ways;
still shall I know you, my Beloved.
Veil yourself with every enchantment
and yet I shall feel you, Presence most dear,
close and intimate.
I shall salute you in the springing of cypresses and
in the sheen of lakes, the laughter of fountains.
I shall surely see you in tumbling clouds,
in brightly embroidered meadows.
Oh, Beloved Presence, more beautiful
than all the stars together,
I trace your face in ivy that climbs, in clusters of grapes, in morning flaming the mountains, in the clear arch of sky.
You gladden the whole earth
and make every heart great.
You are the breathing of the world.

May it be so.