God on the brain: The neurobiology of faith

by Greg Peterson in the January 27, 1999 issue

By James B. Ashbrook and Carol Rausch Albright, The Humanizing Brain. *(Pilgrim, 233 pp.)*

In late 1997, an unusual story about the discovery of a "God-spot" in the brain began to appear in newspapers and newsmagazines. In a series of tests, epileptic patients with heightened brain activity in the temporal lobe showed hypersensitivity to religious words and phrases. Some news services announced that scientists had discovered the source of religious experiences. On Internet discussion groups, atheists crowed that religion had been proven to be nothing more than a dysfunction of the brain. Some theists countered, equally glibly, that God had designed our brains to be receptive to the divine; consequently, atheists seemed to be missing a vital piece of equipment.

Researchers had indeed found a region of the brain that could be linked to religious experience, but they neither claimed that this region was the cause of all such experiences nor sought to disparage or "reduce" religion or religious experience. What they had discovered, rather, was that what goes on in the brain is profoundly connected to what goes on in the mind, even in the most sublime of all experiences. They also demonstrated that neuroscience is becoming increasingly important for thinking about some of the basic claims of religion.

James Ashbrook and Carol Rausch Albright seek to break new ground in the dialogue between religion and science. They also hope to demonstrate that neuroscience is not only the appropriate but the preferred partner in that dialogue.

There has never been a better time to make this argument. President George Bush and the U.S. Congress declared the 1990s the decade of the brain, and it has lived up to that declaration. Spurred by the development of advanced scanning techniques such as PET (Positron Emission Tomography) and MRI (Magnetic Resonance Imaging), neuroscientists are getting glimpses of the brain in action.

These maps allow them to observe the brain as it never has been seen before.

This culmination of more than 100 years of serious brain research is finally allowing us to ask some truly interesting questions: Where do emotions come from and why do we have them? How do we think and learn? How does the three-pound, gelatinous mass that we call the brain produce our identities? Though final answers are still a long way off, it is significant that we can now begin to frame such questions in a scientific way. In some cases, the answers seem startling. Far from endorsing a simple reduction of mind to mere neurons, many neuroscientists are embracing paradigms that emphasize the holistic character of brain function and the ways that reason and emotion interplay to make up a self.

This book is neither a neuroscience textbook nor a systematic theology. Rather, it is a working-out of theology through the lens of the neurosciences. Ashbrook, who before his recent death was a pastoral theologian and professor emeritus of religion and personality at Garrett Evangelical Theological Seminary, and Albright, executive editor of *Zygon: Journal of Religion and Science*, seek to develop a "neurobiology of faith." To do so is possible because the brain holds a peculiar place in the universe--and, more specifically, in our universe. We ourselves, in a sense, are brains. To study the brain is to study ourselves, but in a way that makes us both subject and object. It is as if we were trying to look both in and out of the window at the same time.

Furthermore, to study ourselves, the authors claim, is to study God. Ashbrook and Albright's introduction states that "God-talk is really human-talk, since it is we who are conversing." That is, because we can experience God only as human beings, in the process of learning about human life we will necessarily learn something about God as well. Even more than this, understanding the human brain can be the key to understanding God.

It is worth taking this startling claim seriously. Asked to name the most exotic thing in the universe, most of us would mention either the very large (black holes and supernovas) or the very small (all those spooky little particles). But the most incredible structure in the entire universe may be what is sitting behind our eyeballs. Inside our heads is the most complex and sophisticated device in creation.

Every brain contains approximately 100 billion cells called neurons. Neurons connect with one another to form complex communication networks that, among other things, enable us to walk, talk and breath without thinking about it. There are a

staggering 100 *trillion* neuron connections in the brain. As anyone who uses a comparatively simple desktop computer can testify, it seems a miracle that such a complex system could work without crashing. Yet the brain smoothly, day in and day out, enables us to perceive objects in color, distinguish the year and place of a wine by taste, and (sometimes) understand calculus. Black holes seem boring by comparison.

But can study of the brain really tell us about God? Given the robustness of Ashbrook and Albright's claims, the actual justifications they give for them are rather weak. While any knowledge of God must indeed be conditioned by human experience, Ashbrook and Albright actually claim much more than this: that the brain not only patterns our experience of God, but its very structure can inform us of God's nature. This is possible because "the human brain is orderly and purposeful as the universe is orderly and purposeful." Since order and purpose ultimately derive from God, studying them can give us deeper insight into theological truths.

Yet it is also clear that, ultimately, Ashbrook and Albright's belief in God does not derive from these sorts of arguments. For them, God is something that is experienced, not argued about. The result of this orientation is a book that is more a thoughtful meditation than a discursive argument. Neurobiology is used not so much to discover truths about God as to evoke them.

Ashbrook and Albright argue that a central feature of human cognition is our predisposition to humanize what we perceive. This humanizing begins with the self. In the past two decades, the growing trend in both neuroscience and philosophy has been to counter the old reductionist tradition that we are nothing but a collection of neurons, nothing but the physical constituents of our bodies. Rather, our selves emerge from all the activities of those buzzing neurons. Avoiding the extremes of both a materialistic monism and a mind-body dualism, Ashbrook and Albright advocate an emergent holism that recognizes that the brain has a "bottom up" influence on the mind, but also that the mind has a "top-down" influence on the brain.

The brain is a constantly changing organ. As you read these lines, they induce different firing patterns in the brain. Some of these patterns may be fairly transient, but others may persist. The relationship between the mind and the brain is not a simple, one-way road; it is dynamic. For this reason, Ashbrook and Albright prefer to speak not of the mind or the brain, but of the "mind/brain." The "I" is not simply a

Cartesian soul, but the dynamic interaction and product of a human mind, a human brain and a human body.

But for Ashbrook and Albright the concept of the humanizing brain implies much more than this. They claim that reality itself is humanlike. Two main implications seem to follow from this claim. The first is that the brain plays a primary role in what we perceive. If we are asked to describe what we see when we look out of the window, we are likely to paint a seamless panorama, exquisite in detail and color, and vaguely rectangular. Years of scientific research have shown, however, that this panorama is a construction, enabled by multiple systems of neurons specialized for visual processing.

These neural systems often take shortcuts in processing the data sent in through the eyes. These shortcuts are detectable by a variety of optical illusions and deficits produced under testing. The panorama that we are able to describe is made possible, in part, by the fact that our eyes are constantly moving. Hold your index finger about a foot in front of your face and try to concentrate on it without moving your eyes at all. Not only will you find this difficult to do, but you will soon experience a sudden decrease in your peripheral vision.

Many other and quite unusual effects, however, appear only as a result of brain damage. A phenomenon known as "blindsight" occurs in some patients who have damaged visual cortexes. These patients suffer blindness in a portion of their visual field. Yet if asked to guess where an object is in that blind area, they can do so correctly most of the time. It appears that somewhere in the brain the information is being processed, but it cannot be accessed as part of a visual field.

An even more unusual condition is known as facial agnosia. This condition results in the victim's inability to recognize faces, although recognition of other objects is not generally impaired. It appears that our brains have very specialized modules for identifying faces and reading facial expressions. In fact, our ability to recognize and remember faces is nothing short of remarkable. Over a lifetime, we remember thousands upon thousands of faces. We do it so well that most of us easily compensate for nonessentials, such as beards and hairstyles. The old saying, "I never forget a face," is rooted in good biology.

Our facility for seeing faces, even when they are not there, leads to the next meaning of the humanizing brain. When Ashbrook and Albright say that reality itself

is humanlike, they are claiming that we are predisposed to put a face on external reality, to treat it as if it were a human agent. In a roundabout way, this becomes a justification for belief in God. We cannot help but put a face on the ultimate. Because of the structure of the mind/brain, we prefer to see the ultimate in personal terms, and it is in those terms that the ultimate is the most meaningful to us. This does not mean, however, that God is *merely* a projection or construction. The data are real, but it is the brain/mind's construction of those data that gives them a personal quality.

While I have reservations about this argument, it should not be dismissed out of hand. Studies in developmental psychology show that infants and toddlers are predisposed to treat the world as animate. For them, a ball rolls not because it is following Newton's laws of motion, but because it wants to roll. Similarly, many aboriginal religions possess animistic characteristics. They see rocks, trees and rivers as inhabited by spirits and describe natural events in intentional terms. Our mechanization of the natural world is a rather recent cultural aberration.

Central to Ashbrook and Albright's book is neuroscientist Paul MacLean's division of the brain according to its evolutionary heritage. This framework partitions the brain into its three evolutionary episodes: the reptilian, the mammalian and the "new brain" or neocortex. In MacLean's original schema, each evolutionary episode is reflected in the physical makeup of the brain and the behaviors associated with those brain regions. Thus, the earliest or reptilian portion of the brain, associated primarily with the brain stem, is most involved with autonomic regulation and the most basic of survival strategies involving food, procreation and territoriality. The mammalian brain, sitting roughly on top of the brain stem and including a number of structures associated with the limbic system, plays a primary role in emotional responses and memory. The neocortex, unique to humans, is strongly associated with language, reasoning and attention.

Ashbrook and Albright use this framework to speak of both human nature and the human experience of God. The territoriality of the reptilian brain is reflected (problematically for the authors) in the territoriality and jealousy of the God of the Old Testament. The mammalian brain's predisposition to and need for nurture can serve as a metaphor for understanding a nurturing God. The split between left-brain and right-brain modes of reasoning do and should evoke different ways of experiencing God. Throughout, the brain and its structures are used as metaphors for speaking of God and the role of God in our lives.

The way Ashbrook and Albright use MacLean's model reveals the current state of neuroscience. The two authors recognize what has now become common wisdom: the triune brain is not simply triune. While particular structures of the brain can be seen in terms of their evolutionary heritage, the functions of many of these structures have changed and are much more complicated than previously thought. In other words, the reptilian and mammalian portions of the human brain do not always do the same things as those structures do in reptiles and mammals. Indeed, these regions continue to play important roles in memory, the integration of information, and consciousness--all elements critical to the operation of the neocortex. Thus, Ashbrook and Albright do not take MacLean's model completely literally, but use it as a helpful heuristic for thinking through the behaviors associated with these various stages and systems.

The difficulties with MacLean's model point to a larger issue that Ashbrook and Albright spend a significant amount of space analyzing: to what extent is the brain modular? Much of modern neuroscientific research has been dedicated to associating specific brain regions (or "modules") with specific behaviors or abilities--an approach which has met with considerable success. Language tends to be located in the left hemisphere. Most visual processing occurs in the back of the brain, which is why we see "stars" when we receive a blow to the back of the head. Spatial reasoning seems to be associated with the right hemisphere.

Yet these modules do not work in isolation from each other. Language is a case in point. A considerable amount of language processing appears to occur in the left hemisphere, and brain damage in these areas can result in quite specific language impairments. Damage in a region known as Broca's area, for instance, can lead to an inability to speak, although comprehension remains intact. But it is now clear that the right hemisphere plays a significant role in language processing as well, and that language comprehension and production involve many regions of the brain. To complicate things further, young children who suffer brain damage in the left hemisphere often develop language normally, with the right hemisphere picking up the slack. Increasingly, scientists are finding that brain functions are integrated and dynamic.

One of the most influential and dramatic illustrations of this integration is the case of Phineas Gage, recently republicized by Antonio and Hanna Damasio and cited by Ashbrook and Albright. In 1848, Gage suffered a horrible accident while working for the railroad. An explosion sent a seven-inch metal rod crashing through his skull and

the left frontal lobe of his brain. Miraculously, Gage survived the explosion, did not lose consciousness and reacted rather calmly throughout the event. But after he recovered Gage was no longer the same man he once had been. Once a productive worker, Gage now was often tardy and verbally abusive.

Recent research on people with similar injuries reveals the same pattern. These people seem to lack not any reasoning ability, but the emotional associations that guide reasoning. They are unable to make decisions and do not have the emotional inhibitions that prevent us from saying whatever comes to mind. Reason and emotion seem to be integrally entwined.

Indeed, much of the most exciting research today is being done on the relationships between those aspects of the self that we have long held to be opposed: reason and emotion, mind and body, the physical and the mental. These dualisms that have permeated Western models of thinking are being swept away. It is here, perhaps, that the most fertile interaction between theology and neuroscience can take place, for it is the challenge to these traditional categories that is most relevant to theological concepts of the self and possibly of God as well.

The Christian view of God is preeminently personal. If our view of the human person changes, so will how we speak of God as a person. But the range of implications goes far beyond this, for neuroscience also affects how we see our relationship to God. What do we mean by the image of God? In what sense are we free, moral agents? What does resurrection mean? And do we really have a God-spot? *The Humanizing Brain* serves as a thoughtful introduction to many of these issues. It is, however, merely the first stage in an expanding dialogue, one that is already both stimulating and rewarding. The decade of the brain is nearly over, but the process of discovery for scientists and theologians is only just beginning.