

Knowing Our Minds

September 21, 2008

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First Parish in Brookline

Reading: “*Lessons from Evolutionary Brain Science*”

Michael Dowd,
Thank God for Evolution,
pp. 134-140

Our modern understanding of the human brain offers scant evidence to suggest that a designer God engineered a perfect mental toolkit for the human endeavor. Indeed, the scientific evidence is overwhelming that the human brain is an emergent phenomenon in which physical structures and neurological connections developed in an additive and exploratory way over millions of years. *This* is how God, the Creator, made “Adam and Eve” and the rest of us. It is now beyond dispute in the scientific community that our deepest and most basic brain structures were shaped within the skulls of our reptilian ancestors who ate, survived, and reproduced in an era that long preceded the dinosaurs.

A half century ago, Paul MacLean introduced the idea that the human brain consists of three parts, and that the parts of our “Triune Brain” correlate to the time sequence of their evolutionary emergence: reptilian, paleo-mammalian, and neo-mammalian. Since then, scientists have recognized that there is a fourth and far more recently evolved mammalian structure, which is profoundly manifest in the human brain: the prefrontal cortex, or frontal lobes. Let us begin with a brief overview of each of the components of our *Quadrune Brain*.

REPTILIAN BRAIN: The cerebellum and brainstem together handle our involuntary breathing, basic bodily movements and acquired “muscle memory”... Our ancient reptilian brain is also the seat of instinctual drives that are least subject to conscious control. I call these primordial drives “the 3 S’s” of our *inherited proclivities*. They are Safety, Sustenance and Sex [otherwise remembered as food, reproduction and survival].

FURRY LITTLE MAMMAL BRAIN: This is the limbic system, consisting of the amygdale, hippocampus, thalamus, hypothalamus, and insula. Reptiles do not have a limbic system but all mammals do. It is the seat of deep emotions, and its health and wellbeing seems to require periodic entry into a dream state. Mammals, in fact must dream or they will die. [Furry Little Mammal brain attaches strong emotions to the Reptilian brain’s drives. So sex becomes associated with love, food with comfort, and fear of death with loathing and denial.]

MONKEY MIND: This part of the brain, the neo-cortex, could be called our chatterbox, calculator, or computer brain because it is incessantly talking to itself [fretting, worrying, calculating, and computing who we owe and who owes us]. This part of the brain handles language and symbolic logic, builds scenarios, and tries to rationally decide between the competing drives of the reptilian brain and the furry mammal brain.

MEANING MAKING: The frontal lobes perform the most advanced and complex functions in all of the brain, the so called executive functions. They are linked to intentionality, purposefulness, and complex decision-making. They reach significant development only in humans; arguably they make us human.

Sermon:

If the universe is the answer, what is the question? We are part of the great story of the unfolding of the universe across space and time. The text of our faith is the evolving and emergent universe. Yet we live our days in ever present here and now. How many of you are worried about the state of the stock market and your investments? How many of you are deeply concerned about the coming election? These are anxious times, which trouble our minds, and there appear to be no easy answers. But how well do we understand our own minds? Do you think: I am of two minds about this? In fact most of us are of four minds, about most things; and how well we integrate and cohere our various biological urges due to our neuro-evolution as humans determines how well each of us lives into lives full of meaning, coherence, and integrity. I want to move beyond discussions of sin, concepts of good and evil, worries of who has lost money, or even the Presidential election, to explore the impact of our quadrune brain on our own behavior. Let's think together about how religion responds to neuro-biology.

The oldest part of our brain, the brainstem and cerebellum, we share in common with all life that has a central nervous system. This part controls our involuntary systems such as breathing; automatic movement that doesn't require conscious thought, such as swallowing, walking, running, or driving a car. This so called reptilian brain learns to handle these tasks efficiently without conscious thought; thinking would just get in our way. The reptilian brain developed to ensure our survival (safety), our sustenance (eating), and our reproduction (sex). Left to its own devices our reptilian brain would, given the opportunity, eat everything in sight, have sex as often as possible with as many beings as possible, and kill anything that threatens its access to food, sex, or continued survival as an individual. This core brainstem is also the cause of most impulsive behavior. It is an axiom of the stock market that its two most powerful forces are greed and fear. Both are governed by the deepest part of our cerebellum, they are impulsive, nearly instinctive, and almost always not in our long-term best interests. When someone acts impulsively, you are apt to think "what are they thinking?" but in fact they generally aren't thinking but rather letting lizard brain lead, usually leading from fear or greed. We have all seen such selfish thoughtless behavior at times, and it almost always gets us in trouble sooner or later. However from an evolutionary point of view, despite its biological problems, instinctive fight-or-flight behavior is well adapted for survival.

Each fight-or-flight decision and the stress hormones released by that decision are controlled by our involuntary system. As Rev. Michael Dowd shows in his book *Thank God for Evolution:*

“Our Lizard Legacy is the seat of deep territorial defensiveness and aggression when our boundaries are threatened, which is why arguments and wars tend to escalate.” Warriors attune themselves to killing without requiring conscious thought to trigger that response. Many prominent male leaders have been brought down by illicit sexual activity due to their unfettered reptilian behavior. Of course many forms of addictive behavior, whether alcohol, drugs, sex, overeating, and others are due to the unchecked reptilian brain’s behavior, which has little ability to reason, nor even consider longer term consequences beyond the present moment in which it seeks immediate satisfaction. Much of religion, especially fundamentalists, seeks to provide impulse control of our otherwise antisocial automatic behavior.

Fortunately for all mammals, evolutionary emergence evolved the limbic system which is the source of our deep emotions. Mammals experience a rich range of emotional states: from love to loneliness, pride to self-loathing, anger to ennui, none of which are emotionally available to lizards or other animals. This little furry mammal brain, like our reptilian brain as well, operates in the eternal now. We feel what we feel right now, with no perspective that incorporates a longer term view, and so we respond in the moment in ways that also aren’t always in our long-term interest. We need love, it is core to our continued existence as humans, yet we often self-destruct those same necessary loving relationships. We experience our life centered on familial groups, whether from birth or freely chosen, and seek to satisfy our hierarchy of biological needs within our social network, but to do that we first need love.

Dowd says that the furry little mammal brain is the source of our sense of wellbeing, and that it plays an important role in regulating the actions of our reptilian brain. He also notes that “the insula is the limbic component that translates purely physical cravings into emotionally charged physical cravings.” My over active limbic system appears to be why I eat too much, especially when under stress. Damage to our insula can destroy our ability to respond emotionally to music, to care about our social situation, or even to know and/or care if we are happy. Religious communities play an important role in helping us to construct and maintain familial social networks that help us to pursue our wellbeing within an appropriately conducive and supportive community. Religious messages centered upon love, whether “God is love,” or “All you need is love,” or “Love Your Neighbor as Yourself” all create this warm fuzzy feeling our furry little mammalian brain cherishes, and brings us into a state of wellbeing and bliss. This is why love is central to our sense of the divine, in many ways God is love, and for our own sense of wellbeing we should love our neighbor as ourselves; neuro-evolution and our brains explain why this is so. We are emotionally evolved mammals who require love to survive. We seek to love and to be loved. This is why we seek out groups to belong in, and why we are deeply moved, with both laughter and tears, to feel fully alive. Emotions are part of being human.

Neuro-evolution however did not stop there, for primates also developed a newer mammalian brain, the neo-cortex, which is a chatterbox, a calculator, and a computer, that assists us in

navigating the complex interpersonal dynamics of our social networks, and which Dowd fondly calls our monkey mind. Our neo-cortex uses symbolic language to build elaborate scenarios, to choose between competing needs and drives; it regulates which thoughts from our lizard legacy and emotional responses get expressed through our actions. There are over six billion people on earth today only because we have this monkey mind, otherwise our reptilian tendencies would have killed each other off long ago, or our emotionally driven needs would have led us to dissolve into relatively small pools of self-pity and despair.

Logic, philosophy, theology, and all of our meaning making are processed by and are the result of our monkey mind's ability to manipulate complex thought in ways that are largely unique to primates and dolphins. Rational mind is why Rev. Martha's and my sermons are so deeply researched and logical with so many allegories and words. For thoughts to have resonance and permanence they must make sense to us. Buddhists also point out that this monkey mind is a chatterbox which can keep us forever chained to mental calculations, with no opportunity for peace and wellbeing. So monkey mind is core to our success as a species, and also something for us to transcend in good time.

Thank God neuro-evolution evolved frontal lobes in humans which perhaps best define us as being human. Elkhonon Goldberg, in his book *The Executive Brain: Frontal Lobes and the Civilized Mind* writes: "The frontal lobes perform the most advanced and complex functions in all of the brain, the so-called executive functions. They are linked to intentionality, purposefulness, and complex decision-making. They reach significant development only in [humans]; arguably they make us human. The frontal lobes are the brain's command post. Motivation, desire, foresight, and clear vision of one's goals are central to success in life. All these prerequisites of success are controlled by the frontal lobes." We live with intentionality.

Our frontal lobes are our executive command post, at least when we are in our right mind, and also our center of creativity. *Alice in Wonderland* is a product of Lewis Carroll's frontal lobes! In fact, for many of us, it is when we are engaged in mundane activities, like taking a shower, driving, running on autopilot, our central nervous system is running on automatic, and our emotions and monkey mind are momentarily quiet, then our most creative new thoughts burst in upon our frontal lobes. Surprisingly, recent brain studies show that when we are doing tasks which require little conscious thought, our neo-cortex is sometimes its most active, and this is when new and creative connections can be made. This explains my eureka moments!

The August 31 Ideas section of the *Boston Globe* cites another example, which I don't necessarily want our choir to emulate. It seems one Sunday in 1974, Arthur Fry, an engineer at 3M and a member of a Presbyterian church choir, began daydreaming during the sermon about his problem in marking the hymns they would sing. He thought, "What I really need is a little bookmark that will stick to the paper but will not tear the paper when I remove it." This

evidently was the genesis of Post-it notes. If you should have a similar daydream during one of my sermons, please give generously from your royalties to the work of this congregation! It is our frontal lobes which sets us apart, allows us to dream across space and time, to solve our most complicated problems, and find our sense of meaning.

Meditation, particularly Buddhist meditation, can quiet our monkey minds so that our deeper intentions, and our sense of wellbeing in this very place and time, can successfully emerge. Neuroscientists using dynamic Magnetic Resonance Technology have shown that the frontal lobes become very active in times of deep meditation. They also appear to be triggered by, and become especially active during, those moments when we experience awe. Remember a time when you experienced a deep sense of awe! When we become one with the universe our frontal lobes provide us with that sense of deep connection to all that is. Our human sense of awe returns us to our right minds and prepares us to live out lives full of rich meaning and deep connection. This is what it means to be fully human.

When our frontal lobes are firmly in charge, reviewing and transcending the thoughts emerging from the involuntary, emotional, and reasoning aspects of our minds, we can act with intention and integrity in lives that are full of meaning and likely to ensure our wellbeing over time. This has sometimes been called becoming a self-actualized or fully human being. Not all religions, certainly not all of the time, help us to become fully self-actualized and to operate out of our prefrontal cortex for higher purposes. But this is what *we* aspire to as a community: we wish to become our best selves. Understanding the legacy of our neuro-evolution, knowing our own minds, can be helpful in our envisioning a faith that calls us to be our better selves.

Wilfred Cantwell Smith in his book *Faith and Belief* writes: “Faith, then, is a quality of human living. At its best, it has taken the form of serenity and courage and loyalty and service; a quiet confidence and joy which enable one to feel at home in the universe, and to find meaning in the world and in one’s own life, a meaning that is profound and ultimate, and is stable no matter what may happen to oneself at the level of the immediate event. Men and women of this kind of faith face catastrophe and confusion, affluence and sorrow, unperturbed; face opportunity with conviction and drive; and face others with cheerful charity.” This can be true even when confronted with the stock market’s Black Sundays or contentious national elections. All will be well; all manner of things will be well.

We aspire to be a faith which speaks to all four levels of our quadrune mind. We seek a sense of safety and comfort so that our reptilian instincts do not lead us unthinkingly into behavior that we would be best to avoid. To be a loving environment which allows our fuzzy mammalian self to relax into the warm caring embrace of a loving community. We offer sermons and classes that challenge our monkey mind enough that we are intellectually stimulated, mentally delighted, and securely able to make sense of why we feel so good about it. But most importantly, it is a faith

that calls us to be who we are, and brings us back to our best intentions, so that we can emerge into the wholeness of our being and our best selves together. We participate in the great story of the unfolding of the universe joyfully together. Such a faith leads us to greater joy as we learn to walk in delight in community together. This is a faith worth the effort, and the ultimate path that we seek when we come to truly know our own minds. May it be ever so for each of us! Blessed Be and Amen.