

What led to your interest in human development, health and the central role the brain plays in our continued evolution?

I have always asked questions. At the age of seven, I recall being asked not to come back to Sunday school, because of the questions I asked. They made my teachers and the church very uncomfortable.

In the 1950s, I found the works of Gurdjieff, who had introduced the concept that human beings have not one but three brains. This was 50-60 years before Paul MacLean's began his work on the "Triune Brain." Gurdjieff developed a sophisticated view of three brained beings and talked about many of the issues to which Paul has given a neuro-anatomical foundation. As a physician, when I came across MacLean's work it created an explosion of connectedness between Gurdjieff's views and modern neuro-physiology.

What do you mean by human beings having three brains?

Over 600 million years ago, with the appearance of the cold-blooded vertebrates, there appeared sensory systems, which could construct a *resonant representation*, or *image*, of some portion of the external world. The life of cold-blooded vertebrates, what I call one-brain creatures, is determined by the spectrum of sensors and imaging capacity of this basic core brain. The primary function of this reptilian brain is survival, focused around the triad of food, reproduction and defense.

What is your definition of a brain?

A brain really should be called a brain when it has developed the capacity to take a slice through *all* of the variable forms and energies 'out there' and build a *resonant representation* or an *image* of the external world. And then, within the confines of that creature, act upon these images for survival. Then you have a brain.

The world is defined by the range of sensitivity of its sensors emanating from the brain.

Once the first brain becomes well-established as a whole sensory/motor instrument, which occurred about 200 million years ago, elements of what MacLean refers to as the *Limbic Brain*, or the *Second Brain*, began to appear.

Actually elements of this second brain begin to appear long before that second brain could be called a whole brain. The critical difference is that the world that the second brain opens to is not the world 'out there' beyond the bounding membrane, but the inner world of dynamic metabolism and motions.

For instance, lizards and crocodiles have all the various muscle groups, but they have a rather gross muscular control.

This begins to become more refined as the muscles themselves become interpenetrated by extensions of the second brain. Muscle spindles begin to measure the state of affairs of smaller and smaller groups of muscle fibers, which send information back to the spinal cord and up to the second brain. This increasingly complex monitoring and imaging of inner states is the hallmark of the second brain.

With this feedback we develop a feeling or image of what the body is doing, inside and out.

Self-perception, when limited to the first brain, is a representation only of the body surface. Certainly a lizard has receptors that will tell it to some degree the amount of pressure it's putting on one of its fore limbs. But it doesn't relate the internal dynamic state of the limb itself, the muscles, the blood flow, etc. This capacity evolved with the second brain.

With the development of the second brain, we also see a transition from a two-chambered heart to a four chambered heart. We see the evolution of the diaphragm, the uterus and the support for intra-body development of the embryo. In addition, all of the neural controls and the monitoring of all of the blood vessels, of all the other fluids, the so called lymphatic system of the body, and we have the appearance of a more and more sophistication in the immune system.

A crocodile has an immune system but it is elemental and primarily related again to the body surface and the outside world. With the limbic system, or second brain, we see an incredible diversification of internal defenses via the immune system. The core brain senses and represents an image of the external world. The second or limbic brain monitors and images inner bodily states. When we take all of the states of both brains, the *resonate representations* or *images* that are formed from those states, including feelings, this is what MacLean very appropriately calls the emergence of the Sense of Self.

What kind of image is created from these inner states?

We subjectively experience our inner world in a totally different way than we do external sensations. There is a blending between these two in perception or consciousness. Both, however, are sensations. We flip from a state of sensation into a state of feeling. When you stub your toe and then you kick the dog, for example. There is pain and suddenly we are angry because we have been in pain. The states of sensation at one level will blend into the other and it can be very difficult to differentiate the two.

A more clear-cut sense of self appears with the cingulate gyrus, the highest part of the second brain. It is interesting that no cellular precursor of the cingulate gyrus has been discovered in one brained beings. Here we see the centers for nurturing, audio vocal communication between parent and child, and play. MacLean calls this great triad of functions the Family Triad. He feels that as we study the biological cellular evolution of this area of the Second Brain we will be studying the history of the family. It's a lovely way to put that, although it is certainly controversial in some circles.

We have been raised to believe that human life was somehow different, shall I say, superior to that of other animals. How does this hold up under current research?

Many traditions place an absolute separation between what we as three brained, or human beings experience and what other creatures experience. The neuro-chemicals inside a chimpanzee are exactly the same as inside of us. Their facial expressions are the same, their play behavior is very similar etc. It is increasingly difficult to deny that they are living a world of great, rich feeling. This is one of the most essential insights; that all mammalian life has a rich experience.

Our world is far more complex and subtle, however, because we've got a neural system hundreds of times larger. Fundamentally, all mammals, because we all share this second brain, have similar subjective experiences, which are just as real and just as whole and just as important in the life of that creature as is our inner experience. We should be eminently respectful of that, because that's what we come from and are part of.

Traditions would have us believe; due to our superior nature that humanity holds dominion over all of nature.

The word dominion has been misunderstood. Etymologically the word dominion is not power over, it is responsibility toward, recognizing that everything in creation is inside of us. When we are disrespectful or abuse aspects of the outside world, other life forms, we are abusing ourselves.

Back to the brain. I can close my eyes and see an image of what my room looks like which I assume is a function of the core or first brain.

When we start talking about the image of emotions or the image of inner states, it's a different experience. Help me with that.

All sensory instruments are an extension of a brain, whether it's the core brain looking into the outside world or the second brain interfacing with the inside world, or the third brain which interfaces with both of those brains.

In each case, a system of sensors feed back data, which the brain uses to construct a *resonant representation* of the energies and forms, which that particular sensory system opens to. They are all *images*.

First brain images, because they are created via data from a world beyond the boundary of the creature, are relatively concrete. They are, you could say, literal images. When we come to the second, emotional or Limbic brain, it's much more difficult for most people to see the image.

Perhaps it would be helpful to introduce the term, self-image. What do we mean by self-image? We are looking at pride, vanity, a presumption of honesty, of strength, of purpose, and anger. Externally we see these states expressed as postures, gestures, tones of voice and facial expressions. We can see anger and hostility, suspicion and fear. We see satisfaction, constancy or hesitation. We see maternal love expressed between many mammalian forms. We are looking at the external image reflected through this inter-penetration of the first brain muscular system by the second brain. That inside state is an image because it is not a material 'whole' of anything. The organism has sampled a variable range of energies, which reflect the internal state. We experience that reflection or image as "self".

So we now have two brains.

With the evolution of the second brain special chemicals, called neuro peptides, report to the brain the inner state of the body. Candice Pert, formerly of the National Institute of Health, calls them the "chemicals of emotion". The important differentiation is that the world of the second brain is a world of both neural and chemical formation and function. It isn't just the nervous system alone. Now there's an inter play of inner and outer images.

It is important to keep in mind that our emotional world is very rarely composed of one feeling. Each moment may be filled with a kaleidoscope of emotional images. We can be happy, sad, depressed, and joyful simultaneously. We can be happy and sad at the same time. When your child goes off to school for the first time you're standing there with a big smile on your face. But she's also begun to separate and enter the 'outside' world, so you get tears coming down your face. All this is happening at once. How we feel, our emotional state can be a complex flow of multiple experiences.

Is the core or maintenance brain completely different in form and function from the emotional or second brain?

MacLean never said that the three brains are separate. The primary structures have evolved over long periods of time.

They are fundamentally different in their function and can, relatively speaking, function independently. Do they all the time? No. They should function as a tightly integrated whole.

There's a great deal of misunderstanding about the third brain. What is the third brain and what does it really do?

As we move up the evolutionary ladder over the last 200 billion years we see increasingly dense neural structures, which begin to open capacities and functions that look like the third brain. Cleverness, a monkey digging with a stick for food. We see the emergence of curiosity, not for food, not for survival, but curiosity for it's own sake. All this requires the neural matrix of a third brain. As this third brain develops we naturally see, in the life of many mammalian forms, aspects, which appear surprisingly similar to those that emerge with the full human brain. But the third brain isn't complete.

When it is complete it will have the capacity to create various types of abstract images - of letters, words, numbers; of comparisons, analogies, similarities; of spatial, and sound forms. It will 'image' logical sequences, and 'play' with symbols, word, colors, sounds, and forms. This is the world of the third brain.

This third brain, being the latest evolutionary structure, might be considered immature. We described how the core and mid brains have developed feedback systems which create images of what is happening outside and inside (proprioception). David Bohm suggested, however that the new brain, the Neocortex, has not evolved such a feedback system to keep track of thought and that this is a major source of confusion and conflict. We loose track of what the third brain is doing.

This is a recurring theme in Mac Lean's monumental work, *The Triune Brain in Evolution*. There are far fewer paths connecting the second brain to the third brain than those that connect the first brain to the third brain. This makes the new brain much more vulnerable to data from the outside than information coming from the sensors of the second brain which monitor inside states. We have a strong *neural prejudice* from the outside world and fail to give equal attention to what is going on inside. There also seems to be a clear difference between generic males and females in this regard.

Males tend to emphasize the outside world. Women, because they are the source of nurture, the source of life and continuity, are more *aware* of the inner world. The connections between the second brain and the third brain of females, especially the right side of the third brain, are much more pronounced than males. As a result, they can be more attentive to the reality of their second brain inner world.

You can see this principal in the arrogance, the plundering and the domination, which has often emerged from the male dominated third brain.

More important, so far as the emergence of the third brain, is what it does in terms of perspective. Lizards live in a one-dimensional world. They have fixed habit patterns that react and respond only to the present. They have very poor memories. Two brain creatures develop an enormous tail into the past. Memory develops and becomes longer and longer and immensely dense. But the second brain has little capacity to reach into the future.

With the appearance of the third brain there is a sudden extension into the future, built upon the second brains past and the first brain's present. With that extension life takes on a three dimensional perspective. I can't emphasize that too much.

Another way of looking at our three-brained nature is to see that we have the outside world represented by the first brain, the inside world imaged by the second brain, and the third brain emerges as the third point of a triad, receiving input from both.

Adding this third dimension alters the first brain's sense of the outside world and the second brain's sense of self/other. Now we get a three-dimensional perspective which gives rise to the *inner representation*, or the subjective experience, of an independent "I".

We talk about *having* a body. We talk about *having* feelings. This third brain subjective experience of "I" is unique and enormously powerful. It is an instrument of infinite separation, as well as an instrument of infinite unification. It can cut both ways.

Bohm described how we could look at our image of self as being made up of three completely different representations, Me, Myself and I. In light of what we have been exploring, Me might be the image created by the first brain; Myself, the resonate representation of the limbic or emotional brain and "I" a representation of self generated by the new brain.

All three are images, however. If you penetrate to the core of the Great Traditions you always find this differentiation. There 'lawfully' appears in all humans a sense of "I", a sense of singularity, but that is still an image. There is a possibility of moving beyond the image to what may be called *Real I*.

...To a perception of participation and relationship which is not an "I" independent and separate from, but an "I" that is completely integrated in and through everything.

To 'consciously' go *beyond* the images created by our triune brain presents extraordinary challenges. We each have *imbedded* in the neural matrix of our first and second brains a *hard-wired* imperative to accept and respond to the created images as if they were real and whole. Hundreds of millions of years underpin these physical and social survival patterns.

Clearly the first and second brains cannot question themselves. The third brain has that capacity, if it applies reasoning, logical analysis, comparison etc.

The awareness that *it is an image* and not the *Reality* is however, a very tenuous state, one that we very quickly fall out of view, especially when highly evocative images are presented by the first or second brain. For instance, when a phone call from the IRS occurs, or when we are cut off on a superhighway while traveling 70 miles an hour. In those instances and thousands like them the immediacy of the image as being real is both appropriate (in survival terms) and undeniably potent. Because of the way in which our first and second brains function were equally vulnerable to the facial expression or tone of voice of the boss, and to mistaking a tree root for a snake. A moment later, when the brains have processed more data and the *image* is understood as non-threatening we may 'feel' foolish. However, our heart and breathing rate, muscle tension, and circulation of adrenalin betray that our first and second brain is continuing to react to the *imaged* threat.

As difficult as it is to sustain our impartiality to first and second brain images it is more difficult yet with regard to third brain images. The *Sense-of-I* naturally created by the neural imaging of the third brain brings a potent sense of singularity that is both *real* and *imaginary*. *Real* because of the physical and subjective feelings that we *are* a separate, individual. *Imaginary* in that this image artificially *separates* us from everything. It also creates a subjective 'specialness' that is the germ of a false and intrinsically malevolent egoism. It is this imaginary, 'false I' that results in monsters like Idi Amin, Pol Pot, and Hitler, as well as to abusive parents and arrogant corporate CEOs.

Is possible to beyond' the three images of the Outside, the Self and 'I'?

There have been many approaches to this question over the past five thousand years. In our time, however, the challenge has been made considerably greater because of the extraordinary and *positive* insights of modern science and the unparalleled *negative* impact of technology.

There is overwhelming evidence that the third brain's use of technological power, radio, TV, computers - to industrial conglomerates, managed health care and the unending stream of toys and trivia, has confused and greatly diminished the attention needed to *go beyond* our embedment in the image, to true relationship, to Real I.

It has fractured our personal and community life, and now seriously threatens the continuity of life on the planet. The origin of this gross imbalance is not *out there* in the outside world, it is *inside*, in the images created by the third brain of each of us. All of that represents a great obstacle in discovering what may lie beyond the image, what I call, *Real I*. That is why David Bohm's dialogue process and his conception of the explicate, implicate and super-implicate order is of such value.

Touch the Future
Going Beyond Self As Image
Keith A. Buzzell, A.B.,D.O.
A conversation with Michael Mendizza

They help make the implicit image explicit. This going beyond the limited images of the three brains is also at the core of the Deep Ecology of nature and of childhood. For myself, it is why I have unmeasured respect and value for Gurdjieff, Bohm and many others explore the path beyond *image*.

END

Joseph Chilton Pearce introduced Touch the Future to Keith's interest in the brain and human development over a decade ago. Dr. Buzzell is currently Founder & Medical Director, Hospice of Western Maine, Medical Director, Fryeburg Health Care Center, and Founder of Wyllaned, an educational, research and developmental community.