

Our Triune Brain

Neuroscientist Paul D. MacLean posits a reliable key to human behavior

by Gustav A. Uhlich

In a recent article on environmental issues, Garrett Hardin observed: “Legions of influential people, casually identified as well educated, live by persuasive superstitions.”¹ It takes little effort to verify his contention. We all have a tendency to fall for catchy slogans, senseless mantras, and lofty delusions. In spite of an abundance of scientifically documented information on life about us, our mind often seems entrapped by a spider web of ancient mythologies, philosophical speculations and political utopias.

It is not my intention to question the social utility of some of the empirical guidelines for human conduct which have emerged from the labyrinth of trial and error. It is, however, my conviction that we have reached a point in our evolution at which we need to search for a more rational and consistent basis for human behavior — on the personal, the national, and the global platform.

Where shall we start? The most distinguishing attribute of *Homo sapiens* is our highly developed brain. Do we all have to become neuroscientists in order to understand how our brain works? Fortunately, the answer is “no.” Dr. Paul D. MacLean, who is a neuroscientist, provides us with a handy key to unlock the perplexing mysteries of human behavior: the concept of a triune brain. The concept is remarkable in that it emerged from several decades of meticulous research,

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yet is simple enough to be understood by and applied in the life of the average citizen.

A native of Phelps, New York, Dr. MacLean’s original intention was to study philosophy, but he turned instead to medicine as a more direct means of gaining an understanding of human nature. He graduated from Yale Medical School in 1940. As a medical officer in the U.S. Army during World War II, he was placed in charge of medical as well as psychiatric wards. During a research fellowship at the Massachusetts General Hospital in 1947 he published his first paper on the “visceral brain” for which he later introduced the term “limbic system.”

MacLean later returned to Yale to become associate professor of physiology. In 1957, after a research fellowship at the Institute for Physiology in Zurich, Switzerland, he joined the staff of the National Institute of Mental Health in Bethesda, Maryland. From 1971 to

1984, he served as director of the Laboratory of Brain Evolution and Behavior. He accomplished what Sigmund Freud dreamt about seventy years earlier: to assemble a neurophysiologically-based model of human mentation. An introduction to the subject was published by the University of Toronto Press under the title, *A Triune Concept of the Brain and Behaviour* (1973).² A detailed description of related research is available in *The Triune Brain in Evolution* published in 1990, which is accessible via the internet at www.telepath.com/skipsil/triune.html.³

According to MacLean, man’s brain has retained the hierarchical organization of three basic types described in ascending order: (1) our reptilian brain, including the brain stem and the basal ganglia, (2) our paleomammalian brain or limbic system, and (3) our

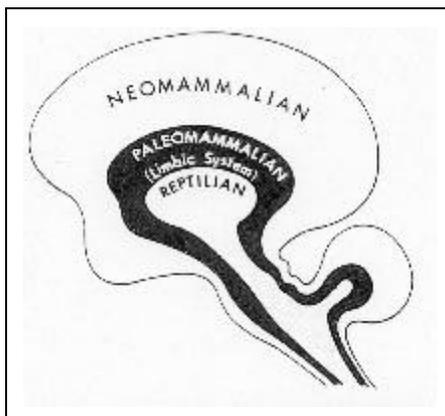


Figure 1

neomammalian forebrain or neocortex. (See Figure 1.)

For the sake of convenience, we could well refer to these parts as our “alligator,” “rabbit,” and “monkey” brains. We are familiar with the characteristic behavior patterns of these creatures and can easily recognize similar proclivities in our conduct as humans. Continuous interplay of these three anatomically and physiologically distinct brain types has culminated in the evolution of our triune human brain — approximately three pounds of it in the mature adult — made up of some 100 billion tightly intertwined neurons.

In popular terminology, the three sub-brains might be regarded as biological computers, each with its own special form of intelligence, subjectivity, time-measuring, memory, motor, and other functions. The “alligator” brain programs behavior according to instructions based on ancestral experiences. It plays a primary role in what are commonly referred to as instinctual patterns of behavior. The “rabbit” brain is of special interest because of clinical and experimental evidence of its important role in emotional behavior. No matter how fast man may eventually travel with his massive “monkey” brain, he will need to acquire self-knowledge that will allow him to accommodate the horse-and-buggy pace of his “alligator” and “rabbit” brain compartments.

Practical Applications

How can we best utilize the concept of a triune brain in the pursuit of our daily lives? I found an excellent example in a letter by Patrick Begg to the editor of *Northern Express* (Traverse City, Michigan) on September 27, 2001.

I was eating at Taco Bell Monday night, and a young couple with two children were sitting near. Nice-looking family ... Everything was okay until I heard the father speaking ...Arabic ... and I regressed 10,000 years in one moment. Suspicion, anger and resentment filled me, even as I knew it was so uncalled for and unfair. My limbic reptilian brain kicked in, full strength. And I think he felt my emotions... How do I say I am sorry?... I don't know, but I am now aware that I can most willingly participate in the drumbeat of hate ...and I will NOT. Wish me luck. Wish us all luck.

Awareness clearly is the key issue — awareness of our potential to override impulses from our alligator and

rabbit brains and to replace them, if indicated, with a rational strategy and civilized conduct. Can we project the Patrick Begg experience onto the global stage? Paul MacLean has done so for us, several decades ago:

Most urgent is the need to devise some way of controlling our soaring world population and thereby removing pressures that promote man's reptilian intolerance and reptilian struggle for territory. There is an accumulation of evidence with respect to several animal species that aggressiveness increases with increasing density of population, often leading to mortal combat. There is no reason to assume that the animal represented in each one of us would not be similarly affected. [However], despite the animalistic problems of communication within the triune brain, there are grounds for hope that man's neo-cortical intelligence, if combined with self-knowledge, will be able to cope with the mounting crises of our time.

I recently had the privilege of meeting Dr. MacLean in person. With his eighty-ninth birthday just around the corner, he continues to radiate intellectual wisdom with a down-to-earth sense of humor. It took us only a few minutes to compose an appropriate battle cry for all mankind: “Let’s think before we judge — Let’s think before we act — Always.”

NOTES

1. Garrett Hardin, “Protection, Yes. But Against Whom? For Whom?” *The Social Contract*, Volume XII, Number 1, Fall 2001, pp.19-22.

2. Paul D. MacLean, *A Triune Concept of the Brain and Behaviour: The Clarence M. Hincks Memorial Lectures*, 1969, University of Toronto Press, 1973. ISBN 0-8020-3299-0

3. Paul D. MacLean, *The Triune Brain in Evolution: Role in Paleocerebral Functions*, New York: Plenum Press, 1990. ISBN 0-306-43168-8. www.telepath.com/skipsil/triune.html.

[See also Paul D. MacLean, “The Brain’s Generation Gap: Some Human Implications,” *Zygon, Journal of Religion & Science*, Vol. 8, No.2, June 1973. An excerpt is reprinted on the following pages.]