The Triune Brain: Your Brain

The reptilian brain, the oldest of the three, controls the body's vital functions such as heart rate, breathing, body temperature and balance. Our reptilian brain includes the main structures found in a reptile's brain: the brainstem and the cerebellum. The reptilian brain is reliable but tends to be somewhat rigid and compulsive. The limbic or Mammalian brain emerged in the first mammals. It can record memories of behaviours that produced agreeable and disagreeable experiences, so it is responsible for what are called emotions in human beings. The main structures of the limbic brain are the hippocampus, the amygdala, and the hypothalamus. The limbic brain is the seat of the value judgments that we make, often unconsciously, that exert such a strong influence on our behaviour. The neocortex or New Brain first assumed importance in primates and culminated in the human brain with its two large cerebral hemispheres that play such a dominant role. These hemispheres have been responsible for the development of human language, abstract thought, imagination, and consciousness. The neocortex is flexible and has almost infinite learning abilities.

These three parts of the brain do not operate independently of one another. They have established numerous interconnections through which they influence one another. The neural pathways from the limbic system to the cortex, for example, are especially well developed.

The Triune Brain

Archipallium brain (reptilian brain)

Palleomammalian brain (limbic system)

Neopallium brain (neocortex)

The neurologist Paul MacLean has proposed that our skull holds not one brain, but three, each representing a distinct evolutionary stratum that has formed upon the older layer before it, like an archaeological site :He calls it the "triune brain." MacLean, now the director of the Laboratory of Brain Evolution and Behaviour in Poolesville, Maryland, says that three brains operate like "three interconnected biological computers, [each] with its own special intelligence, its own subjectivity, its own sense of time and space and its own memory". He refers to these three brains as the neocortex or neo-mammalian brain, the limbic or paleo-mammalian system, and the reptilian brain, the brainstem and cerebellum (see above diagram). Each of the three brains is connected by nerves to the other two, but each seems to operate as its own brain system with distinct capacities.

This hypothesis has become a very influential paradigm, which has forced a rethink of how the brain functions. It had previously been assumed that the highest level of the brain, the neocortex, dominates the other, lower levels. MacLean has shown that this is not the case, and that the physically lower limbic system, which rules emotions, can hijack the higher mental functions when it needs to.

It is interesting that many spiritual traditions teach the same idea of three planes of consciousness and even three different brains. There was one brain for the spirit, one for the soul, and one for the body, all related in an ascending manner, from gross to subtle.

The Reptilian Brain. The archipallium or primitive (reptilian) brain, or "Basal Brian", called by MacLean the "R-complex", includes the brain stem and the cerebellum, is the oldest brain. It consists of the structures of the brain stem - medulla, pons, cerebellum, mesencephalon, the oldest basal nuclei - the globus pallidus and the olfactory bulbs. In animals such as reptiles, the brain stem and cerebellum dominate. For this reason it is commonly referred to as the "reptilian brain". It has the same type of archaic behavioural programs as snakes and lizards. It is rigid, obsessive, compulsive, ritualistic and paranoid, it is "filled with ancestral memories". It keeps repeating the same behaviours over and over again, never learning from past mistakes (corresponding to what is called the mechanical Mind). This brain controls muscles, balance and autonomic functions, such as breathing and heartbeat. This part of the brain is active, even in deep sleep.

The Limbic System (Paleomammalian brain). In 1952 MacLean first coined the name "limbic system" for the middle part of the brain. It can also be termed the paleopallium or intermediate (old mammalian) brain. It corresponds to the brain of the most mammals, and especially the earlier ones. The old mammalian brain residing in the limbic system is concerned with emotions and instincts, feeding, fighting, fleeing, and sexual behaviour. As MacLean observes, everything in this emotional system is either "agreeable or disagreeable". Survival depends on avoidance of pain and repetition of pleasure.

When this part of the brain is stimulated with a mild electrical current various emotions (fear, joy, rage, pleasure and pain etc) are produced. No emotion has been found to reside in one place for very long. But the Limbic system as a whole appears to be the primary seat of emotion, attention, and affective (emotion-charged) memories. Physiologically, it includes the the hypothalamus, hippocampus, and amygdala. It helps determine valence (e.g., whether you feel positive or negative toward something, in Buddhism referred to as vedena - "feeling") and salience (e.g., what gets your attention); unpredictability, and creative behaviour. It has vast interconnections with the neocortex, so that brain functions are not either purely limbic or purely cortical but a mixture of both.

MacLean claims to have found in the Limbic system a physical basis for the dogmatic and paranoid tendency, the biological basis for the tendency of thinking to be subordinate feeling, to rationalize desires. He sees a great danger in all this limbic system power. As he understands it, this lowly mammalian brain of the limbic system tends to be the seat of our value judgements, instead of the more advanced neocortex. It decides whether our higher brain has a "good" idea or not, whether it feels true and right.

The Neocortex, cerebrum, the cortex , or an alternative term, neopallium, also known as the superior or rational (neomammalian) brain, comprises almost the whole of the hemispheres (made up of a more recent type of cortex, called neocortex). It corresponds to the brain of the primate mammals and, consequently, the human species. The higher cognitive functions which distinguish Man from the animals are in the cortex. MacLean refers to the cortex as "the mother of invention and father of abstract thought". Although all animals also have a neocortex, it is relatively small, with few or no folds (indicating surface area and complexity and development). A mouse without a cortex can act in fairly normal way (at least to superficial appearance), whereas a human without a cortex is a vegetable.

The cortex is divided into left and right hemispheres, the famous left and right brain. The left half of the cortex controls the right side of the body and the right side of the brain the left side of the body. Also, the right brain is more spatial, abstract, musical and artistic, while the left brain more linear, rational, and verbal