

HAVE THE UNIVERSE AND TRAUMA A RIGHT BRAIN LANGUAGE?

SYMPOSIUM ON NONLINEAR PARADIGMS FOR TRAUMATIC STRESS

Views of the universe

Linear Concepts

The linear view in physics and mathematics arose when science wrested knowledge from religion. The principle of *observation* was stated by Galileo as, "Measure what can be measured, and make measurable what cannot be measured." The principle of measurement was wedded in biological science to *dualism*, cemented by Descartes, which separated body and mind. The *third* doctrine was *reductionism*, where smallest components were ultimate causes. Pathology through bacteria, viruses, in cells, genes, hormones, biochemical compounds were causes of illnesses. Psychiatry, in attempting to gain scientific credibility declared through DSM that it too had numerous diagnoses based on measurable scientific criteria. Vaillant (1984) called this scientifism, and Weiner (1992) noted that DSM was like fragments of a broken Humpty-Dumpty. He predicted that the fragments would be reconstituted in a medicine based on systems and non-linear concepts. Indeed biological systems are rarely linear.

A Shift in the Scientific Paradigm; Non-linear Concepts

In the last decades physics and mathematics have evolved non-linear paradigms which subsume and correct the inaccuracies in linear Newtonian physics. Static Newtonian logic was replaced by an apparently surrealistic dynamic language.

Quantum mechanics maintained that the story of the universe started with the big bang. In the epochs of the first seconds after this cosmic events out of a ferment of quantum energy space, time and matter froze out. The theory of relativity holds that they still influence each other. Further, particles, virtual particles and ghost particles of these cosmic events have been influencing each other through webs of vibrating energy patterns.

To continue, sometimes events reflected aspects of the big bang. As a star aged it could develop a gravity so strong that it imploded on itself, becoming a black hole enveloped in an infinite timewarp and a prison of curved space, where time stood still. This could explode in flash of energy called a supernova, resembling a star.

Understanding came from whole views, and yet the whole could not be viewed concurrently. What was observed depended on the observer, and the observations had an innate uncertainty (Heisenberg's uncertainty principle). The observer became important not only in what was observed, but also in influencing the system. "When someone looks.. an atom jump[s] in a characteristic fashion that no ordinary physical interaction can mimic." (Davies, 1984, p 40).

Chaos theory also emphasized the importance of the initial conditions in the "butterfly effect" (Lorenz 1979). Theoretically the flap of a butterfly in Brazil could set off a tornado in Texas. Apparently random events could be represented not in statistics, but simple codes represented visually as infinite complex loops so beautiful as to be described "like grapes on God's personal vine" (Gleick, 1987, p 221). And yet

at the edges of unstable equilibria new states may establish a new equilibrium through bifurcation of wholes.

Elegance, beauty, harmony and unity were reflected in non-linear equations and codes described as the poetry of nature. They evoked awe and delight and search for cosmic meaning and purpose reminiscent of the sacred (p 148). The sterile, soulless, Newtonian view of the world gave way to the holistic perspective of the new physics (Davies, 1984). Or poetry and metaphors were added to the language of nature.

Non-Linear Concepts and Traumatology

Non-linear thinking seems particularly applicable to traumatology. Analogously to the big bang, trauma may also be said to be a ferment of energy out of which freeze biological, psychological and social arenas akin to matter, time and space. Here too each is influenced by events in the initial epochs of trauma and their derivatives 'remember' and continue to influence each other.

As with the big bang traumatic events influence unpredictably long term constellations of illnesses, though as with cosmic constellations with information they can make retrospective sense.

Black holes and supernovas may be analogous to traumatic amnesias and hypermnesias reminiscent of the initial trauma. Black holes may be like intensely compacted traumatic memories imploding on themselves in timewarp where time stands still. Later apparently random or chaotic divergent biological, psychological and social manifestations may be dissociated memory fragments which from a whole perspective can be seen to have core relationships. Memories within a web of energy may resemble particles, virtual particles and ghost particles which remember each other.

In traumatology too biological, psychological and social events cannot be viewed at the same time, uncertainty arising due to limited views of observers and their influence on the systems they observe.

Analogously to chaos theory, in traumatology too initial events have unpredictable long term consequences. Perhaps in traumatology too intense energy at points of disequilibrium lead to bifurcations such as left and right brain information splits.

Finally, as in non-linear physics, traumatology is concerned with a range of complexities including ultimate meanings and purpose.

The Right Brain

Jaak Panksepp, a neuropsychobiologist, once said that psychologists have shot themselves in the foot by ignoring emotions, which did not fit their linear views. Similarly, it may be that mental health scientists and traumatologists may have shot away half their brains by ignoring the right brain.

Neurologist Rawn Joseph and neuropsychanalyst Allan Schore note that while the left brain perceives, encodes and retrieves logical (linear) verbal and visual images, the right brain is concerned with (nonlinear) emotions, and emotional comprehension and memory, as well as somatic and action events and memories. The right brain is concerned with gestalt, empathy, intuition, motives, sexuality, music, morals, meanings, metaphors, creativity, beauty, and aesthetics. "Right hemisphere language is social, melodic, emotional, contextual, inferential, and highly communicative of meaning and intent."

The right brain is dominant in life until the age of 4. Memories cannot be retrieved from before age 4 because nonverbal codes are used to store memories in the right brain. However memories are available as emotional, somatic, action, and early inferential states.

The following statement by Josep a decade ago has been confirmed by recent positron emission tomography experiments. [Early and adult traumas] are mediated not only by the limbic system, but also via the non-linguistic, social-emotional right brain. these experiences are stored in the memory banks of the right cerebrum.”

Further, Sperry, Nobel laureate - “What is experienced in the right hemisphere seems to lie entirely outside the realm of awareness of the left hemisphere, especially in traumas, especially in early traumas. .

“..when the two halves of the brain become functionally disconnected and are unable to share information, the possibility of information transfer at a later time is precluded - even when the ability to transfer is acquired and restored. The information is lost to the opposite half of the cerebrum. Nevertheless, although lost, these memories and attached feelings can continue to influence whole-brain functioning, in subtle as well as profound ways.” “...Certain situations act on those memories, much to the surprise, perplexity, or chagrin of the other half of the brain; one hemisphere cannot always gain access to memories stored in the other half of the brain.... These conditions protect the brain and linguistic consciousness from becoming overwhelmed.”

Nonlinearity, right brain and traumatic stress

Left brain science has eschewed right brain thinking as anathema. After all, right brain’s creativity and search for meaning has produced religion, ideologies, illusions and delusions.

But nonlinear physics which also reads like chaos, illusions and delusions, has pointed out that perhaps behind such loss of equilibrium lie more subtle meanings with a scientific logic different to linear or left brain sort.

My colleagues will explain nonlinearity further, and comment on whether life makes nonlinearity in physics inapplicable or not to the arrangement of atoms in our bodies.

But I do suggest that traumatology needs to embrace the nonlinear paradigmatic shift if it is to maintain its soul. This soul includes recognition through different types of memory of emotions, morals, meanings and spirituality which includes harmony, wisdom and the sense of the sacred, internal dynamic processes outside of left brain consciousness, which are enacted in the external environment through their own language, expressing their fulfillment and traumatic disruptions.

Perhaps the right brain is the bridge between body and soul. We should not expunge it, but rather like integration of linear and nonlinear physics, we should integrate our brains.

Non-Linear Concepts Applied to the Triaxial Framework

Neurophysiologists applied non-linear thinking to brain function. Bergland (1985) said that “hormonal harmonies” and other codes were the stuff of thoughts and

the soul. Lonie (1991) and Morstyn (1992) noted applicability of non-linear paradigms to psychotherapy. In both layers of meaning brought order to flows of apparently random information.

As in quantum physics, neither the axes, nor their components can be examined concurrently. For instance, depending on the view of the observer, only one axis, or one of biological, psychological or social aspects of an event may be observed at one time. This introduces a principle of uncertainty, and as in non-linear physics too, the way the observer observes influences the system observed.

In traumatic stress too, divergent derivatives along the axes which 'remember' each other may be discerned in webs of interactions when viewing the whole triaxial framework.

, which can nevertheless be represented visually and coded in relatively simple symbols and metaphors.

The frequent metaphor of trauma as the pebble in the pond (used in its logo by the International Society for Traumatic Stress Studies) may be expanded by the triaxial view. The expanding ripples represent the process axis. Each ripple is like a memory from the impact and subsequent resistances. Crests and troughs of ripples represent reliving and avoiding respectively. Points on ripples represent particular symptoms and illnesses and comorbid diagnoses involve other points on the same or similar ripples. The parameter axis involves the nature of the pebble and the pond, when the pebble was thrown at what angle at which part of the pond. The depth axis recognises that the pebble cause ripples underwater, disturbing different levels of life and the purpose of the pond.

An example of a code which integrates many random events may be the concept biopsychosocial. It may be represented visually as a butterfly with its center the biological, and the wings the psychological and social aspects. The butterfly flutters over the triaxial framework and is refracted and seen differently at different points. The refractions usually only allow one or other of its parts to be seen at any one time. If these seem fanciful explorations, they are nevertheless analogous to thought experiments in quantum physics.

Music has geometrical properties. Bird song may have geometrical instructions of territory and approach of enemies. Cosmologies on music of the spheres - based on pleasing music using ratios. Used in architecture, shells and cochlea in nature.