*DELTA LIFE SKILLS*sm

EMOTIONAL FREEDOM IS IN YOUR HANDS with REBsm

Integral Energy Psychology

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PART ONE: THE RADIANT ENERGIES BALANCE (REB)sm PROTOCOL: PHILOSOPHY/RESEARCH/THEORY BACKGROUND©

Section:

16.7. ENERGY MEDICINE MODEL of Oschman

When I finished reading Oschman's brilliant synthesis (2000, Energy Medicine: The Scientific Basis) I came away with the belief that no therapy (cognitive, hypnotic, energetic, or what have you) would be complete without some form of body work or movement treatment. At least I think that all therapists, of whatever persuasion, must seriously consider including movement, stretching,

etc. as an adjunct to their regular therapy. The REB^{sm} uses squeezing, blinking, rocking, head and eye movements, postures. While doing the various movement and stimulus activities, clients are tuned into the sensations experienced, maintaining a witness orientation and when there is a change in the felt sense (an indication of energy shifting and thus of progress) they are instructed to send a positive emotional feeling sense to their system (especially the heart) for making this change.

His newest book (2003, Energy Medicine in Therapeutics and Human Performance) expands on this. To quote from Pressman's review "…[T]here is a system within the body, actually the largest system, called the connective tissue. This is what we look upon ordinarily as 'gristle,' tendons and fascia. Every organ in the body, indeed every cell in the body is encased in connective tissue. What has been discovered recently is truly remarkable. That is that this connective tissue continues within the cell plasma, and this continuation is in the form of a kind of bony structure called the 'cytoskeleton' (cell skeleton). And furthermore, the continuation continues by going within the nucleus. What are the implications? Mostly that there is indeed a continuum within the body, a wholism, which has been neglected by our scientific and medical researchers. One part of the body not only knows what every other part of the body knows (every cell, every interior of the cell) but also is reactive to it."

"What is equally important is that each cell within the body, each cell within the continuum of connective tissue, lines up, migrates, forms, vibrates with electro-magnetic energy and forms a second nervous system! This does not neglect the well-known nervous system that begins with the brain and extends to the spinal cord and the peripheral nerves. Indeed it does not; but it does define a second nervous system which also affords a basis for acupuncture, and which operates at the same time as the central nervous system. This second system, mediated by the connective tissue, is part of an ancient nervous (awareness) sensorial complex. This is seen in the reactivity of the most primitive organisms, such as bacteria and protozoa. These little beings are able to sense the environment, react to the environment to protect themselves, and explore the environment to find food and sustenance. This ancient communication system operates underneath and ahead of the central and peripheral nervous system."

"The implications of all of this is that there is a wholism within the body, a wholism in which each part connects with the other -- instantaneously and ongoingly. Each part adjusts, and the best result in terms of health and performance arrives when there is the greatest coherence or flowing together or acting together."

"Furthermore, it has been discovered that whereas our approach (to healing and understanding body function) has been through chemistry, trying to find the right chemical reaction and the right pill to set things aright, the ongoing reactions are truly electro-magnetic. There is a flow within this connective tissue that is twenty times faster than that which runs through the central nervous system. There is an instant reactivity. This was noticed when Oschman described a fly flying onto an eyelash. The blinking of the eye is so fast as to be far beyond that which is mediated by the central nervous system."

"There is within the body such a thing as a piezoelectric response. As soon as any tissue is bent or stretched, there is an outpouring of electricity in turn creating a magnetic field. It is the circuitry through which these flows take place that is the basis for the acupuncture meridians. These meridians support the flows of energy from the piezoelectric effect, but they also support many other kinds of regulatory flow, including those involved in emotional expression. This flow of electromagnetic energy is also the basis of transmission of information and even the evocation of

the chemical reactions within the body."

"This magnetic flow is best when everything is coherent, meaning flowing together. This is the 'zone' of exceptional human performance, or the 'zone' of exceptional human health. Furthermore this flow of electro-magnetic energy goes beyond the body, creating electro-magnetic waves that we call the 'aura.' It extends so that we can feel (if we allow ourselves to be sensitive) a good environment or an unhealthy environment, a good person or one who may not be so good. This is an exchange with the environment. This is the opportunity to receive healing vibrations from the hands of a Reiki practitioner or a hands-on therapist-or even the intentions of a good physician as opposed to one who is overly-hard-pressed and in a hurry." (Pressman, 2004, pp. 14, 20)

Any psychotherapy that doesn't get out of its mind will be less effective and less efficient!

The following are some of the more relevant quotes taken from his extensive and detailed examination. (pages refer to Oschman, 2000)

CELL STRUCTURE AND THE "LIVING MATRIX"

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16.7.1. THE CELL IS NOT A BAG

"...[T]he cell is...filled with filaments and tubes and fibers and trabeculae--collectively called the cytoplasmic matrix or cytoskeleton." (p. 45)

16.7.2. CONTINUUM

[T]he cellular matrix is connected, across the cell surface, with the connective tissue system or extracellular matrix... [There is a] whole class of 'trans-membrane' linking molecules, or 'integrins.'.. The boundaries between the cell environment, the cell interior, and the genetic material are not as sharp or impermeable as we once thought... The entire interconnected system has been called the connective tissue cytoskeleton, the tissue-tensegrity matrix. or simply, *the living matrix* ... 'the web that has no weaver. The living matrix is a continuous and dynamic 'supramolecular' webwork extending into every nook and cranny of the body; a nuclear matrix within a cellular matrix within a connective tissue matrix. In essence, when you touch a human body, you are touching a continuously interconnected system, composed of virtually all of the molecules in the body linked together in an intricate webwork. The living matrix has no fundamental unit or central aspect, no part that is primary or most basic. The properties of the whole net depend on the integrated activities of all the components. Effects on one part of the system can, and do spread to others... [T]he various parts and systems of the body... can be regarded as a local domain or subdivision of a continuous web." (pp. 45-48)

16.7.3. INFORMATION FLOWS

"[I]n order to survive, complex living systems require an intricate web of informational processes. Each component must be able to quickly and appropriately adjust its activities in relation to what the other parts are doing... The biology of wholeness is the study of the body as an integrated,

coordinated, successful system. No parts or properties are uncorrelated, all are demonstrably interlinked... [C]ommunications in living systems involve two main languages: the chemical and energetic. Chemical regulations are carried out by hormones, various 'factors'..., and the various 'second messengers' within cells... [E]nergetic interactions are of two kinds, electrical and electronic. The electrical activities of nerves and muscles [are one kind], but there are many other kinds of energetic signaling systems... The entire living matrix is simultaneously a mechanical, vibrational or oscillatory, energetic, electronic, and informational network... Hence the entire composite of physiological and regulatory processes we refer to as 'the living state' take place within the context of a continuous living matrix... [E]very cell receives information on the activities taking place in every other part of the body... Physiological integration is possible because every cell and every molecule fine-tunes its activities appropriately... [T]he living matrix itself is a high-speed communication network linking every part with every other." (pp. 49-51)

16.7.4. BIO-ELECTRO-MANETIC FIELDS OF THE HUMAN BODY

The schematic of the various electromagnetic fields of the body are given in Figures 16.2. to 16.5.

To quote from Oschman (p.77., Figure 6.2) “The overall biomagnetic field of the human body as visualized IN POLARITY THERAPY. Each organ and each tissue contributes to this pattern, which varies from moment to moment in relation to functional activities. The overall shape of the field results mainly from currents set up in the body by the heart, which produces the strongest biomagnetic field. The field is comparable in shape to that developed by … [a] coil is centered around the body axis because of the helical flow of heart electricity through variety of tissues. The main flows are through the circulatory system, which is a good conductor because it is filled with saline solution, plasma. As with the coil …, blood flow up and down through the aorta and major arteries is helical. Muscles are also good conductors of electricity, particularly along their longitudinal axes. There is resistance to current flow across the belly of a muscle. The musculature of the heart and arteries all the way down to the pre=capillaries is helically oriented … As the vascular system begins at the heart and extends into every nook and cranny of the body, it is ideally suited to distribute heart electricity to all of the tissues. (There are about 50,000 miles of blood vessels in the body). In addition, currents set up by the heart flow through the vertically-oriented muscles associated with the vertebral column and backs of the legs – the erectors and hamstring system. … [Figure 16.3.] … shows a representation of the field around the head in an etching drawn by Edwin D. Babbitt (1896), and is abased on the patterns of light he observed around the body after spending some weeks in the dark, which greatly increased his visual sensitivity. … The pattern drawn by Babbitt corresponds primarily to the biomagnetic field expected from movements of nerve impulses through the corpus callosum connecting the two hemispheres of the brain.”

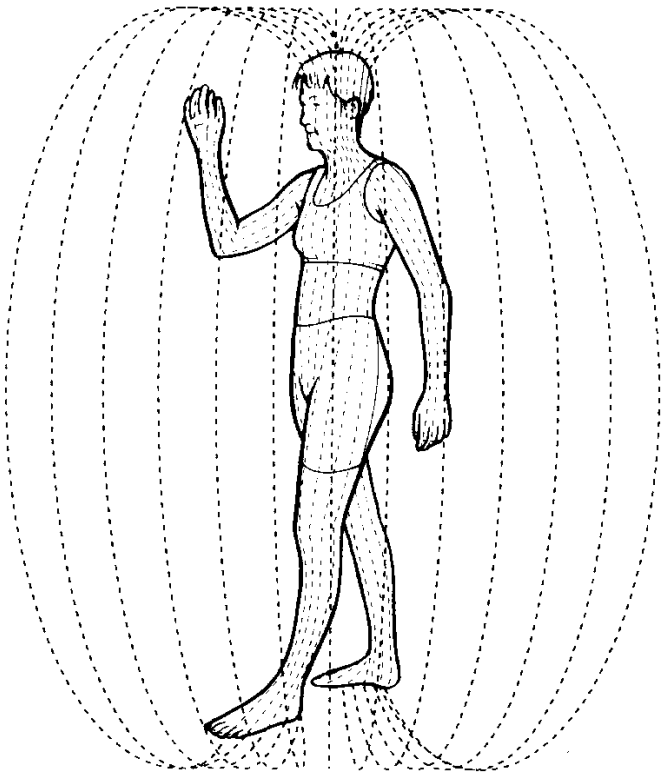

Figure 16.2. The bio-electro-magnetic field of the whole body.

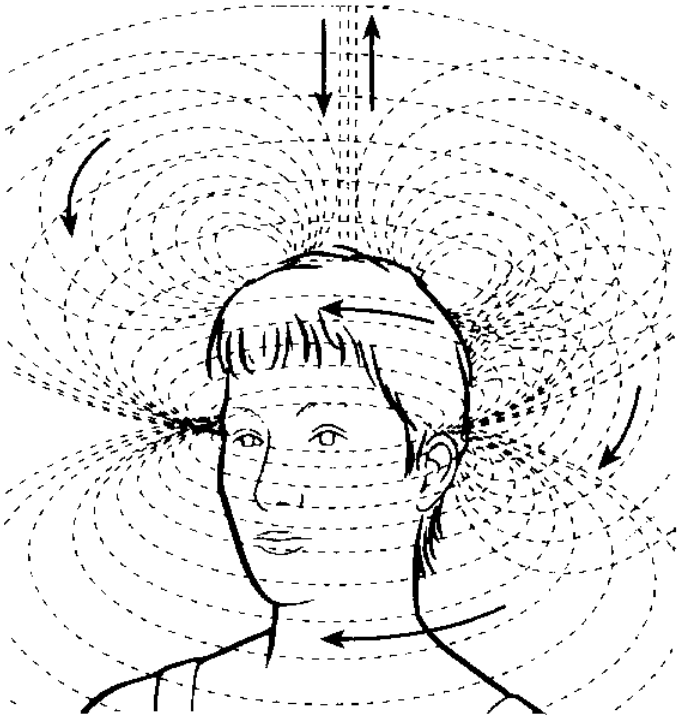

Figure 16.3. The bio-electro-magnetic field of the head.

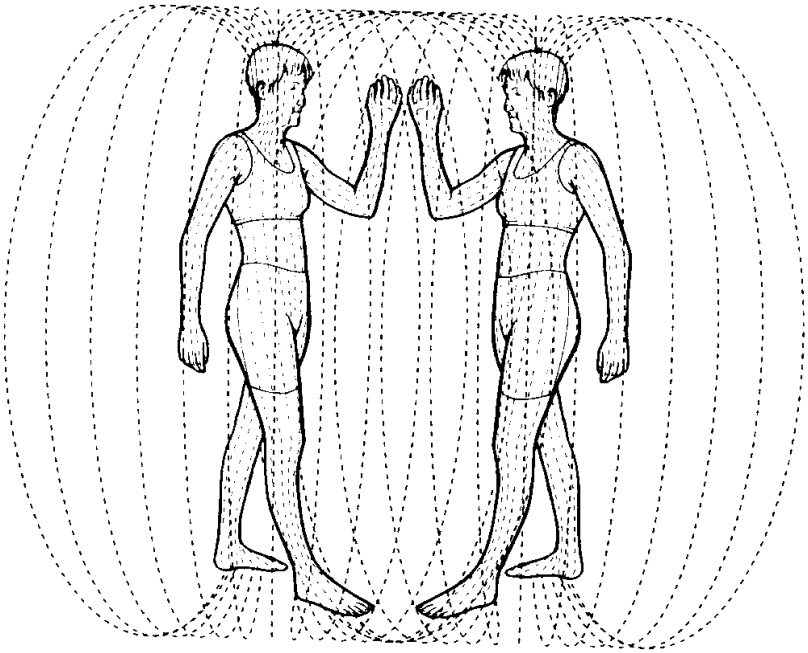

Figure 16.4. The bio-electro-magnetic field of two nearby people.

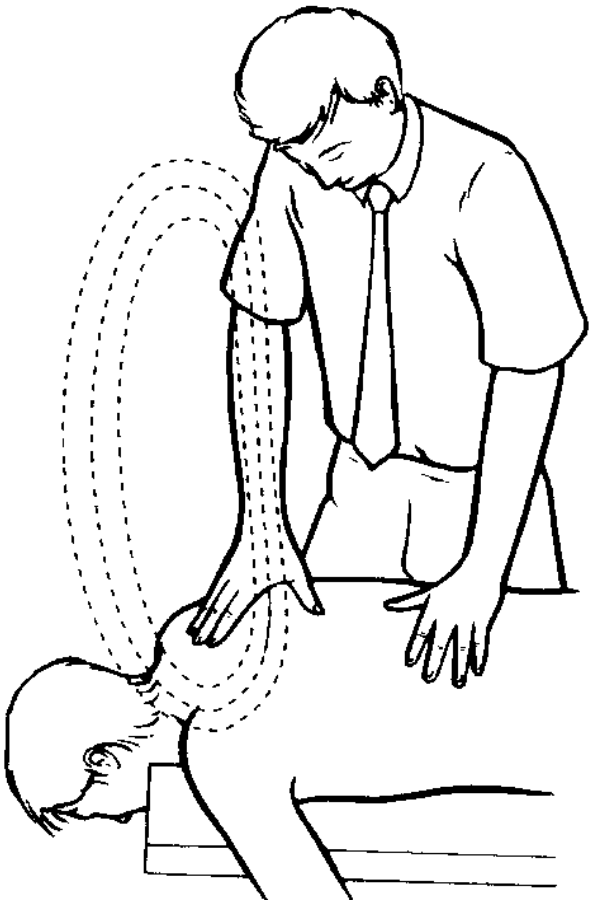

Figure 16.5. The bio-electro-magnetic field of “hands on bodywork”. “Superimposed on a diagram of a soft tissue manipulation (thumb technique) is the pattern of biomagnetic emanations from the practitioners

hands.”

16.7.5. PROPERTIES OF THE LIVING MATRIX

""The living matrix continuum includes all of the connective tissues and cytoskeletons of all of the cells, throughout the body. We can summarize its properties as follows:"

"All of the great systems of the body -- the circulation, the nervous system, the musculoskeletal system, the digestive tract, the various organs and glands -- are everywhere covered with material that is but a part of a continuous connective tissue fabric [this is called the peri- systems or collectively the 'surrounding tissues.']... The connective tissues form a mechanical continuum extending throughout the... body, even into the innermost parts of each cell... The connective tissues determine the overall shape of the organism as well as the detailed architecture of its parts... All movement, of the body as a whole or of its smallest parts, is created by tensions carried through the connective tissue fabric... Each tension, each compression, each movement causes the crystalline lattice of the connective tissues to generate bioelectronic signals that are precisely characteristic of those tensions, compressions, and movements... The connective tissue fabric is a semiconducting communication network that can carry the bioelectronic signals between every part of the body and every other part." (p. 55)

16.7.6. COHERENCE

"[N]earby molecules interact with each other via electromagnetic fields... [C]rystalline molecular arrays should vibrate strongly and coherently... [E]normous electrical fields developed across cell membranes, with the inside negative relative to the outside. Electrical fields are also generated in the collagen arrays to connective tissues (tendons, ligaments, bones, cartilage, fascia) during movements. Activities such as nerve conduction, muscle contraction, and glandular secretion also produce electrical fields. Each activity in the body creates a characteristic field pattern. Moreover, the whole body is polarized, with the head-end negative and the tail- or foot-end positive. Research on electrically polarized molecular arrays reveals that interactions... repeated by the millions of molecules within a cell membrane, tendon, muscle, bone, nerve cell, or other structure, give rise to huge coherent or laser-like vibrations. The vibrations are collective or cooperative phenomena, in which all of the weakly vibrating parts, in the presence of an electric field, become coupled. The result is a strong, orderly, and stable vibration that is far more than the sum of individual vibrations... [T]wo 'new qualities' arise [from these oscillations]. The first is that the crystalline molecular arrays found throughout the body are exceedingly sensitive to energy fields in the environment... The second...is that strong oscillations can travel about within the crystalline network of the body and they can be radiated into the environment... Crystalline components of the living matrix act as coherent molecular 'antennas,' radiating and receiving signals... [T]he water in the spaces between parts of the highly ordered systems is also highly organized. Vibrations of the water molecules can couple to the coherent energy patterns within the protein array. The resulting coherent water system has laser-like properties, and is likely to retain and release electromagnetic information, i.e., have a form of memory." (pp. 130-131)

16.7.7. CELLULAR OSCILLATIONS AND SYSTEMIC REGULATIONS

"[I]nformation is exchanged with the living matrix continuum. This is the continuous network composed of connective tissues, cytoskeletons, and nuclear matrices, and the continuous layers of water adhering to them. Since the living matrix extends into every nook and cranny of the body, it

forms a systemic energetic continuum. The overall field of the body, and fields in the environment, affect all of the steps in the regulatory loop. Hence the electromagnetic 'environment' of a hormone-receptor interaction influences and is modified by the interaction... While pathology may manifest as chemical imbalances, the underlying problem is electromagnetic. Hence balance can often be restored by providing the correct or 'healthy' frequency, and entraining the oscillations back to coherence." (p. 135) This is why the REB^{sm} continually asks the clients to replace the negative with the positive.

16.7.8. GRAVITY AND PHYSICAL AND EMOTIONAL STRUCTURE

According to Ida Rolf (structural integration) the following effects of trauma occur.

"Any trauma to the body is recorded as changes in internal structure... [E]ven slight displacements have cumulative and long-term effects, especially if there is a shift in the way weight is carried (a change in the relation to gravity).... [I]t is possible *all* traumas to the body alter the relation to gravity by causing deviations from the ideal pattern, the form we have inherited to enable us to cope with gravity." [emphasis added]

"The way the body responds to physical trauma applies equally to the response to an emotional mishap or to a chronic psychological state. Psychological attitudes are always are represented in body structure. Fear, grief, and anger each have a characteristic pose and pattern of movements...'body language.' An emotional response immediately precipitates contraction of flexor muscles and movement away from structural balance. Once this happens, gravity takes over and pulls the structure downward, making the body shorter... If an individual continues to dramatize an emotional situation, the physical body becomes set into a psychological pattern. Once these changes have taken place, the physical attitude becomes invariable, involuntary. Movements, including respiration, reveal the emotional turmoils. In a balanced body, inspiration involves lengthening of the entire spine, from the sacrum all the way up to the cranium. When movements are restricted, individuals can no longer feel an emotion as an emotion. No longer can they have a natural response to an immediate situation and then get on with their life. Instead, they live, move, and have their being in an attitude. No amount of discussion, thought, or mental suggestion can change the pattern. To escape... the physical tone of the muscles and the structure in relation to gravity must be changed."

"The imbalances resulting from physical or emotional trauma can lead to a whole realm of chronic problems... [G]ratvity is a part of the whole that has been given relatively little attention [in therapy]."

"A physical trauma... can influence the emotional state. A relatively simple accident which nevertheless leaves the body maligned and out of balance can affect the psychological sense of the individual. The kinesthetic body feels inadequate, and the physical structure projects and image of inadequacy." (pp. 160-161)

Body work and movement therapies can extend range and efficiency of motion, flexibility, resiliency, balance, timing, precision and **emotional integration**.

"Muscular balance is the outward and visible sign that vital communications and energy flows are functioning freely... the flow of body fluids, the flow of neural impulses and the flow of vibrations through the semiconducting tensegrous living matrix. These are the vibrations that convey the information needed for the support system to adapt itself to the way it is being used, and to repair

injuries." (p. 166) Thus, to change a chronic emotion, change the way you move, sit, and be.

16.7.9. SOME CONCLUSIONS

""Body shape and patterns of movement simultaneously tell three stories, each relating to the way we experience gravity:"

1. "A evolutionary history, representing [how] our ancestors adapted to live in the gravity field of our planet."
2. "A shorter history of personal traumas and adaptations during our lifetime."
3. "The story of our present emotional state, including the effects of our most recent experiences."

"[A]ny therapy that brings the visible parts of the body into alignment, or that restores flexibility and mobility, will, at the same time, facilitate vital communications and thereby have beneficial effects upon the health of the fascial supporting systems. Once the body has been organized around the vertical, and dynamic movements have become optimized, 'gravity becomes the therapist'." (pp. 173-174)

"On the basis of what is now known about the roles of electrical, magnetic, elastic, acoustic, thermal, gravitational, and photonic energies in living systems, it appears that there is no single 'life force' or 'healing energy' in living systems. Instead, there are many energetic systems in the living body, and many ways of influencing those systems... [T]he 'living state' and../'health' are all of these systems both known and unknown, functioning collectively, cooperatively, synergistically... [This involves the study of] the interactions between biological energy fields, structures, and functions." (p. 219) [emphasis added]

"Every system in the body has an accompanying 'peri-' system which we can call collectively the 'surrounding tissues.' You can distinguish between the primary function of a particular system and the functions of the connective tissue system that surrounds and maintains it. The nerves, blood vessels, bones, muscles etc. have this peri- system that helps the system function. These 'peri-' systems have an important role in regeneration and repair (healing) as well as a global communication function in the total system." (pp. 231-233)

"There is an emerging new definition of living matter which incorporates the 'new' physics and chemistry (solid state, semiconduction, quantum mechanics, liquid crystals, and biological coherence). [T]iny amounts of energy at the appropriate frequency can produce profound biological effects...[C]ells maintain their organized society by 'whispering together' in a faint and private language. The 'whispers' travel as both chemical and electromagnetic messages... In the past, we thought the words of the 'language of life' were nerve impulses and molecules, but we now see that there is a deeper layer of communication underlying these familiar processes. Beneath the relatively slow moving action potentials and billiard ball interactions of molecules lies a much faster and subtle realm of interactions. This dimension is subatomic, energetic, electromagnetic and wave-like in character. The chemical messenger ultimately transfers its information electromagnetically. Hence the electromagnetic code is actually primary. Nerve impulses and chemical messengers are contained within the individual whereas energy fields radiate indefinitely into space and therefore effect others who are nearby... The electromagnetic language has two aspects, frequency and intensity... [L]aboratory research is confirming [that] when it comes to triggering healing responses, 'small is powerful,' or 'less is more.' The search for an appropriate essence is in fact a search for compounds with the correct molecular emission spectrum to provide benefit for a particular ailment

in a particular patient at a particular time..." (pp. 250-251)

Oschman, J.L. (2000) Energy Medicine: The Scientific Basis, Churchill Livingstone/Harcourt Publishers
Oschman, J.L. (2003) Energy Medicine in Therapeutics and Human Performance, Butterworth Heinemann
Pressman, M. (2004) "Review of Oschman *Energy Medicine in Therapeutics and Human Performance*," Bridges: Quarterly Magazine of the International Society for the Study of Subtle Energies and Energy Medicine, Summer, v. 15, #2, pp. 14, 20

16.7.10. THE INTELLIGENT BODY [1]

James L. Oschman, Ph.D.[2]

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16.7.10.1. Introduction

In spite of a century of neuroscience and a decade of the brain, we are still unclear about the nature of physiologic consciousness and its relations to learning, memory, intelligence, the subconscious, the unconscious, and intuition.

The matrices within and between cells in the human body, collectively called the *living matrix*, give rise to a primordial and evolutionarily ancient form of intelligence or consciousness that predates the nervous system. [3] This matrix provides a basis for a number of healing and related phenomena that have seemed elusive or mysterious in the past. First, it is the matrix that responds to a wide range of bodywork, energetic and movement therapies that often are said to lack correspondences with conventional biomedicine. These therapies are successful in "jump starting" the healing process, sometimes in medically "incurable" conditions, because they address this whole-body matrix system and aren't limited to neural and hormonal mechanisms.

16.7.10.2. Historical Background: Problems with the Neuron Doctrine.

Much of modern research on consciousness has been based on the 1963 Nobel Prize studies of Sir John Carew Eccles. His model explained how the brain makes myriads of decisions that give rise to the conscious "moment." However, in spite of the major direction he established in neuroscience, Eccles concluded in 1993 that his model could not account for non-physical and transcendent properties of mind: feelings, thoughts, memories, intentions, emotions. [4] This was not welcome news to many in the neuroscience community. Eccles suggested that it might be necessary to explore the quantum properties of the neural synapse to locate the ultimate connection between mind and brain. Hence the timeliness of the essay in this issue of Bridges [2005, “The possible mediating role of quantum mechanical phenomena in mind-body interactions”, Spring, v. 16, #1,

pp. 15-20] by Larry Goldberg, exploring the role of quantum mechanical phenomena in consciousness.

16.7.10.3. Neurons as Cells.

In 1961, MIT scientist Francis O. Schmitt, [5] the founder of the Neurosciences Research Program, suggested that electrophysiological methods were unlikely to resolve the problems of memory and consciousness. He pointed out the enormous capacity of biopolymers to store information:

> *Only in giant macromolecular polymers is the diversity possible that is required for the specificity manifested in fundamental life phenomena. A polymer composed of 1 000 monomers of 4 monomer species (e.g., RNA) could have 41000 variants; with 20 monomer species (protein) there could be 20^{1000} variants!*

But, where in the organism might we find the giant macromolecular polymers that Schmitt referred to? We know that they are in neurons-but what about other cells and tissues?

In 1999, Stuart Hameroff [6] reminded us that neurons are cells:

> *. . . individual neurons are far more complex than simple switches, with enormous capacity for intracellular information processing. The neuron doctrine ignores the fact that neurons are living cells.*

While many scientists continued to pursue neural/synaptic mechanisms of consciousness, Hameroff and others began to explore cellular memory, and a number of researchers focused on the microtubule as a potential memory device. Neurons are packed with microtubules, which are polymers of the protein, tubulin, along with other microtubule proteins.

16.7.10.4. The Evolution of Intelligence.

Some philosophers and evolutionary biologists have assumed that primitive organisms such as bacteria and protozoa cannot be conscious. They take the position that a nervous system is needed for consciousness. However, it does not take a rocket scientist to know that intelligence is present in all life, including plants. If you doubt this, look at a flower, and then tell me that plants lack intelligence!

Even the simplest microorganisms sense their environment and respond to it. For example, the most rudimentary of bacteria grow in the direction of nutrients; motile flagellated bacteria propel themselves toward nutrients and oxygen, and away from toxic chemicals. These organisms thus meet the criteria for sentience, which is defined as having sense perception, being conscious.

Hameroff noted that "simple" animals such as paramecia swim gracefully, avoid predators, find food and mates, and have sex, all without a single synapse. In 1951, the British neuroscientist, Sir Charles Sherrington, [7] said of this: "Of nerve there is no trace. But the cell framework, the cytoskeleton might serve." And in 1999 Hameroff added,

> *If the cytoskeleton can be so useful in protozoa, what might it be doing in the highly organized cytoskeleton of neurons? Are neurons stupid in comparison with protozoa?*

In 1858, Rudolf Virchow, the founder of cellular pathology, pointed out that each of the 50 billion

cells in the human body is an "elementary organism." If primordial consciousness is present in microorganisms, that primordial consciousness must be present throughout the human body.

16.7.10.5. Sensation and Action.

In 1973, a classic paper on sensation and movement was published by Jelle Atema in Woods Hole. [8] Atema pointed out that all of our sensory receptors contain cilia. This opens up the possibility that a locomotor-sensory system is a built-in feature in the body of all animals.

In his paper, Atema admitted that he was unable to specify the nature of the conformational waves being propagated through the microtubules and other microfilaments comprising cilia and flagella- but at the same time, research half way round the world, in Kiev, Ukraine, was revealing a possible explanation. Davydov [9] reported a biological basis for the "soliton," the solitary wave, and how it might solve the important riddle of how energy is transferred from the place where it is generated to the places where it is needed. [10]

Incidentally, the first qualitative description of a soliton was published in 1834. J. Scott-Russell was watching a boat being drawn through a canal by a pair of horses. He observed a wave that "rolled forward with great velocity, assuming the form of a large solitary elevation, a rounded smooth and well-defined heap of water, which continued its course along the channel apparently without change of form or speed." [11] Tidal waves and tsunamis are solitons. Their destructive power arises from their coherence, which makes them very stable and prevents them from dissipating their energy. Atema probably did not know that Valerie Hunt was performing electromyographic studies on dancers showing that movement is possible under conditions in which nerve impulses are not reaching the muscles. Hunt concluded that there is some other mechanism for activating movements besides the classical neuromuscular control system. These studies are reported in her book, Infinite Mind [12]

16.7.10.6. The Next Evolutionary Step: The Extracellular Matrix.

The next step in the understanding of sensory systems involved the extracellular sugar polymer coatings of individual bacteria, viruses, and protozoa. Like cilia and flagella, these "antennas" extended the "reach" of organisms into their environments.

In colonies of bacteria and simple colonial animals, this extracellular "fuzz" took on the properties of mechanical and informational linkages that gave the emergent organisms new and never before realized capabilities. The evolutionary progression to the higher organisms, including humans, involved the development of more and more sophisticated cell assemblies, such as the nervous and hormonal systems. But the higher organisms still rely on the primordial matrix system for fundamental aspects of sensation, information processing, defense, regeneration and movement. Because of its much longer evolutionary history, this matrix system is far more sophisticated than the nervous system. And Schmitt, cited above, realized the enormous potential of matrix biopolymers to store highly specific information, i.e. memories.

In his classic work, Matrix and Matrix Regulation, Alfred Pischinger stated that the smallest unit of life in the vertebrate organism is actually a triad: capillary/matrix/cell. [13] Hence there is a substantial theoretical and experimental basis for the storage, processing and movement of information and energy within the microscopic internal skeletons of cells of supposedly simple organisms.

Proposition: I suggest that these mechanisms extend beyond the cell, to the extracellular matrix and

propose that the primordial sensation-movement system described by Atema exists in humans, and operates independently of the traditional neuromuscular system.

16.7.10.7. Capabilities of The Intelligent Body.

It is suggested here that there is a "consciousness" residing in the cellular and extracellular matrices found throughout the human body. This living matrix is a continuous, global or wholebody system that predates the nervous and hormonal systems in terms of evolutionary history. It is composed of biopolymers with enormous capacity to store information (Schmitt, cited above). The relationship of the matrix to the nervous system is that the nervous system is actually composed of this primordial system. The matrix reaches every portion of the organism that is reached by nerves, and the matrix also reaches places where nerves and capillaries do not reach.

Where in the catalog of human behavior does this primordial system reveal itself? My introduction to this question came from of Albert Szent-Györgyi [14]

> *It was at an early date that I began to feel that the wonderful subtlety of biological reactions could not be produced solely by molecules, but had to be produced partly by much smaller and more mobile units, which could hardly be anything else than electrons. The main actors of life had to be electrons whereas the clumsy and unreactive protein molecules had to be the stage on which the drama of life was enacted. Electrons, to be mobile, need a conductor, which led me to the conclusion that proteins have to be electronic conductors.*
>
> *Toward the end of the 1930's theories began to appear about the submolecu/ar structure of condensed matter. This opened the possibility of electronic mobility in proteins, and thus in 1941, I proposed that proteins may be conductors.*

Albert Szent-Györgyi and many others went on to reveal that the primordial protein matrix within and around cells is not composed of conductors, but of remarkable materials called *semiconductors*.

Moreover, much of the living body is composed of highly regular arrays of molecules that are best characterized as semiconducting liquid crystals. Of these materials, British biophysicist Mae Wan Ho 1997 [15] has stated:

> *Liquid crystallinity gives organisms their characteristic flexibility, exquisite sensitivity and responsiveness, and optimizes the rapid noiseless intercommunication that enables the organism to function as a coherent coordinated whole.*

A number of phenomena demonstrate this responsiveness and noiseless intercommunication. The martial arts provide spectacular examples, in which the practiced master demonstrates an ability to sense and respond to his or her environment with extraordinary speed and precision that clearly transcends neuronal capabilities.

Athletes and other performers also routinely make judgments and sophisticated movements that are far ahead of neurological speed and that are inexplicable in terms of the established neuromuscular control system. For example, research has shown that it is impossible to hit a baseball. There is just not enough time between the instant a pitcher releases a baseball and the moment it crosses the plate for a hitter to spot it, react to it and swing the bat across the plate to meet it. [16]

Some other kind of link between sensation and action must exist and I propose that it is to be found in the primordial matrix consciousness described above. A great baseball hitter, Ted Williams, described his success this way: Study the pitcher intently. Then, when he throws the ball, guess where and when to swing the bat! In other words, rely on intuition.

Sports psychologists distinguish between *proceduralized knowledge*-when your body knows how to do something-and *declarative knowledge*--when your conscious mind knows how to do. [17]
I am suggesting that proceduralized body knowledge is subconscious, residing within the living matrix, whereas declarative knowledge is a property of the nervous system.

These phenomena also reveal themselves in the insights of therapists when they find themselves mentally "directed" to the part of the body or psyche that is causing problems for their clients. When the mind is quiet, so that proceduralized body knowledge is allowed to act as a guide, uncanny insights come forth. A number of therapists are adept at this and have published books and tapes to assist others in harnessing their own powers of intuition and insight. [18] Sometimes these experiences are associated with a phenomenon I have labeled "somatic recall" in which both therapist and patient simultaneously have vivid visions or other sensory experiences related to a traumatic event that may have happened many years earlier. [19]

Liquid crystallinity gives rise to another property: biological coherence. Most of the tissues in the body are liquid crystals: highly ordered molecular arrays that have properties of both solids and liquids. This is true of the actin and myosin arrays in muscles, the phospholipids in cell membranes and myelin sheathes, collagen in connective {issue, the arrays of microtubules in nerves and sensory receptors, and the DNA. The six feet of DNA packed into every cell in the body, noted by Karl Maret in his accompanying article, [Bridges, 2005, “Seven key challenges facing science,” Spring, v. 16, #1, pp. pp.4-9] has to be packed into a nearly crystalline form in order to fit into such a tiny volume. These liquid crystals have an extraordinary and vital property: when they are energized to a certain level of excitation, as by the electric fields present within the body, the molecules begin to vibrate in unison, until they reach a high level of coherence.

Such systems must emit highly coherent, laser-like signals and be exquisitely sensitive to similar signals from the environment. Biological coherence is the subject of extensive research, beginning with the work of Fröhlich and colleagues [20] and continuing with the research of Ho and others. [21]

16.7.10.8. The Conscious and the Subconscious.

Can the word "consciousness" be used to describe a consciousness that is not of neural origin? Of course it can! Ever since the work of Freud and lung in Western psychology we have had concepts of the subconscious and unconscious, and their correlates-images, dreams, and flashes of intuition. [22]

In the past, these terms have had little meaning to the physiologist, or cell or molecular biologist. Here I propose that the cellular and extracellular matrix that extends throughout the human body gives rise to a variety of psychological phenomena. I now see the matrix as where a vast amount of subconscious sensory information is stored and processed, an amount of data that would completely overwhelm the capacities of the simple nervous system. This total system is wonderfully described by Tor Nørretranders [23] in a fascinating book entitled The User Illusion:

> *Each second, our consciousness reveals to us a tiny fraction of the 11 million bits of information our senses pass on to our brains. Most of the information from our senses goes*

to our unconscious. Trust your hunches and intuitions-they are closer to reality than your perceived reality, as they are based on far more information.

Access to this system is via intuition that enables therapists and athletes and dancers to reach new and transcendent levels of accomplishment. I see intuition as something that emerges from the living matrix after a vast amount of subliminal information has been stored and evaluated for its deeper meanings.

I now view intuition as an emergent property of a very sophisticated semiconducting liquid crystalline matrix that is capable of storing and processing a vast amount of subliminal or nonneural information. The sophistication of my computer, with its software programs and memory and information storage capacities corresponds to the sophistication of neural consciousness. But these capabilities pale to insignificance in comparison with the evolutionary ancient solid-state subconscious system that is expressed within every cell and sinew of my body and that operates continuously to analyze the world around me.

16.7.10.9. Microgenesis.

To understand how information stored and processed by this subconscious matrix system reaches consciousness, consider the theory of mind developed by Jason W. Brown [24] from clinical observations of patients with various aphasic-disorders of perception and action. Each aphasia provided Brown with a clue about a stage in the normal unfoldment of the conscious present. When these clues were. put together, the result was the description of a process that Brown calls microgenesis. It is the "rapidly flickering recapitulation of an individual's entire past as the content in which each moment of the 'now' is experienced" (Deane Juhan). [25]

An aspect of this model is that traumatic memories and personality structure continuously select or sculpt our perceptions of the world on a moment-by-moment basis, before we become conscious of "the world out there." The existence of this system helps us understand how new methods of energy psychology are able to resolve post-traumatic stress without the lengthy efforts of trying to recall and recapitulate the moment of trauma, as has been done in traditional psychotherapeutic approaches.

From the perspective being developed in this article, I see microgenesis as a means of accessing the status of the entire body, not just the brain. One way this can happen is by the use of the coherent emissions from the various liquid crystals within the matrix. My recent book [3] is an attempt to elucidate the relationship between quantum coherence and conscious experience. [22] Briefly, the theory is that the coherent "laser beam" of holographic consciousness arises within the highly ordered semiconducting liquid crystals of the living matrix.

These internal Fröhlich oscillations reverberate within the organism, repeatedly referencing the status of the body. Each subconscious "sweep" of the body references: 1) the inner boundary of the body, 2) the tensions and positions of all body parts, 3) all sensations, both liminal and subliminal, 4) the entire traumatic history, 5) all cellular memories, and 6) all connective tissue memories.

And each "sweep" of the body has the possibility of erasing the traumatic history. Establishing the conditions for this to take place is being accomplished by methods being developed in the field of energy psychology. Finally, each "sweep" of the body reaches into every part of the body, including each part of the nervous system. To the extent that the nervous system is an integral part of the matrix, and vice versa, there is no need to search for a specific point of connection between them:

they are connected everywhere. In that regard, neurosurgeon Karl Pribram [26] was unable to find the laser he needed to complete his holographic model of the brain, because the "laser" was not in the brain; it is throughout the body. I propose that holographic memory and microgenesis are whole-body phenomena that cooperate to generate the conscious present.

Since the primary channels of this microgenetic holographic memory system are the acupuncture meridians, it is not surprising that many energy psychology methods involve tapping on key points of the meridian system.

16.7.10.10. Where is Consciousness?

Many years ago body workers told me they were convinced that consciousness is in the body and not in the brain. This came as a surprise, for I had been taught that consciousness is a process that takes place only in the brain. Over the years this new perspective of body consciousness became compelling. Key research was done by Candace Pert and her colleagues, and is summarized in Your Body is Your Subconscious Mind. [27] Decades of research on neurochemistry showed Pert that the molecules of emotion, and their receptors, can be found everywhere in the body, on every kind of cell. [28] The so-called "neuropeptides" and their receptors were not, as previously thought, confined to the nervous system. Mind, as correlated with "neurochemistry," had proven to be a whole-body phenomenon. Your body is, at least, a crucial component of your subconscious mind!

In my opinion the therapists who touch real living human bodies (in contrast to those who poke electrodes into cells, or who study individual molecules) obtain vital clues about some of the questions that can never be answered from the reductionist perspective alone. A new understanding of life is emerging from the synthesis of reductionist and whole-person perspectives. At a recent conference on energy psychology, [29] a leading practitioner, Belleruth Naparstek, concluded: *Post-traumatic stress is not mental, it is biophysical. Post-traumatic stress is not a mental health problem. They (the patients) may look mentally ill, but they are not. we have spent years looking at this incorrectly.*

I believe what Dr. Naparstek is referring to stems from psychologists not understanding the reality of the body, and the unsuccessful search for mind limited to the brain. We have searched the brain and nervous system because we know how to study their electrical properties. It now is time to develop ways of connecting our instruments directly to the living matrix, so we can explore more subtle realms of sensation, memory and consciousness. The way to do this emerges from the research on electronic biology developed by Albert Szent Györgyi. As with most new ideas, the scientific community rejected his concepts.

The time has come, however, to use these tools to help determine what consciousness and intelligence really are.

16.7.10.11. REFERENCES & NOTES

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