

Energy Medicine: The Scientific Basis.

Author: Stein, Dave

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Energy Medicine The Scientific Basis James L. Oschman Harcourt Publishers Limited, London, United Kingdom

Energy Medicine is a must read for practitioners of the healing arts (both mainstream and complementary), for their clients and patients, for physicists and biologists, for psychologists, and for others curious about energy's role in health, wellness, behavior, and consciousness! A compendium and interpretation of both recent and historical research, Energy Medicine sets forth scientific underpinnings for therapeutic touch, Reiki, polarity therapy, massage, structural integration, movement therapies, acupuncture, shiatsu, Qi Gong, aromatherapy, and homeopathy--therapies sometimes dismissed by mainstream science and medicine and often based in part on intuition and ancient wisdom.

A central point that the electric and magnetic fields generated by tissues, organs, and even pathologies are not only useful for diagnosis, but also are part of the body's mechanism for communicating with itself and its environment. Each heartbeat, breath, or emotion generates characteristic electromagnetic fields that travel through the living matrix to remote cells and tissues. While every organ and tissue contributes, the heart produces the strongest electrical and magnetic activity. Even muscle contractions produce magnetic pulses. The system distributes the heart electricity throughout the body, primarily through the circulatory system, which is a good conductor by virtue of its salinity. The electricity-generating mechanisms discussed include piezoelectricity and the streaming potential. These electrical disturbances, and their harmonics, are broadcast throughout the body. However, much of the focus of Energy Medicine is on biomagnetic fields, which (in contrast with bioelectric fields) are not significantly attenuated as they pass through body tissues.

An additional point discussed in depth is the extracellular matrix or connective tissue, in which cells are embedded. Observing that diffusion processes are too slow to account for the rapid and subtle aspects of life processes, Oschman refutes the "bag model," in which molecular reactants in the enzymatic pathways move, meet, and react randomly. Instead, he maintains, the cell is filled with filaments, tubules, fibers, and trabeculae, collectively called the cytoplasmic matrix or cytoskeleton--a network extending even to the genome. Many of the enzymes once thought to be floating in the "soup" are actually attached to structures within the cell nucleus. This provides an assembly line arrangement along which reaction sequences can proceed rapidly. Furthermore, it serves as a piezoelectric solid state communication system, enabling each cell, organ, or tissue to adjust its activities in relation to what other parts of the body are doing and thereby coordinating activities such as repair and defense as well as movement of nutrients, hormones, and toxins. The cellular matrix is connected, across the cell surface, with the extracellular matrix.

Oschman presents several views of the living matrix. In Saint-Gyorgyi's semiconductor network model, molecules form an energy continuum along which electricity can travel. The surrounding organized layer of water can serve as a separate communication and energy channel and may also have an impedance-matching role. Becker's view is that the nervous system has two parts--the classical all-or-none (hence, "digital") system and another system involving the connective tissue (perineurium) that surrounds the nerve fibers. While the classical system is point-to-point and provides high speed, high volume information transfer, the perineural system is analog, operates on

direct current (DC), is more like a broadcast system, and is more ancient from an evolutionary standpoint. It sets up a low voltage current that controls injury repair. Oscillations of the DC field, called brainwaves, direct the overall operation of the nervous system and may regulate consciousness. Through the Hall effect, it has been learned that the perineural system is sensitive to magnetic fields and that semiconduction is occurring. This discovery confirmed Saint-Gyorgyi's suggestion of semiconduction in the living matrix and gave a basis for the use of magnets and biomagnetic fields in healing. Oschman also presents facts that corroborate the existence of the perineural system. First, one-celled animals that have no nerves nonetheless have a primitive regulatory system by which they react to external stimuli. In addition, he notes Manaka's findings that various highly-effective Oriental medicine treatments have no effect on the nervous system. Finally, he points out the observed increase in Hall voltage during recovery from anesthesia, indicating that the semiconducting DC current correlates with the level of Consciousness.

Another viewpoint discussed is Frohlich' biological coherence model, which maintains that all parts of the living matrix create vibrations that propagate within an organism and radiate into the environment at different frequencies, including visible light. Each molecule, cell, tissue, and organ has a resonant frequency that coordinates its activities. Living matter is highly sensitive to the information conveyed by these signals. These signals may integrate processes such as growth, defense, injury repair, and the function of the organism as a whole.

Ingber has shown how tissue, cellular, and nuclear architecture can be described as tensegrity systems--an architectural and energy concept developed by R. Buckminster Fuller and characterized by a continuous tensorial network (tendons) supported by a discontinuous set of compressive elements (struts). When mechanical energy is applied to one part of this vibratory continuum, it flows to all other parts as an elastic shock wave. This helps the body absorb impacts without being damaged, particularly if it is flexible and balanced. The mechanism of Pieta and Coffey involves complex harmonic cellular vibrations. In their model, the tissue tensegrity matrix acts as a coupled harmonic oscillator that transduces signals from the cell periphery to the nucleus and ultimately to the DNA. These models support Oschman's own hypotheses that the body is a liquid crystal under tension and that the semiconductor electronic network includes the acupuncture meridians and extends into individual cells and nuclei.

More profoundly, these electromagnetic and mechanical (acoustical) networks provide plausible mechanisms for complementary therapies. A hands-on therapist touches not only the skin but also a continuous web that extends throughout the body. Indeed, as Oschman notes, Ingber has brought both tensegrity and solid state biochemistry concepts into biomedicine by describing how physical forces exerted on tensegrous molecular scaffolds regulate the biochemical pathways. Thus, by manipulating and balancing the vibrational circuits, the therapist can directly influence the body's systems. Furthermore, when a therapist focuses on improving flexibility or mobility in one area, the tensegrity network spreads the effects to other areas including areas too painful to be touched directly.

Citing various scientific studies in which external signals cancelled discordant or pathological frequencies and thereby restored unbalanced physiologies, Oschman also proposes a second mechanism--that the emanations from the therapist's own tissues can provide electromagnetic information that opens or augments vital communication in a patient's tissues. From the standpoint of resonance (sympathetic vibrations), this mechanism is highly plausible, especially considering that biomolecular vibrations and rotations orchestrate all living processes through co-resonance and through matching emission and absorption spectra. The mechanism is further bolstered by Benveniste's studies, in which electromagnetic signatures of hormones triggered a response in the receptors. As Oschman suggests, these therapy mechanisms may have evolutionary significance in terms of survival value before the era of clinics.

Expanding on this frequency information mechanism, Oschman cites Zimmerman's studies of therapeutic touch. In these studies, a superconducting quantum interference device (SQUID)

magnetometer measured large biomagnetic fields emanating from the hands of therapists when they relaxed into their meditative or healing states. The fields pulsed at swept frequencies from 0.3 Hz to 30 Hz, and primarily between 7-8 Hz. This correlates with the sensations of vibration or tingling that practitioners often report (although some practitioners feel warmth instead, indicating a possible IR role). In the experiment, no biomagnetic pulses were observed from non-practitioners. This field is also noticed coming from practitioners of Qi Gong, Yoga, Zen, and the martial arts. Furthermore, the biomagnetic pulses are in the same frequency ranges that are used in pulsed electromagnetic field (PEMF) therapy to jump-start the healing of bone fractures, a medical procedure that also applies magnetic fields to induce current flow in nearby tissues. These studies support Oschman's hypothesis that the healing energy, whether produced by a medical device or projected from a therapist, is the energy of a particular set of frequencies that stimulate tissue repair. A wound that does not heal (whether it resulted from physical or emotional trauma) is not receiving the natural regulatory signals needed to initiate and coordinate repair processes. If healthy tissue is brought into proximity to an injury, then essential information is transferred, and this jump-starts the healing process. He further suggests that activities within healthy tissue give rise to fields that radiate from the hands and that non-contact therapy also works because the biomagnetic fields extend beyond the skin. Most profoundly, he suggests that this biomagnetic field is the same field that Mesmer had discovered in the 1770s!

Oschman suggests that other therapies based on homeopathy, herbs, aromatherapy, sound, heat, and light, are effective because they provide the frequencies needed for healing. He further proposes that the crystals used by some therapists resonate with (and thereby amplify) the healing frequencies.

Energy Medicine discusses the role of brainwaves and the Schumann resonance. He proposes that brainwaves propagate through both the circulatory system (a good conductor, through which the heart's electrical activity also propagates) and the perineural system. Citing EKG and EEG studies that verified the coupling of the brain and heart rhythms of two people, Oschman asks whether signals projected from a therapist's hand entrain a client's brainwaves during the "free run" period (pauses in the thalamic oscillations). Noting the overlap of the Schumann frequency (7.86 Hz on the average) with measured biomagnetic fields--and suggesting an evolutionary connection--Oschman further explores the role of the Schumann resonance in brainwave entrainment and in therapy. He discusses the influence of meteorological conditions, local geological conditions, the diurnal cycle, and solar activity on the Schumann resonance. (although he states that sunspots as well as the positions of the sun, moon, and planets influence terrestrial factors that affect the Schumann pulses, he provides no supporting discussion in the case of planets.). Oschman observes that therapists often blame themselves for sessions that are less effective, when the problem might be due to disruptions of the Schumann resonance by geomagnetic storms or to local geological conditions that influence the "reception" of geophysical rhythms. Studies by Wever, in which human biological rhythms were desynchronized when they were shielded from natural electromagnetic fields, corroborate Oschman's mechanisms. Oschman also expands upon Becker's mechanism by which brainwaves regulate the nervous system.

Building upon Lakhovsky's findings in 1939, Oschman suggests that disease and disorder can result when the collective vibrations of the cells become incoherent, as can happen when a sufficient number of cells get out of step. He proposes that some regulatory loops are electromagnetic (and thus not recognized in mainstream pharmacology) and that allergies as well as chronic and degenerative diseases can result when these loops are disrupted. Suggesting that harmful electromagnetic fields (from the power grid, from radio frequency waves received and re-radiated by the power grid, and from geopathic stress zones) can disrupt electromagnetic signaling within an organism, he even introduces the concept of electromagnetic allergies. It is known that people who are hypersensitive to 60 Hz electricity may experience dizziness, nausea, or migraines that are triggered by walking past a hidden transformer or a household appliance. Moreover, as Oschman observes, Germany apparently regards geopathic stress as serious enough to justify maintaining health records on individual homes. To bolster his case, he cites studies that correlate behavior

disturbances with natural or man-made electromagnetic disturbances--and slower driver reaction times with slower brainwaves, as approaching thunderstorms appear to induce. The supporting clinical studies that he cites demonstrated the effect of electromagnetic fields on the secretion and oncostatic action of melatonin, on pineal cells, on bacteria and yeast proliferation, and on human immunoglobulin on the beta lymphocytes. Smith's findings that electromagnetic frequencies (specific to the patient) can halt an allergic reaction provide further corroboration.

Using an analogy of a phased array antenna, Oschman refutes the conventional physics viewpoint that environmental fields can have no biological effect on living matter unless the energy intensity is sufficient to ionize or heat the tissues. In living systems, extremely weak fields may have potent effects while stronger fields may produce no response or even stimulate tissue necrosis. Research suggests that living systems have a highly efficient mechanism to detect and respond to natural or man-made signals (including PEMF therapy) within specific frequency-intensity windows and discriminate them from noise levels that are substantially higher. Oschman's mechanism involving whole-body resonances is highly plausible--albeit counterintuitive, since organs, cells, and networks would be expected to have different resonant frequencies.

Oschman extends his energy concepts to the release of physical and emotional trauma stored in the body. Accumulated trauma impairs the connections through the extracellular matrix. Then the body's defense and repair systems become impaired, and disease can result. The trauma of an event is set in place virtually instantaneously, bypassing one's self-awareness. As a result, certain behaviors can become addictive and repetitive, and one interprets experiences in terms of other experiences early in life. Through brainwaves, the energy regulatory systems continue to scan the section of stored energy, and the conventional Jungian or Freudian therapies do not consistently alter the basic patterns. Building upon the insights of Redpath, Brown, and Freeman, Oschman proposes that the trauma can be released by corrective energy flow, perhaps at the pre-verbal level since the trauma energy signatures lie outside the thought and speech centers of the brain. To this end, Oschman suggests that the traumatic aspects of personality structure are so approachable when the electromagnetic rhythms of the therapist and client are entrained to form a single collectively coherent pulse. He also notes that therapeutic massage does more than increase the circulation in sore muscles. A holographic model of memory is consistent with the "somatic recall" phenomenon, in which application of pressure to a particular area releases a vivid recollection of a traumatic experience.

Oschman enriches Energy Medicine with elegant discussions of other related phenomena and concepts. He discusses the Aharonov-Bohm effect, clinical and laboratory studies of scalar waves (a possible mechanism for healing, telepathy, and Jungian synchronicity) and Brown' theory of microgenesis (that describes the origin of a quantum unit of conscious in relation to brainwaves and the brain's evolutionary history--and also provides a mechanism for perception of time). He discusses various studies by the HeartMath Institute as well as the phenomenon of anticipatory fields and their possible role in mental imaging and intention. It is these fields, Oschman suggests, that precondition the biological pathways and thereby put an athlete, stage performer, or therapist "in the zone" for best performance. One chapter, presenting the findings of Goldthwait and Rolf, discusses the energetic implications of structural alignment--specifically, maintaining the proper relationship among bioelectric and biomagnetic fields, optimizing organ and nervous system function, and minimizing energy waste. He describes the electrical and mechanical mechanisms by which toxins and metabolic wastes become trapped in dehydrated body tissue, as well as the mechanisms by which bodywork releases the trapped materials while also enhancing the flow of nutrients, enzymes and oxygen to the tissues. At the cellular and genome level, he suggests a possible energetic role for "junk" DNA (that does not code for protein amino acid sequences), and he cites tissue regeneration studies in which weak electrical fields were used to de-differentiate generative cells by unlocking repressed genes. A historical perspective and research chronology, beginning with ancient uses of magnets and early studies by Mesmer, and extending to electrotherapy in the United States more than a century ago, rounds out the book.

Looking towards the future, Oschman acknowledges that his book is a "work in progress," not the last word. Predicting that the electromagnetic languages of all normal and pathological cells will soon be known, he anticipates an increased role of energy in both diagnosis and therapy--even extending to the use of emission spectra to select therapeutic essences, for example. He proposes that natural emissions from therapists' hands be recorded, analyzed, and projected into tissues, and he even notes that some physicists have been inspired to look for new physical concepts and laws by studying living systems. The brilliant insights of Oschman, and of other pioneers whose research he cites, point the way to a better understanding of the energy blueprint from which an organism develops.

The excellent organization of Energy Medicine enhances its readability substantially. Every chapter has a conclusion, and several chapters have introductions. In presenting the research of several pioneers who are rarely cited in mainstream literature, the book sets the example in listing references. Several key concepts are restated in various chapters. In fact, Oschman defends scientists whose new ideas were initially greeted with resistance and skepticism. The book is rich in lucid analogies and illustrations.

One issue not addressed is the possible reverse flow of energies from the patient to the therapist--specifically, the energies of disease and disorder. Since this reverse flow is a possible candidate mechanism for the "drained" feeling that some therapists experience after rendering several treatments, it is an appropriate area for further investigation. In addition, the book does not explicitly address the placebo effect, but various phenomena discussed in Energy Medicine may indeed be candidate mechanisms for the healing power of the mind--and no book can be expected to address everything.

Notwithstanding these omissions, Energy Medicine, a masterful blend of brilliant insight, scientific rigor, and lucid discussion, launches a new level of dialog between physicians, complementary health practitioners, centuries-old wisdom, and the frontier sciences. In addition to providing a scientific perspective to practitioners of complementary healing modalities, the book draws useful insights from energy therapies, insights that point the way to further scientific investigation. Interestingly, Oschman himself emphasizes that the mechanisms that he presents are based on known forces as opposed to unknown "subtle energies." Although that is his observation to make, Energy Medicine will undoubtedly have at least two profound impacts--greater recognition of the "legitimacy" of complementary therapies, and quantum leaps in disease prevention and health care. This is a book not to miss! Known forces or no, two profound impacts of Energy Medicine are beyond question--greater recognition of the "legitimacy" of complementary therapies, and next-generation concepts in disease prevention and health care. This is a book not to miss!

* This book review was written in consultation with Stewart W. Stein, M.D.

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