

Survey: Toward the Scientific Validation of the Human Energy Field (HEF)

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Abstract

According to Beverly Rubik, President of the Institute of Frontier Science, no single tool will measure all of the aspects of the Human Energy Field (HEF), but various methods will each reveal an aspect of it.¹

Generally, scientific validation of a phenomenon in the western mind requires not only acceptable measurement of the phenomena, but also a fitting of the phenomena into a coherent theoretical framework, or model. With respect to health, additional credibility would be gained by therapeutic modalities, or medicine, consistent with the model, which consistently tends to restore health.

This study surveys a few of the major HEF models, measurement evidence, and a few of the many commercial HEF imaging products on the market as of 2010.² Several western technological models, backed by scientific research, have converged with the Chinese acupuncture and meridian model, and have resulted in the development of commercial imaging products. This strengthens the credibility of the idea of an electromagnetic based HEF. Such convergence is not yet apparent for the “multidimensional” Ayurvedic aura and chakra models.

HEF Models, Measurement, and Medicine

Chinese model of Acupuncture and Meridians

Acupuncture points (acupoints) and meridians, as a physically based system, are a Chinese concept which has a lot of experimental support, and may fairly be said to comprise a coherent model. Further, Chinese medicine, depending on the manipulation of of “Qi” or “Chi” energy, practiced for thousands of years, has been shown to be effective in treatment of pain and certain other health problems. The Chinese system of energy medicine appears to be the best integrated of the systems surveyed.

MRI studies of acupuncture are numerous. A 2007 study from Innsbruck Medical University characterizes the status of these studies.³ This study notes that although the mechanisms by which acupuncture works is not fully known, central effects after acupuncture can be characterized in discrete brain areas as well as at the spinal level using Functional RMI (fRMI).⁴ Few investigations have tried to characterized the anatomical basis of acupuncture points.

Figures 1 and 2 show the Yang qiao mai meridian on the lateral (outer) side of the legs, and Yin qiao mai meridian shown as the medial side (inner side) of the legs.

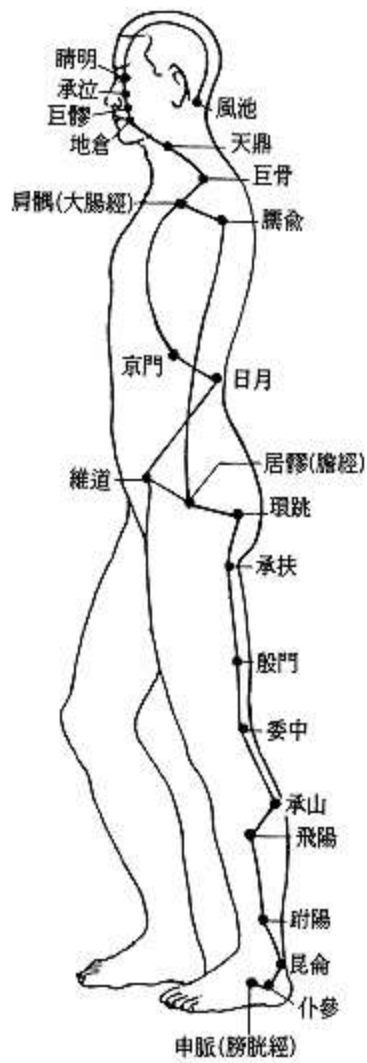


Figure 1. Yang qiao mai meridian from <http://www.thaitsu.com/courses>

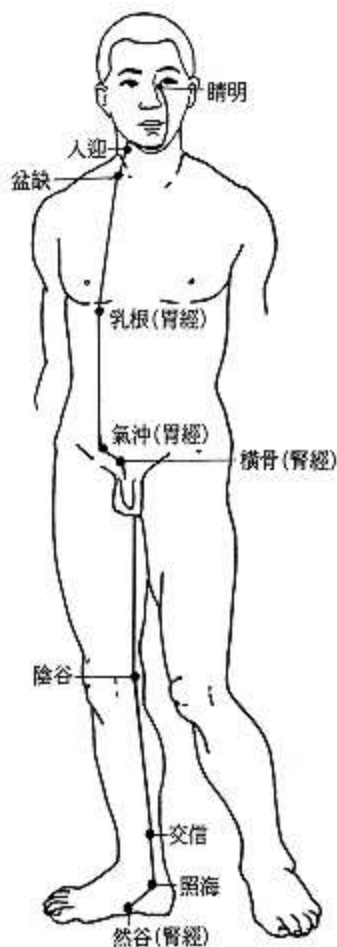


Figure 2. Yin qiao mai meridian from <http://www.thaitsu.com/courses>

The Innsbruck study reports that there is a correspondence between the distant acupuncture points on the Yang and Yin meridians and physiological structures shown in lateral and medial MRI foot images respectively. The meridians appear to route the group acupuncture points to specific physiological areas. It was not clear from the report how the MRI established this correspondence.

The Innsbruck study points out that in 2002, Langevin et al ⁵ tested the hypothesis that the network of acupuncture points and meridians can be viewed as a representation of the network formed by interstitial connective tissue. This hypothesis was supported by ultrasound images showing connective tissue cleavage planes at acupuncture points in normal human subjects. The study results showed a high correlation between the sites of acupuncture points and the location of intermuscular or intramuscular connective tissue planes. These results were from postmortem tissue sections.

Most recently (2010), a Chinese article found that, based on MRI, the structure of fascial connective tissue in the upper limb of humans was similar to the meridian structure as recorded in Chinese medicine. The study speculates that fascial connective tissue might be the anatomic basis for the meridians of the entire body. ⁶ A model has been developed for the meridian system as the primary regulator. ⁷

Electro-acupuncture, the application of a pulsating electrical current to acupuncture needles as a means of stimulating the acupoints, was developed in China as an extension of hand manipulation of acupuncture needles around 1934, and is often used today. ⁸ Further, Today's complementary and alternative medicine community suggests that the ancient Chinese used magnets (lodestones) on acupuncture points. ⁹

The electromagnetic stimulation of acupoints may be significant in helping to further confirm the credibility of a unified HEF model, discussed below.

Other forms of diagnosis and treatment based on acupuncture points and meridians have evolved, including "Ryodoraku", acupressure and the currently popular Emotional Freedom Technique. ¹⁰

In 1951, Dr. Yoshio Nakatani MD, PhD, developed an electronic method of examining, or diagnosing, the meridian system of the body by measuring skin conductance at the yuan (source) point of the wrist and ankle. Dr. Nakatani called this method Ryodoraku: Ryo (good), do (electro-conductive), raku (meridian).

According to Ryodoraku advocates, the results of this method compare favorably with the results of learned Asian masters of acupuncture using pulse diagnosis, while being obtained much more quickly. Electronic measurement evaluation of the patient's yuan points does not determine the same indications seen as when the specific 28 pulse characteristics are analyzed via proper pulse diagnosis. It does, however, determine if an individual meridian is excess or deficient in comparison to the entire meridian system average of the 12 primary meridians. Ryodoraku made possible the discovery of "Split meridians"; that is, a situation in which there is a split in numerical energy value between left and right side meridians of the body. The method of Ryodoraku was refined and renamed "Electro Meridian Imaging™" or "EMI™" in 1982. ¹¹ The Electro-dermal screening devices discussed below, which do not directly reference the terms "acupuncture" or "meridian", appear to be a direct descendent of Ryodoraku.

Wikipedia skepticism

Wikipedia at times may provide a good survey of contemporary concepts. A Wikipedia entry on Qi, acupuncture points, and meridians, ¹² however, is in error. The article states: "No research has established any consistent anatomical structure or function for either acupuncture points or meridians." In defense of this statement, the entry references an article, *Electrical properties of acupuncture points and meridians: A systematic review, published in 2008*, by Andrew C. Ahn et al, published in *Bioelectromagnetics*. ¹³

However, the article abstract indicates the study does not contest the existence of acupuncture points or meridians as anatomical structures; rather it investigates reports that these structures are characterized by lower electrical impedance compared to adjacent controls. Further, the results of the investigation suggest this to precisely be the case: "...7 out of 9 meridian studies showed positive association between acupuncture meridians and lower electrical impedance and higher capacitance." ¹⁴ In fact, several acupuncture advocates use the same reference to support the validity of acupuncture and meridians. ¹⁵ Finally, in 2010, the lead author of the *Bioelectromagnetics* article, Andrew C. Ahn, with a different set of colleagues, published the article *Electrical Impedance of Acupuncture Meridians: the Relevance of Subcutaneous Collagenous Bands* ¹⁶, which concludes that collagenous bands, identified by increased ultrasound echogenicity, are associated with significantly lower electrical impedance. The acupuncture meridian system may also be differentiated from surrounding tissue by a subtle difference in optical properties, as discussed below.

Whole body Qi

Qi in meridians (Ching Qi) may not be the only form of Qi. According to Richard R. Pavek, Ren Qi (whole body Qi) is a different form. Pavek has reported the development of a "SHEN" therapy based on the manipulation of whole body Qi. In this therapy, the right hand "gives", and the left hand "receives", and the placement of the hands on the body can either facilitate or impede this flow. Interestingly, the body polarity suggested in this process appears to be consistent with the

body polarity developed by L.E. Eeman in his Eeman Relaxation circuit, today known as the 'biocircuit',¹⁷ and the effects of reversing the polarity of the Q flow is also similar. When Ren Qi is emitted from the hands, it is known as Wei Chi; when Qi is used in healing, it is known as Fa Qi.

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Electromagnetic models

(Note: This section has been expanded in a separate paper [vo hef electromagnetic models.doc](#) and [vo hef electromagnetic models.htm](#))

Various western researchers in the past have suggested in a general way that a field of electromagnetic (EM) radiation somehow guides the growth of the cellular organism. Harold S. Burr of Yale studied and measured electrical fields; which he called "L fields", or "life felds" around living things. Elmer Lund, of the University of Texas, showed that he could control regeneration of hydra heads by passing a weak electric current thru the body. Orthopedist Robert O. Becker attempted to stimulate or speed up regeneration in humans and animals by application of electricity. He also demonstrated a "current of injury" in which salamanders with amputated limbs develop a charge at the site of the stump, whose voltage climbs until the new limb appears.

These and other discoveries have led to medical technological healing devises, using artificially generated pulsed EM fields, and the applications continue to grow.¹⁹ This is a big hint that EM energy is very important in maintaining and healing living tissue.

A short history of Biophotonics

In the 1920s, Alexander Gurwitsch, Professor of Histology at Moscow University,²⁰ asked why organs had a definite shape. He argued that chemical reactions are isotropic (the same in all directions) which means that chemistry can't determine shape. In his signature experiment, two onion roots were arranged at right angles to one another with the horizontal root (Inductor) pointed towards the vertical stem (Detector), with a space between the two for either normal window glass or quartz glass plate. Gurwitsch recorded the rate of cell division (mitosis) on the detector. With window glass, no cell division occurred, whereas with quartz glass, cell division increased significantly. Gurwitsch was aware that normal window glass blocks UV rays and quartz glass plate is transparent for UV light of about 260 nm. He concluded that 260 nm UV emissions from the Inductor were stimulating increased cell division in the Detector, and that this 'mitogenetic radiation' might regulate cell growth and differentiation. Mitogenetic radiation is now considered ultraweak photon emission from vegetation.

In the 1940s, L. Colli (Italy), T.I. Quickenden (Australia), Humio Inaba (Japan) and Alberto Boveris (USA) began experimenting with a newly devised photomultiplier (light detector) which accurately counted single photon emissions. They dropped the term 'mitogenetic radiation', preferring 'dark luminescence', 'low level luminescence', 'ultraweak bioluminescence', or 'ultraweak chemiluminescence'. These researchers proposed that photons emitted from living tissue were the result of oxidation and free radical reactions. The mainstream scientific community has until recently dismissed biophoton emissions as unimportant,²¹ but that appears to be changing, even in the United States.

Since enzymes and anti-oxidants normally mop up reactive oxygen and free radicals before they can damage cells, healthy cells tend to release very few photons, making them hard to detect, even in a pitch-black lab.

In the 1980s, manufacturers such as Hamamatsu, a Japanese company specializing in photomultipliers, developed new highly sensitive instruments designed to record weak light signals. Keen to exploit this opportunity, and to seed a new bio-optics industry, the Japanese

government funded a five-year, multibillion-yen research program into biophotons in 1986.²² Dozens of researchers across Japan found these emissions coming out of everything from plant seeds to fruit flies. It was discovered that injured or stressed or diseased cells release far more photons than their healthy counterparts.

Researchers are trying to develop ways to convert patterns of photon emissions into images of the body that resemble X-rays or CAT scans. However, cells are sensitive to many factors that alter the rate at which photons are emitted. This causes problems with reproducibility of results, even for relatively simple systems.²³ Apparently direct diagnosis of disease from biophotons will remain difficult without some technical or medical breakthrough.²⁴

Still, the difficulties of reproducibility does not rule out the possibility that information transfer is taking place as a result of photon emission.

The Biophotonic model

In the 1970s, German researcher Fritz-Albert Popp discovered a much wider spectrum of photon emissions (200 to 800 nm) than had previously been recorded and coined the term 'Biophoton'.²⁵

In the 1980s, he found that two cells separated by an opaque barrier release biophotons in uncoordinated patterns. Remove the barrier and the cells soon begin releasing photons in synchrony. The cells, Popp concluded, were communicating by light.²⁶

Popp found that carcinogenic substances absorb UV light (at 380 nanometers), and re-emit it with a changed frequency. He found that photo repair works most efficiently at 380 nm, the same wavelength the carcinogens would react to and scramble. He concluded that carcinogens must inhibit photo-repair, and if so, there must be some light in the body responsible for photo-repair. A prestigious journal on cancer agreed to publish these results. He was invited to speak to the world's leading cancer researchers. Popp's science was unassailable, except for one detail: it assumed that a weak light of 380 nm was being produced in the body, which most scientists refused to believe.

Popp also discovered the photons in the living systems he had examined were more coherent than anything he had ever seen. In quantum physics, coherence means that subatomic particles are linked by bands of common electromagnetic fields, so they can 'communicate'. As they get into phase, they begin acting like one giant wave.

From experiment, he showed that one of the most essential sources of biophoton emission was DNA; that the more DNA unwound, the higher the intensity of light, and also that DNA was capable of sending out a large range of frequencies. He also found that molecules in the cells would respond to certain frequencies and that a range of vibrations from the photons would cause a variety of frequencies in other molecules of the body.

In biophoton emissions, Popp believed he had an answer to the question of morphogenesis. He showed in his experiments that these weak light emissions were sufficient to orchestrate the entire body.²⁷ Some experimental results support this claim.²⁸ Further, some biological phenomena, which can't be understood by molecular or conventional biology, are better addressed by biophotonic theory.²⁹

Results of other researchers have supported this biophotonic theory, and in fact an *International Institute of Biophysics* was founded, with about forty scientific groups worldwide focusing on biophotonic studies.³⁰ Although US participation in this effort is relatively small, in the early 1990s, Guenter Albrecht-Buehler, a biophysicist at Northwestern University Medical School in Chicago, discovered that cells can detect and respond to light from one another. Albrecht-Buehler

believes cell's centrioles function as light detectors. He also believes the reason for this detection and response is that cells are talking to one another. ³¹

Some theorists suggest that the notion of a common cellular language puts biophotons at the center of not only biological communication, but also of consciousness. Scott Hagan, a theoretical physicist at the British Columbia Institute of Technology in Burnaby, Canada, points out that we cannot think unless cells in the brain function simultaneously, as parts of a whole. In quantum physics, coherent states can act as a whole. Could the coherent biophotonic emissions from living tissue also act as a whole? Hagan and Stuart Hameroff, associate director of the Center for Consciousness Studies at the University of Arizona, suggest that quantum coherence in the protein subunits of microtubules may give rise to consciousness. And, says Hameroff, biophotons could somehow control this process. ³²

The Biological Coherence model

This model 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, which may integrate processes such as growth, defense, injury repair, and the function of the organism as a whole. ³³

From 1973, Herbert Fröhlich was professor of Solid State Physics at the University of Salford. He was among the first researchers to suggest that waves or vibration allow proteins to cooperate with one another and carry out instructions from DNA. ³⁴

Frohlich proposed that metabolic energy is not being lost as heat but stored in the form of coherent electromechanical vibrations called coherent excitations. These vibrations, now known as Frohlich Oscillations occur at the microwave and visible light frequency range of the electromagnetic spectrum. ³⁵

He showed that once energy reaches a certain level, molecules begin to vibrate in unison, until they reach a high level of coherence, when they may take on certain properties of quantum mechanics. ³⁶

Work on biophotonic frequencies dovetails with the biological coherence model. French scientist Jacques Benveniste learned how vibrations of Popp's biophotons could cause new molecules to vibrate and create their own signature frequency, even in the absence of physical molecules. His studies were widely regarded as making a valid case for homeopathy. ³⁷ If water were able to imprint and store information from molecules, this would have an impact on our understanding of molecules and how they "talk" to one another in the body. The conventional theory of how molecules communicate in the body requires direct contact, a process which is too slow and too dependent on chance. According to Benveniste's theory, which has been supported by experiment, molecules rely on electromagnetic signaling at low frequencies (between 20hz and 20 khz). Each molecule has its own signature frequency, and can resonate with other molecules.

James Oschman, author of *Energy Medicine: The Scientific Basis*, ³⁸ suggests that therapies based on homeopathy, herbs, aromatherapy, sound, heat, light, and crystals are effective because they provide the frequencies needed for healing. Peter Lindemann also found that the (Eeman) relaxation circuit, referenced above, must be able to carry detailed vibrational information. ³⁹

During the 1990s, Benveniste demonstrated that one could transfer specific usable molecular signals simply using an amplifier and EM coils, and that these signals could be recorded and played back using a PC. ⁴⁰ Reputable research supporting Benveniste's results slowly began to surface in other areas. In 1992, the Federation of American Societies for Experimental Biology

(FASEB) held a symposium, organized by the international Society for Bioelectricity, examining the interactions of electromagnetic fields with biological systems.

Numerous other scientists have replicated Benveniste's high dilution experiments, and several have endorsed and successfully repeated experiments using digitized information for molecular communication. The most unassailable tests of homeopathy were performed in Glasgow by Dr. David Reilly. Despite the scientific design of his tests, although *The Lancet* agreed to publish the results, the journal simply refused to accept them. ⁴¹

Semiconductor model

Oschman subscribes to the Piezoelectric / crystal / Semiconductor Model. He refutes the 'bag model' (of biological processes), in which molecular reactants in the enzymatic pathways move, meet, and react randomly. 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 and frequencies can proceed rapidly. Furthermore, it serves as an integrated piezoelectric solid state system, thereby coordinating activities such as repair and defense as well as movement of nutrients, hormones, and toxins. Through the Hall effect, ⁴² it has been learned that the perineural system is sensitive to magnetic fields and that electronic semiconduction is occurring. This discovery confirmed Albert Saint-Gyorgyi's suggestion of semiconduction in the living matrix and gave a basis for the use of magnets and biomagnetic fields in healing. ⁴³

In Dr. John Zimmerman's 1980s studies of therapeutic touch, the SQUID, ⁴⁴ an extremely sensitive 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. (7-8 Hz is in the range of the fundamental Schumann Resonance)...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. ⁴⁵

Saint-Gyorgyi was not the only one thinking about biological tissue as a solid state semiconductor. In the 1970s, Freeman W. Cope produced pivotal work linking physics and biology, and developed a solid-state theory of biological processes. He deduced that the activity in the cell is not just electrochemical, and looked at the cell function as if the organelles were three-dimensional semiconductors. ⁴⁶

Convergence of Biological Coherence, Semiconductor, Biophoton and Chinese Models

The Biological Coherence, Semiconduction, and Biophotonics models, developed by a number of different western scientists⁴⁷, appear to be converging with the physical basis of the Chinese model. This convergence is indicated in a number of publications. For example, the International Institute of Biophysics (IIB) paper *Anatomic Characterization of Acupuncture System and Ultra-weak Photon Emission*. ⁴⁸

The paper notes, among other things, that biological liquid crystals carry static electrical charges and are influenced by pH, salt concentration, and the dielectric constant. The cell is understood to be mechanically and electrically connected in a 'solid state' or 'tensegrity system', and can therefore be referred to as liquid crystal. Evidence has been provided supporting the hypothesis that all major constituents of living organisms may be liquid crystal.

The collagenous liquid crystalline mesophases in connective tissue combined with the associated structured water constitutes a semi-conducting highly responsive network that extends throughout the organism. This network is directly linked to the intracellular matrices of individual cells, forming an excitable electric continuum for rapid intercommunication throughout the organism. Both the western DC electrodynamic field and the Chinese acupuncture system have a common anatomical basis. Both support rapid semiconduction of protons. Liquid crystal facilitates coherent excitations. Proton jump conduction is a form of semiconduction in condensed matter, and is much faster than conduction of electric signals by nerves. This collagenous 'ground substance' may form a much better intercommunication system than the nerves. ⁴⁹

Popp et al's biophysical model for inter and extra cellular communication postulates that the photon is trapped and emitted by a cellular physical resonance device, presumably DNA, resulting in a high degree of coherence. DNA may be an exciplex in which photons are stored. Non-coding DNA may act as a photon store and coherent radiator, because of its enormous polymer size and ability to form exciplexes. The resulting long range EM waves and fields can be seen as a basis of self organization.

The alleged Bonghan corpuscle and duct system is gaining more credibility with independent research findings, providing an anatomical basis for the acupoint and meridian system. Bonghan ducts appear to supply the channels in the connective tissue with DNA granules inside, connecting acupoints in the skin to internal organs. As the narrow channels form a network of tubes with light sources, they can become an optical (fiber optic) channel which can produce a coherent photon state. ⁵⁰ This is a scientific interpretation of acupuncture therapy. ⁵¹ This interpretation is supported by the fact that biophoton emissions have been recorded from acupuncture points during electro acupuncture. ⁵² Additional studies show a difference in optical properties and a difference in light propagation and reflectance between acupuncture points and meridians compared to surrounding skin. ⁵³

Interestingly, MIT recently published a news article which discusses the hypothesis that microtubules can act as wave guides, channeling light from one part of a cell to another. ⁵⁴

The *Journal of Microscopy*, in an article titled *Nonlinear bio-photonic crystal effects revealed with multimodal nonlinear microscopy*,⁵⁵ by a Chinese team reports: "Highly optically active nonlinear bio-photonic crystalline and semicrystalline structures in living cells were studied by a novel multimodal nonlinear microscopy. Numerous biological structures, including stacked membranes and aligned protein structures are highly organized on a nanoscale and have been found to exhibit strong optical activities through second-harmonic generation (SHG) interactions, behaving similarly to man-made nonlinear photonic crystals." Photonic crystals are periodic optical nanostructures that are designed to affect the motion of photons in a similar way that periodicity of a semiconductor crystal affects the motion of electrons. Various forms of photonic crystals have been studied scientifically for the last 100 years. ⁵⁶

The book *Bioelectrodynamics and Biocommunication*, a collection of technical articles edited by Mae-Wan HO, Fritz-Albert Popp and Ulrich Warnke, draws the same conclusion, noting that in the 1990s a technique was developed to image live organisms by interference colors by detection of "dynamically ordered, coherent liquid-crystalline mesophases of the macromolecules making up living tissues. These measurements demonstrate that organisms are active dielectric, optical systems....". ⁵⁷

This book also noted: "The term 'biocommunication' is significant in several respects. First, it denotes the process of signal generation, transmission and transduction covering the entire electromagnetic spectrum and in both the 'phonon' and 'photon' modes, that are involved in the coordination of biological functions... Bioelectrodynamical processes are the means whereby both communication and the effects of communication are achieved. It becomes arbitrary to

separate the signaling process and call it 'information', for the signaling, the reception and the transduction form an indivisible unit which gives content to the so-called information." ⁵⁸

Interestingly, the Mae-Wan HO/ Popp book was published in 1994. An entry in *The Journal of the Korean Physical Society* states: "Another possible application (of biophoton emission counts) is to evaluate the function of acupuncture meridians because there are suggestive reports on the correlation between biophoton emission rates and the condition of the meridians. ⁵⁹ The IIB paper was published sometime after 2007, ⁶⁰ while the latest mainstream MRI studies are only now speculating that fascial connective tissue might be the anatomic basis for the acupuncture meridian system, as noted above.

Of course there is still a lot of debate on what exactly biophotons are doing. Ken Muldrew, a biophysicist at the University of Calgary in Alberta, Canada believes, as do many others, that "What biophotons communicate is the fact that certain oxidative reactions are going on." ⁶¹

Obviously there is a significant delay between the time key research is done and the time by which it has been disseminated into the general scientific community. Much additional research undoubtedly will be done before this model is even generally acknowledged.

Regardless of skepticism, biophotons, bioelectrodynamics and biocommunication have become an established area of scientific inquiry. ⁶²

We can conclude that the biological coherence, semiconductor, biophotonic, and Chinese models are convergent toward a single credible model.

Multidimensional Model

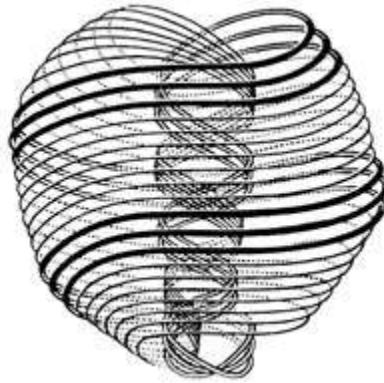
The Multidimensional model holds that a human being consists of multiple layers, dimensions, or planes of existence that coexist simultaneously. There seems to be general agreement that the physical-etheric is the lowest or densest level, and the emotional, mental, and spiritual successively higher or more refined levels. Because the chakra system is acknowledged to be non-physical, It is not surprising that the multidimensional model has not been scientifically substantiated.

Versions of the multidimensional model have been discussed over the years at annual conferences of the International Society for the Study of Subtle Energies and Energy Medicine (ISSSEEM) ⁶³ .

The basis of the multidimensional model appears to derive from the Vedas, which are the oldest written tradition in India, dating to 2,000 - 600 B.C. ⁶⁴ In the resulting Yogic science, the chakras, which represent energy centers of the different dimensional levels, have been primarily the object of meditation. However, it has been pointed out that through modern physiology we can see that the seven chakras of traditional Yogic practice correspond exactly to the seven main nerve ganglia, or glands, which emanate from the spinal column. ⁶⁵

Marmas on the other hand, defined as prana (subtle energy) points, have been a primary topic of Yogic and Ayurvedic medicine. The marmas are said to connect to the nadis (subtle nerves) and chakras of the subtle body and mind, and bridge the physical and subtle bodies in Yogic science. They correspond to acupuncture points in Chinese medicine, and are the subject of Ayurvedic acupuncture, which has also been called marmapuncture. ⁶⁶ Little scientific evidence for the anatomical existence of the marmas can be found on the internet.

In the esoteric tradition, as represented by Charles Leadbeater, Annie Besant, and the Theosophists, the most fundamental particles were described as positive and negative stringed vortices of energy, called "Anu"; the "ultimate atom". The word is Sanskrit for atom or molecule, and a title of Brahma.



“Anu”; the “ultimate atom”.⁶⁷

The first level of Anu, which corresponds to physical reality and the physical body, itself consists of additional [self similar i.e. fractal] iterations, which are building blocks of the successively more refined planes of existence.⁶⁸ The alternative physics community has developed a mathematical concept strikingly similar to the Anu concept. B.G. Sidharth, of the Centre for Applicable Mathematics & Computer Sciences in India, writes: “The physical picture is now clear: A particle can be pictured as a fluid vortex which is steadily circulating along a ring (or in three dimensions, a spherical shell) with radius equal to the Compton wavelength and with velocity equal to that of light.”⁶⁹ The topic is quantum black holes, the name is the Compton Radius Vortex, described as another recent electron model by Richard Gauthier.⁷⁰ Alternative physicist Frank D. (Tony) Smith, Jr. has used precisely the Leadbeater Theosophist figure of Anu to portray the Compton Radius Vortex.⁷¹



Fractal layers of Anu⁷²

An interesting version of the multidimensional model has been advanced by William Tiller, professor emeritus at Stanford University and former chair of the Materials Science department. Tiller notes that in the theoretical physics literature on the Big Bang theory, one finds that our normal state is called the U(1) electromagnetic gauge symmetry state, and there is a higher gauge symmetry state, SU(2), which has a higher thermodynamic free energy per unit volume than U(1), and in which electric and magnetic monopoles naturally coexist. The SU(2) state is associated with a time period closer to the Big Bang.

Tiller thought that if humans had an organ or body system present from birth that was at a higher gauge symmetry, it would enliven the body; it would direct chemical, electrical, and optical flows, cause the heart to pump and neural synapses to operate. He found that bringing the south pole of a DC magnet near an acupoint associated with a particular muscle group strengthened that muscle group, and that bringing the north pole of that magnet near the same acupoint weakened that muscle group. He argues that because the DC magnet is effecting the acupoints, it must be accessing magnetic monopoles, and [conflating the two systems] concludes the acupuncture meridian and chakra system (and by association the fascia or interstitial connective tissue) both operate at a higher gauge symmetry than U(1) (normal reality); perhaps SU(2). This suggests that human bioelectromagnetism is different than normal Maxwellian electromagnetism. ⁷³

Tiller's multidimensional model was used by Richard Gerber, a practicing physician trained in internal medicine and devoted to researching vibrational healing. Gerber became a definitive authority on energy medicine with the publication of his seminal contribution *Vibrational Medicine*.
⁷⁴

Research suggesting scientific verification of the Chakras comes from Dr. Hiroshi Motoyama in the 1950s ⁷⁵, and Dr. Valerie Hunt in the 1970s. Both used instruments that measured physical electrical fields which are said to be secondary fields caused by the non-material chakras.

Dr. Motoyama detected electrostatic fields at the traditional chakra locations. His results are said to have been repeated by Itzhak Bentov, author of *Stalking the Wild Pendulum*. ⁷⁶

A standard ElectroMyoGram (EMG) can only measure up to 1 kHz; the higher frequencies are assumed to be noise and filtered out. Dr. Hunt found that a specially wired ElectroMyoGraph machine detected very high frequency signals; much higher than normally found in muscular activity, apparently at the traditional chakra locations. Hunt found that these signals appear to exhibit chaos, and interprets them as having a very high information content. ⁷⁷ Dr. Hunt also correlated the EMG readings with the color descriptions of the chakras given by energy healer Rosalyn Bruyere ⁷⁸

The Hunt studies recorded 'Chakra' EMG frequencies of up to 16 kHz, but also measured EEG frequencies up to 200 kHz in meditators, as high as their equipment would go. ⁷⁹

In 2008, the Indian *Journal of Physiology and Pharmacology* ⁸⁰ published a short paper by RE Mendanha, a physiologist, regarding the issue of high frequency EMG signals in humans. He references the work of Motoyama and Hunt, and notes that the standard procedure of filtering out higher frequencies because they are assumed to be noise may be filtering out coherent information of the human biofield.

Mendanha is said to have developed a low cost way to study such signals, by combining standard EMG limb electrodes with a laptop computer, sound card, and windows application software. Using this system he is said to have recorded frequencies of up to 96 kHz, enabling FFT analysis up to 48 kHz. Ambient voltage was also recorded.

With the electrode attached to the subjects left wrist, Mendanha found hundreds of well formed minor potential peaks, all the way up to 42 kHz. He found that the relative peak at 40 kHz was profoundly effected by the switching on of a compact florescent bulb. He also found that following meditation, a distinct peak occurs at about 40 kHz.. (Figure D below). Interestingly, he found that the ambient data also showed this distinct peak at 40 kHz. He concludes high frequency oscillometry opens a new field of research.

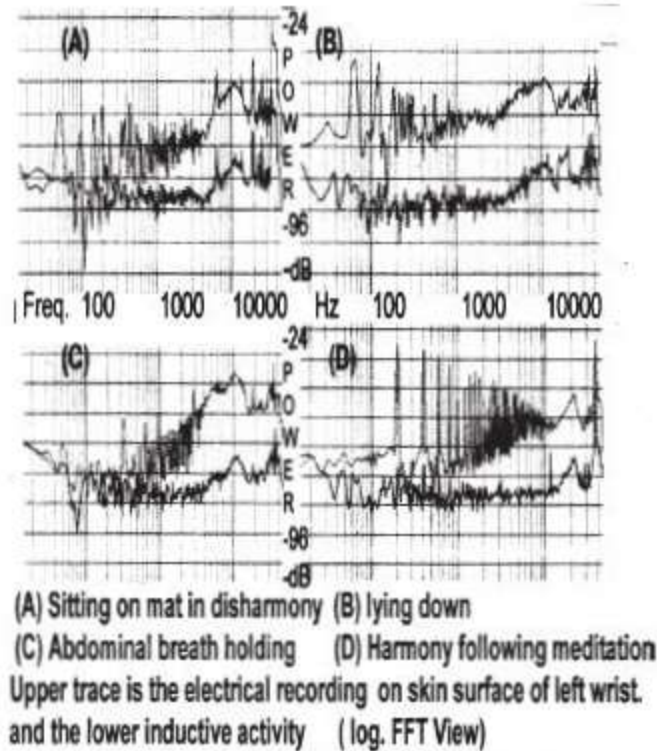


Fig. 2: Progress of meditation with the main switched off.

From: RE Mendanha: http://www.ijpp.com/vol52_4/398-402.pdf

The original researchers apparently placed sensors only at alleged chakra locations. I could find no references to researchers who placed these types of sensors at intermediate locations along the spine. An HEF may be inferred, but it has not yet been verified by instrumentation that there are discrete energy centers along the spine.

The credibility of the SQUID, electrostatic field detection, and EMG results suggesting a HEF could be expanded considerably if more tests by more people were done and reported, on par with the research done with MRI and acupuncture. Dr. Hunt apparently will soon market her version of an HEF monitor,⁸¹ but before you buy one, check out Mendanha's do it yourself approach. I tried and failed to duplicate his results.

Commercial HEF imaging products

Three types of HEF imaging products are described: Kirlian like imaging, Resonant Field Imaging (RFI), and Polycontrast Interference Photography (PIP) imaging. Note that these are imaging tools, and claim no therapeutic benefit. In addition to providing general HEF biophoton/acupuncture information, all of these are said to include provisions for determining aura and/or chakra information. Since aura and chakra information, as represented by the

multidimensional model, is apparently not currently part of the consolidated western-Chinese model discussed above, it is not clear how this alleged additional information is obtained.

The book *Holistic Nursing; a Handbook for Practice*, by Barbara Montgomery Dossey, Lynn Keegan notes: "Curtis, Zeh, Miller, and Rich measured chakra functioning and found that people with more psychological symptoms had more poorly functioning chakras."⁸² However, Curtis, Zeh, Miller, and Rich did not use electrostatic fields or electromyography over the alleged chakras, but rather an Inneractive Aura Video System 5.1,⁸³ which is discussed below. The Aura Video System obtains its data from electrodermal activity of the hands.⁸⁴ Electrodermal activity is associated with the physical meridian energy flow of Chinese medicine, not with the Ayurvedic non-physical chakras.

Kirlian Like Imaging

The Kirlian Effect

The term "electrography" was coined to describe images made of electrical discharges from objects. These were explored by Czech physicist Navratil in 1888, Russian biologist Nardkevitch-jodko and Brazilian priest Landel de Moura in the beginning of the twentieth century. In 1939, Russian electrician Semyon Kirlian rediscovered the phenomena. The "Kirlian Effect" today refers to the resulting image of a gas discharge, "fluorescence", or glow that appears around the edge of a subject, (or object), after it is placed in a high-intensity electrical field that is captured on some type of photo-material.⁸⁵

Early experiments advanced as evidence of energy fields generated by living entities involved taking Kirlian contact photographs of a picked leaf at set periods, its gradual withering being said to correspond with a decline in the strength of the *aura*. However, might it simply be that the leaf loses moisture and becomes less electrically conductive, causing a gradual weakening of the electric field at the drier edges of the leaf? In some experiments, if a section of a leaf was torn away after the first photograph, a faint image of the missing section would remain when a second photograph was taken. The Archives of American Art Journal of the Smithsonian Institution published a leading article with reproductions of images of this phenomenon. James Randi has suggested that this effect was due to contamination of the glass plates, which were reused for both the "before" and "after" photographs.⁸⁶

More sophisticated studies however, seem to refute such simplistic explanation. One of the most extensive of American studies was done by Thelma Moss and K. Johnson, who reported taking over 10,000 'modified' Kirlian photographs, many of human finger tips. After careful experiments, they concluded the fingertip aura, or corona, was not due to skin resistance or to the state of the peripheral vascular system. They found that this field was effected by ingesting alcohol, performing yogic breathing exercises, undergoing hypnosis, and experiencing emotional states. In a study of four healers, the healers' fingertip coronas were much larger and brighter before the session than during or after the session, while the patients' fingertip coronas increased as the healing sessions progressed. Dramatic differences in the corona were found before and after acupuncture treatment.⁸⁷

In 1979, using double blind studies, American researcher L.W. Konikiewicz correctly identified cystic fibrosis patients, and found that women's reproductive cycles were correlated to the brightness of their fingertip coronas.⁸⁸

An important first step to quantifying electrographics was made by Poock in 1976 at the US Navy Post Graduate School in California, when he introduced an image-analytic technique. A multi-disciplinary team, headed by William Eidson at Drexel University in Philadelphia, concluded it was possible to image electrical parameters of a specimen in real time, making it a possible field mapping tool for energy fields. This work was summarized in the journal *Science* (Pehek et al 1976). A bibliography published by L. Wigh in 1994, listed several hundred publications on this

phenomenon. An organization to help standardize this science, the International Union of Medical and Applied Bio-Electrography, was formed in 1997.⁸⁹

Despite the evidence, the 'Kirlian controversy' rages on. Some of the arguments can be seen in "The Skeptic's Dictionary", and responses from readers.⁹⁰

GDV Imaging

Despite some ongoing skepticism of the Kirlian effect, a number of important spin off devices have been developed, which have gained varying degrees of acceptance within the medical and scientific community.

The one that seems most respected across a broad spectrum of practitioners and researchers throughout the world is called the GDV, Gaseous Discharge Visualization, or ... "More precisely-- Biological Emission and Optical Radiation Stimulated by Electromagnetic Field Amplified by Gas Discharge with Visualization Through Computer Data Processing."⁹¹

What is the basic principle behind the GDV?⁹² According to Chinese medical theory, acupuncture works by correcting energy imbalances within the body by way of acupuncture points and meridians. It has been stated that the 10 fingers act as electrical termination points for the 12 main meridians of the body,⁹³ and that Korotkov's GDV is sensitive enough to accurately and reproducibly measure energy changes along meridian pathways via fingertips.

A survey of Traditional Chinese Medicine meridian images from internet websites⁹⁴ shows that six pairs of meridians are "Shou", corresponding to hand, and six pairs are "zu", corresponding to foot. The various sites show a consistency in the finger-meridian association for the "Shou" meridians:

The Hand Lung Meridians (shou tai yin) terminate in the thumbs, the Hand Large Intestine Meridians (shou yang ming) terminate in the index fingers, the Hand Heart Meridians (shou shao yin) terminate in the little finger, the Hand Small Intestines Meridians (shou tai yang) terminate in the little finger, the Hand Pericardium Meridians (shou jue yin) terminate in the middle fingers, and the Hand Triple Energizer (shou shao yang) Meridians terminate in the fourth finger. So twelve meridians do terminate in all the fingers of the hands, but the stomach, spleen, bladder, kidney, gall bladder, and kidney meridians appear to terminate in the feet rather than the hands. The concept of convergence of information from all parts of the body to specific parts of the body enjoys a long tradition.⁹⁵

Research shows that acupuncture points and meridians have a lower electrical resistance than surrounding areas,⁹⁶ as previously noted. This means that current sent through the body will take the path of meridians and the acupoints imbedded in them. Information transfer is possible.

The GDV device, developed by Russian Professor Konstantin Korotkov, has been patented and was certified as a medical instrument in 2000 by the Russian Ministry of Health. Lynn McTaggart reports that as of 2007, some 3000 doctors, practitioners, and researchers worldwide have come to use this technology.⁹⁷ The world wide Institute of Electrical and Electronic Engineers (IEEE) has done studies of this device, and it has earned a place in the library holdings of the US National Institute of Health (NIH).⁹⁸

The device is based on the Kirlian effect: An aura is formed around the point of contact of the fingers with a high voltage low amperage electrical circuit. However, the GDV uses glass electrodes and a special camera in place of photographic emulsions. It employs fiber optics, a digitized TV matrix, and complex image processing. The recordings are said to be highly reproducible in a wide range of environmental conditions. GDV has advantages over Kirlian photography in that it provides a filter for extraneous interacting variables, such as the presence of humidity and temperature changes. Dr. Beverly Rubik believes the GDV is a good research tool, and uses it regularly in her work.⁹⁹

Rubik notes that the GDV camera uses a 1024 Hz 10 K volts electric field, pulsed on and off every 10 microseconds. The electric field causes a light (photon) emitting plasma to stream outward from the exposed, say, fingertip. The light is recorded by a charge-coupled detector (CCD), a state of the art light detector. The CCD signal is sent to a computer, and software analysis is done to characterize the emitted light, including brightness, total area, fractality and density. ¹⁰⁰

Korotkov's website ¹⁰¹ notes of the GDV: "Measuring a spontaneous emission of electrons in the air is nearly impossible ...the registration of 'biophotons' - spontaneous photo-emission – is an extremely complex procedure requiring special conditions.... The data obtained when measuring extremely weak 'biophotons' is invaluable ... as they underline the role of the electro-photon processes in the functioning of the body. These ...results are one of the scientific bases for the justification of the physical processes of electro-photon capture (EPC) bioelectrography. In the GDV/EPC method, we excite, or stimulate electron and photon emissions, and then intensify the resulting glow."

Information from each of the 5 fingertips of both hands are summed to get a final set of 5 images. The resulting measured energy states of various organs and systems are compared to the energetic levels of a relatively healthy person. Excess energy is shown in the outer (pink) zone while low energy appears in the inner yellow ring. Normal or balanced energy is represented in the middle green ring. ¹⁰² These radial positions are similar in a specific person from day to day, suggesting relative stability of this method, and can be projected onto a humanoid shape to create an "aura."

Of the Ayurvedic, or multidimensional model, Korotkov observes the close resemblance of the nadis and meridians and concludes they may be considered essentially the same. ¹⁰³ Somehow he has correlated the chakras with fingers and incorporated this into his "GVD chakra" software, which he claims has been tested and strong correlations found between the program's data and the measurements of psychic individuals who are able to see chakras. ¹⁰⁴

Example image: Kirlian glow around a human fingertip recorded using GDV camera. View from below a semi-transparent glass electrode that provides electrical field excitation.



From http://kirlianresearch.com/kirlian_principle.html

A number of additional interesting studies have been conducted using the GDV. ¹⁰⁵

Electrodermal Devices and Imaging

Electrodermal, or skin resistance measuring devices in general, including Polygraph Galvanic Skin Response (GSR) and ElectroDermal Screening Device (EDSD) instrumentation, as well as Aura Video Station, Progen WinAura, and AuraCam, discussed below, are similar to GDV in that they subject the fingers to a low amperage electrical current. ¹⁰⁶ Because a number of meridians

terminate in the fingers, and are relatively conductive, these tools may fairly claim to access acupuncture points. Interestingly, Lynn McTaggart notes that Korotkov verified Cleve Backster's research.¹⁰⁷ Backster, a polygraph expert, did extensive research in the 1960s with the GSR portion of a polygraph suggesting that plants can read your mind. The result was a nationwide best seller, *The Secret life of Plants*.¹⁰⁸

Electrodermal Screening Device (EDSD)

Meridian energy flow may carry useful information. This is the basis of the electrodermal screening test (EDST). The device used in the EDST is the electrodermal screening device, or EDSD. The electrodermal device process is not about measuring the HEF, but about measuring the resistances of acupuncture meridians to an externally applied current for diagnostic purposes. The core is an ohm meter designed to deliver a very small amount of direct electrical current at a very low voltage.¹⁰⁹ Professional EDSDs, are used in a complicated diagnostic process involving resistance measurements of up to 40 meridians. The purpose of the testing is usually 'remedy testing', whereby an initial test is performed to see if the resulting numbers are 'bad' (indicating that a remedy is needed). If so, a potential remedy is inserted into the circuit and the test is repeated until the numbers are 'good'.¹¹⁰ It was found that remedy testing would work even with the name of the remedy alone inserted into the circuit. For many practitioners, remedy testing today has reached a degree of abstraction that is not compatible with either a purely materialistic view or even an understanding of energy science.¹¹¹ This process has been the subject of significant skepticism.¹¹²

Aura Photography

A spin off from EDSD is the "Aura photography" class of aura construction and projection products: The aura produced by these cameras is an artificial construction, based on analysis of electrodermal information, projected onto a photographic image of the person. The data is collected by placing one's hands/fingers on special sensor pads.

Aura Video Station:

This system is stated to use "electro-dermal" parameters¹¹³

Progen Winaura

Similar to Aura Video Station, it also uses electrodermal measurements, but uses a standard PC computer with special software, and requires a special video camera.

Progen AuraCam 6000:

"A Polaroid camera that is capable of taking a single picture of a subject's aura instantly." Developed by Guy Coggins. "How Does The AuraCam 6000 Work? The Auracam 6000 consists of one or two hand sensors which are connected through cables with the camera. Polaroid instant film is put into the camera and is adjusted and aligned to the customer. Once the customer puts their left and right hand onto hand sensors, the AuraCam 6000 begins to gather standardized biofeedback parameter data through the hand sensors. The measured points of resonance are connected with certain organs and the electromagnetic field of the person; this information about the energetic and auric qualities of a human being are then delivered to the camera. Through a patented operation, these parameters are projected as a radiant, colorful aura field around the body onto the Polaroid film, along with the image of the person."¹¹⁴ According to a skeptical inquirer infiltrator, this system also measures skin resistance, and if so is also electrodermal.¹¹⁵

Example AuraCam aura photo:



From <http://www.auraphoto.com/products/auracam.shtml>

The Progen AuraCam website provides endorsements and a list of PhDs and MDs working with Progen aura imaging. ¹¹⁶ A few of the dozens of additional links referencing AuraCam is given in the endnotes. ¹¹⁷

Resonant Field Imaging (RFI)

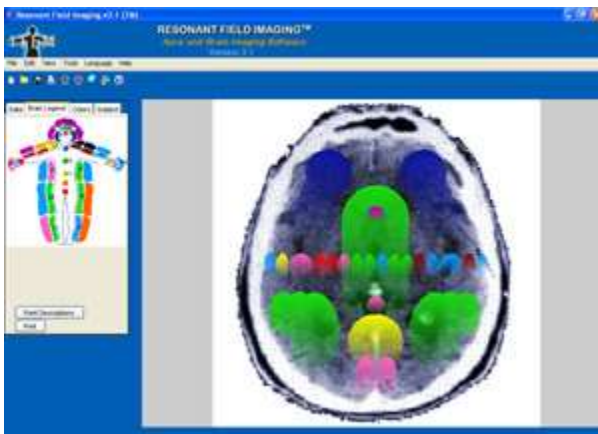
“For many years, ITEM (Innovation Technologies and Energy Medicine) evaluated ways to physically measure the electromagnetic characteristics of the human energy field. We felt it would be more accurate to measure energy fields directly, rather than rely on photographic-based techniques or electronically processed signals, for a more accurate representation of the energy that surrounds us all. We also felt that most of the existing equipment is too costly for the average practitioner. After several years of research, we believe we have found in RFI™ a method that is economical, simple and objective, involving direct measurement of energy fields to identify the predominant electromagnetic frequency in a specific area and converting that frequency into a color within the visible light spectrum using custom software...”

“RFI™, in and of itself, is not merely a device or product. It is a method, or process, which requires copyrighted materials, and involves use of trade secret computations. In other words, RFI™ is really intellectual property, integrated into a computer system which performs a technical process to generate color images and interpretations. The scientific principles of this process, and the tools to use this imaging system, cannot be learned anywhere except by purchasing a license to use RFI™ as a Scientific Investigator of ITEM.” ¹¹⁸

Example photos



<http://www.item-bioenergy.com/rfi/index.html>



<http://www.item-bioenergy.com/rfi/index.html>

ITEM endorsements and testimonials are shown in the endnotes.¹¹⁹ A few of the dozens of links referencing RFI appear in the endnotes.¹²⁰ The software is available from a number of web sites

Polycontrast Interference Photography (PIP) imaging

“Harry Oldfield invented Polycontrast Interference Photography (**PIP**) in the late 1980s using microchip technology. Oldfield developed a scanner that could provide a real time, moving image of the energy field. He believed that the future of diagnosis lay in finding an effective scanner that can see imbalances in the energy field rather than disease in the physical body. Oldfield thought that the human energy field might possibly interfere with photons - energy packets of light - or even what might be called “subtle energy photons” in some way. He decided that ambient (surrounding) light would be interfered with by the field both when the incident ray traveled towards the object and when the reflected ray bounced off the object...”

“According to Oldfield, ‘We believe that we are showing up an energy interaction with light, which is giving us an insight into the energy counterpart, the etheric template on which our physical molecules are strung.’”

ITEM, in partnership with the Centre for Biofield Sciences (CBS) in India, endorses **PIP** because it is a perfect complement to the Resonant Field Imaging™ system. While RFI™ is excellent at objectively and accurately identifying the predominant frequency and color present at a particular location, PIP is the best system available at revealing patterns of energy in and around the body. Many practitioners use PIP in conjunction with RFI™. (Although neither PIP nor RFI™ are diagnostic instruments).¹²¹

Interestingly, the concept of light interference imaging of living organisms has support in the international scientific community. As noted above in the section on EM models, multiple scientific sources reference techniques that has been developed to image live organisms by detection of 'dynamically ordered, coherent liquid-crystalline mesophases of the macromolecules making up living tissues.'

Example photo



<http://www.thewindofkeltia.com/energyfield.html>

Beverly Rubick has called PIP "A novel technique to visualize the whole-body human energy field, including the chakras, dantians, and accupuncture meridians."¹²² A few of the dozens of additional links referencing PIP are listed in the end notes.¹²³

Skepticism towards Oldfield and PIP, as always with these types of technologies, tends more toward character assassination than substantive issues.¹²⁴

NOTE: html links carrying over to a second line must be copied and pasted; clicking on this type of link will not work

¹ Journey into chaos: quantifying the human energy field by Valerie S. Eschiti
"...Dr. Beverly Rubik, President of the Institute of Frontier Science ...acknowledged that there was no single way to measure the HEF, but various methods that each yields an aspect of it.."

<http://www.thefreelibrary.com/Journey+into+chaos%3A+quantifying+the+human+energy+field-a0161284583>

² If you are drawn in the direction of energy balancing or treatment, a good place to start is <http://www.energy-medicine.info/>

³ Research article: from Innsbruck Medical University, Innsbruck Austria April 2007
Title: 3D-MRI rendering of the anatomical structures related to acupuncture points of the Dai mai, Yin qiao mai and Yang qiao mai **meridians** within the context of the WOMED concept of lateral tension: implications for musculoskeletal disease.
<http://www.biomedcentral.com/1471-2474/8/33>

⁴ MRI: Magnetic Resonance Imaging: the use of nuclear magnetic resonance of protons to produce proton density images

wordnetweb.princeton.edu/perl/webwn

Functional MRI or functional Magnetic Resonance Imaging (fMRI) is a type of specialized MRI scan. It measures the hemodynamic response (change in blood flow) related to neural activity in the brain or spinal cord of humans or other animals. ...

en.wikipedia.org/wiki/Functional_MRI

⁵ Reference 14 of <http://www.biomedcentral.com/1471-2474/8/33> :
Langevin HM, Yandow JA: Relationship of acupuncture points and meridians to connective tissue planes
<http://www.ncbi.nlm.nih.gov/pubmed/12467083?dopt=AbstractPlus&holding=f1000.f1000m.isrctn>

⁶ Three-dimensional reconstruction of the meridians with MRI picture in the upper limb of human
Feb 2010 [Article in Chinese]
Wang J, Wu JP, Lu CM, Zhao J, Yuan L.
College of Medicine in Shenzhen University, Shenzhen 518060, China.
<http://www.ncbi.nlm.nih.gov/pubmed/20214070>

⁷ *Birdcage model for the Chinese meridian system: part VI. meridians as the primary regulatory system.*

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Abstract

It is imperative to define the fundamental concepts of Qi, channels, and the meridian system of Chinese medicine in terms of scientific terminology before any meaningful and mutually beneficial dialog can begin between Chinese and Western medicine. In the Chinese theory, the meridian system as a whole is the system of the body. We propose the existence of a meridian regulatory system that governs interactions between and adjusts functions of internal organs, connects them to the body surface through a network of pathways (channels) and displays their status on the skin. The meridian systems is analyzed as a 28-leg, uniform, low pass birdcage coil, where each leg represents a channel. The channel is analyzed as a transmission line and Qi is the standing wave riding on it. Each segment in the channel is represented as a

section of the transmission line and it is in natural oscillation, with its second lowest resonant frequency being the 50-round circulation frequency f_{50} , 0.578×10^{-3} Hz.

PMID: 16265988 [PubMed - indexed for MEDLINE]

<http://www.ncbi.nlm.nih.gov/pubmed/16265988>

⁸ <http://www.itmonline.org/arts/electro.htm>

⁹ http://www.sld.cu/galerias/pdf/sitios/mednat/magnetos,meridianos_y_medicina_energetica.pdf

¹⁰ For example <http://www.eftuniverse.com/>

¹¹ <http://www.emi4.com/>; <http://www.emi4.com/a-contemporary-acupuncture.php>

¹² <http://en.wikipedia.org/wiki/Acupuncture>

¹³ Ahn, Andrew C.; Colbert, Agatha P.; Anderson, Belinda J.; Martinsen, ØRjan G.; Hammerschlag, Richard; Cina, Steve; Wayne, Peter M.; Langevin, Helene M. (2008). *Electrical properties of acupuncture points and meridians: A systematic review*. *Bioelectromagnetics* **29** (4): 245–56. The published version may be downloaded for a cost. Also, an author's final proof is available for free at http://www.treeoflifetaichi.com/AcuPoints_Electrical.pdf

¹⁴ Note: Impedance is a sum of the impeding effects of resistance, capacitance, and inductance

¹⁵ For example: <http://www.slideshare.net/yusiye/electro-acupuncture-presentation>; and the book "Atlas of Shiatsu: The Meridians of Zen Shiatsu" By Wilfried Rappenecker, Meike Kockrick Elsevier Health Sciences 2008
Pg vii footnote 1

¹⁶ Ahn AC, Park M, Shaw JR, McManus CA, Kaptchuk TJ, et al (2010) *Electrical Impedance of Acupuncture Meridians: the Relevance of Subcutaneous Collagenous Bands* PLoS ONE 5(7):e11907
<http://pubget.com/paper/20689594>

¹⁷ Biocircuits: Amazing New Tools For Energy Health by Leslie Patten. HJ Kramer Publishers, 1988. p. 31.

¹⁸ "Chi" is the Wade-Giles transliteration, used before 1979. the PinYin transliteration of "Qi" has been used since 1979.
<http://www.shentherapy.info/images/Measurement%20of%20the%20Biofield.pdf>

¹⁹ Electromagnetic fields are now being used in many conditions such as osseous, ligamental, cartilaginous, or nervous reparation, diabetes, and myocardial or cerebral ischemia. (1996)
<http://www.ncbi.nlm.nih.gov/pubmed/8951540>

Double-Blind study of Pulsing Magnetic Field Effects on Multiple Sclerosis:1997
<http://www.liebertonline.com/doi/abs/10.1089/acm.1997.3.21> 1997

Electromagnetic Fields for Bone Healing: 2002:
<http://ijl.sagepub.com/content/1/3/152.abstract> 2002

Strong Magnetic Fields Aid Severe Depression:2005:
<http://www.medicalnewstoday.com/articles/27318.php> 2005 (Transcranial Magnetic Stimulation).

²⁰ from 1918-1924 at Taurida University (Now Crimean University) in Crimea

²¹ <http://www.anatomyfacts.com/research/photonc.htm>

²² Humio Inaba, an engineer at the Research Institute of Electrical Communication at Tohoku University headed the project.

²³ "The problem is reproducibility of results, even for relatively simple systems like cell cultures," says Barbara Chwirot, head of the Laboratory of Molecular Biology of Cancer at Nicolas Copernicus University in Torun, Poland. Light emission may depend on free radicals, but it is also affected by enzyme activity and the supply of protective antioxidants such as vitamin E or carotenoids.

²⁴ http://www.tohtech.ac.jp/~elecs/ca/kobayashilab_hp/NewScientist.html

²⁵ <http://www.anatomyfacts.com/research/photonc.htm>

²⁶ http://www.tohtech.ac.jp/~elecs/ca/kobayashilab_hp/NewScientist.html

²⁷ *The Field*, Lynne Mc Taggart p. 39 f.

²⁸ <http://www.anatomyfacts.com/research/photonc.htm>

²⁹ <http://www.anatomyfacts.com/research/photonc.htm>

³⁰ <http://www.lifescientists.de/>

³¹ http://www.tohtech.ac.jp/~elecs/ca/kobayashilab_hp/NewScientist.html

³² http://www.tohtech.ac.jp/~elecs/ca/kobayashilab_hp/NewScientist.html

³³ <http://www.thefreelibrary.com/Energy+Medicine%3A+The+Scientific+Basis-a0163336257>

³⁴ http://en.wikipedia.org/wiki/Herbert_Fr%C3%B6hlich

³⁵ <http://elizabethbauerconsults.com/motion.html>

³⁶ http://en.wikipedia.org/wiki/Herbert_Fr%C3%B6hlich also see *The Intention Experiment* Lynne Mc Taggart p. 49 f

The following reference states the biological system could also take on the specific quantum property of non-locality: <http://nonlocal.com/hbar/frohlich.html>

³⁷ While Benveniste was director at INSERM, he found that if solutions of antibodies were diluted repeatedly until they no longer contained a single molecule of the antibody, they still produced a response from immune cells. These effects were replicated by five different labs in four countries: France, Israel, Italy, and Canada. Although strongly contested, the results were published in a 1988 edition of Nature magazine.

These researchers concluded that: "specific information must have been transmitted during the dilution/shaking process. Water could act as a template for the molecule, for example, by an infinite hydrogen-bonded network, or electric and magnetic fields.. the precise nature of this phenomenon remains unexplained." *The Field* pp 39-71

³⁸ Published Spring 2000 by Harcourt Brace/Churchill Livingstone, Edinburgh.

³⁹ Leslie Patten *Biocircuits: Amazing New Tools For Energy Health* p. 159

⁴⁰ Over thousands of trials, Benvenista's team recorded the activity of the molecule on the pc, and replayed it to a biological system sensitive to that substance. In every instance, the biological system had been fooled into thinking it was interacting with the substance itself. Other studies showed that if these signals were erased these signals and stop activity in the cells would stop. .. The inescapable conclusion: As Fritz Albert Popp theorized, molecules speak to each other in frequencies. *The Field* pp 39-71

⁴¹ *The Field* pp 39-71

⁴² The Hall effect is the development of a transverse electric field(Hall voltage) in a solid material when it carries an electric current and is placed in a magnetic field that is perpendicular to the current. <http://www.britannica.com/EBchecked/topic/252688/Hall-effect>. The Hall effect is a rich source of information about the conduction properties of semiconductors. <http://Socrates.berkeley.edu/~phylabs/adv/ReprintsPDF/SHE%20Reprints/10-Hall%20Effect.PDF>

⁴³ <http://www.thefreelibrary.com/Energy+Medicine%3A+The+Scientific+Basis-a0163336257>

⁴⁴ SQUID: Superconducting Quantum Interference Device

⁴⁵ <http://www.thefreelibrary.com/Energy+Medicine%3A+The+Scientific+Basis-a0163336257>

⁴⁶ <http://www.nutrienergetics.com/tech-quantum-biology.html>

⁴⁷ <http://www.biolabor.hu/story-es.php> Shows images of many of the western scientists who helped develop these models.

⁴⁸ <http://www.lifewave.com/pdf/AcuArticles/acuart-Anatomic-characterization.pdf>

Notes: [iib_acup_upe.htm](http://www.lifewave.com/pdf/AcuArticles/acuart-Anatomic-characterization.pdf)

⁴⁹ <http://www.lifewave.com/pdf/AcuArticles/acuart-Anatomic-characterization.pdf> p. 23

⁵⁰ So far, the organ surface Bonghan Corpuscles (acupoint) in rats has been found to be relatively transparent.

⁵¹ <http://www.lifewave.com/pdf/AcuArticles/acuart-Anatomic-characterization.pdf>

⁵² Imaging of biophoton emission from electrostimulated skin acupuncture point jg4: Effect of light enhancers 2008

[http://nopr.niscair.res.in/bitstream/123456789/4469/1/IJEB%2046\(5\)%20340-344.pdf](http://nopr.niscair.res.in/bitstream/123456789/4469/1/IJEB%2046(5)%20340-344.pdf)

⁵³ The two references are reported in the NIH funded study *Dialectrial Properties of the Skin*

http://www.bioelectromagnetics.org/bems2010/supp_data/P-B-152.pdf

H. Lazoura, M. Cohen, E. Lazoura, I. Cosic. *Do acupuncture points have different absorption properties to lazer light than surrounding skin?* 2nd International Conference on Bioelectromagnetism, Melbourne Au, 1998

C. Choi, K.S. Soh, S.M. Lee, G. Yoon. Study of propagation of light along an acupuncture meridian. *Journal of the Optical Society of Korea* 7(4): 244-7, 2003

⁵⁴ <http://trsub.com/blog/arxiv/26151/>

⁵⁵ <http://onlinelibrary.wiley.com/doi/10.1046/j.1365-2818.2002.01081.x/full>

⁵⁶ http://en.wikipedia.org/wiki/Photonic_crystal; tutorial on photonic crystals <http://ab-initio.mit.edu/photons/tutorial/>

⁵⁷ *Bioelectrodynamics and Biocommunication* edited by Mae-Wan HO, Fritz-Albert Popp and Ulrich Warnke World Scientific Publishing 1994. (\$349) p 431 f (referencing Chapter 8 of the book)

Google books

http://books.google.com/books?id=uxAfnxKMdPcC&pg=PA432&lpg=PA432&dq=SQUID+magnetometer+biophotons&source=bl&ots=6fni_ogISW&sig=RRKnWsVk3WJm_7mPCF91LaBnbog&hl=en&ei=8bTHTleKEoX6swOXsbSnDQ&sa=X&oi=book_result&ct=result&resnum=4&ved=0CB4Q6AEwAw#v=onepage&q=SQUID%20magnetometer%20biophotons&f=false p. 432

chapter and author breakdown:

<http://www.worldscibooks.com/lifesci/2267.html>

see also: Imaging liquid crystalline mesophases in living organisms

“The authors now have a technique that optimizes the detection of small birefringences, enabling them to obtain high resolution and high contrast coloured images of entire, living, moving organisms. The technique depends on visualizing dynamically coherent liquid crystalline mesophases in the tissues. It involves viewing the organism between crossed polars with an asymmetrically placed compensatory full wave-plate-about 7.5° from either polarizer when brilliant colours are generated in all living tissues and organisms, whereas, little or no colour is generated when the wave-plate is at its usual position of 45° between the crossed polars. Another innovation in the authors' technique is that they can differentially illuminate various internal organs and tissues by adjusting the level of the condenser.”

http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=369777 1994

⁵⁸ *Bioelectrodynamics and Biocommunication* edited by Mae-Wan HO, Fritz-Albert Popp and Ulrich Warnke World Scientific Publishing 1994. (\$349)

⁵⁹ Biophoton Emission from the Hands Journal of the Korean Physical Society Vol 41 no. 2, August 2002, p 275-278
<http://www.energetic-medicine.net/research/biphotonemissionfromthehands.pdf>

⁶⁰ The article has no publication date, but references articles up to 2007, based on endnote dates

⁶¹ http://www.tohtech.ac.jp/~elecs/ca/kobayashilab_hp/NewScientist.html

⁶² Even MIT has now acknowledged “What’s for sure is that biophotonics is one of the fastest moving and exciting fields in science today.” <http://trsub.com/blog/arxiv/26151> 12/17/2010

⁶³ <http://noetic.org/noetic/issue-three-october/energy-medicine-and-the-multidimensional-model/>

⁶⁴ They were written largely by the Indo-European invaders of India, known as the Aryans.

⁶⁵ http://www.yoga.com/ydc/enlighten/enlighten_document.asp?ID=341§ion=9&cat=0

⁶⁶ http://www.amazon.com/Ayurveda-Marma-Therapy-Energy-Healing/dp/0940985594#reader_0940985594

Dr. Frank Ros is author of *The Lost Secrets of Ayurvedic Acupuncture: Marmapuncture*

⁶⁷ <http://www.esotericscience.org/article5a.htm>

⁶⁸ <http://www.esotericscience.org/article5a.htm>

⁶⁹ <http://xxx.lanl.gov/pdf/quant-ph/9808020.pdf>

⁷⁰ http://www.irprout.it/Documenti/superluminal_helical_model.pdf

⁷¹ <http://www.valdostamuseum.org/hamsmith/worm4holes.html>

⁷² <http://www.esotericscience.org/article5a.htm>

⁷³ http://www.quantrek.org/Technical%20Literature/Tiller_Vision_in_Action_Article_a.pdf p. 9-15

⁷⁴ *Energy Medicine and the Multidimensional Model* by Debra Greene

“Meridians and smaller capillaries called nadis have been validated by a number of modern scientific methods, including magnetic resonance imaging(MRI). Chakras have been experimentally verified with electrostatic measurements as well as electromyography (EMG).”
<http://www.noetic.org/noetic/issue-three-october/energy-medicine-and-the-multidimensional-model/>

⁷⁵ https://www.cihs.edu/cihs/Dr_Motoyama_bio.htm

⁷⁶ *Vibrational Healing Through the Chakras: With Light, Color, Sound, Crystals...*
By Joy Gardner-Gordon

4.5 stars out of 5

http://books.google.com/books?id=Sg_erJTJ-8C&pg=PA27&lpg=PA27&dq=Chakras+electrostatic&source=bl&ots=Wufr5ZER48&sig=0MKyYvryhEpLnvrRjfOHvumNIFw&hl=en&ei=pHe3TlffGoKusAOi14S3CQ&sa=X&oi=book_result&ct=res ult&resnum=1&ved=0CAYQ6AEwAA#v=onepage&q=Chakras%20electrostatic&f=false

⁷⁷ More on the chaos of human physiology at:

<http://www.hummingbird-one.co.uk/humanbeing/artery1.html>

EMG signals do have strange attractors:

Multifractal characterization of electromyogram signals

http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=808048

⁷⁸ <http://www.somatics.de/HuntStudy.html>

Pg 24-27: Science of the Chakras

In her book *Infinite mind*, Valerie Hunt reports using an electromyogram to record signals from a subject's upper and lower arm, back, and head. As the subject began to dance, the signals from the upper and lower arm and back stopped, but the signal from the head became intense. Dr. Hunt concluded she had recorded electromagnetic radiation from the subject's crown chakra. 40. Dr Hunt later had a NASA engineer, who had developed highly sensitive telemetry systems, build a system to record very weak signals. Surface sensors picked up the body's electrical signals by an FM radio frequency carrier via a miniature battery operated radio transmitter and amplifier attached to the subject by a belt. The transmitted signal was then picked up by a radio receiver and recorded. This system allowed Dr. Hunt "to record regular high frequency oscillations coming from the chakras that had never been previously recorded or reported in the scientific literature. ... conventional recordings are taken by inserting needle sensors or probes into a nerve or muscle, which gives a reading only for a very local area. Dr Hunt attached the electrodes to the surface of the skin where there was a larger signal. She amplified and filtered the baseline data to remove the brain and muscle signals, including the heart. She discovered a void of electrical activity between about 250 and 500 cycles per second (hertz), and then discovered continuous activity from 500 to 20,000 cps (the highest capacity of the instrument at the time. 41. An energy healer treated a patient. The EMG signals at the chakra locations up the patients spine and out of the top of his head during healing agreed with the flow of energy reported by a medical intuitive. That intuitive was the quite well known Rosalyn Bruyere. 42

Dr. Hiroshi Motoyama of Japan had no way to measure the alleged energy of the chakras, he hoped to measure secondary energy, such as electrostatic fields. He found that the level of energy found at chakra locations of advanced meditators was significantly greater than that found at the corresponding location of control subjects. (Those with no meditative or psychic experience) He also monitored the energy advanced meditators claimed to be able to project through their chakras. He documented significant electrical field disturbances emanating from the activated chakras. These results were repeated by Itzhak Bentov, author of *Stalking the Wild Pendulum*. 43

Gordon p. 26 on.

40 Hunt, *Infinite Mind* 11, 19, 21

41 *ibid* 18, 19, 21, 27

⁷⁹ Hunt, Infinite Mind, data exhibit

⁸⁰ *A method for computerized recording and analysis of high frequency biopotentials.*

Mendanha RE

Indian Journal of Physiology and Pharmacology 2008 52(4): 398-402

http://www.ijpp.com/vol52_4/398-402.pdf

also posted at NIH:

www.ncbi.nlm.nih.gov/pubmed/19585757

⁸¹ Dr. Hunt has developed the Bioenergy Fields Monitor™, a high frequency low amplitude system with sensitive low noise optic lead cables. Testing and protocol development are scheduled for Fall 2009 with commercial production following in 2010."

http://valerievhunt.com/ValerieVHunt.com/Valerie_Hunt_Research.html

⁸²

http://books.google.com/books?id=EeLoxW5RoYgC&pg=PA656&lpg=PA656&dq=Chakras+EMG&source=bl&ots=pPRWewFKQI&sig=ZvVhub1uqhtX73KuAvoxKGTK1kl&hl=en&ei=EwS4TNzwBIHGAPf1tGWDw&sa=X&oi=book_result&ct=result&resnum=2&ved=0CBYQ6AEwAQ#v=onepage&q&f=false Pg 656, references Fn 16

⁸³ Curtis, R.C., Zeh, D., Miller, M. & Rich, S.C. (2006) Examining the validity of a computerized chakra measuring instrument. A pilot study. *Subtle Energies & Energy Medicine*, 15, 209-223.

Examining the Validity of a Computerized Chakra Measuring Instrument: A Pilot Study. Russ Curtis, Ph.D.; Doug Zeh, M.S. & Michelle Miller, M.S

Context: The chakra system, a complex network of energy vortexes that receive and process energy within the body, has been espoused for centuries in Asian and other cultures to play a fundamental role in the health of individuals. Many illnesses are thought to originate as blocked energy within the chakra system, and are often thought to be caused by unresolved psychological trauma. Recently, instruments have been created to measure chakra functioning, but no studies to date have attempted to determine their validity in accordance with chakra theory. Objective: To determine discriminant validity of the Inneractive Aura Video System 5.1 (IAV system) by examining the relationship between self reported psychological symptoms and chakra levels. Method: Sixty-four university students, 42 Americans and 22 Jamaicans, volunteered to complete the Symptom Checklist 90-R (SCL-90-R) and the IAV system measuring chakra level functioning. Results: The expected overall negative relationship between chakra levels and psychological symptoms was confirmed. Pearson product moment correlation analysis revealed significant negative correlations between chakra levels and psychological symptoms. More significant correlations were found among females than males, and American females had more significant and robust correlations than did Jamaican females. Implications for future chakra research are discussed.

KEYWORDS: Chakra

Ms doc:

http://www.dr4mind.net/board/bbs/include/DOWNLOAD.php3?table=Quantum_Medicine&I=121&nc=local&f=filelink

html:

http://webcache.googleusercontent.com/search?q=cache:0DTkx2KXZiYJ:www.dr4mind.net/board/bbs/include/DOWNLOAD.php3%3Ftable%3DQuantum_Medicine%26I%3D121%26inc%3Dlocal%26f%3Dfilelink+Examining+the+validity+of+a+computerized+chakra+measuring+instrument&cd=5&hl=en&ct=clnk&gl=us

⁸⁴ Quoting from the website: "The Aura Video Station uses the 'hand' biosensor to measure the biofeedback data- the Electro-Dermal Activity and Electrical Conductivity of the skin of the hand and its temperature in real time. This ...data is analyzed,processed, and coorelated..."
http://www.aura.net/flash_e/index.shtml?gclid=CKuWr4rZzKQCFSNsgwodw2mNzQ

⁸⁵ *Measuring Energy Fields: State of the Science Edited*
by Dr. Konstantin Korotkov 2004 Backbone Publishing Company p. 12

⁸⁶ http://en.wikipedia.org/wiki/Kirlian_photography

⁸⁷ *Measuring Energy Fields: State of the Science Edited*
by Dr. Konstantin Korotkov 2004 Backbone Publishing Company p. 12

⁸⁸ *Bioelectrography: A new method for detecting cancer and monitoring body physiology.* L. W. Konikiewicz and L. C. Griff Leonard's Associates Press, 1984.

⁸⁹ *Measuring Energy Fields: State of the Science Edited*
by Dr. Konstantin Korotkov 2004 Backbone Publishing Company p. 12-13.

⁹⁰ Skepticism: <http://www.skepdic.com/kirlian.html> response to skepticism:
<http://www.skepdic.com/comments/kirliancom.html>

⁹¹ <http://www.thefreelibrary.com/Journey+into+chaos%3A+quantifying+the+human+energy+field-a0161284583>

⁹² Brief descriptions are provided in *Measuring Energy Fields: State of the Science* Backbone Publishing, 2004.

⁹³ *Measuring Energy Fields: State of the Science* p. 23

⁹⁴ <http://www.thaitsu.com/courses>

"courses": source: Hungarian site: http://www.chen.hu/main.php?req=elmeleti_akupunktura

Hand Lung Meridians (shou tai yin)(thumb) ,
Hand Large Intestine Meridians (shou yang ming) (index finger) ,
Foot Stomach Meridians (zu yang ming)
Foot Spleen Meridians (zu tai yin)

Hand Heart Meridians (shou shao yin) (little finger),
Hand Small Intestines Meridians (shou tai yang) (little finger),
Foot Bladder Meridians (zu tai yang)
Foot Kidney Meridians (zu shao yin)

Hand Pericardium Meridians (shou jue yin) (middle finger),
Hand Triple Energizers Meridians (shou shao yang) (fourth finger).

Foot Gallbladder Meridians (zu shao yang)
Foot Liver Meridians (zu jue yin)

Governing vessel (Du Mai)
Conception vessel (RenMai)
Chong Mai
Yang Qiao Mai
Yin Qiao Mai
Yang Wei Mai
Yin Wei Mai
Dai Mai

Websites with images of acupuncture finger locations agreeing with chen.hu.:
Agree on thumb in shou tai yin
wingmakers.co.nz (New Zealand)
paoloevangelista.it (Italy)
elgalgolucas.com
shiatsu-stijlen.nl (Netherlands)

Agree on index finger in shou yang ming
paoloevangelista.it
canhcuatruongsinh.vn
shiatsu-stijlen.nl
alternativehealing.org
quanxue.cn

Agree on little finger in shou shao yin
acupunctureandphytotherapy.com
paoloevangelista.it
elgalgolucas.com
tanamana.nl
areashiatsu.it
shiatsu-stijlen.nl

Agree on little finger in shou tai yang
shiatsu-stijlen.nl/
paoloevangelista.it
elgalgolucas.com

Agree on fourth finger in shou shao yang
shiatsu-stijlen.nl
paoloevangelista.it
quanxue.cn
areashiatsu.it

⁹⁵ Ear acupuncture, or auricular acupuncture, is based on the correspondence of various parts of the human anatomy with locations on the ear, and has been reported to be effective.
Dr. Paul Nogier became convinced of the efficacy of auripuncture, and produced a large body of research supporting it.
<http://stresshelp.tripod.com/id16.html>

Reflexology holds that the body is represented in the hands and feet through a system of reflexes mapped out on specific areas, and that massage of these hand and feet areas can produce improvements in the related body part.
http://www.acupunctureproducts.com/foot_reflexology_chart.html; <http://www.ofesite.com/health/reflex/about/index.htm>
In hand reflexology however, the fingers only represent a portion of the human anatomy.

⁹⁶ http://my.clevelandclinic.org/services/acupuncture/hic_acupuncture.aspx

⁹⁷ Someone paraphrased the relevant text from McTaggart's book *The Intention Experiment* and put it on the internet: Basing on 10-fingers BEO-grams and the diagnostic table, the model of field distribution around human body is built in the GDV Programs. Independent clinic observations in different countries revealed diagnostic validity of the GDV-technique and, in particular, the **model of field distribution - Aura....**

<http://liminalthresholds.blogspot.com/2008/04/intention-experiment-scientific.html>

⁹⁸ Computer-Based Medical Systems, 2005. Proceedings. 18th IEEE Symposium 23-24 June 2005

(Institute of Electrical and Electronics Engineers)

How does gas discharge visualization technique assess a body? Emerging models of energy and control in biophysics and physiology

ABSTRACT: The paper presents emerging models of physiological control and energy economies in biophysics and biochemistry, to explore possible mechanisms by which gas discharge visualization technique can assess physiological states in conventional and complementary medical analysis, and to propose research questions focused on such possible mechanisms. A central concept in these emerging models is the storage of coherent energy as both coordination and control in resonant information channels and as immediately available energy for work in organs and tissues.

<http://ieeexplore.ieee.org/Xplore/login.jsp?url=http%3A%2F%2Fieeexplore.ieee.org%2Fiel5%2F9903%2F31475%2F01467731.pdf%3Farnumber%3D1467731&authDecision=-203>

Application of electrophoton capture (EPC) analysis based on gas discharge visualization (GDV) technique in medicine: a systematic review.

Journal of Alternative and Complementary Medicine 2010 Jan;16(1):13-25.

Abstract: Objectives: The objective of this study was to evaluate the scale and scope of implementing electrophoton capture (EPC) analysis based on gas discharge visualization (GDV) technique in diverse medical applications and psychophysiology; to identify the range of applications in medicine; and to show in which areas the procedure can be useful to health professionals.

Conclusions: (1) The software and equipment EPC/GDV-complex is a convenient and easy-to-use device, easily allows examining patients with various pathologies and, therefore, offers a wide range of applications. (2) The GDV method has shown itself to be very fast (i.e., it is an "express-method" for studying states of the human organism). (3) Our review has revealed that GDV method can be implemented as an express method for assessment of treatment procedure effectiveness, evaluating emotional and physical conditions of people, and in many other fields

<http://www.ncbi.nlm.nih.gov/pubmed/19954330> (US National Library of Medicine National Institute of Health)

⁹⁹ <http://www.thefreelibrary.com/Journey+into+chaos%3A+quantifying+the+human+energy+field-a0161284583>

¹⁰⁰ Scientific analysis of the Human Aura B Rubic, PHD From the book *Measuring Energy Fields: State of the Science* Edited by K Korotkov.p. 158.

¹⁰¹ http://new.korotkov.org/index.php?option=com_content&view=article&id=48&Itemid=85

¹⁰² *Measuring Energy Fields: State of the Science* p. 14

¹⁰³ Konstantin Korotkov *Human Energy Field: Study With GDV Bioelectrography* Backbone Publishing Co. 2002 p. 45.

¹⁰⁴ *Human Energy Field: Study With GDV Bioelectrography* p.47.

Also see <http://www.ktispb.ru/en/gdvsoft.htm> ; http://kirlianresearch.com/gdv_aura.html;

¹⁰⁵ A select few: *The Journal of Alternative and Complementary Medicine*

“Gas Discharge Visualization Evaluation of Ultramolecular Doses of Homeopathic Medicines Under Blinded, Controlled Conditions”

Iris R. Bell, Daniel A. Lewis, Audrey J. Brooks, Sabrina E. Lewis, Gary E. Schwartz

Conclusions: GDV technology may provide an electromagnetic probe into the properties of homeopathic remedies as distinguished from solvent controls. However, the present findings also highlight the need for additional research to evaluate factors that may affect reproducibility of results.

<http://www.liebertonline.com/doi/abs/10.1089/107555303321222928>

Report on the First International Congress on Systemic Medicine, Gas Discharge Visualization (GDV) and Electro-oncotherapy (ECT) Published by Oxford University Press.

[“This event, held in Caracas, Venezuela on the 21ST and 22ND January at the Tamanaco Intercontinental Hotel, was attended by close to 1000 medical doctors (MDs) and students. It was the largest evidence-based complementary and alternative medicine (ECAM) meeting ever held in this country”]

...There were also important lectures on the new quantum physics-based GDV method developed by the Dr Konstantin Korotkov. The experience at the Systemic Clinics with GDV demonstrated its capacity to measure quantum changes parallel to the body's clinical changes in those pathologies where the patient had a below normal level of energy, after being treated with SM. The study presented by Dr Libya Gomes, Surgeon, Systemic specialist MD, and co-authored by Eng. Jose Olalde was entitled: ‘GDV Energy Measurements in Evolution of Patients’. Dr Gomes demonstrated the utility of this technology in detecting low energy levels in patients with different pathologies and how the systemic treatment went hand in hand with an improvement in symptoms and increase of energy levels. Dr Konstantin Korotkov and Dr Len Wisneski demonstrated GDV and the medical application of the human energy field...

<http://ecam.oxfordjournals.org/cgi/content/full/2/2/255>

GDV marketers:

<http://kirlianresearch.com/>

<http://gdvusa.org/>

Companies using GDV testing to validate their product

<http://gasdischargevisualization.com/> (iRenew bracelets)

¹⁰⁶ **Skin conductance**, also known as **galvanic skin response (GSR)**, **electrodermal response (EDR)**, **psychogalvanic reflex (PGR)**, **skin conductance response (SCR)** or **skin conductance level (SCL)**, is a method of measuring the electrical conductance of the skin, which varies with its moisture level. This is of interest because the sweat glands are controlled by the sympathetic and parasympathetic nervous systems,
http://en.wikipedia.org/wiki/Skin_conductance

electrodermal is used as a more inclusive term for various types of skin conductance
<http://www.biopac.com/gsr-eda-galvanic-skin-response-amplifier-electrodermal-activity>

Electrodermal response (EDR) has replaced galvanic skin response as the collective term.
<http://www.answers.com/topic/galvanic-skin-response>

¹⁰⁷ *The Intention Experiment* Lynn McTaggart Free Press (division of Simon & Schuster) 2007 p. 46

¹⁰⁸ *The Secret Life of Plants* Peter Tompkins and Christopher Bird Avon books, 1972

¹⁰⁹ <http://www.quackwatch.com/01QuackeryRelatedTopics/electro.html>

¹¹⁰ *Basic Explanation of the Electrodermal Screening Test and the Concepts of Bio-Energetic Medicine*
American Association of Acupuncture and Bio-Energetic medicine

By stimulating an acupuncture point on the skin through pressure, suction, heat, or needle insertion, the circulation of chi is said to be affected, which in turn affects related internal organs.

The meridian energy flow is also said to carry with it information about internal organs that can be used in diagnosis. This is the basis of the electrodermal screening test (EDST). The device used in the EDST is the electrodermal screening device, or EDSD, which works by measuring electrical resistance and polarization at acupuncture points and meridians.

The predecessors to the EDST and EDSD were invented in the 1950's by the German doctor Reinhold Voll. Dr. Voll originally developed a system of acupuncture point electro-therapeutics, but he soon discovered that when an internal organ's function or structure changes, the performance of the related meridian and acupuncture points also changed, and that this change could be measured using a device. Voll used a device called the Dermatron, but all similar devices can be used for diagnosis and medicine testing. The core of the EDSD is an ohm meter designed to deliver approximately 10-12 microamperes of direct electrical current at 1-1.25 volts, a very small and perfectly safe amount of energy.

There are two cables coming out of the EDSD, one positive and one negative. The positive lead is attached to a stylus with an electrode tip. The doctor holds the stylus by the insulated handle and presses the tip against one of the patient's acupuncture points. The patient holds a hand electrode in their free hand. During the measurement the patient and the EDSD form a closed circuit, allowing energy and information to flow from the EDSD to the probe, through the patient to the hand electrode, and back to the EDSD. The EDSD reading is a measurement of how much energy makes it through the circuit.

A reading taken with the EDSD is usually described using two values, the initial reading (generally the highest value) and the indicator drop (ID). An initial reading of approximately 50 followed by little or no indicator drop is considered "good". Initial readings below 45 or above 60 and substantial IDs are all considered bad signs.

<http://www.healthy.net/scr/article.aspx?id=1085>

Sylva dvorak, PhD states:

The Evolution of ElectroDermal Screening

In the early 1950's, Reinhold Voll, a German medical doctor, was one of the first to connect the use of electricity in conjunction with acupuncture points. Voll developed an electronic testing device for finding acupuncture points electrically. He was very successful in finding acupuncture points and demonstrating that these points had a different resistance to a tiny electrical current passed through them than did the adjacent tissues. Voll began a life-long study identifying the correlations between disease states and changes in electrical resistance of the various acupuncture points. He later discovered that he could change the energetic readings when "medicine" was in contact along the same electrical circuit. This later led to extensive research on exactly how to balance the vibration of a person that had a disturbance with a particular frequency.

Jump forward about 30 years and you will find that electrodermal testing instruments have been used widely in Europe and in the last few years in Japan, China, Russia, Canada and the United States. Double-blind studies showing validity have been conducted at UCLA, USC, Stanford and in at least four other countries. One of the most notable findings from the research has been the ability of electrodermal testing to determine appropriate dosing of a regimen. It would be rare to find a western doctor that can determine root cause and at the same time is able to customize a regimen specific for their patient. Unfortunately, in the United States the FDA and the American Medical Association have not recognized electrodermal screening despite the positive results of clinical studies. In some ways, the western model of health care is still in the dark-ages. Use of energy scanning devices such as EKG's, EEG's and MRI's are widely supported while EDS with its ability to go to root cause and dose is not. However, I remain optimistic that one day it will be accepted as THE form of medicine practiced primarily because more and more people are turning to alternative health and demanding a wholistic approach to health care.

<http://www.atmaninternational.com/articles/article/7045596/127257.htm>

¹¹¹ <http://www.energy-medicine.info/eds-devices.html>

¹¹² Quack "Electrodiagnostic" Devices By Stephen Barrett, M.D: *The diagnostic procedure is most commonly referred to as Electroacupuncture according to Voll (EAV) or electrodermal screening (EDS), but some practitioners call it bioelectric functions diagnosis (BFD), bio resonance therapy (BRT), bio-energy regulatory technique (BER), biocybernetic medicine (BM), computerized electrodermal screening (CEDS), electrodermal testing (EDT), limbic stress assessment (LSA), meridian energy analysis (MEA), or point testing. EAV devices are marketed by several companies, most of which also sponsor seminars.*

Interro device. One probe is held in the patient's hand. As the other probe is touched to the patient's other hand or foot, a bar rises on the right side of the computer screen, accompanied by a noise. The reading supposedly determines the status of various organs of the body. In 1986,

while investigating the homeopathic marketplace for *Consumer Reports* magazine, I underwent testing with this device The Nevada Clinic in Las Vegas, Nevada. When the doctor left the examining room, I played with the device and I found that the movement of the bar and the loudness of the noise were determined only by how hard the probe was pressed to my skin.

In a double-blind study, British researchers compared its results with a Vegatest device to those of conventional skin-prick testing in 30 volunteers, half of whom had previously reacted positively for allergy to cat dander or house dust mite. Each participant was tested with 6 items by each of 3 operators in 3 separate sessions, a total of 54 tests per participant. The researchers concluded that Vegatesting does not correlate with skin prick testing and so should not be used to diagnose these allergies. The authors estimated that more than 500 EDS devices were being used in the United Kingdom to assess sensitivity to potential allergens.

The FDA classifies "devices that use resistance measurements to diagnose and treat various diseases" as Class III devices, which require FDA approval prior to marketing. In 1986, an FDA official informed me that the FDA Center for Devices and Radiological Health had determined that the Dermatron and Accupath 1000 were diagnostic devices that posed a "significant risk." No such device can be legally marketed in the United States for diagnostic or treatment purposes.

EAV devices are not biofeedback devices. Biofeedback is a relaxation technique that uses an electronic device that continuously signals pulse rate, muscle tension, or other body function by tone or visual signal. In biofeedback, the signal originates and is influenced by the patient. In EAV, the signal is influenced by how hard the operator presses the probe against the patient's skin. (Pressure makes the electric current flow more easily between the device to the patient's skin.)

Many other "bioenergetic" devices have been claimed useful for diagnosing and/or treating health problems. I am uncertain whether or not they should be considered EAV devices or classified in some other way. The common denominator is that they rely on detection and/or manipulation of a body "energy" system.

<http://www.quackwatch.com/01QuackeryRelatedTopics/electro.html>

¹¹³ Quoting from the website: "The Aura Video Station uses the 'hand' biosensor to measure the biofeedback data- the Electro-Dermal Activity and Electrical Conductivity of the skin of the hand and its temperature in real time. This ...data is analyzed,processed, and coorelated..."

http://www.aura.net/flash_e/index.shtml?gclid=CKuWr4rZzKQCFSNsgwodw2mNzQ

¹¹⁴ <http://www.auraphoto.com/see/>

¹¹⁵ http://www.csicop.org/si/show/aura_photography_a_candid_shot/

¹¹⁶ Endorsements and PhDs and MDs said to be working with Progen/aura imaging

Three user endorsements. 14 phDs and MDs listed:

Notable examples:

Dr. Linda Light Ph.D., environmental scientist, biologist, has provided valuable research. and has traveled to many holistic events with the Aura Camera 6000 giving demonstrations, explaining to the general public the scientific an biological principles as to how the Aura Camera 6000 functions as a biofeedback/photographic instrument.

Dr. Danielle Laurent MD., of France and Belgium is an Aura Camera 6000 owner and is a well known psychiatrist and founder of a professional school dedicated to the study and research of auras and aura photography.

Dr. Carlo Montamari Ph.D., biologist and psychologist, and Aura Camera 6000 owner from Italy, opened the first metaphysical bookstore in his country with the Aura Camera 6000 as a main feature. He is also researching experimental holistic therapy on schizophrenic patients using the Aura Camera 6000 for photographic documentation.

Dr. Gwen Totterdale Ph.D. of Hawaii is an Aura Camera 6000 owner and uses her camera to document her wild dolphin swims with 'before' and 'after' aura photos of the swimmers. She also leads power spots of the world travel tours and photographs sights such as Stone Henge with the Aura Camera 6000.

<http://www.auraphoto.com/fundamentals/user.shtml>

¹¹⁷ SOCIAL SCIENTIST LOOKS AT AURA MYTHOLOGY by Professor Carl Edwin Lindgren
<http://users.panola.com/lindgren/aura.html>

Videos:

<http://www.youtube.com/watch?v=4YqKUuRO0vI>

<http://www.ruclip.com/video/8911huq8gNA/aura-imaging-presentation.html>

Businesses:

<http://www.kirlian.org/aura.htm>

¹¹⁸ <http://www.item-bioenergy.com/rfi/intro.html>

¹¹⁹ “Doctors, chiropractors, psychologists, alternative therapists, and hobbyists all over the world are joining in this revolution to form an international network of **RFI**[™] users. **RFI**[™] is currently being used in 62 countries around the world.”

<http://www.item-bioenergy.com/rfi/index.html>

Endorsements of ITEM RFI system by Shiela King, alternative therapist

<http://newconnexion.net/articles/index.cfm/2003/01/king.html>

testimonials (22 from assorted professions)

<http://www.item-bioenergy.com/rfi/RFITestimonials.html>

¹²⁰ Businesses

<http://www.atlantisvibes.com/RFIinfo.htm>

<http://www.rehutek.com/rht/>

<http://www.garycone.com/rfi.html>

http://aurafem.com/index.php?option=com_content&view=article&id=181&Itemid=160

¹²¹ <http://www.item-bioenergy.com/pip/index.html>

¹²² <http://www.futurehealth.org/populum/pageproduct.php?f=Polycontrast-Interference-Photography--P-092007-12.html>

¹²³ Reprint of Nexus article:

http://www.bibliotecapleyades.net/ciencia/ciencia_imagingtechnologies.htm

A report on the Testing of AMwand, March, 2010:

“The AMwand (manufactured by Amiga Global, is a devise containing AMized Fusion Technology (AFT), a proprietary name referring to wands emitting a beam of zero point field energy resonance” (A client is photographed with a PIP system, treated with the wand, and then photographed again with the PIP system, to document “before-after.”)

<http://www.jeffotto.com/health/pdf/wand-pip-test.pdf>

Businesses:

<http://www.matrixenergetics.com/pip.aspx>

<http://www.electrocrystal.com/pip.html>

<http://www.camelot-connection.com/pip.htm>

¹²⁴ <http://irna.lautre.net/Pseudo-scientific-validation.html>,

<http://jonn.co.uk/garymannion/modules/news/article.php?storyid=52>