Measurement of the Biofield:

Observations, Experiments and Speculations

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Richard R. Pavek

The Biofield Research Institute

The SHEN Therapy Institute

INVESTIGATIONS INTO THE NATURE OF BIOFIELD

Clarifying the Research Questions

Besides the need for further studies of efficacy, several unsettled issues have hindered extensive use of the biofield[1] in medical application; not all of these issues have engaged the attention of all researchers.

- *Is healing only a placebo effect working because of the recipient's belief in the process?*
- *Is healing with the biofield dependent upon the practitioner's intention?*
- *Is God or other cosmic influence acting through the healer to cause the healing?*
- *Is the biofield an extension of 'Mind' – or is it distinct from Mind?*
- *What is its nature? How is it characterized? Does it conform to the conventions of fields in physics?*
- *How far does the biofield extend from the human body – is it finite, or does it extend indefinitely?*
- *Does the biofield permeate the physical body or is it merely a shell around the physical body?*
- *How does healing with the biofield cause biological change within the body to which it is applied?*

Some theorists are convinced the biofield is a subset of mind and not a field in physics. Among practitioners of biofield therapeutics, one school of thought believes healing results from the healer's intention; another school believes the bioflux or 'qi' – the material of the biofield – comes from God or other cosmic source and flows through an essentially passive practitioner. Research needs for these groups are only for studies of clinical efficacy, as there is no compelling need to understand the healing mechanism in any greater detail.

A smaller school, of which I am most assuredly one, believes the biofield is a field in physics following the laws of nature (form, order, internal coherence, etc.) that apply to all fields in the universe. Our research objectives include characterizing the physics of the biofield in order to develop more effective and advanced techniques, and describing the healing interface in logically plausible electro-biological terms.

> *My personal conclusions about the nature of the biofield were shaped by my personal experiences; some of these involved no great thought or long investigation; they came early on as virtual 'startle responses' that overwhelmed any question or doubt I had as to their validity. These conclusions set the direction of my research and started me on the long track of discovery that has brought me here.*

[1] A basic necessity of any science is that its terminology be unambiguous; the term *energy* and its derivatives fail on several counts:
1. *Energy* is in confusion with previously established meanings of heat energy (caloric, Btu) and of physiological (bodily) energy.
2. *Energy Field* is meaningless since all fields in physics possess energy.
3. *Subtle Energy* denies its true potential; when the physics of the biofield are utilized in developing treatments it is not subtle at all.
4. None of the above terms even remotely suggest what the field is, or is involved with.
5. The continuing popular use of *Energy* to explain every new therapy whose mechanism of action is unclear, or has not yet been explained, has stripped the term of the ability to describe the biofield in any useful way.

To rectify the need, The Editorial Review Board of the NIH report, *"Alternative Medicine: Expanding Medical Horizons,"* (GPO 1992) defined 'Biofield' and established it as the proper term; the term was adopted by the OAM and continues as the NIH term of choice.

BIOFIELD: 1) a fluxive, massless medium with the distinctive property of being bioeffective, or having effect on biological material. The biofield penetrates and extends outward from the physical body a finite distance. The term *AURA* is commonly used to denote the portion that is external to the physical body. 2) The operative mechanism in healing modalities using proximate touch.

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Ancient Philosophical Correspondences Relating to Biofield

Chinese



Qi (PinYin transliteration, 1979+) Ch'i (Wade-Giles transliteration, prior to 1979)
Pronounced "chee" (Lower part of pictogram = fire; upper = steam from cooking rice)

Cosmological
Vital stuff of all things, swings through phases (tides) of yin and yang [3]

Personal
Prior to the Han Dynasty: 'breath', animating fluid [1]
Hylozoistic vapors, the activating fluid, vital energizing fluid [3]
The life force, breath, energy [2]
Emits from the hands, used in healing (wei-qi)
Vital energy [5] Vital energy, life force {6}

Egyptian



Ankh Hieroglyph for 'Life Force'

Cosmological
Shown being handed from the rays of the Sun to Pharaohs and others

Personal
Pottery representations of the ankh carried in hands of healing priest/healers
Pictograms show life force emanating from hands and flows between hands

Greek

Πυέω

Pneuma Spirit, wind, breath, (derives from pneo, meaning breathing) [2]

Cosmological
Cosmos composed of pneuma; rhythmical variations in its tonus [3]

Personal
Vital force in man (Stoic, Epicurean), Breath of life [1]
Ether, corporeal vital energy [4] Breath, life, energy [5]

Hindu

Prana

Cosmological
Breath of life that fills the universe; ebbs; flows in cosmological tides [1]
Life force that suffices the universe [5] Transcendental source of life [7]

Personal
Life, breath of life [7] Breath as the essential life force, coincident with but not the same as the air breath, moves with the air breath
Energizes the physical body [5] Breath of life [6] Essential life force [2]

References

[1] Pan Books Dictionary of Philosophy
[2] Chambers 21st Century Dictionary
[3] Routledge Encyclopedia of Philosophy
[4] Cambridge Dictionary of Philosophy
[5] Optima Dictionary of Mind and Spirit
[6] Shambhala Encyclopedia of Eastern Philosophy and Religion
[7] Unwin Encyclopedic Dictionary of Yoga

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A few equivalents for 'Biofield'

Ankh	Ancient Egypt
Animal Magnetism	Mesmer
Arunquiltha	Aborigine (Aus.)
Bioenergy	US/Europe
Biomagnetism	US/Europe
Dunamis	Ancient Middle East
Gana	South American
Ki	Japan
Life Force	General Usage
Mana e	Polynesia
M'gbe	Hiru Pygmy
Mulungu	Ghana
Mumia	Paracelsus
Ntoro	Ashanti
Ntu	Bantu
Oki	Huron
Orenda	Iroquois
Pneuma	Ancient Greece
Prana	India
Qi (ch'i)	China
Subtle Energy	US/Europe
Sila	Inuit
Tane	Hawaii

Sensations noted when sensing
the biofield between the palms

"A pulling feeling"
"Feels like magnetism"
"There is something stretchy"
"I feel tingles"
"Outward pressure"
"A spongy feeling"
"It's like elastic strings"
"Something pushing"
"It prickles"
"A cushion"
"A static-like feeling"
"It feels like electricity"
"Rubbery feeling"
"Something sticky"
"Heat"
"Coolness"

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Until 1977 I was an unshakable disbeliever in 'subtle energy' and disdained the vague, rambling 'explanations' associated with it. But that was to change. In August of that year I attended the Second International Healing Arts Conference in Ward, Colorado, intending to learn all the latest physical bodywork theories and techniques from the 200 or so presenters. On the third day I joined a workshop titled "Healing with the Subtle Bodies" though I had no clue as to what subtle bodies were. To my utter disdain, I noticed a chart of the charkas at the front of the class. Before I could dredge up enough courage to leave, the teacher instructed us to face the nearest person, raise our hands with the palms near our partner's without touching and *"Send energy from your right palm to your partner's left palm."* With considerable disgust, I did – and was shocked to feel something between my right hand and my partner's left. I was thunderstruck – I didn't believe in "energies" but I couldn't deny what I felt! Before I could sort myself out enough to speak, we were told, *"Now try to send the energy from your left hands."* With a slight mental effort, whatever I had been feeling in my right hand was now in my left, magnified ten-fold! Before I could speak a word my partner exclaimed, *"My that's a lot of energy coming from your left hand! "* With that independent validation of the phenomenon, I was forced to accept that the biofield existed. It was clear the biofield was not formed by my mind because it was there before I believed it to be. The unbidden thought flashed through me, *"Now I know why I came into this life – it's to bring this out of the paranormal into physics."* For me 'science' had begun already; the obvious polarity between my hands suggested that I was dealing with a field in physics.

Three days later, I joined a class in 'healing' where we were asked to choose a partner, scan his or her body to find the hot and cold areas and apply the 'energy' from our hands so as to balance our partner's body temperature. A middle-aged woman who appeared depressed and forlorn approached and asked to partner with me adding, *"I don't have very much energy so maybe you could give me some and then I could give you some back."* Less than thrilled, I agreed. She reclined and I scanned her body with the palm of my hand to discover that her abdomen was hot and her thighs cold, especially the right. I remarked on the distinct line separating hot from cold at her groin and she responded, *"There is a sharp pain along that line."* Somehow that seemed reasonable. With that I placed my sending hand on her abdomen and my receiving on her thigh and unleashed a chain of completely unanticipated reactions. The hair on my arms began to rise, my arms got hot, she began sobbing and her abdomen began contracting.

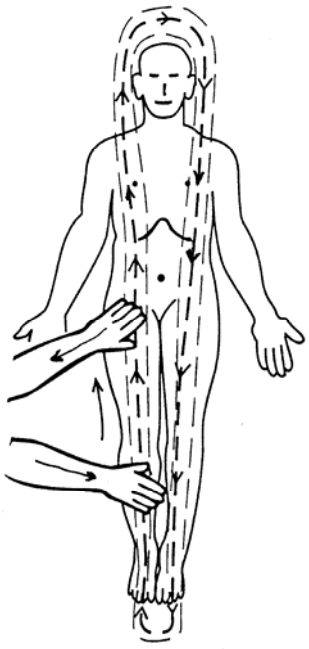
Everything intensified. Then I realized that the contractions appeared to be birth contractions. I said nothing because it was clear she was not giving birth. Eventually everything subsided. She sat up and said, *"I feel as if I just gave birth to myself,"* a completely illogical yet profound statement, especially since the contractions had seemed like birth contractions to me. I saw her every day for the next few days and she always remarked, somewhat illogically, *"I don't know what happened but the world is different."* She left the conference and I thought I would never see her again.

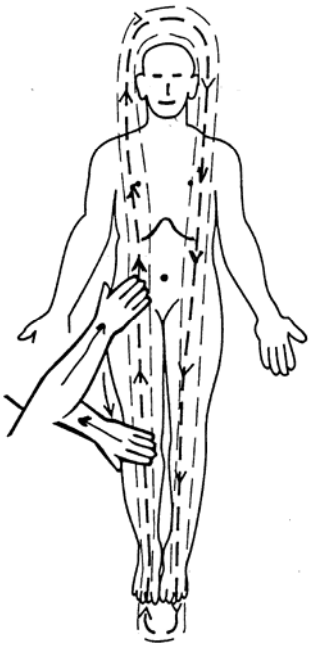
Six weeks later I saw her at a Halloween party. She strode up to me, wearing a vivid red dress with a large black widow spider enclosing her right breast, and exclaimed, "*I still don't know what you did to me back then, but I'm different!"* This was resoundingly seconded by several of her friends. After a bit I asked about the spider. She replied, more nonchalantly that I would have thought possible, *"Oh, I had a mastectomy six months ago."* Somehow I had released her mastectomy trauma and assisted in recovering her sense of self. With that I began a two-fold study of the biofield; a study of its physics and a study of its relation to emotion.

Establishing Polarity in the Biofield

It took nearly a year to confirm that when I (or others) placed my hands (or theirs) in polarized paired positions along the legs and sides of the torso so that the flow of qi between my hands matched the pattern of movement shown in the torso below, and held them in place until I felt the qi from my sending hand enter my accepting hand, and continued this in steps around the torso, that the recipient would report feeling relaxed, energized, and/or refreshed. I found that if I followed the same pattern but with my hands reversed, the person would report feeling anxious, tense, uncomfortable, and, if I did it long enough – nauseous. From this I was able to deduce the normal flow of the bioflux, or *Ren Qi,*[2] through the torso, legs and arms.

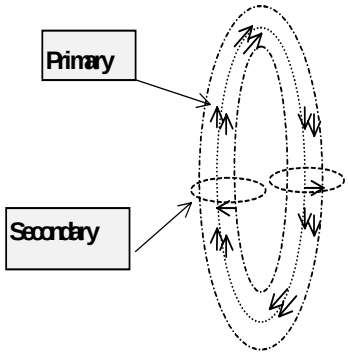
Primary Patterns of Bioflux or Qi in the Human Biofield





Flow between the hands assists body qi. Flow between the hands impedes qi.

Secondary Patterns



As in all fields in physics, intermediary flows are necessary between the basic flows shown in the basic chart; these are not shown on the figures at the left.

[2] Ren Qi (whole body qi) is not the same as the qi in meridians (*Ching Qi*). When Ren Qi is emitted from the hands it is known as *Wei Qi*. However, when Wei Qi is used in healing it is known as *Fa Qi*.

I also became aware that the flow did not proceed instantly from my sending hand to my accepting hand. It could take up to several minutes and was dependent on several factors, the distance between my hands and the emotional state of the recipient were the most obvious. The recipients often reported, *"Feeling the flow go through,"* or reported the reduction of pain at the same time I felt the connection.
It took another year or two to discover that if my sending hand was behind the heart and my accepting hand on the front, emotions of grief, joy and love often be lifted into awareness. But if I reversed the placement of my hands the emotion did not release. This held true for the other emotional regions in the torso.

By then I was caught up in unraveling the mysteries of how emotion – which I believed to be occurring in the biofield – impacted the physical body the way it does. Few were interested in hearing about physics anyway. I began developing methods that resulted in specific treatments for a range of disorders resulting from the effects of bodily-retained emotions. These were refined until we now have SHEN Therapy procedures that challenge standard medical treatments for several hard to treat disorders. Among these are Panic Disorder, Migraine, Reflex Sympathetic Dystrophy refractive to surgical nerve blocks and virtually all cases of Chronic Pain with insufficient organic explanation.

Physio-Emotional Disorders where SHEN Therapy has demonstrated substantial and repeated success

Anxiety Attacks, Unremitting Grief, Depression,
Eating Disorders, Irritable Bowel Syndrome, Migraine,
Phobias, Posttraumatic Stress Disorder,
Premenstrual Distress, and recovery from
Childhood Emotional, Physical and Sexual Abuse.

During this period I began a serious investigation into the history of biofield therapeutics; I had started my exploration tabula rasa – I knew nothing of what others had done before me; I soon found there many others has preceded me along the same track of physics. It was somewhat embarrassing, but confirming and satisfying all the same.

Antecedents to Current Practice

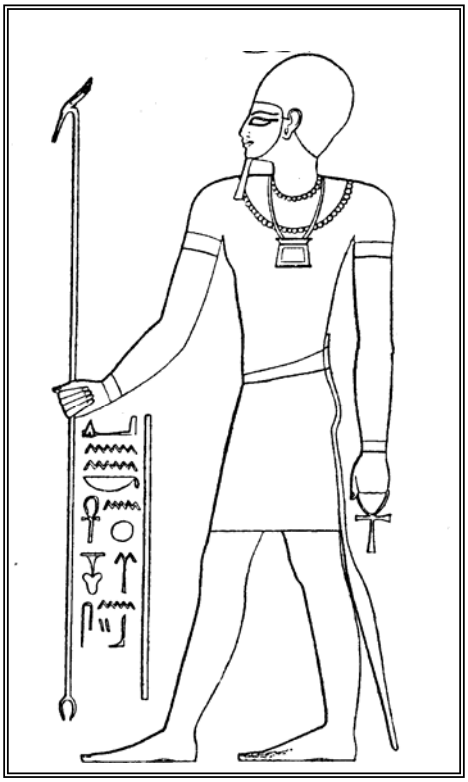
The ability of certain people to heal through proximate or direct touch using the biofield has been known and accepted since the earliest of times. The earliest Eastern term identifying the biofield, "Qi"[3] dates from *ca* 2500 BC and is still in use to describe aspects of the biofield. The oldest known Western term for the biofield, ☥ transliterated as "Life Force" and pronounced *Ankh*, dates back to at least 2900 BC. There is extensive pictorial evidence showing that therapeutic application of the biofield through proximate touch was the essential activity in the Asclepiums (early Greek "incubation" chambers) and the Per Ankhs 𓉐 (Houses of the Life Force)[i] that were associated with many Egyptian temples.



Hieroglyph representing
The Life Force



Hieroglyph representing
House of the Life Force



The Egyptian Healer, Imhotep, *ca* 2700 BC

Imhotep, Grand Vizier to King Zoser and the architect of the step pyramid, was revered as the greatest of all healers. So much so that centuries after his death he was elevated to status of a demi-god. Often mistakenly said to be a physician, the title *physician* was not used with his name while he was alive. Little is known of how he healed, however images that portray him as a healer show him grasping the loop of an ☥ in the manner of Osiris, the Egyptian God of medicine, and the priest-healers. This would appear to signify that he held the power to heal *(the life force)* in his hands. (Physicians were never shown holding an ☥.) The healing temples dedicated to him used the same procedures as used in the Greek Asclepiums.[ii]

[3] qi is the pinyin (current) transliteration, ch'i is the older Wade-Giles transliteration, they are pronounced the same: *chee*



Tablet of Asclepius healing. 4th or 5th century BC.
From the Asclepieion at Piraeus, Museum of Piraeus



Tablet *ca* 4th century BC. From
the Asclepieion of Amphiaraus
In the Museum of Athens

Sites of the Asclepiciea

There is evidence of more than 367 Asclepiciea. Not all were in Greece – others were in Italy, France, England, Spain, Egypt, Cyprus, Sicily, Judea, Samaria and Africa. Historians differ as to the procedures used in the incubation (sleep) chambers. Sigerst states the tablets are depictions of "*Asclepius healing."*[iii] Ligorous identifies the upper tablet as "*manipulation of the spine;*[iv]*"* the British Museum says it is *"a primitive form of chiropractic adjustment"* however manipulation is not possible the way the procedure is depicted. Ligorous identifies the lower tablet as a *"venesection,"* but no knife or catch basin is present. These interpretations are unlikely as the records indicate that few Asclepiciea had physicians in attendance and those held subordinate positions.[v] The procedures shown are identical to those used by present day 'energy healers' and 100 years ago, the 'animal magnetizers.'

Alternative Medicine at the Asclepiciea

Healing through proximate touch, prayer and ritual were the central activities in the Asclepiums. However, diet, fasting, imagery, cleansing baths, mineral water, herbs, incense, the practice of cheerfulness, massage, and physiotherapy were used as well. The Asclepiciea were Alternative Medicine spas with facilities for extended stays, much like today's health spas, operating alongside the conventional Greco-Roman medical practitioners. Apparently it was a reasonably friendly association as information was often exchanged between the healers in the Asclepiciea and conventional physicians. According to Pliny, *(Natural History, 29.2)* Hippocrates went to the Asclepieion at Cos to learn what they knew of herbs.[vi] The fact that the temples existed for over a thousand years attests to the effectiveness of their methods.

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Early Scientific Investigations of Biofield Therapeutics

Prior to the 18th century no attempt was made (in the West) to understand the process as a natural one, as all healing through proximate touch was attributed to magic, pagan influences, or to God acting in concert with or through the healer. Early records show that investigations of healers were by one or another ecclesiastical authority, usually to determine whether the healer was a witch or possessed powers of the devil. When secular authorities did investigate these healers, it was for impersonating royalty, as it was understood that God had given certain kings and queens the power to heal through touch.

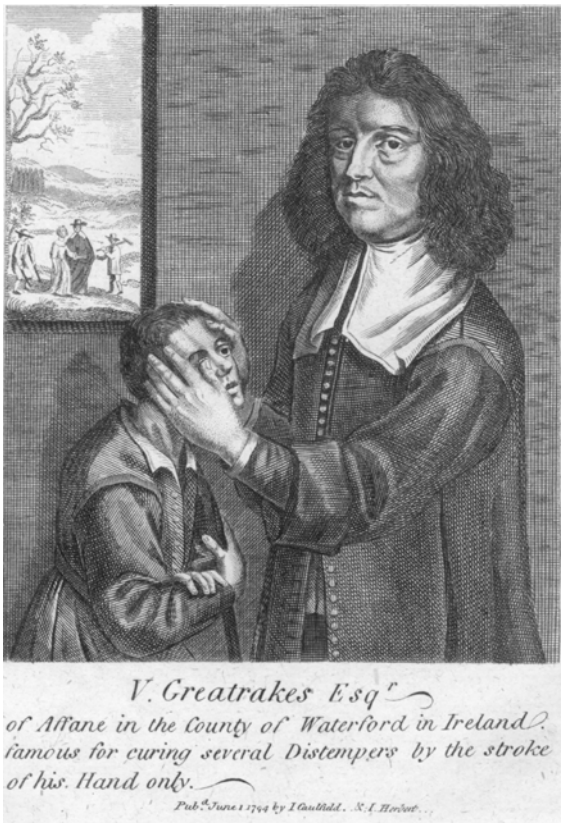
Valentine Greatrakes

The earliest recorded medical investigations of the process began in August 1665 when Dr. Thomas Sydenham and other noted physicians investigated and confirmed the ability of Valentine Greatrakes, the famous 'Irish Stroaker,' to eliminate pain, cure the King's evil (scrofula), reduce other swellings and alleviate a wide range of other disorders by lightly stroking his hands either on, or proximate to, the physical body. The following year, the eminent physicist and chemist Sir Robert Boyle (Boyle's Law) observed Greatrakes' healings on some sixty occasions and gave him a testimonial.[vii] Boyle postulated that, *"perhaps some salubrious streams or spirits"* were induced from Greatrakes' hands into the patient's body. To investigate his postulation, Boyle experimented with the stroking himself. Using Greatrakes' glove turned inside out as a vehicle for the supposed effusions, he was successful in eliminating pain on at least one occasion.[viii]



Magnetische Heilung durch die «Königliche Hand», wie dies von vielen Fürsten Europas ausgeübt wurde

The Royal Touch



Valentine Greatrakes, a deeply religious man, did not consider that his 'gift' was a process of nature; he described his ability to heal as, *"Greatrakes strokes, God heals".*

Franz Anton Mesmer

The first to clearly place the biofield in physics as well as to associate it with electromagnetism was Franz Anton Mesmer, a Viennese physician who established a practice in Paris, France. In 1766, Mesmer postulated that a "fluidium" (field) – which he termed "animal magnetism" differentiating it from "metal magnetism" – existed as a force of nature subject to the laws of physics. His aphorisms associating animal magnetism with influences from the stars were then and now considered ludicrous; however, many of his observations about the nature and characteristics of the biofield were valid.

Most importantly, he unequivocally established that the phenomenon was a natural one, rather than one bestowed by God on select individuals, when he and others successfully taught large groups of ordinary people in the therapeutic procedures he devised.

Class notes from his trainings referred to polarities within the biofield. *" You should likewise oppose one pole to the other, that is to say, if you touch the head, the heart, the stomach, &c. with the right hand you must oppose the left to the hind part. You may easily form the poles by opposing one hand to the other."*[ix]

Polarities were also evident in the downward passes in front of the body producing "magnetic sleep" as the light trance state was then called, and the upward (opposite) passes that terminated the trance.





Mesmer's work and flamboyant manner infuriated most of the French medical establishment as it threatened their dominant paradigm. Eventually the King's Minister appointed a commission headed by the American scientist Benjamin Franklin to investigate Mesmer's medical claims. The commission reported they could find no evidence of the fluidium. Failing to understand the medical and psychological worth of the cathartic emotional releases (referred to as 'convulsions') that frequently ensued during Mesmer's process, the committee declined to comment on any medical value of his work, except to offer the opinion that these

events could easily be produced by "imagination." The unfounded notion that it is only an effect of imagination – mind affecting matter – or belief in the process, continues to this day in medical circles and is the major reason why there has been little serious investigation of the biofield as a discrete force in physics.

The spread of Mesmerism

Mesmer's work spread rapidly throughout Europe and later in America. By the late 1830's New England had "*hundreds of animal magnetizers"*[x] including many who performed "mesmeric anesthesia" for dentists, who had not yet the benefits of chemical anesthesia. About this time the Scotsman, James Easdaile, published "*The Second half-yearly report of the Calcutta Mesmeric Hospital"* detailing his use of Mesmeric anesthesia for major surgical procedures in his hospital. Aside from the complete lack of pain during amputations, removal of scrotal tumors, etc., what was most remarkable was that mortality dropped to 5% from the 50% that was the norm at other surgeries.[xi] Mesmeric anesthesia was used for surgery in Boston, Buffalo, St. Louis, and Charleston in the US. (In 1989 I personally witnessed a thyroidectomy at the Shanghai Medical Hospital[xii] where the only anesthesia was the qi from the qi kung master's hands.)

Baron Karl von Reichenbach

About 1850, Karl, Baron von Reichenbach, discoverer of paraffin (1830) and creosote (1833) confirmed polarities in animal magnetism (which he renamed 'odic force') and established its velocity thorough various substances; the velocity through copper was determined to be about four meters per second.[xiii]

Doctor John Kearsley Mitchell

From 1847 to 1852, John Kearsley Mitchell, then Professor Emeritus at Jefferson Medical College of Philadelphia, conducted a lengthy series of carefully blinded experiments that firmly placed the biofield in physics.[xiv] Mitchell demonstrated that the strength of the biofield decreased exponentially as the practitioner's hands were moved farther from the patient's body (p. 267 item 14) this is consistent with changes in field strength between components in electrostatic (capacitive) circuits when separated. He confirmed that stroking from the pain site out the extremities (see Greatrakes) drew out pain (pp 182-3), that downward passes induced mesmeric sleep and upward passes ended the state (p 165). He described the process as 'induction,' analogous to electromagnetic induction (pp .150-151). *"The mesmeric influence is the effect of what the natural philosophers call induction*[4]*.* As to whether healing was by effort of will – which was a subject of much debate – he concluded, *The will of the operator acts solely on himself; his altered system reacts by proximity on the subject of the experiment, by an unexplained power, analogous to the equally inexplicable induction of the mechanicians and the presence of the chemist.*[5]*"* (p. 270 item 26). His conclusion echoes the ancient Chinese dictum, *"Qi is the horse, and mind is the rider"* which clearly implies

[4] Elsewhere he describes induction as *"when an excited body* (i.e., electrostatic body) *without transmission of any known fluid in either direction, disturbs the electrical repose of adjacent bodies."*

[5] *"Presence of the chemist"* refers to the action of a catalyst in a chemical solution.

that the biofield is not will, but may be influenced by effort of will. Mitchell confirmed Mesmer's statement that the process was useful with *"affections of a nervous* (emotional) *character"* (p.271 No. 20).

S. A. Weltmer

By the end of the century, medical mesmerism had spread from coast to coast. For a time the practitioners who had called themselves "Professors of Animal Magnetism" changed the appellation to "Doctors of Magnetism", or "D.M."s to dissociate them selves from the "M.D."s. The most influential school of magnetic healing in the United States was in Nevada, Missouri. Begun ca 1892 as the American School for Magnetic Healing, it became the Weltmer Institute for Suggestive Healing following a Supreme Court decision upholding the Institute's right to postal service previously denied by the local postmaster.



PROF. S. A. WELTMER,
Originator of the "Weltmer Method" of
Magnetic Healing.

The Institute's principal text, *The Practice of Suggestive Therapeutics*[xv], specifies polarities of the hands and describes the slow passage of the effect*; "The hand with which he "sends" the current is called the "positive" hand and one with which he "receives" the current back again from the patient's body is the "negative" hand. … The operator will usually feel that at first the maneffluvial current*[6] *does not fully penetrate the patient's body, reaching from one hand to the other, but after a greater or less length of time he will feel the complete penetration has been affected. When this occurs the patient often speaks of feeling a heated zone through his body between the operator's hands, he will often experience relief from the painful symptoms simultaneously with the apparent establishment of the "circuit."* (p. 412). *In practice the hands are usually placed with the painful region between them, if possible* (p. 330). *The positive hand is usually placed higher on the body, and when over the spine, at a somewhat higher location than the position of the negative hand on the front of the body* (p. 331).

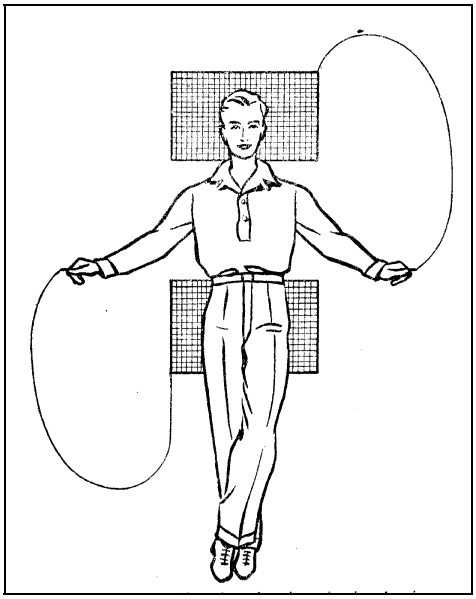
[6] Maneffluvial current. Synonym for "magnetism", "odic force", "animal or human electricity". (p 327-328).

"Mesmeromania" and the demise of Animal Magnetism

The Weltmer Institute ceased operating in 1926. (In a curious twist of fate, the building that housed the Institute is now a mortuary.) Medical mesmerism or 'magnetic healing' as it was known, became such a threat to allopathic medicine that a major effort was mounted to discredit it. The term: *"Mesmeromania: the insane devotion to mesmerism,"* was a standard medical term until the 1974 edition of Dorland's Medical Dictionary. (Fortunately, DSM-V does not continue the classification with the pejorative: '*Energymania*' although the assumption that we who believe are mildly delusional persists among many.) From then on, interest in medical mesmerism waned under the continuing onslaught of medical disapproval and the legal disenfranchisement of alternative medical practitioners. When it rose again it had lost its identity and its association with physics and acquired Eastern, Theosophical connotations. 'Medical mesmerism' and 'animal magnetism' were replaced by 'charkas' and 'energy' and the emphasis on healing shifted from the specific towards the supportive. The importance of specific hand placements for specific disorders as a therapeutic essential was superseded by a single imperative – the intention to heal. The importance of learning how the process worked in order to give better treatments reverted to a belief that some 'cosmic power' worked through the healer. In a reversal of the usual progress of science, physics gave way to superstition and the ship of science moved backwards, awash in such magical thinking as: *"I just put my hands on their body and the energy knows where to go and what to do"* – Hardly the stuff of science.

L. E. Eeman

But physics was not entirely lost. In 1947 L. E. Eeman showed the polarity through the arms and through the spine with his as 'Eeman screens' which produce a light mesmeric state trance state.[xvi] In so doing he unknowingly reaffirmed Reichenbach's discovery that the qi traveled through copper.



The Eeman Relaxation Circuit

The screens were not connected behind the body; the flow of qi from the right hand entered the base of the spine, moved upward and exited at the head, resulted in relaxation and light trance. Reversing the connections resulted in tension and wakefulness, instead of relaxation and light trance.

This brings us to the controversial article about Therapeutic Touch that appeared in JAMA. The article (JAMA, 1998: 279:1005-1010) detailed a novel method of proving that the biofield existed. The authors, not waiting for a response, claimed, *"Unrefuted evidence" that Therapeutic Touch practitioners could not perceive the field."* In the next issue, George Lundberg, JAMA's editor declared, *"This statistically valid study … found that such a field does not exist."* (JAMA 1989: 279:1064). No scientist would ever make such a statement – how can one 'prove' that something does not exist?

Description of the Study *"During each test the practitioners rested their hands, palms up, on a flat surface, approximately 25 to 30 cm apart . a tall, opaque screen with cutouts at its base was placed over the subject's arms, and a cloth towel was attached to the screen and draped over them.* (Figure 1.) *Each subject underwent a set of 10 trials. Before each set, the subject was permitted to "center" or make any other mental preparations deemed necessary. The experimenter flipped a coin to determine which of the subject's hands would be the target. The experimenter then hovered her hand, palm down, 8 to 10 cm above the target and said, "Okay." The subject then stated which of his or her hands was nearer to the experimenter's hand. Each subject was permitted to take as much or as little time as necessary to make each determination. Time spent ranged from 7 to 19 minutes per set of trials."* (JAMA, 1998;279:1005-1010.)

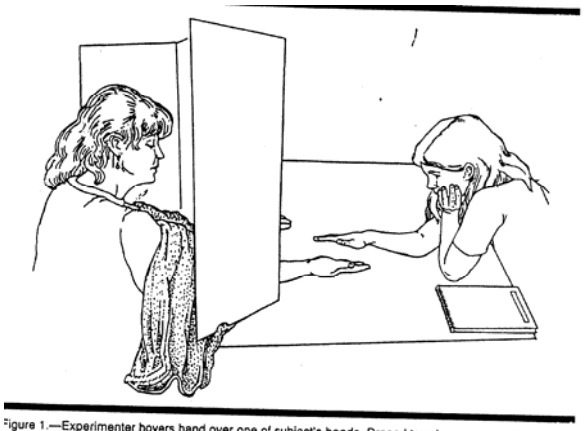


Figure 1.—Experimenter hovers hand over one of subject's hands. Draped towel prevents peeking. Drawing by Pat Linse, Skeptics Society.

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The participants correctly identified which hand was closest to the practitioner's in 123 of 280 trials (44%). From this the authors concluded that the participants "were unable to detect the investigator's "energy field." The study was roundly criticized from many perspectives. However, I was delighted; I had been looking for a method of proof that would be acceptable to the medical journals. JAMA had given it to me and I determined to use it. Its ironic that until published skeptics proposed the hands as valid testing devices, the journals had refused to accept the voluminous evidence that the hands were detecting something.

Being analyzed as a clinical study when it was not confounded the Rosa experiment. It was an experiment in physics, the fact that the field was correctly detected a portion of the time plus the unusual length of time necessary for each set of ten trials (7 to 19 minutes) indicted the field was present but its strength was

below the level of reliable detection. Many of the subjects' comments confirmed this. At the very least, the study should have been redone with another operator. I decided to redo the test with myself as the operator. What seemed like a simple project was to take three years.

The Revised Experiment. The primary objective was to test the assumption that the field presented in the Rosa experiment was below the level of reliable detection. If a higher score resulted from a comparable cohort with a stronger operator, it would prove that the field existed because if it didn't exist, all tests should score approximately the same. Secondary objectives were to determine (1) if there was a significant difference between subjects who had been practicing for several years and those who had begun practicing recently and (2) if different concepts and approaches to clinical usage materially affected hand sensitivity. Accordingly, the subject cohort was expanded to include Healing Touch™ (HT) practitioners and SHEN® Therapy practitioners. HT practitioners scan diagnostically and (most) believe that a concurrent mental process – willful intention to heal – is necessary for the process to be effective. SHEN Therapy is used primarily to release painful emotions, uncover the roots of emotional trauma and promote emotional growth. SHEN practitioners do not train in TT, do not scan diagnostically and do not believe willful intention to heal is necessary for the process to be effective. 37 HT practitioners and 17 SHEN practitioners were recruited.

Statistics

A total of 540 trials were performed; individual scores ranged from 3 to 10 of 10 correct. The HT group (N=37) had a mean of 5.08 with a standard deviation of 1.95. A 95% confidence interval around their mean is from 4.43 to 5.73. Since this interval includes the chance level of 5, the HT scores are not better than chance.

The ST group (N=17) had a mean of 6.00 with a standard deviation of 1.70. Their 95% confidence interval runs from 5.13 to 6.87. The ST group is significantly above chance.

Lakewood, CO	06/23/1999	5 subjects tested, (HT) aggregate score 54% correct
Kauai, HI	01/22-24/2000	32 subjects tested, (HT) aggregate score 50% correct
San Diego, CA	01/29/1999	11 subjects tested, (SHEN) aggregate score 60% correct
Sausalito, CA	02/06/2000	6 subjects tested, (SHEN) aggregate score 60% correct

Primary Objective: The 44 % increase in scores over those in the Rosa study by both HT subjects (50.8% correct) and SHEN subjects (60% correct) confirmed the hypothesis that the biofield offered in the Rosa study was below the level of reliable detection. This was corroborated by the decrease in time required to

complete the trials as all HT and SHEN subjects completed the trials in less than 6 minutes, far less than the range of 7 to 19 minutes in the Rosa trials.

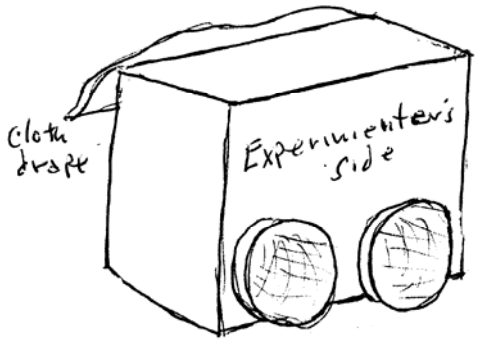
Secondary Objectives: (1) We found no significant difference in scores between subjects who had been practicing for several years and subjects who had begun practicing recently. (2) The greater score of the SHEN practitioners over HT practitioners (20% increase) indicated that developing the flows through the arms results in increased ability to detect the biofield.

Numerous experiments were made to confirm reliability of the design, improvement of individual subjects results over time and to eliminate the possibility of heat and passage of wind being the detected factors.

Redesigning the Study. Several participants volunteered, either during the trials or afterwards, that they had difficulty in determining which was the closer hand *because they felt the biofield with both their hands throughout the trials*.

Given that the field spread from my hand appeared to be reaching both of the subject's hands, it was unlikely that increasing the strength of the biofield alone would increase the scoring any considerable amount. It was going to be necessary to isolate the subject's hands from each other.

Electromagnetic Shielding. Faraday "sleeves" were constructed to electro-magnetically shield the subject's arms from each other.[7] Two large oval sleeves (10" wide by 14" tall) were constructed from standard 18-mesh brass screening used in screen rooms. (See drawing.)#The sleeves were connected with electrical jumper wires and were large enough to contain the subject's hands and arms resting on an elevated pad as well as my hands, which I placed 7#fp #deryh#bqg#7#fp #ehorz#zklfkhyhu#ri#wkh# vxemhfwv#kdqgv#¡#zrxog#bwhp sw#r#diihfw



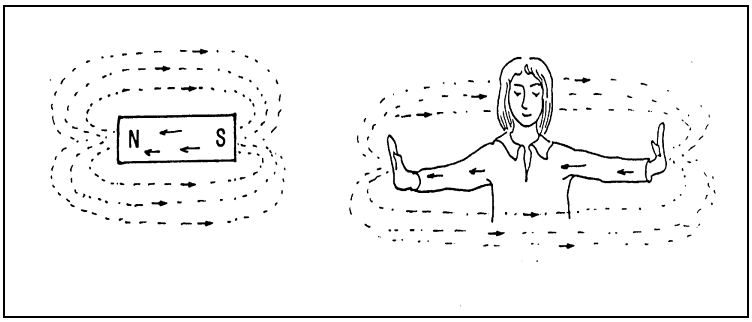
Sleeves constructed of 14 x 18 mesh brass screen

In addition to isolating the hands from each other, I decided to increase the strength of the emitted field at my hands by bringing both my hands into play to concentrate the bioflux between them, similar to the way flux concentration is accomplished with small magnets.

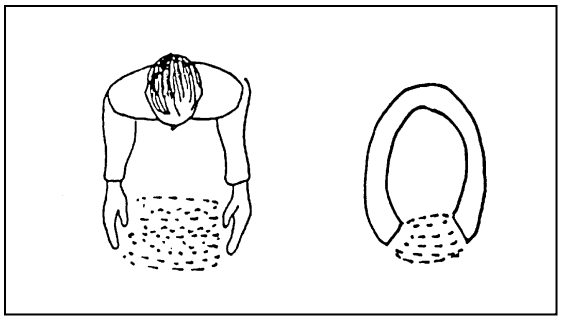
[7] The sleeves are an adaptation of the Faraday cages, or 'screen rooms' used to isolate electronic devices from outside electromagnetic influences when being tested.

Concentrating the biofield to increase its strength.

A well-known method of increasing a simple magnet's field intensity is to bend the magnet into a horseshoe shape; this concentrates the flux and increases the field strength between the poles. Likewise, bringing my hands into closer proximity increases the intensity of the biofield.



Magnetic field is diffuse as is the bioflux, (qi) that passes from one hand to the other



Bringing the hands together intensifies the biofioflux (qi)
just as forming a horseshoe magnet intensifies flux

Subjects. Twenty-seven ST practitioners, practitioner trainees or novice members of SHEN workshops were tested for a total of 270 trials.

During this phase of the experiment both modifications were used. The subject's hands were enclosed in the faraday sleeves and I placed one of my hands below the subject's and the other above, to intensify the field being detected. Compared to the earlier tests, their responses were quick and firm, often spoken as the buzzer was still sounding.

Results. Individual scores ranged from 6 to 10 correct for a total of 253 out of a possible 270, with a mean of 9.37. (See chart) Completion times for the sets of 10 had again shortened, now ranging from 40 seconds to a maximum of 3 minutes.

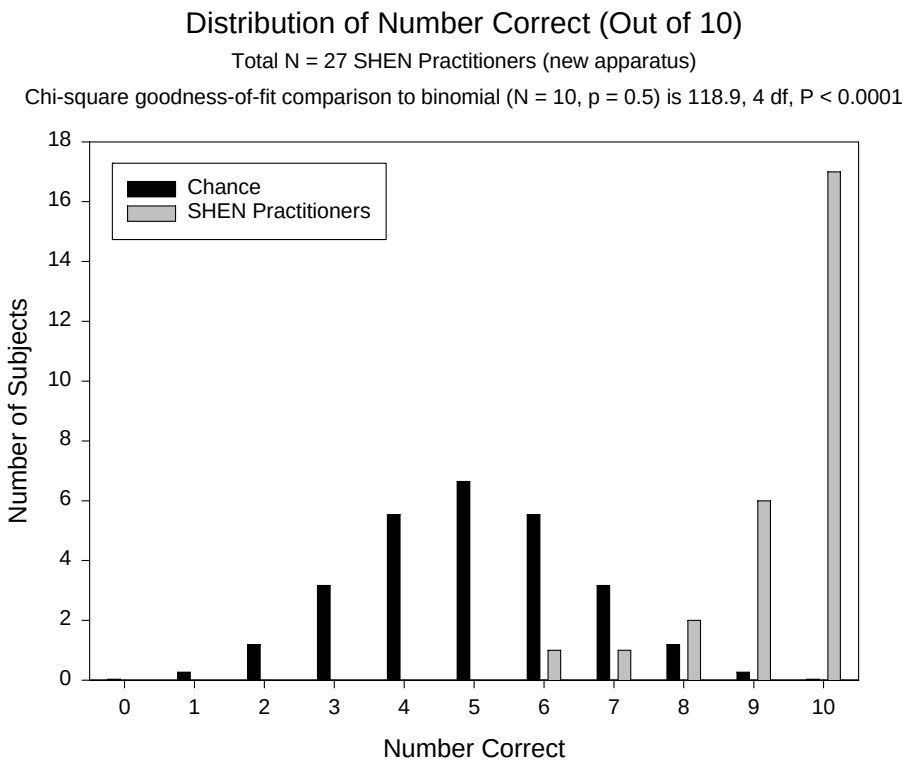
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Scoring of the Results

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Several subjects met me to add to the numbers of those tested with the Faraday sleeves. None of the first six who practiced sensing my hands before the test could feel my hand at all. (This was standard procedure before the tests to establish a sensitivity baseline.) I was stumped at first, then realized that the humidity that day was very high – and high humidity kills static electricity; it had degraded the biofield to where it was too low to be reliably detected.

The trials were postponed to allow the humidity to decrease.

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The Biofield and DC Electromagnetic Fields

When I first began studying the biofield I thought it couldn't be electromagnetic but something similar. In part this was because the sensation of the circuit completing between my hands took as long as several minutes to occur. Electricity (I thought) traveled much faster than that. I tried but was unable to measure the biofield with sensitive electrical voltmeters and was unable to affect delicate magnets. However, as time went on I began to think that I might be wrong. No single event convinced me but one stands.

In autumn of 1989 I was outside Beijing, China attending the first training course in Medical Qigong that had been officially approved for foreigners. The air around Beijing was filled with fine coal smoke particulates; on cool, late autumn days this combination produces a distinct quality to the atmosphere that I have never experienced anywhere else.

Late one afternoon, as it was darkening, a group of Taiwanese students were practicing quick, closely spaced hand movements, playing with the qi from their hands in the chill air of the courtyard. As their hands flashed past each other faint sheets of bluish white light, very similar to the soft glow of the aurora borealis, glimmered briefly between their fingertips. I tried it myself and to the amazement of the Taiwanese, who thought that only Orientals had qi in their hands, produced distinct flashes between the fingers of my right hand and the fingers of my left. Like the borealis, there were no sparks, only the electromagnetic effects appearing in the cold air.

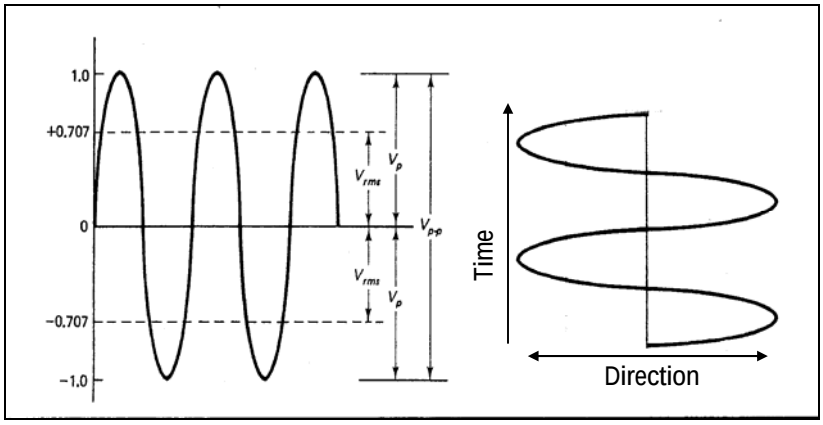
By the time I began the experiments detailed here, I was pretty certain that the biofield was an electrical phenomenon. The effects of the Faraday sleeves seemed to confirm it. The feeling of electrical stimulation when I inserted my arms into the Faraday screens, the fact that they blocked the qi from passage and the fact that they appeared to reflect the qi from my arms by containing it, all were know effects of Faraday screens with electrical fields. The effects of humidity convinced me but I still couldn't measure it or prove it.

Measuring DC in the Biofield

What I needed was a highly sensitive meter capable of detecting low-level static electricity. Measuring static charge is difficult as the charge can disappear in the measuring process. (When you use a meter of this type, it becomes part of the circuit and uses up the tiny mount of electrical power that is available every time it is activated.) It took a while to find a suitable one, one that I could afford. On October 13th of this year, I had my son bring the sensing end of a Monroe Electronics Static Locator Model 281 to each of my hands in turn, which were inside the Faraday screens. The potential (voltage) of the qi was too low to measure numerically, but the polarity indicator switched from negative to positive as he moved the meter from one of my hands to to the other hand. The relative humidity was 38%. We tried it again the next day when the relative humidity was 27% and got the same polarity indications but this time brief numerical readings as well. But it was enough, enough to establish that the biofield is a low power static or capacitive field.

There are three basic sources of electricity: Faradism (electromagnetic), Galvanism (electrochemical) and Franklinism (electrostatic). There are two types of voltage: alternating current (AC) and direct current (DC).

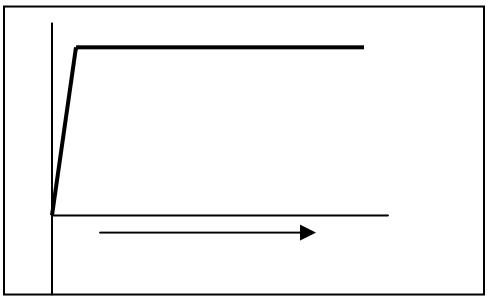
Differences between AC and DC



Classic representation of alternating current voltage (AC)

Reversal of current along a wire in an AC circuit.

The frequency that AC alternates can range from one cycle (once back and once forth) per second to billions of cycles per second. Household AC reverses is direction 60 times per second (60 hertz). The highest frequencies usually found in homes are TV satellite signals which are in the 12-gigahertz range (voltage reversal is 12,000,000,000 hertz, or 12 billion times per second).



Voltage rise and stabilization in direct current (DC)
Direction is continuous in a direct current circuit.

The voltage in DC circuits remains constant and pushes the current in one direction. DC fields do not radiate very far and cannot be amplified. A large DC voltage builds up between the clouds and the ground until it is dissipated by a lightning strike. It is DC that builds up if you shuffle your feet across a carpet on a cold day of low humidity. Battery powered devices are DC although their DC may be converted to AC.

Combining AC and DC

AC and DC can be combined into a direct current that varies its amplitude but the combination remains DC, that is, it does not reverse direction.

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Electrical charge, physical tension and stress. Both medicine and psychology recognize the effects of 'tension' and 'stress' of the body and its ability to function and are aware that these words are used in discussing the physics of mechanical structures but few realize that physics is at work in the human body when we are 'stressed' or under 'tension.' Any time there is a physical distortion to any material, there is a microcosmic shift to the electrical tension in that material. This applies equally to the steel in a suspension bridge and to biological material in humans. To either elongate or compress, the molecule has to distort slightly and the distortion results in changes in electrical charge at the surface of the different elements. Now, how exactly does stress manifest at the sub-molecular level? It distorts the electron orbits around the nucleus of the atoms within the molecules, distorting the molecules and changing the surface charge of the molecules. The amount of distortion is dependent upon the inherent elasticity of the specific material and the results will vary according to the purpose of the bodily tissue involved.

Small electrical charges play an important role in normal biological activity. Although much of this is through ion exchange across cell walls, a review of the standard texts suggests several explanations for interactions between the biofield of the practitioner's hands and the internal organs of the receiver.
One place where the application of minute amounts of direct current has an effect is at the gap junctions that play an essential role in many types of cell-to-cell communication, especially in sheets of smooth muscle tissue which is found in the walls of all hollow internal structures – the organs, the digestive tract where it regulates phasic relationships between contiguous muscles, and the blood vessels.
The walls of all internal organs are composed of self-excitable smooth muscle tissue, oriented into sheets of aligned, interconnected cells; the sheets are laid at right angles to each other. Electrically cross-coupled; phasic action is synchronized through specialized cell junctions called gap junctions. Because of their very low resistance gap junctions act as virtual electrical synapses, with an initial stimulation causing contractions to cascade across the sheets.[xvii, xviii, xix, xx, xxi] Since it is not necessary to separately stimulate each cell to make the entire sheet contract, a very small external initiating DC signal will have a major effect, spreading rapidly across the entire sheet in a contiguous ripple.

> *I have observed, countless times when working with patients with poor gut motility, that when I place my sending hand behind a section of the colon, and my accepting hand opposite it on the front, (much like Mesmer originally taught) that peristalsis is activated in the region of the colon between my hands. As I move my hands along the colon in similar paired placements, peristalsis occurs at each new site where I place my hands.*

Operation of the baroreceptors on the aortic arch and carotid arteries that control blood volume and pressure is also dependent on smooth muscle tissue where slight changes in electrical stress because of the changes in pressure to the surface of the muscle tissue produce a direct reaction.

Stress and tension in local wound swelling and other edema. A similar model can be constructed to account for the rapid release of intercellular fluid in wounds and inflamed and swollen joints, a phenomenon observed by all practitioners of biofield therapeutics.

The inrush of blood and healing fluids to the injured area overpowers the ability of the lymphatic and venous systems to remove the increased volume of waste products from the region and the local tissue swells because of its elasticity. The local swelling itself produces tension, which, in turn, is reflected in the electrical charges at the surface of the cells that make up the lymphatic and venous tubules. This increase in charge prevents the passage of the like charged molecules of waste material. Application of the slight electrical charges from the practitioner's hands offsets the electrical tension in the cell walls of the tubules and the waste products are then able to flow, reducing the swelling and thus promoting the flow of new healing fluids to the damaged tissue.

> *Decrease in swellings and edema can be quite rapid; I have watched the outline of the kneecap return to badly swollen knees outline of the kneecap could no longer be discerned within a few minutes after my hands have been held across the knee.*

Voltage Clamps. The subject is far to large to examine in this presentation but the use of Hodgkin-Huxley voltage clamps illustrate how small outside DC potentials can affect cellular transport mechanisms by influencing membrane potentials.[xxii,xxiii] There has been at least one study in which a Chinese qigong master directly altered the current flow action of clamped rat neuron cells through application of his qi.[xxiv]

Speed of the qi moving through the body. One might question why the DC travels so slowly from hand to hand, through the recipient's body. We think of electricity as moving at the speed of light, however, this is only the case when it is in a vacuum – the electrical resistance of the material it passes through determines the actual speed of electricity. Movement though bodily tissue involves transiting cell walls where it is carried across cell walls largely through ion exchange, a relatively slow process. Spreading Depression is an example of the slow movement of small electrical charge in bodily tissue.

The term Spreading Depression refers to the severe suppression of spontaneous activity that spreads outward in all directions from the source in the cortical brain following a brief electrical excitation. The

spread rate, about 3 mm/minute, is even slower than the transmission effects observed between the hands during a biofield procedure.[xxv]

IN CONCLUSION

In closing, I believe that we have enough evidence to speculate that the biofield is likely to be a field in physics with the characteristics of an electrostatic or DC fields. Of course, this needs to be confirmed through further research. Most of the research needed is well beyond my financial capabilities, but not beyond my vision. I am already planning to replicate the experiments with the Qi Kung master, I would like to get my hands on, or into, a NMR chamber – especially around someone's head, I need more sensitive electrostatic detectors, I need more time – and I'd like a little help.

There is a lot to be done.

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