

Victoria University

BIOFIELDS: Their Detection, Measurement & Behaviour

by

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## ACKNOWLEDGEMENTS

This proposed research project represents the distillation of my deep abiding interest and active involvement in the broad spectrum of the biosciences, most particularly those aspects relating to bioenergetics. As such, this topic has the scope that allows me to bring into play aspects of my studies over the years in biochemistry, physics, electronics, computing, communications, the health sciences and martial arts.

Accordingly, I respectfully acknowledge my appreciation to the many souls who, wittingly or otherwise, have shared of their time, energy, knowledge and wisdom, thereby contributing to the realisation of my endeavours..

In the specific context of this study, I wish to express my gratitude to: Dr. Steve Selig for his central role in enabling me to pursue my present course of studies at a Master's level; Garry Francis-Pester for recognising my capabilities, and pointing me in the right direction; Chris Lerner for his patience, sense of humour, advice and encouragement; and most especially, Simon Lim, who has served as my esteemed mentor, guide and teacher over the years.

## ABSTRACT

Biofields - what are they; how can we detect and accurately measure them; and what maps or models can be used to adequately account for, describe and predict their properties and behaviour?

Biofield research is currently in its infancy, having received scant serious consideration over the course of the last century from the practitioners, propounders and researchers of the empirical scientific orthodoxy. Major advances in theoretical and practical chemistry during this period, have been instrumental in creating a scenario in which life has come to be defined purely as a chemical reaction. However, concomitant with the development of sophisticated and sensitive electronic instrumentation, has arisen a greater appreciation of the role (potential and real) that electromagnetic (EM) factors play in biologic processes.

Whilst research in the area of bioelectricity has yielded some significant and thought-provoking data, no satisfactory theoretical models have been propounded to account for the associated experimental observations in relation to biofields. In the author's view, the prevalent assumption that a biofield is wholly or primarily an EM phenomena may be unwarranted, unproved and untenable, hence any efforts to quantify and define biofields in terms of their associated measured electropotentials and EM fields may be beside the point or even misleading.

Accordingly, the aims of the proposed research are three-fold, namely to:

1. Demonstrate unequivocally the existence of a force field (biofield) associated with the living human body, via the mechanism of 'force at a distance'.
2. Present an hypothesis that seeks to account for this biofield phenomena by way of:
  - a. A comprehensive survey of the pertinent literature, both classical and contemporary, in the electrical, physical, biomedical and cybernetic sciences; and in the Oriental healing / martial arts, in particular TCM (traditional Chinese medicine), yoga, tai chi and qigong;
  - b. Comparative studies of physiological 'maps' of human biologic processes and functions from the perspectives of these sciences, philosophies and arts in order to identify correspondences and commonalities;
  - c. Personal (subjective) understandings gleaned from over 30 years of study (formal and otherwise), research, teaching and working as a health practitioner.
3. Present ideas and propose stratagems for further research, particularly with regard to the design and implementation of biofield detection and development strategies, and for the construction and calibration of biofield sensors.

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## BIOFIELDS: THEIR DETECTION, MEASUREMENT and BEHAVIOUR

### INTRODUCTION

Biofields - what are they; how can we detect and accurately measure them; and what maps or models can be used to adequately account for, describe and predict their properties and behaviour?

In the 1930's, the electrobiologist Harold Saxton Burr formulated the concept of the '*bioelectric or electro-dynamic field*', which he defined as an EM field generated by the sum total of electrical activity of all cells in the organism, and which is the basic blue-print of all life.<sup>1</sup> Accordingly, biofields have been conceptualised by default as being purely EM phenomena, and are quantified in the magnetic field units of Gauss (Gs).

However, the assumption that since this field has an EM spectral component, that it is therefore primarily or wholly an EM phenomenon, may be unwarranted, unproved and untenable — the miniscule EM fields radiated by musculoneuronic electrical activity may merely be a secondary process, EM shadow or artifact of an organism's biofield. To quote prominent electrophysiologist, Albert Szent-Györgyi von Nagrapolt, who received the 1937 Nobel Prize for Physiology for his work with biological metabolism, '... it looks as if some basic fact about life is still missing, without which any real understanding is impossible'.<sup>2</sup>

As attractive or potent the biofield concept may be, without substantiation by means of its detection, measurement and subsequent analysis, we remain unable to make any progress in formulating definitive systemic behavioural models.

Biofield (as opposed to bioelectric) research is in its infancy, the first instance of biofield detection occurring in 1963,<sup>3</sup> consequently there is a paucity of credible published data to work with or refer to. This lack of data may be attributable in varying degrees to: (a) Technological limitations; (b) scientific bias; and, (c) faulty hypotheses. Following is a discussion of each of these factors in turn.

#### TECHNOLOGICAL LIMITATIONS

Currently available laboratory instruments capable of measuring bioelectromagnetic field activity are cumbersome, fragile, expensive and relatively insensitive. In sharp contrast to the relative ease with which bioelectric surface potentials, or neuromuscular ionic conduction processes may be measured (having magnitudes typically in the range of millivolts), biomagnetic sensors require super-cooled, ultra-high precision, state-of-the-art electronic components.<sup>4</sup> This problem is further complicated by the following considerations: (a) the typical human EM field is so miniscule ( $\sim 10^{-9}$  Gs) as to be almost

<sup>1</sup> Burr HS. Blueprint for Immortality: The Electric Patterns of Life. London: Neville Spearman, 1972.

<sup>2</sup> Koranyi lecture in Budapest, 1941.

<sup>2</sup> Koranyi lecture in Budapest, 1941.

<sup>3</sup> Baule GM, McFee R. 1963. Detection of the magnetic field of the heart. Am. Heart J. 66:95.

<sup>4</sup> The SQUID Magnetometer, based on the superconductive properties of Josephson Junctions, yielded definitive proof of the existence of a biomagnetic field. Specialised application of this technology is the magnetoencephalogram (MEG), which has revealed two kinds of biomagnetic fields: high-frequency alternating current (AC) fields associated with neural and muscular currents: and, a steady DC perineural system field of  $\sim 10^{-9}$  Gs.

undetectable; (b) this faint EM field is swamped by the background terrestrial magnetic field (~ 0.6 Gs) which is almost a billion times its magnitude; (c) considerably exacerbating this situation is the ubiquitous presence of the far more powerful and chaotic EM fields radiated by the machinations of *homo electrus* (sic).

#### SCIENTIFIC BIAS

The empirical sciences have maintained a skeptical, dismissive or even hostile stance to the proposition of the existence of forces that can neither be measured by, nor explained in the terminologies of biochemistry, electronics or physics. Accordingly, biofields are conceptualised by default as being purely EM phenomena. In addition, the popularity, utility and successes of biochemistry's molecular model of biologic processes has created an antipathy to research focused on its EM aspects. This 'chemical conspiracy' insists that all bioactivity can be ascribed to, or described in chemical terms, in the wake of which life itself has come to be viewed and defined purely as a chemical reaction.

#### FAULTY HYPOTHESIS:

The assumption underpinning much biofield research (and subsequent experimental data interpretation) is that since this field may be described in EM terms, that it is therefore primarily or wholly an EM phenomena, hence is also explicable by such. In this author's view, these assertions or assumptions may be unwarranted, unproved and untenable; the almost immeasurable EM fields radiated by musculoneuronic electrical activity may merely be a secondary process, EM shadow or artefact of an organism's biofield.

Certainly, consideration of the living body from the viewpoints of the electrical sciences and solid-state physics has unquestionable merit. Adopting these approaches facilitates the conceptualisation of bioelectric circuit maps and models with which we can describe or postulate biofield behaviour. A number of theoreticians have endeavoured to prove mathematically that biofields are EM phenomena.<sup>5</sup>

Electrodynamic and electrostatic manifestations or mechanisms occurring in, utilised by or generated by the body are multifarious, and include: ionic; electrophoretic (colloidal); perineural (neural sheath) DC (direct current); ferromagnetic; piezoelectric (as evidenced in the collagen matrix of bone); digital (binary flip-flops working on the principle of synaptic event registers/counters); bioluminescence; superconduction at room temperature;<sup>6</sup> and semiconductor junction (diode) behaviour. Of these, the DC perineural circuitry — possibly acting in concert with biological semiconduction mechanisms — has come to be regarded as the most significant source, detector or modulator of biofield activity.<sup>7</sup> Research conducted by Frank Brown and Rutger Wever demonstrated the major role played by the geomagnetic field in regulating DC systems control of body function, the partial interpretations of which are that: (a) the DC perineural system confers organisms with the ability to sense EM fields;<sup>8</sup> and (b) the oft noted 10 Hz micropulsation in the geomagnetic field is probably the primary

<sup>5</sup> Detela A. Physical Model of the Biofield. Ljubljana, Slovenia: J. Stefan Institute, 1997.

<sup>6</sup> Cope FW. Evidence from Activation Energies for Superconductive Tunnelling in Biological Systems at Physiological Temperatures, *Physiol. Chem. and Physics* 3, 1971, pp. 403-10

<sup>7</sup> Becker R, Marino AA. *Electromagnetism and Life*: State University of New York Press, Albany 1982.

<sup>8</sup> Brown FA. 1960. Magnetic response of an organism and its lunar relationship. *Biol. Bull.* 118:382.

determinant of biological cycles.<sup>9</sup>

An important characteristic of field physics is *resonance*, this property enabling the transmission of energy and information at low power over long distances. In essence, resonant behaviour effectually couples discrete, similarly-tuned bodies, thus facilitating the communication of information between them. Within the context of biofields, the concept of resonance has profound implications, both with regard to ontology in general, and to the bio-cum-health sciences and parapsychology in particular. In that vein, it is not beyond the bounds of credibility that the well documented phenomena of telepathy, dowsing, psychokinesis (PK), and psychic healing practices may operate via the mechanism of modulated biofield transmission / reception utilising the principles of resonance.

Biofield strength being some eight orders of magnitude less than that of the earth's field, it has been proposed that transceiving at such low power could function effectively via the mechanism of organic circuit-analogues tuned to operate in the ELF (extremely low frequency) EM bands.<sup>10</sup> This would be facilitated by the fact that ELF transmissions in the 0.1 to 100 Hz waveband - in particular and most markedly, frequencies around 10 Hz - exhibit anomalous behaviour due to their resonant interaction with the ionosphere, thereby enabling the transmission of these wavelengths over large distances with minimal attenuation.

The significance of this anomaly becomes apparent when one considers that all terrestrial life forms have been observed to either: (a) exhibit a 10 Hz EM resonance peak (which is exemplified by the fact that this is the dominant EEG [ $\alpha$ ] frequency of all animals) or; (b) to be extremely sensitive to this frequency.<sup>11</sup>

The arguments in favour of the hypothesis that biofields are essentially the product of perineural DC activity are certainly compelling. Nevertheless, serious objections may be raised in the following respects:

Soviet research has been conducted intensively into parapsychology since the 1930's, usually with the intention of disproving the existence of forces or factors that run counter to the mechanistic, materialist ideology of the USSR. A number of these state-funded research institutes have generated a wealth of data pertinent to biofield science, the consensus of which (inferred or stated) is that parapsychological phenomena are not necessarily dependent upon EM, nor are they accompanied, caused or modulated by EM.<sup>12 13</sup> The most notable documented exception to these findings has been in tests conducted on

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<sup>9</sup> Wever R. 1974. ELF effects on human circadian rhythms. In ELF and VLF electromagnetic field effects, ed. M.A. Persinger. New York: Plenum.

<sup>10</sup> Becker R, Selden G. The Body Electric: Electromagnetism and the Foundation of Life. New York: Morrow, 1985.

<sup>11</sup> Cole FE, Graf ER. 1974. Pre-Cambrian ELF and biogenesis. In ELF and VIF electromagnetic effects, ed. M.A. Persinger. New York: Plenum.

<sup>12</sup> Ostrander S, Schroeder L. Psychic Discoveries. New York: Marlowe & Company, 1997.

<sup>13</sup> Balanovski E, Taylor JG.. Can Electromagnetism Account for Extra-Sensory Phenomena? Nature, 276:64, 1978.

individuals manifesting marked PK ability, in which instances strong EM activity (accompanied by extremely high metabolic rates) was recorded.<sup>14</sup>

Without doubt — assuming Soviet bloc research could be substantiated — the most conclusive and incontrovertible evidence presented to refute the EM biofield hypothesis, would be the positive results obtained from experiments that were reputedly conducted in EM shielded environments (i.e. Faraday Cages and submarines).<sup>15</sup>

Research conducted in other countries has similarly failed to find any evidence of heightened or significant EM activity associated with successful telepathy experiments. Some of the most rigorous, determined and technologically sophisticated experiments that were ever conducted in order to resolve this issue, were staged in 1982 by R. G. Jahn, Dean of Engineering at Princeton, who reported that:

‘... the accumulated evidence of psychic phenomena ... compound to a philosophical dilemma ... [and that] effects inexplicable in terms of established scientific theory ... are frequently and widely observed’.<sup>16</sup>

Refutation, in part or toto, of the EM hypothesis would certainly create a conceptual vacuum (in the absence of other plausible and experimentally verifiable hypotheses). In that regard, we are left with a range of proposed possible mechanisms, none of which may be satisfactorily explained or expressed in the terminologies of, or according to the tenets of mathematics, physics, electronics, chemistry or cybernetics.

These alternative hypotheses that purport or propose to account for the biofield and its behaviour include: Tachyon theory (theoretical faster-than-light particles / waves);<sup>17</sup> Plasma fields;<sup>18</sup> Toroidal knots (based on particular chiral solutions to Maxwell’s equations);<sup>19</sup> Magnetic monopoles; and, Oriental bioenergy maps.

As fascinating as these alternate theories may appear, we currently lack the means to satisfactorily prove or refute them, as such they are unprovable abstractions. However, unprovable does not necessarily imply untrue, hence rather than adopting an approach to this problem from the perspective of theoretical veracity, it may be more rewarding to take a practical stance. In other words, gathering meaningful data is the necessary prerequisite to formulation - herein lies the most immediate and significant challenge.

Given the contention of this research proposal that the EM component of the biofield is secondary, negligible and problematic to measure, the question is raised as to which other sensory devices may be reliably employed? In this regard, and as a result of the author’s studies and research spanning some

<sup>14</sup> Sergejev G, Pavlova L. Statistical Method of Research of the Human EEG, Leningrad: Academy of Science USSR, Science Publishing, 1968. Russian.

<sup>15</sup> Ostrander, pp. 31-2

<sup>16</sup> Jahn RG. The Persistent Paradox of Psychic Phenomena: An Engineering Perspective, IEEE, Proceedings, 70:136, 1982.

<sup>17</sup> Karlins M, Andrews LM. Biofeedback: Turning on the Power of Your Mind. London: Sphere Books, 1975. pp 73

<sup>18</sup> Inyushin VM. Bioplasma: The Fifth State of Matter, in Future Science, eds. White, J. and Krippner., S. Garden City: Doubleday / Anchor, 1981.

<sup>19</sup> Detela A. Physical Model of the Biofield. Ljubljana, Slovenia: J. Stefan Institute, 1997.



thirty years, the assertion presented herein is that the most sensitive biofield detector currently available — which although difficult (or even impossible) to calibrate objectively and in absolute terms — is another biofield. Furthermore, arguably the most sensitive one to hand is precisely that — a “sensitive” hand.

Such a contention is not without its supporters. Indeed, several millennia of well documented research and practice in the field of oriental biomedicine reveals the central role of the trained hand in both physiologic diagnosis and clinical treatment.

According to the fundamental precepts of TCM and its near relatives in the oriental medical arts, there is a subtle energy that permeates living cells and tissue. This energy, which is variously known as *ch'i*, *ki* or *prana* in the respective biomedical terminologies of China, Japan and the Indian subcontinent, may be translated as ‘life force’. It is conceptualised as having distinct pathways or channels of distribution, mechanisms of generation, storage sites and behavioural characteristics.<sup>20</sup>

The practitioners of TCM assert that this energy flows through and between three major channel networks of *Meridians*, namely the: *Internal* – interconnecting the organs; *Peripheral* – occurring in the dermal layers; *Connecting* – which link the internal and peripheral networks.<sup>21</sup>

Whilst from the above description it may seem that this bioenergy is constrained to behave as a fluid, flowing within fixed channels, its behaviour may be more aptly portrayed as being wave-like and radiative in nature. In that respect, an organism’s biofield may be considered from the viewpoints of the electrical and communications engineer as being the resultant of: (a) internally generated and directed, narrowcast force fields that permeate an organism (analogous to microwave relays interlinking a network); (b) a broadcast component consisting of coherent directed transmissions, as well as a diffuse radiated field; (c) external sources received by the organism, that it either ‘bathes’ in, or that modulate the host’s field by way of resonance (akin to tuning in).

Of particular relevance to this study is the role of the hand as portrayed in Meridian Theory.<sup>22</sup> According to TCM, the hand is the confluence of many *acupuncture* (i.e. bioenergy) channels, with virtually half of the body’s major meridians either terminating in, or originating from the hand. Furthermore, the hand allegedly functions as the major point of bi-directional energy transfer and sensory interface between organism and environment.<sup>23</sup>

Aside from the hand, there is also the possibility of utilising other biological materials for the purpose of biofield detection and metering. Documented research into plant based metering devices has been conducted in earnest by private individuals over the last fifty years, these devices being generally based on biocircuits incorporating plants wired up to EEGs (Electroencephalograms) or Polygraph recorders.<sup>24 25</sup>

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<sup>21</sup> Mann F. *Acupuncture: the ancient Chinese art of healing*. New York: Vintage Books, 1975.

<sup>22</sup> Yang, JM. *Chinese Qigong Massage*. Boston: YMAA Publications, 1993.

<sup>23</sup> Brennan BA. *Hands of Light* Bantam :Doubleday Dell, 1993.

<sup>24</sup> Bose JC. *Plant Response as a Means of Physiological Investigation*. London: Longmans & Green, 1966.

<sup>25</sup> Adamenko V. *Living Detectors*, Technika Molodyezhi, No. 8, 1970.

Nor is there any reason to restrict biosensor-based devices to plants; it may be feasible to utilise yeast cultures (or other monocultured microorganisms) linked to electronic transducers. Indeed, taking this approach to the next logical step, it may soon be feasible to genetically engineer organo-crystalline polymers based on long-chain lipoproteins, such macromolecules functioning as living solid-state instruments. The most immediate advantages offered by this type of instrument (in comparison to manual monitoring) would be those of objectivity and comparative accuracy of calibration.

The author's interest in biofield science stems from an intensive and extensive background, spanning some thirty years, as a practitioner and teacher in the modalities of complementary and alternate medicine (CAM). The major areas of specialisation undertaken during this period have been in the study and application of taiji, acupuncture, qigong and yoga for the purposes of therapy, health promotion and performance enhancement. In addition, relevant ancillary formal studies include two years of study towards degrees in Electrical and Communications Engineering (Monash University); post-graduate courses in Computer Programming and Instrument Technologies (Latrobe University); Vicfit Fitness Instructor certification; and current studies towards a M. App. Sci. in Exercise Physiology (Victoria University).

The attraction to the Oriental biosciences has been largely due to their practices and philosophy being based on the concept of bioenergy — its origins, organic manifestations, behaviour and pathways — and the subsequent application of this knowledge through the mechanism of techniques designed to develop and channel these energies, whether for martial or medical purpose.

As such, and as the result of having worked with and trained other people in the direct perception of biofields, I have come to the conclusion that the use of external devices for monitoring is largely self-defeating. Far from facilitating the process, these instruments are likely to distort and attenuate the very signals that they endeavour to monitor. The proponents of the technological approach cite the necessity of objectivity. However, the myth of objectivity, as applied to the behaviour of complex, interactive dynamic systems, was laid to rest early last century by Heisenberg and the other pioneers of quantum mechanics. Despite this, the biological mechanics and mechanists still cling to their outmoded fundamentalist doctrine of empirical objectivity enshrined in the discrete, isolated reaction in vitro and vacuo.

Accordingly, the underlying purpose and ultimate significance of this research proposal is not to merely add yet more data to the knowledge banks of academia, but, by way of reasoned argument, common sense and effective practical demonstration, to bring to the attention of the scientific, medical and lay communities the existence of forces, factors and approaches that have been too long denied, decried and dismissed.

The *forces* referred to in this regard are the bioenergies, the intrinsic activities of which give rise to the biofield; the *factors* are the principles, and associated extrinsic practices and agents that affect the behaviour of the field; and the *approaches* are the means of field detection, monitoring and communication.

In short, the real challenge is to put both expert and layperson alike, back 'in touch' with the most sensitive, subtle and adept biofield instrument currently available — the human hand. Inherent in this challenge is the need to develop and implement appropriate practical strategies for enhancing manual acuity, in concert with instructional programs designed to develop the necessary interpretive and diagnostic skills.

The benefits accruing from the development and dissemination of such programs are so obvious as to need little in the way of elaboration. Suffice it to say that an organism's biofield is a direct indicator of the organism's state of health, in the light of which, diagnosis is greatly facilitated by the ability to monitor that field. And the fact that no equipment is required to perform that task has to be regarded as a highly desirable financial bonus, particularly in this day and age of spiraling health care costs and diminished returns.

## LITERATURE REVIEW

Human biofield research, although in its infancy as far as contemporary biomedical science is concerned, has been conducted by physicians, shamans, priests and mystics from many cultures throughout the ages. This is amply evidenced by the considerable body of literature (and oral transmissions) that purports to describe, map and explain bioenergy in terms of its origins as well as manifestations. As a result of their investigations and experiments, a variety of sciences (and pseudosciences) each replete with its own instruments, body of knowledge, observations and methodologies, has postulated theories to reconcile their observations to reality (or vice versa).

The discovery of electricity — and subsequently over the last few centuries the means of its generation and storage — excited the imagination of scientists and the public alike. So much so, that this phenomena received serious consideration from a number of eminent personages, both philosophers and scientists, as constituting the '*élan vital*', kiss of life, or vitalising force that animates inert matter, thereby leading rapidly to electricity's incorporation into the field of medicine.

### BIOELECTRIC RESEARCH: AN HISTORICAL TIMELINE

- 1570 — William Gilbert demonstrated the electrostatic forces produced by rubbing different substances together, naming them 'electrics', and suggests that the earth is a magnet.
- 1660 — Sir Isaac Newton elaborated on Descartes' view of a vital principle flowing through nerves, giving birth to complex life functions.
- 1733 — English clergyman, Stephen Hales took this concept a step further by proposing that nerves function as conductors, wherein the 'vital force' is electricity.<sup>26</sup>
- 1818 — Mary Shelley's *Frankenstein* was published, inspired by Galvani's experiments with *animal electricity*.<sup>27</sup>
- 1831 — Carlo Matteucci, a physics professor at Pisa, demonstrated that electrical current is generated by wounded tissue.<sup>28</sup>
- 1859 — Charles Darwin published *Origin of the Species*, with comments on bioelectric organs.
- 1868 — D'Arsonval reported that changing fields applied to human heads produce subjective sensation of light.
- In the same year, Luis Bernstein published his cornerstone theory of nerve action and bioelectricity, *Bernstein's Hypothesis*, featuring selective ion transport across a neural membrane.
- 1924 — Willem Einthoven received the Nobel Prize for development of the ECG.

In the latter part of the 20th century, Robert O. Becker (and his teams of collaborators) exhaustively investigated the relationships between bioelectricity, limb regeneration, acupuncture and psychic phenomena.<sup>29</sup>

<sup>26</sup> Haemastaticks, published in 1733

<sup>27</sup> Galvani L. Commentary on the Effect of Electricity on Muscular Motion – A Translation of Luigi Galvani's De Viribus Electricitatus in Motu Musculari Commentarius. Cambridge, Mass.: E. Licht, 1953.

<sup>28</sup> Treatise of electrophysiological phenomena of the animals (Trattato dei fenomeni elettrofisiologici degli animali) 1844.

<sup>29</sup> Becker and his associates have contributed a wealth of published research material covering many aspects of EM and it's relation to biology and zoology.

While the topic of biofields may have only received scant serious consideration in the West, it has been the focus of considerable research in the USSR since the 1930's,<sup>30 31</sup> and in the Orient (particularly China, India and Tibet) for more than two millennia.<sup>32 33</sup>

Certainly, much of the Oriental literature (with its attendant procedures and attained proofs) may be regarded as insufficiently rigorous, and too imprecise or mystical in its phraseology to satisfy the dictates of modern scientific empirical methodologies. However, whilst on a case-by-case basis much of the associated evidence, proofs or conclusions may be disputed, the sum total of such a large and profound body of clinical research and knowledge should not be so casually dismissed.

Efforts have been made over the years to reconcile the antagonistic dichotomies of East–West; mind–body; subjective–objective; and vitalist–mechanist, particularly in the area of the biosciences. As yet though, attempts to reveal and explain correspondences by means of overlaying various physiological (or other process) maps have only achieved limited success.<sup>34</sup>

In order to advance our understanding of biofields, further research of a correlative and integrative nature would need to be undertaken. This would involve:

- A comprehensive survey of the pertinent literature, both classical and contemporary, in the electrical, physical, biomedical and cybernetic sciences; and in the Oriental healing/martial arts — in particular TCM, yoga, tai chi and qigong;
- Comparative studies of physiological “maps” of human biologic processes and functions from the perspectives of these sciences, philosophies and arts in order to identify correspondences and commonalities.

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<sup>30</sup> For a comprehensive overview of Soviet research the reader is advised to refer to: Ostrander S, and Schroeder L. *Psychic Discoveries Behind the Iron Curtain*. New York: Marlowe & Company, 1997.

<sup>31</sup> Ebon M. *Psychic Discoveries by the Russians*: New York: Signet Books, 1971.

<sup>32</sup> Needham J. *Science and Civilisation in China*: Cambridge University Press, 1974.

<sup>33</sup> Maoshing Ni. *The Yellow Emperor's Classic of Medicine: A New Translation of the Neijing Suwen With Commentary*: Shambhala Publications, 1995.

<sup>34</sup> As exemplified by research into the correspondences between acupuncture and muscle trigger points, dermatomes, perineural circuitry, and endorphins. Several hundred thousand research papers on the physiologic basis of acupuncture have been published in China alone.

## METHOD

### PREAMBLE

The purpose of the proposed experiment is to: (i) demonstrate the existence of a biofield; that is (ii) perceptibly communicable between two bodies; and that (iii) utilises the hand to transmit this field via the mechanism of ‘force at a distance’.

As such, it is purely a qualitative phenomenological experiment, and accordingly requires little in the way of subsequent data analysis aside from its visual observation. This demonstration will be conducted in such a manner as to minimise the possibility of thermal, visual, auditory, tactile or suggestive factors influencing the outcome.

The idea for the proposed study has its origins in observations initially made by the author whilst conducting taiji classes in the late 1970’s. The relevant facts are as follows.

Periodically during class sessions, it is customary for the instructor to stop all movement drills, and to request that participants assume a stance of standing meditation for a few minutes. This posture differs from the military ‘stand to attention’ in several respects, the details of which are not important at this stage. What is noteworthy however is that the posture involves participants keeping their eyes closed, this practice being conducive to: deep relaxation; enhanced postural alignment; and development of balance through dynamic equilibrium.

During one of these meditation interludes, and whilst doing the rounds in order to assess postures, I noticed the following reaction: If I approached a student from the rear, and extended my hand — positioning it at a distance of some 20 cms from the subject’s lower back — the subject’s back would arch anteriorly several centimeters, remaining in hyperextension until my hand was withdrawn. Repetition of that experiment with the same subject, followed up by conducting it on numerous students throughout the years has elicited much the same result. Subsequent quizzing of participants generally reveals that they were not aware of my presence, but often attested to the sensation of localised pressure in the affected part of the anatomy.

My experiences with and investigation of this and related phenomena extend well beyond such simple biofield presentations, but for the purposes of this research — viz the demonstration of the existence of a biofield via the mechanism of ‘force at a distance’ — this experiment should suffice.

Accordingly, the proposed experiment would be conducted along similar lines to the one mentioned above, and as per the following:

### PARTICIPANTS

A study group numbering ten subjects would be preferentially selected from experienced practitioners, thereby ensuring that the participants would achieve the desired state of deep meditation quickly, and without their exhibiting undue and confusing physical symptoms (such as tremors, swaying, agitation or fatigue). It would be preferable that the subjects were not informed as to the exact nature of the experiment

### PROCEDURE

The participants are lined up in two rows, diagonally offset (to facilitate visual monitoring and recording) and spaced at a minimum of 2 meters apart. The demonstration space should preferably be still, quiet and free of any visual distractions, but with sufficient light to enable clear video recording. Monitoring may be performed with two video camcorders aligned one to each row, and positioned inconspicuously on opposite sides of the space.

Approximately 45 minutes in total will be required to conduct the demonstration. During the first 30 minutes, I will conduct a dynamic meditation session (based on a simplified and modified Taiji movement sequence) the purpose of which is to bring the group's members to a deep state of focused relaxation.

Once the members have attained the desired state, they will be blindfolded and instructed to assume the standing meditation stance, which position may be summarised as follows:

- Feet — shoulder width apart, with body weight evenly distributed over the sole and heel;
- Knees — slightly bent such that the patella is vertically aligned with the tips of the toes;
- Pelvis — rotated slightly posteriorly sufficient so as to ensure that the spinal column is straight, upright and minimally curved;
- Shoulders — relaxed with the chest slightly hollowed;
- Arms — hanging limply straight down the sides (with the wrists medially rotated so that the palms face inward, and resting lightly against the upper thigh);
- Head — held straight, but with the chin slightly retracted in order to minimise the curvature of the cerebral spine;
- Mouth - lightly closed in a relaxed manner, with the upper surface of the tongue lightly resting against the superior palate;
- Eyes – closed. The focus of attention is relaxed, with awareness being peripherally directed to the breath.

Having determined that the subjects are in a state conducive to the demonstration, I will silently approach each person from the rear, and in random order (or to particular nominated subjects as selected by an impartial observer). Finally, I will lightly extend one hand, placing it some 20 to 30 cms posterior to the subject's lower back, and maintain it in that position for a few seconds before withdrawing it.

At the conclusion of the demonstration, those subjects from whom any positive response was elicited, will fill in a brief questionnaire pertaining to their subjective impression of what their physical reaction was, and why they felt they had reacted in such manner.

#### SUPPLEMENTARY PROCEDURES

Further extensions and refinements of this simple experiment would be necessary in order to rule out thermal factors. Such a step would be relatively easily (and cheaply) implemented through the incorporation of thermal insulating materials and electronic thermometers.

A more definitive resolution as to the role and extent of the EM component in this biofield demonstration would require highly specialised ancillary equipment in the way of: (1) a modified MEG used in conjunction with; (2) an earthed, cylindrical, mu-metal shield to partially encase the subject. The costs associated with such a setup would be considerable.

## DISCUSSION

Perusal and careful consideration of the literature relating to biofields, both ancient and state-of-the-art, reveals that the bioscience community has a very limited understanding of the origins and mechanisms of this phenomena.

TCM has in my estimation, made the most significant progress in charting bioenergies. However, some of TCM's descriptions and rationalisations of the underlying generative and distributive processes involved — e.g. *Five Element Theory* — which, whilst being intriguing, are highly speculative, somewhat archaic, and beyond substantiation.<sup>35</sup>

The assortment of Oriental philosophies and practices that are collectively known as *Qigong*, are intrinsically concerned with the sensing, development, channelling and transmission of bioenergy. Since bioenergies directly give rise to, and are intrinsic to biofields, the underlying theories of Qigong (and other related practices) have direct relevance to biofield research.

From the annals of Qigong, which have been steadily evolving over several millennia, two central works (penned in the sixth century C.E. by the Bodhidharma Da Mo) are particularly noteworthy in regard to biofield enhancement strategies, and as such merit deeper consideration.<sup>36</sup>

Other significant practices in this vein are: *Dao Yin* — a series of exercises of considerable antiquity;<sup>37</sup> *Tai Chi Ch'uan* - internal energy development methods based on adapted, modified martial arts movements; Yoga – wherein some schools have evolved potent routines for bioenergy development and redeployment (e.g. *Kundalini* and *Swara* Yoga).

On the other side of the globe, the Occidental sciences, with their empirical foundation and rigorous analytic procedures, have made significant, relevant contributions to mapping some of the bioenergetic pathways and mechanisms, particularly at the micro levels of cellular, metabolic, hormonal and neurotransmission processes. In addition, the mathematical and technological basis of the Western sciences has provided us with the tools to investigate and analyse biofields from a multi-disciplinary vantage point.

In conclusion, meaningful advances in biofield research would be expedited by a concerted approach based on a synthesis of methodologies: Eastern and Western, analytic and experiential, subjective and objective.

These advances will, in the wake of their contributions to a more profound understanding of the mechanisms of life, enable us to develop better strategies for the prevention, diagnosis, and treatment of disease. In addition, they may also shed some light on the mysteries of parapsychology, with all of its attendant implications, thereby leading to a keener appreciation of the phenomena of consciousness, perception and the extra-sensory faculties.

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<sup>35</sup> Lawson-Wood D. *The five Elements of Acupuncture and Chinese Massage*: Thorsons Publishers, 1973.

<sup>36</sup> Yang JM. *Xi Xue Jing, Yi Jin Jing: Muscle/Tendon Changing and Marrow/Brain Washing Chi Kung*. Jamaica Plain: YMAA Publications, 1997.

<sup>37</sup> Chia M. *Dao Yin: Exercises for Revitalization, Health and Longevity*. Hackensack: Universal Tao Center, 1999.



## BIBLIOGRAPHY

- Baule, G.M., and McFee, R. 1963. Detection of the magnetic field of the heart. *Am. Heart J.* 66:95.
- Becker, R. "The Direct Current Control System: A Link Between Environment and Organism," *New York State Journal of Medicine* (April 15, 1962): 1169-1176.
- Becker, R., and Selden G.. *The Body Electric: Electromagnetism and the Foundation of Life*. New York: Morrow, 1985.
- Becker, R and Marino A. A.. *Electromagnetism and Life*: State University of New York Press, Albany 1982.
- Brennan, B.A., *Hands of Light* Bantam: Doubleday Dell, 1993.
- Burr, H. S. *Blueprint for Immortality: The Electric Patterns of Life*. London: Neville Spearman, 1972.
- de la Warr, G., and Baker D., *Biomagnetism*. Oxford: de la Warr Laboratories, 1967.
- Cope, Freeman W., "Evidence from Activation Energies for Superconductive Tunneling in Biological Systems at Physiological Temperatures," *Physiol. Chem. and Physics* 3, 1971, pp. 403-410
- Eden, J. *Animal Magnetism and the Life Energy*. New York: Exposition Press, 1974.
- Galvani, L. *Commentary on the Effect of Electricity on Muscular Motion – A Translation of Luigi Galvani's Disease Viribus Electricitatus in Motu Musculari Commentarius*. Cambridge, Mass.: E. Licht, 1953.
- Gerber, R., M.D. *Vibrational Medicine: New Choices for Healing Ourselves*. Santa Fe, N.M.: Bear, 1988.
- Jahn, Robert G.; "The Persistent Paradox of Psychic Phenomena: An Engineering Perspective," *IEEE, Proceedings*, 70:136, 1982.
- Kaptchuk, T. *The Web That Has No Weaver*. N.Y.: Cogdon & Weed, 1983.
- Krieger, D. *The Therapeutic Touch: How to Use Your Hands to Help or to Heal*. Englewood Cliffs, N.J.: Prentice Hall, 1979.
- Lehninger, A. L. *Bioenergetics*, Menlo Park: W. A. Benjamin Inc., 1973.
- Tiller, W. "Energy Fields and the Human Body, Part II." *A.R.E. Medical Symposium on Mind-Body Relationships in the Disease Process*. Phoenix, Arizona, January 1977.
- Tiller, W. and Cook W.. "Psychoenergetic Field Studies Using a Biomechanical Transducer, Part I: Basics," *Proceedings of the A.R.E. Medical Symposium on New Horizons in Healing*: Phoenix, Arizona, January 1974.
- Tompkins, P. and Bird C.. *The Secret Life of Plants*. New York: Harper & Row, 1973.
- Watson, L. *Supernature*. London: Coronet Books, 1974.
- Wever, R. 1974. ELF effects on human circadian rhythms. In *ELF and VLF electromagnetic field effects*, ed. M.A. Persinger. New York: Plenum.

### ORIENTAL TEXTS

- Chao, Yuanfang. *Zhubingyuan Houlun (Treatise on the Causes and Symptoms of Diseases)*. A five volume work published in 510 C.E.
- Chia, M., *Dao Yin: Exercises for Revitalization, Health and Longevity*. Hackensack: Universal Tao Center, 1999.
- Huebner, A. L. "Life's Invisible Current", *East West Journal*, June 1986.

- Jayasuriya, A., *The Scientific Basis of Acupuncture*, Sri Lanka: Medicina Alternativa, 1982.
- Lawson-Wood D. *The five Elements of Acupuncture and Chinese Massage*: Thorsons Publishers, 1973.
- Leadbeater, C. W. *The Chakras*. Wheaton: Theosophical Publishing House, 1927.
- Maoshing Ni. *The Yellow Emperor's Classic of Medicine: A New Translation of the Nei Jing Suwen With Commentary*: Shambhala Publications, 1995.
- Needham, J. *Science and Civilisation in China*, Cambridge University Press, 1974.
- Pomeranz B. and Stux G. *Scientific bases of acupuncture*, Springer-Verlag 1988.
- Saraswati, Y. *Science of Vital Force: A Treatise on Higher Yoga*. New Delhi: Yoga Niketan Trust, 1980.
- Yang, J. M., *Chinese Qigong Massage*. Boston: YMAA Publications, 1993.
- Yang, J. M., *Xi Xue Jing, Yi Jin Jing: Muscle/Tendon Changing and Marrow/Brain Washing Chi Kung*. Jamaica Plain: YMAA Publications, 1997.

#### SOVIET TEXTS

- Adamenko, V. "Behavioural Reactions and Electromagnetic Fields," Research Report, E. L. F. Cocoon, IL. 1992.
- Balanovski, E., and Taylor, J.G.; "Can Electromagnetism Account for Extra-Sensory Phenomena?" *Nature*, 276:64, 1978.
- Detela, A. *Physical Model of the Biofield*. Ljubljana, Slovenia: J. Stefan Institute, 1997.
- Ebon, M. *Psychic Discoveries by the Russians*, New York: Signet Books, 1971.
- Gulyaiev, P. I. "Cerebral Electromagnetic Fields," *International Journal of Parapsychology*, No. 7, August 1965.
- Inyushin, V. M. "Bioplasma: The Fifth State of Matter," in *Future Science*, eds. White, J. and Krippner., S. Garden City: Doubleday / Anchor, 1981.
- Kamensky, N. "Methods and Results of Telepathic Transmission of Images." Paper presented: Symposium on Parapsychology & Health, Section of Technical Parapsychology, All Union Engineering Institute, Moscow, April 1967. Russian.
- Krivorotov, V. "Bioenergetic Influence on the Organism of Man in Healing." Paper presented: Conference of Technical Parapsychology, All Union Engineering Institute, Moscow, June 1968. Russian.
- Mutschall, V. "The Present Status of Research in Telepathy in the Soviet Union," *Foreign Science Bulletin*, Vol. 4, No. 8, Aerospace Technology Div., Library of Congress. English.
- Ostrander, S. and Schroeder, L. *Psychic Discoveries*. New York: Marlowe & Co., 1997.
- Ryxl, M. "Research in Telepathy in Soviet Russia," *Journal of Parapsychology*, Vol. 25, No. 2. English.
- Sergeyev, G, and Pavlova, L. *Statistical Method of Research of the Human EEG*, Leningrad: Academy of Science USSR, Science Publishing, 1968. Russian.

#### BIOCIRCUIT TEXTS

- Eeman, L.E., "Psycho-Physical Effects of Conducted Radionic Emission From Drugs and Bloods," *Proceedings of the Scientific and Technical Congress of Radionics and Radiesthesia*. London: May 16 – 18, 1950: 149 – 159.

- Eeman, L.E., *Cooperative Healing*, Mokelumne Hill, Calif.: Health Research, 1987.  
(Reprint of the 1947 edition.)
- Patten, L., and Patten T., *Biocircuits*. Tiburon, CA: H J Kramer, 1988.
- Hieronymus, Dr. T. :The E. E. Eeman Circuit,” *The Advanced Sciences Research and Development Advisory*. Lakemont, Georgia, July-August, 1986.