

Exploring the Effects of Audible Sound on the Body and its Biofield

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THESIS ACCEPTANCE FORM

Exploring the Effects of Audible Sound on the Body and its Biofield

This thesis is accepted by the Thesis Committee for its style and content

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Abstract

Sound therapy practitioner Eileen McKusick recorded sound signals produced by tuning forks during therapeutic tuning fork sessions and rendered the signal visible in spectrogram view through a software program (Raven Pro). In looking for correlations between changes in the signal and changes in the reported state of the participants, McKusick sought to observe patterns between signal strength and coherence, and the participants reported feeling states. Since the tuning forks are used between four inches and six feet off the body, explorations in the literature regarding the human energy field, or “biofield” are considered in the literature review, as are other therapeutic sound treatments.

Dedication and Acknowledgments

This thesis is dedicated to my husband and two sons, who have been very supportive while I have been in school for the last five years.

Many people participated in the process to bring this body of work to fruition. Thank you to the individuals who answered some of my many questions and pointed me in the direction of helpful resources: Gary Robert Buchanan, Valerie Hunt, Karl Maret, Randy Masters, Lynne McTaggart, David Roundtree, Claude Swanson, William Tiller, and Fred Alan Wolf (Dr. Quantum). Thank you to Kate Bogdanoff and Randy Repass for your assistance in my research study. Thank you Karl Maret, Kathleen Moore, Kimberly Schipke, Lauren Walker, and Ann Zuccardy for your help with editing and feedback. And very special thanks to my advisor and thesis chair Dr. Darlene Witte for her constant support and inspiration; and Drs. Susan Green and David McGough, teachers and members of my thesis committee, for your time and helpful feedback.

Table of Contents

Abstract	i
Dedication and Acknowledgments	ii
Table of Contents	iii
Table of Figures	vi
Definition of Terms	1
Prologue	3
Chapter I - Background and Rationale for the Study	4
Research Methodologies	7
Background	11
Why the Study	18
Beginning Steps in Research	19
Discovering the “Biofield”	20
Questions	22
Chapter II - Literature Review	23
What is Sound?	23
Why Use Sound Therapeutically?	24
Conventional vs. Alternative Perceptions of Sound Medicine	25

Uses of Sound in Conventional Medicine.....	25
Newer Applications of Ultrasound.....	26
Sound Medicine Used in Both Alternative and Conventional Settings	27
Sound in Alternative Medicine	30
The Human Voice	31
Sound Technologies	33
Discovering Plasma.....	36
What is Plasma?	37
Discovering the Biofield in Science.....	46
Pioneering Biofield Researchers	47
Subtle Energy in Science.....	52
Biophotons	53
The Subtle Body.....	57
Entropy and Syntropy.....	59
Sound Balancing Biofield Model.....	63
Consciousness and Subtle Energy.....	66
Chapter III – The Research Study.....	67

The Story of the Study	67
Research Project: Introduction	69
Materials and Procedures	70
Method and Results	72
Volunteer A, “Arthur”	72
Volunteer B, “Betty”	76
Volunteer C, “Candace”	79
Volunteer D, “Deborah”	84
Chapter IV- Discussion.....	88
Implications.....	89
Applications.....	92
Conclusion.....	94
Further Questions.....	95
Appendix B: Biofield Anatomy-Significance of Energetic Imbalances	99
Appendix C: Biofield Imaging Devices.....	103
Gas Discharge Visualization (GDV) Camera	103
Polycontrast Interference Photography (PIP).....	103

Medical Thermal Imaging.....	104
Appendix D: Student Stories.....	106
Appendix E: Aura Camera Photos.....	114
References.....	116

Table of Figures

Figure 1.Quantitative/Qualitative.....	8
Figure 2. Chakras.....	12
Figure3. Nerve Plexuses	12
Figure 4. Plasma and Gas.....	37
Figure 5. Electromagnetic Field of the Heart.....	39
Figure 6. Chakras and Corresponding Auras.....	40
Figure 7. Toroid.	41
Figure 8. Toroidal Field of the Earth	41
Figure 9. Toroidal Field of the Sun.....	41
Figure 10. Hypothetical Toroidal Field of a Photon	42

Figure 11. Hypothetical Toroidal Field of a Human	42
Figure 12. Double Helixes.	43
Figure 13. Caduceus.....	54
Figure 14. DNA Helix.....	44
Figure 15. CAM practices.....	50
Figure 16. Biophoton emissions from finger of smoker.	53
Figure 17. Biophoton Emission of a Soybean Sprout Before Being Scored with a Knife.	54
Figure 18. Biophoton Emission After Being Scored.....	55
Figure 19. Infinite Regeneration.	60
Figure 20. Swanson Biofield Model.	61
Figure 21. Arthur, 1 st chakra.	73
Figure 22. Betty, 3 rd chakra.....	77
Figure 23. Candace, 2 nd chakra.	80
Figure 24. Deborah, 1 st chakra.....	85
Figure 25. Seven Chakras.	97
Figure 26. Chakras and Associations.....	97
Figure 27. Nadis, chakras and plexuses.	97

Figure 28. GDV camera images.....	103
Figure 29. PIP image.....	104
Figure 30. Medical Thermal Imaging.	105

Definition of Terms

The following terms are used frequently in my research.

Biofield – the field of energy and information that surrounds and penetrates the body. Also called the human energy field.

Biophoton – quanta of coherent light that appear to be emitted and absorbed by our bodies, including our DNA.

Bioplasma – a proposed fifth state of matter, a hypothetical field of free ions, electrons and biophotons that surrounds and interpenetrates the body in the same way that complex plasma flows surround the earth and sun.

Chakra- One of the seven centers of subtle energy in the human body according to yoga philosophy. Chakra means ‘wheel’ in Sanskrit: chakras are perceived as “spinning wheels of light” in the subtle energy body.

Coherence – logical or natural connection or consistency; the quality of being logically integrated, consistent or intelligible. Also, in-phase vibrational coherence: a laser produces coherent light.

Dissonance – a tension or clash resulting from the combination of two disharmonious or unsuitable elements; lack of agreement, consistency, or harmony.

Entropy – a thermodynamic term equated with a loss of order or information; gradual decline into disorder increases entropy.

Harmonic/Overtone - An overtone accompanying a fundamental tone at a fixed interval; signal or wave whose frequency is an integral (whole-number) multiple of the frequency of some reference signal or wave; a musical tone that is a part of the harmonic series above a fundamental note and may be heard with it.

Infrasonic - sound waves with a frequency below human audibility, generally considered to be below 20Hz.

Integrative- relating to a multidisciplinary, holistic approach: to make into a whole by bringing all parts together; unify.

Sound balancing – a therapeutic method utilizing the coherent frequencies produced by tuning forks to balance the body's electromagnetic and subtle energies.

Spectrograph – graphical representation of a sound or series of sounds; computer analysis system tracking frequency and intensity of signal over a duration of time.

Syntropy (synonyms: negative entropy, negentropy) – the creation of order, structure and function in systems.

Ultrasonic - having a frequency above the human ear's audibility limit of about 20,000 Hz.

Prologue

Recently, when I was driving my 13-year old son to school, he asked me, “Mom, are you a sound healer, or a physicist?”

And I replied, “Well, I am a sound healer who is trying to understand the physics of sound healing.”

“But really what I am,” I said, “is a cosmological storyteller.”

“I think I’ll just tell people you’re a physicist,” he said.

Cosmology

1 a: a branch of metaphysics that deals with the nature of the universe

b: a theory or doctrine describing the natural order of the universe

2: a branch of astronomy that deals with the origin, structure, and space-time relationships of the universe; also: a theory dealing with these matters

This small conversation raises many points relative to this thesis. I am not a physicist – in fact I have never even taken a single physics class. I am not even technically a scientist, although I enjoy experiments and exploration and always have. And I abandoned the term “sound healer” many years ago after encountering consistent ideological rejection from mainstream-minded individuals, choosing instead the better received “researcher who has been studying the effects of audible sound on the body” as my vocational moniker.

However, my aim and intention as a researcher and an educator go beyond simply understanding how and why audible sound frequencies appear, after 16 years of studying them, to have a definite, consistent, and predictable therapeutic effect on the human body. My aim and intention are not just the healing of individual humans, but of contributing to the body of knowledge and experience that facilitates the healing of humanity as a whole, and of humanity’s relationship with itself, the earth and the cosmos at large- through the telling of a new cosmological story.

Chapter I - Background and Rationale for the Study

After spending many years contemplating the human condition, it occurred to me that the root of the problems faced by humanity arises from the *illusion of separation*. In our Newtonian-Cartesian world of duality, we see ourselves as separate – separate from each other, separate from nature, separate from the cosmos. Our billiard ball, particle-based self exists as a separate “thing” from all the other “things” out there, made of stuff.

Our cosmological story is one of separation. Yet, consider this quote, spoken by Max Planck upon receiving the Nobel Prize for Physics in 1918: “We have now discovered that there is no such thing as matter, it is all just different rates of vibration designed by an unseen intelligence.”

Planck and his contemporaries observed, almost 100 years ago, that the Newtonian perspective was, in fact, an error of perception. Here is the concept restated by Fritjof Capra, author of the book, *The Tao of Physics* (1975):

Quantum theory thus reveals a basic oneness of the universe. It shows that we cannot decompose the world into independently existing smallest units. As we penetrate into matter, nature does not show us any isolated "building blocks," but rather appears as a complicated web of relations between the various parts of the whole.

Yet today, in 2012, my children are still being taught in school that an atom is the smallest unit of matter. They are still being indoctrinated into a cosmology of separation.

The fact of the matter is that this story, this story of stuff, of separate stuff, is simply not true. And the fact that we as humans have been believing this story, and behaving as though this story was true, has led us to the brink of destroying ourselves, each other, and the world that is our host.

We need a new story, a new cosmology, one that describes the *connectivity of everything*. I realized that if I wanted to make a difference in the world, this was the place to put my energies. Traditionally, our cosmology is our overarching story, our fundamental assumptions about the nature of life, the universe, and humanity's place in it: it is the container in which the human experience takes place.

Currently, cosmology is more of a science, dominated by math, with complex equations to describe the expansion rate and age of the Universe. Since an important part of philosophical cosmology is about who we are in relation to the Universe, many people feel quite lost when confronted with modern standard cosmology – it becomes something beyond the comprehension of the ordinary individual. And so our collective understanding of our collective cosmology goes largely unexplored, with most of us living within a cosmological framework that is assumed but rarely examined.

“Science, like art, religion, commerce, warfare, and even sleep, is based on presuppositions.” Gregory Bateson

However, this unexamined framework is so important, that when the cosmology changes, everything within the cosmology – the entire human experience –changes, and we experience what Thomas Kuhn described in *The Structure of Scientific Revolutions* (1962) as a “paradigm shift.” This shift was set in motion by the physicists of the last century, but the full ramifications of what it means has yet to trickle down into culture as a whole, and the collective, popular cosmology remains unchanged.

But, according to Richard Tarnas, PhD, a student of Kuhn, in an article called *The Timing of Paradigm Shifts*:

A new paradigm, a new scientific understanding—or even a new philosophical or religious paradigm—that informs an entire civilization can only take place when it fits the larger archetypal dynamic of the culture at that time, otherwise it will not take hold and spread. (Tarnas, 2012)

Perhaps we are approaching that time.

It was this awareness of the need for a new story that led me to design a Master's degree in *Integrative Education*—where we look at what *connects the disciplines*. I wanted to explore and describe different concepts of connectivity, and as such, I pursued independent studies on sacred geometry, cosmology, plasma and the electric universe, and sound. This exploration into the nature of sound, and specifically the potential therapeutic benefits of sound, has been my primary focus. And while one might not immediately think of sound as a connective medium, consider the following dictionary definition:

Sound (noun): *transmitted vibrations of any frequency*

Remember Planck's observation of it all being "different rates of vibration." One can also consider the Vedic saying "Nada Brahma" which translates into "all is sound" (the Vedas are a large body of Sanskrit text originating in Ancient India. The word Veda translates into *knowledge*). Even our own Biblical creation story begins with sound: "In the beginning was the Word". What emerges is an interesting picture of a universe of vibrating frequencies, a place where, according to Goethe, "Nature has no kernel or shell, she is everything at once."

This notion that everything is fundamentally frequency remains largely ignored by current medical science, which still observes most human functioning from a chemical, mechanical view—despite the physicists noting for almost a century that this perception is, in fact, erroneous, or at the very least, limited.

It was my own observation that, if everything is indeed vibration, then treating vibration with vibration was a very logical and elegant approach, and it was the sheer logic of this that drew me to working with sound in the first place. It is only after many years of learning what it has to teach that I see how it can be used to tell a new story about a different cosmology: a cosmology of connection.

For this reason, storytelling is my medium for this thesis— my purpose is simply to tell my story of how I came to develop the therapeutic process I call sound balancing, the story of my journey through the literature in an attempt to understand how and why sound is an effective medium for facilitating healing, the story of the study I conceived, and the stories of the people who participated in the study. In the appendix are stories of some of my students. Ultimately, it tells the story of a very different paradigm than the one in which we currently inhabit.

Research Methodologies

In general, there are two kinds of approaches to research: quantitative, or qualitative. Quantitative research refers to a more objective and number-oriented approach, whereas qualitative research takes a more holistic look at the meaning and context of things. Quantitative researchers tend to be more interested in prediction and control, while qualitative researchers tend to be more interested in understanding. The table below illustrates some of the key differences between these two approaches:

Table 1 Differences between qualitative and quantitative research

Quantitative ('positivistic' or 'empirical-analytical')	Qualitative ('humanistic' or 'naturalistic')
Foundation of pure fact that can be turned to for questions regarding truth	Evidence is always social
Interest in controlling events	Interest in human expression and human meaning
Relationship between cause and effect	Relationship between meaning, action and behaviour
Causal relationship described in terms of observation statements, verification and prediction	Description of human action and behaviour
The social governed by rules of law-like regularity	The social structured by meanings we give to experience
Physical events and human activities that can be measured with tools designed to produce generalisable observations	Recognition of the difference between explaining physical events and human activities
No place for interpretation. Measurable hypotheses tested to improve theory	Interpretation, grounded in understanding expressed through language
Explanation through causal analysis based on invariant laws	Explanation through interpretation and description

Fig 1. Quantitative/Qualitative (Rapport, 2004 p.2)

Narrative Inquiry, or narrative -based methodology, has emerged as a discipline within the broader field of qualitative research over the last 30 years or so. While qualitative researchers make use of words or even the construction of stories in their work, narrative researchers study the story: "Inquirers describe the lives of individuals, collect and tell stories about peoples' lives and write narratives of individual experiences" (Clandinin and Connelly, 1990). This approach considers the story "as actions and events in others' lives that encourage reflection and self-understanding for the narrator" (Rapport, 2004). The telling and examination of stories provides the opportunity of understanding not only the stories being told but also the culture, environment and platform of the narrator.

The narrative approach to knowing began to fall from favor with Descartes and his studies of optics 400 years ago, and then more so shortly thereafter with Galileo and his studies of motion. It was completely out of favor in the Academy by the early part of the 20th century

which saw the undisputed rise of the quantitative or positivistic approach due to the belief that the observer could be separate from the observed, and that objective numerical data was superior to felt perception (Cousineau, 2005).

This stance was challenged as early as 1958 by philosopher and chemist Michael Polanyi: “Polanyi suggests however, that ‘an impersonal knowledge would be meaningless and that we must learn to accept as our ideal a knowledge that is manifestly personal’” (Witte, 1989). It was further challenged in the 1980’s, by Jerome Bruner who argued in his 1986 book, *Actual Minds, Possible Worlds* for the value in both narrative and positivistic research and articulated the historical basis for the credibility in narrative knowing (Clandinin, 2007).

This validation of the narrative approach was further elucidated by educational researchers Michael Connelly and Jean Clandinin through the 90’s and especially in their landmark book, *Narrative Inquiry: Experience and Story in Qualitative Research* (2000) where among many other examples they cite the work of philosopher Mark Johnson.

In his 1987 book *The Body in the Mind*, Johnson speaks of the need to reunite what Cartesian duality and technical rationalism has separated and reduced: by “putting the body back into the mind”. A disembodied mind, the so-called objective observer or pure spectator, permits the certainty needed by technical rationalism. The notion that there can be an objective relationship between observer and observed based on the use of reliable and numeric measurements is the fundamental assumption of the positivistic approach. To put the body, with its emotions, values, and felt experiences with the world back in to the mind is to wreak havoc with certainty (Clandinin and Connelly, 2000).

The resurgence in the narrative movement is due in part to the unraveling of this certainty – we have seen that ultimately there is no separating observer from observed, and that in the quantitative approach “there is little contextual evidence that allows the audience to determine whether the research was simply designed to impose the worldview of the researcher on what was researched.” (Clandinin, 2007).

While the quantitative, positivistic approach is still largely favored in the Academy, the qualitative and narrative approaches have been and continue to be more widely accepted, particularly in the fields of Education and Health Sciences: here the use of biographical and narrative methods to promote participatory and inclusive approaches has been hailed as groundbreaking (Rickard, 2002).

My paper falls primarily into the category of narrative methodology; however, my study also pilots a unique quantitative method of rendering the tuning fork frequencies visible as they pass over and through the body’s energy centers. This study suggests a correlative relationship between quantitative visual data collected in tuning fork frequency images and qualitative data collected in narrative stories.

“Telling stories is a natural part of life, and individuals all have stories about their experiences to tell others. In this way, narrative research captures an everyday normal form of data that is familiar to individuals.” John Creswell

“Rita Charon is the first person I know to use the term ‘narrative medicine.’ It’s an idea that comes out the narrative paradigm, which is as ancient as the indigenous cultures. It’s the idea that everything is story, that everything that really matters is part of a story, the story of the story, presented as a story and memorized as a story. So in medicine, then, the notion of history is the notion of story.” Lewis Mehl-Medrona

“I believe there is a subtle magnetism in nature, which, if we unconsciously yield to it, will direct us aright.” Henry David Thoreau

Background

I began using tuning forks therapeutically in 1996, when I introduced them into my massage therapy practice. I had been reading books about alternative therapies, human potential, science and spirituality, and more since 1987 in my own quest to heal myself of an eating disorder. I found I had a passion for learning about these sorts of things: once I found a particular topic that was of interest to me, I would acquire and read numerous books on the subject.

After coming across Planck and his contemporaries’ concept that “everything was vibration”, I was given a book on the use of color and sound in healing. It appeared to me at once that if everything was vibration, then treating vibration with vibration was logical and elegant, and I proceeded to read everything I could find on this subject. At this time, I received a catalog in the mail advertising a set of tuning forks for healing, which I ordered.

The tuning forks were called the Harmonic Spectrum set: eight forks in the octave of the C major scale. They came with very simple directions: use the note of C over the root chakra, the note of D over the sacral chakra and so on, up to the note of B at the crown chakra. There are seven major energy centers, or chakras, that run along the spine, according to Vedic and other traditions – they are considered part of the body’s subtle anatomy.

The word chakra means “wheel” and these energy centers are considered spinning wheels or vortexes of subtle energy flow. As one can see in the below images (and additional images in Appendix A), these centers sit in the same approximately the same places as nerve plexuses.

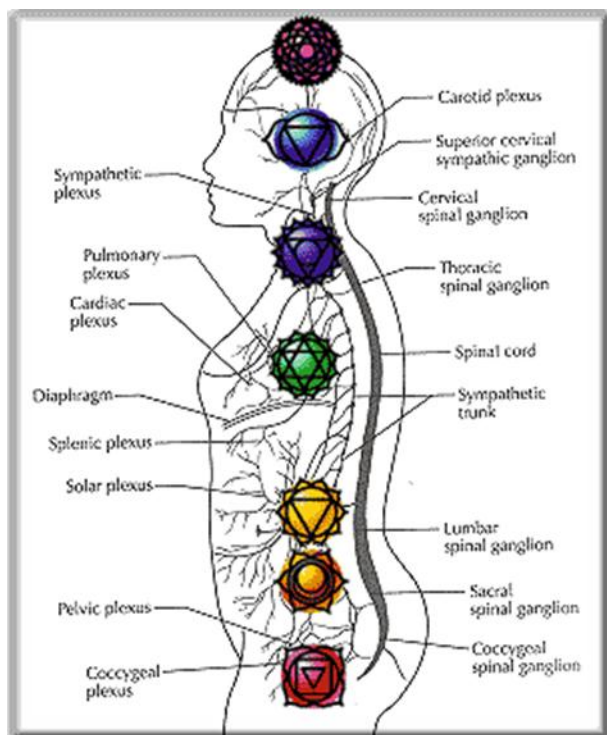


Figure 2. Chakras

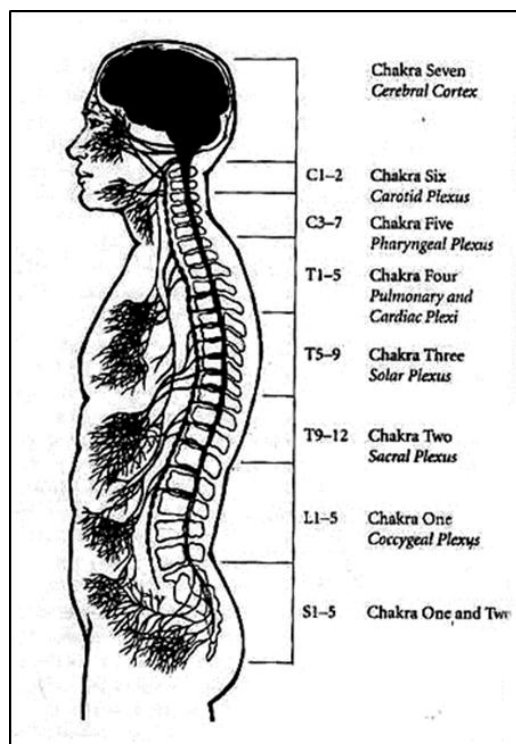


Figure 3. Nerve plexuses

I began experimenting with the tuning forks with a few of my massage therapy clients. I struck a hockey puck to activate the forks, and then held them over the body as instructed. I immediately noticed that the quality of the sound- the volume, pitch and timbre- changed, depending on where the tuning fork was held. This was very surprising to me, as I expected the fork to produce a steady, regular tone. A single strike could produce tones that were flat, sharp, dull, loud, soft, or full of static as I moved the fork around the body.

I found that if a client was complaining of pain in a particular area, the fork would produce either a loud sharp tone or a tone full of static and “noise” (in science and engineering, *noise* is an undesirable component that obscures a wanted signal). After holding the fork over the area, perhaps six inches or so over the body, I found that after a few moments, the tone would become clear. Again, much to my surprise, the client would return the following week and tell

me that all their pain was gone after the session. People also reported to me that they felt more calm, clear, and “lighter” after sessions.

Another curious phenomenon that I observed was that I could actually “drag around” the spots that were more energized. For example, if I passed the tuning fork over a person’s hip and the tone became louder over it, I could do what felt like “hooking in” to the energized area, and pull it along with the fork. It made sense to me that it should sound loud down the center of the body, at the areas where the chakras and the nerve plexuses were, along the spine.

I developed a technique that I called “click, drag and drop” which was essentially a combing of what I could only describe as “energy” from the periphery of the body to the midline. The process felt akin to using a magnet to move iron filings across a surface. I noticed a definite increase in the volume of the fork in the area over each chakra after I completed this dragging process.

Clients began requesting that I use the sound more, and within a few months, I found myself doing more sound sessions than massage. Initially, I only worked on the front of the body, from the root chakra to the crown chakra. One day, it occurred to me to turn a person over and go down the back. I was surprised to find an altogether different sonic terrain there, similar and yet different from the front, and continued to make that part of my regular protocol.

My biggest breakthrough with the work occurred one day in 2005, quite by accident. I was approaching the table with the tuning fork activated (usually I activated the fork right next to the body), when about 2 ½ feet to the side of the client’s throat, the tone of the fork flared up and became quite loud and sharp. I investigated the area and discovered a “pocket” about four

inches wide that, when the fork passed through, the volume went up. When the fork passed out of it, the volume went back down.

Intrigued, I employed the click, drag and drop technique, tugging the pocket back to the throat chakra, where it felt as though it was literally sucked into the body. This particular client had been complaining of jaw, neck and shoulder pain on that side. When I had initially investigated the area, I was surprised to find no noise over it, and was puzzling over this observation when I discovered that the noise was in fact out in what I surmised was, based on what I had read in esoteric literature up to that point, the client's energy field.

This person had gone to many different kinds of practitioners, including an osteopath, an acupuncturist, a chiropractor and a massage therapist, and had found no relief from this uncomfortable condition. She called me the day after the session to tell me that, much to her surprise (and mine), the pain was completely gone. It also stayed gone after that, returning only briefly and occasionally when she was under stress.

After this, I began to explore the area around the body. I went as far off to the side as space allowed - about six feet – and from there combed my way in on the plane of the treatment table towards the body. I began to find phenomena I perceived as “pockets” and “walls” and “fields” and different kinds of vibrational information expressed through the overtones on every person I worked on, in various positions all around the body.

I found that I seemed to have the ability to translate the feedback, or “hear the story” that the forks were sending. (This ability, to hear more than the average individual, is called “clairaudience,” as opposed to “clairvoyance” which describes the phenomenon of seeing more, as in the case of seeing colors in people's energy fields). In certain areas, the tone would sound

or feel sad, or angry, or fearful, or any number of different emotional expressions. Much like how a minor third in music is a universal expression of sadness, the interface between what seemed to me to be a pattern of information stored in the field and the sound of the tuning forks evoked a sense of emotion just as music does. And much to my surprise (this work has and continues to surprise me regularly), I began to find that the same emotions seemed to reside in the same places in each person.

For example, I kept observing, or hearing, the emotion of sadness in the area off the left shoulder; the emotions of guilt or shame in the area off the right hip; a sense of worry off the left side of the head, and so on, throughout the body. It took a few years, but, like putting together a puzzle, the entire picture of what I now call the Biofield Anatomy emerged (see Appendix B).

Very often when I found a pocket of energy and information, I could “hear” not only what the emotion involved was, but also the age at which it was generated. I noticed that information generated currently or in the recent past was close to the body, information from earliest childhood (even gestation and birth) was at the outer edge of the field (which was about five feet out on most people), with the rest of the life history falling in between, like rings in a tree.

These observations were inconsistent with the traditional esoteric literature, none of which I had ever found describing this timeline phenomenon, or compartmentalization of specific emotions in specific places off to the sides of the chakras. While much of what I found was in line with Carolyn Myss’s description of the emotions that resided *in* each chakra in her book *Anatomy of the Spirit* (Myss, 1996), I had found nothing anywhere, despite having read extensively on the subject, which was in line with my own findings.

As such, I proceeded tentatively with the notion that what I was observing was an objective phenomenon. Only after seeing the patterns repeated over and over in many hundreds of people, and now having my students observe the same information, do I feel more confident that this structure of information storage does exist within the body's energy field, at least on the level of the energy field that interfaces with the audible frequencies produced by the forks.

For most of the duration of my practice, I have worked with the seven major chakras, as suggested by the simple instructions that came with my tuning forks. However, I was getting feedback from people that they felt ungrounded and lightheaded after sessions, so in 2008, I began working on the feet as well. The feet appear to contain complex information and as such I have never defined them as I have the rest of the field. They remain a bit of a mystery to me.

Also in 2008, I added a new set of forks to my practice- a nine piece, unweighted Solfeggio set (generally unweighted forks are used over the body and weighted forks, with small weights attached to the ends of the tines, are used with the handles placed directly on the body). This set has clearer and brighter tones than the C scale set, and though it is not technically a musical scale, I used it in the same ascending fashion, with the lower tones on the lower part of the body and the higher tones on the upper part.

In 2009 I began to include work on people's knees. I found the information contained in the knees- regarding forward movement, release, and spontaneous action – to be so key to a person's ability to become "unstuck" (think "knee jerk reaction"), that I was somewhat mortified that I had been doing the sound work for so long without incorporating this critical part of the anatomy.

Even without this piece though, I had been continually receiving fascinating feedback from people regarding their experiences with the work. The sound appeared particularly useful for pain and anxiety: in some cases, I heard that massive anxiety disorders had resolved in just one session, or that pain a person had had for thirty years was gone the morning after a first session. But clients told me it was also helpful for many other kinds of issues as well: digestive disorders, menstrual disorders, depression, insomnia, migraines, emotional “stuckness”, fibromyalgia, arthritis, and much more.

Although I had been using a weighted C128 fork occasionally for a few years, mostly by placing the handle on shoulder knots, in 2010 I acquired a weighted 26 Hz fork. This fork is the lowest frequency fork that can be manufactured, and though somewhat large and unwieldy, the penetrating qualities of the very low frequency have shown themselves to be very beneficial, with people reporting feeling very relaxed after the tone has been applied to the body. The fork is imprinted with the letters YHVH which is the Hebrew word for the name of the Creator, “I am who I am.” Through Hebrew Gematria, a system of assigning numerical value to a word or phrase, the value of the name YHWH (Yod, Hey, Vav, Hey) is $10+5+6+5=26$. (We have nicknamed it “the G-d Fork”).

The 26 Hz fork appears to open space up within the body. Just as the 5-7 Hz frequencies employed in the conventional medicine practice of lithotripsy create space between the molecules of a kidney or gall stone, breaking them into smaller pieces, the sound current travels through the different mediums of the body, inducing an opening and relaxation of clenched areas. This allows blood, lymph and electricity to flow with greater efficiency through the area, speeding the body’s process of healing and balancing itself.

Because the work was more exploratory than anything, for a long time I never knew what to expect. Sometimes I learned the hard way that a particular way of approaching the work was not optimum. While I have done little work on people who are truly ill, I found that less is definitely more with people with deeply compromised systems, and that too much sonic input was exhausting and sometimes powerfully detoxifying.

Generally, the more dramatic the dissonance there is in a person, the more dramatic a response they tend to have to the sound inputs. It is not uncommon for people to experience healing crises after a session, although the majority of people report feeling calmer, clearer, lighter and brighter. While usually the crisis is mild, such as a symptom briefly becoming worse before it gets better, I have also observed fevers, skin rashes, flu- like symptoms, extreme emotionalism, diarrhea lasting a few days and other symptoms consistent with detoxification.

As such I have limited my work with tuning forks to people who are mostly healthy. While I would like to explore working more with people who have cancer and other more serious disorders, I will only pursue this in a clinical setting with support and clinical supervision.

Why the Study

From the very beginning of my explorations with tuning forks, I have had many questions arise. I read numerous books in the esoteric literature about chakras and auras and energy healing, but was unable to find the answers I was looking for. I wanted to understand the physics of what was happening, and the scientific terms for the phenomena I was encountering, but it seemed as though I was looking for information in a place that was bridged by neither alternative nor conventional perspectives.

Because I was so impressed by the outcomes reported by my clients after being treated by the audible sound frequencies, I felt a very strong need to both understand better and demonstrate the validity of the method. I realized the only way to do this was to go to college, something I had not chosen to do out of high school. I entered college as an adult learner with a very clear objective, and set out to learn what I could through academic input.

Beginning Steps in Research

I was given the opportunity to write several research papers on therapeutic audible sound, and was extremely surprised to find a complete dearth of information in the literature about its application and practice. Searches yielded information of the use of audible sound for tinnitus and autism, and little else. There was research on infrasonic sound, as used in the practice of lithotripsy (using 5-7 Hz pulses to break up kidney stones); and research on ultrasonic sound, as it was used in physical therapy to stimulate blood flow to areas, but virtually nothing on the use of single tones of audible frequencies.

This made me aware of a curious fact – the use of inaudible sound was considered conventional, and the use of audible sound was considered alternative. Using tuning forks as I had since 1996, I had encountered quite a lot of skepticism. People seemed to have no problem accepting that a 7Hz frequency directed at their kidneys could relieve their kidney stones, but could not accept that a 174Hz frequency directed at their head could relieve their migraines.

There was no logic to this, but I found over and over again that most mainstream-oriented individuals had an immediate and predictable ideological rejection of the notion that audible sound frequencies could produce a beneficial therapeutic outcome. And here it was easy to see

why- there had been virtually no related American published research, and we are culturally programmed to reject anything that hasn't been validated by the scientific method.

Needless to say, this made doing research challenging. I had to look to other areas of research and find uncontroversial, accepted parallels. The logical first step was to look at music research. Music therapy had been a relatively accepted mainstream practice since after WWII when it was used to treat returning veterans suffering from what is now called posttraumatic stress disorder (PTSD). Quite a lot of research had been conducted on music, especially in the last decade when fMRIs (functioning magnetic resonance imaging, a system to image brain activity related to a specific task or sensory process) have made it possible to see what is happening in the brain in real time.

However, while I did find some interesting correlations, especially regarding the concepts of resonance and entrainment (discussed below), after some consideration I realized that the sound work was much more targeted and specific than music therapy. Additionally, the concept of and interface with the energy field surrounding the body was a significant part of the work, and this played no role at all in music therapy.

Discovering the “Biofield”

When I first began doing research on the human energy field, as it is called in the alternative literature, in Medline and other academic searches, there was very little to be found. But then while reading *The Energy Healing Experiments* (2008) by Gary Schwartz, I came across the term “biofield”. This is the term chosen by a 1994 panel of NIH (National Institute of Health) scientists to describe the field of energy and information that surrounds the physical

body. A search of the term *biofield* yielded far more satisfying results, with much of the published research available published by Schwartz and his team at the University of Arizona.

After some analysis of the articles turned up in the biofield searches, I realized that a process called Therapeutic Touch, where the practitioner used their hands to locate and correct disturbances in the field, was actually a closer approximation to my work. This and the other so-called “biofield therapies”, which I learned were “the most controversial of the CAM (Complementary and Alternative Medicine) modalities due to a lack of the description of a mechanism by which they operated” (Rubik, 2004) actually seemed a closer fit than the many studies on music therapy.

While I did some work on the physical body, the vast amount of my work involved the manipulation of the biofield – working with what seemed to me to be that elusive energy that the Eastern traditions called chi, qi, or prana: the subtle energy that Western medicine, up to this point, seemed reluctant to deal with.

I did not understand why this denial of subtle energy held so firm until I came across a passage that described the Western translation of the concept of chi as “Holy Spirit”, or “spirit” (Jain, Mills 2009). Since spirit is the domain of religion and not of science, there is a line drawn in the sand when it comes to this concept that many people who consider themselves “hard scientists” will not cross over. Hence my struggle to find a knowledgeable physicist who would discuss the physics and composition of the biofield with me.

That the biofield existed seemed indisputable to me after many years of exploring and manipulating it - as it is to most of the rest of the world except for those looking through the lens of Western science. My internet searches yielded snippets of evidence of extensive research

being conducted on the flow of the subtle body in China, Russia, and Germany. I found studies and evidence of devices that are successfully measuring and manipulating the biofield, but I also found ample evidence of an entrenched contingent in the upper echelons of today's mainstream medical journals rejecting the concept of the biofield. The story of Emily Rosa, discussed later, is a fine example of this.

I found myself, therefore, setting out to conduct research on two sketchy and debatable frontiers of current American medical science: audible sound, and the biofield.

Questions

I had a great many questions leading into my research, but what I have found, through the course of what is now three years of almost continual research, is that questions always seem to lead to more questions and rarely to answers. Here, though, are a few of my key questions:

- Why does the tone of the forks change as they are moved around the body?
- What are these energized pockets and fields and why do they seem to respond magnetically the vibrating tuning forks?
- What laws of physics and biology describe the mechanics of how sound may have a beneficial therapeutic effect on the body?
- Can we demonstrate that intervention with tuning forks can modulate this field, and support balance and improve functioning in the body and psyche?
- Can a spectral analysis of the sound produced by tuning forks as they pass through the biofield demonstrate before and after states of energetic resonance within an individual?
- What is the current understanding of the nature of the biofield?
- What technologies exist that claim to measure the biofield?

Chapter II - Literature Review

My first efforts at research on the use of therapeutic sound turned up surprisingly little information. I had not expected to find so little published research on the therapeutic use of audible sound. As such, my early forays into looking into how sound was being used therapeutically included both conventional and alternative applications, both of which I describe in this paper.

I personally am troubled by the divide between what is labeled “alternative” and what is labeled “conventional” in medicine and would prefer to see a world in which there is simply medicine. Much of what is considered alternative is done so because the mechanics of how it purports to work do not fit in with our current paradigm of mainstream scientific thinking, or because it has yet to be scientifically validated. I am interested in participating in the effort to bridge this divide, and so in my literature review I draw from both sides, in an effort to stitch together these both perspectives. Interestingly, I have found sound to be an effective medium in this effort, as it is employed therapeutically in both arenas.

What is Sound?

There are essentially two definitions of sound – one describing vibrations in the range of human hearing, and the other describing vibrations in general: *1. Vibrations transmitted through an elastic solid or a liquid or gas, with frequencies in the approximate range of 20 to 20,000 Hertz (Hz), capable of being detected by human organs of hearing* *2. Transmitted vibrations of any frequency.* For the purpose of this discussion, we will be referring to the latter definition.

Frequencies above 20,000 Hz are referred to as ultrasonic, and frequencies below 20 Hz are referred to as infrasonic.

Why Use Sound Therapeutically?

The human body is wired to be exquisitely sensitive to sound. The faculty of hearing is one of the first sense to develop in utero, and the last to depart before death. In addition to perceiving sound through our ears, the journal *Nature* recently published a paper (November 26, 2009) detailing a recent NIH study that shows that we also “hear” the pressure waves of sound through our skin. Water, of which our bodies are largely composed, conducts sound at a rate approximately four times faster than air (hypertextbook.com).

Our bones also conduct sound, as evidenced by newer hearing aids that conduct sound through the skull directly to the cochlea, and through the technique of using a vibrating tuning fork to determine if a bone is fractured. In this technique, the tuning fork is placed distal to the suspected fracture and the stethoscope is placed proximal to the injury on the same bone. A clear tone indicates an uninjured bone, whereas the sound is diminished or absent in the presence of a fracture (Moore, 2009).

It has been discovered that in addition to the traditionally viewed lock and key structure of receptors on cell membranes that receive and respond to physical molecules, there are also antenna –like structures (“primary cilium”) that respond to vibrational frequencies. Bruce Lipton writes in *The Biology of Belief* (2005):

Receptor antennas can also read vibrational energy fields such as light, sound, and radio frequencies. The antennas on these energy receptors vibrate like tuning forks. If an energy vibration in the environment resonates with a receptor’s antenna, it will alter the protein’s charge, causing the receptor to change shape. Because these receptors can read energy fields, the notion that only physical molecules can impact cell physiology is outmoded. Biological behavior can be controlled by invisible forces as well as it can be controlled by physical molecules like penicillin, a fact that provides the scientific underpinning for pharmaceutical-free energy medicine.

These receptors are also described in a paper titled “The Primary Cilium as a Complex Signaling Center” (Berbari et al., 2009):

Fluid movement through the tubules and mechanosensory activities of the cilium may have an important impact on cellular responses. In addition to responses induced by fluid shear, cilia have important functions in pressure, touch and vibration sensation.

In addition to receiving vibrational information, these cilium also may also transmit information about the state of order or disorder within the cell.

Conventional vs. Alternative Perceptions of Sound Medicine

My research revealed an interesting phenomenon that I had not previously considered with regard to the different perceptions and applications of sound in conventional and alternative medicines: conventional medicine employs sound frequencies in the ultrasonic and infrasonic ranges, while alternative medicine employs largely frequencies in the audible range. While the practice of using these ultrasonic and infrasonic frequencies is well-documented and widely employed in conventional medicine, there has been very little attention given to the use of audible frequencies. The two perspectives break down along distinct lines, with just a little overlap.

Uses of Sound in Conventional Medicine

Perhaps the best known and most widely employed use of sound in conventional medicine is the use of ultrasound. Most people are familiar with its use as a diagnostic technology, as in the use of sonograms for viewing of fetuses. The sound waves bounce off the bones and fluid and return the information to a transducer which translates it into a visual image. Medical sonography is also used diagnostically to discover pathologies within the body.

Ultrasound is also used therapeutically. Ultrasound therapy has been shown to cause increases in tissue relaxation, local blood flow, and scar tissue breakdown. The effect of the increase in local blood flow can be used to help reduce local swelling and chronic inflammation, reduce pain and, according to some studies, promote bone fracture healing (Hadjiargyrou et al., 1998). It is regularly employed by physical therapists and chiropractors.

However, despite over 60 years of clinical use there are few studies that definitively verify the efficacy of therapeutic ultrasound. One of the reasons for this is the challenge presented in double blinding the process (Robertson, Baker 2001). This issue makes studies on the effectiveness of sound challenging due to the aforementioned numerous channels of conductivity. Some more recent studies have been more conclusive- one shows a 44% reduction in trigger point sensitivity after just one five minute application of high-intensity ultrasound (Srebley, Dickey 2006).

Ultrasound can also be used to evoke phonophoresis, a non-invasive way of enhancing the absorption of analgesics and anti-inflammatory agents to tissues below the skin using ultrasonic waves (Byl, 1995).

Newer Applications of Ultrasound

Ultrasound is also being used as a non-invasive surgery technique. Magnetic resonance-guided focused ultrasound (MRgFUS) is a process that uses highly focused ultrasonic frequencies to destroy unwanted growths such as fibroids and even tumors by rapidly heating them. The magnetic resonance provides a precise guidance system to focus the sound beam on the specific areas and then raises the temperature to the point where the structural integrity of the growth is destroyed. Although this treatment has been in use since 1994 and has been used on

fibroids, breast tumors, prostate tumors and more, showing highly successful results, it has been slow to catch on (Wilkins, 2008). An important difference between high-intensity focused ultrasound and many other forms of focused energy, such as radiation therapy or radio surgery, is that the passage of ultrasound energy through intervening tissue has no apparent cumulative negative effect on that tissue (Wilkins, 2008).

Another sound application in conventional medicine is the practice of lithotripsy, a technology that breaks up stones in the kidney, gall bladder, or liver with pulsed infrasonic sound waves in the range of 4-12 Hz for the purpose of breaking them up into smaller pieces that are more easily passed by the body. It was developed in the early 1980s in Germany and has since become more widely used but can have complications rates of 5-20% and result in a sensation akin to “being punched in the kidney” (Saher, 2004).

Lastly, a search of sound therapy in a medical database will bring up mostly articles about the use of Tinnitus Retraining Therapy (TRT) to treat tinnitus, the phenomena of a constant ringing or roaring in the ears. While apparently no cure for this has been determined, TRT is an ongoing process that uses sound generators to help the sufferer retrain their relationship with the issue so that it no longer bothers them as much, a process that can take upwards of two years to be truly effective (Gold et al, 2000).

Sound Medicine Used in Both Alternative and Conventional Settings

Music therapy, vibroacoustic therapy, and the Tomatis Method are three techniques that are used both conventionally and alternatively. All three fall into the category of sound therapy.

Music has been used clinically in the United States since WWII, when it was used to treat returning soldiers for what is now known as post-traumatic stress disorder or PTSD. Since then it

has become more widely employed, and is now used in hospitals, nursing homes, institutions, and other rehabilitative settings. Music therapists work to help clients improve their level of functioning and quality of life by using music experiences such as singing, songwriting, listening to and discussing music, and moving to music, to achieve measurable treatment goals and objectives.

Music therapy has been shown to be particularly effective with some of the more challenging members of the population, especially those with Alzheimer's and dementia, autistic spectral disorders, stroke victims, and even prisoners. A study on a group of women in prison in Israel who all participated in a choir showed that group members "experienced a sense of community and togetherness as a result of the exercise" (Silber, 2004). Alzheimer's patients demonstrate less agitation and confusion when engaged in group or individual music exercises, as opposed to being left alone in front of a TV (Darrow, 2004). Autistic children are able to be more expressive and engaging when involved in musical activities (Kim, 2009).

Music is also gaining more acceptance in the medical field, being used during both operations and post-op, and especially in the practice of music thanatology, which combines music- often harp music- with end of life care. It is being used to help people manage pain, anxiety, stress and a surprisingly wide range of other issues.

Studies have shown (Rider, 1985) the method of music therapy that works most effectively utilizes the principles of *resonance* and *entrainment*. Entrainment music therapy is described as "any stimuli that matches or models the current mood state of the individual and then moves the person in the direction of a more positive or pleasant mood state" (Freeman, 2004). For example, if a person is initially agitated, music selected will match that agitation

initially (resonate with), and then move slowly into a melodic piece that can lead to anxiety reduction (entrain to). This technique has been used successfully in reduction of both pain and anxiety.

[It is my observation that tuning forks may work on the same premise, and that this is potentially central to their therapeutic efficacy: initially they resonate with whatever dissonance may be present, gradually entraining, through the inherent coherence and order of the produced tone, the dissonance of the body into a more harmonious expression. For example, if someone is experiencing pain in a particular area, when the fork is initially held over the area, it will sound either sharp, or full of static. After a few moments, the noise can resolve, or settle down, and the fork will sound more harmonious. People often report a simultaneous reduction in discomfort.

This principle is one of the reasons why acoustic sound therapies are different (and potentially more effective in some cases) than synthesized sound therapies – the “living” quality of the acoustic tone allows for this reflective resonance and entrainment to occur.]

Vibroacoustic Sound Therapy (VST) incorporates both music therapy and sound frequencies. VST is the transduction of both sound and music through specially designed beds, tables, or chairs, with speakers arranged in such a way that the sound currents travel directly through the body. Lower frequency waves, in the range of 30-100 Hz are generally used, and sessions can last from 10-45 minutes (Boyd-Brewer, 2004). This technology originated in Sweden in the 1970s and now has grown to be used worldwide in settings from hospitals to spas. Numerous studies have been conducted on this technology and have demonstrated that it is beneficial for a wide range of ailments, from pain and anxiety reduction to reducing problem

behavior in autistic adults and children. One study found that negative stereotypical behavior was reduced upwards of 40% in autistic adults (Boyd-Brewer 2003).

VST can be utilized with just music, pulsed sound waves and music, and in some technologies, combined with visual light stimulation. Most studies have determined that VST is most beneficial when pulsed sound is combined with music, and nearly all studies have shown that it brings improvement to a wide range of disorders (Boyd-Brewer, 2004).

The Tomatis Method, and a somewhat similar technology called Auditory Integrative Training, are other sound therapy techniques that have undergone some, but not many, rigorous studies. While these therapies are fundamentally different, both involve listening to specially created music through headphones for the purpose of retraining the auditory system and creating symptomatic improvement for issues such as autism, learning disorders, hearing disorders, ADHD, and more. The treatment of autism has been the most studied with these techniques, as they are generally effective at reducing the sound sensitivity so common in the disorder, resulting in improved interaction with their environments (Edelson et al. 1999).

Sound in Alternative Medicine

The use of sound in alternative medicine is much more broad and deep than conventional uses. For the purpose of this part of the discussion, it is important to distinguish between what is *sound healing* and what is *sound therapy*. Sound healing refers to the more general field of therapeutic sound use, including singing, drumming, rattling, toning, etc. - whereas sound therapy refers to methods that are more clinical and structured. In alternative medicine, sound therapy is a sub-group of sound healing.

The Human Voice

Conscious and intentional use of the human voice in chanting, singing, and toning has been used for millennia, often within a religious or devotional context. Numerous studies have been done to determine what exactly happens when we chant or sing or tone, whether alone or in groups. Neurological imaging has shown changes in blood flow to the brain, in addition to other biological markers of increased well-being, when experienced meditators are engaged in chanting meditation (Lazar, 2000). One study demonstrated a positive emotional effect and immune competence confirmed by the increased presence of secretory immunoglobulin A in saliva swabs after a choir rehearsal, and even more marked increase after a performance (Kreutz et al, 2006).

The process of toning, which has gained some popularity in recent years, is a sort of informal chanting where the individual simply intones extended vowel sounds which are supposed to help release energy blockages from the body. Chanting is said to have a similar result of facilitating the flow of energy through the body.

Tuning forks and singing bowls

Acoustic instruments such as tuning forks and crystal or Tibetan bowls are widely used in sound healing in a variety of different ways. One of the best known tuning fork practices is called Acutonics, a system of using vibrating weighted tuning forks on acupuncture points that was developed by an acupuncturist. It works on the same premise as acupuncture – that stimulation of these particular areas unblocks stuck or stagnant energy, improving energy flow through the body and supporting the body in healing itself. While Acutonics is used in a variety

of settings including hospitals, it draws fire from critics because the frequencies it employs are “tuned to the frequencies of the Earth, Moon, Sun and Planets.”

Unweighted tuning forks are also used on and around the body. Because this is my particular area of work, I attempted to find studies that demonstrate their effectiveness for pain, anxiety and some of the other issues my clients with these symptoms have reported the work is beneficial for, but I was unable to turn up a single paper. John Beaulieu, one of the authors of “Sound Therapy Induced Relaxation: Down Regulating Stress Processes and Pathologies” (2003), states on his website (www.biosonics.com) that he discovered that tuning forks spike the body’s production of nitric oxide (NO) but this is not addressed in this paper.

Rather, Beaulieu and the other authors speculate that the physiological reason music and sound therapy induce relaxation is because of the relaxing properties of NO, which appears to be released in the presence of certain music and sounds. According to Beaulieu, nitric oxide is not only an immune, vascular, and neural signaling molecule, it is also “antibacterial, antiviral, and it down-regulates endothelial and immunocyte activation and adherence, thus performing vital physiological activities including vasodilation” (Salamon et al. 2003).

Crystal and Tibetan bowls are struck or rubbed to produce pure, penetrating tones, not very different from tuning forks. Metal bowls have been used in Tibet for centuries as an aid to meditation, while crystal bowls are a relatively recent development but the two are used similarly. Dr. Mitchell Gaynor, an oncologist and author of *The Healing Power of Sound* (2002), began integrating music, vocalization, breathing, sound, and meditation techniques in his work with patients in 1991, after first being exposed to a Tibetan bowl through one of his patients. He observed many beneficial outcomes as a result of this integration.

Sound Technologies

Binaural beats are created when two tones are detuned from each other by a small amount. The resulting third oscillation, which is the difference between the two frequencies, will automatically entrain the brain into different brainwave frequencies. For example, if 315 Hz is played into the right ear and 325 Hz played into the left ear, the brain becomes entrained towards the beat frequency of 10 Hz, which is in the Alpha brain wave range. Since the Alpha range is associated with relaxation, this is supposed to have a relaxing effect. Binaural beats are embedded in music, or simply as repeated tones, and listened to through headphones.

Studies suggest therapeutic application of binaural beat technologies can be beneficial for anxiety, mood improvement, behavior disorders in developmentally disabled children, and stress reduction in patients with addictions and focus and attention (Wahbeh et al, 2007).

BioAcoustic therapy is the use of human voice analysis to provide a representation of a person's state of health. Developed by sound pioneer Sharry Edwards, this technology reads the frequencies present in a person's voice and determines what important frequencies are missing. Once appropriate sound formulas are ascertained, they are programmed into a Square 2 tone box, a portable analog frequency generator, allowing an individual to listen privately through headphones or subwoofer (Blachly, 2005). According to their website, BioAcoustic Therapy has had success with varying issues during their research efforts but several specific areas of expertise have emerged: sports injuries and structural problems, pain management, nutritional evaluation, and tissue regeneration being among the most successful.

I was unable to find any published studies on this technology. All of the studies that appear to be done are by Sound Health, the research organization of Ms. Edwards herself.

However, it is noteworthy to point out that the new 2nd edition of *Alternative Medicine: The Definitive Guide* has included BioAcoustics as a recommended alternative therapy, and one of only four sound therapies listed, and that in 2009 Edwards received the Scientist of the Year Award from the International Association of New Science.

The Cyma-1000 is a frequency generating device that was developed by Dr. Peter Guy Manners, a British Osteopath, beginning in the 1960s. This device emits over 500 different frequencies, and fifty years of research has determined which frequencies and combinations of frequencies treat which ailments. It uses an applicator to deliver precise combinations of frequencies associated with healthy tissue and organ systems, and is registered in the United States with the FDA as an “acoustic massager.”

The theory is that these sound waves help to normalize imbalances and synchronize the cell's frequency back to its natural healthy state of vibrational resonance. This technology is used and accepted in the United Kingdom (where it is referred to as “advanced medicine”, rather than alternative medicine) but not so much in the United States. I was unable to find any peer-reviewed published studies on the Cyma-1000 either (or on any of the other frequency generators available such as the Rife machine, Medisonix, and others).

Interestingly, I watched a YouTube video interview with Dr. Manners that took place in the United States in the early 1980s. He was convinced that he was introducing a technology that was going to revolutionize medicine in this country, but now almost thirty years later this type of sound medicine is only just beginning to gain acceptance.

Dr. Guy Manners was not the first person to work with audible frequencies therapeutically and develop a large body of work related to it. Royal Raymond Rife was a

researcher who developed technology beginning in the 1930s to use both audible and inaudible frequencies both diagnostically and therapeutically. His “Rife Machine” technology was based on the premise that each pathological organism had a threshold at which a particular frequency would shatter it, like a wine glass shattered by an opera singer.

By increasing the intensity of the naturally resonating frequency of these microbes, Rife created structural stress that caused them to distort and then disintegrate. He called this frequency the “mortal oscillatory rate” (MOR) and it did not appear to harm any of the surrounding tissues (Lynes, 1987).

He spent many thousands of hours in exhaustive research developing a specific process that involved directing these frequencies through a plasma tube (filled with helium gas turned into a plasma with the introduction of an electric current) to the area of pathology of the patient. Rife reported many amazing cures, including for cancer, through this process. Unfortunately, his work was destroyed, his lab burned, and his reputation ruined, allegedly by Morris Fishbein who was head of the American Medical Association at that time (Lynes, 1987).

The above represented the extent of my research into sound and frequency technologies and practices. Aside from the information about primary cilium on cell membranes and their tuning fork-like nature, and the notion that music therapy that employed the principles of resonance and entrainment enjoyed the greatest success, very few of my questions had been answered. This inability to find more relevant information led me to believe I was quite alone on a fringe frontier with few peers whose work I could look to, to help answer my persisting questions.

I was particularly concerned over understanding the composition of the “energy and information” that I encountered in the body’s energy field. While the esoteric literature discusses the spiritual properties of the human energy field, it neglects to mention whether they are composed of free electrons, biophotons, magnetic fields, or other such scientifically described phenomenon.

However, the next two turns in my journey supplied me with unexpected and welcome pieces to the puzzle.

Discovering Plasma

The first turn occurred one night at the family dinner table, when my son who was twelve at the time said to us, “Did you know there was a fourth state of matter called plasma?”. At the time, I had to say that I did not, in fact, know there was a state of matter called plasma. I was familiar with solids, liquids and gases – somehow learning about plasma was something that had eluded me.

In the same conversation, we were discussing the vacuum nature of space. I must confess my limited science education (I had avoided both physics and chemistry in high school and college) had left me with a rather rudimentary understanding of such things, but I had a vague memory of reading once somewhere that space was not, in fact, a vacuum of empty nothingness but that it was actually filled with something.

That night, I did an internet search of “space is not a vacuum” and was only mildly surprised to discover that space, in fact, appeared to be filled with none other than plasma. I spent the next five months researching plasma in every spare moment, and the information I uncovered completely reframed my cosmological outlook.

What is Plasma?

The technical definition of plasma is that it is an ionized gas present in stars and fusion reactors, occurring when a gas is heated sufficiently that the electrons split off from their nuclei and become a carrier for the electric force. Although generally referred to as the 4th state of matter, it is more accurately termed the 1st state of matter as it is what all other states condense from. An early definition (Webster's, 1913) calls it “unorganized material, elementary matter”.

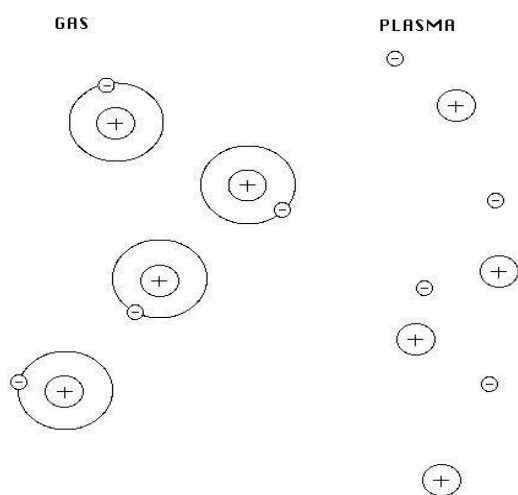


Figure 4. Diagrams of gas and plasma.

Plasma is present not only in stars and intergalactic and interplanetary space, but also in auroras, neon lights, lightning, and even fire at high temperatures. The flow of electrons and ions as carriers of the electric charge and the resultant magnetic fields that surround and guide this flow are considered plasma. Plasma is present wherever an electric charge is flowing.

According to more traditional plasma physics, what we call plasma is something that only occurs in a heated environment. When plasma cools, the electrons join up with the protons and nuclei and condense back into gases and other states of matter. However, in several places, I came across information that likened the human energy field to a plasma, calling it *bioplasma*, or

the fifth state of matter. The following paragraph appears in numerous places on the internet, with no reference to where it comes from and no references to the original work of Inyushin:

Since the 1950's, Dr. Victor Inyushin at Kazakh University in Russia has also done extensive research in HEF (Human Energy Field). He suggests the existence of a bioplasmic energy field composed of ions, free protons, and free electrons. He suggests that the bioplasmic energy field is a fifth state of matter. (The four states are solids, liquids, gases, and plasma.) Inyushin's work shows that the bioplasmic particles are constantly renewed by chemical processes in the cells and are in constant motion. There is a balance of positive and negative particles within the bioplasma that is relatively stable. A severe shift in this balance causes a change in the health of the patients or organism.

Barbara Brennan, former NASA physicist and world-renowned energy healer, also refers to the human energy field as a “bioplasma”, and sees trauma as “frozen” or stuck energy within this bioplasmic medium (Brennan, 1988). Ampere’s law states that wherever there is an electric current, there is a magnetic field. According to research by the HeartMath institute,

The heart's electrical field is about 60 times greater in amplitude than the electrical activity generated by the brain. This field, measured in the form of an electrocardiogram (ECG), can be detected anywhere on the surface of the body. Furthermore, the magnetic field produced by the heart is more than 100 times greater in strength than the field generated by the brain, and can be detected a number of feet away from the body, in all directions, using SQUID-based magnetometers. (McCraty, 2004)

The SQUID, or superconducting quantum interference device, is an extremely sensitive magnetometer, capable of measuring the biomagnetic field produced by a single heartbeat, muscle twitch, or pattern of neural activity in the brain. These instruments are now being used at universities and medical research centers around the world, with the goal of understanding the biomagnetic fields in both diagnosis and treatment.

Here is the image that is often associated with this depiction:

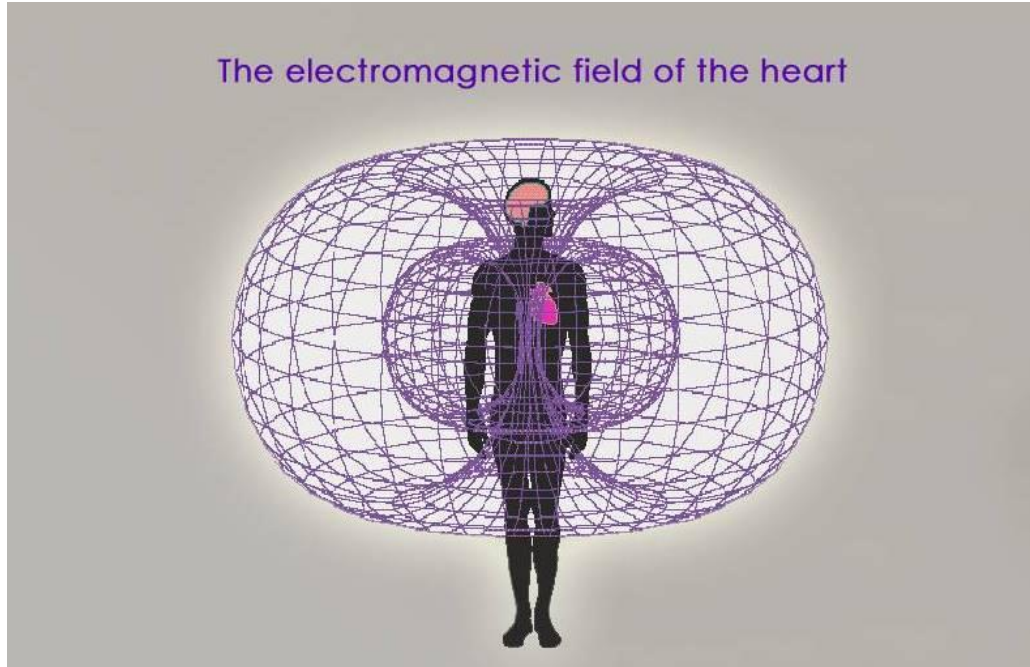


Figure 5. Electromagnetic field of the heart

More on this from the HeartMath Institute:

The electrical energy produced by the heart radiates outside the body into space. The heart's field is not static. It changes, depending on what we are feeling. For example, when we are feeling emotions like anger or frustration, the frequencies in the field become chaotic and disordered. On the other hand when we are experiencing emotions like compassion, care, appreciation or love, the frequencies in the field becomes more ordered and coherent. In a sense, through the electromagnetic field created by the heart we are literally broadcasting our emotions like radio waves. (Martin, 2009)

This image is slightly different from the image generally associated with the human energy field:

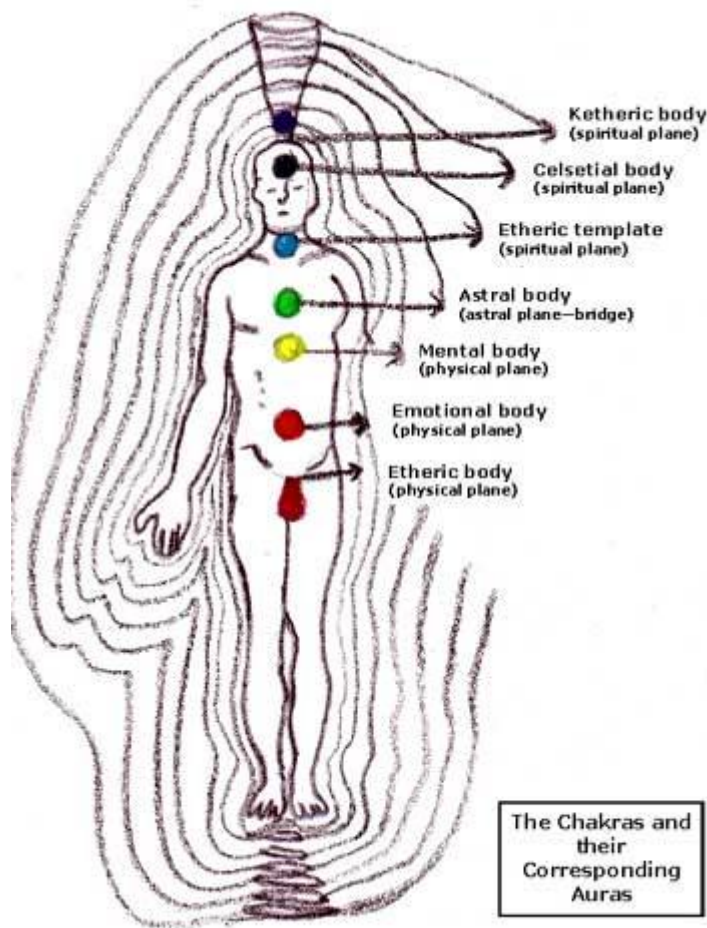


Figure 6. Chakras and corresponding auras

The rings are referred to as Koshas or Sheaths, again stemming from the Vedic tradition, and the colored dots as chakras. Both associations describe the field as *toroidal*, with this being what the top view would look like:

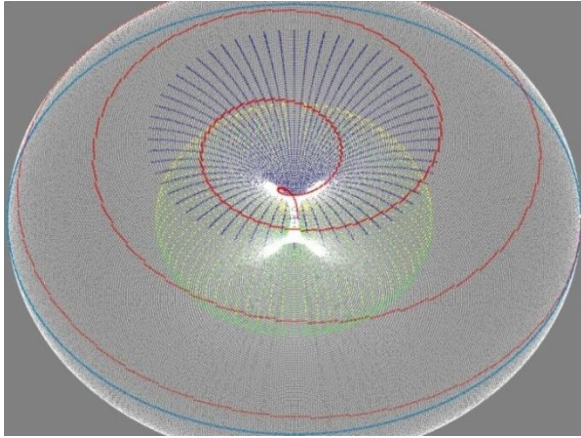


Figure 7. Toroidal field

The toroid is a shape that repeats itself throughout nature. The following pictures are artistic renditions of the toroidal nature of the plasmaspheres of the earth, sun and a photon:

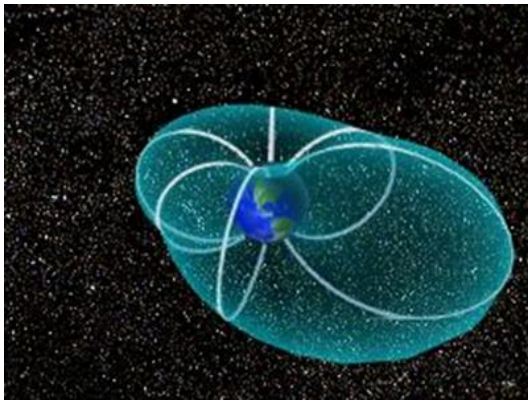


Figure 8. Earth's toroidal field.

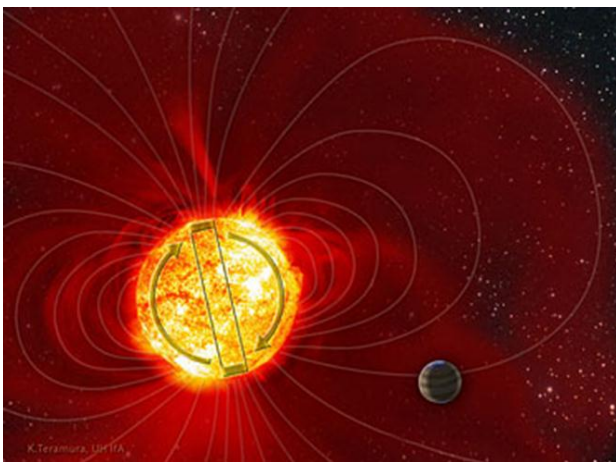


Figure 9. Sun's toroidal field.



Figure 10. Photon toroidal field.

When one considers that the human body carries an electric charge and also has a north and south pole, the larger toroidal representation here, seems plausible:

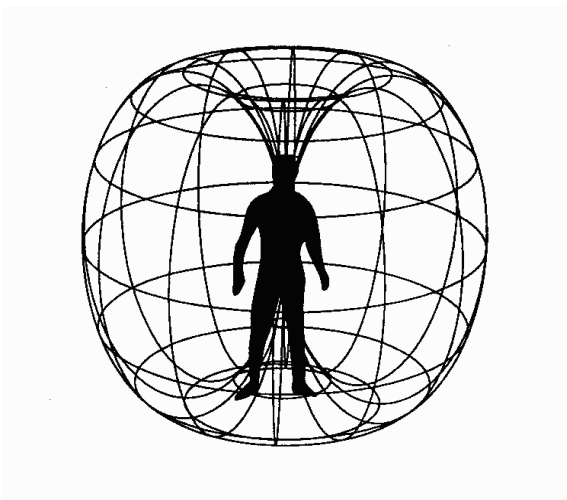


Figure 11. Hypothetical toroidal field of the human body.

Plasma is described as forming twisting filaments, cells, and sheaths. The sheaths are formed at the outer boundaries of the plasma field. They are called *double layer(DL) sheaths*, and have a higher electrical charge than the ambient plasma within the boundary defined by the sheath. When plasma in arc mode (like lightning, or a plasma welder) travels across distances in space, it forms helical twisting filaments called Birkeland currents that spiral around each other

(Scott, 2006). This vortex or spiraling action is present in many different levels of the expression of life.

Considering that life also expresses itself in fractals (the term fractal was coined by mathematician Benoit Mandelbrot in 1975 to refer to the non-geometric repeating patterns observable in nature), or “as above so below”, a similar spiraling action may be present in the subtle body. Consider the following picture:

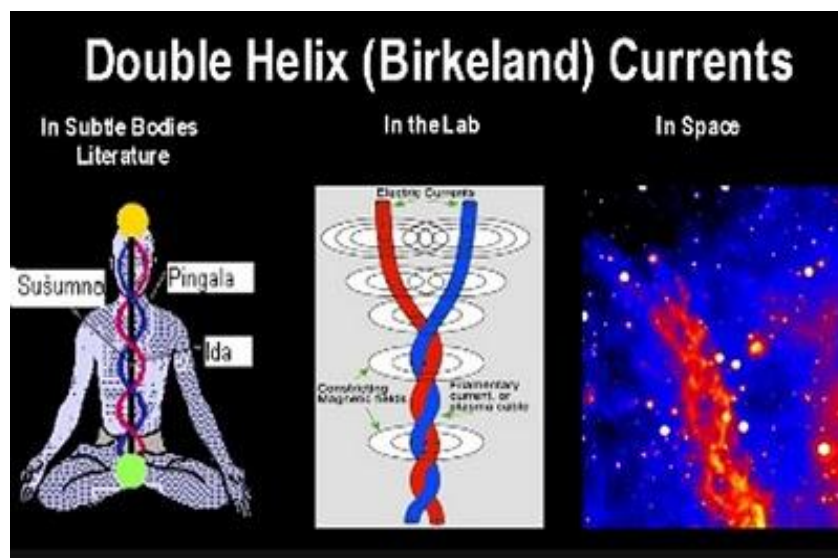


Figure 12. Double helix currents.

The Ida and Pingala are the serpentine channels as described in Vedic literature that begin at the base of the spine and twist their way up to the crown of the head, creating vortices or chakras at each crossing point. These images bring to mind two other common images:



Figure 13. Caduceus.



Figure 14. DNA helix

The image in Figure 13 is the caduceus, an ancient symbol that the esoteric texts describe as originating in Egypt:

The caduceus is an Egyptian symbol that lives prominently in our western mainstream culture, primarily as a logo for many health care practitioners and companies, including the American Medical Association. The principal power comes from the two snakes that wind their way up the spinal column, or central staff. The snakes represent the kundalini energies that move up two etheric channels known as the ida and the pingala in tantric lore. These conduits carry the energy up through the body and connect the physical and spiritual realms. The snakes represent the elements of water and fire, female and male, and yin and yang. The wings symbolize the air element that we associate with our spiritual self. They unite us with the entire cosmos and give us the freedom to explore it. The central staff is the shushumna canal, our central energetic artery that runs within our spinal column. The Caduceus staff is made of metal and represents the earth.
(www.shamanicjourneys.com)

Other sources describe this image as arising from Greek mythology. According to Wikipedia, “The caduceus is the staff carried by Hermes, and by extension of its association with Mercury/Hermes, the caduceus is also a recognized symbol of commerce and negotiation.” The Greeks/Romans took an image relating to the primal aspects of the masculine and feminine energies and related them to the marketplace as opposed to one’s inner elemental experience. This concept of the marketplace taking the place of the cosmos and our own inner riches is true

even today. Either way, it is an image we as Americans have come to recognize as related to medicine.

The image in Figure 14 is an artistic depiction of the helical structure of DNA. From the micro to the macro, we see the movement of the life force as forming these twisting, helical structures of negative and positive, also described as feminine and masculine, or yin and yang.

And with this term, *life force*, we run into a four hundred-year old problem (some sources cite it as a 2500 year old problem): the fundamental disagreement of the Mechanists vs. the Vitalists over the nature of life. In *Energy Medicine: the Scientific Basis* (2006), James Oschman describes it this way:

Mechanists hold that life obeys the laws of chemistry and physics. Vitalists have historically held the belief that life will never be explained by normal physics or chemistry and that there is some form of mysterious ‘life force’ that is separate from the known laws of nature.

This debate took center stage in 1784 with the drama that came to surround physician Franz Anton Mesmer. Again, quoting Oschman:

In 1773, Franz Anton Mesmer began using magnets for healing. His patients frequently noticed ‘unusual currents’ coursing through their bodies prior to the onset of a ‘healing crisis’ that led to a cure. Soon Mesmer discovered that he could produce the same phenomena without the magnets, simply by passing his hands above the patient’s body.

Mesmer claimed that he detected a magnetic fluid that surrounded the body and formulated a theory closely akin to Chinese medicine. Wikipedia describes it this way:

Mesmer understood health as the free flow of the process of life through thousands of channels in our bodies. Illness was caused by obstacles to this flow. Overcoming these obstacles and restoring flow produced crises, which restored health. When Nature failed to do this spontaneously, contact with a conductor of animal magnetism was a necessary and sufficient remedy. (http://en.wikipedia.org/wiki/Anton_Mesmer)

What is particularly interesting to me regarding Mesmer is that I have also had the same experience or feeling sense – that there is indeed a sort of magnetic fluid surrounding and

interpenetrating the body, and that blockages in this field are representations of blockages within the body. Where energy does not flow, pathologies arise. Unblocking the energy in the field can lead to a resolution of the issue in the body. The coherent tones produced by activated tuning forks appear to act as a “conductor of animal magnetism” in that they have the capacity to unblock the flow of the life force, or free up “frozen” bioplasma.

[The study of the movement of plasma in plasma physics is called *magneto-hydrodynamics*, implying a magnetic fluid.]

Unfortunately, a panel of scientists decided in 1784 that Mesmer’s “magnetic fluid” and “animal magnetism” were figments of his imagination and he was disbarred from practicing medicine and went on to live the rest of his life in exile and obscurity. And science has maintained this particular stance ever since, with the Mechanists trumping the Vitalists.

“Vibration trumps chemistry” Albert Einstein

For most of the twentieth century, the mechanistic biological process has been described by chemistry, involving local interactions on a molecular scale. However, this model does not explain the instantaneous and complex coherence of the entire organism. The explanation of chemical reactions governing the operating system is too slow to describe the complexity and rapidness of the interactive systems of an elite athlete, for example. The need for a better model is indicated.

Discovering the Biofield in Science

“The existence of a ‘bio-field’ or ‘bio-energetic field’ directly contradicts principles of physics, chemistry, and biology.” (Stenger, 1999).

“Authority in science exists to be questioned, since heresy is the spring from which new ideas flow.” John Polyani

After reading about plasma and bioplasma, I felt as though I was on to something. However, aside from Barbara Brennan and the elusive Russian and Chinese research, the only other researcher whom I could find espousing a similar idea was Jay Alfred, author of *Our Invisible Bodies* (2006). In this book, Alfred outlines the logic involved in the concept of “higher harmonic electromagnetic energy bodies” but then goes on to use the explanation to describe ghosts and life after death, both off-topic concepts to my research. Additionally, he holds no degrees. I was feeling a great lack around finding American scientists who were researching the human energy field, until I came across the word “biofield” in the book *The Energy Healing Experiments* by Gary Schwartz, PhD.

According to Schwartz, the term biofield was chosen by a 1994 panel of NIH scientists to describe the field of energy and information that surrounds the human body. Suddenly, searches in PubMed and Medline began to bear fruit, and I became aware of a small but earnest group of American scientists working to describe the composition and mechanics of this field. No longer out on a fringe by myself, I found myself awash in the rich and useful contributions of those who had come before me in this same quest to understand and define something that the Mechanists had been exerting a strong effort towards ‘brushing under the rug’.

Pioneering Biofield Researchers

One of the first Americans to do extensive research on the fields surrounding matter was Harold Saxton Burr, who was a professor of Anatomy at Yale Medical School from 1929- 1973. From 1932-1956, Burr conducted extensive work on exploring energy fields, which he termed *L-Fields* (Oschman, 2004). During this time, he was going against the current of the mainstream biology and medicine, which was geared towards a mechanistic and pharmaceutical perspective.

Despite the fact that his peers considered the concept of life fields to be complete nonsense, Burr was convinced that his L-fields were the blueprints of the living matter. According to him, if a disturbed energy field could be detected and returned to normal, the pathology could be prevented from arising. While not accepted in his time, his work became the basis of a later researcher by the name of Robert O. Becker.

Becker was the author of the classic book, *The Body Electric, Electromagnetism and the Foundation of Life*, and one of his many contributions was demonstrating acupoints to be special regions of higher electrical conductivity than the surrounding tissues (Becker, 1976). Becker also believed that the electromagnetic fields in and around the body were primary for giving rise to and organizing the physical body.

More recently, Rupert Sheldrake has put forward the concept of what he calls morphic resonance and morphic fields. Sheldrake is a biologist and prolific writer who is currently a controversial figure in contemporary science due to his determinately Vitalist perspective. He describes morphic fields in the FAQ of his website in this way:

The Hypothesis of Formative Causation states that the forms of self-organizing systems are shaped by morphic fields. Morphic fields organize atoms, molecules, crystals, organelles, cells, tissues, organs, organisms, societies, ecosystems, planetary systems, solar systems, galaxies. In other words, they organize systems at all levels of complexity, and are the basis for the wholeness that we observe in nature, which is more than the sum of the parts. Morphic fields also contain an inherent memory given by the process of morphic resonance, whereby each kind of thing has a collective memory. For example, crystals of a given kind are influenced by all past crystals of that kind, date palms by past date palms, giraffes by past giraffes, etc. In the human realm this is similar to Jung's theory of the collective unconscious.

(<http://www.sheldrake.org/Resources/faq/answers.html>)

Sheldrake's argument, that the fields give rise to the order, structure and function of organisms, points to a holistic, non-reductionist view of nature. He notes that "the shift from a

mechanistic to holistic paradigm of nature has been happening in stages for several decades, but mainstream science is still committed to mechanistic and reductionist view of nature.”

This perspective underscores the primary difference between the viewpoints of the Mechanists vs. the Vitalists. The Mechanistic view is that any biological fields in the body are a consequence of the presence of physiological activity, whereas the Vitalists argue that the physiological activity is a consequence of the electromagnetic and other subtle energies present.

The argument can also be summed up in the phrases that we are either a “spiritual being having a physical experience,” or a “physical being having a spiritual experience.” My personal opinion is that we are both, as each gives rise to the other in a dynamic and continual exchange. Light is, after all, both a particle and a wave from the human perspective.

Certainly the research of the last few decades, as Sheldrake notes, underscores the validity of the Vitalist perspective. In her seminal 2002 paper, *The Biofield Hypothesis: Its Biophysical Basis and Role in Medicine*, Beverly Rubik, PhD describes the biofield in this way:

This paper provides a scientific foundation for the biofield: the complex, extremely weak electromagnetic field of the organism hypothesized to involve electromagnetic bioinformation for regulating homeodynamics. The biofield is a useful construct consistent with bioelectromagnetics and the physics of nonlinear, dynamical, nonequilibrium living systems. It offers a unifying hypothesis to explain the interaction of objects or fields with the organism, and is especially useful toward understanding the scientific basis of energy medicine, including acupuncture, biofield therapies, bioelectromagnetic therapies, and homeopathy. The rapid signal propagation of electromagnetic fields comprising the biofield as well as its holistic properties may account for the rapid, holistic effects of certain alternative and complementary medical interventions.

Rubik offers the following table of CAM practices that may involve field interactions, and notes that they challenge the current dominant medical paradigm. These therapies remain

outside the mainstream because there is no agreed upon scientific foundation to describe how and why they work.

CAM PRACTICES THAT MAY

INVOLVE FIELD INTERACTIONS.

1. Acupuncture, electroacupuncture, laser acupuncture
2. Acupressure and reflexology
3. Bioelectromagnetic medicine
4. Electrodermal testing
5. Electrostimulation, electrotherapy
6. Biofield therapies (Reiki, Therapeutic Touch, Healing Touch, etc.)
7. Homeopathy
8. Bach flower remedies
9. Magnet therapy
10. Microwave resonance therapy
11. Low-level laser therapy
12. Phototherapy
13. Color therapy
14. Orgonomy
15. Sound Balancing (added by author)

Figure 15. CAM Practices

Rubik describes how physics had to be changed in the early part of the twentieth century to accept the observation that light behaves as both a particle and a wave, and says:

We need to consider particle–wave duality for the constituents of life. On the one hand, life is made of complex biomolecular structures; on the other hand, it is dynamic waves with information. Whereas the molecular view of life provides a scientific basis for allopathic medicine, the field view offers a scientific foundation for many types of CAM modalities.

She points out that the components of the biofield are not agreed upon, but goes on to describe it further as follows:

The components of the biofield are the EM fields contributed by each individual oscillator or electrically charged, moving particle or ensemble of particles of the organism (ion, molecule, cell, tissue, etc.), according to principles of conventional physics. The resulting biofield may be conceived of as a very complex dynamic standing wave (Rubik, 1997b; Zhang, 1995, 1996). It has a broad spectral bandwidth, being composed of many different EM frequencies, analogous to a musical symphony with many harmonics that change over time. The biofield hypothesis offers a unifying hypothesis to explain the interaction of objects or fields with an organism, such as are used in certain CAM interventions. All objects radiate an EM field signature of resonant frequencies. If an object (such as a nutritional supplement, homeopathic, or drug) or

externally applied EM field (such as that produced by a therapeutic electromagnetic device) is brought near to or inside the body of an organism, the frequencies radiated by the object (or applied EM field) would, in theory, interact with the organism's biofield. For example, it could modify, reinforce, destabilize, or otherwise interact with the biofield, by the principle of superposition of waves in the behavior of chaotic nonlinear dynamical systems. This would be the first step in mediating a biologic response.

This descriptor is a possible explanation of how and why audible sound frequencies interface with the biofield as they do, producing beneficial therapeutic outcomes. The following statement also supports this mechanism:

Many natural frequencies are emitted by the brain and heart, and externally applied fields at these same frequencies can cause entrainment and physiological, psychological, and behavioral changes. Siskin and Walker (1995) have reviewed the healing effects of specific frequency windows, and some of them are as follows: 2 Hz, nerve regeneration; 10 Hz, ligament healing; 15, 20, and 72 Hz, stimulation of capillary formation and fibroblast proliferation. This suggests that EM bioinformation is fundamental to regulation of biologic function, and that it is encoded in the biofield. Thus, the natural oscillators in living systems themselves emit EM bioinformation regulating biologic function. In other words, cells and tissues may be "whispering" EM signals to one another and "listening" for relevant signals from their surroundings.

Finally, Rubik concludes that:

The biofield hypothesis has implications for the life sciences in general, predicting a new communication system in organisms that involves EM bioinformation. It has implications and explanatory power for CAM; it predicts that many CAM modalities act dynamically on bioregulation, rather than on structure–function relationships in the body. Moreover, it provides the rudiments of a scientific foundation for the energy medicine modalities of acupuncture, homeopathy, bioelectromagnetic therapies, and biofield therapies. The first stage in the *modus operandi* of these modalities is predicted to be an interaction with the organism's biofield, and the result is an effect on homeodynamics.

While the fields that Rubik describes are more of the classical, electromagnetic fields (veritable), other scientists purport to be able to measure the more subtle field interactions (putative).

Subtle Energy in Science

Dr. William Tiller, Professor Emeritus of Stanford University and a pioneering researcher of subtle energy, has taken this even further. While the scope of Dr. Tiller's work lies beyond the scope of this paper, it is worth noting that Dr. Tiller and his colleagues at Stanford University developed a subtle energy detector - an ultra-sensitive Geiger counter-type device - with which they demonstrated the existence of an energy field that is not in the electromagnetic spectrum. Dr. Tiller was able to demonstrate with this device, as well as a variety of other devices and methods, that this subtle energy responds to human intention and focus (Tiller, 1997).

Another American scientist, Dr. Valerie Hunt, Professor Emeritus of Physiological Science at UCLA, has also been studying the biofield for many decades. From Dr. Hunt's website:

Postulating that human bioenergy fields oscillate at significantly higher frequencies than EKG or EEG machines were designed to measure, Dr. Hunt developed a high frequency instrument which records the bioelectrical energy that emanates from the body's surface. She proved that energy radiating from the body's atoms give frequencies 1000 times faster than any other known electrical activity of the body. (www.valeriehunt.com)

Dr. Hunt also conducted research using an electromagnetically shielded or "mu" room and found that when electromagnetism was removed from the room, people "went to pieces", having emotional breakdowns for no particular internal reasons. When ambient electromagnetic energy was restored to the room, participants found themselves feeling fine again (Hunt, 1996). This would imply that the presence of EM fields is necessary for the organism to maintain a sense of coherence and "togetherness."

[I have come across several sources, without citations, that claim that the magnetic field of the earth has declined 80-90% in the last 4000 years. When one considers this in relation to

the above study, it makes sense that we are seeing a steady rise in mental illness and a collective sense that the world is falling apart].

Biophotons

While Rubik, Tiller, and Hunt (and others) discuss electromagnetic waves and frequencies, German researcher Fritz Albert Popp describes what may be the same phenomenon using a different term: biophotons. Biophotons are quanta of coherent light that are thought to be emitted and absorbed by the DNA present in cells. Discovered in the 1970s by German scientist Fritz Albert Popp, biophotons appear to create a holographic, coherent electromagnetic field throughout the body that uses EM frequencies for instantaneous communication throughout the systems.

Biophoton: In modern quantum theory, light occurs in small packets or particles of energy called photons. In living processes, certain specific types of photons are emitted and received primarily by the DNA, as well as a few large biomolecules. They serve as a function of communications, stimulation of biochemical reactions, and coordination within the body. (Swanson, 2010)

[I had not thought about the similarity/difference of the two concepts until I started writing this paper but knowing that light appears as both a particle or a wave, when we discuss electromagnetic transmissions and biophoton emissions, it appears we may be discussing the same thing. For those of us who are more “particle” inclined, the concept of a biophoton flying about our body may be easier to grasp than the concept of an EM wave.]

In other words, the science of biophotons describes the level of information below the level of chemical interactions. Sophisticated cameras have detected that the human body (indeed, all living organisms) emit these biophotons. Normal human emission from the skin is between a few and a few hundred per square centimeter (Swanson, 2010). When an organism is under

stress, however, it emits more biophotons. The picture below depicts the fingers of a smoker. Note the greater emission on the finger that habitually holds the cigarette:

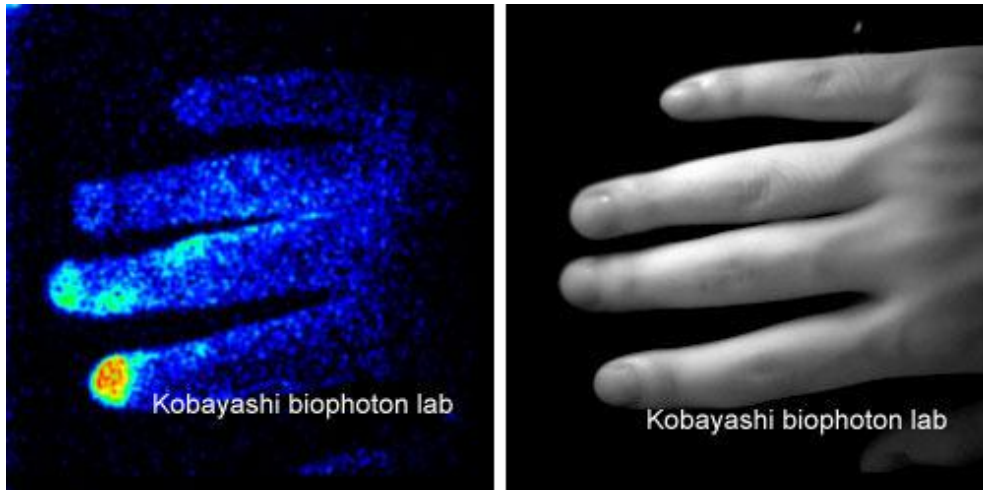


Figure 16. Biophotons from fingers of a smoker.

These photos below show a soybean sprout before and after it has been scored with a sharp knife:

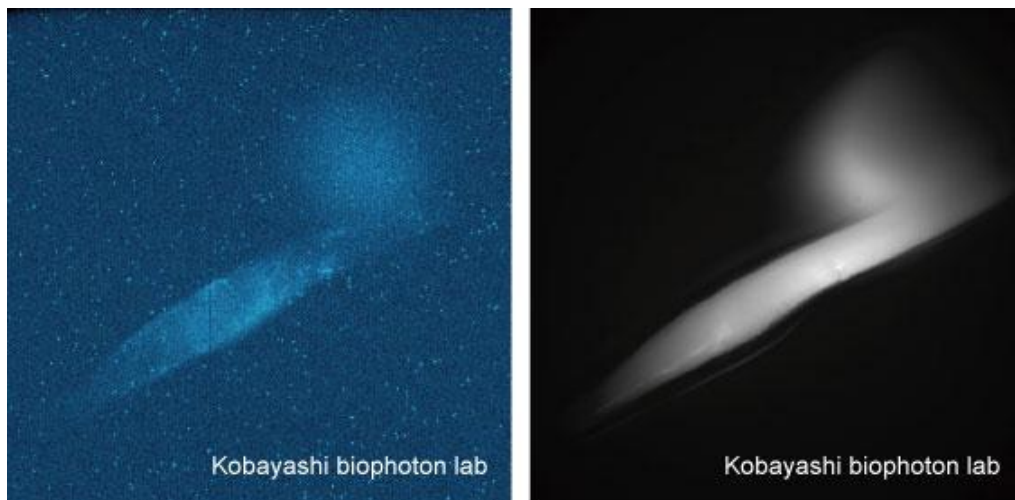


Figure 17. Biophoton emission of a soybean sprout before being scored with a knife

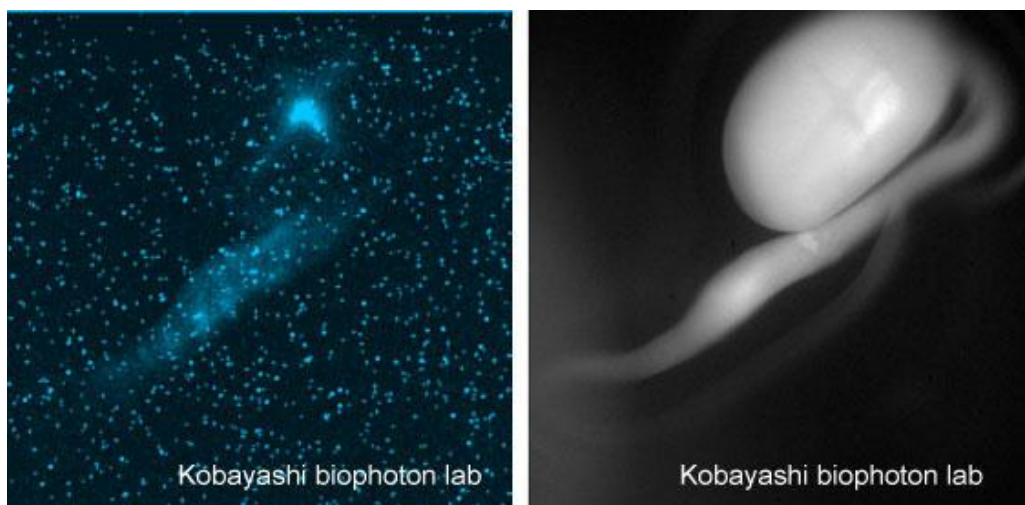


Figure 18. Biophoton emission of a soybean sprout after being scored with a knife.

You can see how in Figure 18, image on left, the sprout is “leaking light” (greater biophoton emission) or life force, after it has been scored with a thin knife blade. In “death by a thousand cuts” one is leaking not only blood, but perhaps one’s vital, organizing, electromagnetic force as well.

The rapidly evolving field of biophotons may be useful in bridging science and spirituality: the mystics have been telling us for millennia that we are beings of light, Carl Sagan has told us we are “star stuff” – now we can see how the mechanism of coherent light may provide the energetic framework on which the physical body and its physiological processes take place.

The work of British physicist Herbert Frohlich has also provided us with greater insights into this mechanism – he pointed out that many biomolecules act as emitters and receivers of electromagnetic energy (as carried by biophotons) as well as vibrational energy (primary cilium), and in doing so, provide the frequency required to allow specific reactions within the cells (Swanson, 2010).

Since most of the emission and reception is thought to happen through DNA molecules, biophotons act in a synchronizing fashion throughout the organism. This phase synchronization plays a crucial role in cell communication and coordination. These signals may be carried through the acupuncture meridian system (Swanson, 2010).

Rubik says the same thing:

If indeed the acupuncture system of meridians and points is part of the biofield, and if EM waves are the means by which a signal moves through the acupuncture system, then the biofield hypothesis predicts that this signal will travel faster than the speed of nerve conduction (20 m/s), because EM signals in the body travel at nearly the speed of light.

Rubik adds:

As part of biologic regulation and maintenance of homeodynamics, cells and tissues may engage in continuous EM field sensing and exchange of information. This is proposed to be an inherent communication system in the organism based on waves, in which each constituent of life may serve as both antenna and receiver of information-carrying signals. (Rubik, 2002)

However, all of this describes the electromagnetic aspect of the field. Yet, according to Swanson, (an MIT and Princeton educated physicist who has extensively researched the science of subtle energy) few biophotons escape – they mostly live within the organism. And electromagnetic measurements, other than the SQUID, are unable to measure classical EM energy more than a few centimeters off the body. Although some sources say that the SQUID can measure the field of the heart up to three feet off the body, when I work with my forks I find information imbedded in a medium that appears to relate to the individual six or sometimes more feet away from the surface of their skin. So what, then, constitutes the terrain that extends away from the body?

The Subtle Body

According to Rubik, the body produces acoustic signals and also potentially non-classical fields. These non-Hertzian or longitudinal waves may emanate at right angles from the EM field produced by the body's electrical system, and these waves may be carriers of energy and information (Rubik, 2002). Longitudinal waves are also called scalar waves, torsion waves, or potentials. They appear to be of a much higher frequency, and seem to underlie the traditional Maxwellian- Hertzian waves of the EM body.

When waves cancel each other, obeying the law that matter and energy cannot be created or destroyed, they resolve back into the underlying, unifying field of potential, dissolving, as it were, into the zero point field or quantum vacuum.

Indeed, in the minds of many mathematicians and scientists, the postulated 'standing waves' are conceived to be 'progenitors' of the transverse electromagnetic waves of Maxwellian physics, since it appears that interactions between pairs of potential, or standing, waves generate the Maxwellian propagating waves of our more tangible world. (Lockhart, 2010)

According to Swanson,

Corresponding to this biophoton field is a torsion field which is generated through the same processes that create biophotons. They carry much of the phase information of the biophoton field, but because they involve spin interactions, they are not absorbed as strongly by matter. As a result they are not contained inside the body, but radiate out and form a torsion field beyond the body. (Swanson, 2010)

So, what does that mean exactly? What are spin interactions? What is a torsion field?

While this is a question that we could spend a lot of time exploring, it is impossible to go into depth with it without committing many pages to it. In the simplest terms possible, a torsion field is created whenever a particle spins. Consider the statement, "whenever an electron wiggles, it produces a photon." This spinning energy can either be right handed (clockwise) or left handed (counter-clockwise), with each direction acting on matter in different ways. Subtle energy, like

electromagnetism, comes in two different polarities, positive and negative, and seems to exist as a sort of “higher harmonic” to electromagnetic energy, as it is present wherever electromagnetic is, yet it is fundamentally different from electromagnetism.

For example, the research of German chemist Baron Karl von Reichenbach (1788-1869) into the nature of subtle or torsion energy, which he termed “od”, resulted in the following awareness:

When positive od is added to positive od, it results in a stronger concentration of positive od, with stronger effects. Likewise, when negative od is added to positive od, they tend to cancel. This additive nature of subtle energy leads to the use of the term “charge”. Subtle energy charge is NOT electrical charge. Electrical charge exerts a very strong force, while subtle energy is usually much weaker. Electrical charge is conserved, which means that its quantity remains the same, it may flow elsewhere, but it does not simply disappear. By contrast, subtle energy or od can decay over time and disappear. (Swanson, 2010)

Another way to look at this subtle energy is through the Chinese concepts of Yin and Yang chi. Yin represents the feminine or negative aspect, Yang, the masculine or positive aspect. Earlier, we mentioned the work of Russian scientist Inyushin, who observed that the bioplasmic field around the body, which may be composed of free electrons, ions and protons, demonstrates a balance of both positive and negative particles. When the balance of this becomes unbalanced, illness can ensue. Chinese medicine sees this as an imbalance in Yin and Yang energies, and seeks to restore that balance.

Other cultures also describe this subtle energy:

There are close to 50 cultures around the world that have been identified as understanding the concept of 'life energy' in one form or another; e.g., Ki (Japanese), Chi (Chinese), Prana (Sanskrit), Neyatoneyah (Lakota Sioux), Num (Kalahari Kung), Ruach or Roohah (Hebrew), Rooh (Persian), Lung (Tibetan), and so forth. All of these cultures have their energy healing modalities. Bioenergy healing is one such modality. Bioenergy healing (of Eastern European origin) Chi Gong healing (Chinese), Sufi healing (Middle East, North

African and to some extent Asian origin), Prana Healing (India/South Asian), and so forth are all broadly practiced modalities. (source unknown)

So subtle energetic action appears to involve a torsion force that travels in either a right hand or left hand direction. Depending on the direction of the spin, the energy takes on either a negative or positive polarity. This spin is also ascribed to the concepts of entropy and negative entropy (or *syntropy*, the term I prefer, coined in 1974 by Hungarian physiologist Albert Szent-Györgyi, proposed to replace the term "negative entropy").

Entropy and Syntropy

“The tendency for entropy to increase in isolated systems is expressed in the second law of thermodynamics — perhaps the most pessimistic and amoral formulation in all human thought.” Principia Discordia, 1965

Entropy is defined as the tendency of a closed system to lose order over time. The Second Law of Thermodynamics states that entropy is inevitable in a closed system – the general common perception arising from this is that the second law predicts the ultimate dissolution of the universe. However, as Einstein notes, “The field is the only reality” - which essentially states that there are no closed systems in the universe because everything, being ultimately waves, has no boundary. The Russian astrophysicist Nikolai Kozyrev noted this:

In the universe, however, there are no signs of the degradation which is described in the 2nd law of thermodynamics. Stars die and are born again. The Universe sparkles with inexhaustible variety. In it one finds no traces of an upcoming thermal and radioactive death. ...Such systems, in a state of degradation, should prevail in the universe, and yet they are almost non-existent. (Swanson, 2010)

Swanson goes on to say,

From observations such as this, Kozyrev arrived at his theory of torsion and “time density” which concludes that when entropy increases in one place, it decreases elsewhere. This avoids the “heat death” scenario. His theory states that whenever an irreversible process occurs (like the burning of a log), which leads to a local change of entropy, this change causes a local change in the density of time, and this change is radiated away in a twisting wave carrying ‘torsion’ which will be absorbed at some other location. The absorption of the wave causes an entropy change in the opposite direction

creating negentropy (syntropy) at the point of absorption. The overall entropy of the system therefore does not change.

This idea can also be represented this way:

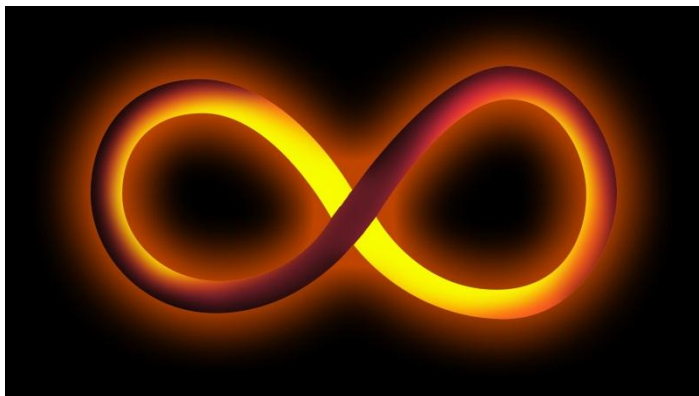


Figure 19. Infinite regeneration.

Depending on the direction of the spin, torsion is either syntropic or entropic – or yin or yang. Now consider this quote:

“The physical is inherently entropic, giving off energy in ever more disorderly ways. The metaphysical is antientropic, methodically marshaling energy. Life is antientropic.”

R. Buckminster Fuller

What begins to emerge is a curious picture of the Western mind being in denial of the anti-entropic or syntropic force. What Fuller is referring to when he says “the metaphysical” is the spiraling torsion force of subtle energy, the life force itself, the very same motion that gives rise to galaxies, planets, humans, snails, and flowers -this miraculous force that western science calls “negative entropy.” When this life force is present, in motion, it maintains order and structure and function. When it departs, entropy ensues.

So, how is all of this related to sound balancing?

In Swanson's model, the biophoton field remains within the body with no biophotons in the field beyond the body.

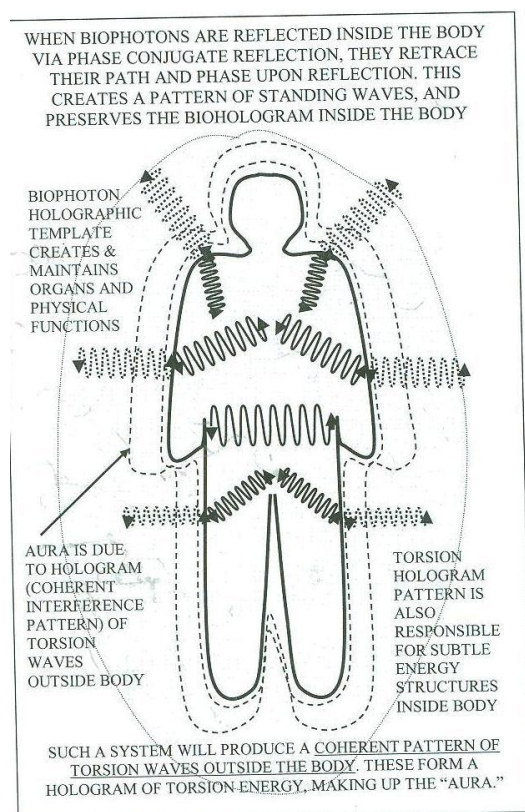


Figure 20. Swanson biofield model.

However in my work, I have the experience of encountering what appears to me to be “charge” in the field. Biophotons, being light, are carriers of the electromagnetic force. These pockets of charge appear to “follow” the tuning fork in a way that is reminiscent of iron filings following a magnet. Once returned to the spiral vortex of the chakra, the charge appears to be “absorbed” and “digested” by the body, implying that the charge “prefers” to be in the body, rather than frozen or stuck in the field.

Furthermore, these charges appear to me to relate to a trauma in a person's life. It has been determined that an organism under stress emits more biophotons, which may be considered

a “leaking of the life force.” Periods of trauma, whether mental, physical or emotional, often recede in time and space without ever being completely processed by the individual (a process referred to in Shamanism as “soul loss”).

These memories seem to live on as charged “pathological oscillations” within the biofield, exerting a non-beneficial frequency within the person’s body and mind. Over time, they can create a breakdown in the order, structure and function of the physical body (entropy).

By locating, discharging, and neutralizing these dissonant frequency fields with tuning forks, and by returning the energy previously associated with them to the body, we are counterbalancing the entropy of the system, engaging in a syntropic process by manipulating the subtle energy or torsion field of the body. This is healing – the returning of order, structure and function in the body.

Part of what may be involved in this process is a quantum principle called “Bose-Einstein Condensation”:

When many photons of the same frequency and phase are present, they tend to pull other photons into the same state. Consequently, the high energy states tend to capture loose biophotons and get them to march in step together (like a laser). This is key to negentropy (syntropy). Instead of letting the photons spread out into many states, it pulls them into a few high energy states. In this way, it preserves order and reduces randomness or entropy. So Bose Condensation is one of the secrets of negentropy in living systems. (Swanson, 2010)

This potentially explains several things – why the same patterns tend to repeat in our lives over and over (for example, sadness over perceived abandonment) – because the biophotons in that part of our field keep drawing the experience to us (think, law of attraction). And also how the tuning forks comb up these biophotons and return them to the center of the chakra, where they gain a more laser-like coherence. The increase in the coherence of EM

emissions above a chakra after sound balancing is very evident in the spectrogram screen shots of the next section.

This observation of systemic breakdown and disease as a consequence of unprocessed trauma is in keeping with the German New Medicine, a body of work proposed by Dr. Ryke Geerd Hamer. His work asserts that healing can only occur after the conflict or trauma that has given rise to the disease has been resolved, and as such focuses on identifying and resolving the original trauma (Hamer, 2001).

Hamer's work and others like it focuses on where these traumas live in the brain; comparatively, sound balancing offers a way to actually find where these oscillations are present within the field, and potentially employs aspects of the physics of resonance and entrainment to support them in resolving. This apparent resolving of pathological oscillations and integration of imbalance back into the body is a process somewhat similar as well to the Shamanic concept of "soul retrieval".

From a shamanic perspective, during a traumatic experience, parts of the self get split off and left behind. The shaman enters into a trance state in order to locate and restore these lost pieces. When I first began employing the 'click, drag and drop' method within the field, I called it "sonic soul retrieval". The outcome of locating, de-differentiating, neutralizing, and integrating these disturbances in the biofield can be immediate and profound, on all levels of functioning.

Sound Balancing Biofield Model

I am proposing a torsion field of subtle energy that acts as a template or container, and that is a higher harmonic of the physical body.

According to Candace Pert, author of *Molecules of Emotion* (1996),

Your subconscious mind is really your body. Peptides are the biochemical correlate of emotion... They provide the body's most basic communication network... This means that emotional memory is stored throughout the body... and you can access emotional memory anywhere throughout the network.

I would add that they are *electrochemical* events, with an aspect embedded in the body and the higher harmonic of that represented in the field. For example, by my observation, and also Chinese medicine, the emotion of anger appears to be stored in the liver. If someone has a lot of anger, there will be a strong field of energy around the liver. When I manipulate the pattern of the field around the liver, discharging the energetic aspect of the electrochemical substance of anger, the physical body then potentially releases the chemicals. I have seen a number of situations where clients have experienced healing crises that have included skin rashes, fevers, mucus and flu-like symptoms as a result of energetically discharging the liver.

This manipulation of the field may happen not only through the physics of entrainment of the dissonant frequencies, but also through the intention of the practitioner. The work of William Tiller, the Princeton PEAR lab (*Princeton Engineering Anomalies Research*, where consciousness-related physical phenomena were studied scientifically and in-depth from 1979-2007) and others, has shown over and over again that human intention influences reality through the manipulation of the electromagnetic and/or subtle energy environments. This may be due to the fact that thoughts and emotions may be associated with electromagnetic events which also produce subtle energy. The subtle energy of the practitioner interacts with subtle energy of the client.

I have found that where I put my attention and intention is the level at which I am able to work. In the region of the third chakra, or solar plexus, there are many different layers of information present: here we have the organs of the liver, gall bladder, stomach, spleen,

pancreas, kidneys and adrenals; also the energetic information related to mother, father, the emotion of anger, and more. If I want to work on one specific thing, for example the adrenal rhythm, the mediating factor in this equation is my *intention* to work on this level. It is this ability to use my mind with this precision that seems to make the work effective in the way that it is.

(I will use this opportunity to point out that I have trained 50 people in this method so far, and all of them have been able to replicate the basic practice, with younger people tending to excel more than those who are older. Some of their experiences of working with tuning forks are included in the appendix).

So, this brings up yet another challenging part of looking at all of this- and that is the question of consciousness and subtle energy.

Neither science nor philosophy can even begin to explain how it is possible that mind, consciousness or spirit could influence matter or energy (subtle or electromagnetic). Nevertheless, the evidence is there, demanding explanation. David Feinstein

As I understand the concept of qi (or ki, as it's called in Japanese), it's not just energy. It's really an intelligent energy, with consciousness attached to it. In other words, in Eastern philosophy, they never suffered a Cartesian split. So when they're thinking about an energy field around the body, it's not just physical electromagnetic or biophotonic fields, it's imbued with mind. It's something much more profound and not quite part of Western science. Beverly Rubik

Since we have consciousness, it is not unlikely, (according to the fractal nature of nature) that consciousness – a greater consciousness than ours of course, is everywhere. Maureen Lockhart

In order to fully understand and advance energy medicine (healing), science will have to accept the currently taboo possibility that pervasive intelligence (consciousness) exists throughout the universe. Gary Schwartz

Consciousness and Subtle Energy

The concept of a universal consciousness, mediated by torsion waves propagating through the holographic ether or zero point field (or quantum potential) can potentially explain the mechanics of how distance healing works. Just as I can place my awareness now in my left foot, now in my right hand, with no sense of that awareness having to travel in a linear way through my body, so I can place my awareness on a client 1000 miles away and use my subtle energy field to influence it at a distance. Torsion (spirals) may be the energy of consciousness.

Numerous experiments have been conducted that have demonstrated that Chi Gong masters (a form of energy healing originating in China) can create healing in one petri dish vs. another over great distances, with great precision (Swanson, 2010). Whether we place our awareness in a specific finger of our body, or a specific petri dish far away, it is fundamentally the same action.

Ultimately, science is coming to see what mystics have been saying for millennia – the universe is one unified field of varying frequencies, the arrangement of which determines the information present. The subtle field around the body is a field of potential, of energy, and information – of mind and consciousness.

Chapter III – The Research Study

The Story of the Study

In the process of developing the sound balancing protocol, I had spent fifteen years moving tuning forks around the human body, and about eight of those years working in the area up to six feet or more off the body. During this time, I had observed that the tuning forks changed in pitch, volume and timbre in different areas, and that I had the curious ability to “hear the stories” in these areas of dissonance. It seemed to me that if I could find an objective way to share these observations, it could advance our collective understanding of what the biofield is and how it can be worked with therapeutically.

When I started to think about how my own research could provide concrete, observable data of the process and outcomes of sound balancing, I felt that a visual representation of the frequency shifts could be a useful means. The changes in pitch and timbre and volume in a session were easily discernible auditorily to a person present, but “seeing is believing”. I researched the best method to capture the sound signal and render it visible, consulting with a sound engineer regarding hardware and software appropriate for the process.

I initially thought to use a transducer, or acoustic pick-up – a device that would attach to the tuning fork and record the vibrations- but I found that having the transducer attached to the fork dulled the sound quality, and I was concerned this might lessen the therapeutic effect of the process. The next step was to try a variety of microphones, and ended up settling on a lapel mike, suspended by a wire attached to my wrist over the end of the fork.

While less than ideal, this did do a fairly good job of capturing the signal. After exploring a variety of software, I chose Raven, a product designed by Cornell University to analyze bird calls. It contains a spectrum analyzer, which shows the fundamental tone plus the overtones and displays the changes in the signal in real time.

The process of figuring out how to capture the signal and how to operate the software was more complicated than we anticipated – in fact, the entire study was a Murphy's law kind of experience. Basically everything that could have gone wrong did go wrong, from dead batteries in the mike, to software upgrade downloads that corrupted the program, to blizzards on research days. I had initially planned on having eight volunteers experience three sessions each, but due to the numerous technical challenges and other difficulties, I was only able to include four volunteers with just two sessions each.

Additionally, the limitations of the space we were using did not allow for me to walk all the way around the treatment table like I usually do in a session so I was unable to work on both sides of the volunteers, instead doing only one. The process took longer so I was also unable to flip them over and work on their backs. I also had to speak aloud which fork I was using and how far off the body I was at any given juncture where I encountered a pocket of noise so that my intern assistant could write this down and note what time it was on the recording. This continual switching to a different part of my brain than I usually use for this work was surprisingly challenging and exhausting, as was having a wire run down my arm.

As a consequence of all of these limitations and challenges, the sessions that were received by the volunteers were not like a typical session. I was uncomfortable and stressed, the protocol was truncated, the space was inadequate, and the volunteers did not receive the ideal

number of treatments. All in all it was a frustrating and stressful experience, and a poor approximation of the study as it was originally conceived. That said, however, we did manage to extract some interesting information, and we also learned quite a bit about how to proceed in future studies.

Research Project: Introduction

Sound balancing is a unique healing modality I have developed that uses the acoustic audible sound frequencies produced by a variety of tuning forks to detect and correct distortions/dissonances within the human biofield. Vibrating tuning forks are passed six feet to four inches or so around the body, beginning with the feet and working up the body with the subtle energy and chakra (or energy center) system, including the knees.

When the forks pass through an area of resistance/distortion within the field, the overtones produce a dissonant sound that can be heard by both practitioner and person being treated (in fact, this change in tone is so obvious that it can be heard in a classroom of 20 or more people). After a short time of being exposed to the orderly frequency produced by the tuning fork, the body appears to “retune” itself and the overtones cease to sound dissonant. Areas that have a lot of “charge” (perhaps associated with biophotons) are “combed” in a repetitive sweeping motion to the midline of the body, where the energy appears to be reabsorbed and digested by the chakra system. This system of distortion detection and resolution appears to work on physical, mental, emotional, historical, ancestral issues and more.

This system has been developed over the last sixteen years of clinical application and has been used on many hundreds of people. In practice, it has been my observation that the process appears to diminish pain and anxiety, and resolve a wide variety of imbalances including but not

limited to vertigo, migraines, emotional imbalances or ‘stuckness’, insomnia, chronic fatigue, irritable bowel syndrome, Crohn’s Disease, blood sugar imbalance, menstrual issues, and more. This observation is purely anecdotal, based on the feedback I have received from my clients.

In this study, we were examining the visual rendering of the tuning fork signal through a software program, looking for correlations between signal changes and reported state changes of the participants.

Materials and Procedures

This trial study of four volunteers to describe the effect of sound balancing on their physical, emotional and mental states was conducted at Johnson State College from March 2011 through May 2011. Volunteers were healthy adults, three women and one man, ages 28-55. Each volunteer received two sessions of sound therapy treatment, one week apart.

The study was conducted in a sound-treated recording studio. The volunteers lay face up on a massage table for 60 minutes for each session. An intake form was filled out by the volunteer and given to an assistant, and an outcome form was given immediately following the session. A three day follow up form was given via e-mail, and I did not see any of the forms until the end of the study.

On the forms, the volunteers listed, on a Likert scale of 1-7, what their perception was of how they felt mentally, physically and emotionally, and identified, on a diagram of the body, where they were experiencing pain or discomfort. Space was also given for them to share any other thoughts or observations about their perceived state.

Sessions were performed in the same manner for each volunteer and each session. I began using the tuning forks at the feet, then the knees, then each chakra: Root, Sacral, Solar Plexus, Heart, Throat, Third Eye, and Crown.

I was hooked up to a lapel microphone suspended over the end of the tuning forks, which was plugged into the computer. Using a software program, Raven Pro, the sound was made visible in real time in a spectrogram rendering of the fundamental frequency and its overtones, or harmonics.

A tape measure placed on the floor was used by my assistant and me as a tool for noting the distance from the body where the dissonant sounds were produced. There was an initial strike of the tuning fork directly over the area of the body or chakra for before and after comparison, and then the next was at the outer edge of the biofield (typically in the range of 5 feet from the body). Each subsequent strike was done closer to the body until I returned to the original place of the initial strike directly over the chakra.

Based on the changes in the tones produced by the forks, I can perceive if there were injuries to an area of the body or if emotional trauma had been endured at a certain time in the volunteer's life. The timeline is estimated by how far away from the body a change in tone occurs – information closest to the body appears to be of recent or current origin, whereas information at the outer edge appears to relate to earliest childhood, with the years in between falling chronologically like rings in a tree.

The tuning forks are used both diagnostically – to locate areas of resistance, distortion or static within the field, and therapeutically, simply by holding them in a place of dissonance until

the dissonance resolves, and also by “combing” the associated energy into the chakra at the midline of the body.

Method and Results

After we finished seeing each of the volunteers, my intern and I examined our data, going through each Raven recording and comparing it to the notes she had taken while I was working. We looked for patterns and correlations in the visual rendering to what the volunteers had reported on their intake and outtake forms, on the intern’s notes, and then compared them with the stories the volunteers shared with us after the process was complete.

We found a definite correlation to the signal and what I verbally reported to the intern. What was particularly interesting was seeing how weak a signal was over a chakra at the first strike and then how much more vibrant, with more overtones, it became after the chakra was combed. Most of the images below depict this phenomenon.

My interpretation and description of the results are shared here in the form of stories and pictures, a qualitative and not quantitative analysis. While I look forward to future opportunities to engage in a more comprehensive quantitative approach to research, the limited resources available to us suggested proceeding as we did.

Volunteer A, “Arthur”

Before his first session, Arthur (not his real name) described himself as “feeling average” physically, mentally and emotionally. He noted pain in both hips, knees and shoulders. When he arrived for his second session, he noted that his energy level had increased considerably after his first session and remained that way for several days. Below are the screen shots of the strike

sequence of his root chakra during his first treatment, the area of the body that I have come to see as describing the overall energy level of the individual:

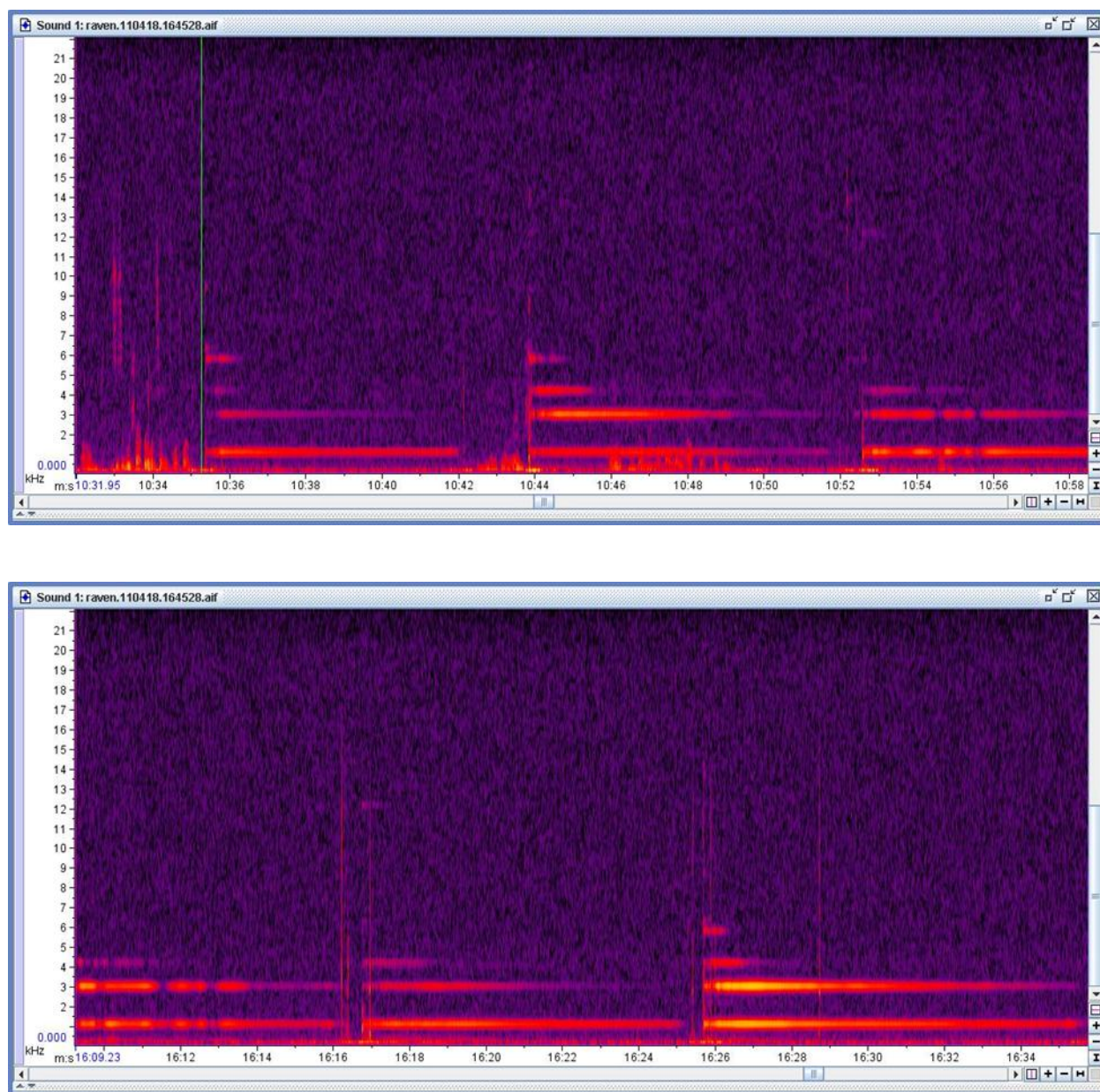


Figure 21. Arthur, 1st chakra.

The first of the six strikes in Figure 19 depicted is right over the root chakra at the beginning of the sequence. The line on the bottom is the fundamental tone and the lines above it

are the overtones. This particular fork is 174 Hz. Each pulse is a strike - the second strike is the fork at the outer edge of the field, and the subsequent strikes are during the combing process, while I was engaging in the “click, drag and drop” method of moving charge in the field from the periphery to the midline. The final strike is over the root chakra again, subsequent to combing. One can see that there is much more vibrancy depicted in the final strike over the chakra than in the initial strike over the chakra.

Arthur’s Story: “When I was approached by my wife to sign up I thought it interesting and was curious to experience what others have had done.

I didn’t know what to expect out of the sound balancing but I did find it a nice moment of peace. Due to the layout of the room, I always felt “off” at the end of the first two sessions. It felt to me, which it was, like an experiment for the computer, the forks, and my “energy” field. However there was much attention paid to my knees, shoulders, and sciatic nerve; this area I can’t stress enough is a tense area. There were times I felt that the nerve would ache more when tone got closer, or octaves that got higher. After the first session my back felt ok but this didn’t last, the pain came back with twice the vigor. After the second session the nerve, which shot down both legs, blazed like never before. Yoga and stretching were helpful but would never release the tension and became to hard to do, what I thought was my wallet was now clenched muscle due to sciatic pain.

My knees would start to ache starting the next day and progressed till the next session, but cracked less, it was as if the discomfort was just sitting below the kneecap and felt quite curious. My shoulders just got thick and tense. I never felt too good after being tuned just strange and manipulated.

The third meeting was much more conducive to a therapeutic treatment. The areas of focus were the same even though she tuned all around. The beginning was the same and felt the same as before, then I was asked to lay face down. She thankfully used very low tones at first placing one in contact with my lower back in specific areas. In one moment everything changed, a fork was placed gently on my back off to the side, She said it felt thick, muddy. To me it was interesting sensation as much as it was pain, it was quite a thing to feel. Eileen grabbed the muscle, squashed and pulled it away and down. Things got intense, forks were humming, I was rocked vigorously back and forth with matter of fact firm movements to loosen the tension in the hips and lower back.

After the treatment I felt a little better but wasn't sure. I was told to take it easy, to rest, drink water, and relax. When I got home I stepped out into a pain free world and was shocked. It was the best I felt in months and I didn't listen to a bit of the good advice. I had too much energy to sit or relax. In fact it was a startling amount of energy that would not be stopped. The energy released from my hips shot straight to my head.

The twinge in my back is now a dull reminder of what lays beneath. Having the tension gone has freed me up to do yoga and stretching again and stay on top of things."

Commentary: Arthur was in significant pain from his inflamed sciatic nerve, and this was evidenced very clearly in the very strong signal his body produced when the forks passed over the nerve that was inflamed. As he noted: "There were times if felt that the nerve would ache more when the tone got closer, or octaves that got higher".

What he does not note in this narrative but he did note on his 2nd intake form was that his energy level went up significantly after his first session and stayed elevated for three days

afterwards. I surmise this was a consequence of moving the energy from the aching hips to the root chakra.

(There are some discrepancies in what he recorded in his forms vs. what he shares here in the narrative, however the narrative was written about 4 weeks after his treatments).

His experience with discomfort after the partial sessions underscores to me the importance of the protocol being followed properly in a treatment. Because I couldn't work on his back side for the first two sessions, we were unable to work completely through the issues he was carrying. I have learned it is very important to work around the sacrum with a client who has difficulty with sciatica. As such, he felt 'strange and manipulated'. This sense that he was 'half-baked' spurred me to offer him a third session, without wires and recording, in my regular treatment space.

In this session I was able to conduct a full protocol, and he was able to receive the full benefit – working on the problem spot in his low back from behind and being able to include some visceral manipulation as well. Since I am trained as a bodyworker, I also integrate this into my practice, and the use of the physical manipulation certainly played a role in the release of the tight muscles and stuck energy in the hip.

Volunteer B, “Betty”

On her forms, Betty noted that she felt somewhat better physically, mentally and emotionally after each session. This sense of mild improvement was noted on her 3 day and 2 week follow up forms as well.

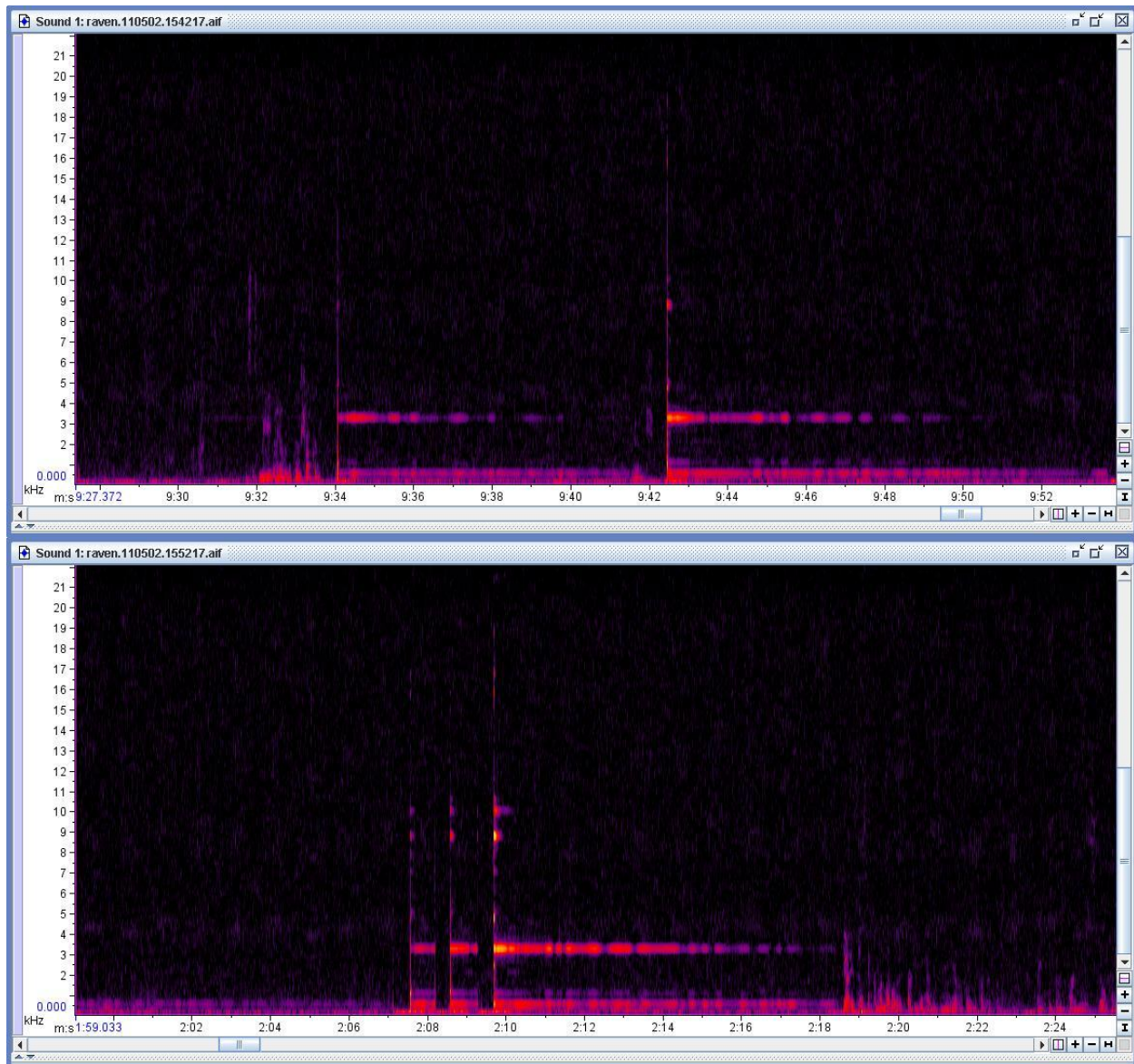


Figure 22. Betty, 3rd chakra

The screen shots in figure 18 are of the 3rd chakra using a 518 Hz fork. The first strike is right above the chakra before combing and the final strike is above the chakra after combing.

Note the emergence of greater vitality and more overtones by the final strike.

Betty's story: "I was familiar with Eileen's method of healing through reading her website in addition to my daughter having previous successful sessions with her.

In my first visit with Eileen, she told me that it would not be a normal session due to space, time and the need to pause in order to record findings.

Her explanation of the tuning method was clear and insightful. She explained that she would use different tuning forks with a range of pitches starting few feet away from me and working her way in until there was a change in frequency or static. When she reached a place of static, she was able to make an approximation of what age range and issue that occurred in my life by where she was standing. She compared this to counting the rings of a tree in order to know it's age.

One of the main issues that presented itself throughout my life and in each session was centered around self-worth and using my voice. When Eileen reached a frequency change, she prompted me with a question and age range which triggered a memory that related to this particular issue. Even though it was not necessary for me to remember the issue for her to proceed with the tuning and bring my chakras back into balance, it was important for me to be aware for my own development. How, I do not know, but each time Eileen reached a blockage she would know whether it was a physical, mental issue or emotional issue.

**After each session I was extremely relaxed and felt less anxiety.*

**After a few weeks I felt more sensations and aliveness."*

Commentary: Betty had no real pain in her body, so we did not encounter the same problems that we did with Arthur as far as pain resolution went. Her experience of relaxation, diminished

anxiety, and greater aliveness seems to be a common and predictable outcome of this treatment, based on my past experience.

The screen shot is of the 3rd chakra, an area traditionally associated with self-esteem and self-worth, and in Betty's case, where she experienced her anxiety in a physical sense.

Depending of the quality of the sound, I can often determine if it is a consequence of an injury (on the physical level), or of emotional/mental trauma – there are subtleties in the tone that differentiate the levels.

Volunteer C, “Candace”

Candace reported feeling considerably low in mental and emotional states, but above average physically before her first session. After the session, there was vast improvements mentally and emotionally, and slight improvement in physical well-being. However, in her 3 day follow up, she seemed to be back to where she had been emotionally and mentally when she entered her first session. She also reported feeling worse physically.

Prior to her 2nd session, Candace reported feeling very good physically, mentally and emotionally. Immediately following the session there were significant decreases in her mental and emotional state as well as a slight drop in her physical state. Her 3 day and 2 week follow ups reported mixed results.

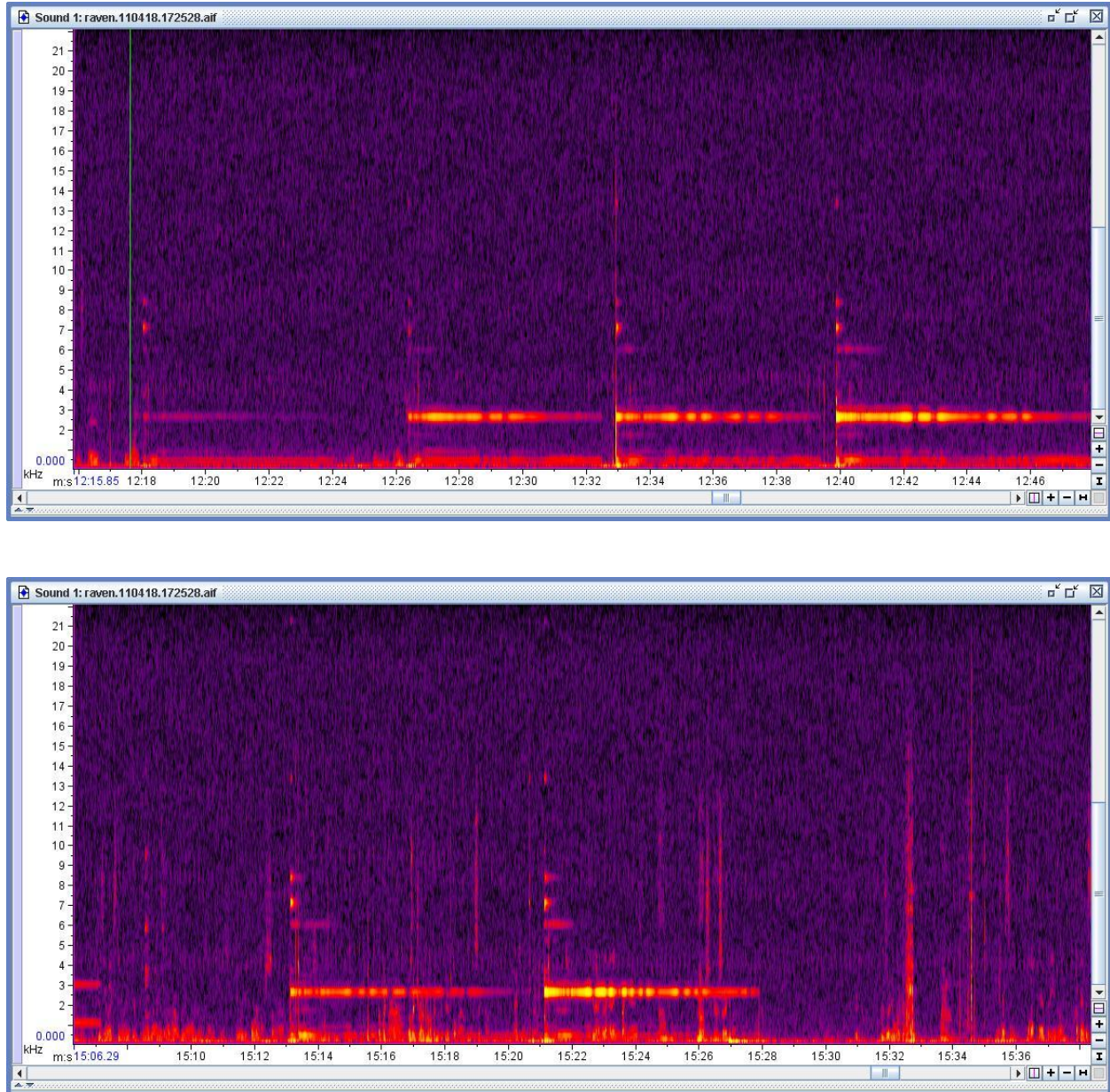


Figure 23. Candace, 2nd chakra.

These images are from Candace's 2nd chakra, with a 174Hz fork. The top image is the first strike right over the chakra, showing a very weak signal. Subsequent strikes are combing

through the field and the last one is over the chakra again. (The vertical lines are background noise). There was a lot of energy trapped in her field, especially 2/3 of the way towards the outer edge of her field (3rd and 4th strikes). I determined that this was during Candace's teenage years, a time when she was highly stressed. The bottom image shows the final strike over the chakra after sound combing, with much greater vibrancy and more overtones.

Candace's story: *"I expected radical change for various reasons. First, I witnessed such change to a friend that was working with Eileen. Followed by another friend who was just beginning to work with Eileen and I saw some subtle shifts in her. Along with talking to another client of Eileen's who expressed the powerful shift that occurred for her.*

Second, I needed something to change. Witnessing change to my friends, hearing another's story and my desire for change led to a high level of anxiety about going which didn't stop with the first session.

I can sum up my experience as WOW with little things immediately and more profound shifts over time.

Right after the first session while leaving, I was walking with my usual gait but in a few steps at that pace I almost fell over. My body did not feel as heavy or did not have the weight that kept it erect at that gait. It was pretty funny because I didn't trip over something, it just happened!

The snow was coming down hard and it was bad driving conditions when I left the first session. I noticed on my drive how unusually calm I was for what normally is a white knuckle drive. The Hogback Road is terrible to travel in snow with curves, narrow and such. But I was so relaxed and the best part was that I fishtailed a few times and laughed! That would normally

put my heart in my throat. The other immediate experience is that after each session it was the second day that all my faculties were affected. This experience was the first sign of something larger shifting.

The profoundness experienced brought me into a deep sadness, a sharp defensiveness, bitter anger, violent dreams, and heightened senses. These emotions are not new to me but they had not been around for a long time. The violent dreams had been years since occurring. The sadness was well hidden and defense and anger are always there but more subtle like a dull ache.

What is important, for me, at this high level of emotion created by the tuning is Eileen's guidance. Eileen's gift of intuition, insight and intellect allows me to inquire, why do I feel this way, why is this happening. In session, Eileen is able to determine a relative age, emotion and describe the sensation of the/those emotions. These abilities are helpful in assisting through the shifts.

I like singing. I equate singing to provide the same care-freeness and joy that bubbles up when you skip. I've never had formal singing lessons and I have no aspiration to be a singer – it is purely just fun to do. I have not sung since being a kid except two occasions over the years with my husband on long road trips. He would start to sing and I would join in.

I've begun singing on my rides to and from work and it is a moving experience (pardon the pun). I get messages because I'm singing whatever pops out of my mouth, no particular song. Or, it is just sounds and no words.

One message received was when you heal yourself you will be able to forgive and be with them again. This was over issues of abuse that surfaced up. I have no memory of this occurring at the hands of another but I was able to see how I was abusing myself.

Another profound experience is that I feel I have new “eyes” in that I see myself differently, can see the soul and essence of myself. I’ve continued to work with Eileen after the two research working sessions. I’ve had four sessions to date with another scheduled.

The singing also is helping to relax my voice which is allowing the fear I experience to settle, not rise up and out of my mouth as anger, ugly words or retreat and say nothing. But, allowing my heart to open up, stay calm and speak wisely if necessary.

In my mind abuse takes you out of your body and far away. But more importantly, the tuning work has shown me fear that I hold and hold when I am out in the world interacting and communicating. How sweet it is!.

This is still very much a work in progress as it seems to be penetrating my life in many ways and the shifts are not done. I feel thankful, good and satisfied that change is happening. I’m not surprised by anything, as I’ve always been on a path of self-reflection and development. I’m happy that there are alternative modalities to healing, health and empowerment besides our traditional venues. I feel fortunate to be tied into this alternative community.”

Commentary: Candace had a lot of repressed emotion and memories, and her tendency to want to avoid dealing with them had put her into a sort of autopilot life. Our first sessions brought these emotions up to the surface for her, and allowed the deeper self beneath those to surface as well. While she felt better directly after her two initial sessions, she did go through the

“healing crisis” often reported by people who have been repressing strong emotions as they rise to the surface of one’s awareness.

“I feel like I have a consciousness now, like I am really here”, she told me in one of her subsequent sessions. Candace opted to continue with the work, engaging in 4 more sessions after the two we did as part of the research project.

Her experience of feeling relaxed even while driving in a snowstorm, and also the desire to sing, are also very common outcomes of the work. There is a deep relaxation and unwinding of the body that occurs in a session, going far deeper than massage and also lasting longer. The more anxious a person is, the more dramatic their experience of relaxation can be.

Each of us is a natural singer and people often open to their voices as a consequence of a diminishment of the habitual tension in their bodies and minds.

The theme of change shows up over and over again in Candace’s narrative – her friends and coworkers ‘changed’ as a result of the work, and she both wanted and feared change in her own life. Because the sound intervention repatterns the energy flows in and around the body, change is inevitable. If one is in the mental habit of always energizing the neural and nervous system pathways of, for example, guilt, once this pattern has been interrupted and the energy associated with it has been centered and neutralized, different patterns of thought and action arise. People become more functional, more ‘true’, less prone to emotional and other imbalances in their bodies and minds.

Volunteer D, “Deborah”

Deborah reported feeling better emotionally, mentally and physically after her 1st session and reported that her energy level was quite high after her first session. She reported feeling

worse physically after her 2nd session, but mentally and emotionally at her best. 3 days later she felt considerably better physically and still well on the other scales.

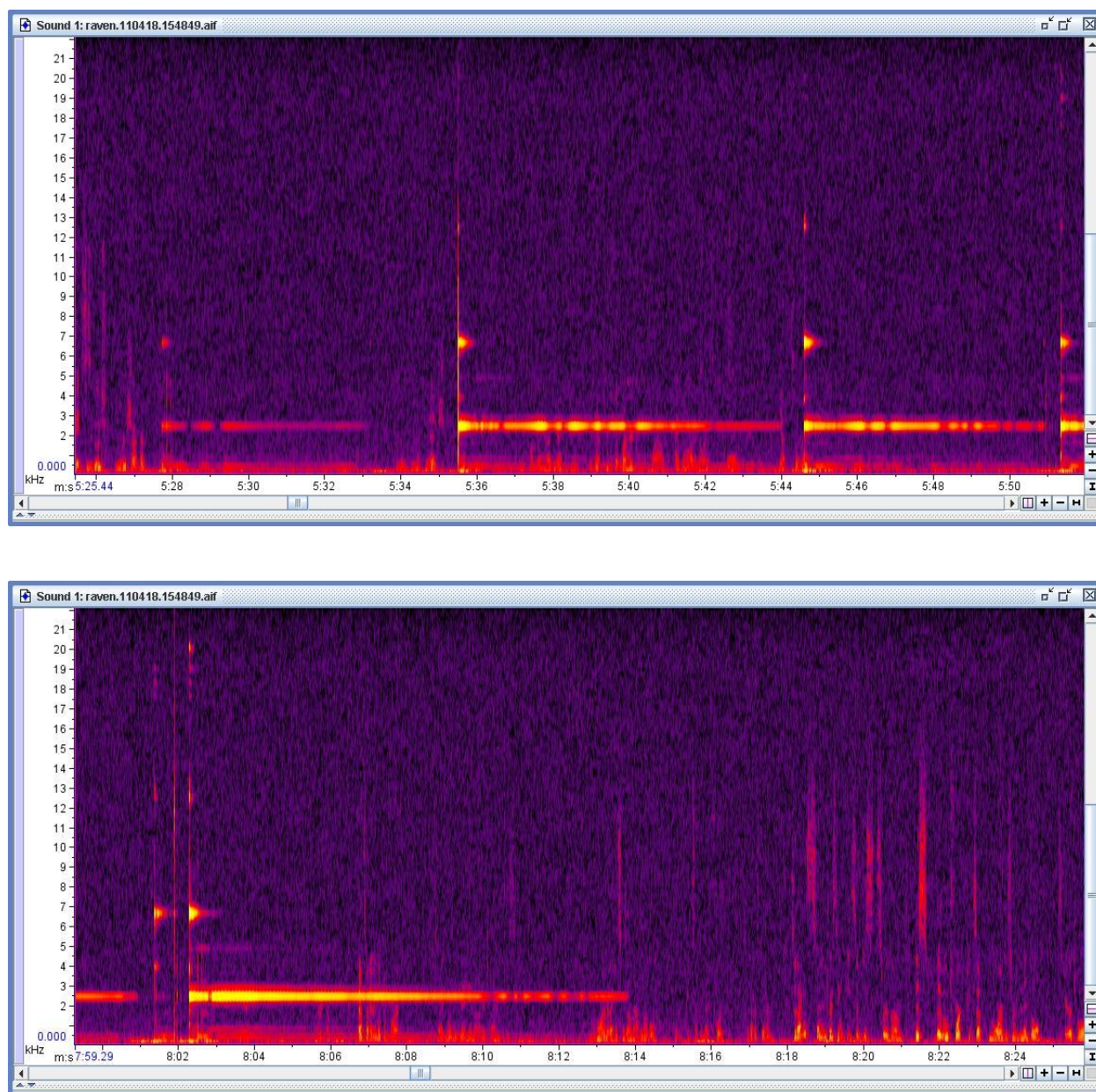


Figure 24. Deborah, 1st chakra

Figure 22 show's Deborah's root chakra, with a C 256 Hz fork, beginning and end of sequence. The first strike in the top image is right over the chakra and shows very low energy. In

the image below, the last strike is the fork held over the chakra after completed sound combing.

Deborah reported a dramatic increase in overall energy after first session.

Deborah's story: *"When I first went for a sound treatment I was feeling good (so I thought, now I know what good feels like). I did have some body aches, but they were reoccurring and I just deal with them. I did feel a bit off balance and I thought it was because I had a lot going on in my life. When I went to my first treatment I expected nothing in particular. I do know we are vibrational beings and something would happen and I was curious to find out what it would be.*

I was very surprised by what happened during the session. Eileen was very accurate with dates about times in my life when incidents occurred with my mother and father. I was fascinated by her ability to know these things through my knees (as I recall). During the sessions I became aware of blocks that were in my way of enjoying life to the fullest. Once she made me aware of them I was able to do something about them or not. Eileen told me about my liver, spleen and I think kidney or bladder. I was fascinated by how she knew these things. I am a Reiki Master so I do know that we are energy and our energy extends outward from our body, however sound therapy is awesome. If I was out of "tune" she brought another tuning fork and got me back in balance. If it was a tough one she got out her special tuning fork and used that one. Now I am balanced in a new way.

During the sessions I would say I experienced a lot of memories by the questions Eileen asked me or the comments she made (access to the blocks).

After the session I was always very energized and slept really well the next few nights (sleeping is not always easy for me, I don't get tired enough to go to sleep until after midnight).

After a treatment I went to sleep around 10:00pm and slept until about 4:00am (very odd for me). I still am sleeping better than I ever have in over 40 years.

Long term outcome:

Well I am sleeping better, I have a better outlook on life. I was very positive before and now I am envisioning quantum leaps in my life. Like earning \$10,000 monthly, being married by the end of the year (I don't have a boyfriend). I now view both of them as not just possible but doable and done in my mind.

I feel like a different person in my mind, I believe these treatments assisted in elevating my level of awareness. Now I know on a gut level that I am the creator of my reality. It's no longer conceptual for me, it's reality. The blocks that were in my way have been removed or they are now vibrating on a harmonious vibration, instead of a resisting vibration."

Commentary: Deborah was the least previously informed of all the volunteers – she did not have anyone close to her who had received the work and so she arrived with a very open mind.

I think what she says about a 'resisting vibration' is very interesting, as dissonance in the field appears to me as a sort of resistance. The more trauma an individual has encountered in their life, the greater the amount of resistance they have in their field. I am starting to see this as a tendency to hold one's breath and resist what is going on during a traumatic experience. When this energy is neutralized, it is no longer taking up valuable energetic resources. People regularly report to me elevated energy levels and the ability to maintain a greater degree of order in their lives and homes after their fields have been cleared of resistance/distortion. Also, as with Deborah, they experience a greater awareness and ability to consciously create their lives.

Chapter IV: Discussion

“The transition from a paradigm in crisis to a new one from which a new tradition of normal science can emerge is far from a cumulative process, one achieved by an articulation or extension of the old paradigm. Rather it is a reconstruction of the field from new fundamentals, a reconstruction that changes some of the field’s most elementary theoretical generalizations as well as many of its paradigm methods and applications. During the transition period there will be a large but never complete overlap by the problems that can be solved by the old and the new paradigm. But there will also be a decisive difference in the modes of solution. When the transition is complete, the profession will have changed its view of the field, its methods, and its goals.”

Thomas Kuhn

As I stated earlier, this study did not take place as originally conceived, largely due to a lack of resources. I wanted to figure out a way to render visible the changing pitch and volume of the forks as I moved them around the field, and this was achieved to a small degree. The most obvious changes are the ones I selected as screen shots to include in this paper- the increase of signal strength in the chakra after combing the field.

We were also able to correlate their reported state change to this signal change, and found this to be consistent with the reported anecdotal evidence from my clinical practice: most often people experience an increase in their overall energy level, sometimes preceded by an initial dip. There is also generally an overall increase in well-being as a result of being brought into what could be called a greater *focus*.

So while this may be somewhat useful, my larger aim of demonstrating that there is a field of energy and information around the body, and that this appears to me as a compartmentalized record of our life history, remains unfulfilled. My ear (and my primary cilium as well, apparently) is sensitive enough to distinguish nuances of emotion in the sound signal. I have been able to recognize a pattern in the field: like the brain, it appears to be divided into sections, with each section assuming responsibility for a particular role, and so far, at least with North American subjects, this pattern appears to be consistent throughout the population I

have encountered. However I am the only person that I am aware of who has had this perception – therefore, it is suspect and could simply be a construct of my imagination.

I would like to see if there is a technology in existence or waiting to be created – both from a hardware and a software perspective- that could also detect and display the finer nuances of the sounds. Can we see a consistent signal in the left side of the heart chakra that we can objectively correlate to the emotion of sadness? Can we see one to the right of the solar plexus that we can correlate to the emotion of anger? Perhaps translating it to color might demonstrate this, as emotions are subtly nuanced in each person.

This approach could potentially show other finer details of historical storage that I have been unable to determine. It could also potentially show beyond a shadow of a doubt that there is a field around the body and that it is composed of what is understood by other cultures to be subtle energy – chi - and consciousness: that mind and memory storage resides not only in the brain, but also in the whole body and the field that surrounds it.

Implications

That this field around the body even exists remains a subject of debate in current medical science. Currently, the official stance of the American Medical Association and other related organizations, including all mainstream medical journals, is that the biofield does not exist. The reasons given for this are largely that it hasn't been sufficiently proven or adequately demonstrated, or, as noted above, it “directly contradicts principles of physics, chemistry and biology.” A good example of popular opinion on the biofield is the oft cited study by Emily Rosa, the nine-year old girl who devised a science fair experiment in 1998 to test the bio-energy sensitivity claims of Therapeutic Touch practitioners.

Emily's science fair study showed that 21 Therapeutic Touch practitioners (a practice that involves sensing and correcting disturbances in the biofield with the hands) were only able to sense when she held her hands up to theirs from behind a screen 44% of the time. Dr. Stephen Barrett of the Quackwatch organization (www.quackwatch.com) worked with Emily and her parents to write up the study and submit it to the *Journal of the American Medical Association*, where it was accepted and published, and subsequently picked up by the popular media.

This study by a nine-year old girl, coauthored by people who were extremely critical of CAM (Complementary and Alternative Medicine), became “unrefuted evidence that biofield therapies were groundless and unjustified” (Schwartz, 2005).

However, Rosa et al. (1998) failed to cite two previously published studies that used far more sophisticated designs, subjects, trials per subjects, and experimenters that demonstrated that 66% of blindfolded college students could determine which of their hands were closest to the experimenter's hand.

Studies by Schwartz et al. in 1995 and 1998 demonstrated this and a variety of other basic mechanisms of biofield awareness where they found approximately 15% of participants 70-80% accurate in their perception of bio-energy. Numerous other rigorously controlled and replicated studies have demonstrated the efficacy of other energy practices such as Reiki on such unbiased participants as rats and bacteria (Schwartz, 2005). Schwartz's studies and others that demonstrate anything to do with the validity of the energy body and energy medicine are “swept under the rug”, while spectacles such as a nine-year old girl's science fair project are willingly brought forth and applauded.

The problem, then, is one of bias, and paradigm. Our current paradigm with regards to biology and medicine is one still firmly entrenched in a mechanistic world view that eschews the concepts of life energy, energy medicine, biofields and the like, despite mounting evidence to the contrary. This is not science: this is dogmatism.

Defenders of the paradigm populate the editorial boards of mainstream medicine journals and the popular press:

“We know people have ideas beyond the mainstream,” said the sociologist Harriet Zuckerman, author of *Scientific Elite: Nobel Laureates in the United States* and senior vice president of the Andrew W. Mellon Foundation, “but if they want funds for research they have to go through peer review, and the system is going to be very skeptical of ideas that are inconsistent with what is already known.”
(<http://www.nytimes.com/2007/02/10/science/10princeton.html?pagewanted=all>)

How then, do we ever move forward? A bridge must be built, between what is known and what is purported to not be known. Sound can potentially provide this bridge, being all of what we call matter, and energy, and subtle energy. All of these “things” are fundamentally frequency fields of energy and information, vibrating at different rates. It isn’t either conventional or alternative- it’s both. We are both a particle and a wave, a bag of biomolecules and a field of complex and varying electromagnetic frequencies.

Science currently understands how the principles of resonance and entrainment operate in music therapy, and it is a small step to see how these principles can apply to the therapeutic benefits of tuning forks. And potentially, with some more advanced research methods, we can also clearly demonstrate this field of energy and information that surrounds the body. Once subtle energy is described, measured, and defined, we can no longer dismiss biofield therapies as having no basis in science.

The implications for this information are significant. Biofield therapies are one of the most controversial and least understood therapeutic applications in CAM at this time. The feedback loop provided by tuning forks as they pass through the biofield provides evidence of the changing terrain of this medium. Demonstrating that this field exists, appears to contain historic information in a compartmentalized fashion, and that sound intervention can effect changes in this field provides a possible mechanism for explaining how other biofield practices operate.

The acknowledgement of subtle energy – of “spirit” - by science is a game changer. We can no longer call “alternative” medicine alternative if it is described and validated by science. We can no longer call issues that deal with subtle energy “metaphysics” or “pseudoscience”. In unifying these two camps, we will have created a truly integrative, holistic world view.

Once we have crossed this bridge, into a world of waves *and* particles, instead of just particles, we have entered into a domain where sound balancing makes sense. We have crossed into a cosmology of connection, where we see that treating a vibrational imbalance in any individual treats the imbalances in humankind as a whole- and in a very small way, the entire cosmos.

Applications

Currently the sound balancing method is being taught to students in a 100-hour training program. The basic technique of finding the resistance and distortion within the field and supporting the body in releasing it and resolving back into coherence can be taught in a 20-hour, three-day class.

Students are reporting the same outcomes in their practice sessions that I see regularly with my clients – diminished pain, quieted emotions, greater clarity, improved physical and mental flexibility, and more. Some students report feeling more attuned to their hearing sense, some report feeling more attuned to their feeling sense, as they experience changes in the vibration of the forks through their fingers; all report becoming more attuned to the subtleties present with time and practice.

Because of the relative inexpensiveness of the tools and the relative ease of learning the practice, sound balancing can easily be learned and integrated into the practices of general practitioners, nurses, physical and occupational therapists, massage therapists and more. It is a useful method of first aid, as it has been observed and reported to relieve headaches, stomach aches, elevated emotional states, muscle spasms and tension. It is a simple and useful addition to any caregiver's skill and tool set.

More technological applications are also a possibility. Since audible sound frequencies both detect and correct imbalances within the biofield, there exists the potential for the creation of several different types of diagnostic and therapeutic biofield imaging and balancing devices that could eliminate the need for a skilled and intuitive sound healer.

The next stage of research involves the creation of a sensor that can attach to a tuning fork and transmit its vibration and location to a program on a laptop which would translate the signal into a 3-D image. The deviation from the harmonic mean would be color coded, allowing for a real-time mapping of the terrain of the biofield, and the ability to actually see what is going on. This technology could then be commercialized and used in therapeutic settings.

A much more sophisticated and expensive device could operate like an MRI or CT Scan, but instead of diagnostic imaging of just the inside of the body, it would conduct a sonic scan of the body and biofield, determine where dissonant frequencies exist, and apply the correct frequencies of perhaps both sound and light to stimulate the body to auto-correct. This technology can be applied while people are still relatively symptom-free in order to create and sustain balance in the field before imbalances become so pronounced as to create pathology in the physical organism.

Conclusion

Due to technical and other difficulties, this study did not take place as originally conceived. We had planned on seeing eight volunteers a total of three times each, with several weeks allotted for data analysis and write up. Instead, we ended up with four people with just two sessions each, and little time to analyze and contemplate the data. Consequently, there is a sense of incompleteness of the process.

However, based on the information compiled of intake, outtake and three day follow up forms, it appears that change in a person's physical, mental and/or emotional state occurs after sound therapy sessions.

Some volunteers observed less pain and discomfort after the treatments, others observed more. For the volunteers who exhibited more pain or discomfort, additional sessions were recommended outside of a research setting. This outcome is consistent with my clinical experience. In some cases, symptoms become worse before they get better. In such cases, the client is advised to continue with treatment until the symptoms resolve, generally within three sessions or less.

It would appear, based on the observations of the study and the sound frequencies recorded, that change in the electromagnetic and subtle energy patterning in the field around the body can be manipulated by the tuning forks. A tone that may be muffled or weak to begin with, can become unified and clear through the session. This process of the shifting of a tone from one that is unclear, dissonant and weak to one that was vibrant and clear was observed through the Raven sound analysis software.

However, this process would benefit greatly by having both more data and more time to analyze the data. A more sophisticated microphone (ideally a wireless one), or perhaps a transducer, and a more sound-proof room would also add to the quality of the data. In addition, an issue that could not be addressed in this study was the randomness of the intensity of the fork striking the puck. I did my best to maintain a consistent strike; however, this is something that would need to be completely consistent (perhaps mechanized in some way?) in future studies.

Employing additional biomarkers would also be helpful. Medical thermal imaging, Gas Visualization Discharge (GDV), a Polycontrast Interference Photography (PIP) system, and a heart rate variability monitor (see Appendix for more info on these systems) are just a few of the available systems for observing change within a system that could be useful to employ in future studies. Additionally, a fMRI,

Further Questions

While my research process yielded many interesting pieces of information, some of my most pressing questions remain to be answered: What IS the “energy” in the biofield? I speculate that it is light, bioplasma, but this remains only a speculation. Why does this energy follow the tuning forks as though they were a magnet? I have no speculation about this phenomenon

whatsoever, and have been utterly unable, up to this point, to find anyone or anything to explain it to me. The closest answer I have found came from a client: “Well, we all know that music has the power to move us.” Would the energy in the field follow the sound independent of a human operator or is the human heart and mind and intention a crucial factor in this equation?

Is there a way to truly objectively demonstrate what I have discovered intuitively, and through careful observation and attention to story: that there is a compartmentalized field of energy and information that surrounds the body and that this field is where our memories live? Can we capture these frequency signatures that my ear recognizes as specific emotions and in doing so have “the codes of emotion”? Are they similar to how the emotion is expressed in music? Can we, through the next stage of research, create a 3-D, color-coded biofield imaging system that would objectively demonstrate the existence of this field and these frequencies?

I look forward to the opportunity to collaborate with scientists to further explore these questions, and possibly even answer them.

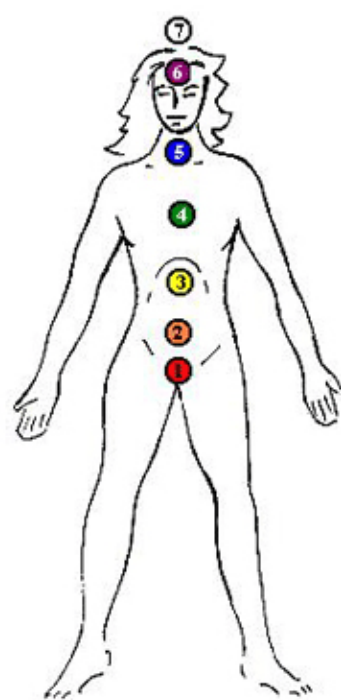
“Informational Medicine, that changes disturbed information available in the biofield, is going to be the future of medicine.” Lynne McTaggart in the movie, The Living Matrix

Appendix A : The Chakra System



The image on the left shows the physiology of the chakras as they extend from the body front and back – they are described as cones extending out from the spine.

Figure 25. Seven Chakras.



7. WHITE
Connecting us to Universal Consciousness.
Pituitary Gland.

6. VIOLET
Insight, intuition, clairvoyance, clairsentience, clairsentience. 'Knowing' that is beyond words.
Pineal gland, third eye.

5. BLUE
Communication, responsibility, thyroid, rules
bodies timing and metabolism. Issues of timing.
Manifestation.

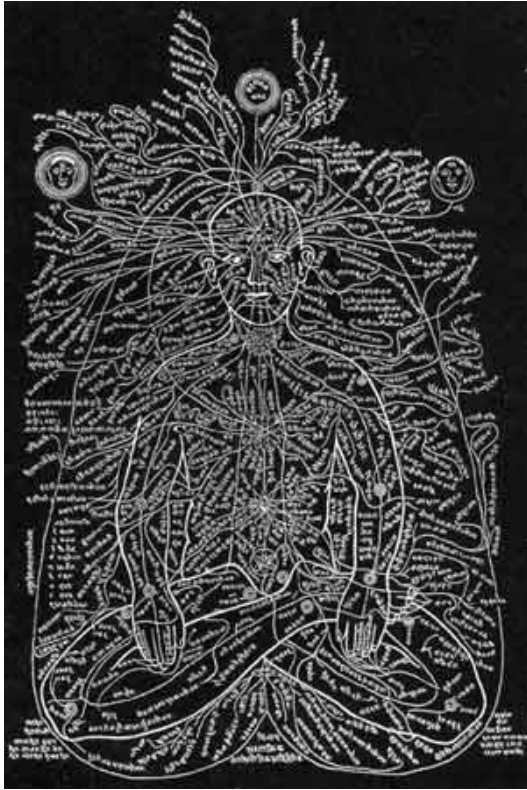
4. GREEN
Compassion, personal freedom, surrender,
forgiveness, acceptance. Gateway to higher Self.
Thymus helps to initiate immune system.

3. YELLOW
Mental issues, synthesis of ideas and feelings,
judgements and opinions. Childhood emotional
trauma, assimilation of sweetness, setting
boundaries, fear, ego.

2. ORANGE
Emotional issues, attachment and letting go of
people, places and things AS WELL AS ways of being.
Peyer's patches/Immune system center

1. RED
Survival issues, anger, passion, lust, money,
career, shelter, pain, irritation.

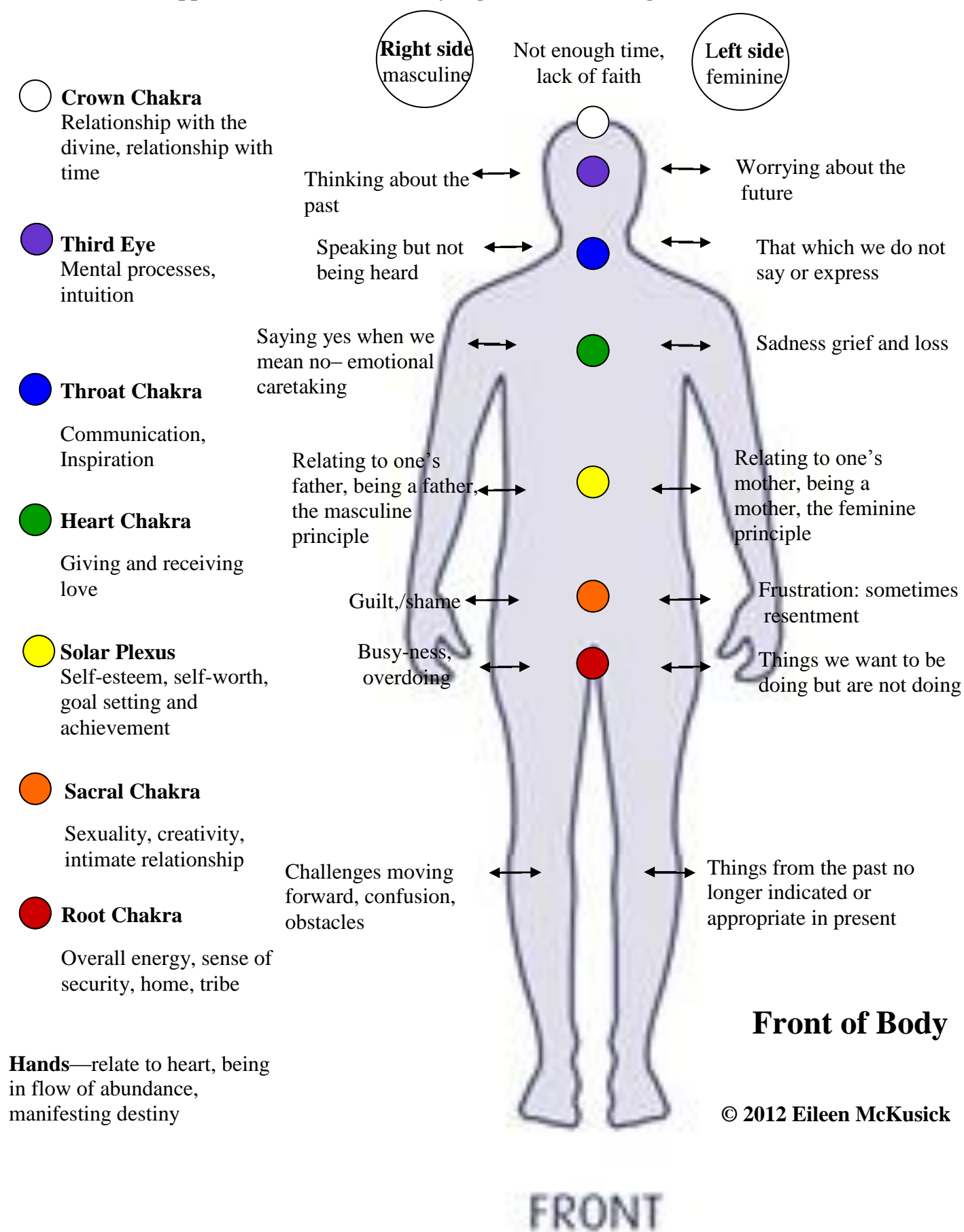
Figure 26. Chakras and Associations.



The image to the left, figure 25, is a map of all of the nadis, channels, and plexuses through which subtle energy is purported to flow through the body.

Figure 27. A map of all nadis, channels, and plexuses.

Appendix B: Biofield Anatomy-Significance of Energetic Imbalances



Significance of Back Chakras

Third Eye— things in the back of our minds

Throat - artistic inspiration, channeling

Heart – love we receive from others

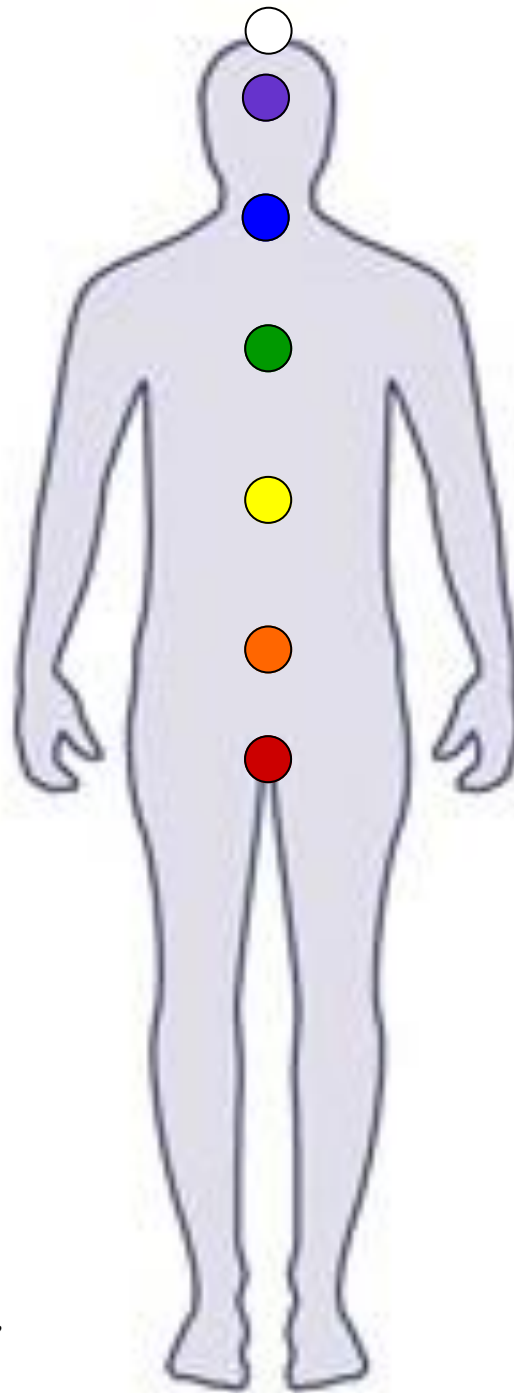
Solar Plexus – support from ourselves and others

Sacrum –unresolved issues regarding money, intimacy

Root— home, where we live

Back of knees— fear of changes, uncertainty of how to proceed

Sides of feet and sides of crown, both front and back, remain unidentified and seemingly complex.



BACK

- The energy field extends approximately 5-6 feet on either side and 2-3 feet on top and bottom.
- The energy in the field appears to be encoded in a kind of timeline fashion– information encoded close to the body is current or recent past, information at the outer edge is earliest childhood or birth experience.
- This information can be physical, mental, emotional, or ancestral.
- Depending on where a pocket of energy falls in relation to the outer edge, one can gauge the age at which the information was generated.
- Information appears in layers in each treatment, with the pockets in each region generally being related to each other in some way.

Notes on each chakra

- Root: this can speak of the overall energy level. If the volume of the fork is low, the person's overall energy may be low, resulting in depletion-based depression.
- Second: there is a range 2-6 inches or so above the second chakra that contains information related to the primary or intimate relationship. Excessive static in this area relates to significant discord within the relationship.
- Third: the Liver is the organ that relates to the father and also holds the emotion of anger. The spleen is the organ that relates to the mother and also speaks of our ability to nourish ourselves properly.
- Fourth: heavy energy to the left of the heart chakra speaks of depression or sadness due to excess emotions. This kind of excess responds well to exercise.

- Fifth: hypothyroidism is often accompanied by excess energy on the left side of the chakra, hyperthyroidism is often accompanied by excess energy on the right side of the chakra.
- Sixth: If there have been head injuries of any kind at any age they can show up here or in the 7th chakra– usually in the 6th.
- Seventh: If it is running fast there may be a tendency to feel like there is not enough time.

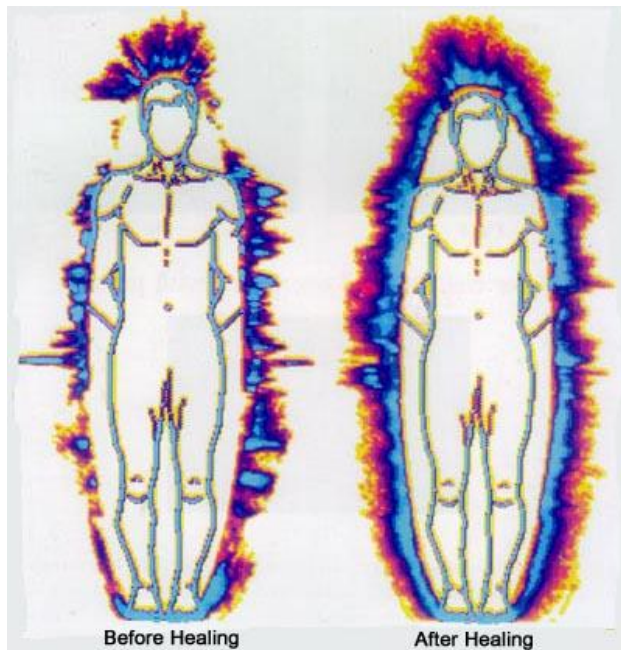
A tendency to right side issues: Guilt driven overdoing often as a consequence of trying to please the father; anger, repressed or otherwise, addictions, worry about the future.

A tendency to left side issues: stuckness, sadness and frustration, often as a consequence of lack of support from the mother; thinking about the past.

Appendix C: Biofield Imaging Devices

Gas Discharge Visualization (GDV) Camera

The GDV Camera complex consists of hardware and software for the direct computer registration and processing of a subject's energy field. GDV pictures are created by a unique patented optical system and CCD camera in daylight conditions with real-time processing.



These are the sorts of images it produces. It is also used to read and analyze the images produced by fingertips.

Figure 28. GDV camera images.

Polycontrast Interference Photography (PIP)

PIP is an energy field video imaging process. This new, experimental technology reveals patterns of light that are not visible to the naked eye. PIP, in and of itself, is not merely a device or product. It is a method, or process, which requires copyrighted materials, and is driven by an

intricate system of calculations and formulas. In other words, PIP is really intellectual property, integrated into software that performs a technical process to generate images.



Figure 29. PIP image.

Medical Thermal Imaging

Medical Thermal Imaging is based on analysis of skin surface temperatures as a reflection of normal or abnormal human physiology using a high performance infrared camera. Areas of excess heat or coolness are easily apparent and may display pathologies before they are recognized by other methods. The following image is of me, before and after rubbing a healing salve on several areas around my head and neck. White is hottest, then red, orange, yellow; green is neutral and blue is cool.

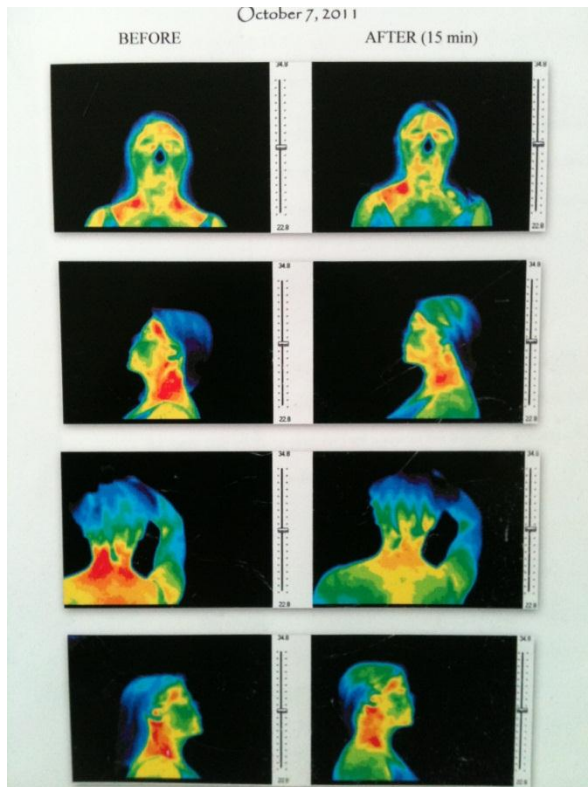


Figure 30. Medical Thermal Imaging.

While the first two methods are more controversial, all three of these imaging technologies have the ability to show before and after treatment scenarios and would be useful to apply in future studies on sound balancing.

Appendix D: Students' Stories

"I have decided to focus on the sound healing arts after working with Eileen.

She has solid scientific knowledge on the theories of sound and documentation of her practical work. What convinced me the most to continue were the positive affects I have been able to reproduce on the people have worked with. I have also seen great improvement in my health and well-being. Eileen has patience and compassion for others. She has great enthusiasm for her work and displays gifted teaching skills. I am looking forward to learning more with her and have become a regular client." - Mary Beth Giroux

"I began my healing with Reiki. My family suffered from depression and I watched them self-treat and take medications, which did not work. I had gone to a doctor for my weight and depression and told me it was in my family history which in turn meant he wanted to put me on medication. I refused and asked the universe for help and it was sent to me in the form of Reiki. It truly saved me.

I'm now a certified Reiki Master, Karuna Master, and Magnified Healer. But I was looking for more. I knew something had to go along with the Reiki I was doing but what. I looked into Reflexology but that wasn't it either- until my husband bought me a singing bowl. I fell in love but couldn't quite make it sing right. I asked for help again and found the Conduit Center where I had previously received treatment with bowls, bells, tingshaws, and gongs. I knew I had to do this. So I found a bowl class and became certified.

It has been so wonderful and I realized it was sound I had to work with. I then took a fork class but was still looking for more and that's when I found Eileen. I saw her video and called her. She

was so insightful and gave me a book to read. I found a way to make it to her to take class one on sound balancing.

This is what I had been looking for.

I now practice my Reiki with bowls and or forks. They are amazing. Eileen has us doing 20 sessions before the next class and I have to say it's been a great learning process. But the reaction I'm getting has been better than I imagined. Something new always comes about and teaches me something.

The people I have treated with the tuning forks never seemed to amaze me. Some have cried through the treatment and then told me later they felt so relieved and relaxed. People had allergies and couldn't breathe well and this also made them feel better. I worked on a woman's throat chakra and it swelled up at first but the outcome was great. She spoke up and things started working out the way she needed them to. The list goes on and the people I have been working on are now looking for more treatments.

I can't begin to say how grateful I am to be able to help people through the use of sound. To have found Eileen also has been a blessing. “ -Debra Dion

“There's something deeply familiar about using the tuning forks and to the process of relating and connecting to people. I think that's because of two things: My background as a musician and a dancer, and my background in mediation and conflict resolution.

*As a musician and dancer, I feel comfortable and enjoy being in the world of vibration, and I also enjoy working with spatially with human beings. However, because it was initially pretty easy to **feel** the vibrations, it wasn't as easy for me to **hear** the changes in the forks, especially as I worked with higher notes. As I practice, though, I find I am having breakthroughs*

in hearing; I couldn't distinguish under- and over-tone notes initially, and now I can. I've learned as much being a practice body for others as I have as a practitioner. When there is no pressure on me to actually do anything, I find I can more easily focus my attention. I'm sure there's more to hear, and I look forward to those breakthroughs, too.

Also -- I feel comfortable in the realm of listening deeply to people talk about what comes up for them in the process. I think one of the gifts that I bring from my background and training in mediation (and somehow, also, just from my "being") is a strong sense of listening deeply, trust in my own intuition, ability to check out that intuition gracefully, and being client centered. I can easily shift between what I'm hearing/feeling/intuiting to doing reflective listening (and now "sponge listening"!) and creative inquiry to support whatever's coming up for the client.

A challenge I'm having is to feel that I am still not completely comfortable in the energy anatomy. I have middle-age brain: On the plus side, for me that means that I feel a strong sense of being able to connect and integrate lots of ideas and bring my wisdom and skills to bear on a situation. The struggle is around memorization. I've never been good at memorizing information, and it's more of a challenge now. One of my next steps will be to do some focused memory work on the material from class, and to re-read Carolyn Myss' energy anatomy work.”
-K.M.

“Sound balancing has changed my life. I originally tried it because I was told by other therapists that it had been a very beneficial and profound experience for them. I was going through a time of crisis in my life. I cried though the whole first session. I felt like Eileen hit the nail on the head in every aspect of my life that I felt pain. It was a huge relief and release of pent up

emotion. Afterwards I felt like I was in an altered state. The tears kept pouring out of my eyes even though I had no idea why. I felt lighter and calmer and more peaceful.

Further sessions were less intense but no less profound. I continued receiving sessions with Eileen as often as possible, sometimes once a week, sometimes once a month. It helped me through the intensity I was experiencing at the time, and continues to be a source of healing and health for me.

I began studying sound therapy in Eileen's pilot class. Learning sound balancing has taught me how to listen to my intuition. I've realized that we are all intuitive, we only need to "tune in" to hear it. Now I have a new depth in my professional healing practice. I use the forks alone in sound therapy sessions, in my massage sessions, and as first aid. I find the vibrations of the forks to be like a sonic massage of body, emotions, and mind. I am so glad to have sound balancing in my life as a healing tool for others and myself." -Cara Joy

"I am realizing in this work how ultimately it is the forks themselves that are doing the work, not me, I am more the guide in a way, and I can trust that the forks will do their work, even as I am still very much a beginner. I just had a friend with adrenal issues tell me that, while she didn't feel much during our second session, afterwards she felt this rush of energy like she hadn't felt in a very long time and it reminded her what it felt like to have energy and feel good again. It only lasted several hours and then her exhaustion set in again but she said it helped just to feel what that was like and know it was possible. I hadn't been sure I'd done a whole lot since she didn't seem to feel things the way she did the first time. After she told me this I had the Aha moment that the forks are going to have some kind of effect on people regardless of my abilities. This realization has made me more aware of, and more respectful of the potential power (both

healing and, if used in ignorance or carelessly, harmful) of the forks and so to be extra vigilant about follow up with people.” -Susannah Blachly

“For four years I have worked with Eileen personally with Sound Balancing. When I first began, I found that my body took in the vibrations of the tuning forks like a sponge. The pain I experienced at the time was greatly relieved. I felt better and better over the course of treatment over two years and my stress level was always significantly diminished after a session.

I am an Artist and trained in The Netherlands in Painting Therapy.

About 15 years ago I purchased two tuning forks and I really didn't know what to do with them. Nearly two years ago I was asked to go to the hospital to work with a patient with depression who had tried to commit suicide. Intuitively, along with my color box of paints, I took my tuning forks. The patient responded so well to the tuning forks that I decided I owed it to them to take the training with Eileen.

After beginning my training, when I was working on this patient with sound, when placing the vibrating fork on the foot, there was no sensation of vibration past a few toes closest to the fork. Now they can feel the whole foot vibrating. This patient continues to do both therapeutic modalities and is becoming more and more successful in taking up a healthy life-style and able to stand on their own two feet. To be sure these two modalities are working well in tandem.”

-Martha Loving

“I, for some unknown reason, was attracted to taking Eileen’s class. I had a single tuning fork from a special Native American friend of mine but didn't really know how to use it to benefit

anyone. I saw Eileen's class posted and decided to give it a whirl. I loved the class and was noticing how people were responding to the forks. Some in a very dramatic way. I practiced Reiki but never had gotten that kind of response. I felt the sound went much deeper into the field. I then decided maybe I should go to a session with Eileen. Well I have never ever experienced anything so profound in my entire life! I felt like a whole life time of bottled up shit excuse my profanity came out that session. I came to the awesome conclusion that I need to save myself first then take care of others. I have steadily felt like I've been coming into my own power source in a balanced way. I'm healthier from the inside out. I'm truly grateful for this healing tool that came into my life.

I can both hear and feel when I'm coming up against resistance in a person's bio-field when I am practicing with the forks. Both myself and some people I have worked on have heard it get very loud in some places - very interesting. I've also had people say they can feel if I'm twisting or manipulating the forks without them seeing me doing this." -Robin Farrar

"I was fascinated the first time I went to see Eileen to experience the tuning forks. I could hear the disturbance of sound in my energy field and was amazed by the questions that she asked me about my experiences in the past. I knew I wanted to learn how to do it. I am a Homeopathic and Heilkunst practitioner so I am used to using energy but in a much more specific form.

Homeopathy and Heilkunst is an intellectual and intuitive process of looking at one's pain to find the appropriate homeopathic remedies and nutritional support to resolve both the physical and emotional pain. To find the appropriate remedies I ask a lot of questions such as what was happening when the symptoms started, what makes it better and worse, time of day more of a

problem etc. Many people don't know the answers, they are not aware of themselves enough to give me the information so I can look up the symptoms in the materia medica.

Sound therapy utilizes the practitioner's gamut, or inner wisdom to feel the dissonance in an energy field. As the client feels or hears the dissonance, the practitioner bears witness so the client can allow the healing frequencies to dissolve the stuck pain. That experience can then be integrated so they can move forward with greater clarity.

I have been amazed at how different people experience the tuning forks. Some people hear the sound changes, others feel pressure or tingling, some feel an intensity of pain and then it is gone. People are able to laugh at situations that have been so painful to them and realize that they have options, People have been able to remember situations just by hearing or feeling the energy changing in their bodies or the sound dissonance. Headaches, anxiety, panic attacks, TMJ, back tension, knee issues, and herpes outbreaks have been lessened or dissipated totally. I use the weighted forks on people when they come for a homeopathic sessions and use for physical pain as well as have them use the forks on themselves while I am making up remedies for them. I have found it an invaluable tool to add to my practice.” -Judy Jarvis

“Like the art of massage- anyone can grasp the basics of sound balancing if they have an interest in the material. But it takes a sensitivity to wield these forks with true power, and an awareness of slight differentiations in sound, or the ability to feel shifts in energetic that come through the fork as you hold it in your hand. Both of these can be fostered in anyone who is drawn to use this balancing modality.

When I am working with the forks I am very aware of the tone and pitch, the overtones and undertones. When I land on a discrepancy in the field, the sound will sharpen, dim, the overtones and undertones may increase or disappear. This signals me to combine this sensory input with any one of the numerous techniques that Eileen has taught me, to return the tone to its original pitch. When I am receiving sound balancing work and this occurs, the use of the fork on my biofield is very noticeable, I can actually feel the sound vibration- and have been known to laugh or cry, as a natural reaction to the repair that is occurring.

I know this method works because I have been on the giving and the receiving end of numerous healing and balancing experiences. I feel blessed to have had the privilege to work with Eileen and learn her self-created technique directly. It would not be an understatement to say that the last year and a half spent studying tuning forks with Eileen McKusick has been some of the most transformational time of my life.” – Ashley Laux

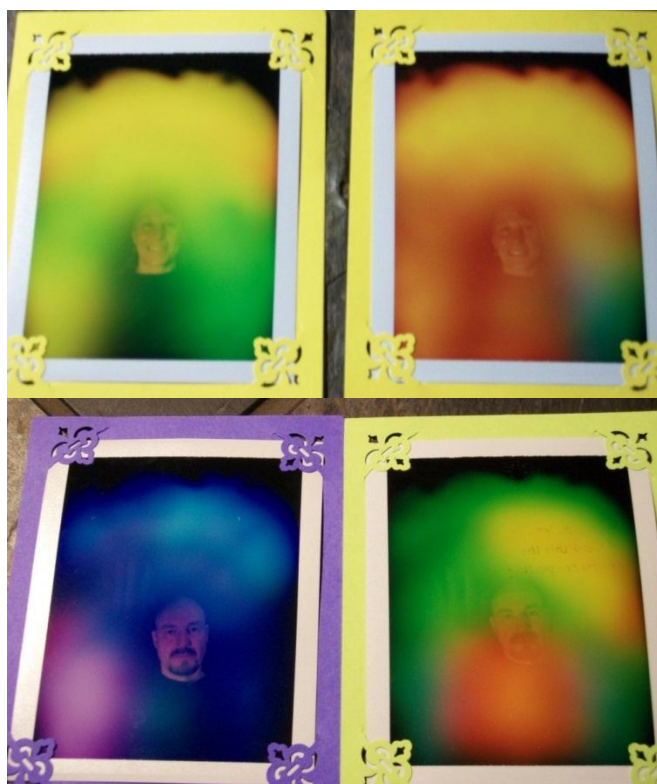
Appendix E: Aura Camera Photos

The following pictures are offered because I have them, but they are not objective science. The Aura camera used does not take actual pictures of an aura. The following paragraph, taken from their FAQ page, explains how it purports to work:

“This is classified as a biofeedback apparatus. Our technologies produce an electronic interpretation of what we believe the Aura would look like. It does *not* photograph the actual Aura. There’s nothing that exists which can do this. The camera actually moves through two processes. It takes about eight to ten seconds to take an aura portrait. In the first two seconds the Polaroid camera snaps the portrait. In the remaining six to eight seconds, the biofeedback apparatus measures the electrical potential along the meridian points of the palm of the hand, then converts that information into an electrical frequency and displays this as colors and pattern which are shown directly over the portrait to represent the Aura. The aura photos are brighter than the auras seen by psychics, because we amplify the signal.”

<http://www.auraphoto.com/resources/faq.shtml>

October 29, 2011 – Some samples of photos taken before (left) and after ½ hr session of sound balancing- all demonstrate a state change, with most of them showing an increase in brightness and clarity, correlating with a reported increase in brightness and clarity in the individual.



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