

possible. Membranes are libraries on which turns of fold or shapes of touch can be shared. The point here is to understand that concentricity of focus — literally the convergence of electrical and sonic pressure — is exemplified by the muscular and toroidal electrical structure of the heart itself. If the orderliness or coherence of electrical energy grows, then radiance to the immune system of the body expands. Hologram theory tells us that wherever the pattern essences for building bodies come from, they must be information-dense or packed.

Informationally, we might think of this as survival-critical information, umbilicus to the soul. Getting this wiring connected without shorts or interference is key to health and mental and emotional stability. High frequency ordering, or information density, is what the living cell does. For example, food's long-wave energy is transformed to short-wave energy that is usable by the cells through the steps in cellular metabolism. This information-rich ultraviolet blue short wave light drives our cellular metabolism. High quality ultraviolet light choreographs cell replication. This "blue light" is the cell's life energy source, which flashes measurably at moment of DNA braid cell division.

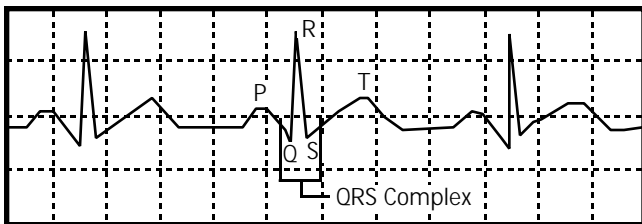
QRS Frequency Content

There is much support for theoretical arguments that the healthy heart beat is a temporal fractal and that the heart's anatomy is fractal-like. Spectral analysis of the EKG's QRS complexes reveals a broad band frequency spectrum with most of the frequency content or power below 30 Hz, yet extending several hundred Hz. Ary Goldberger of Harvard Medical School has confirmed that changes in the geometry of the heart's branching conduction system can alter the frequency content of the QRS complex, independent of any changes in myocardial conduction.

The research at IHM (Institute of HeartMath) has shown a direct correlation between the frequency signature of cardiac electricity and positive mental and emotional states. Through our observations it

appears that the rhythm, amplitude and frequency modulation of the heart electricities all contain information or intelligence that are linked to our mental and emotional aspects as well as to the physical cellular systems, such as DNA and the immune system. Power spectrum analysis of the EKG reveals that feelings of sincere love or appreciation generate remarkably different frequency contents in the EKG than those produced when

stress is experienced. Even more remarkable was Doc Lew Childre's ability to consciously direct and control the frequency content of his EKG by switching his focus from care to love or appreciation, etc. The



EKG waveform showing the QRS complex

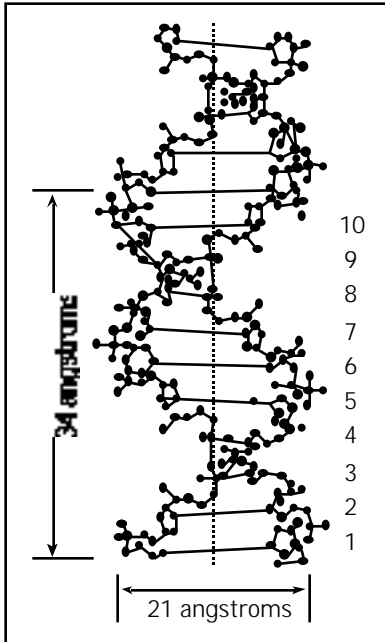
power spectra shows peaks or frequency contents which are spaced by a repeating ratio. This ratio of spacing changes as the subject changes their focus. The geometry of these ratios appear to be harmonically linked to the immune system and DNA structure. We are tempted to postulate that coherent emotion, and even perhaps love, is teachable and accessible with feedback tools. We further postulate that onsetting coherence in heart resonance will eventually be proven to be a direct conduit to immune health.

Encoded Heart Intelligence

There is mounting evidence indicating that the heart is the master oscillator or controller of the human system. Current theory suggests that the brain controls all the body's functions and is the seat of emotion and intelligence. I am not suggesting that the brain does not play a key role in these functions. However, I am suggesting that it is only part of the puzzle. We postulate that the heart electricities play a far more important role in brain function than previously believed.

It is well known that the cardiac electricities are the dominant electrical force in the human system, although the source of the heartbeat is still a mystery. Another piece of this puzzle is starting to emerge — the discovery of the fractal structure of the physical heart and chaos theory of the heart rate. Before these discoveries, the classical notion of homeostasis relating health to constancy was that perturbations are likely to cause a loss of regularity in the heart rate. The chaos hypothesis predicts just the opposite, namely that a variety of disease states which alter autonomic function may lead to a loss of physiologic complexity and therefore to greater, not less, regularity. When the heartbeat becomes regular and loses its complexity, there is a high risk of sudden death through heart failure. Aging has also been associated with this loss of physiologic complexity along with a number of other diseases. The term “complexity” is used here to include the fractal type of variability found in the heart's structure. The nonlinear complexities of cardiac electricities cannot be quantified by the use of traditional statistics such as variance. The advancement in chaos theory and computer power has made these new discoveries possible, but it's still only one step closer to understanding the dynamics of heart electricities.

We postulate that the ordered randomness found in the cardiac electricities and nervous system, which have been termed chaos, contains encoded intelligence and is only chaotic from the perspective of not understanding the intelligence that it contains. This is analogous to a TV signal in which both FM and AM modulations are used to transmit intelligence or information. If the receiver of the signals does not understand the complete technology or the language of the information being transmitted it would appear as randomness with some sort of organization, yet chaotic.



One 360 degree turn of DNA measures 34 angstroms in the direction of the axis. The width of the molecule is 21 angstroms, to the nearest angstrom. These lengths, 34:21, are in the ratio of the golden mean, within the limits of the accuracy of the measurements. Each DNA strand contains periodically recurring phosphate and sugar subunits. There are 10 such phosphate-sugar groups in each full 360 degree revolution of the DNA spiral. Thus the amount of rotation of each of these subunits around the DNA cylinder is 360 degrees divided by 10, or 36 degrees.

This is exactly half the pentagon rotation, showing a close relation of the DNA sub-unit to the golden mean.

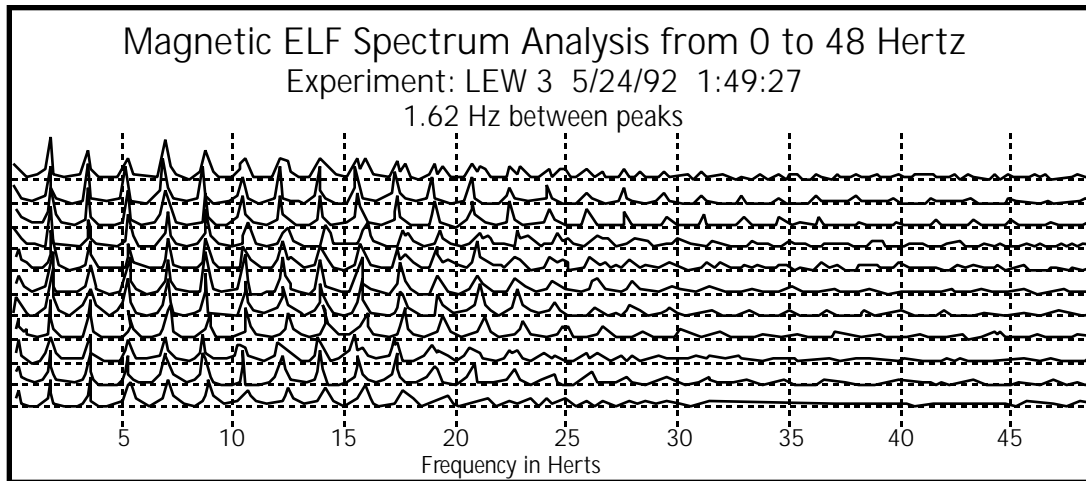
The existence of an electrical body or organizing field of intelligence that forms around all living organisms is well established and has been measured. This field contains the system's intelligence which organizes the structure of the body down to the atomic level. It is the fractal structure of the physical heart which receives and transforms this electrical energy and the information encoded within it. The brain acts as a demodulator of this information and then communicates with the cellular systems of the body. The flow of information is duplex, traveling both up and down the harmonic series of scale. Each heart-beat is like a phrase or part of a song that sends organizing instructions throughout your system. We just don't have the intellectual understanding of this language yet. A series of these beats or packets of information make up what could be called a song or "event," such as climbing a hill. When you climb a hill the body expends more energy and a whole series of complex events must take place: the heart beats faster and harder, supplying more energy and information throughout your system. We are suggesting that it is the next level of organizing intelligence that runs this show and that it is through the heart that all this information flows to make up the events of life.

We can map the brain neuron by neuron and perhaps eventually understand the wiring structure, but what then? The brain is just the machinery of the mind, which is far more complex than the brain itself. Where does the mind receive its instructions? We are suggesting the source is the heart electricities and by learning to listen to its intelligence, it will facilitate our understanding of how the mind and brain function.

The Golden Mean

From the many hours of coherent EKG data sampled, it appears that the center frequency ratio of the cardiac electricity is the Golden Mean ratio of 1.618 with modulations between 2 Hz and 1.42 (which are also geometrically and harmonically important but beyond the scope of this article). The main point is that 1.618 is also the ratio of the DNA structure and is the only ratio that allows complete information or geometry to cascade down the harmonic series without loss of power or geometry.

The mind/brain can literally learn to tune to the heart frequency; it just needs to know the right "access codes." When it learns to stay tuned to the heart center frequency, then balanced energies can flow up and down the harmonic series and the human system takes on a new level of operating efficiency. This can add energy and clarity to what ever one engages in and feels good to the mental, emotional and physical aspects of our nature. It is the lack of this communication between the mind and the heart that leads to stress and lack of efficiency.

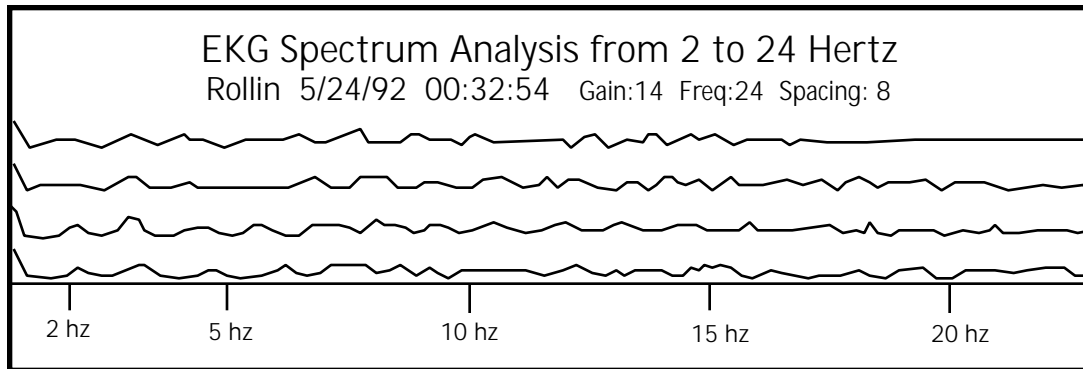


This power spectrum graph shows Golden Mean ratio spacing between the power peaks in the frequency content of the EKG, extending up past 45 Hz. Results of this kind would be highly improbable unless there is conscious intention and focus.

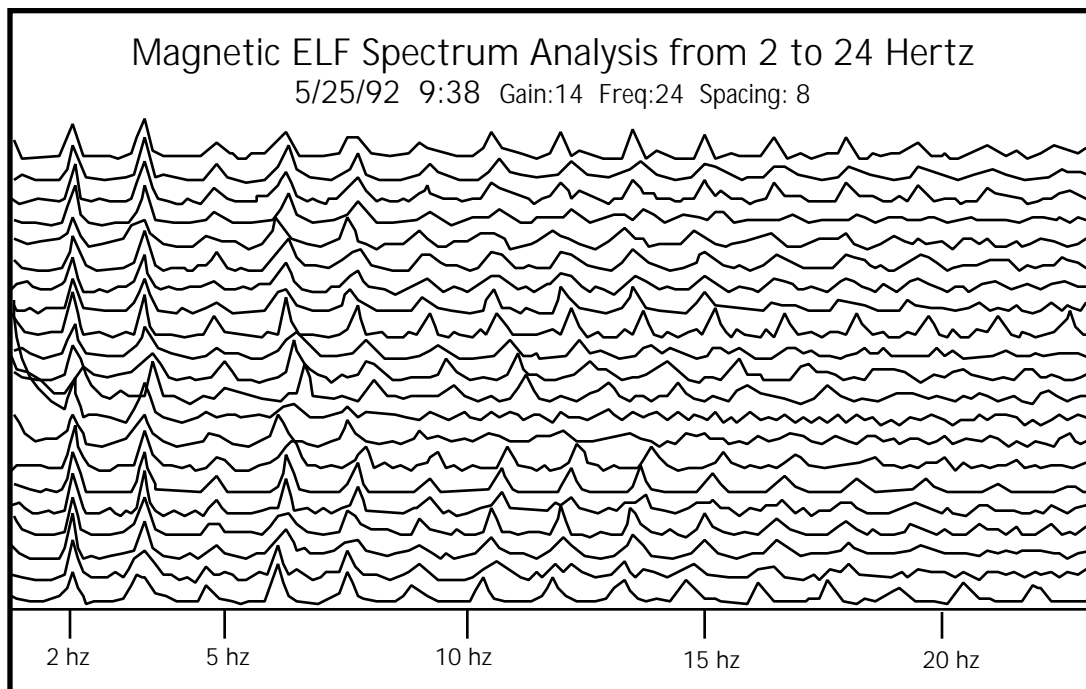
The Heart's Balancing Function

The heart is a balance organ whose function is to balance and regulate the physical, mental and emotional natures. (The importance of balance is not yet fully understood, but I believe it will be discovered to be the key to energy efficiency in many areas in the near future.) The lower the frequency of a wave, the more power or force the wave contains. Another way of saying this is that the closer to balance or singularity a wave is the more power it has. Most of the power contained in the heart beat is in the low frequency range below what is audible. Heart energy originates from balance or zero and radiates from there; then it rests or returns to zero, regenerates and fires again, sending energy throughout your system. It is when the heart no longer returns to its balance point of regeneration that ventricular fibrillation occurs.

It is widely believed that there is no such thing as a free energy machine, yet there are individuals who have the ability to live and fully function with very little or no food intake for extended periods of time. Once instrumentation is developed which is capable of measuring the energy output of living beings, I believe it will be easy to show that the amount of energy output from most people will far exceed the caloric input they consume. Where does this additional energy come from? My conclusion is that it originates from the same place as the heartbeat — a less dense octave in the harmonic series. Geometrically, we know the ratio which allows energy and information to change scale or dimension without loss of power. This is the same ratio as the one the heart is operating on when sincere love or appreciation is experienced. The frac-



The above graph is a typical spectrum without conscious focus on love or appreciation.
 Below is another example of coherence when love was being experienced.



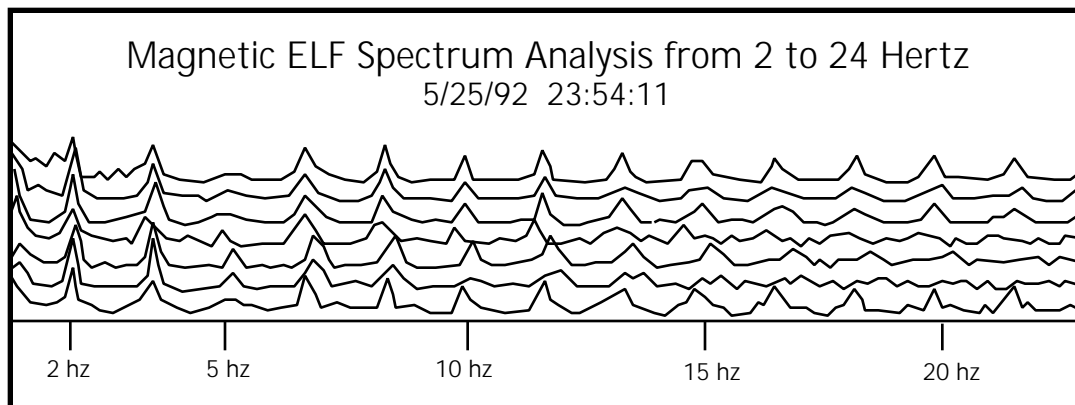
tal structure of the heart is designed to transform this electrical energy from one dimension into another, and from the point of view of the physical dimension, this energy is free as long as balance can be maintained. A deeper look at heart geometry could be the key to understanding and developing a new source of planetary energy.

Wave Relationships in Heart Electricity

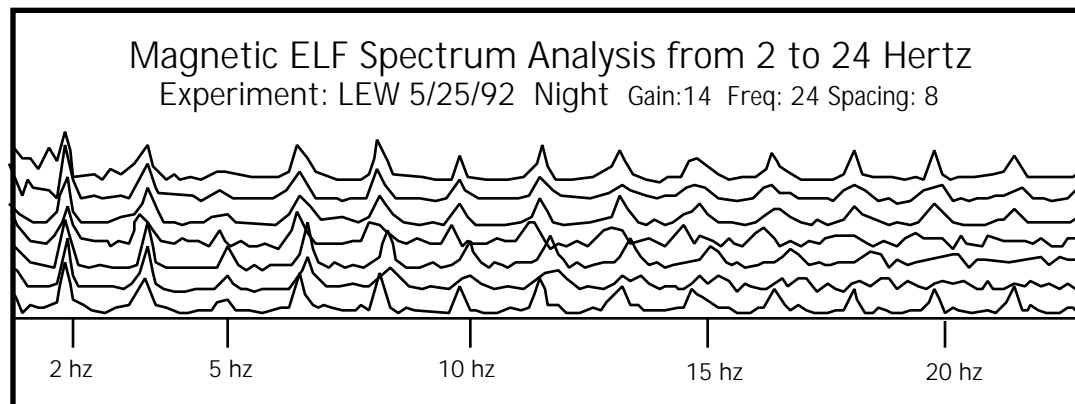
Consider the relationship between the electrical pulse of the heart, called EKG, and what it pushes as a strictive wave of pressure into the bloodstream. The relationship in muscle between the electrical wave and the sound wave, or phonon, is called piezo-electricity. This refers to the principle of coupling between mechanical or strictive pressure

versus electrical pressure called voltage. The mechanics of the piezo-electric connection in crystal or muscle (as liquid crystal) occurs because of a helical stairway shape in the molecules. If you wring out a braided rope, like you would a wet towel, the long-wave-pull end to end is "coupled" mechanically to the short-wave-move inward tightening the braid. It's like you had a slinky between your right and left hands. When you pull the slinky apart, the sides of the slinky move inward or closer together, mechanically coupling the long wave of your hand motion to the short wave of the slinky's braid. This is an important clue to the information relationship of the long wave to the short. A coherent, orderly braiding is required to couple them. The short or electrical wave is more information dense; the long or sound wave is more information unpacked or accessible. This is the heart of the matter, the principle of ALL connections across scale or dimension. Emotion allows attention or feeling in the long wave of sound pressure to reach into the short wave life of cells.

This helps us to understand why helical braiding is nature's choice for the structure of piezo-electric quartz, and for DNA. These struc-



By looking at the shape of the heart electricity, we are actually looking at the shape of the mechanical pressure wave being sent to the far corners of the body by the heart.



tures are the wave braids which permit information to reach between worlds of scale by ratio.

As mentioned earlier, the heart muscle is shaped like seven layers of nested donut or torus-shaped muscle. This is the shape of all natural wave fields. So, essentially the "geometry of pressure" or "shape of the hug," which the muscle folds around the vortex of blood in the heart, is also the shape of the electrical wave which triggers that muscle. In other words, by looking at the wave shape of heart electricity (by spectral analysis or frequency signature) we are in actuality looking at the shape of the pressure wave being squeezed into the bloodstream. It may not be too romantic to think of this as "the whispers of the heart" reaching out into the far corners of the body. at the shape of the mechanical pressure wave being sent to the far corners of the body by the heart.

The heart is not a simple pump. Ralph Marinelli in Royal Oak, Michigan, has documented that the heart moves blood by generating tornado-like vortex momenta. The coherence of these orderly little tornadoes in the blood is what then travels throughout the body. They remember the instructions of the heart from the shape of the pressure waves in the EKG-triggered heart muscle, which pushed them into their aorta world. So when we find an orderly harmonic series in the EKG, we may be finding the whispers of the electrical "soul," reaching out musically to touch each cell around the body.

Heart/Brain Sonic Resonance

Another puzzle piece supporting this is the sonic resonance the brain has with the heartbeat. Bentov showed that the sounds coming from the heart phase-locked or arranged the sound ordering in the liquid ventricles of the brain. He later came to believe it was this sonic ordering which set up the conditions necessary for superconductive ecstasy in the brain. Bentov built a sensitive capacitive accelerometer to measure the sonic thrust of the heartbeat which causes a ringing sound in the brain which can be heard. This ringing sound is often heard by meditators and many non-meditators when they still the processing of the mind. Bentov started his research in this area by having many meditators tune an oscillator to the same frequency they heard in their ears. He then determined that this frequency was a direct harmonic of the heart sonic. Bentov showed that the heart controlled the brain resonance, and when phase-locked, a standing wave is set up that can be physically heard. Orderly sound collimates the fluids contained in the ventricles of the brain toward conductive crystal, and gently massages the gland centers to their secretion of psychoactive hormones. The heart sounds set the beat to start the sonic superconduction in the brain ventricles whose psychoactive chemicals are largely

responsible for our perceptions of reality and our mental and emotional reactions to stimuli from both internal and external sources.

It also appears that low frequency coherent sonics program the immune system by projecting on the thymus gland as if onto the walls of the cave. The thymus is the radiative source of most of immune system chemistry. It is like a sound dish umbrella around the heart that vibrates in resonance with the sonics of the heartbeat. When the thymus shrinks, apparently so does its ability to receive instructions from the heart sonics.

The Wave Shape of Emotion

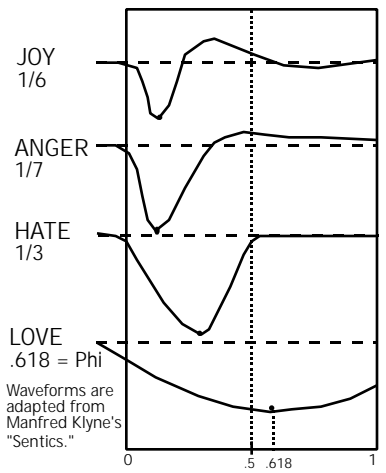
Medical research has proven that the emotional state of mind programs the cell's health more than perhaps any other factor (or it can be said that negative emotions distort the accurate flow of information). Dr. Manfred Clynes, author of *Sentics*, is well known for his work in mapping the wave shape of emotions and the invention of a pressure transducer and related equipment to measure the wave shape of emotion. His work has been tested in many different cultures around the world.

The chart above shows the wave shape of the basic emotions. Notice that the Golden Mean ratio 1.618 appears again in the emotion (frequency) of love. It is interesting to note that the ratio 1/3 is the ratio of hate and in a wave form this ratio creates destructive interference among waves. This can be likened to the mechanical waves traveling down a cowboy's whip. If the wave shape is correctly programmed in the long wave at the handle of the whip, then the whip cracks at the short end. If an interfering wave motion is programmed into the whip it will not snap. Positive emotions are constructive or coherent waves and cause the long wave to transform or "crack" into the short waves imparting its energy to the smaller scale ratio such as the DNA. I think of this as Energy Motion, or E-Motion.

Brain Wave Coherence

There is another clue to the emotive feeling state creating geometry in the electromagnetic field of the body. This clue is in the extensive body of literature correlating ordering in brain waves, or EEG, to psychological states. Power spectra analyses (frequency signature) of EEG (brain waves) has shown that under certain unstressful and consciously focused conditions coherence exists within the power spectrums of the brain waves. MIT physicist Larry Domash has published elaborate data which illustrate that cross-hemispheric EEG ordering or coherence, correlates to the health benefits of intentional relaxation. It also seems that onsetting coherence ordering in brain electrical resonances correlates to shared information in a group or telepathy

Measuring the Onset & Duration of the Pressure of Emotion



Pressure vs Time
Documenting the Moment of Average Touch

between several people. This was also documented in the "Mind Mirror," EEG spectra research of Cade et al, in Awakened Brain. The spectral range of significant EEG resonance coherence found in these studies are the same resonances we found significant in the EKG power spectra.

Summary

Current research at the Institute shows a possible link between coherent cardiac electricities and DNA programming. The output of the EKG machine is fed into a spectrum analyzer which shows the frequency content of the heart beat. When people who are skilled in mental and emotional self-management focus on loving or appreciating, the frequency content of their EKG (heart electricity) changes in a significant way. The distribution of the power content of the heart electricity is normally scattered and cancels out. This is called incoherent. However, when love and other positive feelings are being experienced the distribution dramatically changes to a coherent and ordered pattern. This, by itself, is amazing, but even more amazing is the fact that the mathematical ratio between the power peaks is the same ratio as the Golden Mean ratio. This ratio is the one one that allows electrical power to change scales or harmonic octaves without losing any of its power or information carried in its modulation. The DNA of every cell in our bodies is built upon this same ratio. There are many other examples of this ratio in cellular structures, but this discovery is especially important because it shows a direct link between the heart electricities and the DNA. In other words, the electricity of the heart programs the DNA much like a radio wave is sent through the air to your radio. The DNA is like a radio receiver and the heart is like the transmitter.

There is also new evidence appearing in the spectrum analysis showing that the heart electricities contain a highly ordered or encoded intelligence that is ultimately responsible for the instructions sent to the DNA. These waves from the heart are affected by people's emotions and thoughts, so when people are processing negative emotions such as fear, anger, anxiety, etc., the electricities are affected in a way that blocks the proper flow of information from reaching the DNA. If these types of negative patterns are experienced repeatedly over time it eventually manifests in disease. The symptoms of this are already well documented. Doctors and researchers have known for many years that negative emotions and thoughts are the main cause of aging and many diseases. These negative patterns have also been linked directly to heart disease. New research also indicates that conscious generation of "heart frequencies" such as love, care, and appreciation has a positive, beneficial effect on immune system health and brain function, and can reverse the effect of negative stress patterns in the mental and emotional nature.

References

1. Winfree, Arthur T., *When Time Breaks Down: The Three Dimensional Dynamics of Electrochemical Waves and Cardiac Arrhythmias*, Princeton University Press.
2. Edwards, Lawrence, *The Field of Form: Research Concerning the Outer World of Living Forms, and the Inner World of the Geometrical Imagination*, Floris Books.
3. Szent-Gyorgyi, Albert, *BioElectronics, and Electronic Biology and Cancer*
4. Jenny, Han, *Cymatics*, Basilus Press, Basel, Switzerland
5. Ghyka, *The Geometry of Art and Life*, Dover Press
6. Cook, *The Curves of Life*, Dover Press
7. Taubes, Gary, "An Electrifying Possibility," *Discover Magazine*, April 1986
8. Gyorgy Doczi, *The Power of Limits*, Shambhala Press
9. Clynes, Manfred, *Sentics and Music*, Mind & Brain.
10. Bentov, Itzack, *Stalking the Wild Pendulum*, Dutton Publishers.
11. Orme-Johnson, Wallace, Dillbeck, Alexander, and Ball, (September 1981) "Improved Functional Organization of the Brain through the Maharishi Technology of the Unified Field as Indicated by Changes in EEG Coherence and its Cognitive Correlates: A Proposed Model of Higher States of Consciousness." Paper presented at the American Psychological Society, Los Angeles, CA.
12. Childre, Doc Lew, *Self Empowerment: "The Heart Approach to Stress Management; Common Sense Strategies,"* Planetary Publications, PO Box 66, Boulder Creek, CA, 95006, 408-338-2161.
13. Childre, Doc Lew, *Heart Zones, music designed for stress release and prevention*, Planetary Productions, PO Box 66, Boulder Creek, CA, 95006, 408-338-2161.
14. McClelland, D.C. (1985, March), "Motivation and Immune Function in Health and Disease." Paper presented at the meeting of the Society of Behavioral Medicine, New Orleans, LA.
15. Goldberger, Ary L., "Fractal Mechanisms in the Electrophysiology of the Heart", *Cardiovascular Division, Beth Israel Hospital, Harvard Medical School*.
16. Goldberger, Ary L., Ringey, and West, "Chaos and Fractals in Human Physiology: Chaos in Bodily Functioning Signals Health. Periodic behavior can foreshadow disease," *Scientific American*, February 1990.
17. Rosinsky, Ned, M.D., "The Geometry of Life", Sept. - Oct. 1984, *Fusion*.
18. Eysenck, Hans, *Personality, Stress and Cancer: Prediction and Prophylaxis*, Institute of Psychiatry, University of London, Denmark Hill, United Kingdom
19. Fukudo, S; Lane, JD; Anderson, Nb; Kuhn, Cm; Schanberg, SM; McCown, N; Muranaka, M; Suzuki, J; Williams, RB, Jr; "Accentuated vagal antagonism of Beta-adrenergic effects on Ventricular Repolarization. Evidence of weaker Antagonism in hostile type A men." *Behavioral Medicine Research Center, Duke University Medical Center, Durham, NC*.

ECG SPECTRA: THE MEASUREMENT OF COHERENT AND INCOHERENT FREQUENCIES AND THEIR RELATIONSHIP TO MENTAL AND EMOTIONAL STATES

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 Mike Atkinson, Institute of HeartMath, Boulder Creek, CA.
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INTRODUCTION

Research at the Institute of HeartMath has shown that people capable of generating deeply focused love create coherence in the power spectrum of the electrocardiogram (ECG). The normally scattered and incoherent power spectrum of the ECG can become dramatically ordered and coherent when a person experiences deep feelings of love, care, or appreciation. On the other hand, feelings of anger, worry or frustration create incoherent ECG patterns. Changes in the EEG, as well as the ECG, are also seen over time as a person practices mental and emotional self-management to transform negative emotions into positive ones.

Numerous scientific studies have shown that negative mental and emotional states (such as hostility) create hormonal imbalances which weaken the heart (1) and the immune system (2). Feelings of care have been shown to increase the production of salivary IgA (3) which is an integral part of the immune system known to protect against colds and flu. Feelings of anger and frustration are known to cause an overproduction of the hormones norepinephrine, epinephrine, and cortisol, which can increase the risk of suffering from acute coronary events (1). Psychoneuroimmunology (PNI) research continues to confirm the mind-body link. We propose that the heart's electrical system plays a key role not only in physical health but in mental and emotional health as well. We are suggesting a new discipline: Cardioneuroimmunology (CNI).

Since the heart produces the strongest electromagnetic field in the body, the basis of CNI is that the heart is the master oscillator (4). It is well known that the heart's signal is distributed throughout the human system. At an energetic level, all cells in the body exist in this electromagnetic field. This field can be classified as generally either coherent or incoherent. The state of coherence or incoherence of the body's electromagnetic field is shown in the frequency domain of the ECG. Our hypothesis is that the ECG frequencies (spectra) affect hormonal secretions in the body. Our research indicates that individuals who have a higher ratio of coher-

ence in their ECG spectra tend to live happier and less stressful lives (4).

METHODOLOGY & EQUIPMENT

ECG was measured with a Grass ECG Pulse amplifier fed to a BioPak A to D converter, recorded on a Mac II CI computer. The interbeat interval (IBI), respiration and four channels of EEG were simultaneously recorded using Grass wide band EEG amplifiers. Test subjects were seated in a screen room with electrodes placed over the back and front of the heart to minimize muscle artifacts. Electrodes were also placed on the left and right temporal lobes, the top of the head (CZ), and the back of the head (PZ). Additional experiments were conducted where electrical recordings were monitored simultaneously at the top of the head, the heart, and the base of the spine. ECG, EEG and heart rate data were analyzed by Fast Fourier Transform (FFT) analysis to determine the frequency spectra. Spectral analysis has the capacity to reveal characteristics in a signal not apparent in the raw data (5).

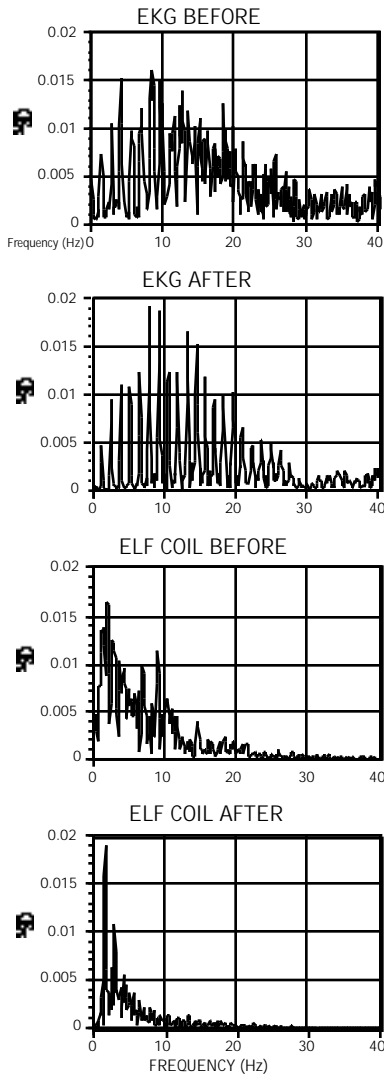
PROCEDURE

All test subjects were first interviewed and given a written test by IHM staff psychologist Dr. Deborah Rozman to determine their overall mental/emotional stress level. Ten individuals trained in mental and emotional self-management and ten control subjects not trained in self-management methods were asked to enter into different states, such as love, appreciation, care and worry. A baseline recording was first obtained. Markers were placed in the computer recordings to indicate the points at which the test subjects were asked to change states. Any significant events were recorded in the computer log as they occurred.

RESULTS

ECG frequency spectral patterns can be divided into two basic categories, coherent or incoherent. When the data was viewed in 10 second epics, not all epics showed coherence. Rather, what was seen was a ratio of coherent to incoherent patterns. The degree of coherence was defined as a percent of the total coherent to incoherent epics. Feelings of anger, frustration and worry created higher percentages of incoherence, while feelings of love, care, or appreciation created higher percentages of coherence. These ECG spectral patterns were highly reproducible. Control subjects who were not practiced in mental and emotional self-management often expressed feelings of anxiety or frustration while being tested and could not readily change states to deep feelings of love when asked to do so. Psychological questionnaires revealed that control subjects had more mental and emotional stress in their daily lives than did test subjects. Test subjects who consistently produced coherent ECG frequencies showed more ability to manage their mental and emotional reactions to stressful events in day-to-day life.

Power Spectral Density Charts



Power Spectral Density (PSD) charts show a noticeable effect after conscious human intervention with the Earth's magnetic field. The frequency spectras of the EKG (first pair) and the ELF coil (second pair) were measured. Note the dramatic change in ELF coil and the more ordered and coherent spectras in the EKG.



After demonstrating the geometric unity behind the origin of alphabetic symbolism, the structure of consciousness and the compassionate resonance of the heart's rhythm, Dan Winter turns to the earth itself. This section outlines the major ideas of a new science, grid engineering. Using the basic concepts developed in the previous sections, Dan weaves a rich tapestry of earth-related issues.

The first chapter, "Light Cones From the Heart: The Geometry of the Emerald Modem," explains how the symmetry language of the heart and the tilting photon donuts of color create a handshaking protocol that allows us to interact with the planet itself, The Emerald Modem.

Chapter two, "Landscaping Your Magnetic Front Yard," gives some practical hints for improving the twinkle of energy in our own neighborhood. "Love's Electricity," the third chapter, sketches out the physics of geomancy, or planet taming. "Green Magick," the fourth chapter, returns to biology with an attempt to answer the age old question: Does the bio-mass of earth's living creatures serve any cosmic purpose?

With chapter five, "Symmetry Field Cascade," Dan's focus returns to physics as he examines the implications of Zero Point Energy,

and other free energy theories. Chapter six looks at recursion in the earth's magnetic geometry as the source of planetary self-awareness and Zero Point Energy, while chapter seven examines how this recursion occurs and suggests that it is teachable by bio-feedback.

"Stable Tectonics," chapter eight, shifts back to the biology of emotion and the ability of coherent emotional symbolism to nourish the earth. Chapter nine explores the work of Dr. Phil Callahan with microwave antennae in nature and the application of this technology to monitoring the earth's grid. The next chapter, "The Deep Psyche of the Middle East," gives a tantric perspective of the Gulf War.

"Desertification," chapter eleven, completes this thought current with a look at the work of Dr. Callahan and Dr. James DeMeo on how patriarchy precedes the spread of deserts.

"Magdala's Green Stone, Part I," chapter twelve, begins to weave in a new mythology for our emerging planetary paradigm. This chapter stretches language and concept into a new shape, a new meaning matrix. Sort of like James Joyce explaining Einstein. Part II, which weaves our planetary myth onto its galactic woof, appears in section seven.

"Feeling the Faces of Earth" is an imaginative journey that allows the reader to consume the faces of earth in mind, and therefore understand the whole as greater than its parts. Chapter fourteen, "A Service for Dying Trees," deals with the death of trees from acid rain and what this suggests for our planetary immune system.

Chapter fifteen, "To Friends and Visionaries Dear to Mother Earth," addresses this problem by suggesting that planetary coherence of environment, human emotions and the earth grid could in fact heal the earth.

The Emerald Modem ranges over a wide array of topics, circling around the basic idea of using human emotion to interact with the planetary consciousness. Later in the book, section nine, Dan offers some concrete proposals to accomplish this much needed interaction of mind, body and planet.

LIGHT CONES FROM THE HEART: THE GEOMETRY OF THE EMERALD MODEM

In the "Fractal Heart" chapter above, we illustrated the mechanics of the origin of the heart beat. To summarize: The heart muscle is seven layers. Each layer is tilted to one of the seven spin axis of the tetrahedron. The tetra is the most symmetrical form, and consumes the most perspectives. As the universe's most symmetric shape, it holds the most "dimensions" of memory folded as spin in it's shape. Thus it becomes the index of spin for the heart muscle layers, and the tilt of the donut's strip "flame letter" origin of symbol. Even the name for heart in sonics, "cardiod," means a catchment shape of all phases (faces). We learn this shape is the very essence of consuming perspectives, making One from many.

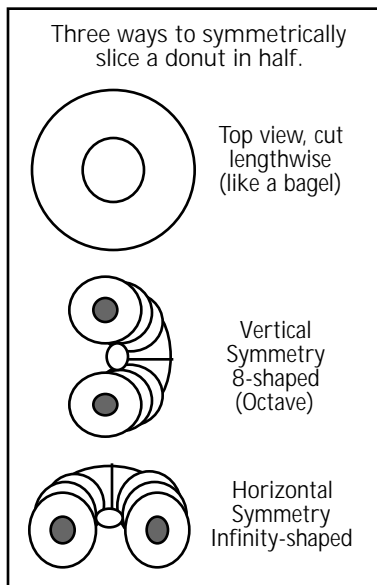
The mythology of the indigenous peoples called "seven arrows," refers to this maximized symmetry or the most folded back onto self. This is the heart structure. The sonic technical term for the shape which consumes all phases (faces) means heart shape.

Thus, balancing the tilt of the light cone-toroid-domain-donuts, is the essential alphabet of biology. It is the alphabet of the heart.

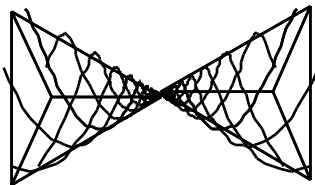
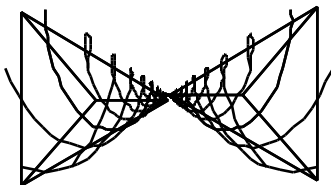
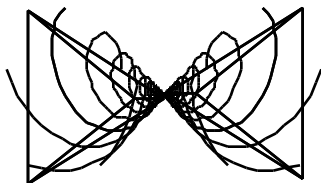
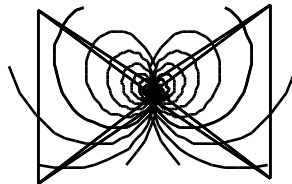
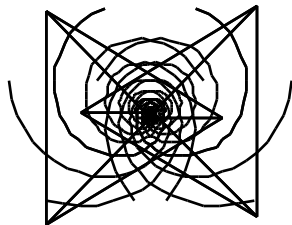
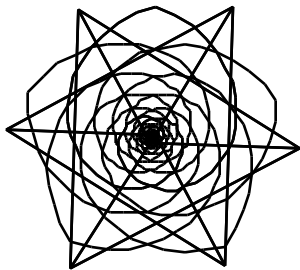
In order to understand why the "emerald modem" is green, it is necessary to understand the origin of color. (See Section Three.) The photon light donut does not change size to make color into one octave of wavelength. It is a single donut shape, whose relative tilt is antennaed by the cone of the eye to perceive color. Three rotations exactly make a donut surface of x, y, and z spins. They are the primary color pairs. Percentage of tilt on three spins pairs becomes the percentage of the primary color mix.

A donut seen from the side is half the width as from the front: one octave. Hence 2D flat thinking conceives of light in one 2D flat octave 440 to 880 angstroms. In 3D this is the length vs width of the 3D photon donut. Physics and hydrodynamics have concluded that all fields are primally toroidal, therefore how flatland and unOZ-like to consider color a difference of length instead of a difference of turn or tilt. Try making shadows with a donut. Is not the shortest shadow half the length of the longest shadow you can make? Isn't the difference, tilt? Every ham radio operator knows that you use an antenna cone to measure tilt or phase angle. How else would we describe the receptor cone of the eye?

In the lexicon of the tilt of the donut as indexed by the spiral strip



Two tetrahedral cones,
superimposed with fractal flower,
tilts through space.



off its' surface, green is centered. This means that the heart, able to balance the unpacking blue donut vortex outward with the packing red donut inward, is able to be still on the cross between hard-making and wet-making power. This is the tightrope pendulum still point between moving attention to node from wave (matter from energy), and back. In the body this balanced heart riding flow, neither up or down, can connect the red Eros to the blue Marian tantra. A gift of the Magdalen: a Green stone, an Emerald Tablet.

The Emerald crystal is hex, like quartz is hex. Two tetra make a cube, which ratchet up a hex helix. The image is clear, the heart's muscle contraction layers are exactly the seven tetra symmetry spins. The shape which fires the heart is a seven-color donut, electrically. This symmetry alphabet/emerald or hex view modem (modulate/demodulate) is the common alphabet of the human condition, the alphabet of the heart.

Two tetra/two light cones are the shape of yod and vau in Yod He Vau He, Yahweh the name of God. Two tetra light cones make an octahedron in their center, the "Buddha, or diamond body." This diamond, the most dense focus light takes is the eye of the needle, or the Eagle. The outer trace of the two tetra is a cube. The Tile view of the tetra cube is hexagonal. This spun hex is quartz; it is the emerald cross. As the common denominator of the morphic resonance alphabet cascading the donut of light into biology, it is the handshaking protocol to link immune selves to the ultimate computer net — The (Green) Emerald Modem.