

- Sustainability
- Energy Efficiency
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## **Sustainability**

Since the industrial revolution the concentrated energy of the Sun stored in fossilised plants as fossil fuels have been a major driver of technology and the source of both economic and political power.

In 2007, after prolonged skepticism about the human contribution to climate change, climate scientists of the IPCC concluded that there was at least a 90% probability that this atmospheric increase in CO<sub>2</sub> was human-induced - essentially due to fossil fuel emissions and, to a lesser extent, the CO<sub>2</sub> released from changes in land use.

Projections for the coming century indicate that a minimum of 500 ppm can be expected and possibly as much as 1000 ppm. Stabilising the world's climate will require high income countries to reduce their emissions by 60-90% over 2006 levels by 2050. This should stabilise atmospheric carbon dioxide levels at 450-650 ppm from current levels of about 380 ppm. Above this level and temperatures would probably rise by more than 2o C to produce “catastrophic” climate change. Reduction of current CO<sub>2</sub> levels must be achieved against a background of global population increase and developing countries aspiring to energy-intensive high consumption Western lifestyles.[60]

Projecting climate into the future and forecasting regional impacts depends on our understanding of the exchange of carbon dioxide between the atmosphere, oceans and land ecosystems. NOAA (National Oceanic & Atmospheric Administration), is charged to provide the atmospheric measurements and analyses required to track the fate of carbon dioxide emissions caused by the burning of fossil fuels and biomass, and to reduce uncertainties in how the

exchange of carbon responds to the variations and trends of climate and land use.

Well-being has environmental, sociopolitical, and cultural dimensions as well as economic ones, and the goal of sustainable well-being entails improving all of these dimensions in ways and to end points that are consistent with maintaining the improvements indefinitely. This challenge includes not only improving sustainably the standard of living in developing countries, but also converting to a sustainable basis the currently unsustainable practices supporting the standard of living in industrialized ones.

Civilization's ability to meet this immense challenge clearly depends on our strengths in natural science and engineering. But it also depends on our strengths in the social sciences and in "social technology" in the form of business, government, and law, as well as on the societal wit and will to integrate all of these elements in pursuit of the sustainable-well-being goal.

No part of this challenge is more complex or more demanding than its energy dimension. This is so in part because energy supply is tightly intertwined with national and international security and with many of the most damaging and dangerous environmental problems--from indoor air quality to global climate change--as well as with the capacity to meet basic human needs and fuel economic growth.

The multiplicity and importance of these linkages would make energy a vexing issue even in a world where energy demand was constant. But that is not the world we live in. Continuing population growth and rapidly rising affluence in many parts of the globe are driving a rate of increase in energy use that has staggering implications. Even if the energy efficiency of the world economy--gross world product per unit of energy--were to continue to increase at the long-term historical rate of about 1% per year, the realization of middle-of-the-road population and economic projections would entail quadrupling world energy use in this century.

In a world where today one-third of primary energy comes from oil (two-thirds of the remaining high-quality supplies of which probably lie under the volatile Middle East) and 80% comes from oil, coal, and natural gas combined (virtually all of the carbon dioxide from the combustion of which continues to go

straight into the atmosphere), that middle-of-the-road energy trajectory cannot be managed simply by expanding what we are already doing. Such a path is not merely unsustainable; it is a prescription for disaster.

The perils of oil dependence and climate change, coupled with the demand for large increases in the per-capita availability of energy services, compel an early transition to a different path. Its requirements include a reduction in global population growth (achievable, fortunately, by means that are desirable in their own right) and a sharply increased emphasis on improving the efficiency of energy conversion and end use (aiming to improve the energy efficiency of the world economy not by 1% per year but by 2% per year or more).

Also required is a several fold increase in public and private investments to improve the technologies of energy supply. We need to know whether and how the carbon dioxide from fossil-fuel use can be affordably and reliably sequestered away from the atmosphere; whether and how nuclear energy can be made safe enough and proliferation-resistant enough to be substantially expanded worldwide; and to what extent biofuel production can be increased without intolerable impacts on food supply or ecosystem services. And we need to improve the affordability of the direct harnessing of sunlight for society's energy needs.

Our IOE members provide services include:

#### Mainstreaming Sustainability

Research, appraisals, audits, key performance indicators and mapping to inform government policy. Training, management and implementation of sustainability plans.

#### Sustainable Supply Chains

Strategies to encourage more sustainable and resource efficient supply lines, improving quality, lowering costs and providing marketing opportunities.

#### Total Resource Efficiency

Opportunity identification. Achieving energy savings through energy audits and carbon management initiatives. Audits to reduce waste production and increase reuse, recovery and recycling. Regulatory compliance, waste

management licenses and Planning Applications. Environmental impact assessments and monitoring. Anaerobic digestion.

### Climate Change Solutions

Research into the effects of climate change and development of adaptation strategies. Mitigation and carbon management strategies. Greenhouse gas footprinting. Offsetting services. Climate change impacts on or from agriculture and land. Awareness and communication programmes.

### Renewable Energy Solutions

Consultancy, research and project development. Biomass and biofuel crop production, anaerobic digestion, land suitability assessments, environmental/economic assessments and conversion technologies.

### Code for Sustainable Homes

Assessment of Code Levels for Energy, Water, Materials, Surface Water, Waste, Pollution, Health, Management and Ecology.

Check the section on [Sustainable energy](#)

## Efficient Energy Use

### Efficient energy use

*For energy efficiency as a ratio in physics, see [Energy conversion efficiency](#).*



Compact fluorescent light bulb

**Efficient energy use**, sometimes simply called **energy efficiency**, is using less energy to provide the same level of energy service. An example would be insulating a home to use less heating and cooling energy to achieve the same temperature. Another example would be installing fluorescent lights and/or skylights instead of incandescent lights to attain the same level of illumination. Efficient energy use is achieved primarily by means of a more efficient technology or process rather than by changes in individual behaviour.<sup>[1]</sup>

Energy efficient buildings, industrial processes and transportation could reduce the world's energy needs in 2050 by one third, and be crucial in controlling global emissions of greenhouse gases, according to the International Energy Agency.<sup>[2]</sup>

Energy efficiency and renewable energy are said to be the “twin pillars” of sustainable energy policy.<sup>[3]</sup>

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### **Overview**

Making homes, vehicles, and businesses more energy efficient is seen as a largely untapped solution to addressing [global warming](#), [energy security](#), and [fossil fuel depletion](#). Many of these ideas have been discussed for years, since the [1973 oil crisis](#) brought energy issues to the forefront. In the late 1970s, physicist [Amory Lovins](#) popularized the notion of a "soft path" on energy, with a strong focus on energy efficiency. Among other things, Lovins popularized the notion of [negawatts](#) -- the idea of meeting energy needs by increasing efficiency instead of increasing energy production.

Energy efficiency has proved to be a cost-effective strategy for building economies without necessarily growing [energy consumption](#), as environmental business strategist [Joel Makower](#) has noted. For example, the state of [California](#) began implementing energy-efficiency measures in the mid-1970s, including building code and appliance standards with strict efficiency requirements. During the following years, California's energy consumption has remained approximately flat on a per capita basis while national U.S. consumption doubled. As part of its strategy, California implemented a three-step plan for new energy resources that puts energy efficiency first, renewable electricity supplies second, and new fossil-fired power plants last.

Still, efficiency often has taken a secondary position to new power generation as a solution to [global warming](#) in creating national [energy policy](#). Some companies also have been reluctant to engage in efficiency measures, despite the often favorable returns on investments that can result. Lovins' [Rocky Mountain Institute](#) points out that in industrial settings, "there are abundant opportunities to save 70% to 90% of the energy and cost for lighting, fan, and

pump systems; 50% for electric motors; and 60% in areas such as heating, cooling, office equipment, and appliances." In general, up to 75% of the electricity used in the U.S. today could be saved with efficiency measures that cost less than the electricity itself.

Other studies have emphasized this. A report published in 2006 by the McKinsey Global Institute, asserted that "there are sufficient economically viable opportunities for energy-productivity improvements that could keep global energy-demand growth at less than 1 percent per annum" -- less than half of the 2.2 percent average growth anticipated through 2020 in a business-as-usual scenario. Energy productivity -- which measures the output and quality of goods and services per unit of energy input -- can come from either reducing the amount of energy required to produce something, or from increasing the quantity or quality of goods and services from the same amount of energy.

The Vienna Climate Change Talks 2007 Report, under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC), clearly shows "that energy efficiency can achieve real emission reductions at low cost" <sup>[4]</sup>

The average American household consumes about 10,000 kwh of electricity every year. Each kwh that is used equals two pounds of carbon dioxide let into the atmosphere. <sup>[5]</sup>

## **Energy efficient appliances**

Modern energy-efficient appliances, such as refrigerators, freezers, ovens, stoves, dishwashers, and clothes washers and dryers, use significantly less energy than older appliances. Current energy efficient refrigerators, for example, use 40 percent less energy than conventional models did in 2001. Modern power management systems also reduce energy usage by idle appliances by turning them off or putting them into a low-energy mode after a certain time. Many countries identify energy-efficient appliances using an Energy Star label. <sup>[6]</sup>

## Energy efficient building design

A building's location and surroundings play a key role in regulating its temperature and illumination. For example, trees, landscaping, and hills can provide shade and block wind. In cooler climates, designing buildings with an east-west orientation to increase the number of south-facing windows minimizes energy use, by maximizing passive solar heating. Tight building design, including energy-efficient windows, well-sealed doors, and additional thermal insulation of walls, basement slabs, and foundations can reduce heat loss by 25 to 50 percent.<sup>[6]</sup>

Dark roofs may become up to 20°C (70°F) hotter than the most reflective white surfaces, and they transmit some of this additional heat inside the building. US Studies have shown that lightly colored roofs use 40 percent less energy for cooling than buildings with darker roofs. White roof systems save more energy in sunnier climates. Advanced electronic heating and cooling systems can moderate energy consumption and improve the comfort of people in the building.<sup>[6]</sup>

Proper placement of windows and skylights and use of architectural features that reflect light into a building, can reduce the need for artificial lighting. Compact fluorescent lights use two-thirds less energy and last 6 to 10 times longer than incandescent light bulbs. Newer fluorescent lights produce a natural light, and in most applications they are cost effective, despite their higher initial cost. Increased use of natural and task lighting have been shown to increase productivity in schools and offices.<sup>[6]</sup>

Effective energy-efficient building design can include the use of low cost Passive Infra Reds (PIRs) to switch-off lighting when areas are unoccupied such as toilets, corridors or even office areas out-of-hours. In addition, lux levels can be monitored using daylight sensors linked to the building's lighting scheme to switch on/off or dim the lighting to pre-defined levels to take into account the natural light and thus reduce consumption. Building Management Systems (BMS) link all of this together in one centralised computer to control the whole building's lighting and power requirements.<sup>[7]</sup>

Smart meters are slowly being adopted by the commercial sector to highlight to staff and for internal monitoring purposes the building's energy usage in a

dynamic presentable format. The use of Power Quality Analysers can be introduced into an existing building to assess usage, harmonic distortion, peaks, swells and interruptions amongst others to ultimately make the building more energy-efficient.

## **Energy efficiency for industry**

In industry, when electricity is generated, the heat which is produced as a by-product can be captured and used for process steam, heating or other industrial purposes. Conventional electricity generation is about 30 percent efficient, whereas combined heat and power (also called cogeneration) converts up to 90 percent of the fuel into usable energy.<sup>[8]</sup>

Advanced boilers and furnaces can operate at higher temperatures while burning less fuel. These technologies are more efficient and produce fewer pollutants.<sup>[8]</sup>

Over 45 percent of the fuel used by US manufacturers is burnt to make steam. The typical industrial facility can reduce this energy usage 20 percent (according to the [US Department of Energy](#)) by insulating steam and condensate return lines, stopping steam leakage, and maintaining steam traps.<sup>[8]</sup>

Electric motors usually run on a constant flow of energy, but an adjustable speed drive can vary the motor's energy output to match the load. This achieves energy savings ranging from 3 to 60 percent, depending on how the motor is used. Motor coils made of superconducting materials can also reduce energy losses.<sup>[8]</sup> Motors may also benefit from voltage optimisation.

Many industries use compressed air for sand blasting, painting, or other tools. According to the US Department of Energy, optimizing compressed air systems by installing variable speed drives, along with preventive maintenance to detect and fix air leaks, can improve energy efficiency 20 to 50 percent.<sup>[8]</sup>

## **Energy efficient vehicles**

*Further information: [Automotive market](#) and [Alternative propulsion](#)*

Using improved aerodynamics to minimize drag can increase vehicle fuel efficiency.

Reducing vehicle weight can significantly also improve fuel economy.

More advanced tires, with decreased tire to road friction and rolling resistance, can save gasoline. Fuel economy can be improved over three percent by keeping tires inflated to the correct pressure. Replacing a clogged air filter can improve a cars fuel consumption by as much as 10 percent.<sup>[9]</sup>

Fuel efficient vehicles may reach twice the fuel efficiency of the average automobile. Cutting-edge designs, such as the diesel Mercedes-Benz Bionic concept vehicle have achieved a fuel efficiency as high as 84 miles per US gallon (36 km/l/101 mpg-imp), four times the current conventional automotive average.<sup>[9]</sup> Also alternative propulsion vehicles that do not use or use less fossil fuels can use energy in a efficient way.

## **Energy conservation**

Energy conservation is broader than energy efficiency in that it encompasses using less energy to achieve a lesser energy service, for example through behavioural change, as well as encompassing energy efficiency. Examples of conservation without efficiency improvements would be heating a room less in winter, driving less, or working in a less brightly lit room. As with other definitions, the boundary between efficient energy use and energy conservation can be fuzzy, but both are important in environmental and economic terms. This is especially the case when actions are directed at the saving of fossil fuels.<sup>[10]</sup>

## **Sustainable energy**

*Main article: Sustainable energy*

Energy efficiency and renewable energy are said to be the “twin pillars” of a sustainable energy policy. Both strategies must be developed concurrently in order to stabilize and reduce carbon dioxide emissions in our lifetimes. Efficient energy use is essential to slowing the energy demand growth so that

rising clean energy supplies can make deep cuts in fossil fuel use. If energy use grows too rapidly, renewable energy development will chase a receding target. Likewise, unless clean energy supplies come online rapidly, slowing demand growth will only begin to reduce total carbon emissions; a reduction in the carbon content of energy sources is also needed. A sustainable energy economy thus requires major commitments to both efficiency and renewables.<sup>[11]</sup>

### **Check these links for further information:**

[Renewable energy](#)

[Biofuels](#)

[Biomass](#)

[Geothermal](#)

[Hydro power](#)

[Solar power](#)

[Tidal power](#)

[Wave power](#)

[Wind power](#)

### **Rebound effect**

*Further information: [Rebound effect \(conservation\)](#) and [Jevons paradox](#)*

If the demand for energy services remains constant, improving energy efficiency will reduce energy consumption and carbon emissions. However, many efficiency improvements do not reduce energy consumption by the amount predicted by simple engineering models. This is because they make energy services cheaper, and so consumption of those services increase. For example, since fuel efficient vehicles make travel cheaper, consumers may choose to drive further and/or faster, thereby offsetting some of the potential energy savings. This is an example of the direct *rebound effect*.<sup>[12]</sup>

Estimates of the size of the rebound effect range from roughly 5% to 40%.<sup>[13][14][15]</sup> Rebound effects are smaller in mature markets where demand is saturated. The rebound effect is likely to be less than 30% at the household level and may be closer to 10% for transport.<sup>[12]</sup> A rebound effect of 30% implies that improvements in energy efficiency should achieve 70% of the reduction in energy consumption projected using engineering models.

Since more efficient (and hence cheaper) energy will also lead to faster economic growth, there are suspicions that improvements in energy efficiency may eventually lead to even faster resource use. This was postulated by economists in the 1980's and remains a controversial hypothesis. Ecological economists have suggested that any cost savings from efficiency gains be taxed away by the government in order to avoid this outcome.<sup>[16]</sup>

## See also

### *Energy portal*

- Alliance to Save Energy
- Banning of incandescent lightbulbs
- Cogeneration
- Energy efficiency in British housing
- Energy-efficient landscaping
- Energy resilience
- Energy saving lamp
- Green computing
- Performance per watt
- Green energy
- High temperature insulation wool
- Hybrid vehicle and plug-in hybrid vehicle
- International Partnership for Energy Efficiency Cooperation
- National Electrical Manufacturers Association
- National Energy Action
- Negawatt power
- One watt initiative
- Plug-in Hybrid Electric Vehicle
- Renewable heat
- Solar lamp
- Standby power
- Vehicle-to-grid

## Organizations promoting energy efficiency

### International

- [European Council for an Energy Efficient Economy](#)
- [International Electrotechnical Commission](#)
- [International Energy Agency](#) (e.g. [One watt initiative](#))

### Iceland

- [Marorka](#)

### United States

- [Alliance to Save Energy](#)
- [American Council for an Energy Efficient Economy](#)
- [Climate savers computing initiative](#)
- [Consortium for Energy Efficiency](#)
- [Energy Star](#), from [United States Environmental Protection Agency](#)
- [Industrial Assessment Center](#)
- [Institute for Electric Efficiency](#)
- [Rocky Mountain Institute](#)

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2. [^ Invest in clean technology says IEA report](#)
3. [^ The Twin Pillars of Sustainable Energy: Synergies between Energy Efficiency and Renewable Energy Technology and Policy](#)
4. [^ Microsoft Word - 20070831 vienna closing press release.doc](#)
5. [^ \[1\]](#)
6. [^ \*\*a b c d\*\* Energy-Efficient Buildings: Using whole building design to reduce energy consumption in homes and offices](#)
7. [^ Creating Energy Efficient Offices - Electrical Contractor Fit-out Article](#)

8. <sup>a b c d e</sup> [Industrial Energy Efficiency: Using new technologies to reduce energy use in industry and manufacturing](#)
9. <sup>a b</sup> [Automotive Efficiency: Using technology to reduce energy use in passenger vehicles and light trucks](#)
10. <sup>^</sup> [Diesendorf, Mark \(2007\). \*Greenhouse Solutions with Sustainable Energy\*, UNSW Press, p. 87.](#)
11. <sup>^</sup> [The Twin Pillars of Sustainable Energy: Synergies between Energy Efficiency and Renewable Energy Technology and Policy \(American Council for an Energy-Efficient Economy\)](#)
12. <sup>a b</sup> [The Rebound Effect: an assessment of the evidence for economy-wide energy savings from improved energy efficiency](#) pp. v-vi.
13. <sup>^</sup> [Greening, Lorna \(2000\), "Energy efficiency and consumption—the rebound effect—a survey.", \*Energy Policy\* 28: 389-401](#)
14. <sup>^</sup> ["The Effect of Improved Fuel Economy on Vehicle Miles Traveled: Estimating the Rebound Effect Using U.S. State Data, 1966-2001"](#). University of California Energy Institute: Policy & Economics. Retrieved on 2007-11-23.
15. <sup>^</sup> ["Energy Efficiency and the Rebound Effect: Does Increasing Efficiency Decrease Demand?"](#). Retrieved on 2007-11-21.
16. <sup>^</sup> [Wackernagel, Mathis and William Rees, 1997, "Perpetual and structural barriers to investing in natural capital: economics from an ecological footprint perspective." \*Ecological Economics\*, Vol.20 No.3 p3-24.](#)

## External links

- [APS Energy Efficiency Report on Viable Technology and R&D](#)
- [Saving Electricity](#)
- [Energy Efficiency in the Power Grid](#)
- [Directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006 on energy end-use efficiency and energy services and repealing Council Directive 93/76/EEC.](#)
- [European Council for an Energy Efficient Economy](#)
- [ASHRAE, DOE Partner to Promote Energy Efficiency and Renewable Energy](#)
- [A layman's introduction to energy efficiency](#)
- [Methods of Energy Conservation](#)

- [Article on reading your power meter, and explaining how much money you save with newer appliances vs. old ones](#)
- [Conservation and Efficiency Are Key to Our Energy Future](#)
- [Institute of Energy Saving - Russia, Ekaterinburg](#)
- [Wuppertal Institute for Climate, Environment and Energy - Energy Efficiency](#)
- [IEA cites gains from energy efficiency](#)
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## **Resonance Therapy Music**

### **CORE SOUND HEALING CONCEPTS**

#### **Intention**

As shown by Dr. Emoto, if one focus love on water, it will create a beautiful geometric crystalline pattern when it freezes. If one focus any negativity on water (such as hate) it will form a discordant, chaotic pattern. Through his scientific studies, Dr. Emoto has proven that your intention not only affects matter, it affects yourself and others. This same concept has also been shown to be true in Quantum Physics. Simply stated, the way one perceive something affects the way it is! Therefore, this is a very important concept when it comes to helping others heal (including yourself).

Individuals can help others by simply holding a very specific intention.

If your intention is pure and clear, one can create change in another person and in matter. Most importantly, if one focus an intention on your music it will be carried by the sound to the listener.

#### **Binaural Beat Brainwave Entrainment / HemiSync**

Binaural beats are created when two tones are detuned from each other by a small amount. For example, if one have a tone generator creating 60 hertz and another one putting out 67.83 hertz one will hear the difference between the two tones which is 7.83 hertz (which is the Schumann Resonance - the resonant frequency of the earth's atmosphere between the earth and the ionosphere). When one have two speakers playing the two different frequencies simultaneously, the two sounds cancel each other out as they physically meet in space. However, when one wear headphones, the two sounds never meet, as the physical brain is in the way. In order to make reality consistent, our brain creates a third frequency on it's own. Because the frequency in the left ear goes to the right brain, and the frequency in the right

ear goes to the left brain, this third frequency created by the brain connects the two sides of the brain. When this occurs, the Corpus Collosum, which functions to connect the two sides of the brain, lights up. As one might know, when the left and right sides of the brain are connected one are operating at your highest potential. Therefore, we commonly use binaural beats in headphones to synchronize the brain and light up the Corpus Collosum.

### **Your Root Frequency**

Research has now shown that each of us has a root or soul frequency that we vibrate at. This frequency is most apparent when one are centered, grounded or in love. The frequency also naturally emanates from one when one are in perfect present awareness of now.

There are many frequencies that distract us from our own. There are car sounds, sounds of the city, electricity, and electromagnetism to mention a few. Therefore, it is easy to lose our frequency.

One can use sound to resonate your frequency in order to restore your connection to it. Simply toning can do it, but there is nothing like getting on a sound table with the right combination of consistent sounds.

The truth is that any consistent frequency will essentially resonate your own root frequency. When any frequency is resonated within one your root frequency is naturally triggered because your system knows all frequencies and recognizes it as a musical interval. In fact, it isn't as important to find your own frequency to help as it is to simply have a consistent frequency vibrating one. This is one underlying power of music is that it gets your own frequency humming again. However, any type of consistent drone (any music that stays on one note the whole song) will be more conducive to resonating your frequency. The trick is to find drone music that is right the combination of calming versus activating so as to not make one bored or too agitated.

Of course, if one use your resonant frequency then it is even more powerful. One can find your resonate frequency by simply tuning into yourself and singing the frequency that your think it might be. More often than not, one will sing the frequency. This can be confirmed by multiple try, muscle testing and ultimately using a heart variability monitor.

The most powerful way to get your frequency humming inside of one again is

to get on a sound table. The vibration is so intense that it jump starts your own frequency powerfully.

Besides your root soul frequency there are a whole host of other frequencies vibrating within one:

- Body Resonances (particularly chest and head cavity resonance)
- Astrological Frequencies
- Chakra Frequencies
- Resonant Frequency of your Voice
- Frequencies of each Organ
- Frequencies of each gland within the Endocrine System
- Elements within each tissue
- Frequencies of each of the Etheric Bodies
- Frequencies of each of the Rays (from Alice Bailey)

In fact, evidence shows that there is a harmonic structure of sound within us that is our very own fingerprint of sound. If we could find that fingerprint and vibrate one at those multiple frequencies, we believe it would make one perfectly present, centered and grounded.

### **Harmonic Structure of Sound**

One of the key concepts that runs through the whole program is the connection between the mathematical structure found within the harmonic structure of sound and the mathematical structure found throughout nature.

Almost every sound is made up of a combination of pure tones, or notes.

When one hear an instrument play a particular pitch, one are hearing many other notes hidden in that sound. These other notes are called harmonics, or overtones. Sounds are combinations of different harmonics. The harmonics present in a certain sound account for the differences in sound qualities, or timbres. The term timbre refers to different sounds, such as guitar versus piano, or vocal versus accordion, as well as the differences in the sound quality of particular instruments. Another example of timber would be the difference between the sound of people's voices.

There are two interesting things about harmonics. First, each harmonic found in a sound's timbre is a pure tone (A pure tone is the sound of a tuning fork, or tone generator). Almost all sounds are made up of a combination of these pure tones. The second interesting thing about harmonics is that they're all mathematical multiples of a root, or fundamental frequency. For example, if

one play the E string on a guitar, it is approximately 80 hertz. The harmonics would be 160, 240, 320, 400, 480, 560 and so forth.

The harmonic structure of sound is the same in:

- The distance between the planets in our Solar System.
- The weight of each vertebrae in our spine.
- The frequencies of elements in Chemistry.
- The Spectral Lines of Hydrogen
- The distance between the electron shells in an atom.
- The energy levels of matter at the Quantum level.
- The frequencies of the etheric bodies.

### **The Unified Field**

This mathematical structure of sound (mathematical multiples) is also found in the distance between the planets, the weight of each vertebrae in your back, in the cellular structure of hydrogen and in chemistry. Some even say it is the basis of the frequencies in chakras.

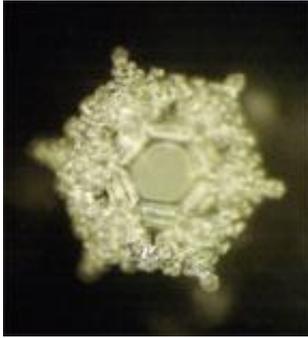
It is through such correspondences that we begin to see the “unified field” where we are all connected with each other, with nature and with every aspect of the universe. We are always connected with this unified field. The goal is to become more conscious of this connectedness.

### **Dr. Masaru Emoto's Study of The Effect of Intention and Prayer on Water**

Dr. Emoto studied the crystalline snow flake like structures that formed when water freezes (actually they form while the ice is melting after having been frozen).

He discovered through research in the lab that one can affect the type of snowflake patterns that are created with your mind and with music.

For example, if one place the word love on a bottle of water, the crystalline pattern would form a beautiful mandala.



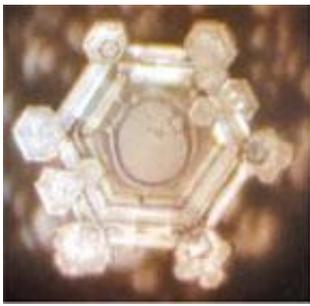
If one put the word hate on the bottle of water one would get an ugly malformed crystalline pattern.



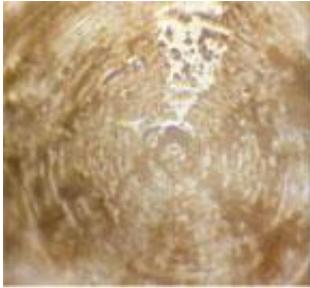
The same type of effects were seen when one or more persons would simply meditate on transmitting love to the bottle of water. Prayer would have an even stronger effect on the water.



Dr. Emoto also discovered that certain types of music would create different types of crystalline patterns. Classical music created beautiful patterns



while heavy metal created ugly mush.



There have been numerous other studies proving the effect of intention. Dr. Emoto's work not only corroborates the powerful effect of intention, but also shows how intention and sound can make a major effect on the structure of each water molecule in your body -- and, of course, we are mostly made of water.



Check Dr. Emoto's site at  
[www.masaru-emoto.net](http://www.masaru-emoto.net)  
or at  
[www.hado.net](http://www.hado.net)

## Sound and Nature



**There are many secrets hidden in the sounds of nature.**

### **SACRED GEOMETRY**

The Images on this page are courtesy of Jonathan Quintin.  
We thank him for his assistance.

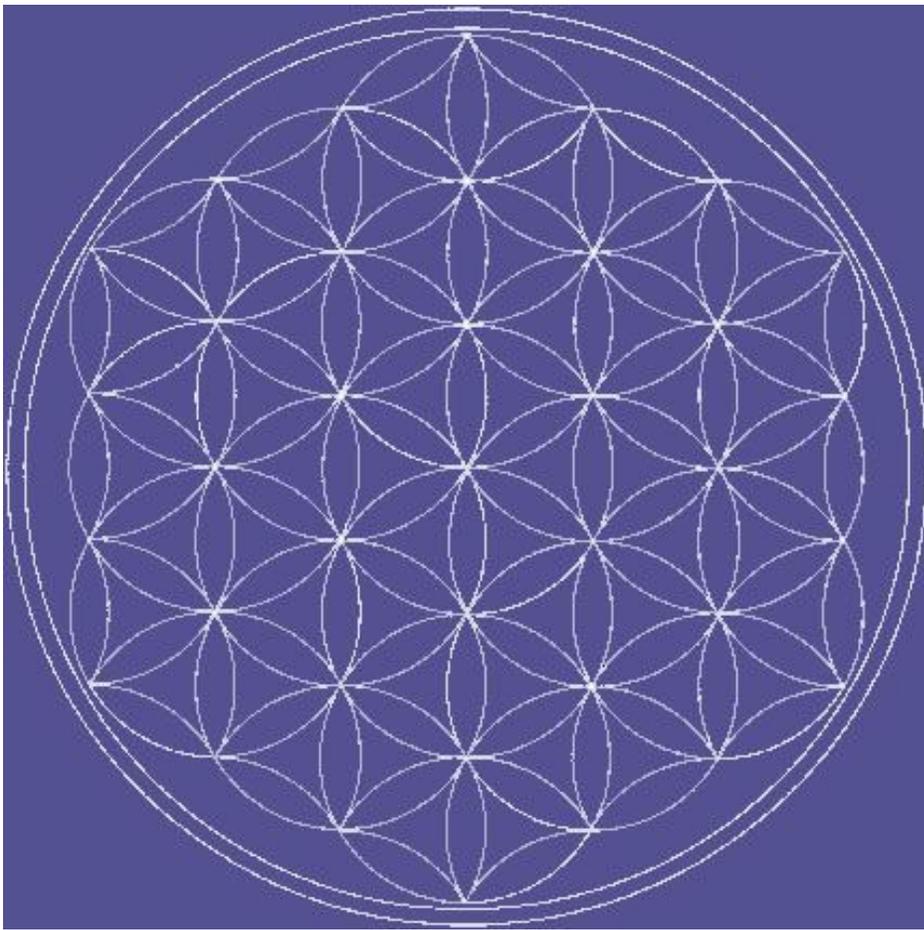
Some images are by Gary Carpenter



Bruce Rawles explains it the best on his website - [www.geometrycode.com](http://www.geometrycode.com)  
"In nature, we find patterns, designs and structures from the most minuscule particles, to expressions of life discernible by human eyes, to the greater cosmos. These inevitably follow geometrical archetypes, which reveal to us the nature of each form and its vibrational resonances. They are also symbolic of the underlying metaphysical principle of the inseparable relationship of the part to the whole. It is this principle of oneness underlying all geometry that permeates the architecture of all form in its myriad diversity. This principle of interconnectedness, inseparability and union provides us with a continuous reminder of our relationship to the whole, a blueprint for the mind to the sacred foundation of all things created."

The images are often called Sacred because they are part of the actual structure of the entire universe.

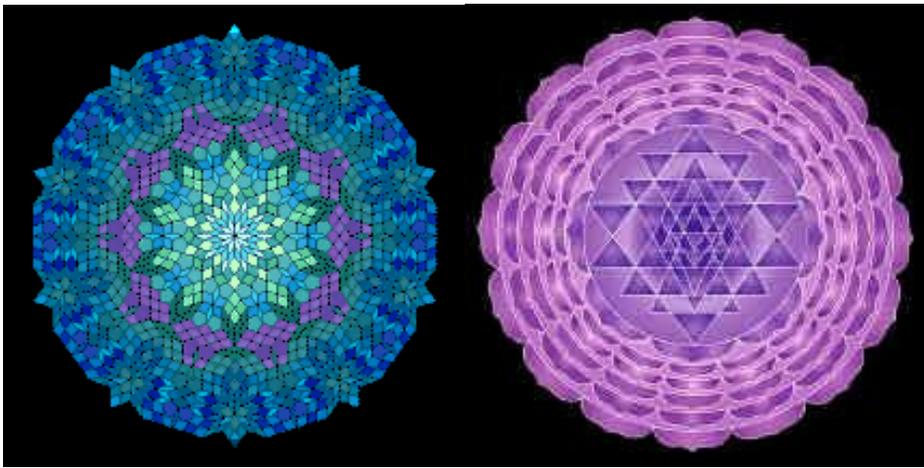
The flower of life has every single component of reality imbedded in this one image.



From a sphere



to complex patterns



every image is actually a reflection of music.



Randy Masters has created chimes based on all of the musical intervals found within the relationships of each of the triangles.

In fact, technically, every single geometric shape within the entire universe (including each organ within our bodies) has a mathematical correlation to musical intervals. Therefore, everything can be broken down into a musical interval that we can feel. When one learn all of the musical intervals one have the key to feeling everything in the universe.



The kings chamber in the Great Pyramid has very specific chords setup by the resonance created by the distances between each of the walls (Width, Depth, and Height)



The Golden Spiral above is based on the Golden Mean ratio. This ratio is found throughout all life. Also, when a person is transmitting love, the heart actually creates a sound that is made up of golden mean harmonics.

## SACRED GEOMETRY LINKS

(most from Bruce Rawles)

Besides the following links there are so many websites out there that have a huge amount of information. Just google "Sacred Geometry."

[Bruce Rawls \(www.geometrycode.com\)](http://www.geometrycode.com) has one of the clearest and easiest to read explanations of the basics of sacred geometry on his home page.

[Gregory Hoag \(www.metaforms.net\)](http://www.metaforms.net) has some of the coolest sacred geometry sculptures.

[Juliet and Jiva Carter \(www.templatewales.org\)](http://www.templatewales.org) also have a huge array of sacred geometry forms with workshops that tie it all together.

[LightSource \(www.sacred-geometry.com\)](http://www.sacred-geometry.com) now has both PC and Macintosh versions of their screen savers: the Gaiametry CD, LightSource CD and DVDs

with Hemi-Sync audio (which promotes synchronization of the left and right hemispheres of the brain).

Heartbeat2000: A wonderful site on the beauty and power of the compassionate heart – it's relation to the golden ratio and much more.

Nassim Hamein ([www.theresonanceproject.org](http://www.theresonanceproject.org)) is doing some fascinating work with sacred geometry and modern physics.

Jain from Australia has some interesting info on Vedic Math, Magic Squares, etc.

Michael S. Schneider - author of a marvelous book on geometry, A Beginner's Guide to Constructing the Universe - The Mathematical Archetypes of Nature, Art, and Science - A Voyage from 1 to 10 - I often recommend this book as a complement to my book for newcomers to the subject

Drunvalo Melchizedek has acquainted many about the mysteries of sacred geometry with his Flower of Life programs

Ibrahim Karim's Biogeometry work is also being conducted in the USA by Dr. Robert J. Gilbert

David Fideler - The Pythagorean Sourcebook and Library

The School of Pythagoras

Sig Lonegren - Mid Atlantic Geomancy

Bob Dratch - Biological and Bioactive Electronic Holoforms (tm)

James Furia - Geomusic

Bernard Pietsch - The Philosopher's Stone - Recovering the Perennial Paradigm

Barbara Hero - [www.Lambda.com](http://www.Lambda.com) - International Lambda Research Institute

John Boyd-Brent - The Circle and the Square and the Square Root of Two

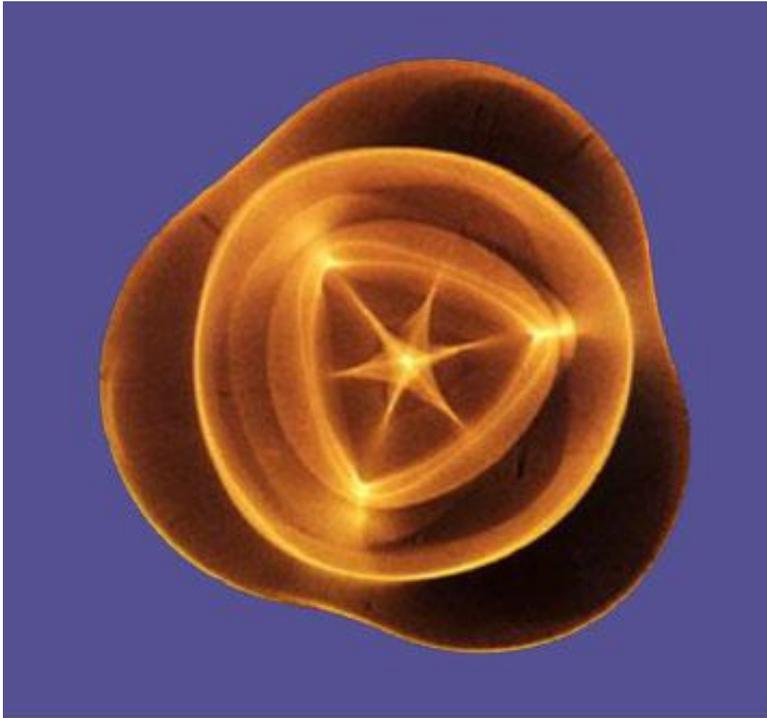
Charles Henry's Human Forms from spherical reflections

Vincent Beall - an interesting site on sacred geometry from a Kabbalistic perspective

Sound and Consciousness Centre on <http://www.soundhealingcenter.com/>

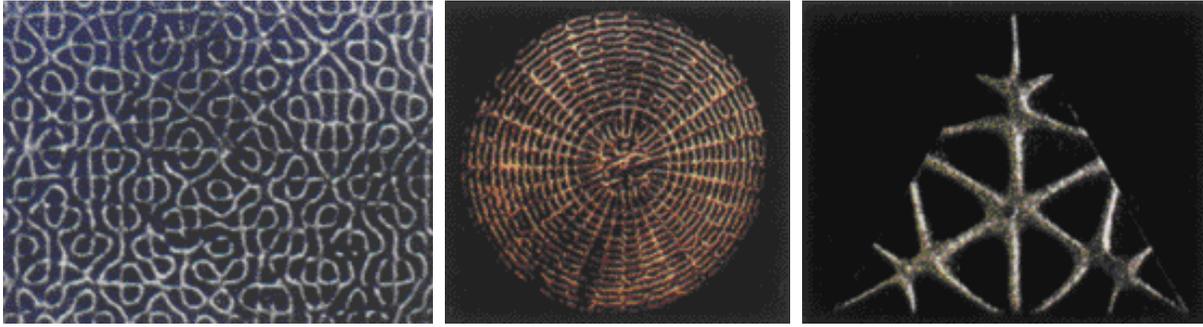
## **CYMATICS**

### **Sound in Form**



Light shining through water vibrated by sound

The truth is that sound creates a dynamic mandala-like pattern in every water molecule of your entire body. And, since your body is 90% water, the effect on your whole system is dramatic. In fact, your entire body (especially your skin) is actually an ear. When you consider the findings of Dr. Emoto, which prove that your intention changes the structure of water, then it becomes clear how sound and intention can create extraordinary changes in your body and consciousness.



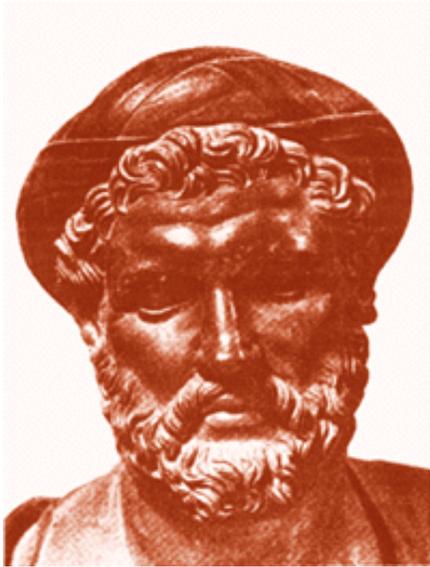
Cymatics, the study of wave phenomena, is a science pioneered by Swiss medical doctor and natural scientist, Hans Jenny (1904-1972). For 14 years he conducted experiments animating inert powders, pastes, and liquids into life-like, flowing forms, which mirrored patterns found throughout nature, art and architecture. What's more, all of these patterns were created using simple sine wave vibrations (pure tones) within the audible range. So what you see is a physical representation of vibration, or how sound manifests into form through the medium of various materials.

Dr. Jenny's methodology was meticulous, well documented, and totally repeatable. His fascinating body of work offers profound insights into both the physical sciences and esoteric philosophies. It illustrates the very principles which inspired the ancient Greek philosophers Heraclitus, Pythagoras and Plato, on down to Giordano Bruno and Johannes Kepler, the fathers of modern astronomy. "In the beginning was the word..." takes on a whole new meaning while looking at these experiments!

These cymatic images are truly awe-inspiring, not only for their visual beauty in portraying the inherent responsiveness of matter to sound, but also because they inspire a deep recognition that we, too, are part and parcel of this same complex and intricate vibrational matrix.

Check out more details at [www.cymaticsource.com](http://www.cymaticsource.com)

## The Historical Background of Medical Resonance Therapy Music®



### **PYTHAGORAS**

**Physician, musicologist,  
mathematician, founder of our  
scientific age  
he created the preconditions for  
utilising harmonically structured  
music in medicine**

The history of Medical Resonance Therapy Music is ancient – it begins at a time when art, religion, and medicine still formed a unity.

That is why the oldest works of art or religious and philosophical writings of mankind report of the effect of a kind of music which forms the soul, puts social life in order, and heals man holistically.

Even prior to the beginning of our modern calendar, in the sixth century BC, especially the famous physician, mathematician, philosopher, musicologist and musician respectively, Pythagoras, whom I have already mentioned several times, supported the application of a kind of music which was structured according to the laws of harmony of the microcosm of music, and was to have a beneficial effect on the life of the individual in health as well as in harmony with nature.

And the way in which this brilliant scholar approached this matter, finally made him the founder of our scientific era.

At the time of Pythagoras, music had the very conscious task of developing man ethically. All characteristics of this art were concentrated on the objective to naturally put the inner life of the individual human being in order, and to cultivate his soul to live with the creator and his creation in natural harmony – and in this way to also have a healthy inner self.

At that time, this practical task of music was simultaneously a religious, ideological, ethical and purely artistic one.

Pythagoras now aroused in this ethically shaped musical work the idea of modern scientific thinking by starting to objectivise the musical parameters which had so far only been defined religiously, philosophically or artistically – with measurements and numbers. He began to measure music and / or elements of music in terms of mathematics and physics.

For the religious, philosophical, ethical and artistic leaders of that time, this was an enormously revolutionary act which threatened to turn their previous conception of the world upside down – and so it was not a coincidence that Pythagoras got caught in an increasing whirlpool of religious, political, philosophical and artistic dispute and finally even in ideological persecution – for which, with the help of musicological research and the help of physics and mathematics, he prepared to capture the mentioned areas of life: religion, ethics, philosophy and art in an exact knowledge of scientific character, and to thereby demystify them – which, of course, was also linked to a loss of the previous power that the contemporary leaders of social life had.

Pythagoras had verified the natural point of contact of creation between the subjective and objective world in the microcosm of music: between our inner world with our religious, ethical, moral, philosophical and ideological ideas, but also with our talent, with our innate inner traits and abilities on one hand – and the rational world of mathematics, physics, chemistry and biology as well as astronomy on the other hand.

And he wanted to use this microcosm of music to firmly weld together the outer and inner world of man as well as the sciences naturally resulting from this.

And in his famous school for the training of young physicians, scientists and artists he therefore logically taught on one hand:

1. the intuitive spontaneous inner realisation of the natural laws of harmony of the creator in the microcosm of music of the inner mental imaginative space, meaning in the area of musical intuition or musical creative thinking and feeling, as well as on the other hand
2. the outer empirical: the scientific realisation of the natural laws of harmony of the microcosm of music with the help of his famous “Monochord”, the mathematical and physical investigation of the microcosm of music and its harmonical connection to other scientific fields of knowledge such as medicine, biology, physics and astronomy

This complex research and teaching work of Pythagoras was directed beyond the aspect of health at the realisation of a standardised field of life and creation, and therefore at the development of a unified field theory, something our modern science also strives for – but contrary to this, Pythagoras, at the same time, included the great areas of religion, ethics, psychology, sociology and art, as well as medicine in this whole process of integrated, subjective and objective achievement of knowledge:

so he combined the arts' intuitive and the scientific objective verifying achievement of realisation with each other, in order to advance to a holistic, standardised view of the inner and outer world, shaped by natural harmony.

On this integrated basis, he wanted to ensure the holistic systematical development of natural human dignity and the protection of life as well as the ecology.

Excerpt from:

**Peter Huebner**

### **Nature's Laws of Harmony in the Microcosm of Music**

From a lecture given by the classical composer at the medical faculty of the University of Heidelberg, the University of Tel Aviv and the University of Magdeburg, and the talks which followed on the application of the natural laws of harmony in the microcosm of music for medicine.

Check out more details at

<http://www.medicalresonancetherapymusic.com/index.php>

## **Pythagoras Teachings**

### **The Teachings of Pythagoras**

by Ovid

Excerpted from *Metamorphoses*, book 15, lines 59-477

translated by Rolphe Humphries

There was a man here, Samian born, but he  
Had fled from Samos, for he hated tyrants  
And chose, instead, an exile's lot. His thought  
Reached far aloft, to the great gods in Heaven,  
And his imagination looked on visions  
Beyond his mortal sight. All things he studied  
With watchful eager mind, and he brought home  
What he had learned and sat among the people  
Teaching them what was worthy, and they listened  
In silence, wondering at the revelations  
How the great world began, the primal cause,  
The nature of things, what God is, whence the snows  
Come down, where lightning breaks from, whether wind  
Or Jove speaks in the thunder from the clouds,  
The cause of earthquakes, by what law the stars  
Wheel in their course, all the secrets hidden  
From man's imperfect knowledge. He was first  
To say that animal food should not be eaten,  
And learned as he was, men did not always  
Believe him when he preached "Forbear, O mortals,  
To spoil your bodies with such impious food!  
There is corn for you, apples, whose weight bears down  
The bending branches; there are grapes that swell  
On the green vines, and pleasant herbs, and greens  
Made mellow and soft with cooking; there is milk  
And clover-honey. Earth is generous  
With her provision, and her sustenance

Is very kind; she offers, for your tables,  
Food that requires no bloodshed and no slaughter.

Meat is for beasts to feed on, yet not all  
Are carnivores, for horses, sheep, and cattle  
Subsist on grass, but those whose disposition  
Is fierce and cruel, tigers, raging lions,  
And bears and wolves delight in bloody feasting.  
Oh, what a wicked thing it is for flesh  
To be the tomb of flesh, for the body's craving  
To fatten on the body of another,  
For one live creature to continue living  
Through one live creature's death. In all the richness  
That Earth, the best of mothers, tenders to us,  
Does nothing please except to chew and mangle  
The flesh of slaughtered animals? The Cyclops  
Could do no worse! Must you destroy another  
To satiate your greedy-gutted cravings?  
There was a time, the Golden Age, we call it,  
Happy in fruits and herbs, when no men tainted  
Their lips with blood, and birds went flying safely  
Through air, and in the fields the rabbits wandered  
Unfrightened, and no little fish was ever  
Hooked by its own credulity: all things  
Were free from treachery and fear and cunning,  
And all was peaceful. But some innovator,  
A good-for-nothing, whoever he was, decided,  
In envy, that what lions ate was better,  
Stuffed meat into his belly like a furnace,  
And paved the way for crime. It may have been  
That steel was warmed and dyed with blood through killing  
Dangerous beasts, and that could be forgiven  
On grounds of self-defense; to kill wild beasts  
Is lawful, but they never should be eaten.

One crime leads to another: first the swine  
Were slaughtered, since they rooted up the seeds  
And spoiled the season's crop; then goats were punished

On vengeful altars for nibbling at the grape-vines.  
These both deserved their fate, but the poor sheep,  
What had they ever done, born for man's service,  
But bring us milk, so sweet to drink, and clothe us  
With their soft wool, who give us more while living  
Than ever they could in death?  
And what had oxen, Incapable of fraud or trick or cunning,  
Simple and harmless, born to a life of labor,  
What had they ever done? None but an ingrate,  
Unworthy of the gift of grain, could ever  
Take off the weight of the yoke, and with the axe  
Strike at the neck that bore it, kill his fellow  
Who helped him break the soil and raise the harvest.  
It is bad enough to do these things; we make  
The gods our partners in the abomination,  
Saying they love the blood of bulls in Heaven.  
So there he stands, the victim at the altars,  
Without a blemish, perfect (and his beauty  
Proves his own doom), in sacrificial garlands,  
Horns tipped with gold, and hears the priest intoning:  
Not knowing what he means, watches the barley  
Sprinkled between his horns, the very barley  
He helped make grow, and then is struck  
And with his blood he stains the knife whose flashing  
He may have seen reflected in clear water.  
Then they tear out his entrails, peer, examine,  
Search for the will of Heaven, seeking omens.  
And then, so great man's appetite for food  
Forbidden, then, O human race, you feed,  
You feast, upon your kill. Do not do this,  
I pray you, but remember: when you taste  
The flesh of slaughtered cattle, you are eating  
Your fellow-workers.

Now, since the god inspires me,

I follow where he leads, to open Delphi,  
The very heavens, bring you revelation  
Of mysteries, great matters never traced

By any mind before, and matters lost  
Or hidden and forgotten, these I sing.  
There is no greater wonder than to range  
The starry heights, to leave the earth's dull regions,  
To ride the clouds, to stand on Atlas' shoulders,  
And see, far off, far down, the little figures  
Wandering here and there, devoid of reason,  
Anxious, in fear of death, and so advise them,  
And so make fate an open book.

O mortals,

Dumb in cold fear of death, why do you tremble  
At Stygian rivers, shadows, empty names,  
The lying stock of poets, and the terrors  
Of a false world? I tell you that your bodies  
Can never suffer evil, whether fire  
Consumes them, or the waste of time. Our souls  
Are deathless; always, when they leave our bodies,  
They find new dwelling-places. I myself,  
I well remember, in the Trojan War  
Was Panthous' son, Euphorbus, and my breast  
Once knew the heavy spear of Menelaus.  
Not long ago, in Argos, Abas' city,  
In Juno's temple, I saw the shield I carried  
On my left arm. All things are always changing,  
But nothing dies. The spirit comes and goes,  
Is housed wherever it wills, shifts residence  
From beasts to men, from men to beasts, but always  
It keeps on living. As the pliant wax  
Is stamped with new designs, and is no longer  
What once it was, but changes form, and still  
Is pliant wax, so do I teach that spirit  
Is evermore the same, though passing always  
To ever-changing bodies. So I warn you,  
Lest appetite murder brotherhood, I warn you  
By all the priesthood in me, do not exile  
What may be kindred souls by evil slaughter.  
Blood should not nourish blood.

## Full sail, I voyage

Over the boundless ocean, and I tell you  
Nothing is permanent in all the world.  
All things are fluid; every image forms,  
Wandering through change. Time is itself a river  
In constant movement, and the hours flow by  
Like water, wave on wave, pursued, pursuing,  
Forever fugitive, forever new.  
That which has been, is not; that which was not,  
Begins to be; motion and moment always  
In process of renewal. Look, the night,  
Worn out, aims toward the brightness, and sun's glory  
Succeeds the dark. The color of the sky  
Is different at midnight, when tired things  
Lie all at rest, from what it is at morning  
When Lucifer rides his snowy horse, before  
Aurora paints the sky for Phoebus' coming.  
The shield of the god reddens at early morning,  
Reddens at evening, but is white at noonday  
In purer air, farther from earth's contagion.  
And the Moon-goddess changes in the nighttime,  
Lesser today than yesterday, if waning,  
Greater tomorrow than today, when crescent.

Notice the year's four seasons: they resemble  
Our lives. Spring is a nursling, a young child,  
Tender and young, and the grass shines and buds  
Swell with new life, not yet full-grown nor hardy,  
But promising much to husbandmen, with blossom  
Bright in the fertile fields. And then comes summer  
When the year is a strong young man, no better time  
Than this, no richer, no more passionate vigor.  
Then comes the prime of Autumn, a little sober,  
But ripe and mellow, moderate of mood,  
Halfway from youth to age, with just a showing  
Of gray around the temples. And then Winter,  
Tottering, shivering, bald or gray, and aged.

Our bodies also change. What we have been,  
What we now are, we shall not be tomorrow.  
There was a time when we were only seed,  
Only the hope of men, housed in the womb,  
Where Nature shaped us, brought us forth, exposed us  
To the void air, and there in light we lay,  
Feeble and infant, and were quadrupeds  
Before too long, and after a little wobbled  
And pulled ourselves upright, holding a chair,  
The side of the crib, and strength grew into us,  
And swiftness; youth and middle age went swiftly  
Down the long hill toward age, and all our vigor  
Came to decline, so Milon, the old wrestler,  
Weeps when he sees his arms whose bulging muscles  
Were once like Hercules', and Helen weeps  
To see her wrinkles in the looking glass:  
Could this old woman ever have been ravished,  
Taken twice over? Time devours all things  
With envious Age, together. The slow gnawing  
Consumes all things, and very, very slowly.

Not even the so-called elements are constant.  
Listen, and I will tell you of their changes.  
There are four of them, and two, the earth and water,  
Are heavy, and their own weight bears them downward,  
And two, the air and fire (and fire is purer  
Even than air) are light, rise upward  
If nothing holds them down. These elements  
Are separate in space, yet all things come  
From them and into them, and they can change  
Into each other. Earth can be dissolved  
To flowing water, water can thin to air,  
And air can thin to fire, and fire can thicken  
To air again, and air condense to water,  
And water be compressed to solid earth.  
Nothing remains the same: the great renewer,  
Nature, makes form from form, and, oh, believe me  
That nothing ever dies. What we call birth

Is the beginning of a difference,  
No more than that, and death is only ceasing  
Of what had been before. The parts may vary,  
Shifting from here to there, hither and yon,  
And back again, but the great sum is constant.

Nothing, I am convinced, can be the same  
Forever. There was once an Age of God,  
Later, an Age of Iron. Every place  
Submits to Fortune's wheel. I have seen oceans  
That once were solid land, and I have seen  
Lands made from ocean. Often sea-shells lie  
Far from the beach, and men have found old anchors  
On mountain-tops. Plateaus have turned to valleys,  
Hills washed away, marshes become dry desert,  
Deserts made pools. Here Nature brings forth fountains,  
There shuts them in; when the earth quakes, new rivers  
Are born and old ones sink and dry and vanish.  
Lycus, for instance, swallowed by the earth  
Emerges far away, a different stream  
And Erasinus disappears, goes under  
The ground, and comes to light again in Argos,  
And Mysus, so the story goes, was tired  
Of his old source and banks and went elsewhere  
And now is called Caicus. The Anigrus  
Was good to drink from once, but now rolls down  
A flood that you had better leave alone,  
Unless the poets lie, because the Centaurs  
Used it to wash their wounds from Hercules' arrows.  
And Hypanis, rising from Scythian mountains,  
Once fresh and sweet to the taste, is salty and brackish.  
We must not wander far and wide, forgetting  
The goal of our discourse. Remember this:  
The heavens and all below them, earth and her creatures,  
All change, and we, part of creation, also  
Must suffer change. We are not bodies only,  
But winged spirits, with the power to enter  
Animal forms, house in the bodies of cattle.

Therefore, we should respect those dwelling-places  
Which may have given shelter to the spirit  
Of fathers, brothers, cousins, human beings  
At least, and we should never do them damage,  
Not stuff ourselves like the cannibal Thyestes.  
An evil habit, impious preparation,  
Wicked as human bloodshed, to draw the knife  
Across the throat of the calf, and hear its anguish  
Cry to deaf ears! And who could slay  
The little goat whose cry is like a baby's.  
Or eat a bird he has himself just fed?  
One might as well do murder; he is only  
The shortest step away. Let the bull plow  
And let him owe his death to length of days;  
Let the sheep give you armor for rough weather,  
The she-goats bring full udders to the milking.  
Have done with nets and traps and snares and springs,  
Bird-lime and forest-beaters, lines and fish-hooks.  
Kill, if you must, the beasts that do you harm,  
But, even so, let killing be enough;  
Let appetite refrain from flesh, take only  
A gentler nourishment.

Check out more at <http://plato.stanford.edu/entries/pythagoras/>

## **Subtle Energy**

What Are Subtle Energy Fields?

**Exerpt from *A Subtle Energy Technology for Noise Reduction in Physical and Psychophysical Systems* — Jan, 1999**

**By T.M. Srinivasan, Ph.D. - QLink Co-Founder  
International Society for the Study of Subtle Energies and Energy  
Medicine (ISSSEEM)**

The term Subtle Energy (SE) is of recent origin. SE could mean a physical energy, such as electromagnetic or acoustic, that is of such low intensity we have no means of measuring it presently. The sensors we have designed in the laboratories are not sensitive enough to directly discern these fields. In this

definition of SE, we are dealing with a physical field which is of very low magnitude.

Several scientists in the United States (Tiller, Bearden, Rein, Putoff, Green, and Srinivasan) have studied SE and its effects. Though each has developed his own nuanced theory of SE, in general they all tend to concur that SE phenomena is related to a type of unified energy, and is not just a physical field of very low magnitude.

Contemporary quantum physics has mathematically described and predicted the presence of a unified energy which underlies conventional transverse electromagnetic (EM) vectors. The concept of a subtle energy underlying EM fields was first introduced by Bohm and Aharonov in describing quantum potentials as an implicate order "embedded in" our normal 3-D space. It has recently been proposed that an additional implicate order is embedded within the quantum potentials.

This higher-dimensional space is composed of an energy, which has been called time-reversed waves, non-Hertzian waves, longitudinal waves, scalar waves, or zero-point energy.

The classical EM fields have been under investigation since the laws of Maxwell were established more than 150 years ago in England. We know all about the physical fields; we can generate, manipulate and use them for purposes such as long distance communication, computer applications and measurement techniques that are proliferating all around us. However, our knowledge regarding SE fields is expanding slowly. We present below a view of SE field generation based on some of the latest theories in quantum physics.

#### Physics Of Subtle Energy Fields - ZPE

Subtle Energy fields might be a fundamental manifestation of energy that underlies classical energy systems. We need to invoke current theories in physics to postulate possible scenario for SE production. It is known that what we thought of as vacuum or empty space is not really so. Quantum theory predicts this vacuum is really a container of enormous amounts of energy. Particles seem to appear and disappear out of this vacuum. Such processes are presently called Zero Point Fluctuations (ZPF), providing an infinite energetic background for the physical world.

The manifestation of elementary particles from this vacuum and their disappearance proceeds continuously and is postulated as the basis for the formation of the universe as we know it. At the level of ZPF, Zero Point Energy (ZPE) is converted into matter and matter falls back into this ocean of ZPE. If

we can 'mine' even a small part of this vast energy, we can theoretically supply the energy requirement of the world for a fraction of the cost of conventional energy sources. Renowned scientists, several of whom seem close to extracting this energy, are making attempts at this.

Now, one might ask, how is this ZPE connected with SE? It is likely that as particles are formed from vacuum (which as we said, is a concept emerging from quantum physics) there are associated radiations. As particles emerge and disappear, these radiations also appear and disappear. It is similar to when ripples are formed as stones are thrown into still water. As each stone disappears in water, it produces waves at the surface of water. Though there is no mathematical proof for production of SE through this method, it is likely such a mechanism exists in the vacuum state. Quantum mechanics postulates elementary particles do have specific energy states, which have certain fingerprint radiation patterns. Hence the above model for subtle energy radiation's is well within the possibilities of theories in modern physics.

While the production and radiation of SE fields could possibly be within the realm of physics, the design and use of SE field devices most likely require novel engineering constructs. It is likely these SE fields can be focused and down-converted through special energy-information transduction techniques which couple the multi-dimensional SE fields to three-dimensional force fields. It is likely, then, if SE fields are focused, they can be brought out from the Zero Point Energy itself. As SE fields emerge out of ZPE, they may be beyond physicality (and hence not possible to measure); however, after transduction, they seem to manifest as quasi-physical energies. Or they directly influence the behavior of classical field phenomena. After such a change in energy format, SE fields become 'useful' and take part in energy interactions with physical fields such as electromagnetic and acoustic.

Subtle Energy Device Dynamics - Prof. Tiller Theory

While the above thoughts could very well be mere speculation which could face premature mortality as physics advance, we need to ponder over these ideas with the backdrop of a particular instrument which seems to fall within the category of SE field generation and its interaction with the physical world, especially with electromagnetic and bioelectromagnetic phenomena.

There are a set of SE instruments devised by Clarus Transphase, L.L.C. and its affiliate company Clarus Products International, L.L.C. These devices are called Sympathetic Resonators (SR) and use Clarus's proprietary Sympathetic Resonance Technology (SRT). A brief report is presented regarding these devices which have undergone many laboratory trials and seem to produce

consistent and measurable changes in both physical and psychophysical systems.

The Clarus devices consist of a family of hardware platforms. Each hardware platform has certain formats imprinted in the electronic or non-electronic circuitry such that transduction and coupling of SE fields to physical phenomena is achieved. These formats are delivered via the proprietary "Sympathetic Resonance Technology" (SRT) developed by Clarus. Clarus has developed the capability to generate an almost infinite number of variations of subtle energy fields using SRT. It has been found that different types of SE fields are suited for specific applications. Testing has also shown that the SE field intensity falls off as Inverse Square of distance; in other words, they have a radius of action beyond which their efficacy reduces.

Because the SE fields cannot be measured directly, the effects of the Clarus Sympathetic Resonators on physical and psychophysical phenomena are being tested. Once the SE field is generated and coupled to a physical field, or application, its effects are then studied.

An overview of the theories proposed by Prof. William Tiller of Stanford University (former Chairman of the Materials Science Department and Guggenheim Fellow), who has worked extensively with Clarus, provides a more detailed explanation of the possible mechanism of causation.

Prof. Tiller has proposed that magnetic vector potentials are the means by which energy exchanges occur between subtle energy fields and the physical world of electromagnetics. It is likely that the energy generated through magnetic vector potentials from the fundamental ZPF is 'pure', and can influence fields and matter around it through resonance effects.

Resonance occurs when two objects have frequencies of oscillations that are close to each other. When two such systems are in proximity, then they will resonate at the frequency dictated by the stronger of the two oscillations. For example, when a string in a guitar is plucked, any string, which is at a nearby resonance, will start oscillating at the driven frequency.

Similarly, the strong oscillations at the fundamental ZPE level will couple with other material oscillations and organize them to its proper frequency. Further, the ZPE generated field is considered coherent. In other words, a pure noise free field is radiated from the Clarus SE transducer. This would serve to bring electromagnetic phenomena to a new coherent order with less fundamental noise within the vicinity of the Clarus SRT devices.

Thus, resonance and coherence are two important aspects of SE fields. The physical field that emanates from the SE device is highly coherent and induces

resonance in material objects as well as electromagnetic force fields around it. The property of coherence is important in many systems, including the psychophysical. For example, information is transmitted across junctions in the human nervous system because of coherence. Even at the gross level, activities such as speech, movement of limbs and other functions are possible because of a coherent behavior of many subsystems. We can see the effects of loss of coherence in diseases such as Parkinson's and spasticity.

Tiller summarizes the four ways subtle energy and thus a Clarus SRT device can relate to and influence classical electromagnetic phenomena:

- (1) Subtle energy may directly influence the ordering of fundamental magnetic properties, which would regulate the fundamental magnetic behavior of all electromagnetic fields in the range of the subtle energy device.
- (2) Subtle energy may be related to magnetic vectors, such that the vectors serve as the media whereby the properties of subtle energy are able to impact electromagnetic phenomena.
- (3) Subtle energy may be the rarefied form of magnetic vectors, or one and the same phenomena.
- (4) Other properties of subtle energy may exist that impact sub-atomic particle phenomena through quantum field interactions, and thus they would indirectly influence forces such as magnetic phenomena.

If the magnetic vector were used as a medium or vehicle to store and transport and disseminate this energy, it would carry the new magnetic value to the electromagnetic phenomena in the environment, most likely through the mechanism of resonance. The same result would occur if the magnetic vectors were physical attributes of non-physical subtle energies, as if they were the flip side of the same coin.

Because electromagnetic radiation is composed of both an electric component and a magnetic component, the electric component will be always be directly affected by magnetic shifts. This is based on the principles of magnetics, where magnetic fields influence charged particles in motion such as photons, the carriers of electromagnetic force.

Thus, if a SE device can influence electromagnetic phenomena, it would be theoretically expected to influence a wide variety of phenomena spanning physical, chemical, biological, and psychophysical systems.

Check out more at <http://www.issseem.org/>

**Psychoenergetic Science** involves the expansion of traditional science to include human consciousness and human intention as capable of significantly

affecting both the properties of materials (non-living and living) and what we call "physical reality."

For the last four hundred years, an unstated assumption of science is that such a thing is impossible. However, our experimental research of the past decade shows that, for today's world and under the right conditions, this assumption is no longer correct.

We have discovered that it is possible to make a significant change in the properties of a material substance by consciously holding a clear intention to do so. For example, we have repeatedly been able to change the acid/alkaline balance (pH) in a vessel of water either up or down, without adding chemicals to the water, merely by creating an intention to do so.

While this is very exciting - even more exciting is the fact that we have been able to use a simple electronic device to "store" a specific intention within its electric circuit. This is important because this "intention programmed" device (we call it an intention-host device), can be placed next to a vessel of water at any physical location to obtain the same results we have achieved in our lab. In this way, we have had others replicate these water pH results at multiple locations around the world. Such results are consistently reproducible!

How is it possible for something like this to occur in the physical reality with which we are all so familiar? We have discovered that there are actually two levels of physical reality and not just one. It is this "new" level of physical reality that can be significantly influenced by human intention! How?

There are two basic kinds of unique substances found in these two levels of physical reality. They appear to interpenetrate each other but, normally, they do not interact with each other. We call this the uncoupled state of physical reality. In the uncoupled state we are able to detect our normal physical environment with our five physical senses. But the substance in this normal state of physical reality is not influenced by human intention. The substance in the "new" level of physical reality, appears to function in the empty space between the fundamental electric particles that make up our normal electric atoms and molecules. As such, it is currently invisible to us and to our traditional measurement instruments. But the substance in this "new" level is influenced by human intention.

The use of intention-host devices affects both realities in such a way that meaningful coupling begins to occur between these two very different kinds of substance, and therefore, between these two levels of physical reality. Then, the "new" level of physical reality becomes partially visible to our traditional

measurement instruments. We call this condition the coupled state of physical reality. In the coupled state, we can measurably influence physical reality via intention.

The implication of all of this for our world is enormous! Our experimental research suggests that implementation of the technologies we are pioneering will have profound impact on all aspects of human endeavor. Improved methods for converting fossil fuels to mechanical energy, more powerful computing capabilities and greatly enhanced potential for human mental and physical development are just a few examples of the dramatic possibilities.

Check out more at <http://www.tillerfoundation.com/>

## **Qigong (or Chi Kung)**

**Qigong** (or *ch'i kung*) refers to a wide variety of traditional cultivation practices that involve methods of accumulating, circulating, and working with Qi or energy within the body. Qigong is sometimes mistakenly said to always involve movement and/or regulated breathing; in fact, use of special methods of focusing on particular energy centers in and around the body are common in the higher level or evolved forms of Qigong. Qigong is practised for health maintenance purposes, as a therapeutic intervention, as a medical profession, a spiritual path and/or component of Chinese martial arts.

The qi in qigong means breath or air in Chinese, and, by extension, life force, dynamic energy or even cosmic breath. Gong means work applied to a discipline or the resultant level of skill, so qigong is thus breath work or energy work. The term was coined in the twentieth-century and its currency, David Ownby suggests, speaks of a cultural desire to separate cultivation from superstition, to secularize and preserve valuable aspects of traditional Chinese practices.

Attitudes toward the scientific basis for qigong vary markedly. Most Western medical practitioners and many practitioners of traditional Chinese medicine, as well as the Chinese government, view qigong as a set of breathing and movement exercises, with possible benefits to health through stress reduction and exercise. Others see qigong in more metaphysical terms, claiming that cosmic qi can be drawn into the body and circulated through channels called

meridians. There is no physically verifiable anatomical or histological basis for the existence of acupuncture points or meridians.

Everything vibrates. When two things vibrate at different frequencies, there is a tendency for the vibrations to come together. Most often, the slower vibration will rise to match the faster frequency. There are many kinds of examples of entrainment: over time, similarly tuned electric oscillators will match frequencies; disembodied animal hearts when placed near each other and kept alive in a lab will all beat in unison; and when women share a dormitory, over months they will often start menstruating at the same time.

Check out more at <http://www.quantumtouch.com/> and [http://www.geocities.com/qigong\\_zhineng/index.htm](http://www.geocities.com/qigong_zhineng/index.htm)

## **The “Unknown” Reality**

### **Extract from “The Unknown Reality” by Jane Roberts**

**Now:** There is an 'unknown' reality. I am part of it, and so are you.

"Some time ago I suddenly appeared within your space and time. Since then I have spoken to many people. There would be nothing strange to anyone in any of this if I had been born into your world in a body of my own, in usual terms. Instead I began to express myself by speaking through Jane Roberts. Period. In all of this there has been a purpose, and part of that purpose lies in this present book.

"Each individual is a part of the unknown reality. Because of my position, however, I am obviously more a part of it than most. My psychological awareness bridges worlds of which you are consciously aware, and others that seem, at least, to escape your notice. The woman through whom I speak found herself in an unusual situation, for no theories metaphysical, psychological, or otherwise would adequately explain her experience. She was led to develop her own, therefore, and this book is an extension of certain ideas already mentioned in *Adventures in Consciousness*. To write that book, Jane Roberts drew on deep resources of energy.

"The unknown reality, however, is unknown enough to usual reaches of the most flexible consciousness, in your terms, that it can only be approached by a personality as couched in it as I am. Once expressed, however, it can be comprehended. One of my purposes then has been to make this unknown reality consciously known.

"Man thought once, historically speaking, that there was but one world. Now he knows differently, but he still clings to the idea of one god, one self, and one body through which to express it.

"There is one God, but within that God are many. There is one self, but within that self are many. There is one body, in one time, but the self has other bodies in other times. All 'times' exist at once. Historically speaking, mankind chose a certain line of development. In it his consciousness specialized, focusing upon sharp particulars of experience. But inherent always, psychologically and biologically, there has been the possibility of a change in that pattern, an alteration that would effectively lift the race into another kind of weather.

"Such a development would, however, necessitate first of all a broadening of concepts about the self, and a greater understanding of human potential. Human consciousness is now at a stage where such a development is not only feasible. but necessary if the race is to achieve its greatest fulfillment.

"Jane Roberts experience to some extent hints at the multidimensional nature of the human psyche and gives clues as to the abilities that lie within each individual. These are part of your racial heritage. They give notice of psychic bridges connecting the known and 'unknown' realities in which you dwell.

"While you have highly limited concepts about the nature of the self, you cannot begin to conceive of a multidimensional godhood, or a universal reality in which all consciousness is unique, inviolate and yet given to the formation of infinite gestalts of organization and meaning.

"In my other books I used many accepted ideas as a springboard to lead readers into other levels of understanding. Here, I wish to make it clear that this book will initiate a journey in which it may *seem* that the familiar is left far behind. Yet when I am finished, I hope you will discover that the known reality is even more precious, more "real," because you will find it illuminated both within and without by the rich fabric of an 'unknown' reality now seen emerging

from the most intimate portions of daily life. Give us a moment. Your concepts of personhood are now limiting you personally and *en masse*, and yet your religions, metaphysics, histories, and even your sciences are hinged upon your ideas of who and what you are. Your psychologies do not explain your own reality to you. They cannot contain your experience. Your religions do not explain your greater reality, and your sciences leave you just as ignorant about the nature of the universe in which you dwell.

"These institutions and disciplines are composed of individuals, each restrained by limiting ideas about their own private reality; and so it is with private reality that we will begin and always return, period. These ideas in this book are meant to expand the private reality of each reader. They may appear esoteric or complicated, yet they are not beyond the reach of any person who is determined to understand the nature of the unknown elements of the self, and its greater world.

"So the book had a private beginning. Jane Robert's husband, Robert Butts, wondered about the death of his mother. In a session he brought out some old photographs. Now: Life after death has usually been described quite in keeping with the old accepted ideas about one self, and limited concepts of personhood. I took that opportunity, however, to begin this book.

"The self is multidimensional when it is physically alive. It is a triumph of spiritual and psychological identity, ever choosing from a myriad of probable realities its own clear unassailable focus. When you don't realize this, then you project upon life after death all of the old misconceptions. You expect the dead to be little different from the living--if you believe in afterlife at all--but perhaps more at peace, more understanding, and, hopefully, wiser.

"The fact is that in life you poise delicately and yet perfectly between realities, and after death you do the same. I use the opportunity, then, to explain the great freedom available to Robert Butts's mother after death but also to explain those elements of her reality present during life that had been closed to him consciously because of mankind's concepts about the nature of the psyche. I comment now and then about photographs that belong to the Butts family, including Jane Roberts, yet any reader can look at old photographs and ask the same questions, applying what is said here to private experience. *The 'unknown' reality* you are its known equivalent. Then know yourself. Your expand as you become acquainted with these ideas.

"I speak, myself, for those portions of your being that already understand. My voice rises from stratas of the psyche in which you also have your experience. Listen, therefore, to your own knowing.

--Seth