Cymatics

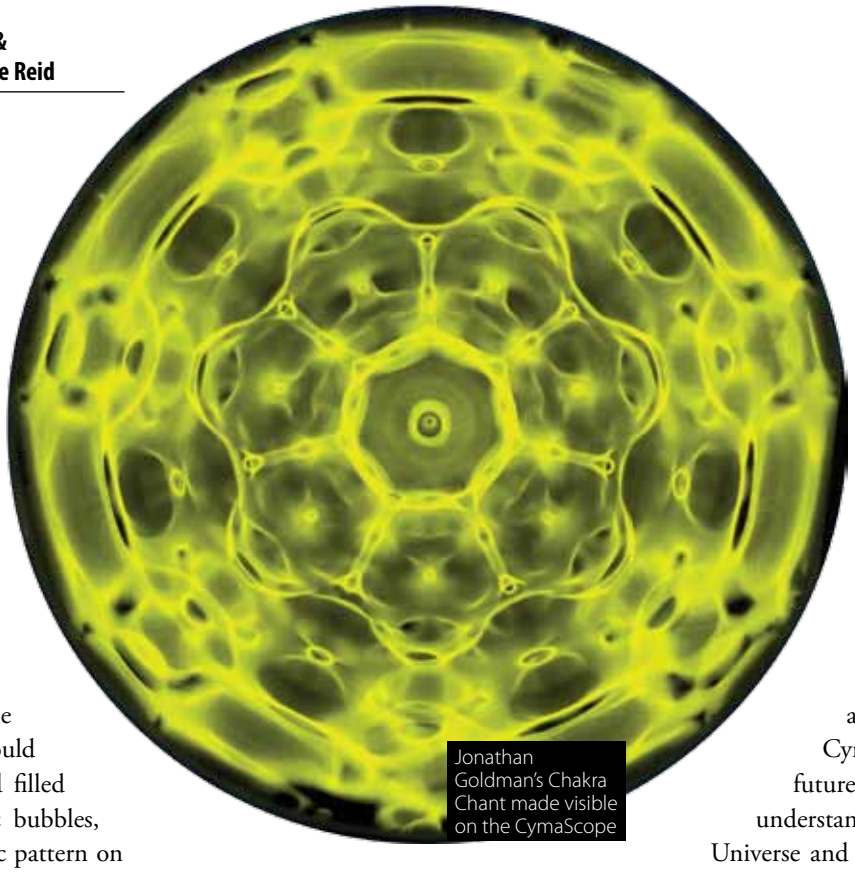
A Bridge to the Unseen World


by John & Annaliese Reid

Seeing sound with the CymaScope

Sound is an invisible force that permeates every aspect of our lives. With the exception of music, many man-made sounds are jarring while the sounds of Nature tend to flow over and around us like soothing waters, lifting our spirit, inspiring us, exciting us. Yet if we could see sound our world would be even more beautiful than we could imagine. It would be a world filled with shimmering holographic bubbles, each displaying a kaleidoscopic pattern on its surface. To see sound is to open a new window onto our world, one that has been veiled in mystery until recently.

When the microscope and telescope were invented centuries ago, new realms came into view that were not even suspected to exist—a Universe in miniature under the microscope and a Universe so immense that centuries of research lie before us with the telescope. Now, like the microscope and telescope that preceded it, the CymaScope instrument allows us to see a previously invisible realm—the world of sound—helping us to gain a deeper and fuller understanding of life and the Universe. The CymaScope uses the science of 'cymatics' to make sound visible, by imprinting sound's invisible vibrations onto the surface of ultra pure water to reveal its once-hidden geometric structures.



Jonathan Goldman's Chakra Chant made visible on the CymaScope

The CymaScope

This new scientific frontier reveals aspects of Nature every bit as authentic as a flower or a butterfly, the stars in the heavens or starfish in the oceans—in fact, as we will come to see in this article, sound is just as much at work in the interior of a star as it is in the organs of a starfish or in the cells of your body. Sound lies at the heart of every aspect of Nature, underpinning all of Creation. Cymatics will, in the future, enable humanity to understand far more about the Universe and our world than was possible with previous technologies. The CymaScope and the science of cymatics provide a bridge that will lead to significant advancements in knowledge.

The Shape of Sound

Before looking at cymatics more closely let us dispel the popularly held misconception that "sound is a wave". It isn't. All audible sounds are, in fact, spherical in form or *spheroidal*, that is to say audible sounds are sphere-like but not necessarily perfectly spherical. For the sake of simplicity we'll call these spheroidal sound spheres "sound bubbles."

Our world is teeming with beautiful holographic sound bubbles that envelop us in shimmering patterns of acoustic energy, each bubble rushing away at around 700 miles an hour as new bubbles form from

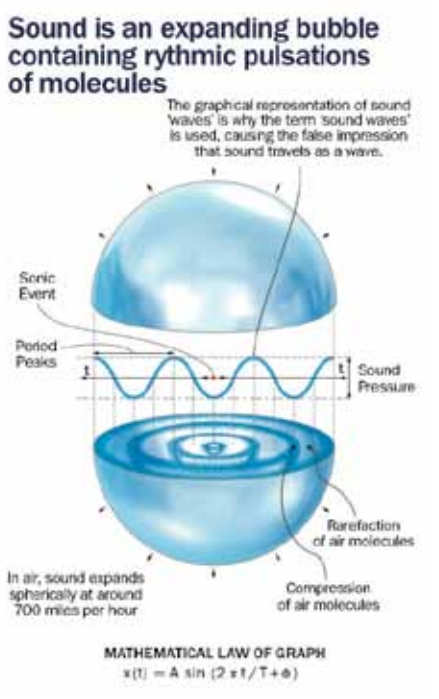
the source of the sound. Whether the sound is emitted from your voice or from some other source, such as a musical instrument, this 'bubble-in-a-hurry' leaves a fleeting vibrational imprint on the surface of your body: every cell in the surface tissues of your body actually receives sound patterns from the bubbles that surround you. However, only low frequency sounds can penetrate the interior of your body. To understand more fully how your cells respond to the healing power of audible sounds please refer to our previous Veritas article, *Rediscovering The Art And Science Of Sound Healing*.

A sound bubble created by a violin sound. Image credit: Dean Baker

Yet, despite the fact that sound is not a wave, the term 'sound wave' is in general use throughout the world, which is rather amazing when sound waves don't actually exist! So let us briefly discuss how this strange anomaly has occurred.

Sound is basically periodic movements of air molecules bumping into each other. These movements of sound can be described mathematically and when plotted graphically the shape of the graph does indeed look like a wave. However, if we could see audible sounds shimmering in the air around us we would see beautiful bubbles, not waves, so it is misleading to say that sound is a 'wave.' If what is actually a bubble is described as a wave it is possible that incorrect conclusions will be made about the way Nature works.

In the illustration below a slice through a sound bubble is depicted. The peaks of the graph represent the regions of high-pressure air within the sound bubble, whereas the mid points of the graph represent the areas of low-pressure air. The 'space-form' of audible sound is indeed bubble-like whereas the graph—often referred to as a sound wave—is merely a mathematical depiction of the peaks and valleys of sound pressure.



Sound and its relationship with light

To understand the concept of visual sound a little more fully it will be helpful to explore how the vibrating atoms of air that create sound relate to light and life. At the moment of these atomic sound collisions something quite magical happens: Light is created.

Light occurs every time the magnetic shells of two vibrating atoms bump against each other. The frequency of light created in this way depends on the energy in the collisions, meaning how fast they bump together. Try this experiment: Rub your hands vigorously together. You'll feel warmth. This is because the atoms in one hand are slipping past the atoms in your other hand, creating heat, which is just another name for light. The light you create by this friction method is in the infrared part of the spectrum of electromagnetism, invisible to our eyes but quite visible to some species of bat, owl, snake and mosquito.

You create infrared light even when you speak. The atoms and molecules in the air are excited by the vocal folds in your larynx, creating a tiny pearl of acoustic energy that rapidly expands out of your mouth and rushes away at around 700 miles an hour. The atoms and molecules of air within this expanding bubble are bumping into each other, each collision transferring your voice vibrations to the nearest atom or molecule. As these 'bumps' occur they cause infrared light to be created due to the friction between the magnetic shells of the air particles. The infrared light carries with it the modulations of your voice that rush away at the incredible speed of 186,000 miles per second. Unlike the *sound* of a voice, which becomes inaudible after about one mile, the infrared light created by your voice rushes out into space where it travels for eternity, carrying your words or songs to the stars.

Thus, there is a direct relationship between sound and light and in fact there can be no light in the Universe without sound because light is only created when atoms collide with each other, and such collisions *are* sound. So light and life owe their existence to sound.

FEELING GOOD VIBRATIONS- A FUN EXPERIMENT!

The Scottish born Alexander Graham Bell moved to Boston with his deaf parents in 1870 and became a teacher of the deaf. He fell in love with one of his students, Mabel, a young woman of 17 years, who had lost her hearing in childhood through contracting scarlet fever. To help Mabel and some of the younger children at his Boston school avoid collisions with horse-drawn carriages approaching from behind, he conceived a simple idea: *If they walked outside holding a balloon they would feel the sounds made by the carriages through their fingertips.* Alexander realized that the balloon's surface would tremble in sympathy with the sound of the approaching carriages and alert the children to their presence. It was this simple idea that led him to invent the telephone because he realized that if the sound of a voice could move a membrane by a tiny amount, that movement could be converted into an electric current fluctuating in sympathy with the voice sounds.

Try Alexander's experiment: Hold a balloon very gently in your fingertips (if you have long nails make sure your skin touches the balloon's surface, not your nails.) Now, bring the balloon close to your mouth, close your eyes and make a low-pitched 'oo' sound while focusing your attention on your fingertips. You should easily feel the sound of your voice through your fingers. But apart from the fun you'll have doing this, it's a wonderful reminder of the bubble nature of sound because a balloon is bubble-like and you will feel the trembling of its surface, almost as though you could see the trembling sound bubble coming out of your mouth as you speak.

The Origin of Cymatics

Cymatics—the study of visible sound—can be traced back at least 1000 years to African tribes who used the taut skin of drums sprinkled with small grains to divine future events. The drum is one of the oldest known musical instruments and the effects of sand on a vibrating drumhead have probably been known for millennia. However, perhaps the first scientist to notice the phenomena was Leonardo Da Vinci. One day he noticed dust behaving oddly on a wooden table:

'I say then that when a table is struck in different places the dust that is upon it is reduced to various shapes of mounds and tiny hillocks. The dust descends from the hypotenuse of these hillocks, enters beneath their base and raises itself again around the axis of the point of the hillock.'

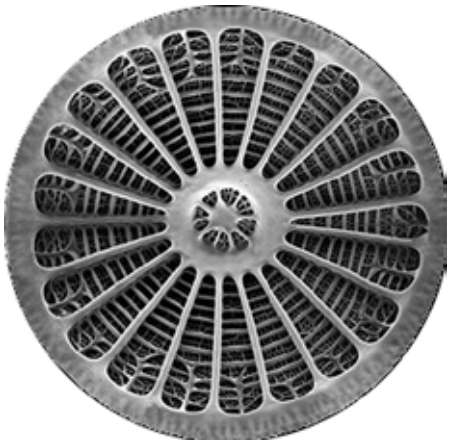
Hans Jenny, a Swiss medical doctor and scientist who studied visual sound intensively is most widely known as the "Father of Cymatics." Jenny coined the word kymatik, ('cymatic' in English) from the Greek 'kyma' meaning 'wave,' to describe the periodic effects that sound and vibration have on matter (even though, as we mentioned earlier, sound is not actually a wave!) His books are rich sources of cymatic imagery, which he observed and described in great detail, although he left scientific and mathematical explanations to scientists who would come after him. Jenny invented the 'Tonoscope' and was the first to suggest that such a device might one day assist deaf individuals to acquire speech.

Dr. Hans Jenny working with a cymatics apparatus

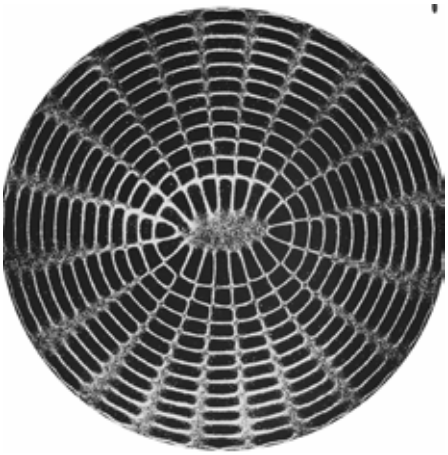
Cymatics today, a window into the Universe

The underlying principle of cymatics is that the geometry of sound can be imprinted onto membranes and made visible with special techniques. The membrane can be a flexible material, such as latex or your skin, while other surfaces, such as brass or glass plates, may appear rigid yet they can still be minutely imprinted by sound. Simply by sprinkling on a little powder or sand, provided the membrane is horizontal, the imprint of sound can be revealed. The particulate matter gathers in the areas that are not vibrating, leaving the vibrating areas clear of particulate. Cymatic patterns are, therefore, rather like a photographic negative, because they represent the inverse of the sound that caused them to form.

Below is a typical CymaGlyph created with sand on the CymaScope that reveals a fundamental frequency of 5000 Hertz. Note the similarity between this cymatic pattern with the structure of a diatom, a sea creature that first appeared in the oceans of the Jurassic period, around 185 million years ago.



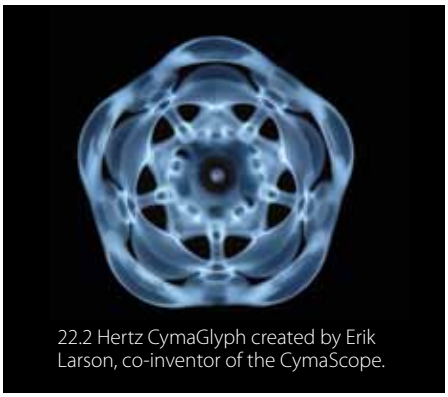
A 5000-Hertz CymaGlyph reveals a pattern of radial cells



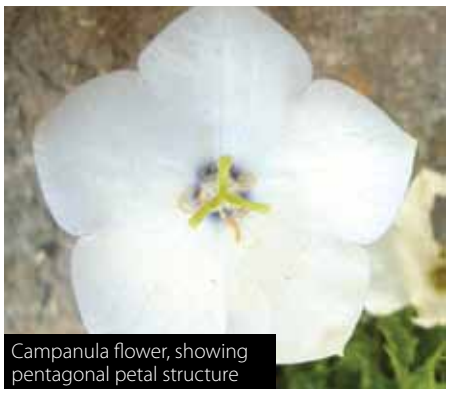
Diatom "Arachnoidiscus" first appeared in the Jurassic period

We used sand in our early research as the disclosing medium, but we soon discovered that water, with its highly flexible surface tension, acts like a super-thin membrane and reacts almost instantly to any sound, revealing very high levels of detail.

In the water CymaGlyph below an ultra-pure tone of 22.2 Hertz demonstrates archetypal pentagonal geometry creating an almost 3D view of sound. This CymaGlyph compares remarkably with the structure of the Campanula flower.



22.2 Hertz CymaGlyph created by Erik Larson, co-inventor of the CymaScope.

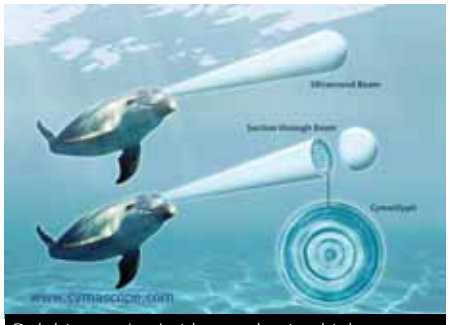


Campanula flower, showing pentagonal petal structure

Dolphin Research

Applications for the CymaScope are beginning to emerge in many different fields. For example, in collaboration with Jack Kassewitz of SpeakDolphin.com we have taken the first steps in unraveling the mystery of dolphin language. We are contributing to their research program by transcribing dolphin echolocation sounds into CymaGlyphs, with each image representing a type of dolphin picture word. The image below is that of a CymaGlyph created by a baby dolphin calling to its mother. The call creates a replicable pattern of acoustic energy with a particular meaning. The second graphic illustrates the basic principle: a cross section through the dolphin's high frequency sound beam is made visible on the CymaScope.

A baby dolphin's call to its mother made visible on the CymaScope

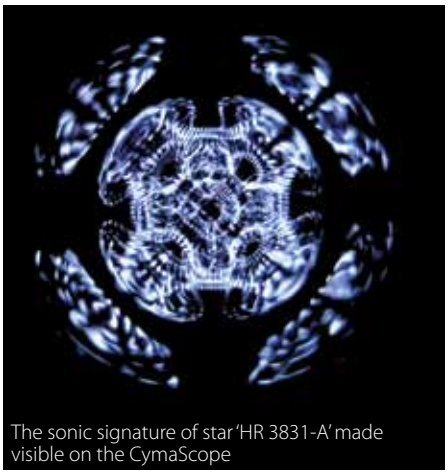


Dolphins can 'see' with sound, using high frequency sounds. These echolocation sounds can be imaged on the CymaScope.
Image credit: Dean Baker

> "Our world is teeming with beautiful holographic sound bubbles that envelop us in shimmering patterns of acoustic energy."

Signature Sounds of Stars

Another application for the CymaScope is imaging sounds from space. We discussed earlier the concept that all sounds have an infrared component. When we speak or sing outdoors our words or song will one day reach the stars in the form of modulated infrared light. But the reverse is also true: sounds from stars continually bathe the earth. Oscillating stars have a particular type of signature and in collaboration with Professor Don Kurtz we recently imaged the sound of a star that he discovered, known as HR 3831-A. This technique allows us to see the distinctive geometry of the sounds at work within the atomic furnace of the star and could provide a valuable analogue for future students of asteroseismology and for outreach projects in schools and colleges.



The sonic signature of star 'HR 3831-A' made visible on the CymaScope

Cymatics in Egypt

Most people who have experienced the acoustics of the King's Chamber in the Great Pyramid walk away with a feeling of awe, in some cases coupled with an impression that the chamber was designed to reverberate. For a relatively small chamber the reverberation is indeed extraordinary; one can literally

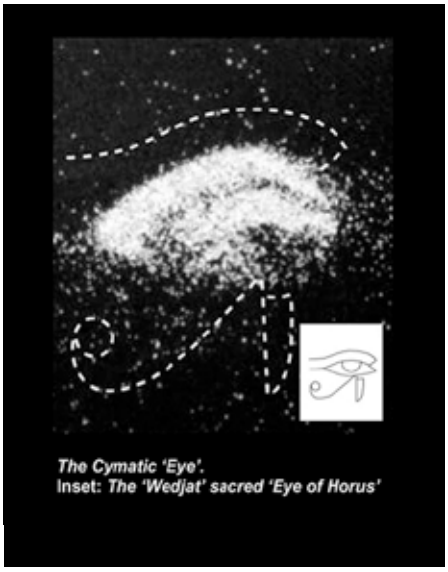
hear one's own breathing (when the fluorescent lighting is turned off) and this experience often accompanies feelings of cathedral-like reverence. This notion of design implies a prior knowledge of acoustics and materials. The high levels of reverberation in the chamber are actually a function of the flat granite surfaces, their parallel arrangement and the chamber's dimensions.

John Stuart Reid undertook an experiment in the Great Pyramid in order to investigate his belief that the King's Chamber was *designed* to be highly reverberant and that the energy of any sound made in the chamber is transferred into the sarcophagus. Reid has studied Egyptology for decades and believes that the King's chamber was designed to support a rebirthing ritual enacted prior to the pharaoh's death or perhaps afterwards and that vowel sounds chanted in the chamber were intended to have an energizing effect on the sarcophagus and its occupant during sacred rituals.

Cymatics Experiment in the King's Chamber

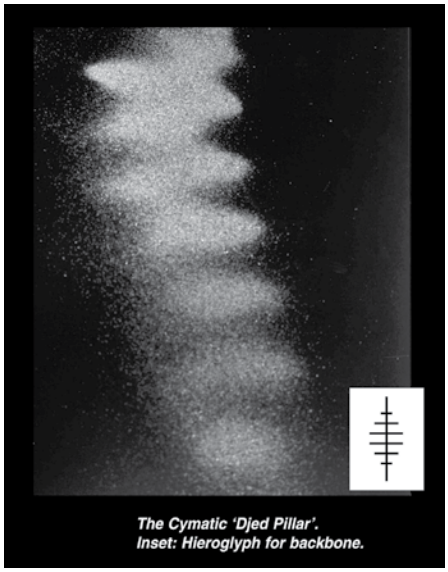
Reid conducted his cymatics experiment in 1997 with the intent of making sounds within the sarcophagus visible. He positioned a speaker inside the sarcophagus and connected it to an oscillator, a device that electronically creates pure tones. Finally, he sprinkled quartz sand on the surface area of the temporary latex membrane stretched across the sarcophagus and turned the oscillator on. To Reid's amazement as well as the 'Keeper of the Keys' who accompanied him in the chamber, an astounding array of ancient Egyptian hieroglyphic-like images appeared! Two are shown here and we have many others on file.

> "Most people who have experienced the acoustics of the King's Chamber in the Great Pyramid walk away with a feeling of awe."



The Cymatic 'Eye'.
Inset: The 'Wedjat' sacred 'Eye of Horus'

John Stuart Reid standing beside the sarcophagus with his acoustics equipment



The Cymatic 'Djed Pillar'.
Inset: Hieroglyph for backbone.

The simplest explanation for how hieroglyphs came to be imbedded in the sarcophagus derives from the highly resonant crystalline structures imbedded in the granite that would have bathed the scribes in sound bubbles during the construction of the sarcophagus. Hypothetically, one or more of the scribes had synaesthetic abilities, that is, they could 'see' the sounds from the sarcophagus while it was being worked with tools. Reid postulates that these minds-eye sound patterns influenced the scribes in the development of the hieroglyphic language.

(For those readers interested to learn more about Reid's acoustics research in Egypt please go to our web site: http://www.cymascope.com/cyma_research/egyptology.html)

Cymatics and the Chakras

The word 'chakra' means wheel or circle in Sanskrit and is based on the ancient Eastern model of the body having seven primary chakras or energy centres. Each of the seven centres connects subtle energies with the physical body and they are receptors that vitalize the body with prana or life force energy. The chakras are aligned from the base of the spine to the top of the head. Each chakra possesses specific purposes and is associated with the functioning of a particular endocrine gland. In order to maintain emotional, mental, physical and spiritual health, all chakras must be functioning properly and working harmoniously with each other. When one or more of the chakras become imbalanced or blocked the result is dissonance in certain aspects of the body. Emotional imbalance, illness or disease often manifest as a result. Just as the cells of our bodies produce distinct sounds, so too do the chakras, although science is only just beginning to investigate this phenomenon using SQUID magnetometers.

Many healers have used their intuition to guide them to the sounds of the chakras and one of the most notable authorities on this subject is Jonathan Goldman, renowned sound healer. He devised a system of chakra sounds that Reid imaged on the CymaScope and can be used as an aid in meditation. Astoundingly, when he imaged the heart chakra it appeared in the shape of a heart—the image below has not been retouched except for the addition of colour.

The study of cymatics is still in its infancy and innumerable realms within this sphere of research are waiting to be explored. Please visit our website for updates on the latest cymatic insights and discoveries:
www.cymascope.com

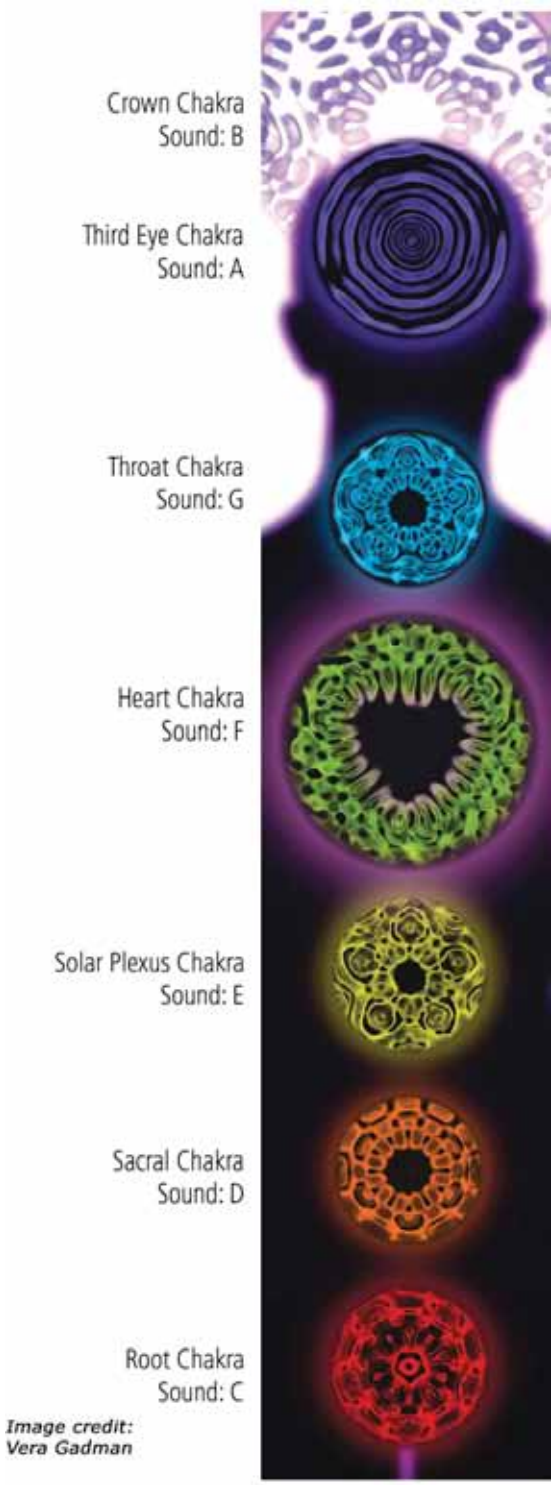


Image credit: Vera Gadman

Autobiographical note from John Stuart Reid

Following a career in acoustics that spanned 30 years I began to research the true nature of sound in 1999, never having been comfortable with the 'sound wave' model of sound taught in our Universities. This inevitably led me to search for a way to see sound and to the work of Hans Jenny, a Swiss scientist who had investigated cymatics in the 1960's.

A few years later, in 2005, I created the first CymaScope, the same year that I met my wife-to-be, Annaliese. When I showed the prototype to a brilliant young American design engineer, Erik Larson, he took my 'model T Ford CymaScope,' as he called it, and gave me back a veritable Ferrari, built to sacred geometry proportions and gleaming in brass and polished mahogany like a machine from the workshop of one of my heroes, H.G. Wells. Vera Gadman, a gifted graphics designer, soon enhanced our company and today CymaScope.com serves the world as a wonderful source for all things cymatic. We now have CymaScopes in several private research institutions, sowing seeds that hold the potential to blossom into new and important sciences for humanity.

Autobiographical note from Annaliese Shanda Reid

I have studied ancient philosophies and its correlations with modern quantum theory for a large part of my life. I have been a teacher of energetic healing and sound healing techniques for over 20 years and have given talks and taught workshops in the United States and Great Britain. I am committed to supporting personal wellbeing on all levels, physical, mental, emotional and spiritual and I co-authored "Journey Into Wholeness" a book that explores the reader's untapped resources in a practical, affirming manner.

I met John in 2005 at a cymatics workshop he gave in Atlanta. We are both interested in the effects of sound on cellular matter and are planning a series of micro Cymatics experiments to research this area using a powerful Nikon microscope. I am currently co-authoring, with John, a mainstream book on cymatics.

Call to Action

CYMATICS
A BRIDGE TO THE UNSEEN WORLD

1. Learn more about the fascinating history of cymatics: **http://www.cymascope.com/cyma_research/history.html**
2. Learn about sound's role in the creation of life on earth: **http://www.cymascope.com/cyma_research/biology.html**
3. Learn more about using cymatics to decipher dolphin language: **http://www.cymascope.com/cyma_research/oceanography.html**
4. Learn more about making the songs of the stars visible: **http://www.cymascope.com/cyma_research/astrophysics.html**
5. Have fun conducting your own cymatics experiments with a CymaPlate: **http://www.cymascope.com/store/index.php?main_page=index&cPath=15**