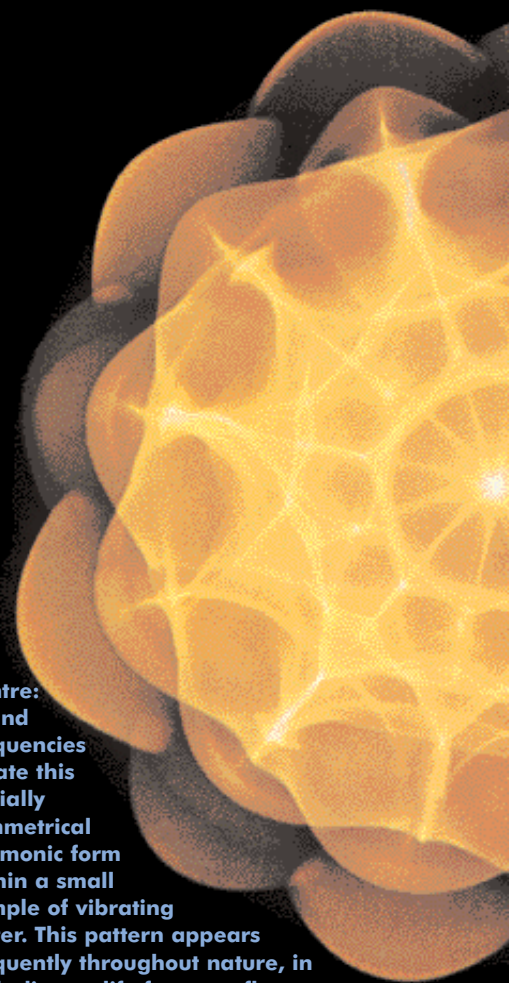


# Sound



Centre:  
Sound frequencies create this radially symmetrical harmonic form within a small sample of vibrating water. This pattern appears frequently throughout nature, in such diverse life forms as flowers and small sea creatures.



The amazing power of sound to change and shape matter is fundamental to all life and many spiritual technologies, according to expert **Jeff Volk**.

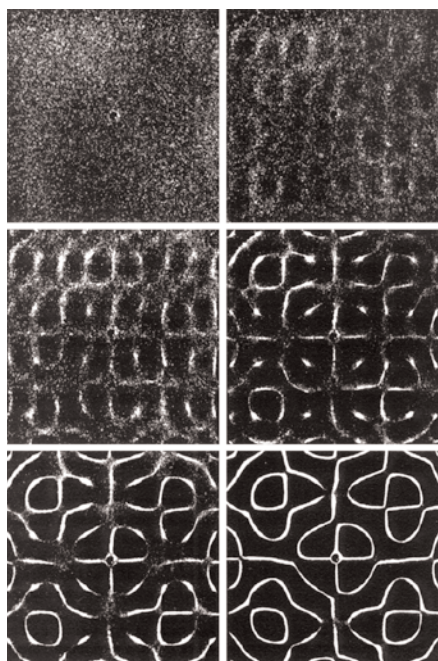


fig.1

**I**n the beginning was the word - or in Sanskrit, 'Nada Brahma,' the world is sound.

For most of my life, I could only relate to these as abstract religious concepts until I actually had the opportunity to see these principles in action.

I witnessed the formation of galaxies; watched coherent 'organic' forms arising from the dust of the earth; viewed delicate flower-petalled mandalas taking shape within a vibrating sample of water.

No, I'm not describing a psychic excursion to the lofty realms of cosmic consciousness. These are but a few of the fascinating experiments in the field of *Cymatics*, the study of wave phenomena, pioneered in the 1950s by the late Swiss scientist, Dr Hans Jenny. Following the work of German physicist and acoustician, Ernst F.F. Chladni, who, towards the end of the 18th century, created intricate sand patterns by vibrating a steel plate with a violin bow, Dr Jenny employed the modern technology of the day to carry out more precisely replicable experiments. Using a sine wave generator and a speaker to vibrate various powders, pastes and liquids, Jenny succeeded in making visible the subtle power through which sound structures matter (see fig.1 left).

Imagine hearing a tone, and watching as sound waves involute an inert blob of

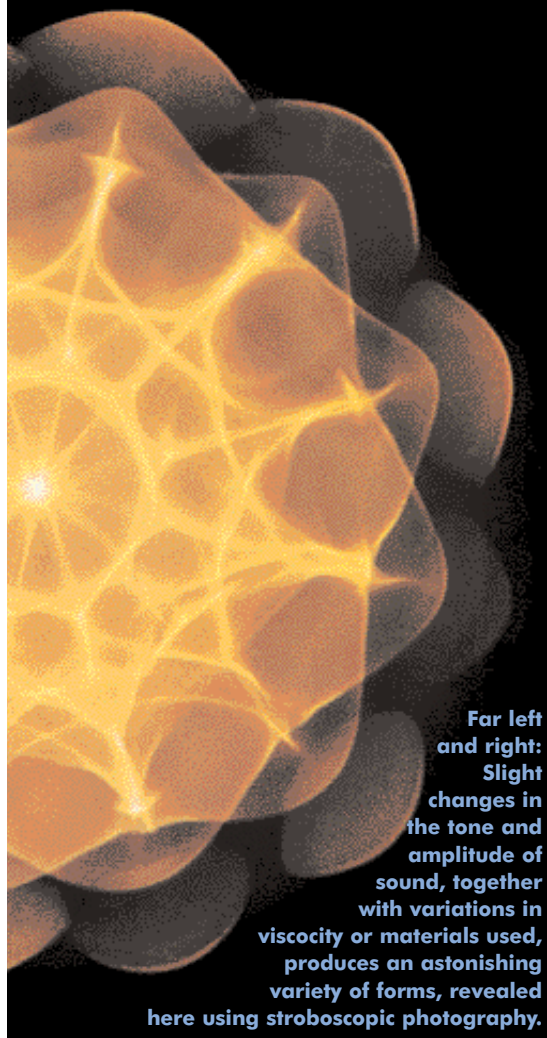
kaolin paste, 'animating' it through various phases in a nearly perfect replica of cellular division. Or watching as a pile of sand is transformed into life-like flowing patterns, mirroring symmetrical geometric forms found in nature, simply by audible vibration. Perhaps the most striking image is that of a 'snake' slithering along, as if its vertebrae were being viewed by x-ray cinematography - the result of light reflecting off the wave trains created in a thin film of glycerin spread upon a vibrating membrane (see fig. 2 bottom right).

These phenomena vividly reveal certain universal principles which lend credence to the proliferation of sound therapies that are rapidly emerging at the forefront of the holistic health movement. Might this be yet another example of the blending of ancient wisdom with the discoveries and practical applications of modern science?

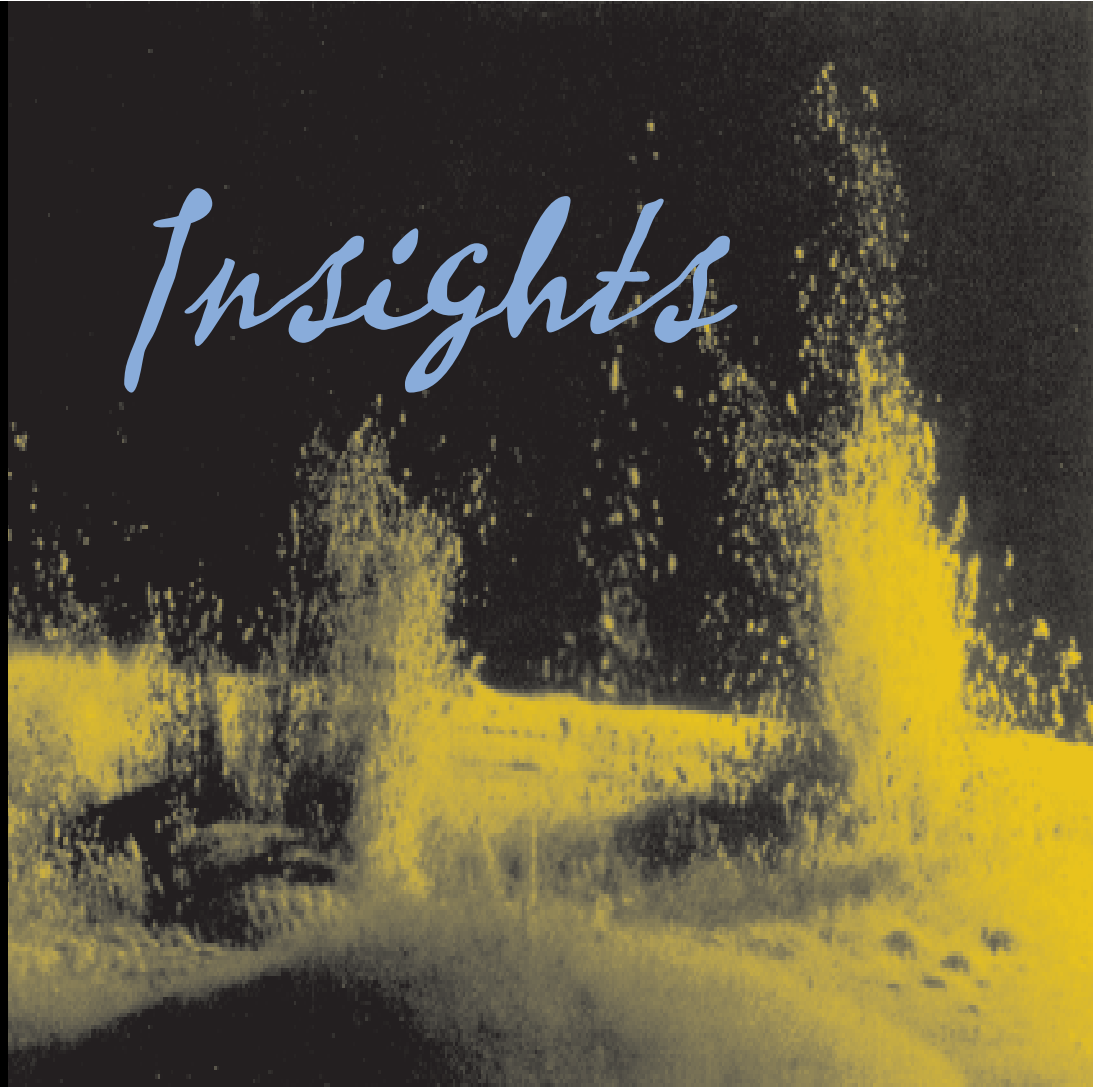
In the video *Of Sound Mind and Body: Music and Vibrational Healing*, biologist Rupert Sheldrake describes our bodies as 'nested hierarchies of vibrational frequencies' which appear as discrete systems functioning within larger more complicated systems, which themselves are contained within even larger and more complex vibrational structures (see fig. 3 p16 top left). In fact, you can view the whole universe in this way, from

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# Insights



Far left and right: Slight changes in the tone and amplitude of sound, together with variations in viscosity or materials used, produces an astonishing variety of forms, revealed here using stroboscopic photography.



sub-atomic particles to the most intricate life forms, to the nebulae and galaxies themselves - all are resonating fields of pulsating energy in constant interaction.

If you accept this viewpoint, it becomes quite plausible that externally imposed vibration can have quite an influence on our physiology. We've all experienced this phenomenon of *entrainment*, but we are usually unaware of it. Say you're sitting in your kitchen balancing your chequebook and you begin to notice that your shoulders are hunched up and your back is tighter than normal. Suddenly the refrigerator shuts off and you heave a sigh of relief. Your shoulders drop, your back loosens up, and your whole breathing pattern changes. Well, what just happened? Could it be that certain biological rhythms had unconsciously entrained to the 50 cycle hum of the refrigerator motor?

This process was first articulated in 1656 when Dutch mathematician, physicist, and astronomer, Christian Huygens, performed an unusual series of

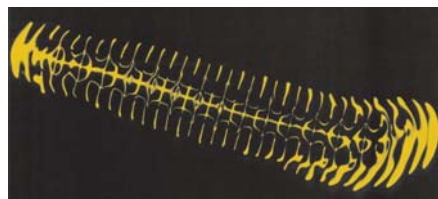


fig. 2

**“Despite our discomfort with discord and disharmony, chaos appears to play an essential role in the process of growth and evolution.”**

experiments. He found that randomly swinging pendulums of similar lengths would begin to swing in unison after a period of time. After extensive observation, he formulated the principle of entrainment to describe this phenomenon where weaker pulsations come under the influence of stronger ones.

Some 300 years later, British naturopath Dr Peter Guy Manners applied this same principle to treat a variety of physiological conditions. Positing that every form, with its unique shape, size and density, vibrates within its own specific range of frequencies, Manners correlated the resonant frequencies of healthy tissues and organs. He devised a way to project these vibrations via sound waves, directly into

distressed areas. Through a process called *sympathetic resonance*, the tissues are then guided back to their optimal frequency patterns, while releasing the tension which they had been holding.

With the advent of neurological monitoring devices such as EEG and EKG, it became possible to examine the entraining potential of audible sound frequencies on brainwaves. In the 1960s Robert Monroe pioneered a process in which he used specific sound frequencies to modulate brainwave states. Through headphones, he would introduce slightly different audible frequencies into each ear. Subjects reported that as the frequencies converged, they no longer heard separate tones, but rather an oscillation, like the sound heard when you tune a guitar. As the strings approach the same pitch you hear a 'wawawawa' pulsation, the 'beat' of which is the difference between the two frequencies.

The Monroe Institute in Faber, Virginia, spent many years experimenting with these binaural beat frequencies, developing precise formulations to evoke a *frequency following response*, or an entraining effect, on brainwaves. An extensive body of research documents the ability of specific frequency differentials to entrain brainwaves in such a way that a dynamic state of balance is achieved between the left and right hemispheres of



# SOUNDFORMS

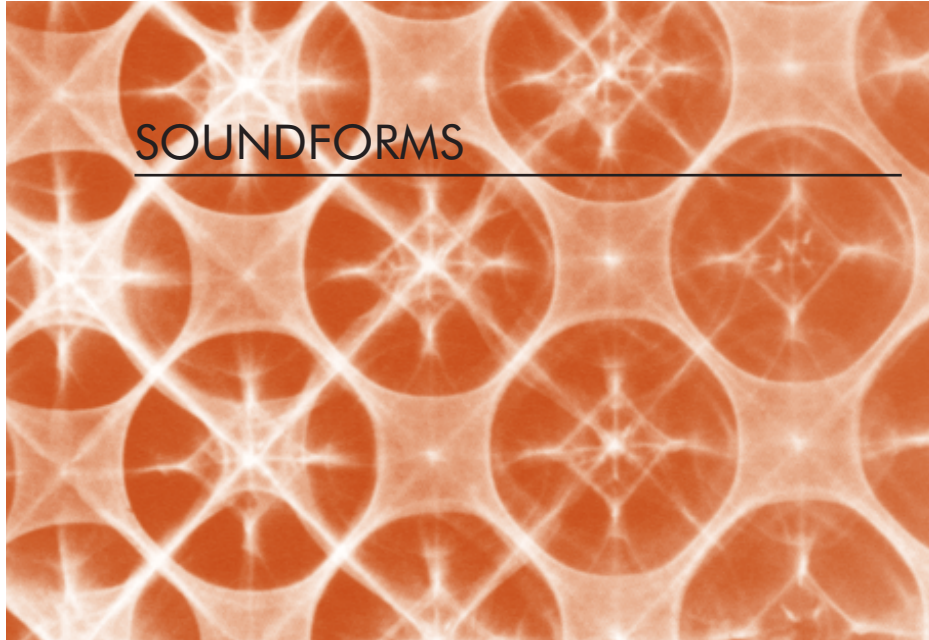


fig.3

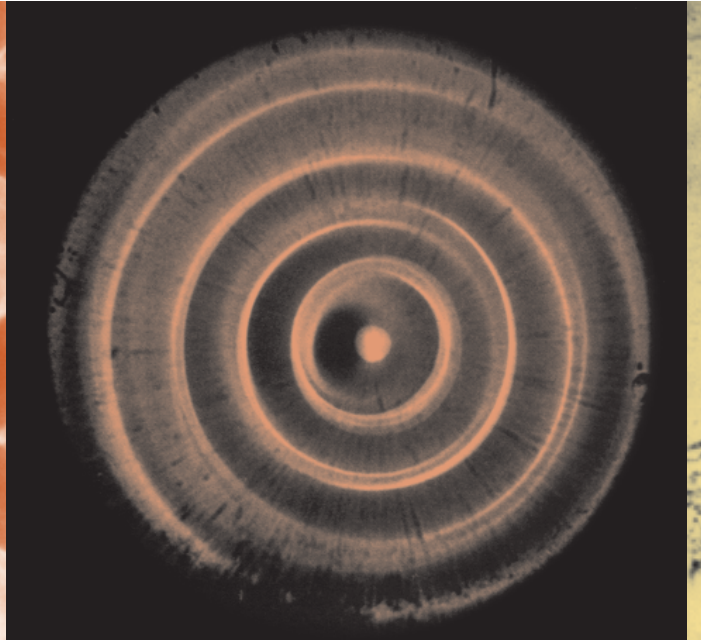


fig.4

the neocortex. Specific HemiSync™ beat frequencies can be encoded into musical compositions which are further engineered to assist the listener to reach desired 'brain states' ranging from relaxed or meditative states, to those of increased mental clarity and alertness.

There are also well-established practices which require no sophisticated equipment other than our own nervous system. For example, the beat frequencies associated with states of deep meditation are quite prevalent in such ancient ritual instruments as Tibetan singing bowls. These pulsations tend to quiet brainwave activity from our more normally active Beta states (around 14 - 20Hz) to the Theta and Delta states where predominant brainwave activity may drop to a range from 8Hz to as low as 0.5Hz in the deepest meditative states.

## Listening to the world within

From time immemorial, spiritual traditions have imparted various esoteric disciplines to help the student achieve these profound states of mental stillness. While modulating one's brainwaves may provide a momentary sensation or experience, I believe that real, lasting effects will only take hold when such qualities as self-knowledge, dedication and devotion to inner unfoldment, a strong yearning for transcendence over one's conditioning, and the desire for liberation from the tyranny of one's own mind, are assiduously cultivated.

It is a very humbling experience to try to subjugate one's mind. This is where the power and skill of a teacher is paramount. In a sense, the teacher provides the entraining frequency, the 'perfect pitch' through which one may allow oneself to be drawn into harmonisation with the 'universal tone'. So this is not a simple process of entrainment, so much as true individuation - with the objective not merely to be drawn like an iron filing to a magnet, but to offer oneself as a bell to

be rung, an instrument to be played.

Throughout the ages, various esoteric traditions known as the Light and Sound teachings, have proffered a simple contemplative process of 'deep listening', where one may actually begin to hear the subtle 'inner sounds' at play within our nervous system.

In our normal active (Beta) state, the sensory currents flow throughout our body and out into the world gathering perceptions. We process these physical, mental, and emotional sensations and navigate our environment accordingly, totally unaware of this subtle energy outflow. Yet these sensory currents are the very avenues through which most of our life force is diffused into the outer world. The Light and Sound paths teach that through controlling the play of the sensory currents, rather than trying to dominate the *kundalini* energy, one may begin to reclaim this spiritual elixir and consolidate these energies at the third eye centre. When sufficient energy has accumulated therein, it begins to rise into the higher chakras. It is through these centres that one may begin to hear these subtle sounds.

Yet hearing the sounds is not the objective, nor is simply stilling the mind. These are but effects of centralising one's sensory currents and allowing the energy to ascend to the higher, non-physical energetic vortices within the cranium. The sounds are very particular, each one denoting the level of consciousness to which one has 'tuned-in'. At first, faint buzzing or electrical-sounding noises may be heard, analogous to the static received when tuning a radio or when going online with your computer modem. If your attention remains focused, perhaps through chanting a mantra to help entrain the mind, you might begin to hear the humming of bees, then the chirping of crickets. These are the various 'elemental sounds' produced as the *Nada* (or Audible Life Stream or Sound Current) interacts with our nervous system.

Over time, as one masters the ability to sustain focused attention at the third eye, the sounds become clearer and more powerful: a resounding bell being struck, a conch shell being blown, the beating of a large drum, the playing of harps, the flute, and finally a sound similar to bagpipes. It is interesting to note that human cultures the world over have created musical instruments which mimic these subtle sounds, perhaps as archetypal echoes reminding us from whence we have come, and as guideposts for our long journey back home.

This is the same path that has been navigated by the great masters, saints and teachers from all sacred traditions throughout the ages. In the Sufi lineage, it has been described in detail in the poems of Rumi, and the writings of Kabir and Hafiz. In the Western mystery schools it was revealed by Pythagoras, Socrates and Plato, to name but a few. These teachings describe a 'souljourn' that is laid out within the template of our own bodies, and is therefore universal. It is a true science of sacred sound which is precise in its application, yet non-denominational in approach. It can direct the courageous soul on a step-by-step process of emancipating one's own consciousness!

## Dancing with disorder

Now if this sounds a bit too good to be true, there may be good reason for that - things don't ever seem to progress quite so smoothly! We usually, nay, *always*, meet up with a bit of resistance, and frequently disorder ensues. Unfortunately, most of us

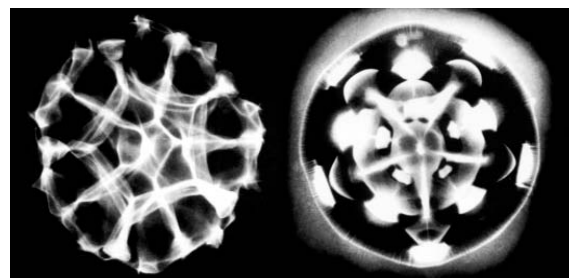


fig.7

fig.8



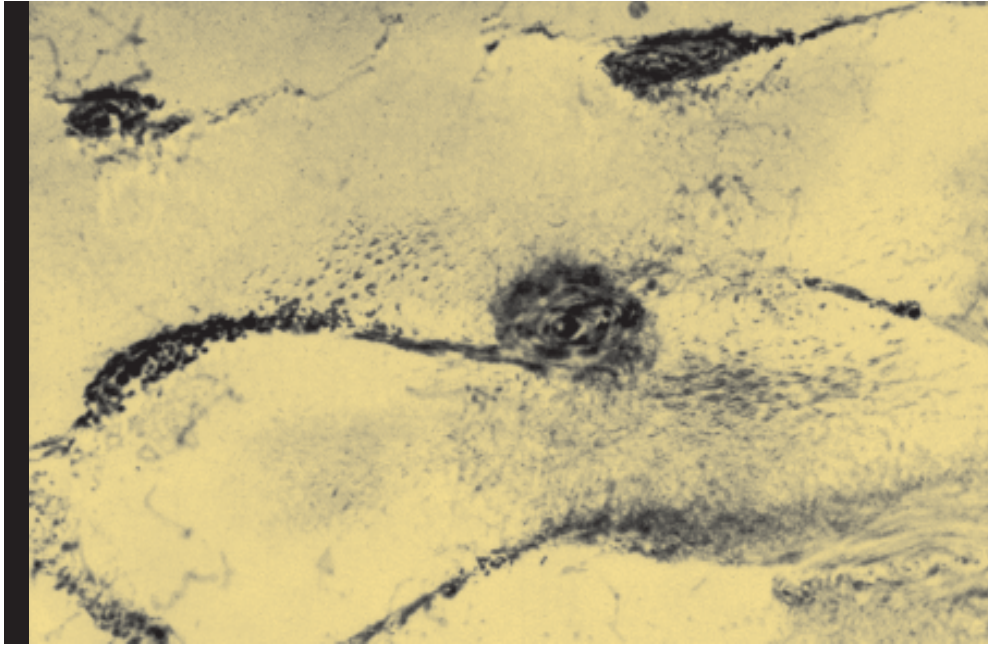


fig.5

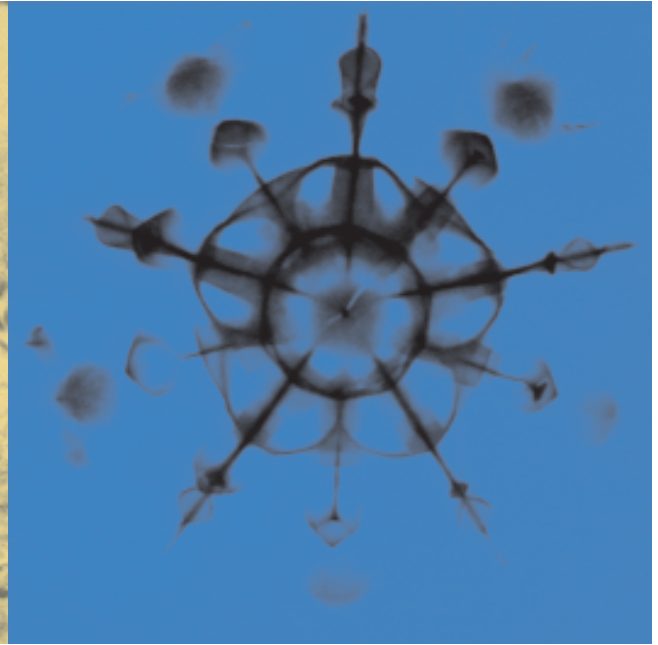


fig.6

have a strong aversion to this, fearing a loss of self-control. Yet despite our discomfort with discord and disharmony, chaos appears to play an essential role in the process of growth and evolution. Just think how much discord is involved in learning to play the violin, and how much disharmony occurs in a choir rehearsal.

The crucial role of chaos is demonstrated in one of Dr Jenny's cymatic experiments with such grace and elegance that it completely changes the way one views disorder, beckoning you to accept disintegration as an ally, instead of resisting or fearing it.

The experiment is actually quite simple, though ingenious, yielding a wealth of insight into processes which are normally invisible. A small wooden ring containing about 20cc of water is placed on top of a magnifying lens. A small crystal is attached to the lens which, when an electric current is applied, creates a specific vibration depending upon the frequency of the current. Just as a speaker vibrates, displacing air and creating specific sound waves according to the frequencies it is subjected to, so the vibrating crystal transmits its oscillations from the electrical frequencies through the lens and directly into the water sample.

In order to observe this phenomenon, light is projected up from beneath this lens, through the water sample, and into a camera lens looking down from above. In this way, Dr Jenny was able to photograph the disturbances (standing wave patterns) created in the water as it vibrated in response to the pure tones

(sine waves) to which it was subjected.

The frequency (pitch or tone) and the amplitude (volume) can be varied independently, with characteristic results. At a low frequency, a very stable looking pattern emerges, that of concentric waves. These waves do not move outward, like the ripples in a pond. As long as the pitch is sustained, and not altered, this pattern appears static, just like the photograph (see fig. 4, p16). But as soon as the frequency changes, guess what happens? This stable structure dissolves into chaos. The end of the world? Hardly! As the frequency steadily increases, a remarkable thing occurs. At a certain frequency the water sample spontaneously re-organises into a more intricately structured form. Even though the frequency is steadily rising, the new figure doesn't emerge gradually. Rather at a given moment it transforms into a new harmonic structure, reminiscent of the quantum leap seen in sub-atomic physics.

So after a short chaotic phase, a new stable structure emerges which is more intricate and which also has a greater degree of 'interconnectedness' between its elements. Instead of 'isolated' concentric rings, we see rays coming out from the centre, penetrating and re-shaping these rings into pentagonal forms (see fig. 7, below). As the frequency increases, the same process recurs - chaos, and then re-integration - with a higher order of intricacy and harmonic coherency reflecting the higher vibration, or frequency. We begin to see elements that look like flower petals, mandalas and stained glass windows (see figs. 8, 9 and 10).

There is much more to say about these experiments than space allows, and seeing this phenomenon in motion speaks volumes - but suffice to say that as the frequency continues to increase, the resulting forms become more intricate, more delicate, more symmetrically balanced. So in addition to demonstrating the inherent organising

principle of sound, these fascinating experiments graphically depict phases of dissolution and re-integration.

These universal principles may be found in all of creation, from the macro (formation and dissolution of galaxies, fig. 5) to the micro (snow crystals, fig. 6) right down to subatomic oscillations. But we are most interested in how they manifest in our lives. A sudden illness, the loss of a loved one - or one's job for that matter - and chaos and disorder appear unexpectedly. How we view these things has a lot to do with how they impact on us.

Being universal, these phenomena reside within our consciousness as well. Once we become aware of this, we can access the tremendous equanimity that arises from 'what the opposites have in common'. We need not be swept up in the daily dramas, the cycles of creation and dissolution which are constantly occurring about us. From the still centre of our being, we *know* that we are a part of that which animates all of this, the sound, and not just the substance, in its constant state of agitation.

I am greatly heartened by the burgeoning interest in the various fields of sound therapy, and in the more esoteric practices of 'sacred sound'. To me, this is a clear indication of the spiritual renaissance which is accelerating as humankind moves through this millennial portal in our evolution. KS

#### MORE INFORMATION

• Jeff Volk has produced a series of videos on Cymatics, including *Of Sound Mind and Body: Music and Vibrational Healing*. He recently republished Hans Jenny's two books on Cymatics, and is currently completing *Sounding the Psyche: Attuning the Bodymind*, a video which examines many of the themes outlined in this article. He can be reached c/o Lumina Productions, 219 Grant Road, Newmarket, NH 03857, USA. Further information is at [www.cymaticsource.com](http://www.cymaticsource.com)

• The book *Cymatics* and related videos in the VHS PAL format (the UK's regular video format) are available from the *Kindred Spirit* Mail Order Collection.

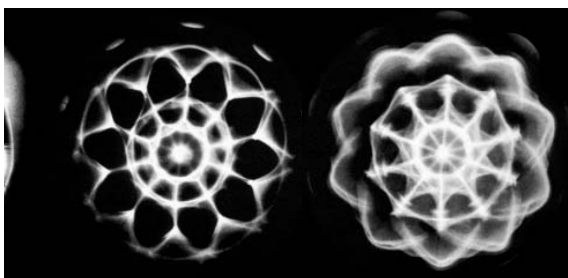


fig.9

fig.10