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Sonic Entrainment

by Jonathan Goldman

All life consists of rhythmic processes. From the simple pulsations of a single-cell organism to the rising and falling of our breath, life is filled with rhythm. This rhythm is also called "periodicity," meaning that the activity of something falls in cycles. Much of life is directed by the external rhythms of nature. For example, the earth spins on its axis and rotates around the sun, and around our moon orbits the earth. We attune ourselves to the cycles of the sun and the moon, following the different rhythms they create. With day and night, different behavior is created; we usually get up with daylight and go to sleep at night. When our light-dark cycle is disturbed, as when we take a long jet flight, our ability to function in the new environment is affected for a day or two. We call this "jet lag." Different behavior due to rhythm also occurs for the different seasons of the year and the response of nature to this. Not only our sleep patterns, but our eating patterns, digestive patterns, even our harvesting and mating patterns are affected by the rhythms of these cycles.

Sound and Frequency

Sound can be understood as being rhythmic. Sound takes the form of waves, which are measured in cycles per second (hertz or hz). This periodicity is rhythmic in nature. Each cycle of a wave may be recognized as a pulse of sound. Each individual frequency that we measure may be understood as being rhythmic, for the number of cycles per second that make up that frequency creates a rhythm. Low notes pulse much slower than high notes. The lowest note on a piano produces a frequency that vibrates at 27.5 hz; the highest note on a piano vibrates at 4,186 hz.

The range of hearing for the human ear varies immensely. The upper range for "normal" hearing is between 16,000 and 20,000 hz. The bottom limit of what we can hear is around 16 hz. We cannot actually hear very slow pulsed notes, below the threshold of hearing, as single tones, but we can perceive them as being rhythmical in nature. These extremely low frequencies (called ELF5) sometimes can even be counted. In particular, sounds pulsed in the range of 0.1 hz to 8 hz are perceived as being rhythmic in nature. Events slower than this are not perceived as part of an ongoing rhythm, while faster events are heard as a single tone.

Entrainment and Resonance

Entrainment is an aspect of sound that is closely related to rhythms and the way these rhythms affect us. It is a phenomenon of sound in which the powerful rhythmic vibrations of one object will cause the less powerful vibrations of another object to lock in step and oscillate at the first object's rate. This phenomenon of nature has to do with the conservation of energy. It seems that nature finds it more economical in terms of energy to have periodic events that are close enough in frequency to occur in phase or in step with each other.

Itzhak Bentov illustrates an excellent example of entrainment in his book *Stalking the Wild Pendulum*. If you have a room full of pendulum-type grandfather clocks and start the pendulums in motion at different times, they will all swing differently. However, if you walk out of this room and come back the next day, you will find that all the pendulums are swinging together at the same rate. This locking in step of rhythms is entrainment. The Dutch scientist Christian Huygens discovered it in 1665.

Entrainment is actually an aspect of resonance. Resonance may be defined as the frequency at which an object most naturally wants to vibrate. One object may set another object into motion if it shares the



same resonant frequency. If, for example, you strike a tuning fork of 100 cycles per second and bring it near another tuning fork of that same frequency, the second tuning fork will be set in motion. Even though it has not been struck, the second fork will begin to vibrate and sound merely by being in the same field as the vibrating tuning fork.

We have all seen a singer break a glass with his or her voice. This is another example of resonance. This also occurs between two guitar strings, one struck and one unstruck. Resonance is a cooperative phenomenon between two objects that share the same frequency. With resonance you are meeting the natural vibrations of an object with its own vibrations, thereby setting it into motion. Thus resonance may be conceived of as being passive in nature.

Entrainment, on the other hand, seems to be active. With entrainment you are changing the natural oscillatory patterns of one object and replacing them with the different oscillatory patterns of another object. You are actively changing the vibrations (the frequency or rhythm) of one object to another rate.

The oscillators of television sets, radio receivers and other similar equipment lock on to each other and entrain. With television sets, when you turn the knobs you are adjusting the frequency of your set's oscillators to match the frequency of the station's oscillators. When the frequencies come close to one another, they suddenly lock, as if they "want" to pulse together. Usually, the fastest oscillator will force the slower ones to operate at its pace. Living things are like television sets in that they also oscillate; they pulse, they vibrate, they have rhythm. These rhythms of life allow for entrainment.

Entrainment is found throughout nature. Fireflies blinking on and off entrain with each other. Female college roommates often have menstrual cycles that synchronize together. Muscle cells from the heart, when they move closer together, suddenly shift in their rhythm and start pulsing together, perfectly synchronized. This entrainment also takes place when two people have a good conversation. Their brain waves oscillate synchronously. Such entrainment is seen in the relationship between students and their professors. Psychotherapists and clients entrain with each other, as do preachers and their congregation.

Within our own bodies, we are constantly locking in our own rhythms. Our heart rate, respiration and brain waves all entrain to each other. Slow down your breath, for example, and you slow down your heartbeat and your brain waves. Conversely, if you are able to slow down your brain waves, you can affect your heart rate and respiration. This is one of the principles of biofeedback.

It has been found that the frequencies of pulse, breathing and blood circulation, as well as their combined activities, all function harmonically. That is, their rhythms are strictly coordinated in whole number ratios-two to one, three to two.

Brain Waves

Our brain waves pulsate and oscillate at particular frequencies that can be measured, just like sound waves, in cycles per second. There are four basic delineations of different brain wave states, based upon the cycles per second of the brain. They are:

Beta waves-from 14 to 20 hz. They are found in our normal waking state of consciousness. Beta waves are present when our focus of attention is on activities of the external world.

Alpha waves-from 8 to 13 hz. They occur when we daydream and are often associated with a state of meditation. Alpha waves become stronger and more regular when our eyes are closed.

Theta waves-from 4 to 7 hz. They are found in states of high creativity and have been equated to states of consciousness found in much shamanic work. Theta waves also occur in state of deep meditation and sleep.

Delta waves-from .5 to 3 hz. They occur in states of deep sleep or unconsciousness. Some of the newer brain wave work indicates that a state of deep meditation produces Delta waves in conscious individuals.

Two other delineations of brain-wave activity have been noted by some researches:

High Beta-from 23 to 33 hz. They are associated with hyperactivity and some types of anxiety.

K Complex-over 33 hz. They usually occur in short bursts and are often associated with the "aha" moments, when there is a sudden integration of ideas or experiences.

External Rhythms and Internal Processes

As the functions of the human body can entrain to each other, it is possible to use external rhythms to affect the internal mechanism of heart rate, respiration and brain wave activity. This ability to affect internal rhythms by external means seems fairly logical and matter of fact. Yet research into this area did not make its way into scientific journals until the 1970s, when studies began to report that resonance and entrainment of bodily processes could occur in response to external sound and musical rhythms. In his paper "On the Effects of Lullabies" Johannes Kneutgen reported on the soothing effects of lullabies played for infants and noted that breathing rhythms became synchronized with the rhythm of the music. A paper by Janet and Hobart Landreth called "Effects of Music on Physiological Response" reported that heart rate changes were directly related to changes in tempo.

One series of extensive studies by Harrer and Harrer called "Music, Emotion and Autonomic Function" explored some of the effects that emotional musical experiences have on the autonomic nervous system, including blood pressures, pulse rate, respiration, galvanic skin response and muscle tension. The authors found that heart rate was sensitive to both music volume and rhythm. They also found that some subjects tended to synchronize either their heartbeat or their respiratory rhythm to the music.

In 1980, Sheila Ostrander and Lynn Schroeder's book *Superlearning* brought to the public some awareness of the potential abilities of music to entrain. They examined the Lozanov Method of education, which originated in Bulgaria. In part of the program music is used to help induce states of consciousness effective in heightening the learning process. Music pulsed at about 60 beats per minute was found to be helpful in inducing an alpha state.

Lozanov utilized baroque music in his work. Almost immediately after the book appeared, sales of baroque music climbed dramatically, due to its use in various learning acceleration programs. However, close examination of the Lozanov Method revealed that only the adagio sections of certain baroque pieces were effective. In Bulgaria Lozanov had limited access to music. It has since been found that much "New Age" music is pulsed at this 60 beats per minute and is as effective as baroque music in entraining brain waves in listeners.

These cited studies of the 1970s, as well as information in *Superlearning*, did not seem to contain conclusive data about the ability of external rhythms to entrain internal rhythms. An external rhythm of 60 beats per minute should reduce the heart rate and a much faster rhythm should raise it, but the change was not always directly proportional; 60 musical beats per minute would not always produce 60 heart beats per minute. For example, some heartbeats might go down from 72 to 64 beats per minute, and others might reduce to 68. This differentiation makes data for certain research studies inconclusive, though it does not rule out the ability of external rhythms to entrain internal rhythms.

It is also important to understand that different individuals being tested had the ability consciously to fight against external rhythms and not be affected by entrainment to them. An additional factor is that the strength of response to the entraining rhythm may vary from person to person.

Monroe's Entrainment of Brain Waves

During the time much of this research on the various effects of external rhythms and heartbeat was being conducted in universities and medical centers, a great deal of private research was being conducted on using, not specific rhythms to entrain heart beat, but specific frequencies to entrain the brain. This work was pioneered by Robert Monroe of the Monroe Institute.

Robert Monroe was a business executive with a background in broadcasting. He was director of the Mutual Broadcasting System and owner of a group of radio stations and cable television corporations in the southeast. When Monroe began having spontaneous out-of-body experiences in the 1960s, he started private research into the effects of different frequencies on various states of consciousness. Part of Monroe's experience with out-of-body travels involved hearing different frequencies, which he felt, triggered the experiences. He felt that sound somehow could play a role in helping others achieve similar states of consciousness, and with the help of a research team, he set out to discover if he could control or drive the brain with sound waves.

Through trial and error and probably a lot of intuition, Monroe discovered that specific frequencies could produce entrainment of brain waves. He found that, much like a glass resonated by a pure tone, the brain resonated when bombarded with pulsing sound waves. Monroe called this a frequency following response, or FFR, and patented this effect in 1975. In particular, the neo cortex, or frontal lobes of the brain responded to sound in this manner.

The frequencies Monroe used to entrain the brain were in the same spectrum as the brain waves

themselves-from .5 hz to about 20 hz. These are frequencies that the human ear is incapable of hearing. However, working with a psycho-acoustic phenomenon called beat frequencies, Monroe found that it was possible to create very low frequencies from much higher sound.

At the same time that Monroe was doing this work, Dr. Gerald Oster, a biophysicist at the Mt. Sinai School of Medicine in New York, was independently investigating the effects of this beat phenomenon. The phenomenon is this: If you use two independent sound sources, for example a tuning fork of 100 cycles per second and another of 108 cycles per second, they produce a tone that waxes and wanes in a pulsing wah-wah-wah sound or beat. The rapidity of the beat equals the difference between the two frequencies. In the above illustration, between the two tuning forks of 100 and 108, you would create an 8 cycle per second beat frequency. If the sound comes from an external source, such as a loudspeaker, the beats can be heard with both ears or with only one ear, which is called a "monaural" beat frequency. The phenomenon of beat frequencies is described in many psycho-acoustic journals.

If the frequencies of the two sound sources are applied separately, one to each ear, a "binaural" beat frequency is created. This beat frequency is not an actual sound, but only a frequency difference between the two actual sounds. This sound is "heard" within the brain itself; the binaural beat frequency is created by both brain hemispheres working simultaneously. Thus, in his attempt to discover a technique to entrain the brain, Monroe found a way to sonically synchronize the left and right hemispheres. In thousands of experiments using an EEG to monitor the brain waves of people hearing a different signal in each ear, he verified that binaural beats could indeed entrain or drive brain waves. The entrainment or frequency following response did not take place only in the area of the brain responsible for hearing, or only in the left and right hemispheres; the entire brain resonated, the waveforms of both hemispheres becoming identical in frequency, amplitude, phase and coherence.

This paper is not on the potential uses of brain synchronization, which may have remarkable implications for education, but rather on the ability of external sound stimuli to affect the internal rhythms of the brain. This most interesting side effect-the ability to synchronize the hemispheres of the brain-is mentioned for those interested in further study.

In order for this patented process (which Monroe called "Hemi-sync") to work, it appeared that headphones were necessary. Later work with the FFR, however, indicated that entrainment of the brain still occurred with external sound sources, such as stereo speakers, if they were given enough separation in the room. While the effects were not quite as rapid or as powerful as with headphones, sonic entrainment still took place.

Other Work on Sonic Entrainment

Monroe is the creator of this technology. However, he is not the only person who is utilizing sonic phenomenon to entrain the brain. A number of other private institutions utilize similar processes. One person, a non-sectarian monk named Master (formally "Brother") Charles, is head of M.S.H. Associates, which specializes in using sound to enhance and accelerate consciousness. Master Charles was a disciple of the Eastern spiritual leaders Swami Paramahansa Muktananda. He found that through the new sonic entrainment technology it was possible almost instantly to induce states of deep meditation, normally not available to people without years of meditational practice. Charles uses a process called "phasing,"- which employs a mechanism very similar to Monroe's to create altered states of consciousness. Indeed, it is the innate ability of the brain to detect waveform phase difference which gives rise to binaural beats.

An additional aspect of this sonic entrainment technology, brought to my attention by Sharry Edwards, a researcher at Ohio University, is that if the carrier waves creating-the beat frequencies are harmonically related to the beat frequencies, a more powerful sonic entrainment occurs. According to Edwards, the most powerful form of entrainment to induce 7 hz., for example, involves using two differentiated signals that are harmonic multiples of frequencies of 7-say 49 hz and 56 hz. For entrainment of 6 cycles, you would work with a multiple of 6-perhaps 60 and 66. Thus far there has not been much available research regarding this. It does make sense, however, and I mention it for those interested in working with this technology. Ronald deStrulle, director of Holistic Programs, Inc., of New York, utilizes a process which seems to be in agreement with Edwards' thoughts on entrainment.

One of the most popular entrainment frequencies being utilized these days is that of 7.8 cycles per second. Both Ronald deStrulle and scientist Robert Tollaksen have created different tapes utilizing this frequency. DeStrulle's is called "Geo-Magnetic Field Entrainment," while Tollaksen's is simply called "Earth Hertz." It is of interest to note that the earth's ionosphere, the electromagnetic field around the earth, has been measured. This is called the Schumann Resonance, and it appears that the frequency of the earth is somewhere around 7.83 cycles per second, which is identical to the alpha wave rhythm of the human brain. Itzhak Bentov, author of Stalking the Wild Pendulum, theorized that persons vibrating at these frequencies during meditation would entrain with the geomagnetic energies of the

earth and lock in resonance with it. There are also some researchers who, like Bentov, believe that this 7.8 hz frequency is the resonant frequency of the human body.

It has been suggested by Dr. Robert Beck that perhaps this frequency is a "cosmic carrier of information" and could be the "drummer" to which psychics, healers, dowzers, etc. are entrained. By listening to tapes of the 7.8 hz it may be possible that listeners are able to resonate with the frequency of the earth's aura. Both deStrulle and Tollaksen have reported rather remarkable therapeutic experiences from those who have utilized these frequencies. It should be remembered however, that the Schumann Resonance is actually an average of the electromagnetic pulsations of the earth. These electromagnetic frequencies go up and down. Some suggest that 8 hz. is an equally valid frequency that may be used for this resonance.

The original innovator and creator of this entrainment process, Robert Monroe, does not utilize beat frequencies of 7.8 hz or those in the alpha frequency spectrum. Most of the beat frequencies in his tapes, such as "Way of Hemi Sync," focus more on delta and theta waves mixed with beta frequencies. Additionally, unlike many of the other recordings to be discussed, Monroe does not deal with one specific frequency but with many.

Tom Kenyon, head of Acoustic Brain Research in North Carolina, produces various sonic entrainment cassettes called "WaveForms." Along with "Differential Signaling," Tom's term for the Hemi-Synch process, he also utilizes the pulsing of low tones at specific rhythmic patterns to entrain the brain into the desired state. He claims that an advantage of this form of entrainment is that a person with ear deafness can still get the entrainment, whereas in differential signaling, there would be no entrainment since one of the signals is not being received. Tom has worked with researchers using a 24 channel Neuromap EEG recording of subjects after they listened to his WaveForm tape. This research showed a shift of dominant alpha brain activity and a powerful increase in theta (4-8 hz).

Dr. Jeffrey Thompson, a chiropractor working with sound at Sound Sphere Productions has produced the "Isle of Skye," which incorporates music as well as the sonic entrainment technology. This tape, according to Dr. Thompson, "contains specific frequency modulation designed to induce the production of Alpha and Theta waves in the human cerebral cortex. I use multiple variations of Alpha and Theta wave frequencies, phasing the waveforms through the 3.5 to 13 hz. range." Jeffrey uses a number of other sonic therapies besides these tapes, and his work merits further investigation.

The use of music to accompany these sonic entrainment frequencies is becoming more and more common. Many of Monroe's tapes utilize music as well as the Hemi-Sync frequencies, with most of the Hemi-Sync frequencies at a subliminal listening level. These subliminal frequencies have been found to be as effective as the audible ones.

It is important to understand that with these extremely low frequencies any music which may accompany the sounds must be pulsed slowly. As discussed before, music pulsed at about 60 beats per minute is ideal for helping to induce alpha states. If music pulsed a good deal faster were used, the entrainment of the heart to faster rhythms would clash with the slow brain waves pulses created by the beat frequency process. The effect would be minimal, if it existed at all. Therefore, slow music must be utilized.

"Dolphin Dreams"

The relationship between rhythms and brain wave frequencies is utilized and applied in the Spirit Music recording of "Dolphin Dreams." This is a sonic environment created as a tool for meditation and birth. It features the sounds of the ocean, human heartbeat, dolphin sounds and choral voices. The choral voices utilize a wordless melody containing the "Ur" song, a descending melodic minor tune that is found in lullabies throughout the world. Along with these sounds, there is a choir chanting the Sanskrit mantra "Om." This sound was detuned in each channel to be slightly out of phase in order to attempt to create the "Schumann" resonance of 7.8 hz.

Some of the dolphin frequencies heard on this recording also resonated in this 7.8 hz range, with the dolphins utilizing a vibrato effect in order to create this frequency. Scientists at the Aspen Research Center have found that not only do dolphins create this frequency, but they have also been attracted to 7.8 hz when it was sent out via sonic instrumentation during underwater research.

In choosing the correct heart beat for "Dolphin Dreams," researchers experimented with a number of different pulsed heartbeats. At first the heart beat of an infant in utero was tried, but the heart beat of the infant's mother was found to be equally if not more effective for calming. A heart beat of 60 beats per minute was also tried, since it is so favored by the Lozanov Method, but a heart beat of 48 to 50 beats per minute was finally found to be most effective for working harmoniously and harmonically with the other soothing sounds on the recording.

Since the time of recording "Dolphin Dreams", I have continued to apply principles of sonic entrainment to many of the various recordings I have made. I have utilized the beat frequency phenomenon as well as other sonic entrainment techniques with such recordings as "Chakra Chants" and "The Lost Chord". Researchers have found that these recordings produce very slow and deep states of brainwave activity including both Theta and Delta.

The power of different mantras and chants, specific harmonic frequencies and specific sonic intervals creates by themselves, very powerful effects upon the nervous system and the brain. Some of this information is contained in my book Healing Sounds. The Pythagorean ratio of 2:3, for example, can help induce synchronization of the hemispheres of the brain as well as deepened states of brainwave activity. However, when combined with many of the different psycho acoustic methods available to create sonic entrainment, the utilization of sacred sounds such as mantras and Pythagorean intervals produces the most powerful recordings available for transformation. My recording, "Ultimate Om", is an example of this application, as is "Hermetic Harmonics".

Tibetan Bells, Peruvian Whistles

"Sonic entrainment" when first used in this paper was a relatively new term. Yet, sonic entrainment as a phenomenon has been used by medicine men and women and shamans from different cultures since prehistoric days. The ability to create altered states of consciousness through drumming, chanting and music is probably as old as music itself. Jeanne Achterberg in her book Imagery in Healing notes, for example, that analysis of shamanic drumming encompasses a frequency range of from .8 to 5.0 cycles per second, which she refers to as "theta driving capacity."

Tibetan bells, or Ting-Sha's, have been utilized in Buddhist meditation practice for many centuries. An examination reveals that the two bells, which are rung together, are slightly out of tune with each other. Depending upon the bells, the difference tones between them create ELF's somewhere between 4 and 8 cycles per second. This falls exactly within the range of the brain waves created during meditation and helps shift the brain to these frequencies. It is little wonder that Tibetan bells are experiencing a worldwide increase in popularity as tools for increased relaxation and reduction of stress.

Peruvian whistling vessels are ancient pipe-like instruments, originally found buried with mummies in Peru. For quite a while it was thought that they were just water jars. Then, some people began to experiment with them, blowing on them as whistles. The psychoacoustic effects of actually blowing these vessels are quite amazing and powerful.

Recently, replicas of these whistling vessels have been made available for experimentation and research. The entire cranium of the person blowing them seems to act as a resonating chamber-an effect that cannot be reproduced on a record. These vessels are usually blown in sets of seven and they create tremendous beat frequencies.

The March 29th, 1988, science section of the New York Times was devoted to these vessels. The headline read "Complex Whistles Found to Play Key Roles in Inca and Maya Life"; the subtitle read "Much more than toys, the whistles were genuine musical instruments." Stephen Garret and Daniel Statnekov tested the tonal ranges of these vessels using spectrum analysers and frequency meters. They suggested that, rather than being primarily utilitarian liquid containers as anthropologists regarded them, the bottles were specifically produced as whistles. Dr. Garret found that curious sounds were produced when two or three bottles of the same culture were blown simultaneously. Their higher notes would interact to produce deep lower notes that could not be tape-recorded but heard only in the ear, where the effect is generated. He said, "The idea is that these low frequency sounds were important religious rituals for changing states of consciousness." Such vessels were undoubtedly sacred tools, used under the guidance of a shaman or priest and utilized only at specific times and for specific purposes. Listening to these whistling vessels makes one truly appreciate the possibility of profound knowledge of sound among ancient cultures.

The Peruvian whistling vessels and the Tibetan bells are two examples of shamanic tools that employed the concept of sonic entrainment for the brain. Numerous other ancient cultures knew of these principles for using ELF's to alter consciousness and applied them in their instruments, drumming and chanting.

Today, healers and therapists working with sound and music have the potential of following in the paths of the ancient shamanic traditions, combining magic and mysticism with modern science and technology. These healers and therapists are responsible for being aware of new discoveries of the use of sound and music in this manner.

Hemi-Sync and Other Uses of ELF

The technology of creating sonic entrainment may turn out to be a most important aspect of the therapeutic use of sound and music. Private research from various people working with this technology has indicated very promising results. However, the available literature is at this time mostly anecdotal, and experiential data is limited.

As creator of this technology, Robert Monroe and the Monroe Institute have done the most research for the longest period of time with their Hemi-Sync, particularly in the area of using sound to enhance education. A number of subjective studies have shown that groups of students in various age groups using tapes with Hemi-Sync had higher test scores and grades than control groups not using the technology. Hemi-Sync has also proved to be of help in the areas of learning disabilities, cerebral palsy, mental retardation, autism, uncontrolled seizure disorder, emotional disturbance, and Down's syndrome. Sonic entrainment is also being utilized for pain control, stress reduction and relaxation.

Ronald deStrulle, cited earlier, utilizes an entrainment frequency of about 1.45 hz, which he calls a "Tri-Thalamic Entrainment Format." It is designed to create entrainment between the hypothalamus, pituitary and pineal centers of the brain. Master Charles is experimenting with this frequency in a select group of test subjects, and he also believes it stimulates the pituitary gland.

While there is little research to indicate the effects of utilizing frequencies such as 1.45 hz, it is certainly an area of research that may prove enlightening. In a letter, deStrulle wrote that several doctors and audiologists from the New England Dyslectic Center Group have been obtaining excellent results with dyslexia by using Tri-Thalamic Format and that a study was presently being conducted which indicated profound improvement with Alzheimer's patients. We have been unable to confirm these reports, but they indicate the possibility of great inroads in this area.

It seems likely that in the area of neurological illnesses and brain injuries, sound, and in particular sonic entrainment, may prove to be the most effective, especially when this technology is combined with other sonic technologies such as those developed by Dr. Alfred Tomatis. Hemi-Sync has been utilized with stroke and aphasia patients with seemingly considerable success. If, as has been indicated, it may be possible to resonate specific portions of the brain using particular frequencies, it may therefore be possible to treat all manner of physical and emotional ailments using sound in this manner. Hopefully, we are just at the very beginning of some very powerful therapies which will utilize this technology.

Cautions

At the same time, it seems that caution is needed. If such frequencies stimulate the pituitary, for example, what effects would occur from long-term exposure to them? It has been suggested that these frequencies could be dangerous as well as healing, perhaps bringing on premature strokes and other imbalances in the brain. We do not know. Sonic entrainment is by no means the cure-all or the answer to all the potential uses of healing with sound, but it certainly is an important development with astounding possibilities. As with all new discoveries, there is equal concern about misuse. With technology as simple as this, it is becoming increasingly easy for anyone with a bit of recording equipment to produce tapes that create sonic entrainment. The ease with which such tapes may also be obtained and used without discretion is of equal concern.

Without proper research and study, we may be unleashing a Pandora's box to an unsuspecting public. It is important that the long-term effects of some of these frequencies being utilized should be studied, and that we determine whether they are beneficial or dangerous. We are currently at the forefront of using sound to affect the body, mind and spirit. These are exciting times with many new discoveries and developments. The potential areas of use may be limited only by our imagination.

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