

WHOLE BODY ACOUSTIC FIELD GENERATORS

by Teny Patten

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Designers of several sound tables have deliberately attempted to create an "ultimate consciousness machine" or something close... Human states of mind and emotion, including many physiological tensions, respond instantly and profoundly to musical influence.... This technology can help them get in touch with their feelings and emotionally available to work deeply in 15 minutes or so.

You recline, relax, and let go. Music begins, and the device you're lying on doesn't just deliver music to your ears; it tingles your whole body in a sensory bath of sound and vibration, playing upon your skin with the constantly changing vibrations of a wide array of musical styles. Sometimes the musical sounds feel soothing, sometimes powerful and intense and sometimes exquisite and sublime. Through it all, you relax more and more deeply, letting go into a musical experience that seems to take over your whole being. These are "Whole Body Acoustic Field Generators" also known as "Sound Tables," "Music Beds," or "Vibro-Tactile-Stimulators."

It all began in the early 1980's with Michael Bradford's "*Cotyledon*" (since revised into "*The Genesis*") an elaborate delivery system for what some believe is "the ultimate experience in consciousness technology." The Cotyledon's price tag was high (\$56.000 to \$68.000) but many of its users swore that it was worth every penny.

It changed the lives of some of them, including Byron Eakins, who abandoned his successful artistic career to bring this type of technology within reach of ordinary people. Today, he is the manufacturer of the *Somatron* series of vibrating chairs and tables, and he continues to pursue a vision that "vibrational systems will someday be in every home in America."

Today there are at least eight (mostly small) manufacturers of Sound Tables in America, most of whom offer their products for deep relaxation, pleasure, emotional catharsis and consciousness growth. But because the experience is also lots of fun, its applications are not limited to provoking profound personal catharses and peak experiences. In Japan, body vibration has spawned products directed at much less "evolutionary" applications, including inflatable vibrating car seats, vibrating beds for lovemaking, vibrating theater seats and even-vibrating dance floors!

"ULTIMATE" EXPERIENCES

These devices have "blown the minds" of many users; in their wake we find a striking concentration of enthusiastic, emphatic praise, strong claims, and testimonials laced with superlatives. Designers of several sound tables have deliberately attempted to create an "ultimate consciousness machine" or something close. These would-be Svengalis have embellished their machines With a number of creative enhancements in order to boost the already powerful experience of tactile sound into an extra dimension of sensual, psychological and/or spiritual potency.

What are these "extras"? They include quite a range: Some sound tables are suspended from large geometric structures which are intended to act like a pyramid in focusing and heightening subtle energy. Some incorporate sensors which feed back (to the subject or the operator or both) information about the relative expansion or contraction of the user's "biofield." Other sound tables incorporate

optional extra transducers which can be placed under the soles of the feet, laid across the abdomen, or placed under the neck touching the shoulders, vibrating a more and more dominant percentage of the body's surface area.

All sound tables require a console of audio equipment, sometimes provided as part of the initial "package." Some incorporate complex and sophisticated sound processing systems to deliver sound to the body with optimal psycho-physical impact. Certain sound tables include equipment incorporating non-audio equipment powering goggles with flashing lights, which may flash in sync with the rhythm of the music, or at a predetermined brainwave frequency, and/or in response to an operator's signals. Some come with video displays mounted in front of the subject's face, so that the eyes can be stimulated with a congruent display of colors and shapes while their body is being vibrated by sound frequencies and textures.

Each of these additional features is intended to further potentize an already super-powerful experience. These features distinguish one sound table from another, and they give each manufacturer a basis for claiming that their unit is in some way more "ultimate" than any other. I have experienced some (but not all) of the sound tables which include these embellishments, so I can only say that I think at least some of them (particularly the extra transducers placed on feet, stomach and/or neck) have great value and deserve to be taken seriously.

However, this article will concentrate on the core phenomenon: All of these units build their extras upon a single powerful effect -- what music therapist David Ison calls "Vibro-Tactile Stimulation" -- the vibration of the whole human body with sound and music. This physical, whole-body experience of music is the powerful medicine that has created all these dreams of "ultimate consciousness machines."

THE HEALING POWER OF MUSIC

For nearly 20 years, the scientific literature has contained well-documented studies confirming the impact of music on human physiology. Harrer & Harrer's 1977 publication, "Music, Emotion and Autonomic Function" identified some of the effects that emotional musical experiences have on the autonomic nervous system, particularly tension-related factors including blood pressure, pulse rate, respiration rate, skin resistance, and muscle tension.

According to Harrer & Harrer, heart rate seemed sensitive to music volume and rhythm, and both heart rate and respiration rate tended to synchronize with music. Other studies have independently measured the effects of music on respiration rate (Kneutgen) and heart rate (Landreth).

In his paper, "Thrills in Response to Music & Other Stimuli", Dr. Avram Goldstein cited experimental evidence that endorphin suppression blocks the subjective experience of "spine tingling thrills" when listening to music, and concludes that the subjective experience of musical "thrill" is endorphin-connected.

The growing field of "Music Therapy" has gained some professional credibility from studies linking music with physiological changes, but its most persuasive evidence is empirical and clinical. Human states of mind and emotion, including many internal physiological tensions, respond instantly and profoundly to musical influence. Since the dawn of human culture, people have intuitively chosen music as a healing influence. Ancient examples range from Shamanic healers to Greek Orphic

Asclepians.

The goals of music therapy have been stated to be "the reduction of psycho-physiologic stress, pain, anxiety and isolation... [helping clients] achieve a state of deep relaxation, develop self-awareness and creativity, improve learning, clarify personal values, and cope with a variety of psycho-physiologic dysfunctions." If music has this power when heard through our ears, how much more powerful are the effects we experience when it is powerfully felt through the body? It is no wonder that sound tables have found their way into hospitals, private clinics, and universities, where they are used by a wide variety of healers.

CLINICAL REPORTS

Dr. Juanita McElwain, Director of Music Therapy at Phillips University conducted a pilot study involving sessions on the *Somatron*, the sound table in widest use. She played 30 minutes of native American flute music for headache sufferers. She reports 100% success with complete elimination of migraine, sinus and tension headaches. According to her report, the headaches were gone within 30 minutes and did not return.

Beth Denisch. Music Therapist with the Massachusetts Association for the Blind, has used a *Somatron* with severely developmentally delayed multi-handicapped children. She reports " [the music bed's] ability to relax and comfort as well as enrich and enliven has made it an indispensable tool.... Muscles of constant hyper-tauticity relax...restless and disgruntled behaviors are calmed and soothed."

The Children's Cancer Center of Tampa, Florida uses a *Somatron* table during invasive procedures such as spinal taps and bone marrow aspirations, which are quite painful. The bed soothes the children before and after such procedures by reducing their anxiety and distracting them from the unpleasant experience, reducing the pain medication required.

Dr. Arthur Babick, a Clinical Investigator with the Dissociative Disorders Institute of the Southwest, has used the *Somatron*, along with therapeutic music designed by David Ison, to specifically summon and soothe individual personalities within those suffering from "multiple personality disorders." Ison says that certain music will consistently summon specific personalities in a repeatable and predictable pattern. Babick reports that the unit is known at the facility as the "Magic Table" because of its powerful effects on patients.

Ison is Creative Director for the Society for Neuro-Biology Division on Addiction. He is also a Music Therapist and composer who has worked extensively with *Somatron* devices and has created several types of therapeutic music for use with them. Some of this music has been used with dissociative disorders as described above. Other examples produce different effects. For instance, Ison reports "Some music will consistently create a 20% drop in blood pressure. Other music will produce a 15% drop in pulse rate. I have reams and reams of data to this effect."

Ison calls these musical pharmaceuticals "Vibro-Tactile Software." He says, "The body holds trauma in specific areas. Usually a specific memory of a particular trauma is stored in a particular place in the body. Through my work with vibro-tactile music, I know what areas store what kinds of trauma and how to reach them. I help the body to come into resonance with an external sound source. Breathing slows down and the traumatic memories surface so they can be released."

Charles Wilson, co-creator of *Discovery Sound Tables*, has recently created a two-week certification program for sound table operators. He offers sound table therapeutic sessions in partnership with Donna Hale, a psychologist practicing in Marin County. According to him "[Using music and the sound table] I can help the client enter into a deep experience faster than any other way I know of. Most therapists spend a lot of their time getting people 'in state.' This technology can help them get in touch with their feelings and emotionally available to work deeply in 15 minutes or so. State specific memories and traumas surface. The client needs to re-enter certain psycho-physical states to do his or her work, and I can help re-create those states, and I can do so quickly and powerfully because the sound table accesses so many senses."

Don Estes points out, "If I say my name and you hear it, it's in one part of your brain. If you repeat it, it's in two. If you write it, it's in three. If you look at the written name, it's in four. The *Vibrasound* experience registers, as best as I can compute it, in millions of brain cell sites."

Dr. Jeffrey Thompson is an innovative sound researcher and composer and a longtime user of the *Somatron*. He now manufactures the *PSI table*, an inexpensive massage-table based system. He points out, "A huge section of the brainstem and nervous system is devoted to sensing and processing vibration. The spinal cord is composed of nerve bundles carrying different kinds of sensation such as heat and cold, pain, pressure, vibration, etc. Two entire columns sense vibration and take up almost the whole posterior half of the spinal cord. Large portions of the deep, primitive portions of the brain near the brainstem are devoted to vibration-processing. So when you are lying on a sound table, powerful emotional information, in the form of musical vibrations, gets processed right in the part of the brain where our most deep-seated emotional programs reside. This is one reason sound tables produce such powerful effects."

WHAT PRINCIPLES ARE AT WORK?

When asked why sound tables create such a powerful experience, Byron Eakins points first to the obvious, "Feeling music in the body is a unique experience; we're just not used to it. This has a profound effect. It really gets your attention. And if you "let go" into the experience, all kinds of things can happen. I've exhibited *Somatrons* at many trade shows, and I've heard people describe emotional catharsis, mystical experiences, out-of-body travel, amazing things. I stay away from talking about these more mystical experiences in my professional communications because I want the *Somatron* to be taken seriously. But I hear stories like that all the time."

Don Estes, the creator of the *Vibrasound* describes the principle of "sensory resonance." In sensory resonance, the senses offer the brain completely congruent information. "Sensory deprivation such as you experience with a flotation tank is a form of sensory resonance. All the sensory inputs are simultaneously, congruently quiet.

"On the *Vibrasound*, all the senses get convergent, simultaneous stimulation. Normally, in order to focus on a single stimulus, your reticular activating system has to screen out countless 'background' sensations. When the *Vibrasound* drowns out the background distractions, the attention and mental energy that would otherwise be used up by the task of sorting inputs, is freed up. This in itself is highly unusual, and it means you have much more consciousness available than you would ordinarily.

"And what is presented to consciousness? Music. And great music is profound. Communication can be boiled down to frequency, amplitude and waveform. Music results when those elements are combined together in the most beautiful, powerful ways possible. Music is the greatest form of communication man has ever created. Music can be emotionally powerful, aesthetically powerful, mentally pleasurable, physically healing, deeply relaxing. And consciousness is uniquely freed up. No wonder the result is so profound "

While still in his teens, Dr. Patrick Flanagan invented a unique device called the *Neurophone*, which communicated sound to the brain via the skin. He points out, "Each cavity in the body is a Helmholtz resonator; it has a specific frequency to which it resonates like a tuning fork. Thus, if the body is resonated by music, certain parts of the body will resonate particularly strongly to each frequency."

Flanagan considers the modality inherently powerful, in part because the human skin is such a powerful sense organ." Our skin is not just a covering; it is an enormously sensitive organ with hundreds of thousands of receptors for temperature and vibro-tactile input. Every organ of perception develops ontologically and phylogenetically out of skin. In the embryo skin folds and then form our eyes and our ears. Our skin may contain the latent capacity to perceive light and sound. I think by stimulating the skin with energy in the right way, you can potentially repolarize the brain and charge it with energy."

Flanagan points out that the technology is still in its infancy. He looks forward to dramatic developments in Acoustic Field Generators, with dramatic refinements in the efficiency with which sound is translated to the body, making possible increasingly profound applications.

FREQUENCY RANGE: DOES TREBLE MATTER?

Dr. Norman Shealy makes successful use of several sound tables in his private practice where he offers residential stress training programs. Shealy's protocols involve the use of his *Relaxmate* flashing light device, his Biogenics self-regulation program, music therapy, Microcurrent CES, and extensive counseling. According to Shealy, (high frequencies are not reproduced well by some tables, and he prefers those on which "you can feel the higher musical tones."

Charles Wilson points out that vibrations above 380 cycles per second are not physically palpable. He speculates that higher frequencies become palpable when sound distortion or "speaker buzz" creates low-frequency shadows of higher tones. Don Estes agrees, saying, "I have spent thousands of dollars studying it. and I can't find anybody who can feel more than 350Hz. Theoretically human cells can vibrate up to 2000Hz based on the laws of resonance, so I make sure the *Vibrasound* reproduces frequencies that high. Above that. though I don't believe there is any effect."

Byron Eakins candidly admits that he lacks hard data, but he says, "Using the *Somatron*, I can feel the violins and other higher-pitched instruments. I think they make an important difference."

His intuition is given a boost by the writings of Alfred Tomatis, a French Otolaryngologist who developed a method of music therapy and vocal training based on his pioneering observations of the profound interconnections between the brain, the ear, the voice, and the general state of human health. Tomatis stresses the profound physiologic importance of sound conducted through our bones, and he identifies the most important frequency range of the sounds conducted by bones as high frequencies: 2,000 Hz and above!

But most people do not consciously notice the palpation of such high frequencies, except insofar as they reach the ears through bone conduction. Do high frequency vibrations influence the body without being consciously palpable?

Dr. Patrick Flanagan's work with the *Neurophone* suggests this. In the *Neurophone*, two electrodes on either side of the head broadcast radio frequencies to the body which are "heard" in the brain as "sound." However, Flanagan is convinced that they bypass the ear completely. The *Neurophone*'s sounds can be "heard" even by people whose cochlear hearing system is physically damaged. He has experimentally observed that skin numbed by novacaine will block the *Neurophone*'s signals, but when the electrodes are moved beyond the boundary of the numbed area, the *Neurophone*'s "sound" reappears. Flanagan believes "the skin can be an organ for audition" of signals we ordinarily presume we cannot "hear" or "feel." This suggests that we may be sensitive to, and influenced by, sounds beyond our range of normal sensation.

[Interestingly, all the manufacturers I spoke with told me that their units reproduce sounds at least up to 2,000Hz, and usually as high as 20,000Hz (frequently cited as the upper limit of human audition) whether or not they believed these vibrations had a significant effect.]

TECHNICAL CONSIDERATIONS

How do you evaluate a sound table? What should you look for when selecting one? Here is a list of technical considerations you should take into account:

(1) DO I WANT A BED OR A RECLINER CHAIR?

Most sound tables use a flat vibrating surface, such as a bed platform, massage table or water bed. However, *Somatron* (and perhaps others) builds vibrating recliner chairs, electric reclining beds, and baby beds. Therapeutic applications usually require a flat bed, but a recliner chair may be more appropriate for home use when an operator will not usually be present.

(2) DO I WANT A FLAT FOAM-BASED SURFACE OR A WATER BED SURFACE?

Most acoustic field generators consist of a series of speakers mounted into a wooden frame covered with foam and upholstery. In a few, however, speakers are mounted below a water bed or gel-filled medium. Both types of units have advantages.

The solid medium allows the vibration sources to be localized, enabling an operator to "move the sound" from the bottom to the top of the body, or from the left to the right. In the water or gel medium, this kind of separation isn't possible. Additionally, the water bed units are much heavier and less easily moved.

On the other hand, the water and gel allow the body to sink into the vibrating medium, communicating vibration across significantly more skin surface, and creating a sensation of being almost "surrounded" or "embraced" by the vibrational effects. Most people agree that this intensifies the experience significantly.

(3) DO I WANT A UNIT WITH SMALL SEPARATED SPEAKERS?

Most sound tables are intended for use with headphones. However, several are manufactured with small speakers positioned near each ear. These small separated speakers eliminate any discomfort or restriction caused by the headphones pressing onto the head, allowing the head to be turned freely to either side. The subject is not auditorily isolated by the headphones, and the speaker sounds "leak" into the room a bit.

(4) HOW NOISY IS THIS UNIT?

In practice, you may want to use your acoustic field generator without disturbing other members of your household (or the landlady downstairs). Some units operate relatively quietly, isolating their vibrational output so that it is felt without being heard. Some are extremely noisy. Consider this aspect of the unit you buy, and make sure that you are satisfied that it operates quietly enough to suit your needs.

(5) BE A TACTILE AUDIOPHILE

An acoustic field generator is a specialized speaker system. It can and should be evaluated as you would evaluate a high-quality speaker. Make sure it cleanly reproduces "sound" ("vibration") without distortion -- even when played at the maximum "volume" ("vibrational intensity"). Buzzy speakers vibrate a lot; don't confuse distortion buzz with vibrational power.

A useful concept here: "impedance loss." Every unit must translate a signal in a sequence; for example: from wire to magnet to speaker cone to air to foam to skin. How efficiently does it do that? How much distortion creeps in?

The best way to evaluate this is to experience it for yourself. Each manufacturer tries to create the best possible product, and each can explain why his or her unit is best. Lie on the table, close your eyes, and feel the sound. Is it clear, pleasing and strong? It is best if you can compare your experience on several sound tables.

Some manufacturers have a very simple explanation for why their units are especially attractive. For instance, Dr. Jeffrey Thompson's *PSI table* uses speakers, but large and powerful speakers, 4 to a table, offering higher power and more separation than any other unit in its price range.

Also quite simple is the rationale for *Discovery Sound Tables*, either their water bed-based unit or the massage table unit. The water bed unit was refined by speaker-designer Paul Hughes using known principles of speaker design. Applying well-established principles "the end result is extremely fine, efficient and affordable." Their massage table unit uses powerful, specially designed transducers which Charles Wilson believes outperform the speakers used by his competitors while resulting in a very low priced system.

Some manufacturers have attempted to address "audiophile" values in unique ways. For example, the *Somatron* has a patented design in which the surface on which the body rests has a "resilient support system" which allows it to vibrate too, becoming, in effect "a second diaphragm." Byron Eakins believes this enables it to provide the most intense ride with the least room noise and the lowest power.

"It's a heck of a ride for 20 watts."

Don Estes' *Vibrasound* system comes with powerful speakers and sound-processing equipment, designed and tuned in a unique fashion. He points out that speakers cones are normally designed to produce "flat" response across their frequency range. He says his new, redesigned *Vibrasound* has speakers with non-flat cones designed instead for maximum efficiency. Before it reaches the speakers, however, the sound is corrected so that the end result is felt by the body as proportional and balanced. This is done by means of an extremely sophisticated sound equalization system. He says hundreds of vibrational measurements at different frequencies taken with highly sensitive accelerometers (microphones which sense vibration) allow him to program the equalization process so the experiential result is nearly perfect -- and fully-efficient.