

# Sound Healing

Dr Andrew Weil

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*Research shows that music and sound can relieve pain, help stroke patients, and benefit other conditions.*

*Dear Reader,*

*Music is one of life's greatest pleasures, and it can also serve as a powerful force for healing. In this ... [article], you'll discover some practical ways to use music and sound to improve your health, and you'll learn about a new recording I helped create to speed the healing process.*

Many years ago, I had an unexpected encounter that introduced me to the power of sound. It happened in December of 1959, when I was 17 and midway through a year's study abroad with a traveling school called the International School of America. That month my classmates and I were in Calcutta, India. On the night of the full moon, a friend and I walked to the banks of the Hooghly River, where we came upon a small Hindu temple. An old *sadhu* with a long beard -- the caretaker of the temple -- suddenly emerged from the shadows and put his hand on my shoulder. Then he made the most amazing sound I had ever heard. When he finished, he explained that this was the sacred sound *aum*, which, he said, encompasses all sounds in the universe and is a healing vibration. I remember that the night was very, still and clear, and the moonlight shone radiantly on the man's face. When I closed my eyes I could still feel the vibration from the sound he had made.

That experience sparked what would become a lifelong interest in how sound and music affect our health. In my recent books, for example, I prescribe listening to music you like as one component of an 8-Week Program for optimum health. But music can do more than raise our spirits: A growing number of studies indicate that music and sound have measurable effects on the human nervous system (for better or worse). My own belief that what we hear can be a healing force has led me to help create a specially engineered recording called Sound Body, Sound Mind: Music for Healing.

One way to see how sound affects your consciousness is to turn down the soundtrack of the next video you watch -- whether it's a thriller or a romance -- and note how your level of engagement changes. In fact, it is often the soundtracks of films more than the images that influence our emotional responses.

Cultures around the world have long recognized the power of sound and music. Ancient Egyptian documents prescribed incantations for physicians to intone to the sick. In African religions, drumming is a highly developed art that can produce trance, sexual excitement, spirit possession, or even loss of consciousness. I was once quite stirred by Indonesian gamelan music (played on gongs and other percussion instruments): A concert I attended included a traditional piece for rousing warriors to battle, and by the end I felt such an adrenaline rush I was ready to fight.

Why do sound and music have such a strong effect on us? One answer has to do with a process called entrainment, whereby various bodily processes -- respiration, heart rate, and brainwaves --

synchronize with the frequencies of what we hear. For example, a stroll along the beach becomes deeply relaxed as body rhythms entrain to the lulling sound of the ocean's waves. The concept of entrainment is important to music therapists and sound researchers, who experiment with rhythmic and tonal combinations to find those that best induce states conducive to healing.

### Some Sound Research

Music therapists tend to classify music as either stimulative or sedative in its effects on the body. The former has dynamic rhythms that set feet tapping and adrenaline surging; the latter has peaceful, flowing melodies and easy tempos similar to those of a resting heartbeat. One expert in the field, Baltimore psychotherapist and violinist Helen Bonny, learned firsthand about this distinction when she developed severe angina in the late '70s. Although Bonny -- who originated the technique known as Guided Imagery and Music -- had been using music for years in her psychotherapy practice, it wasn't until she turned to it for her own recovery that she understood its effect on the body as well. In her weakened state, even much-loved stimulative compositions felt too jarring to her, while sedative pieces, such as Bach's Air on the G String and Debussy's Clair de Lune, made her feel better. In 1981, Bonny tested her theory on coronary patients in intensive care, and discovered that sedative music decreased heart rate and blood pressure, lowered the need for pain medication, eased anxiety, and promoted sleep.

Other specialists in the field of sound believe it can actually control the development and functioning of the brain. The leading proponent of this theory is French physician and psychologist Alfred Tomatis (see "The Listening Cure," November 1996, Dr Andrew Weil's Self Healing: Creating Natural Health for Your Body and Mind), whose unique mode of therapy inspired me to think about using sound to promote healing. In the Tomatis Method, patients listen to specially filtered tapes of classical music and Gregorian chant with the intention of retraining the ear and thus influencing the brain. His work has shown great promise in the treatment of learning disabilities, brain injuries, stroke, and a variety of other conditions for which conventional medicine has little to offer. *For information on Tomatis Centers in the United States, contact the Sound Listening & Learning Center, 2701 E. Camelback Rd., Suite 205, Phoenix AZ 85016; (602) 381-0086*

Spurred in part by the work of sound pioneers such as these, there has been a spate of research in the past several years supporting the theory that music makes good medicine:

**Childbirth.** In a study reported in the January 1996 issue of the Journal of the American Medical Association (JAMA), music therapists worked with prospective mothers to choose music for birthing -- calming selections for early labor, music with a steady beat for the later stages, and a celebratory piece for the birth itself. According to the researchers, half of the 30 women who listened to music during delivery had no need for anesthesia.

**Pain relief.** In 1996, the American Journal of Hospice and Palliative Care published an analysis of numerous reports linking music to the alleviation of pain. Some studies suggest that listening to music you find enjoyable may facilitate an increase in endorphins, the body's natural pain-reducing hormones.

**Stroke and Parkinson's disease.** In a controlled study reported in JAMA in 1996, 10 stroke patients received auditory stimulation in the form of metronome pulses embedded in recorded

music, played through headphones. After three weeks of listening for 30 minutes a day, the patients had improved their cadence, stride, and foot placement compared to the control group-and the effect was lasting.

Rhythmic auditory stimulation has also been used successfully to treat patients with Parkinson's disease. In one compelling anecdote, noted neurologist Oliver Sacks, M.D., tells of a Parkinson's patient named Rosalie who remained transfixed and motionless most of each day except when she played the piano, at which time all signs of the disease disappeared.

**Alzheimer's disease.** A 1991 study of 10 elderly men and women with dementia, reported in the Journal of Music Therapy, found that they could recall words to songs much better than spoken information. The researchers suggested that singing long-familiar tunes may be an effective way for caregivers and family to engage with Alzheimer's patients.

## Sound Applications

As research continues on the effects of sound on our bodies, brains, and psyches, here are some ways to use its healing power in your everyday life:

*Listen to music you like for relaxation.* Because musical taste is so individualized, I don't like to make blanket recommendations: When I prescribe music to people with anxiety or depression, say, or those with high blood pressure or stress-related disorders, I first try to find out what kind of music makes them feel happy or confident. As for myself, I enjoy anything from the piano strains of David Lanz to traditional Andean music, from Handel's "Hallelujah Chorus" to the down-home tunes of Credence Clearwater Revival.

*Use music with a steady beat to energize your exercise routine.* As reported in the Journal of Music Therapy, a study of female undergrads at Colorado State University found that coordinating arm movements to the beat of a synthesizer greatly increased muscle control, while another study showed that music enhanced strength, pacing, and motivation during aerobic workouts.

*Try Mozart or slow-baroque music to enhance learning.* While I myself prefer not to listen to anything when I'm trying to concentrate, other people find this type of music to be very helpful when performing mental tasks. A well-publicized study conducted at the University of California at Irvine in 1993 found that 36 undergrads scored 8 to 9 points higher on a spatial IQ test after listening to 10 minutes of a Mozart sonata.

*Arrange to listen to calming music during stressful medical procedures.* A growing body of research documents the positive role of sedative music and relaxation tapes in preparing for and recovering from surgery (see "10 Steps to Successful Surgery," September 1997, Dr Andrew Weil's Self Healing: Creating Natural Health for Your Body and Mind). In addition, soothing music may be helpful during diagnostic tests: A 1993 study of patients undergoing a sigmoidoscopy -- an unpleasant test for colon cancer -- found that patients who listened to self-selected music had significantly less anxiety as measured by heart rate and blood pressure. Studies have also shown that listening to music in the dentist's chair may lessen the need for anesthesia.

*Be aware of the ability of sound and music to induce stress.* When I am stopped in city traffic I often find myself next to cars that have music with an exciting beat blaring from the tape deck. I have no objection to this kind of music as entertainment, but I worry about its effect on the human nervous system when it is background noise taken in unconsciously. City driving is usually stressful enough, without having the nervous system roused further by stimulating rhythms and this might apply to anything from jazz and rock to the jangling dissonance of some classical compositions.

*Consider consulting a music therapist for specific conditions.* I plan to cover this field in a future issue. Meanwhile, you can get information through the recently expanded American Music Therapy Association, 8455 Colesville Rd., Suite 1000, Silver Spring MD 20910; (301) 589-3300.

## **A Symphony of Brainwaves**

Through the new science of psychoacoustics -- the study of the effects of music and sound on the human nervous system -- we now know that frequencies that stimulate the ear have a remarkable ability to affect our well-being. With this in mind, I collaborated recently with brainwave-biofeedback expert Anna Wise, sound engineer Joshua Leeds, and composer Richard Lawrence to create a recording called *Sound Body, Sound Mind: Music for Healing with Andrew Weil, M.D.* (Upaya). Our intent was to induce states of deep relaxation in which healing can occur. I recommend this recording to people who are sick, injured, or facing surgery, as well as to anyone interested in maintaining optimum health.

While many recordings for relaxation are available, what makes this one unique is the way it uses beat frequencies -- background sounds embedded within the music -- to influence brainwave activity and guide the listener into other states of consciousness. As far as we know, this is the first time beat frequencies have formed the basis for an orchestral score, with Anna mapping the frequencies out first and Joshua choosing appropriate classical compositions and other music to accompany them.

What does this mean to the listener? The brain produces four types of brainwaves -- beta, alpha, theta, and delta -- whose configuration at any given time correlates with your state of consciousness. Beta, the fastest frequencies, dominate your ordinary waking consciousness, including thinking and anxious arousal. Alpha, the mid-range frequencies, accompany daydreaming and light meditation. Theta brainwaves, associated with the subconscious mind, are present in dreaming sleep as well as deep meditation. And delta brainwaves, associated with unconscious mental activity, are the slowest: They remain when all other frequencies turn off in sleep, during the deep restorative stages of rest.

*Sound Body, Sound Mind* begins by meeting you in your normal waking state, then gently guides you down through the different brainwave states into a place we call "The Deep" -- a 30-minute period of theta and delta frequencies with just enough alpha to keep a link to the conscious mind. This is a safe space of inner rest in which healing can take place. At the end of this period, you are waltzed back to normal consciousness through a gradual increase of alpha and beta frequencies. Interwoven are melodic classical themes, Tibetan bowls and bells, exotic Indian instruments, and occasional electronic sounds. We suggest that as listeners slowly emerge into a refreshed state, they try to picture themselves fully healed. *Available ...from Upaya, (800) 354-3943.*

## Pain: A Sound Cure

Anecdotal evidence suggests that toning -- self-generated vocal sound-may reduce areas, relieve insomnia, and counter the symptoms of tinnitus and migraines. Here is a toning exercise designed to ease pain, drawn from the recent book The Mozart Effect by musician and educator Don Campbell. -- A. W.

- ∞ Sit or stand in a comfortable position, or, if you are bedridden, position yourself so that your throat and neck are relaxed.
- ∞ Now close your eyes and locate the source of your physical discomfort. Make an *ah* or an *ou* sound (the most soothing) and visualize the pain in your body being released through your voice. The *ou* sound is pronounced like the *ou* in the word *soup*.
- ∞ If the pain is acute, you may want to make a high *ee* sound. The *ee* and *ay* sounds release sharp pains and can help you to let go of inner anger and torment. (Be sure to let anyone nearby know that you are experimenting with sound and not to be alarmed.)
- ∞ It takes a few minutes of toning before the pain begins to change its shape. Never strain the voice, and rest between each minute or two of sounding. This method can trigger an endorphin release that will mask the pain for a short time, Pain that has emotional origins may also be released, which will enable the body to heal more effectively.

Excerpted from The Mozart Effect by Don Campbell Copyright 1997 by the author. Reprinted with permission of Avon Books.

### **SOUND BODY, SOUND MIND: CD description**

1997, Music for healing with Andrew Weil, MD

Quoted from the description provided with the CD

#### **Experience profound healing and deep relaxation through the power of SOUND**

**Sound Body, Sound Mind** is a double CD set containing music designed to "walk" your body through an experience of deep healing. A combination of classical and world music with specially designed frequencies that influence your brain waves, **Sound Body, Sound Mind** will transport you into a state of profound relaxation where healing can occur. Just put it on, relax and let the sound do its work.

... Dr. Weil is a leading authority in alternative healing methods. The sound healing principles used by Dr. Weil to create **Sound Body, Sound Mind** provide you yet another unique form of healing medicine that is natural, non-invasive, cost-effective, and enjoyable. **Sound Body, Sound Mind** encourages any kind of healing: physical, mental, emotional or spiritual. As you listen and allow yourself to relax, the intricate combination of sounds gently encourages your mind to follow it into states of deep relaxation that provide the best environment for the body and the mind to heal themselves.

Beautifully packaged, **Sound Body, Sound Mind** contains 64 pages of exciting material on sound healing from Dr. Andrew Weil, Anna Wise, leading authority on brain waves and healing and

author of The High-Performance Mind, and Joshua Leeds, producer, composer, and author of Sound Affects: Using Music and Sound for Health and Enhancement. **Sound Body, Sound Mind** also features an enlightening discussion on healing and sound from Dr. Weil, insights from Anna Wise on frequency work and healing, and words from Joshua Leeds on the making of **Sound Body, Sound Mind**.

The idea that sound can promote healing is far from new: Healers in traditional cultures have always used music as part of their therapeutic tool kit, and the ancient Greeks often assigned a musician along with a physician to those who were ill. Now, modern scientific research has borne out music's healing power: Recent studies have shown that consciously selected music and sound can lower blood pressure, boost immune function, ease pain, and speed learning. In this country alone, more than 5,000 music therapists work in hospitals and clinics, rehab centers, nursing homes, hospices, and elsewhere.

The selection of music on this album was guided by principles of psychoacoustics, the new scientific field that studies the effects of sound on consciousness. It will guide you to a place where healing can occur. The technology that makes this recording unique is the use of beat frequencies to influence brainwaves, allowing you to enter states of consciousness different from your normal waking state. In these states, close to unconsciousness but focused and still retaining connections to thought, beneficial changes can take place.

#### The Music: Disc 1

Track 1: opening meditation from Dr. Weil 6:12

Track 2: A symphony of brainwaves; music based on themes from Mozart, Mahler, Brahms, and Bach, combined with healing sound frequencies:

part 1: Slow dance for healing 13:12

part 2: The deep 34:27

part 3: Integration 12:37

TT: 66:43

#### The Words: Disc 2

A discussion on sound healing from:

Track 1: Dr. Weil, leader of the emerging field of integrative medicine, on healing and sound -- 16:20;

Track 2: Anna Wise, leading authority on brainwaves and healing, on frequency work -- 13:26; and

Track 3: Joshua Leeds, producer and composer, on the making of sound body, sound mind -- 23:12

TT: 52:59

Upaya/Tommy Boy Music, 902 Broadway, NY, NY 10010

When I try to recall how my interest in the healing power of sound began, I remember an exotic night long ago. I was seventeen, spending a year abroad with a traveling school called the International School of America. In December of 1959 my classmates and I were in India. In

Calcutta, on the night of the full moon, another student and I walked to the banks of the Hooghly River where we stumbled upon a small Hindu temple. An old sadhu with a long beard suddenly emerged from the shadows and put his hand on my shoulder. He told us he was the caretaker of the temple. Then he made the most amazing sound I had ever heard. When he finished, he explained that this was the sacred sound AUM, which encompasses all possible sounds in the universe and is a healing vibration. The night was very still and clear, the moonlight radiant on the man's serene face. When I closed my eyes I could still feel the vibration.

Years later, I learned to make that sound myself and derived much enjoyment from it. I recall that scene by the river and my introduction to the concept that sound could heal. From my understanding of neurophysiology, I knew that sound had a direct effect on the brain. Readings in anthropology convinced me of the widespread use of rhythmic sound, especially drumming and chanting, to induce altered states of consciousness. The essential tool of shamans throughout the world is a drum. (In the early part of this century, when authorities of the young Soviet Union attempted to extend central control over tribal peoples of Siberia, they enacted laws making the possession of drums illegal.) Some of the most sophisticated uses of drumming to alter consciousness occur in African religions and their counterparts in the New World, especially Haiti and Brazil, where voodoo flourishes. Participants in these ceremonies dance to batteries of drummers who, by suddenly changing rhythms, cause the dancers to fall to the ground and enter states of spirit possession in which normal physiology is completely changed. Those possessed are completely immune to injury from swords and hot coals and may experience dramatic healing of both mental and physical ailments.

Healing is making whole, restoring a state of perfection and balance that has been lost through illness or injury. Whenever the balance of health is upset, the healing system attempts to restore it, drawing on innumerable mechanisms of reaction, regeneration, and adaptation. Everyone has experienced healing. Anytime you cut your finger, you have a wonderful opportunity to observe the body's healing system at work; soon the injured area will be as good as new. What happens on the surface of your body also happens throughout.

We know less about this potential of the body than we should because conventional medicine has focused so much on disease. Doctors do not collect and study cases of healing, or think about the body's healing system. Yet ordinary people are increasingly interested in this subject. More and more, they are experimenting with health-restoring ideas and techniques that conventional medicine has largely ignored. The popular enthusiasm for alternative medicine has finally begun to influence medical education, research, and practice. For example, I now direct a Program in Integrative Medicine at the University of Arizona, whose aim is to develop new ways of training physicians for the next century. We need doctors who work from the premise that the body can heal itself if given a chance.

There is nothing mystical about healing. It can be wonderful, even awe-inspiring, but it is a natural phenomenon that can be studied by scientific method. My understanding is that the body wants to be healthy and is always trying to restore balance when balance is lost, but that the circumstances of illness or injury can overwhelm its capacity to do so. In such cases, outside help -- treatment -- can be welcome, even lifesaving. It is important to understand the distinction between treatment and healing: treatment comes from outside, while healing comes from within. Treatment facilitates healing.

Standard medicine at the moment is very materialistic. One aspect of its materialism is its reliance on substances -- drugs -- to treat disease. Drugless forms of treatment exist but are more likely to be offered by alternative practitioners than by conventional physicians. Among the many forms of treatment I have studied, some of the most interesting fall within the province of Energy Medicine - the use of forms of energy to affect the body and promote healing. Energy Medicine includes practices like yoga and Qi gong as well as therapeutic touch and other forms of hands-on healing that claim to direct "subtle energies" to the body. It also includes methods that rely on more familiar forms of energy, such as electricity, magnetism, light, and sound.

My own experiences of sound have taught me how powerful an influence it can be. I have been transported by the vibrations of a huge pipe organ played in a cathedral and by the resonance of AUM chanted by hundreds of voices in unison. I observe that some kinds of music make me anxious, while others calm me down; some elicit joy, others sadness, while still others make me want to march off to war.

Here is a simple experiment to convince yourself of the power of sound on emotions and through them on the physical body. The next time you are watching a dramatic video, mute the sound, and note the difference in your level of engagement with the film. In fact, it is often the soundtrack of a movie, more than the visual content, which causes our adrenaline to surge, our hearts to beat faster.

Although I have been well aware of the power of sound to influence our mental and physical states for some time, I did not begin to think about how we might use it in a practical way to promote healing until a few years ago, when I discovered the work of a French physician and psychologist, Alfred Tomatis, born in Nice in 1919. Tomatis theorizes that the ear, far from being a simple sense-receptor for sound, generates sound on its own and controls the development and function of the brain. He points out that hearing begins to function four-and-a-half months before birth, making it the first sense to become operational. Working from his theory, Tomatis invented an original therapy, the Tomatis Method, which uses constructed sounds to stimulate healing. In the Tomatis Method, patients listen to specially filtered tapes of classical music, Gregorian chants, and voices, all of which have been processed by a Tomatis invention called the Electronic Ear. Listening is done for several hours a day in cycles of a week or two each, with time off in between. The purpose is to retrain the ear and through this retraining to influence the brain and then the whole organism.

The Tomatis Method shows great promise in the treatment of learning disabilities, brain injuries, strokes, and a variety of other conditions for which conventional medicine has little to offer. Though the method and its underlying theory are little known in medical circles, I predict that they and related forms of sound healing will soon come into their own. This is a non-invasive, cost-effective, enjoyable, and exemplary form of healing-oriented medicine.

*Sound Body, Sound Mind* also uses classical music that has been specially engineered. It comes from the same philosophical perspective as the Tomatis Method but uses somewhat different techniques. A great deal of thought and effort has gone into it in order to produce a recording that will help you access the healing potential within.

The selection of music on this album was guided by principles of psychoacoustics, the new scientific field that studies the effects of sound on consciousness. This music will make you feel



good -- secure and happy -- creating an emotional climate in which you can relax deeply. Then it will guide you to a place where healing can occur. The technology that makes this recording unique is the use of beat frequencies to influence brainwaves, allowing you to enter states of consciousness different from your normal waking state. In these states, close to unconsciousness but focused and still retaining connections to thought, beneficial changes can take place.

Just by itself, such deep relaxation is healing. Stress and deep-seated tension are primary or aggravating causes of most cases of illness and frequently obstruct the body's effort to return to a state of health. In addition, when you are deeply relaxed, the positive emotions generated by the music can pass into your body, helping it along the road to recovery. Even more important is the effect on the brainwave states that this music, with its embedded frequencies, can generate. Based on my knowledge of the research in brainwave biofeedback that has occurred over the past thirty years, I believe that we can now identify patterns of brain activity and use technology to help people experience these patterns to further their growth and development, including their natural potential for healing.

In the many cases of healing I have studied, I often have seen that changes in consciousness precede or accompany physical healing, leading me to think that therapeutic efforts should be directed to the mind as well as to the body. It's not a matter of wishing oneself well or thinking positive thoughts; rather I think the problem is to keep the mind from interfering with the healing system. A man whose recovery from lymphoma reported in Spontaneous Healing, put it this way: "Most of all, I've learned that you are your own physician and have to heal yourself. The trick is to get your ego out of the way, get your concepts out of the way, and just let the body heal itself. It knows how to do it." This recording is designed to help you do just that.

I suggest that you listen to it in a quiet room, free from distractions. The effect of the beat frequencies will be enhanced if you can listen with a headset. You may become aware of some of the beats during the middle section ("the deep") of the recording, but for the most part, they will be inaudible because they are concealed within the music. Whether you can hear them or not, they will be affecting your nervous system.

Loosen any tight clothing, get comfortable, and begin relaxing by taking a few deep breaths. Think about your intention in listening to *Sound Body, Sound Mind*. What is it that you want? When the music begins, hold this intention in your consciousness for a moment, Then focus your attention on the music and let it do all the work. The sounds will guide you to the state of awareness in which you let the body heal itself.

**About Andrew Weil.** Dr. Andrew Weil is the leader in the new field of Integrative Medicine, which combines the best ideas and practices of conventional and alternative medicine. A graduate of Harvard Medical School, he is Director of the Program in Integrative Medicine at the University of Arizona, the first program to train physicians in this way at an American medical school. He is also the founder of the Center for Integrative Medicine in Tucson, which is advancing the field worldwide. Dr. Weil is well known as an expert in natural medicine, mind-body interactions, and medical botany, as well as the author of the best-selling books Spontaneous Healing and 8 Weeks to Optimum Health. The public and critics alike enthusiastically received his two recent Public Television specials of the same names. Website: <http://www.drweil.com>

Program In Integrative Medicine, University of Arizona Health Sciences Center, Tucson, AZ

Website: [http://www.ahsc.arizona.edu/integrative\\_medicine](http://www.ahsc.arizona.edu/integrative_medicine)

Write: Center for Integrative Medicine, 1760 N. River Road, Suite 119, Tucson, AZ 85718

Self Healing Newsletter: (800) 523-3296

## THE SYMPHONY OF BRAINWAVES

Anna Wise

As we approach the third millennium, we bring with us a multitude of resources to further our health and well being. Medical technology has improved beyond recognition, giving us the external tools of surgery and medicine. Paradoxically, the newest frontier is one that has always been available within ourselves: the healing space inside, where the body can call upon its natural impulse to return to stasis and equilibrium. People from all cultures and spiritual traditions have long used prayer and meditation to access deep inner healing states. Now a marriage of meditation and technology, inner and outer, has provided us with new ways to understand and enter deeper and higher states of consciousness. Using an electroencephalograph (EEG) called the Mind Mirror, I have studied these states of consciousness for the past two decades, observing the brainwave patterns that underlie them.

The state of consciousness you are in at any given time is reflected by your brainwave pattern. Your broad range of mental states, from anxiety and stress, to deep relaxation and peace, to attentive, creative, high performance, are all mirrored by the electrical impulses of your brain. *Sound Body, Sound Mind* uses an innovative new technology to create beat frequencies: background sounds resonating at the same speed as your brainwaves, which are interwoven within the music. As you listen and allow yourself to relax, the intricate combination of sounds gently encourages your mind to follow it into states of deep psycho-physiological relaxation that provide the best environment for the body and the mind to heal themselves.

The speed of your brainwaves is called the "frequency" and is measured in cycles per second ("hertz" or "Hz"). The frequency determines the specific category of brainwave you are producing, the four categories being beta, alpha, theta, and delta. The particular configuration of these four categories determines your mental state at any given time. Knowing what part each category of brainwave plays within the spectrum of your mental states will help you understand the transformations you may experience in your state of consciousness as you listen to *Sound Body, Sound Mind*.

Beta Brainwaves are the fastest frequencies, ranging from 38 Hz down to 15 Hz. This is the state of consciousness in which you spend most of your waking day. Beta underlies your conscious thought processes, encompassing high anxiety and panic, the list-making, critiquing, and continual commentating of the overactive mind, as well as creative, clear, alert, attentive thinking.

Alpha Brainwaves are the mid-range frequencies, encompassing 14 Hz to 9 Hz. This is your daydreaming mind, your relaxed, detached awareness, and your most vivid, lucid imagery. Alpha also provides the link or bridge between the conscious mind of beta and the subconscious and unconscious minds of theta and delta, allowing you to be aware of what is happening in your deepest dream and meditation states.

Theta Brainwaves are the subconscious mind. Ranging from 8 to 4 Hz, they are present in dreaming sleep as well as providing the profundity of deep meditation states. Theta is the creative storehouse where you may often find your spiritual link. Theta provides the peak in peak experience. When we want to heal our bodies or minds, theta is the place where that healing most readily enters our being and makes a deep, penetrating impact.

Delta Brainwaves are the unconscious mind, the lowest and slowest of brainwaves ranging from 4 to 0.5 Hz. Delta is still present when all the other frequencies turn off in sleep, giving you deep restorative stages of rest. When it is present in combination with other brainwaves, delta acts as a kind of "radar" or unconscious scanning device that underlies our intuition, our empathy, and our instinctual action. It may also offer that true sense of inner knowing that provides deep levels of psychic awareness.

The electrical frequencies produced by the brain influence our mental states, providing the appropriate foundation for the content of our minds. In order to encourage the best combination of these frequencies for healing, the sound technology used in *Sound Body, Sound Mind* creates binaural beat frequencies through a sine wave generator. For example, by generating sound at 300 cycles per second (Hz) in one ear and 306 Hz in the other ear, the brain receives the experience of the difference between the two -- or 6 Hz -- which is a mid-range theta.

Because it is the specific interrelationship of frequencies that determines our state of consciousness, I use a complex combination of different binaural beat frequencies at once, in four different octaves, to encourage the mind's shift into the desired state of consciousness. This combination of frequencies changes several times a minute, both to prevent habituation (the brain getting used to hearing the same sound over and over again, and therefore ignoring it) and to gently help activate the appropriate blend.

The architecture of this musical piece is constructed to be as effective as psychoacoustics allows. First, I composed an intricate "frequency score" to underlie, structure and guide the piece to the appropriate state of consciousness. The music was then composed and crafted to align with this frequency score. Finally, we carefully interwove the frequencies and the music to create the end result of *Sound Body, Sound Mind*.

The frequencies within the music begin by meeting you in a normal waking state. They gently guide you through the different stages of brainwave activation, down inside yourself into what we lovingly call "the deep," a 25-minute period of theta and delta with just enough alpha to keep a gentle link to the conscious mind. The music and frequencies provide a safe and secure space of inner rest and subconscious activation. In this deeply relaxed place, your body can allow profound restorative and regenerative healing. In the last 15 minutes of the piece, you are gently reawakened with the increase of alpha and beta frequencies to the eventual stimulation of the "Awakened Mind" brainwave pattern. The Awakened Mind is characterized by the presence of all four brainwave categories in the right proportions. These frequencies underlie the high performance states of artists, musicians, inventors, top business executives and ALL people of extraordinary accomplishment. They are also found in people in higher spiritual states such as swamis, yogis, healers and spiritual teachers, regardless of theology, philosophy, and culture or meditation technique.

This music may be used to encourage any kind of healing: physical, mental, emotional or spiritual. The healing you are working on may be specific, such as a particular illness or condition, or generic, such as a desire for increased energy or emotional or spiritual clarity. Although no preparation is necessary for the use of this music, it is advisable to create an open space of time and a safe, secure environment in which to listen, free from interruptions and disturbances.

Turn the phone off, lock the door, put the cat out, turn off any bright lights, recline in a comfortable position, and allow yourself to relax. As you begin to listen, you may wish to set the intention for healing by visualizing and "sensualizing," experiencing with as many senses as possible, that which you want healed.

Allow the sound to carry you very deep inside yourself where you can float in a state of regeneration, rest and peace. If you start to emerge from your state of deep relaxation before the end of this section, simply focus on the music once again and allow yourself to be carried back down. Notice how you feel inside yourself when you are at your most relaxed and begin to recreate those feelings inside. If you "disappear" or lose conscious awareness during "the deep," don't worry. The healing state can continue inside until you are reawakened at the end.

As the music arouses you toward the end of the piece, allow yourself once again to "sensualize" the healing, this time seeing it as if it had already taken place. Visualize [imagine] yourself as already healed. Look into the future and imagine a situation where you would normally have been affected or limited by the illness, and experience yourself as being completely well and fully functioning. Allow yourself to reawaken, feeling alert, refreshed and present. Take several deep breaths and stretch fully before sitting or standing and continuing your day.

**About Anna Wise:** Anna Wise is the leading authority on the use of the Mind Mirror EEG to measure and train brainwaves for high-performance and meditative states; she has taught biofeedback meditation and brainwave training for the past twenty Years and has led workshops and seminars throughout the United States, in Europe, Asia, and South America. She is author of The High-Performance Mind - Mastering Brainwaves for Insight, Healing, and Creativity, and has created cassette tapes of the same name for brainwave development and mastery using guided meditations, music and frequencies. Anna is a member of the Academy of Certified Neurotherapists. She makes her home in Marin County, California with her son John.

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## **THE MAKING OF SOUND BODY, SOUND MIND**

Joshua Leeds

My journey into the exciting field of psychoacoustics began in 1986. I was already a composer and record producer when I discovered the work of Dr. Alfred Tomatis, the "Einstein of the Ear." Tomatis, a French Ear, Nose and Throat surgeon, perceived sound as a nutrient for the nervous

system. In its subtlety, sound touches us far more than we realize. Approaching the world primarily through sight, most of us are unaware of sound's significance.

Applied Music and Sound Technologies is a production company dedicated to the use of music and sound for the enhancement of health, education, and productivity. My partner, Richard Lawrence, is an acclaimed violinist, composer and arranger. Together we have worked extensively in the areas of music and mental productivity. Though we have been cautious in approaching the use of sonics for health, it was with great pleasure that we accepted the role of co-producers for *Sound Body, Sound Mind*, under the aegis of Dr. Andrew Weil.

Dr. Weil has been instrumental in bringing holistic remedies to the attention of the American public. So we were not surprised when he expanded his attention to music and sound for immune system enhancement. As the three of us discussed various psychoacoustic approaches, we agreed that the inclusion of binaural beat frequencies would significantly boost the potency of our sonic tool for healing. At that point, Anna Wise, an internationally respected brainwave researcher, author, and teacher was invited to join our team.

Susan Piver, our visionary executive producer from Upaya, instructed us to create an album "...where people feel safe." While our perceptions of safety may differ, it seems that extraordinarily beautiful music cuts across all boundaries. We decided the sonic texture of this album must intimate the softest, sweetest feather bed.

To Provide these dulcet sounds, we gathered The Archangelos Chamber Ensemble. Archangelos consists of a string quintet, woodwinds, and various other instruments as needed. Our team complete, we began an intensive ten-week journey into *Sound Body, Mind: Music for Healing*.

Believing that sound is a "Carrier wave" for our intention, we paid great attention to the energy with which this music was performed and produced. We let the title, *Sound Body, Sound Mind: Music for Healing*, set our direction: to create a sonic environment conducive to the listener's individual healing.

Initially, Dr. Weil and Anna Wise determined that theta and delta brain-wave states would provide optimal levels of consciousness for self-healing work. With that in mind, our team began an unparalleled exploration into the sonic creation of these states. Though Richard and I had created other albums that include the binaural effect, we soon discovered Anna's work in this arena to be uniquely advanced. She uses frequency pulses to tickle and naturally coax brainwaves into specific patterns known as the High Performance Mind.

Most psychoacoustically-designed production creates the music first and inserts sub-audio frequencies underneath. However, as Richard and I became aware of Anna's highly intricate frequency work, we realized that we had to compose a score -- similar to film cues -- to match music with Anna's distinct progression of brainwave states. At this point, we realized we were breaking ground. As far as we know, brainwave states have never been orchestrated as a symphony!

For the first step in this process, Anna created a ten-foot long scroll. In a symbolic language all her own, she designed an intricate blueprint which changed in its matrix every 15 seconds. After

learning how to decipher this intricate schematic of brainwave-inducing frequencies, Richard and I were left bewildered as to how we could possibly write musical cues to enhance this work. Even with knowledge of specific timbres, tempos, meters, harmonic structures, and various psychoacoustic techniques, neither of us was sure how to proceed. Our challenge became: How do we create the loveliest of sounds, designed to safely escort the listener into deep sub-conscious regions of the brain, yet keep it simple and unobtrusive? Even more puzzling was how to sonically integrate the sound of Anna's electronic binaural frequencies with the acoustic violins, clarinets, and French horns. Our goal became the balance between these different elements.

We decided to find classical themes that matched the four different brainwave states. After an exhaustive search, Anna, Richard, and I selected Mozart for beta, Mahler for alpha, Bach for theta/delta and Brahms for the Awakened Mind [the actual pieces are ...:beta -- *Wolfgang Amadeus Mozart, Adagio, Concerto no. 3, G major, K216.* alpha -- *Gustav Mahler, Adagietto, Symphony no. 5 in c sharp minor.* theta/delta -- *Johann Sebastian Bach, adagio, Concerto no. 2 for violin and strings in E major.* awakened mind -- *Johannes Brahms, andante, Concerto for violin, cello and orchestra in a minor*]. Our choices were based on melodic and harmonic structures, and the adaptability of each theme to various re-arrangements. Once our themes were selected, Richard, Anna, and I began delineating sections, creating sequences that would facilitate brainwave movement. In essence, Richard and I were constructing a soundtrack to Anna's blueprint

When writing for psychoacoustics, the intended effect must determine many factors that were not part of the composers' considerations hundreds of years ago. For example, if the music is too complex, brainwaves move to alpha and beta in order to receive and analyze the sonic information. For our purposes, this would defeat the intention of bringing the listener to a deeper sub-conscious state. Consequently, we often change original tempo and meter, rearrange sections, and "thin out" the scores to create a more easeful listening experience.

The middle of the piece has become known as "the deep." In this section, brainwaves are brought to their lowest and slowest. It is here that the strongest healing effects may be derived. A totally different treatment was necessary here because the sounds of Anna's frequencies are far more present than in the other areas of the recording. Consequently, while the front and back sections of *Sound Body* contain Western acoustic orchestral instruments, the timbres for "the deep" are created with Tibetan bowls and bells. These tones seem to be the closest to those of the electronic sine waves. For drone effects, we used other exotic instruments, such as the Indian tamboura, unitar - a derivation of the sitar - and ocarinas.

We also employ a small number of electronic sounds on *Sound Body*. This has been a surprising and hesitant choice for Richard and me. Because we believe so strongly in Dr. Tomatis' "sound as a nutrient" concept, we feel a great impact of sound comes from the natural harmonics that are often lost in electronic duplication. Unless electronics are either therapeutically relevant or creatively congruent, acoustic sounds are always the first choice. However, in some instances with the *Sound Body* project, we found that we could not acoustically achieve certain synthesized sound textures. Also, Western instruments are not designed for the level of slow playing that we need for "the deep." We painfully discovered that violinists are not fond of two-minute long single tones necessary for Delta brainwave states.

We concluded our sonic journey with a waltz, an adaptation of both the Brahms and Mozart themes. The 3/4 time signature of this piece is reminiscent of a universal breathing reaction of intake, outtake, and rest -- appropriate reminders for our healing intentions, expertly woven by Richard Lawrence. Our desire was to have the listener -- literally or figuratively -- dance out of the meditation.

Anna's brainwave training manifested itself serendipitously in Andrew's presentation. While recording his voice-over, we hooked him up to the Mind Mirror, an EEG biofeedback device that instantaneously shows the amplitude and frequencies of each of the four brainwave states. With this as a visual tool, Anna guided him into states most conducive to our shared goal. In recording Andrew, we theorized that if he spoke from the desired state we intend for the listener, it would facilitate the listener's moving from beta into the slower brainwave states. Anna moved him into an alpha/theta state. As he barely opened his eyes to read the script, his voice sounded completely different from our previous experiences. His voice fully reflected his deep relaxed state.

It is fitting that on the eve of the 21st century, we combine classic art with high technology. The timeless beauty of Mozart, Mahler, Bach, and Brahms has been humbly adapted to create an intentional effect. Those of us on the *Sound Body* team have experienced many divine moments in bringing this project to fruition. The currents of sound have the ability to carry us far in and far out. We can ride on it, in it, and through it. We believe sound -- like a fiber optic -- carries the vibration of the composers, producers, designers, musicians, and engineers. We have lovingly produced *Sound Body*, *Sound Mind* with this awareness. We believe sound can take each of us to that safe place where everything is in balance, in perfect right order.

**About Joshua Leeds:** Joshua Leeds is composer, producer, and writer. He is author of [Sonic Alchemy](#) (InnerSong Press) and the forthcoming book, [Sound Effects: Using Music and Sound for Health and Enhancement](#). His music credits span TV, film, stage and radio. Joshua is co-founder of Applied Music and Sound. He presents at seminars and conferences on the evolving field of psychoacoustics.

**About Richard Lawrence:** Richard Lawrence, a conservatory-trained violinist, composer, and teacher from Scotland, has been concertmaster of symphony orchestras in America, Canada and Great Britain. He is known for his warm, lyrical style and has produced numerous recordings found on the Sonarc label. Richard is the first violinist of Archangelos. Richard is a co-founder of Applied Music and Sound Technologies, specializing in the creation of audio products for enhanced health, education, and productivity. Recent releases include [8 Meditations for Optimum Health](#) with Andrew Weil, MD, [Masterworks](#), and the [Thinking Music Series](#). Website: <http://www.appliedmusic.com>  
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