

AVS

Auditory / Visual Stimulation

Vol. 5, #1
Fall '05

Includes:

Zoe Seven is Back from the Void

An Interview with Dr. Ruth Olmstead

S.A.D. by David Siever

Introducing the Electric Lodestone

& More!

"Your Source for Current Light & Sound Information"

Free
Courtesy of
Mindmachines.com

AVS Journal Vol. 5, No. 1 Fall '05

Table of Contents

Of Scientists and Shamans: Mind, Molecules & Magic 2

By Zoe Seven

An Interview with Ruth Olmstead, Ph.D. 8

Psychologist with the Associates in Behavioral Counseling of Sunrise, Florida

Pains, Pills and Magnets 12

By Rick Williams, CEO of Rybett Controls, Inc.

Using Tinted Blue Overlays When Stimulating with White Light 21

By David Siever

The Psytopian Mystery 22

The Application of AVE for the treatment of Seasonal Affective Disorder 24

By David Siever, CEO of MindAlive, Inc.

Product Review: The Gold Plated MegaChi Pendant 30

Disclaimer: All information contained in this AVS Journal is copyrighted. All articles are used with permission. No duplication of this journal, in part or in whole, may be made without prior written consent of the respective author(s). Michael Landgraf, Publisher of the AVS Journal, assumes no responsibility, whether financially or otherwise, for any misleading or incorrect information contained within this journal. Questions? Visit: AVSJOURNAL.com.

Cover design: created entirely by Christopher Oliver. Mr. Oliver is known in the AVS community for his talent in designing AVS sessions and musical compositions (Space Journey, L/S Voyager and Synthesizers From Outer Space). Christopher's latest work "AV3X: Digital Meditation" on DVD is the first DVD to utilize light and sound. You can contact Christopher at: www.AV3X.com.

Proud sponsor of the AVS Journal

Shop online with the experts

Over 15 Years of AVS retail experience

GREAT PRICES

BEST SERVICE

FREE shipping to USA



MindMachines.com

**Offering a huge selection of gear including
Mind-Gear, Mindplace, MindAlive, and more!
Light and Sound Instruments and Related Accessories**

We know our products.

Complete sales, instruction, and information.

www.MindMachines.com

Of Scientists and Shamans: Mind, Molecules & Magic

By Zoe Seven

In early 2002 I was invited to the Brazilian Amazon to lecture at an experiential ayahuasca healing retreat led by Silvia Polivoy, a transpersonal psychologist from Argentina (Ayahuasca-Healing.net). Being a consciousness researcher and writer and just having published the first book of a science fiction trilogy dealing with altered states of consciousness – *Into The Void, Exploring Consciousness, Hyperspace & Beyond* – I eagerly accepted the invitation. Now years later and steaming from all my experiences with the supernatural in Brazil, I have released the second instalment of the trilogy: *Back From The Void – A Modern-day Shaman's Odyssey Continues*.

Blurring the lines between reality and fantasy, the trilogy revolves around the main character “Joey” (my real name). Joey is a fantasy-prone individual who uses psychoactive compounds and mind-modifying technologies to enter into hyperdimensional worlds—worlds that *may* only exist in his mind. He does this because he’s bent upon uncovering the secrets of existence itself. While engaged in these explorations, Joey comes to meet “himself” from the future: Zoe Seven. If you’ve read *Into The Void*, you may recall that Zoe told Joey that he had been guiding him “from the future” and creating life situations so that Joey would eventually embody “him” in this time line. Now, in the second instalment of the trilogy, Joey crosses over the boundary of his own book’s psychological framework to find himself “here,” back from the Void in the real world, as Zoe Seven. Considering this, I often wondered if Joey created Zoe Seven, or if Zoe Seven actually created Joey.

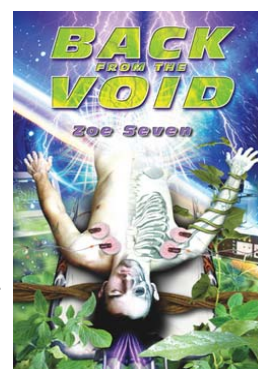
As a consciousness researcher and writer, in my new book I wanted to play with the reader’s perception of reality. One of the ways I accomplished this is by blurring the boundary between what the reader may consider to be reality and fantasy. Hence I had to find elements for the story from the “real world,” such as contemporary news items of world events that seem fantastic (as in not real), such as so-called “conspiracy theories” of late and combine them with the storyline of *Back From The Void*. This enables the reader’s awareness to “enter” into Zoe Seven’s reality – his book – and similarly, enables the book’s reality to “leap of the pages” and into the reader’s reality.

As far as my infamous experiments combining psychoactive compounds and neuro technologies are concerned, I was particularly curious about the interaction of two particular molecules *together* in the human’s brain: salvinorin A and dimethyltryptamine (DMT). These are the active ingredients in the *Salvia divinorum* sublingual tincture and ayahuasca potions. So as to maximize the effects of these plants, I underwent sessions of light and sound hemispheric synchronization prior to intake. This alchemical fusion, if you will, enabled my consciousness to enter into a never-before-experienced altered mind state I have dubbed the “Zenith7 state.” The effects of this combination are detailed in my new book. But based on my experiences with it, I must conclude that “Zenith 7” may be more than simply a new mind state, as what I experienced opened a portal of sorts to a “psychological space” where magic, real magic, is able to be integrated with reality.

This combination of plants had never been attempted before. Curious about this, I inquired about this particularity to various ethnobotanists, anthropologists, chemists and shamans I know. No one had heard of anyone doing what I was attempting to. Some of my colleagues reasoned that this was probably due to the fact that the plant species we're discussing are from different geographical regions. Obviously, the only way I could find out if this was a viable shamanic admixture was to undergo the experience myself. What resulted from this however, was not the typical psychedelic experience. What's more and stemming from my experiences with Brazilian shamanism, I have come to understand that plants have spirits similar to humans having a soul. And these plant spirits can be *communicated* with while engaged in the altered states of consciousness the plants produce. Which is what shamans have been claiming for millennia: that there is a spirit world that can be interacted with.

From my new book, *Back From The Void*:

At one point during a plant ceremony, my consciousness “tuned into something” that was attempting to communicate with me. I engaged it for a few moments by *feeling* its essence. I was not prejudging whether this “thing” was either “good” or “evil;” I only wanted to “catch its vibe.” After a while, I felt an energy emanating from this mysterious thing, and I received a communication in the form of a “packet of data” or ROTE. [Robert Monroe, the author of several books on the subject of the out-of-body experience, including the classic *Journeys Out of the Body*, uses the term as an acronym for Related Organized Thought Energy—which is transmitted telepathically among beings engaged in out-of-body states. ROTE is described as “a mental book or recording, complete with emotional and sensory patterns.”] The thing was asking me for permission to enter into the ceremonial circle. Which seemed odd. I mean, why didn't it just come in without asking permission? If the thing or entity or whatever it was hadn't tried to engage me in communication, I would have never even noticed it. And then it could have come in without any problem.



While I was receiving this information, I was sitting up and appeared to be talking to myself. Silvia interrupted me. She said that she did not want me to speak too loud, as it might disturb the seminar participants.

“Zoe what’s going on?” she asked. “You’re getting a bit loud.”

“I am communicating with a presence, Silvia. An entity,” I countered. Then I continued, “Hmm... I am getting that. No, wait a moment. That, nope... Oh, it’s a shaman! His name is Don Navarro,” I responded in an excited state.

“Don Navarro?” Silvia asked bewildered, “How do you know this Zoe?”

I replied, “What do you mean how do I know this? He told me. How else would I know?” I shrugged.

But I had been wrong. As I continued to get impressions from this invisible source, I realized that what was actually taking place is that I was *not* communicating with “Don Navarro” himself, but rather with the *healing energy* he used to heal with, back when he was incarnated and worked with clients. In other words, this shaman’s “magic” seemingly had a consciousness of its own, and its essence was the embodiment of healing. Hence, it wanted to come into the healing space of the ceremonial circle.

Apparently the energy wanted permission to enter into this space to aid those who had *called* upon Nature for healing. Although Silvia and I were both facilitating the ceremony, the energy—having been previously used by a male, Don Navarro—was asking permission from me rather than Silvia. I had a particular vibe, a “male resonance polarity,” for lack of a better term. Therefore this energy was attracted to me like a magnet.

In hindsight, the energy was obviously both intelligent and *ethical*, since it requested permission before doing anything. The energy wasn’t going to intrude on the group’s ceremonial circle anymore than I would walk uninvited into a stranger’s home. I respected such an attitude, and acknowledged it as well. But it really should not come as a surprise given the fact that we are talking about a healing energy that is intelligent, are we not? So I let it in [...]

Through my investigations, I discovered four major ways in which psychoactive plants can be used. The first way is purely for hedonistic purposes; while there is nothing wrong with this, it isn’t my own focus and hence I won’t be discussing it further.

A second way focuses on psychological analysis. One can take a medicine that produces a physiological effect that heals or reduces pain on the physical level. I could take an aspirin to stop a headache. In the same way, psychoactive medicines act in the psychological realm. Some antidepressants may be of help to those who are chronically down in the dumps. And entheogens can be useful for a person to reflect on his or her *own* thoughts regarding any given topic. Such an approach is a form of self-guided psychotherapy. And from the perspective of the entheogen (psychoactive plant) consumed, it would be passive rather than interactive. It would be one’s own mind interacting with one’s own thoughts.

Yet a third manner of working with psychoactive plants seems to be driven by an interaction with the consciousness of the plant species consumed. These voyages are interactive, as they appear to be communications between two types of consciousnesses: the human mind/spirit and the plant mind/spirit. A plant’s biological form is much the same as a human biological form. Each of them has a “limited” consciousness, due to being anchored in physicality.

The soul *uses* the physical form to exist in the physical realm. And finally, the fourth sort of occurrence that has happened in my research is when I felt that I was

actually interacting with the intelligence which *created* both my own soul and the plant spirits.

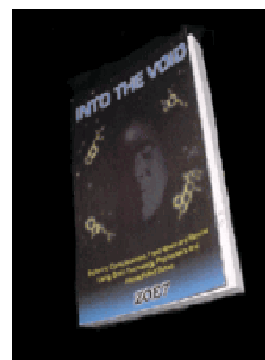
There is a big difference between these four sorts of inner voyages. Can an automobile tell one how its automatic transmission works? Of course not, since cars can't talk. And even if an automobile *could* talk, it would not be likely to be able to tell you how its transmission worked anymore than most human beings could explain how their lymphatic system works, right? To find out about how this biological structure works, one would have to research it or see a physician or scientist who has studied the human body. In fact, it would be better if the actual designers of the human body could somehow be contacted, correct?

Similarly, a physical specimen of a psychoactive plant probably couldn't answer questions about what neuroreceptors its chemistry binds to in the human brain. Its consciousness is based in 2nd density life forms, and as such it is largely limited to the realm of physical survival. But it seems as though a plant's *spirit* can open a channel of communication with its creator, and/or enable the user to connect with an informational field. Through their use of entheogenic plants, shamans claim to be able to communicate with "the source of all knowledge."

Shamans have also claimed throughout millennia that they are able to leave their physical vehicle behind by disengaging their spirit or soul from it. Back when I began to write my trilogy, I became curious about shamans. I wanted to understand what makes such individuals tick. And perhaps taking my role of investigator to the extreme, I delved into the mind of the shaman by "becoming" one. For me, there was really no other way of writing about the subject. These types of transpersonal experiences are very real—at least for those who experience them. In my first book, I share a few experiments in consciousness where I engaged the out-of-body state. Here's a representative passage which describes a different combination than plants and technology. It is the dissociative anesthetic called ketamine together with hemi-sync frequencies. Ketamine was used by doctor John C. Lilly, the inventor of the flotation/isolation tank in a series of experiments in consciousness which he wrote in his books; most notably *Center of the Cyclone*. Lilly's experiments were loosely portrayed in the film *Altered States*.

From *Into The Void*:

After putting on my headphones and as the pleasing hemi-sync tones were beginning to synchronize both of my brain hemispheres, I made myself comfortable on my home office recliner. Next, I proceeded to inject the awaiting dose of ketamine into my left thigh. I then began to describe out loud a brief outline of my experiment into an overhead microphone. For I had started to try and record my explorations in real-time. (But this didn't workout very well, for all of the body's muscles become paralyzed when using this substance. However, this is not the case with LSD.)



Then, for a very brief period of time—until the pharmacological effects of ketamine began—I preprogrammed my coming voyage with the following command: “Go to the night of December 25, 1996...which I repeated as many times as I could. Within two minutes of injection, the nauseating effects of ketamine began coming over me. I felt my eyes roll back and my body started to become paralyzed, while my mouth remained almost halfway open.

In seconds my sense of being began to spin round and round, and continued in a circular motion until it seemed as if I was going to spin out of my ‘axis’, out of my normal state of mind, out of control. At this point the REM binaural frequencies became my only lifeline to my self-conscious awareness; and within moments, I became completely engulfed by a ravishing centrifugal force that eventually culminated by forcefully and rather violently ripping me out of my body and shooting me into hyperspace.

I raced through the dark tunnel at an indescribable speed, faster than what I had traveled in the past—at least this was my sense. I also felt an overwhelming raw energetic force engulf my consciousness. This in turn made me feel like a comet or a shooting star. The speed was staggering, and, as usual, I could not close my eyes. A few moments later, hues of materiality began to become discernible within the ethereal-like mist that I was traveling through. My speed gradually began slowing down, and in a few more seconds, I glided into a physical reality urban scene. I found myself floating above a number of houses and began descending towards a large dark-colored mansion. Although it was nighttime, the entire area was somewhat illuminated from the Christmas lighting that adorned the town’s neighborhood homes, which made it possible for me to see.

As my non-physical body went through the roof, everything went black, but within one second or so I was hovering above a large living room area. Although it was dark, I had a sense of grayish night vision. While I was experiencing all of this I had the sensation of being underwater, for I had no weight and felt no gravity to pull me down. This caused me to struggle up in the air a bit. For I was trying to reach the floor and move horizontally—the way one normally walks—as opposed to the ceiling-level floating I was experiencing.

The achieving of this was imperative to me, for I wanted to have as good a perspective of my surroundings as possible. From what I had gathered so far, the place I now found myself at seemed to be a two or three story house. After horizontally floating away from the carpeted living room, I immediately came to a large wooden floor hallway that had a stairway going up. I did see at least one floor rest. My problem was that I had no idea where the murdered child’s room was, or whether she and her parents were even home yet. Because you see, there was no way of me telling what time of night it was.

So I decided to check upstairs and see if the bedrooms were there. As soon as I had this thought, I instantaneously found myself in a small dark hallway, which took me into an open area. At this point I gave myself the mental command to start

remembering details about what I was encountering in the house while looking for the bedrooms, for I knew that I only had but a few minutes in this out-of-body state.

One of the things I clearly remember seeing was an American Indian-style motif artwork that hung on one of the hallway's walls. I also remember seeing a fireplace on an upper floor, which struck me as odd, because at least here in Florida—where I live—all fireplaces are on the ground floor. Another thing I remember seeing was a room that had a very impressive and expensive-looking bar, completely leather bound, stools and all. It also boasted a large number of liquor bottles. Along with this there was a large arcade style video game on the side of the bar.

However, I never got the opportunity to see what type of game it was, for while in the process of doing all of this, I started to feel like a thief in the night, intruding on someone else's home. For I was doing this without the homeowner's knowledge or consent. But my purpose was to see how the murdered had taken place and who had done it. So I felt that my non-physical prowling was at least justifiable in that sense. While in this non-physical 'phantom state,' if you will, something incredible dawned on me: The moment I see how this child was murdered, and who did it, I will become a witness in an ongoing murder investigation! Instantly I found myself back in my body, lying on my home office recliner. The binaural frequencies had stopped, and the CD player was on idle. And although I still felt kind of groggy, I did my usual audiotape recording of the exploration.

Most scientists claim that studies about the human mind and its abilities are still in their infancy. Perhaps out-of-body experiences and other psychedelic states, natural and drug/ technology induced, offer glimpses of the innate abilities of the human psyche. I have always been a curious individual. And given this curiosity, I took it upon myself to investigate facets of my own psyche. Based on these investigations I must conclude that the human mind *has* paranormal abilities, which may be tapped into by certain practices. In my books, *Into The Void* and *Back From The Void* I share some these personal techniques.

I invite you to delve into your own psychological landscape by way of plants, potions and/or mind machines and see what is there for you. You may just be surprised at what you find “in there.”

Zoe Seven can be reached through www.zoe7.com. To purchase *Back From the Void* please visit: www.mindmachines.com.



Take A Trip On The "Meditation Superhighway™"

AV3X® Digital Meditation® offers scientifically proven and extremely powerful technology to help you relax deeply:

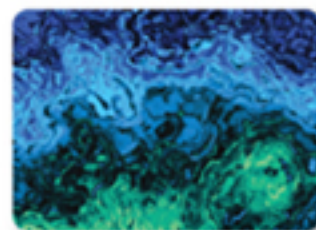
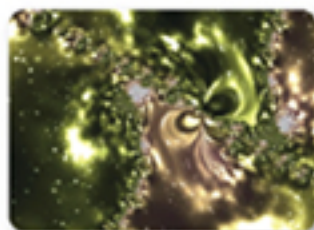
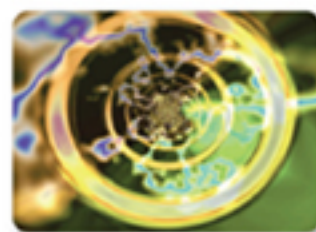
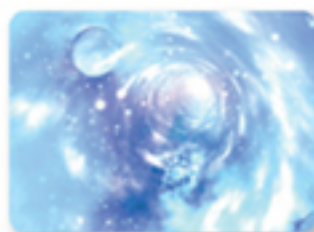
AV3X uses audio-visual Alpha/Theta AVS brainwave stimulation, immersive visuals of ineffable artistic beauty, and ethereal soundscapes carefully designed to guide you into deeper states of consciousness without conscious effort. Now anyone can have a deep meditation "ZEN MONK" experience using an ordinary TV and DVD player. Take your mind into a DEEPLY RELAXING mind state without ANY of the hard work, training, or effort! That's right, AV3X Digital Meditation technology will guide your mind into deep Altered States.



WHAT CAN AV3X DIGITAL MEDITATION DO FOR YOU?

How would you like to...

- *Meditate and experience deep relaxation like you've never dreamed possible
- *Get a great night's sleep when you watch AV3X before bedtime
- *Use your TV set as your own personal mind spa.
- *Tune out the world, shed your stress and go on an inner journey of bliss.



Christopher Oliver - The Creator

469.644.6447 • info@av3x.com

www.AV3X.com • www.DigitalMeditation.com

An Interview with Ruth Olmstead, Ph.D.

Psychologist with the Associates in Behavioral Counseling of Sunrise, Florida

Background: I have been fascinated with light/sound technology since experiencing its benefits about 16 years ago. Since then I have obtained a PhD in psychology in order to conduct research and publish studies using this technology, sometimes in conjunction with other therapies, to treat the symptoms of a variety of disorders. My main area of interest is the treatment of individuals diagnosed with learning disabilities (LD) and attentional disorders. I find the notion of medicating children, while not rehabilitating their cognitive and academic weaknesses, rather disturbing. Currently, I work in a large, family practice (Associates in Behavioral Counseling) in Sunrise Florida, and specialize in the treatment of children diagnosed with a variety of disorders, including anxiety, depression, attention-deficit/hyperactivity disorder (ADHD), Asperger's disorder, and learning disabilities. Our practice uses a multi-faceted approach in the treatment of LD, which involves academic and intelligence testing, parent instruction, behavior modification, and AVS treatment for the enhancement of cognitive abilities. I write my own AVS programs based on years of experience and testing, and currently have software in the Synaptic Stimulus Trainer.



I can be reached at Associates in Behavioral Counseling by phoning (954) 742-8400 or emailing druth@mail.abcpysch.com.

When did you personally start using light and sound stimulation, what instrument did you use, and what were your first thoughts about applying it to learning disabled children?

“I started using AVS 16 years ago for personal use to address my own diagnosed attention deficit disorder (ADD). At that time I bought the DAVID 1 by Comptronic Devices. Some of the most immediate changes I noticed after using AVS was that I had become much more focused and able to multi-task more easily without being distracted. After experimenting a few years with this and other devices, I decided to pursue a higher degree in psychology, and specifically address the symptoms of attentional disorders, learning disorders, and cognitive enhancement. I knew too many parents who had their children on medication, and who were very

concerned about the side effects of neurostimulants. Children with specific learning disorders were still needing significant remediation and tutoring, as the medications were doing little to assist with cognitive enhancement. A recent study that I conducted with 30 children diagnosed with LD was published in the Journal of Neurotherapy (Vol.9, No 2), and the results demonstrated significant improvements on specific cognitive abilities after 12 AVS sessions. The programs used in this study will be available in the Synaptic Stimulus Trainer (SST) starting in December, 2005.”

How often do you personally use light and sound? What is your favorite type of session and why? When personally experiencing a session, do you incorporate other modalities, such as music, neurofeedback or tactile stimulation?

“I use AVS when I feel extremely stressed, have difficulty getting motivated, or when I need to be very focused and organized. I wrote a program specifically to address my own attentional weakness, although the last time I took a Test of Variables of Attention (TOVA), a number of years ago, I showed no clinical diagnosis of ADD. I like to use any type of relaxing music, and recommend that children use story CD’s or children’s songs or music that will assist in keeping them focused and relaxed during a session.”

What is your definition of the perfect AVS instrument? What would the light frames be like and which color(s) would you want included?

“I don’t yet have a definition of the “perfect” AVS unit, but I would like to have the ability to gain a higher frequency range and significantly faster Hz. rates. I personally like the white, full spectrum glasses as I believe they induce a higher degree of brain stimulation. I caution my patients not to get too attached to “seeing color.” Individuals may associate color with stimulus, but at higher frequencies, which can be more stimulating, color is often not detected.”

You have created dozens of AVS sessions, many used by manufacturers. How do your session designs differ from others? What aspect of a session is most important to you, in terms of ensuring maximum entrainment affects?

“My AVS sessions typically access the higher frequencies, or Hz. rates. I believe that it is

important for the brain to be able to handle more stimulus, thus “training” at higher frequencies may be essential for gaining greater flexibility with regard to multi-tasking and problem solving.

Depending on the presenting problem or the desired results, the AVS program that one selects will differ greatly. I recommend using Inhibitory programs (starting at high frequencies and training down to slower frequencies) for anxiety, stress, and relaxation. For motivation, energy, and cognitive enhancement, I recommend Excitatory programs (starting at lower frequencies and training up to higher frequencies).

The most important aspect of a session is probably the last 10 or 15 minutes, as it takes approximately 10 to 20 minutes for the brain to entrain to any specific frequency.”

As mentioned in the previous question, your sessions have appeared in many different AVS instruments. Is there an instrument that contains your sessions that both professionals and the average individual can acquire?

“I am launching a new website called AVS-devices.com which will sell the new Synaptic Stimulus Trainer (SST). The SST is what I consider to be a clinical device, as it has the fastest frequencies and has been used in a number of studies. The SST devices can be purchased beginning in December, 2005.”

You have participated in many research studies utilizing light and sound. Is there one study in particular that left an indelible impression on you?

“There have been many studies using AVS which demonstrated change in verbal and processing IQ (Carter & Russell, 1994), achievement tests (Carter & Russell, 1994; Patrick, 1994; Micheletti, 1997), behavior (Carter & Russell, Micheletti, 1997; Joyce & Siever, 2001), and computerized tests for impulsivity (Patrick, 1994). After researching these studies, I decided to investigate whether AVS could produce significant changes in specific cognitive abilities known to be weak in LD subjects. The most recent study I conducted investigated six areas of weakness which included the functions of speed of information processing, visual short-term memory, visual-motor coordination, number ability and sequencing. This study found significant changes in all cognitive abilities (in all 30 children) after only twelve, 35 minute AVS sessions. This study is available in the Journal of Neurotherapy, Vol.9 No.2.”

You have worked with so many people, from all walks of life. Which area has proved most satisfying to you and why?

“Though I treat many children and adults with and without using AVS for a variety of disorders, I find that working with children is particularly satisfying. I have specifically worked with children diagnosed with Asperger's disorder, Autism, and significant learning disabilities with remarkable results. I believe that many of these individuals were at risk of developing social, psychological, and a multitude of personal disappointments and life-long failures without such a treatment intervention. I have found that AVS technology has greatly enhanced the quality of life for those individuals who have undergone its variety of benefits.”

What do you believe are the most important issues facing the light and sound industry today? What would you like to see happen?

“As it is generally agreed that physical exercise and maintenance of healthy living are required for optimal health and longevity, I believe that the importance of any form of brain stimulation for ongoing cognitive maintenance and enhancement should not be underestimated. Evidence now exists that brain stimulation induces an increase in dendritic growth (Boyde; 1998; Diamond, 1988; Kolb & Whilshaw, 1990; Spinelli & Pribram, 1967), significant ameliorated recovery of neurons in the visual cortex (Spinelli and Pribram, 1967), and increased levels of glucose (Kato, Murashita, Shiori, Hamakawawa, & Inubushi, 1996; Sappey-Marinier et al., 1992). If these physiological brain studies demonstrate that AVS is associated with enhanced cognitive abilities and functioning, other brain disorders and dysfunction may also be aided, such as stroke, brain injury, syndromes such as autism, and those diagnosed with mental handicaps.

I would like to see many more AVS studies for a variety of disorders, with some utilizing brain imaging technology to measure areas of brain activation and specific changes in brain neurophysiology. I do not believe that these devices will ever gain recognition as legitimate "clinical" instruments for treatment unless many more studies are conducted and published.”

ALLcolor Visual System™

An Amazing Stand-Alone Color Therapy Device
That Also Works with ANY Light and Sound Machine

Hemispheric



Color Control



The Purest



White Light

Color Therapy Meets Light and Sound

Over 4000 Colors - 1 Pair of Light Glasses

The Color Therapy "Dream Machine" for the Light and Sound Enthusiast

Why settle for one color of light glasses?
Why buy several pairs when you can get
the ALLcolor Visual System and have.....

ALL the Colors in the Rainbow!



Now Available and IN STOCK @ www.MindMachines.com

Pains, Pills and Magnets

By Rick Williams, CEO of Rybett Controls, Inc.

Introduction: Our bodies are complicated electrochemical machines. As time passes, accidents, fastfood, bad habits and old age make us susceptible to chronic, painful conditions. Regular exercise, a good diet and lots of sleep can help. But most of us will eventually turn to prescription medication as a solution. Pills seem to be the answer for so many of our modern problems. They are powerful, convenient and supported by millions of dollars in pharmaceutical advertising. Unfortunately, pills can be expensive and they often produce unwanted side effects. Consider the recent meltdown of prescription pain relievers Vioxx, Bextra and Celebrex. It is estimated by Dr. David Graham, formerly of the FDA, that the side effects of Vioxx alone may have caused 139,000 heart attacks or strokes, resulting in the premature death of 26,000 Americans. Of course, the FDA disputes the numbers but they have withdrawn these drugs none the less. All drugs are handicapped by unwanted side effects as their active chemicals circulate throughout the entire body. If prescription side effects can kill thousands, they probably bring lesser misery to millions more. These risks must be weighed against the benefits and other options should be considered.

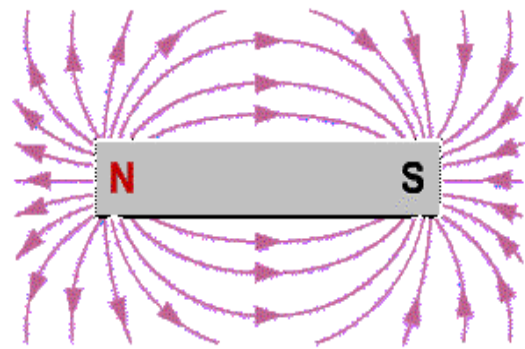


Magnets offer an alternative for chronic pain with some important advantages. Magnets may be applied locally to act upon only the painful area. And they don't add chemicals to your body. The allure of magnets is strong and hundreds of companies sell thousands of magnetic health products. Magnets find their way into jewelry, elastic bands, mattresses, pillows and facial masks. They are supposed to cure aches, pains, stiffness, arthritis, fibromyalgia, bone spurs, varicose veins, migraine headaches, depression and sleep disorders while they improve overall health and even athletic ability. It's a billion dollar market. The magnets themselves cost a few dollars but, when sewn into supports, wraps and braces, they sell for \$40 to \$80. Mattress pads run into the hundreds of dollars and therapy stations can cost thousands. The population seems somewhat divided on the merits of magnetic healing, with most doctors considering it quackery. Many studies have shown permanent magnets to be of no help with medical conditions. On the other hand, a double blind study at Baylor College of Medicine concluded that permanent magnets significantly reduced pain in post-polio patients. Another double blind study at the School of Nursing within the University of Virginia showed small statistical reductions of pain in fibromyalgia patients that slept on a magnetic mattress. And there are virtually thousands of people that claim magnets have helped them, including many notable sports figures. Of course, magnets have some disadvantages, too. They are generally less powerful and less convenient than pills. And due to a history of fraud, magnets are not held in high esteem by the American

medical establishment or the Food and Drug Administration, although opinions are changing. There are two classes of magnets: permanent magnets and electromagnets. Permanent magnets produce magnetic fields that do not change with time. The magnets on your refrigerator are permanent magnets, though probably less powerful than those used for medical problems. Many people swear permanent magnets are effective in treating painful joints and muscles. But medical studies of permanent magnets paint a very fuzzy picture of failure mixed with success. Electromagnets are coils of wire that generate magnetic fields when powered by electricity. If the electricity is pulsed, the magnetic fields change very rapidly. These rapid changes can induce tiny electric currents in living tissue. And these tiny currents give pulsed electromagnets advantages over permanent magnets. Many studies have shown that electromagnets produce biological effects although there have been very few clinical trials of electromagnets in the United States. To better understand what magnets can do for you, a basic knowledge of the science of magnetism is helpful.

Permanent Magnets: Everybody knows how magnets work. You can stick them on your refrigerator to hold up notes, drag them through sand to collect iron grains and push other magnets to amaze yourself. Of course, if you look harder, it gets more complex. All magnets have at least 2 poles, places where the magnetic force is the greatest. These poles are called north or south depending on which way the magnet points when freely suspended like a compass needle. The north pole of a magnet points to the north pole of the earth. The basic rule of magnets is like poles repel and unlike poles attract. If you bring magnets together with the north poles facing each other, they will push away. If a north pole faces a south pole, they will pull together.

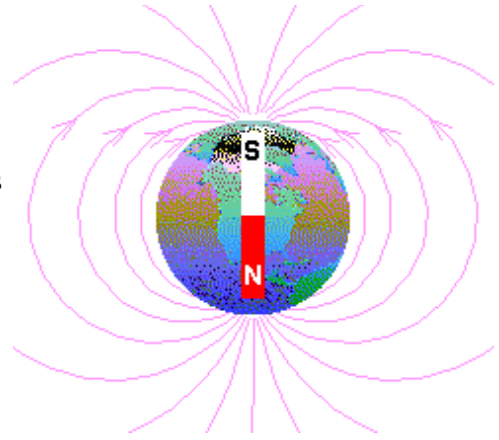
A bar magnet is shown with imaginary force lines looping from one pole to the other. If you place this magnet under a sheet of paper and sprinkle iron dust on top, the particles will align with the force lines and trace a similar pattern.



This pattern is often called a field, perhaps because it looks like plowed furrows in a corn field. The iron particles respond to the magnetic field by temporarily becoming little magnets themselves. That's why iron is attracted to the magnet. So when iron dust was sprinkled on top of the magnet, the iron bits became magnetized with all of north pieces facing the south pole of the original magnet. If the dust were shaken off and the magnet removed, the iron particles would lose most of their acquired magnetism, retaining only a small residual amount that would fade in time. Only iron and a few other metals are strongly attracted by magnets and they are classified as ferromagnetic. For most other materials, including all of the human body, magnetic fields pass right through with only subtle effects.

Why do magnets point to the north pole of the Earth? The earth itself is a very big magnet. In fact, the magnetic field lines that surround our planet look very much as if a giant bar magnet were stuck in the center. At this point, things get a bit confusing. Since the north pole of a compass magnet points north, then the magnet inside our planet must have its south pole on top.

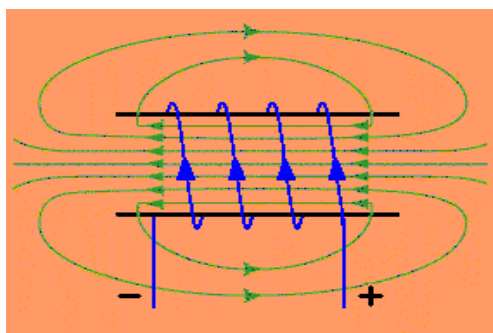
Remember, only unlike poles attract. This is shown by the cartoon drawing where the Earth contains a bar magnet with the south pole up. To make matters worse, many health advocates call magnetic south poles by a new name, bio-north poles. If I weren't so confused, I'd say this makes sense. Things get even stranger when you consider that the magnetic poles of the Earth wander over tens of thousands of years and can flip in a field reversal that may cause planetary mayhem. Compared to a typical bar magnet that you might hold in your hand, our planet's magnetic field is much weaker but extends further. Magnetic field strength is measured in units called gauss and the Earth's magnetic field measures about 1/2 gauss. The strength of a bar magnet might be 1,000 gauss but only very near the poles. A few inches away, the strength could easily drop tenfold. At a few feet, the tiny field of the Earth would be stronger than the bar magnet. At laboratory strengths greater than 10,000 gauss, a larger measure called tesla is preferred. One tesla is equal to 10,000 gauss. These magnetic units are named after the famous mathematician Carl Friedrich Gauss and the quirky electrical pioneer, Nikola Tesla.



Permanent magnets can be made out of ordinary iron or steel but they make relatively poor magnets. Nickel alloys are also ferromagnetic and can be turned into an Alnico magnet that is more powerful and longer lasting than an iron magnet. They were very popular until ceramic and rare earth magnets were developed. Ceramic magnets made of iron oxide are not very powerful but they are cheap and can be molded into many shapes. The magnets on your refrigerator are probably ceramic. Rare earth magnets are more expensive, less rugged but very strong. The most popular of such magnets are called "Neo" because they are a brittle alloy of iron, boron and neodymium. Such magnets are usually plated with nickel or gold to protect them from damage. A neodymium magnet shaped like a cube 1 inch on each side can require nearly 100 pounds of force to pull it from a steel plate. In general, magnet specifications can be a bit confusing and require a little more explanation.

Permanent magnets are created by placing ferromagnetic alloys in a magnetizing field. The magnetizing field is represented by the symbol H . Ferromagnetic material amplifies the original field to create a more intense induced field represented by the symbol B . In air, these two fields are equal. But in iron, the induced field may be hundreds of times stronger than the magnetizing field. When creating a magnet, the magnetizing field must eventually be turned off leaving us with just the residual field of the new permanent magnet. This residual field is somewhat less than the original amplified field and is denoted by the symbol B_r . The residual magnetism sounds like it should be the field strength at the poles of our magnet but this is not the case. The residual field number describes something deep inside the magnet. It can be measured by connecting the poles of the magnet with a large piece of iron and sliding a thin probe into the gap between one pole and the iron. If you just hold a magnet in your hand, the actual magnetic field at the pole face or some distance away is much less than the strength of the residual field, B_r . It depends strongly on the shape and size of the magnet, your distance from the surface of the magnet and the value of the residual field.

As a practical matter, most health magnets are round disks that look like buttons. Such magnets are effective close to their surface but become very weak at distances greater than their diameters. For instance, consider a strong neodymium button magnet with a diameter of 1 inch. Its residual field specification (Br) is a whopping 12,000 gauss. But remember, this describes something deep inside the magnet. At the surface, the strength is 2,600 gauss, respectable but quite a bit less. At an inch, it falls to 240 gauss. Inexpensive ceramic magnets are even more of a surprise. Typically, they might be half an inch in diameter and advertised at 3,000 gauss. But what do you really get when you use it? On the surface, the ceramic magnet would read 660 gauss. But if you placed this magnet on your elbow, at one inch inside your arm where your joint hurts, the strength would be a disappointing 10 gauss. The size of the magnet is more important than its advertised strength.



Electromagnets: Electricity and magnetism are joined at the hip. When an electric current flows, a magnetic field is produced. When a magnetic field changes, electricity is generated. If a wire is wrapped into a coil, you get an electromagnet that behaves very much like a bar magnet. A magnetic field circles the wire and each turn produces a field down the middle of the coil. Then the forces from adjacent turns add to the effect creating a stronger magnetic field. Such a coil of wire is called a solenoid which is drawn below with blue wires. If you are well inside the

coil, the strength of the field does not change as you move around. Note how similar the green field lines look compared to those of a permanent bar magnet. If an iron bar is placed in the middle of the coil, ferromagnetic enhancement occurs to make a stronger magnet.

Many modern marvels depend on electromagnets and coils. The speaker in your favorite stereo is a coil sitting inside a permanent magnet. When electricity flows through the coil, the electromagnetic field reacts with the permanent field and moves the coil. The coil is attached to a cone which pushes air around to make music. And we can't forget motors. Almost all electric motors are nothing but coils and magnets. The fields are turned on and off at appropriate times to push the rotor of the motor causing it to spin. The faster the motor turns, the faster the magnetism has to be pulsed to keep up with the rotor. To get personal, the hard drive in your very own computer is another example. Not only does it need a motor to spin the memory disk, but the data is actually recorded and read by a coil of wire interacting with tiny magnetic spots on the disk. Without electromagnetic technology, say goodbye to radios, televisions, computers, clothes washers and dryers, automobiles, air conditioners ... heck, say goodbye to the twentieth century.

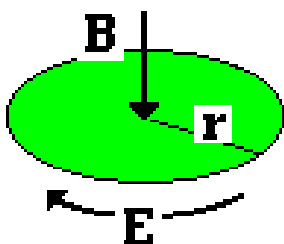
So far we have assumed that the electric wires and magnetic fields are not in motion or changing in time. When a wire moves through a magnetic field or when a magnetic field changes, an electric field and associated currents are generated. Consider a coil of wire like the solenoid pictured above with a switch to connect it to a battery. When the switch closes, the battery tries to push electrons through the wire. As the electrons start to move, a magnetic field begins to build. But the changing magnetic field reacts with the coil producing a new current that opposes the original current. This prevents things from happening too rapidly much like a train

that must slowly accelerate a heavy load of freight cars. Both the current and the magnetic field rise to a maximum determined by the capability of the battery and the resistance of the coil wires. So, an electromagnet is similar to a permanent magnet that can be turned on, but with a rise time that limits how fast things change.

Let's imagine that you hold a permanent magnet in one hand and an electromagnet in the other. What's the difference? First, let's consider a practical electromagnet that is 3 inches in diameter. Assuming it is a simple coil of wire, it might generate a 100 gauss field in 1 millisecond (which is 1/1000 second). When the electromagnet is switched on, the magnetic field passing through your hand rises from zero to full force in the rise-time of the coil. And what happens to your hand? Assuming you are mostly made of salty fluid, the changing magnetic field will produce a circulating electric field which will cause a small electric current to flow. This won't have much of a counter effect on the magnetics but it may have an effect on your body chemistry. After all, you are an electrochemical machine of sorts. The effect would be proportional to the rate of change of the magnetic field, in this case 100 gauss per millisecond.



What about the permanent magnet? Let's assume it is 1 inch in diameter and has a field strength of 1000 gauss nearby. If it is held steady, no rate effects occur. However if the magnet were rolled in your hand, the field might swing by 1000 gauss in a second. That's a rate of change of 1000 gauss per second. But in a millisecond, the change is only 1 gauss, much less than an electromagnet. So, the currents induced by the strong permanent magnet would be one hundred times smaller than those of the electromagnet. If the permanent magnet were belted to your hand or another body part, movement would be restricted and the potential for induced currents would be even smaller. Many people feel that belting magnets to painful joints or sleeping on magnetic mattress pads helps reduce pain and improve healing. If this is due to a rate effect, electromagnets may be more beneficial.



The circulating currents produced by electromagnets are driven by induced electric fields. Electric field strength is usually expressed in units of volts per meter (volts/meter). A flashlight battery is a 1.5 volt source of electricity and your arm is about one meter long. If you press one end of a flashlight battery to your nose and touch the other end with a finger tip, you will produce a 1.5 volts/meter electric field down the length of your arm. This electric field will cause a small current to flow, mostly on the surface of your skin. If you get nervous and sweat, the current will increase. The fields produced by electromagnets can penetrate much deeper than

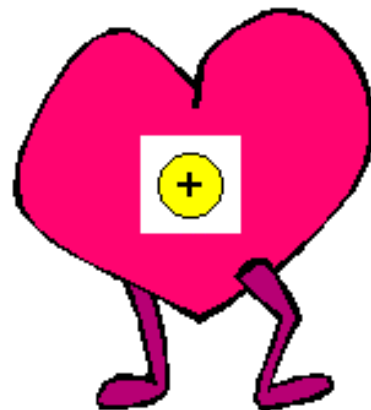
the skin and we can estimate these fields using Faraday's Law, discovered by Michael Faraday two hundred years ago. Since we are talking about coils, imagine a circle inside your hand a little bit smaller than the coil itself. A magnetic field passing through this circle will produce an electric field that will drive a circulating current. By Faraday's Law, the electric field around the edge will be proportional to rate of change of the magnetic field averaged over the area of the

circle. For a 3 inch coil with a uniform magnetic field that is changing at 100 gauss per millisecond, the induced electric field is 0.15 volts/meter.

How does all of this compare to the electrochemistry within the human body? The long axons of nerve fibers fire at an electric field gradient of about 13 volts/meter. The coil above operates at about 1% of this level. It won't make your hand twitch but it may have a gentle effect on the electrochemistry. Nerve pulses typically operate in the millisecond range and then require a rest period of tens of milliseconds before they can retrigger. This suggests that electromagnets should fire millisecond pulses at a repetition rate of several pulses per second to influence the nervous system. Imagine that a tense muscle is locked in a biological feedback loop whereby the muscle pinches nerves that cause the muscle to contract which further pinches the nerves and so on. If the pinched nerves are being stimulated at near their firing threshold, a pulsing magnetic field may provide just enough energy to drop the stimulation below the threshold. This would inhibit some muscle contraction and further reduce the stimulation. In a few minutes, enough muscle fibers might relax to break the feedback loop and stop the pain. In such a situation, the magnetic field doesn't have to operate at 100% of the nerve energy threshold. All it has to do is play the spoiler at a few percent.

Lorentz Forces: For electromagnets with rapidly changing magnetic fields, Faraday forces as described above are an important biological mechanism. But permanent magnets have static fields that do not change, so how do they affect your body? When a particle with an electric charge moves through a magnetic field, a Lorentz force acts on the moving particle. Many websites that sell magnets proudly allude to Lorentz forces but the topic is controversial. Unfortunately, when you actually perform a Lorentz calculation, the magnitudes of such forces are so pitifully tiny that it's hard to believe they are relevant. This is one reason so many people in the scientific community think permanent magnets are a health fraud. Let's take a closer look and you can make up your own mind.

When an atom gains or loses an electron in a chemical reaction, it becomes electrically charged and is called an ion. If you dissolve table salt in water, sodium and chlorine atoms separate to become Na^+ and Cl^- ions. In living tissue, sodium and potassium ions are very common. When a charged particle moves in a magnetic field, a force pushes the particle at a right angle to its motion. This is called a Lorentz force and its magnitude is given by $F = qvB$, where force equals charge times velocity times magnetic field. Let's use this formula to run some numbers. But first, we have to decide how an ion might be in motion inside your body. It could be carried by your blood and a velocity of 1 cm/sec might apply to smaller vessels in your arms or legs. At your heart, the peak flow rate in the aorta may be as high as 63 cm/sec. Outside of the circulatory system, things don't flow as fast. What about movements when you flex a muscle? If a magnet were banded to your arm, you might be able to flex centimeter movements in a tenth of a second. This would move cells and ions at 10 cm/sec. Let's do a calculation with a velocity of 1 cm/sec remembering that in some circumstances it could be ten or more times higher. Second, we can consider



a sodium ion with a positive charge of one missing electron. And third, we can choose the magnetic field strength to be 240 gauss. This is the strength of a rare earth magnet at a distance of 1 inch from the pole face.

For the Lorentz calculation, we have assumed a sodium ion moving with blood under the influence of a rare earth magnet. The Lorentz force is 3.84×10^{-23} newton, where newton is a metric unit similar to a pound. Scientific notation is used and it means 3.84 divided by ten 23 times. It is a very small force. Of course, the sodium ion is also small, so we must compare forces to get an idea of its relevance. One approach is to assume the Lorentz force pushes the ion halfway across the blood vessel or about 1 mm. In so doing, work will be performed which will raise the energy level of the ion. How does this increase compare to the thermal energy due to temperature vibrations? Well, at body temperature, the thermal energy is 167,000 times greater than the Lorentz contribution. Based on this result, it would appear that any chemical reaction would be dominated by temperature alone, making the Lorentz force insignificant.

Another calculation can further test this conclusion. Lorentz forces move positive charges one way and negative charges the other. This would create a small electric field across the blood vessel. A balance would be reached when the electric field was strong enough to counter the Lorentz forces. Balance occurs at an electric field strength of 0.00024 volts per meter. Of course, a blood vessel is much smaller than a meter, so across a 1 mm width, the voltage difference would be a mere 0.24 microvolt. Compare this to the voltage difference across a human cell membrane which is typically 80 millivolts. The membrane potential is 333,000 times greater than the Lorentz voltage. Again, we must conclude that Lorentz forces cannot play a significant role under our assumed conditions. If the velocity were higher or the magnetic field greater, more of an effect would be expected. But remember, we are orders of magnitude away from matching the other forces and energies. You can now see why so many physical scientists are skeptical of magnetic health hype.

To counter this pessimism, let's take a look at some unusual creatures. Sharks, skates and rays are able to use the Earth's magnetic field for guidance. They accomplish this feat with special organs in their heads called "Ampullae of Lorenzini." Interesting name, don't you think? The ampullae are long, jelly-filled canals that use Lorentz forces to separate ions and create low level electric fields. These are very specialized sensors capable of detecting less than 1 microvolt. As the fish swim across the Earth's magnetic field lines, the micro voltages in their sensors



change, allowing them to tell north/south from east/west.

Sharks actually do what we just calculated to be impractical.

Let's compare our blood flow assumptions to the environment of the shark. For blood flow, we assumed a velocity of 1 cm/sec and a field of 240 gauss. For a shark, perhaps we could estimate a swimming speed of 1 m/sec in the Earth's field of 1/2 gauss. Comparing these numbers, the blood flow Lorentz

forces would actually be 4.8 times greater than the shark Lorentz forces. At faster blood speeds, the situation could be 48 times more favorable. So if the biology is arranged just right, magnetic Lorentz forces can make a difference. Fancy calculations and dumb sharks contrast the opinions in the debate over permanent magnets and health.

Electric Lodestone: If you are considering magnets for pain relief or improved health, you might want to consider the advice of the Alternative Medicine division of the National Institutes of Health. Considering the number and breadth of the products available, you should only buy magnets that may be returned if you are unsatisfied. This seems like a very reasonable stance to me. Also, the size and shape of magnets are important parameters which limit the effective penetration depth of the field. I suggest you try to find magnets that are as large as the depth of your target. Permanent magnets are the most convenient and economical. So, try them first. If you need to move on to something stronger but more expensive, consider electromagnets. Again, the size is important, so small battery powered units are not as effective as wall powered models. Finally, the published rates of rise should be considered as they determine the strength of the Faraday forces. I work for Rybett Controls, Inc. and we build an electromagnet called the Electric Lodestone.



Electric Lodestone with Cloth Cover

Panel with Lights, Switches and Coil

The Electric Lodestone is a personal health appliance that targets pain relief and chronic medical conditions. Anecdotally, it relaxes muscles, eases tension, promotes restful sleep and may provide relief for arthritis, tendonitis, bursitis, headache and pain associated with pinched nerves, repetitive motion, joint trauma, varicose veins, bone spurs and other heel or toe discomforts. It works as a pulsed electromagnet stimulating electrochemistry deep within the body. The Electric Lodestone generates 100 gauss/ms Faraday effects over a 3 inch circle capable of penetrating several inches into the body. It operates at about 1% of the motor threshold of nerve and muscle tissue. This means if you want your muscles to twitch, you need magnets that are many times more powerful. It also means they operate more gently and safely.

The Electric Lodestone consists of a coil of wire with lights and electronics mounted on the backside. It is very simple to use. Press the blue push-button and a red LED will start flashing. Each flash indicates a magnetic pulse. Place the magnet coil over the most painful part of your body and wait for the pain to diminish. This usually takes about 5 minutes and somewhat longer for joint problems. Then move to your next painful spot as needed. The magnetic field is most powerful inside the coil through the large hole in the cloth covering. To achieve maximum effect, place the coil so that it surrounds your body part. If this is not possible, lay the coil opening against your body. To turn it off, hold the blue button down for 2 seconds or wait for the automatic timeout.

The Electric Lodestone is available in two models, MP 100 recommended for elbows, heals, veins or surface muscles and MP 200 for more difficult targets like knees, fingers, toes and deeper muscles. At an inch from the coil center, the model MP 100 generates a 100 gauss magnetic field in 1 millisecond while the MP 200 produces 200 gauss. Both models may be operated in a steady pulsing mode or with modulation at 1 to 4 hertz for greater relaxation. The Electric Lodestone is protected by a 30 day unconditional return policy and a one year warranty. We guarantee that the products meet their published electronic specifications. However, we cannot make medical claims as to the benefit of magnets. And the user assumes all risk for use of these magnets, including health risks. The liability of Rybett Controls is strictly limited to repair or replacement of defective electronics.

Electromagnets should not be used around other electronic devices as they may interact. This is especially important for implanted devices such as pacemakers, defibrillators, insulin pumps, liver infusion pumps or TENS units. Of course, if you notice unwanted side effects while using an electromagnet, you should discontinue use immediately. Since the effects on a developing fetus are unknown, you should not use an electromagnet during pregnancy. Some practitioners discourage the use of magnets to treat myasthenia gravis and bleeding disorders although hard scientific evidence to justify caution is lacking. Since the electromagnet pulses, do not use it if you have a seizure disorder. Finally, do not use any electronic device around water as a shock hazard may exist.

To purchase the Electric Lodestone MP 100 or MP 200 visit: www.mindmachines.com and for further information contact:

Rybett Controls, Inc.
10020 Canoga Ave.
Chatsworth, CA 91311

Phone: (818) 341-7522
Fax: (818) 341-7524
Email: rybett@aol.com

Magnetics Website: <http://www.readingtarget.com/magpulse/>
Phonics for Free Reading Website: <http://www.readingtarget.com>
Sulfite Food Allergy Website: <http://www.readingtarget.com/nosulfites/>

An Explanation for Using Tinted Blue Overlays When Stimulating with White Light

By David Siever, CEO of MindAlive, Inc.

Because photic induced seizures involving those aged from 5 - 24 years of 1/4000 has been reported by Newmark and Penry (1979) and Jeavons, Bishop and Harding (1986), care must be taken when delivering photic stimulation to children. Physiological photic stimulators generally used to induce seizures employ a Xenon strobe light that reaches maximum brightness within 50 micro-seconds at intensities of 10,000-300,000 lux. Carterette and Symmes (1952) first reported that red-flicker provoked an increased photo-



convulsive response (PCR) relative to other wavelengths. Since then, this finding has been reported by Bickford (1953); Marshall (1953); Pantelakis (1962); Kojima (1963); Brausch and Ferguson (1965); Harley (1967); Takahashi and Tsukahara (1972a, 1973). It has also been reported by Carterette and Symmes (1952); Brausch and Ferguson (1965); Buskirk (1952); Marshall et al (1953); Bickford (1954); Asano and Umezaki (1965); Maruyama (1968); Takahashi and Tsukahara (1972b) and Harley (1967) that red-removing eyeglasses or contact lenses afforded clinical relief to patients with photogenic epilepsy. Kasteleijn-Nolst Trenite (1989) found that in 100 PCR participants, 81 showed sensitivity with eyes closed while 66 were sensitive with their eyes opened. Harding and Jeavons (1994) found that peak PCR sensitivity occurs from 15 - 20 flashes per second. Takahashi and Tsukahara (1976) measured IPS induced PCRs under controlled lighting conditions. They observed that PCRs were most frequently induced with red light stimulation from 15 - 20 Hz and that it was superior in producing PCRs than stroboscopic (white) light. In all 14 cases generalized PCRs of sharp and wave and spike and wave complex were induced. They also found that 20 cd/m² were inhibited by blue light of 1.9 cd/m². All of these studies used a brief, intense flash pulse. Ruuskanen-Uoti (1994) reported on a person who developed seizures while using a "light and sound" machine utilizing square wave stimulation delivered by red light emitting diodes (LEDs).

Brief, intense flashes produce harmonic activity in the brain, Van der Tweel and Verduyn (1965) whereas sine wave stimulation produces a sine-like response (insignificant harmonic activity). Van der Tweel and Verduyn (1965), Townsend (1973), Donker (1978) and Regan (1965) all agree that sine-wave modulated light eliminates the problem of light intensity from a Xenon strobe increasing with frequency and the harmonics generated within the neo-cortex at frequency multiples much higher than the fundamental at times. It has been our observations that square wave LED flashing at 7 Hz can produce strong harmonics between 20 and 40 Hz. Of these sine wave stimulation studies, the concern of inducing seizures is completely omitted from the studies. In the raw EEGs shown in the studies, there are no signs of epileptiform activity nor any discussion about it.

To address the concerns of eliciting a photic induced seizure, the lightframes used had a slowed turn-on and -off time of about 15 msec. The light emitted from the lightframes was white light produced by incandescent bulbs over which was a translucent plastic sheet that was tinted a shade of light blue. (Originally published in The Journal of Neurotherapy Vol 4, #2. By David Siever). For more information visit: www.MindAlive.com.



The Psytopian Mystery

In April, 2004, I was contacted by a promoter for a festival to be held in Jamaica in August, 2005. It was touted as 'the meeting of all things psychedelic' and was to take place at two adjoining all-inclusive resorts on the north shore of paradise. Live music, comedians, workshops, presentations, demonstrations; with people the world over coming together in celebration of true mind exploration. It had 'Ultimate Rave' written all over it. A 24/7 party. But in August? The midst of hurricane season? Hey, no worries, mon.

Like dozens of others, I of course volunteered my time. After all, the proceeds were for charity, and it would be an ideal event to spread the good word of light and sound technology. And like all the other volunteers, I immediately started preparing a presentation that would be unique, unique as the gathering itself. Alex, the promoter, had a wonderful idea and we all felt privileged to be part of it.

Preparations were completed. Equipment packed and shipped. Psytopia was fast approaching. However, as the big event drew closer, strange things started happening. Or rather, not happening.

As the months turned into days, when speaking with Alex I noticed his voice gradually change from excitement and anticipation to one of sounding over-worked, with a tinge of anxiety and a large dose of stress. He was a one person operation trying to achieve what few groups would be capable of pulling off. Days before Psytopia was to occur, situations that few could possibly predict, surfaced. For Alex, these situations became his worst nightmare.

Some who put a down-payment on tickets never paid their balance, certain sponsors re-neged, still others circumnavigated having to purchase tickets by booking rooms through their travel agents (which Alex was totally unaware of and defeated the purpose of attending a 'for-charity' event). To compound Alex's dilemma, there were volunteers, myself included, calling him regularly. Alex was trying his best to accommodate everyone, but his nightmare only grew.

The Friday before Psytopia I received my plane tickets, and I was one of the lucky few who did. But the following Monday, just two days before the start of the festival, Psytopia was cancelled. Talk about a major letdown, an incredible bummer. Then I looked at my airline reservations and saw that the tickets were non-refundable. As the old saying goes, when you are handed a lemon, you make lemonade, right? Why waste the tickets? So I contacted my travel agent and booked a week's stay at Sandal's Grande resort in Ocho Rios. It wasn't Psytopia, but it was Jamaica. And it was on the beach.

Upon landing at Montego Bay and wandering along the halls of the terminal leading to immigration, I saw others who undoubtedly were there for the festival. They too had just arrived and were ready to do some serious partying. It was rather obvious. Getting through immigration, turning left down the hall and heading to where tourists go to check in at the respective resort's meeting areas, and of course being asked several times if we would care for some of Jamaica's 'finest' along our walk, I began to notice certain things that I thought I'd be seeing, but didn't. Namely, signs promoting Psytopia. Sure, the festival had been cancelled, but I thought I'd still see one sign at least promoting it. Nothing.

Entering the room where one goes for checking in to be taken to all the respective resorts, still no signs. Even the two resorts that were to hold Psytopia had nothing posted. I asked at both the Breezes and Hedonism check-in counters about the festival. The response was either "you mean the Bob Marley Festival" or "I haven't heard about Psytopia, what is it?" Hmmm...

Being a first-time visitor to Jamaica, I fast learned to look out the sides of the mini-bus and not where the driver is looking. It takes a special breed to drive in Jamaica. So as we traveled from the airport to Ocho Rios, I gazed at the surrounding sites, careful not to look straight ahead. When we past Breezes, no Psytopia signs. A short distance further we past Hedonism and again, no signs promoting the festival. About twenty minutes later, at a 'pit-stop' where beverages and jerk-chicken could be purchased, I asked a few of the locals about the Psytopian Festival. Their answers were the same as I received at the resort check-in counters at the airport.

In the seven days that I spent in Jamaica, I did not find one person who knew about Psytopia. After spending over a year preparing for the 'Ultimate Rave', the celebration of all things psychedelic, I really believed 'some' local promotion would have occurred. Maybe it did, maybe I just asked the wrong people, or maybe it does take more than one person to create an event of this magnitude.

Alex, it is a shame your idea did not happen. And it is a shame what some people are saying about Psytopia not happening. What exactly went wrong? What caused the final decision to cancel the festival so close to it's start? Alex, this is an open invitation to you, a chance for you to let those of us who volunteered to help make Psytopia the festival we all dreamed of, understand what really happened. I, like so many others, would simply appreciate knowing.



mindaware

The place to shop for light and sound machines

www.MindAware.com

The Application of Audio-Visual Entrainment for the Treatment of Seasonal Affective Disorder

By Dave Siever

Abstract: *Seasonal Affective Disorder (SAD) strikes all people from all nations, not just those near the poles of the earth as might be thought. The treatment of SAD has traditionally involved the use of anti-depressants, and more recently, light box therapy. Audio-Visual Entrainment (AVE) has also been shown to be beneficial in the treatment of this genetically based affective disorder and its related anxious/depressive/dietary conditions.*



Introduction

Each year, 6% of northern populations are affected with Seasonal Affective Disorder (SAD) and another 14% have a milder form of SAD, called the *winter blues*. Surprisingly, SAD may occur at any time of year and in equatorial regions although the ratio of northerners with SAD as compared to those living in the tropics is about 10-1. People in the southern USA experience SAD in the summer from staying indoors where air conditioning allows them to escape the unbearable summer heat. People have also experienced SAD moving into a basement suite or an office on the north side of a building or after painting the interior of their home a darker shade of color. People have experienced SAD following the development of cataracts or after wearing sunglasses for an extended period of time and during overcast, rainy periods (Rosenthal, 1993). The common symptoms are depression, anxiety, extreme fatigue, hypersomnia, carbohydrate cravings, and weight gain. Women through the ages of 20 to 40, their sexually reproductive years, are most susceptible (Rosenthal, 1993). The first controlled study using light therapy to treat SAD was published in 1984. SAD was officially accepted as a clinical malady in 1987 by the American Psychiatric Association and described in its then current diagnostic manual, the DSM-III-R. Since that time, a great number of studies on the topic have been completed. Animals are more sensitive to the seasons than humans, as they go through migration, mating, molting and hibernation. For instance, hamsters can sense the difference between a 12-hour day when their gonads don't grow versus a 12-hour and 15 minute day when their gonads begin growth. It is thought that humans aren't as sensitive as animals because humans originated in and around Africa where solar fluctuations are much more minimal than those near the Earth's poles (Wright, 2002).

Tick-Tock Goes the Clock

It must be understood that circadian timing has nothing to do with the sense of time lapsing between events, nor the ability to notice differences in timing between two events, such as two tone-bursts or other sensory stimulation. Stimulation from events initiates an attentional *cortical reset*, which in turn synchronizes brain activity. More specifically, about 300 milliseconds later, the brain generates an attentional spike known as the P300 response. This spike starts a timing

loop, initiated in the substantia nigra, a part of the basal ganglia, which in turn sends a burst of the neurotransmitter dopamine to another part of the brain called the striatum. The striatum contains “spiny” cells, which oscillate at different frequencies. Over time, the differences or “beats” add up. When attention is once again initiated, the count is recorded, providing a “time stamp” for that interval, which higher levels of the brain then interpret into a sense of timing (Wright, 2002).

The Captain and Pineal

All species studied to date, from single-celled organisms to humans, have been observed to have a biological clock. This clock is essential for survival, regulating various types and levels of arousal to provide cues for alertness, eating, sleep and the release of hormones. Light waves striking the retina activate electrical output that is sent down the optic nerve to the brain for visual processing. A secondary, smaller nerve tract from the retina, originating from specialized cells that utilize a light detecting pigment called melanopsin, also carries signals to the suprachiasmatic nucleus (SCN) of the hypothalamus. The SCN in turn sends nervous outputs to various parts of the brain including the pineal gland. Four genes that govern circadian cycles in flies, mice and humans have been discovered that not only reside within the SCN, but in all cells of the body. When cultured in a petri dish under constant lighting, these cells continue with gene activity, hormone secretion and energy production in a 24-hour cycle that varies less than 1% (Wright, 2002).

In the mid 70s, Dr. Alfred Lewy of the National Institute of Mental Health (NIMH) discovered the neurotransmitter melatonin. The wake/sleep cycle in animals and humans is controlled by melatonin, which is produced by the pineal gland, a structure the size of a pea and located in the mid-brain. Every night, the pineal gland excretes melatonin into the bloodstream and continues to do so until dawn. However, under normal exposure to sunlight, secretions of melatonin follow the Earth’s light/dark time frame and therefore more melatonin is typically released during the long dark hours of the winter months. Henceforth, the pineal gland is in charge or “captains” our wake/sleep arousal states.

Knowing if We Have SAD

Although most anxiety and depression inventories could be used to detect SAD, one popular SAD test is the *Seasonal Pattern Assessment Questionnaire* or SPAQ, developed by Rosenthal and his colleagues at the NIMH. The SPAQ is a self-assessment questionnaire that evaluates one’s level of SAD from four basic categories:

- 1) Pattern of Seasonality.
- 2) Degree of Seasonality.
- 3) The degree that seasonal changes are a problem for you.
- 4) Evaluating other related information.

SAD and Brain Function

Few PET or SPECT studies of brain metabolism in SAD persons have emerged and they are

inconsistent in results. Both Cohen, et al's, (1992) positron emission tomography (PET) study and a single photon emission computerized tomography (SPECT) study by Murphy, et al. (1993) were inconsistent in results. The results of electroencephalographic (EEG) studies are also inconsistent and involve few electrode sites (Volf & Passynkova, 2002). One such study suggests increased left frontal alpha activity as compared to the right (Allen, et al., 1993), which is consistent with common understandings of depression. Another found all activity except alpha was higher in the left posterior region (Teicher, et al., 1996) while another study showed increased theta-alpha at C3 (Cajochen et al., 1996). Volf sought to finally put the debate to rest by comparing 16 site QEEGs of 31 depressed SAD patients against those of controls. Barring technical issues (a digital filtering concern of aliasing error, possibly invalidating all data, arises within the study), he found asymmetries of delta, theta and alpha involving heightened EEG activity in the right parietal and temporal regions. An asymmetry of heightened beta EEG occurred in lateral frontal regions (F7 & F8).

Treatment

A number of coping techniques are used to reduce the symptoms of SAD. These include long walks outside, aerobic exercise, a diet rich in complex carbohydrates or “carbs” and protein diets, relocating to sunnier locations, winter vacations to tropical areas, and frequenting sun-tanning centres. Light based clinical interventions include light box therapy and audio-visual entrainment.

“Light box” therapy has been used to reduce the symptoms of SAD in 60% to 80% of SAD patients (Lam, 1999). White light therapy, using intensities of 2,500 lux, requires exposure times from 2 to 6 hours, a considerable behavioral investment for the user (Terman, et. al., 1989). Light exposures in the intensity of 10,000 lux for 30 minute exposures has been found to be more effective than 2,500 lux intensity with exposure times of several hours (Terman, et.al., 1990). Some people have reported that over-use of light therapy can leave them feeling “wired” and restless (Rosenthal, 1993).

Audio-Visual Entrainment (AVE) using flashing lights and pulsing tones has been shown to enhance EEG activity at the stimulation frequency, however, a lesser known attribute of AVE lies in its inhibition effect at roughly the half-frequency of stimulation (Siever, 2003). In QEEGs (brain maps) collected at our office of those with SAD, we have observed long spindles of 10 Hz alpha brain wave activity, globally, with particularly increased activity in the left frontal regions, consistent with Allen's findings. In light of these findings, we had chosen to utilize 20 Hz AVE as a treatment modality for SAD.

SAD Study Using Audio-Visual Entrainment

Method

The Digital Audio-Visual Integration Device (DAVID) Paradise by Comptronic Devices Limited (now Mind Alive Inc.) was used in a 4-week randomized study of 74 SAD sufferers

(52 females and 22 males, avg. age = 38.5 years) to reduce the symptoms of SAD through the application of AVE. The participants were screened according to the DSM-IV, SAD requirements. The study accepted participants from Edmonton, Alberta at roughly 53.5 northern latitude from November 1998 to March 1999.

Procedure

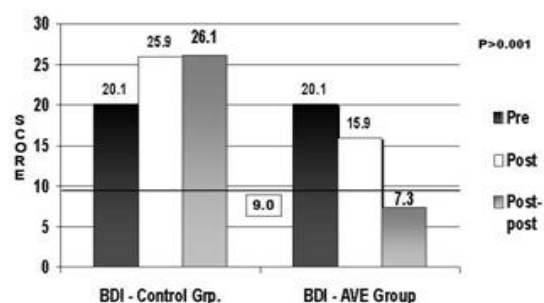
The Beck Depression Inventory (BDI) and the Anxiety Sensitivity Index (ASI) were used for the pre-test, post-test (placebo), and the post-post-test (treatment) results. A daily diary was maintained to record total sleep time, sociability at work and with the family, eating, appetite and carbohydrate intake, cravings, energy and body weight.

The participants were divided into two groups: a Control Group (CG) that did not receive the DAVID AVE unit and the Treatment Group (TG) that received “placebo” and treatment sessions. The Treatment Group received sub-delta (placebo) frequencies of 1 Hz for 2 weeks followed by beta frequencies (treatment sessions) of 20 Hz for 2 weeks. Fifty-eight treatment participants and 16 control participants finished the study. Paired t-tests were used in the within group measurements, and the analysis of variance (ANOVA) was used in the between group measurements.

Results

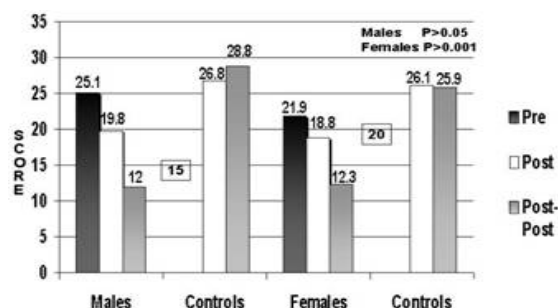
The pre-test BDI score for both groups was 20.1. A score above nine indicates at least mild depression. Depression within the CG increased by 28% to a score of 26.1. A reduction in depression for 36% of the participants was observed in the TG during the placebo condition and during actual treatment (the beta AVE group) 100% of the participants had reduced depression (BDI = 7.3, $p < 0.001$), as shown in Figure 1.

Figure 1. Comparison of BDI Scores Between Controls, Placebo & Treatment Groups



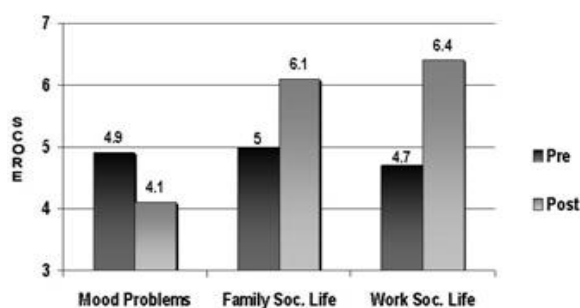
Of these, 84% became clinically non-depressed. The AVE male population anxiety sensitivity (AS) decreased significantly from 21% to 60% ($p < 0.001$) from post to post-post, respectively while the control male population had a 7% increase in AS. The AVE female population showed decreased AS, from 15% to 34% ($p < 0.001$) from post to post-post respectively, while the control group showed a mild reduction of 6%.

Figure 2. Comparison of ASI Scores Between Pre, Post and Post-Post Results.



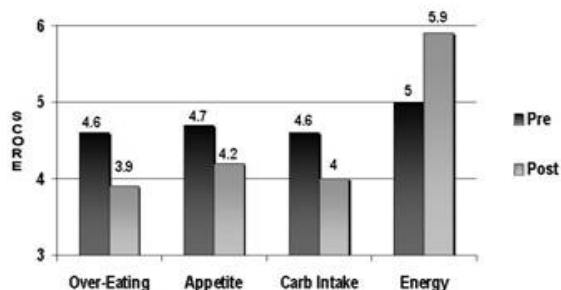
Daily diary results (Figure 3) indicated marked improvements. Positive moods improved by 20%. Sociability at home with the family and at work improved by 22% and 40% respectively.

Figure 3. Comparison of Measures From Pre to Post-Post Conditions.



As shown in Figure 4, AVE participants' food intake changed; over-eating decreased by 18%, appetite decreased by 12%, and carbohydrate intake decreased by 15%. The participants also reported happiness with their increased energy (avg. increase of 18%).

Figure 4. Comparison of Pre and Post-Post Measures.



The daily diary results also showed that by using AVE, some participants lost considerable weight. A group of 12 participants (8 females and 4 males) reported that their average weight gain during the winter months was 15 pounds. During the placebo condition, they had an aver-

age weight loss of 3 pounds (1.36 Kg) plus an additional average weight loss of 6.5 pounds (4.3 Kg) during the two-week treatment condition.

Conclusion

White light AVE at 20 Hz produced significant results. Although sub-delta frequencies are non-effective at generating entrainment, sub-delta frequencies can affect both dissociative mind states and cerebral blood flow (Fox & Raichle, 1985). In addition, the “placebo effect” could also explain the sub-delta significance. The “placebo effect” has been shown to reduce anxiety, increase endorphin production, conditioning, and expectancy (Godfroid, 1998). Being that inadequate light elicits depression in SAD sufferers, the “placebo effect” via photic stimulation is possible.

The AVE Group’s depression decreased while the Control Group’s depression increased. Sensitivity to anxiety decreased in both male and female AVE groups. Although the female control participants had decreased sensitivity to anxiety, the female AVE population showed significance between the 1 Hz and 20 Hz stimulation.

Most control group participants claimed that they gained weight whereas an additional benefit of AVE is weight loss. One participant claimed that, “after using the 20 Hz session for 2 weeks, the taste of sweets in my mouth was repulsive.” Follow-up reports indicate participants’ SAD symptoms returned within an average of 2 weeks after discontinuing use of the DAVID AVE device.

References

- Allen, J., Locono, W., Depue, R., & Arbisi, P. (1993). Regional encephalographic asymmetries in bipolar seasonal affective disorder before and after exposure to bright light. *Biological Psychiatry*, 33, 642-646.
- Cajochen, C., Brunner, D., Krauchi, K., Graw, P., & Wirz-Justice, A. (2000) EEG and subjective sleepiness during extended wakefulness in seasonal affective disorder: circadian and homeostatic influences. *Biological Psychiatry*. 47, (7), 610-617.
- Cohen, R., Gross, M., Nordahl, T., Semple, W., Oren, D., & Rosenthal, N. (1992). Preliminary data on the metabolic brain pattern of patients with winter seasonal affective disorder. *Archives of General Psychiatry*, 49, 545-552.
- Fox, P., & Raichle, M. (1985) Stimulus rate determines regional blood flow in striate cortex. *Annals of Neurology*, 17, (3), 303-305.
- Godfroid, I.O. (1998). [Placebo II. Psychiagenia and the brain organization. *Annales Medico-Psychologiques* [French], 152 (2), 108-114.
- Lam, R.W. (1999). Information about seasonal affective disorder (SAD). *University of British Columbia/VHHSC Mood Disorder Clinic*. Retrieved on www.psychiatry.ubc.ca/mood/md_sad.html.
- Murphy, D.G., Murphy, D.M., Abbas, M., Palazidou, B., Binnie, C., Arendt, J., Campos Costa, D., & Checkley, S. (1993). Seasonal affective disorder: response to light as measured by electroencephalogram, melatonin suppression and cerebral blood flow. *British Journal of Psychiatry*, 163, 327-331.

- Rosenthal, N.E. (1993). *Winter blues: What it is and how to overcome it*. New York: Guildford Press.
- Siever, D. (2003). *AVE session protocol guide for professionals*. Available from Mind Alive Inc., Edmonton, Alberta, Canada.
- Teicher, M., Glod, K., Ito, Y. (1996) Hemispheric asymmetry of EEG and T2 relaxation time in seasonal affective disorder (SAD) pre and post-light therapy. In: SLTBR: Abstracts of the Annual Meeting of the Society for Light Treatment and Biological Rhythms. p. 9.
- Terman, M., Terman, J., Quitkin, F., McGrath, P., Stewart, J., & Rafferty, B. (1989) Light therapy for seasonal affective disorder: a review of efficacy. *Neuropsychopharmacology*, 2, 1-22.
- Terman, J., Terman, M., Schlager, D., Rafferty, B., Rosofsky, M., Link, M., Gallin, P., & Quitkin, F. (1990) Identification, assessment, and treatment of seasonality in mood disorders. *Psychopharmacology Bulletin*, 26, 1, 3-11.
- Volf, N., & Passynkova, N. (2002). EEG mapping in seasonal affective disorder. *Journal of Affective Disorders*, 72, 61-69.
- Wright, K. (September, 2002). Times of our lives. *Scientific American*, 287 (3), 59-65.

Product Review:

A Unique Gift for Christmas: The Gold Plated MegaChi Pendant



The MegaChi Pendant utilizes the principles of sacred geometry and is designed to raise your energy level and vibratory frequency.

The MegaChi Pendant is different from other energy devices and is the culmination of 9 years of research from Oxygen Research Institute, LLC, whose commitment is to design the most protective and transformational energy possible, while ensuring that it's beautifully balanced.

The Gold Plated MegaChi Pendant with Harmonic Resonance Energy is designed to protect you not only from negative ELF's (low frequency electromagnetic energy fields) caused by cell phones, cars, microwaves, computers, etc. but also from other negative energies such as fear and doubt. In addition, while you enjoy freedom from these negative patterns, you will also be protected from the negative thoughts of others.

In a world where the harmful effects of computers, cell phones, and high voltage electrical lines are becoming increasingly prevalent, The MegaChi Pendant utilizes the groundbreaking research from renowned Egyptologist, Dr. Ibrahim Karim and internationally renowned scientist Dr. Masuro Emoto to transform harmful negative energy fields into life force and vitalizing energy. A soft, black silk cord and instructions are included and arrives in a plush, scratch-resistant pouch.. Immediate shipping available from: www.mindmachines.com.

The MegaChi™ Pendant

Protection from EMF's, Negative emotions, and more!

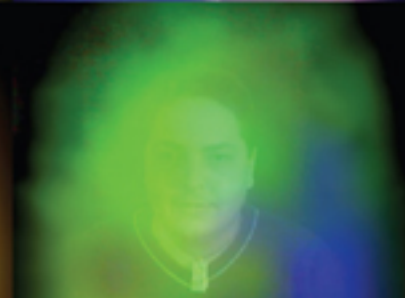
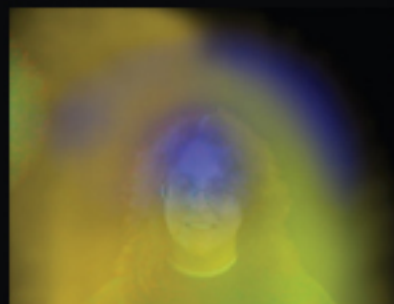


"I noticed a pleasant emotional lift when wearing the MegaChi™ Pendant. I also felt a lot less grumpy in the morning." - Fred Williams, AVS Journal staff member

Kirlian aura photography of the MegaChi™ Pendant in action

Before

After



The MegaChi™ Pendant makes a great holiday gift!
Get it at www.MindMachines.com