

AVS

Auditory / Visual Stimulation

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Cover design: created entirely by Christopher Oliver. Mr. Oliver is known in the AVS community for his talent in designing avs sessions (including sessions in the Muse#, Nova Pro, Halcyon and 515) and musical compositions (Space Journey, L/S Voyager). Christopher's latest work "AV3X: The TV Mind Machine" on DVD is the first DVD to utilize light and sound. You can contact Christopher at: www.AV3X.com.

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Light, Sound & Fun

The Original Light & Sound Coloring Book



Grab Your Crayons and Enjoy Light & Sound!

The Fossil Phil Way

Light / Sound & CES

By Jeff Labno

The idea of using CES (cranial electro-stimulation) devices while doing light and sound sessions has been around since the mid eighties. For those who don't know what CES is; these units are driven by a 9 Volt battery and the machine is about the size of a packet of cigarettes. An electrode cable coming out of the unit has a left and right side. Some use ear clips, while others use adhesive pads that adhere on a spot behind the ear, in front of the ear, or the temporal lobe.

You can use any CES machine while using light and sound, it doesn't have to be a specially-made model. CES basically tricks the brain to produce serotonin which then triggers a "domino effect" amongst other neurotransmitters. The precise effects are individual because everyone's brain chemistry is different.

The first CES device I used was Bob Beck's original Braintuner. One day he brought it over saying it would help people in Hollywood with cocaine addiction. Cocaine was a problem for some at that time in Hollywood, in the early 1980's. I used it for one half hour, but didn't feel much of anything. Actually, I had just come out of a flotation tank. Floating for one hour generally leaves you feeling euphoric for about two days. Clearly I didn't need any more serotonin at that time. I've used CES on many occasions since then, it works like a dream when you are "on edge."

One of the first commercial light and sound manufacturers, Denis Gorges of Synchro Tech, started the idea in 1986 of using strobing magnet flux during light and sound. Magnetism is not exactly electricity, but it is related in that a magnetic field will induce an electrical response when strobed. He slipped these rubberized magnets onto the side of light glasses on a machine he made called the Relaxman.

At this time, the book Megabrain by Michael Hutchison was making its rounds, and people became more aware of the different ways to apply brain technology and also how technologies could be combined. Light and sound and CES became permanently intertwined.

One of the first applications of strobe CES was the Alphasynth made by Lowell Pope in the mid 1980's. The Alphasynth III was easy to wear as a walkman-type radio of sorts with a headset which delivered a micro current stimulus near the ears strobing in alpha. His unit sold for \$279. Lowell was one of the first to use sine waves instead of square or triangle.

Keith Simons was introduced to Lowell's work before he made the Alpha Pacer in 1987. Keith was the first person to integrate as many components into a light and sound device that he could think of. He had strobe light, strobe sound, strobe magnets, and strobe sine wave electrical flux via ear clips.

I get occasional questions regarding which is better; CES, or light and sound? From customer reports, it seems that CES is better for those who are truly "on edge" and that once they feel better from a more balanced serotonin level, then they can concentrate on enjoying light and sound.

It will be interesting to see how the partnership of light, sound, CES, and magnetics evolve over the next decade(s).

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An "E-Interview with Rayma Ditson-Sommer, Ph.D.

Editors Note: Dr. Rayma Ditson-Sommer has done more to promote the positive benefits of light and sound stimulation than most of us combined. From Anthony Ervin (Olympic Swimming Gold & Silver Medalist) and Nate Chittick (St. Louis Rams, 1999 Super Bowl Champions) to Lee Trevino (Senior PGA Golfer) and Kim Hayashi (BMX Bicycle Junior World Champion), Dr. Sommer has repeatedly proven individuals can improve their performance levels through light and sound with biofeedback.

Dr. Sommer has spent many years as an international lecturer, having degrees in Music Therapy, Psychology, Specialized Education and Child Development. She attended Southwestern Medical School with an internship at the Menninger Clinic in biofeedback and psychiatry. And to quote Rayma: "I continue my lifetime of interest in children with a constant burning passion for light and sound and a deep reverence for those who have crossed my path, teaching me many lessons in life I needed to learn. (It is) better that people know me as a researcher, developer and teacher of modalities, used to bring change for a better life, for those who find their way in my direction."

I am just one of many who refer to Dr. Sommer as my mentor. And I thank the late, great Rob Robinson of InnerQuest for introducing us. I am proud to call Rayma my friend, and honored for her taking the time to participate in this interview. All of you will gain from reading this interview, and for those of you wanting to contact Dr. Sommer directly, you can reach her at: Opnet2@aol.com or visit www.gosportslink.com.

Q: 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?

A: "I personally began to study light and sound after the death of my best friend, my husband in 1989. He had been working with light and sound with Rob Robinson of InnerQuest, Inc., and SMR research with Dr. Joel Lubar of the University of Tennessee. When I was filing away their research papers I became enthralled with the possibilities offered by this modality.

I immediately thought of ways I could use AVS for brain wave training to enhance focus, decrease impulsive behavior and improve logic. It seemed the perfect way to 'wake up' the left-brain hemisphere in learning disorder individuals who were almost totally right brained. It was exciting and provided me a road to travel other than grief and loneliness. I remembered a quote from Alfred Whitehead that states: "Ideas won't keep, something must be done about them." This spurred me on and I established the Mastering Alternative Learning Techniques Laboratory at Arizona State University. The MALT Lab was continued and at that time I wrote programs for Synetic Systems, later joining the InnerQuest staff as Director of Research and Development. I then spent many exciting months uncovering ways to help people learn. We carried on eight (8) pilot studies with exciting results and implications for further study.

After leaving InnerQuest I developed a private practice in Phoenix which has evolved into a training center for Olympians, elite athletes, golf pros and many children needing various approaches in learning to improve their quality of life."

Q: How often do you personally use light and sound? What is your favorite session? Do you incorporate other modalities, such as biofeedback or tactile stimulation, during your sessions?

A: "I use light and sound whenever I have difficulties being creative or focused. I also use it for calmness when I have heard one too many stories concerning hurtful behavior relating to one of the children. I use music to therapeutically enhance my session. I have found that music excites the agents for brain endorphins known as peptides. They promote a positive attitude towards learning by activating the flow of associative memories that travel across the Corpus Collosum embracing synchrony waves for better learning balance. I also use it to help me read and retain information at a faster rate. The type of music used should relate to the intended outcome. For example, alertness relates to Bach, Vivaldi or Paganini. Deep concentration and focus are better influenced through Mozart or Brahms. Modern music, such as Enya or New Age, are best for deep rest and sleep.

My favorite unit is, of course, the second generation Focus Trainer by SportsLink. I put many hundreds of research hours into this new unit and developed it for areas of need in sports, learning, emotionality, rest and relaxation. There are many more high technology based units developed by engineers and those who devote themselves to the improvement of the field. My basic goal was to develop a unit that was scientifically based for learning, easy to use and safe. The Focus Trainer was actually developed for active use with the clear glasses providing an opportunity for enhanced visual learning.

My overall goals were to:

- A. Increase Productivity
- B. Improve Mental Balance
- C. Develop and Maintain Wellness
- D. Achieve Calmness
- E. Accelerate Learning

As I stated previously I use the Focus Trainer, light and sound for a specific purpose, usually session 7 or 1, for mental balance and alertness concerning creativity and enhanced development. Reaching the 'zone' requires brain synchrony and a relaxation response according to Benson's research. I find myself training for this state often.

In our training center we use many other therapeutic modalities with light and sound. Although varied, the synergism between the modalities has been very successful. These include:

- A. Galvanic Skin Response biofeedback for tracking the autonomic nervous system.
- B. Vestibular stimulation to energize the reticular activating system promoting a learned response.
- C. Auditory process training stemming from the Tomatis methods.
- D. The Pfeiffer Clinic Nutritional Protocol which excludes foods containing large amounts of copper such as chocolate or food dyes. Dairy and wheat are also restricted in some cases."

Q: What's your definition of the perfect light and sound instrument? What would the glasses be like? How close does your SportsLink Focus Trainer come to meeting your definition of a perfect l/s instrument?

A: "A perfect light and sound machine would be small, easy to use, wireless and containing few enough programs to allow the user to understand and feel comfortable. Glasses would be something like the ones on the Focus Trainer allowing for active use. They should have a shade to attach if training the front of the brain since eyes should be closed and open for development of the back of the brain. I personally feel that more units would be sold and many more used if specific application was related to daily learning needs of the users. Emphasis should be on the understanding they are safe if they have read the restrictions and found no problems. It is my belief and observation that for learning and relaxation, conservation in using high level Hertz, etc., should be observed. I have carried that reputation for many years and have found no reason to change."

Q: What considerations should someone new to light and sound take into account before using their first instrument?

A: "A new user should have goals in mind and utilize the unit for that purpose first. For instance, rest, sleep, travel, accelerated learning or focus training should show measurable results if used as directed. It is important that new users realize that the brain needs nutrients and light and therefore wants light as a stimuli. It is important that they follow the suggestions of the developer of the particular unit. For instance, lights and sound do not have to be at an uncomfortable level to be successful. Balance in hours of use are necessary since the body relishes structured balance in all forms. I received a call from a champion skeet shooter who informed me that the SportsLink had not 'worked'. As we got into the story I found that he had used it four hours a day without any practicing. He complained that he had shot a match but didn't win and that he was certain the light and sound machine was to blame. I suggested that he try it for an-

other week and practice daily using the open glasses. The next week he won and has been using it ever since. He is still a world champion, endorses the unit and uses it in a balanced protocol.”

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

A: “I have been involved in many, many research studies using light and sound. Most have been without a control group using non-parametric statistics for groups under 25. One of the more exciting ones involved 25 third grade students. Arizona State University did the before and after data testing. The study allowed the students a 20 minute light and sound program daily. At the end of six weeks a marked improvement in reading score occurred. The average gain was three (3) grade levels. Four students tested were higher than the post-test could record. The results gave rise to the belief that focus was the dominant gain allowing for retention and reading ease.

Another pilot study is ongoing with Reactive Attachment Disorder children as subjects. Anger management and self-calming improvement are the goals. These ‘out of sync’ kids need self-control abilities to improve their lifestyle.”

Q: I understand you have recently established the Chrishaven Foundation. Could you tell us a little about it and how we can get involved?

A: “Michael, thank you for asking about the Chrishaven Foundation. I am very proud that we have now established this 501(c)3, charitable cause. The primary purpose is to provide needed therapeutic services for children and youth diagnosed with labels stemming from neglect, abandonment, sexual and emotional abuse, manifested through behavioral disorders. A secondary purpose is to provide education concerning these individuals, their needs and the protocols that have been successful.

Many adopted children have these challenges with very little support from their parents. Having been the first, single, female adoptive parent in the United States, I have walked down the path of the adopting parent. I realize their needs and hope we can make a difference for these giving people. We are beginning a fund raising campaign to carry on a summer camp program for three weeks this summer, so any donations will be well used.”

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

A: “I have worked with people from many ‘walks of life’ and I have enjoyed them and learned a great many things. We have brought 18 Olympic medals into OPNET, Inc., we have 6 PGA and LPGA golfers ‘cutting a check’ weekly and many other winners in sports fields. This has been exciting and very rewarding. If, however, I had to pick an area that was most satisfying to me, personally, I believe I would pick my continuing journey with children who struggle to

function in a daily world of frustration, hurt and disappointment. Their resiliency and strength has taught me a tenacity that has guided me to new heights in my own life. The unconditional love these children give is priceless and I feel blessed to even be acquainted with them. I acknowledge their trust in my knowledge and strive to maintain a intuitive faculty within myself hoping this will give me the power to create something new and useful. I call on strong initiative to stand on my own feet, free and independent as an attribute to success in helping solve many challenges.”

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

A: “The issues for the light and sound industry involve the lack of understanding of this simple, safe modality. I have, for 13 years, personally used this exciting approach for learning disorders, sports performance enhancement, accelerated learning, attachment disorders, emotional challenges, closed head injury, grief, depression and many other life-changing challenges. All protocols were goal oriented toward learning and relaxation and without incident. Hopefully, the powers that control these areas realize the value of light and sound and accept that there are alternatives in life everyone should be allowed to choose for their personal well-being.

I have spent many years in the field of audio-visual stimulation and hold great hope for its growth and development in the future. The world needs it now, I deem it an honor to be counted among the growing AVS community. So many mental giants are among this group. I credit Michael Hutchison with enticing me onward and use his books as the ultimate resource. Robert Austin, Rob Robinson, Ray Wolfe and you, Michael, have given much to nurture this exciting modality. It has been a gift that the rest of us should acknowledge, give thanks and pledge to continue in a humble, dynamic and powerful attitude allowing us to perform creatively in any sphere of activity required.”

Fechner’s Colors Are Induced By Flickering Monochromatic Light

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Abstract

Fechner described the phenomenon of inducing illusory colors by means of rotating black-and-

white disks. The induced spectral illusions were later termed 'Fechner's Colors'. Similar color perceptions can be induced by non-rotating stimuli even on computer screens. We performed an experiment to investigate whether a uniform 'Ganzfeld' formed by means of rhythmically generated, unstructured, monochromatic light (i.e. flicker) is sufficient to induce perceptual phenomenon analogous with Fechner's colors. Ten human observers participated in the experiment, reporting both color and form illusions despite the absence of particular spectral and spatial variations in the 'Ganzfeld'. Moreover, particular illusions were induced reliably at particular frequencies, which may be taken to indicate that visual experience of different qualities may be subserved by mechanisms with different temporal sensitivities. In conclusion, rhythmic visual stimulation is sufficient to induce form-based illusions analogous with Fechner's colors, while the qualitative nature of those illusions may necessarily depend upon the frequency of stimulation.

Fechner (1838) described how color perception can be induced by rotating a black-and-white disk at a certain velocity. This phenomenon was subsequently referred to as the so-called Fechner's colors. Benham (1985) designed a more complex disk which also induced colors when it was rotated (cf. Fig. 1). Collectively, the color perceptions induced by Fechner's or Benham's disk were termed subjective, illusory or flicker colors and have been widely used in psychophysical experiments (Cohen and Gordon, 1949; Festinger et al., 1971; Jarvis, 1977). Recently, Nieke (1986) demonstrated that the inducing black-and-white stimulus does not have to rotate to generate illusory colors which can also be induced by means of presentation on CRT technology (Rotgold and Spitzer, 1997). Following the induction of illusory color perception on computer screens, a number of demonstrations have been programmed, some of which can be accessed via internet, a very nice example of which can be viewed at the website of Krantz: <http://psychlab1.hanover.edu/Krantz/BenhamTop/version1.html>.

The objective of this study was to examine whether flicker can induce subjective colors. This study was prompted by the subjective reports of observers in a previous electroencephalographic (EEG) study designed to examine the characteristics of the EEG steady-state response to flickering stimulation (Herrmann, 2001). In this experiment, observers were presented with monochromatic, rhythmically-generated, unstructured light of varying frequencies via light-emitting diodes (LEDs). A flickering 'Ganzfeld' was achieved when observers wore defocusing goggles, such that the entire visual field was filled with flickering light. Under these circumstances, observers reliably reported, not only the perception of different colors, but also the geometric forms in the flicker. Furthermore, the reports given by observers under these conditions suggested that illusory form and color were quite specific to different flicker frequencies.

Methods

Ten observers with a mean age of 24.5 years (19-34 years, 6 female) took part in the experiment. All observers had normal or corrected-to-normal vision and showed no signs of neurological or psychiatric disorders. All gave written, informed consent and observers were explicitly informed that flicker stimulation might lead to seizures in epileptics. In no case was it reported that either they or any members of their families had ever suffered from epilepsy.

The special goggles employed in this experiment were constructed with defocused lenses and with one LED placed in front of each eyepiece. White LEDs with a light intensity of 3000 mcd (#153745, Conrad Electronic, 92240 Hirschau, Germany) were mounted in polished, conclave metal reflectors. In this way, the entire visual field (the Ganzfeld) was illuminated by the two LEDs. A frequency generator (Wavetek, 10MHz Function generator, model 29) was used to drive the LEDs at frequencies from 1 to 100 Hz in 1 Hz steps, i.e., we presented unstructured stimuli driving predominantly magnocellular (M) cells (Silberstein, 1995). The presentation order of the frequencies was pseudo-randomized for each observer and each stimulation frequency was presented for 30 seconds with 5 seconds pause between presentations. The observers were asked to report whether or not they perceived form and or color for each presentation frequency.

Results and Discussion

For frequencies of around 40 Hz and above observers reported constant illumination and no specific illusory phenomenon. However, for frequencies of less than 40 Hz alongside flicker, all observers reported experiencing both form and color illusions. The probability of reporting an illusory color was found to be approximately normally distributed around a flicker frequency of 12 Hz (lower and upper standard deviations falling at 6.75 and 16.6 Hz respectively). In contrast, illusory forms were reported across a bandwidth of 5-39 Hz with a non-normal distribution centered at around 22 Hz. The reported colors were in the range from 'red' to 'blue' with most observers reporting both 'red' and 'blue' or 'purple'. No observer reported to have perceived 'green'. In this respect the reported colors are very similar to bi-phasically generated Fechner's colors computed with a mathematical model of retinal ganglion cells (Grunfeld and Spitzer, 1995). While Grunfeld and Spitzer (1995) were able to compute 'red', 'green', and 'blue' in their model, only 'red' and 'blue' were generated by simple, bi-phasic on-off patterns. In order to generate 'green', a more complex, tri-phasic on-off pattern was required. This goes well in line with our simple, bi-phasic on-off pattern of the flickering LEDs.

The form illusions were usually simple geometrical shapes. Most observers reported to initially perceive a horizontal and a vertical line which separated the visual field into four quadrants. The partitioning subsequently became more fine-grained for some observers until the whole field was separated into hexagons (honeycombs). Some observers reported that the forms started to rotate after a while giving them the impression of flying through a tunnel. The reported geometrical shapes resemble those described for 'phosphenes' (Eichmeier and Hofer, 1974). The phenomenon of illusory form perception is also known from certain kinds of epilepsies and has been simulated in mathematical models (Tass, 1995, 1997). Our observers were retrospectively shown the hallucinations calculated in (Tass, 1995) and reported them to be identical to the ones observed.

Due to the fact that rhythmic electrical stimulation of the retina also results in illusory color perception (Young, 1977), we assume the retina to be the basis of illusory color generation in this study. Adamczak (1981) argued that amacrine cells in the retina are responsible for the generation of color response to flicker, which has also been argued to occur as a function of lateral inhibition between retinal cells (von Campenhausen et al., 1992). The relation of the general class of illusory phenomena described here with particular patterns of neural activity in the ret-

ina is also supported by evidence that illusory 'form' perception, of the phosphene-class, can be induced by electrical stimulation of the retina. For a description of these effects in the context of retinal cybernetics see Eichmeier and Hofer (1974).

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An Introduction to: The Phosphenic Machine

By Patrick Soyer

MIND MACHINES

The phrase "*mind machines*" covers a whole range of technologies that may work on your mind or consciousness. This includes mind-altering technologies, lucid dreaming machinery, the old classic sensory deprivation tanks, the Light and Sound mind machines (L&S) , the electrical stimulation etc...

Did you know that some people who used a virtual reality flight simulator have reported spontaneous Out-Of-Body Experiences (O.O.B.E) or also vortex sensations with inner enlightenments, which are called " kundalini " in yoga ? The simulator transmits the sense of movement and stimulates the phenic system of the individual, what explains these phenomena?

Daredevil rides in amusement parks like Six Flags in the United States and elsewhere, ecstasy, drugs and narcotics, virtual reality helmets, all these stimulants are very much in fashion. Most people love strong emotions. Just look at the tremendous success of the new so-called extreme sports like the free-ride, sky surf, skydiving, free fall, jump in space. All these forms are modern but in reality simple and undeveloped means to rediscover the antic initiation. The eagerness to experience strong emotions is no modern occurrence of our times. It always existed in every era and civilization of mankind's history. To name them all would fill several volumes. One example is the ritual passage of young boys into manhood, who some indigenous Vanuatu tribes exercise in 2000 years already : the rite includes a jump from an 83- feet-high wooden

tower, tied by a mere liana at the ankle. The modern version of this old rite is called " bungee jumping or "Benji" . The Conscious Expansion, Out - Of - Body Experience or Disembodiment; the discovery of the Psychic Parallel Universe; the perception of Kundalini vortex; transcending the world of causes and effects, becoming a new mutant; exploration of the subjective world and joining the " Transcenders ". Immediately, without drugs, without practice, no master or guru required , harmless and dogma-free.

Yes, it is possible, with the **PHOSPHENIC MACHINE** , a futuristic apparatus deriving from the extraordinary discoveries of phosphenes made by a French researcher Dr. Francis Lefebure (1916-1988) , a machine which he called a " Cerebral cyclotron ".

This extraordinary machine can lead an individual, believer or incredulous into the invisible worlds and give him the awakening, so greatly desired by mystics from all religions and philosophies. No, it is no joke, it is a serious project , supported by real scientific studies, based on cerebral physiology.

Just imagine, you would be in a comfortable moving armchair inside of a virtual reality flight simulator, no helmet on your head, no physical contact with any dimension or air hole, danger free, and without any side effects. You are listening to sounds and observe lights , let the magic work on you and take off for an unforgettable journey.

WHAT ARE THE PRINCIPLES OF THE PHOSPHENIC MACHINE ?

The Phosphenic machine works with several sensorial sources : Light, sound and kinesthetic stimulations combined together and alternatively.

The sounds: Dr. Lefebure is the inventor of the Alternophone, an alternating hearing device with adjustable rhythm and tone. He won the Gold Medal and the Prize of the "Lépine" contest at Paris in 1963, as well as the Gold Medal at the International Inventor's Show , Brussels in 1964. The Alternophone produces an alternating sound, independently from the right to the left ear. The alternative audition means listening with one ear independently from the other, on an adjustable regular rhythm, a sound, which can be a humming, a clicking, one or two combined, or also a speech or a musical piece. Instead of using headphones, the Phosphenic Machine uses spatialized sound with speakers encircling the room.

The light: the Phosphenes. "Phosphenes" are multicolored stains which remain in the field of vision for three minutes, in darkness, after having stared at a source of light for thirty seconds. After having stared at a source of light for thirty seconds, turn off the light and close your eyes; you can let them open too, providing you are in darkness, those luminous patterns will appear.

The first phase of the phosphene has to be a yellow coloring and after some practice a bright green coloring surrounded with a red rim which will progressively expand towards the center, overriding the green circle . The red circle will be then surrounded with a blue rim, which will push its way towards the center until it completely eliminates the red circle. This typical green-red-blue cycle is called "postphosphene" which ophthalmology calls "after image".

The source of light can be either phosphenic lamps placed all around the room or a very large gyroscope (2 to 4 meters diameter), the machine to raise kundalini whose Dr Lefebure was the inventor. Phosphenic lamps and the gyroscope produce turning phosphenes (gyrophene) which will raise the kundalini.

The kinesthetic stimulation: You are seated on a comfortable moving armchair not reclining but rotating. This is the particularity of the Phosphenic machine which causes the kundalini to awake. As Kundalini is a vibrational force and a whirling force (See annex).

The Phosphenic machine is a kind of cerebral cyclotron using alternatively light and sounds, exciting one eye and ear from one side then the other side, then one ear and one eye from the other side together etc...(in a right and precise proportion). The total excitation must remain circular for inducing a rotational movement in the brain. The rotation speed and the durations can be controlled.

You will understand that we cannot describe more in details how exactly works the cerebral cyclotron, it would be immediately copied by unscrupulous organizations only attracted by the huge profits expected with this kind of equipment. Plans are at the disposal to our future partners after signing a contract, nothing similar has been built before. A rough prototype has been built and the first tests have been astonishing.

This machine can also be used as a palliative for drugs users. This machine is so powerful that it was necessary to run a lot of test series. One question came up very quickly : To what kind of degree a person using the device has to be psychologically insured in order to make a maximum use of it? Users of hard drugs were the first individuals to remain in the list of possible volunteers. They were the most adapt to test the prototype. As result, the "guinea pigs" found the experiences richer and of a greater quality than any drug would provide them, thus they were discustomed from the drug. The test result concluded an adjustment of the machine on a scale from 1 to 7. Level 1 to 2 for children, youth and sensitive souls ; level 3 to 5 for initial strong sensations for beginners ; level 6 and 7 for the sevrance of drugs users.

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- Yet it is time to recuperate from the extraordinary sensations . Let the magical travel with the machine pass by in your thoughts again. The hostess will suggest you go up to the floor where you will find lounges to discuss with other transcenders of the day . Or if you prefer , you also can take a rest in the Relax Room where you find beds and comfortable armchairs, rocking chairs, cradling you under relaxing music.
- Oh, unfortunately it is time for you to go . Take care of your Astral Passport and your Transcender Certificate. These documents allow you to return in order to make other incredible experiences with the phosphenic machine. As a little gift you will receive the ABC of PHOSPHENO-LUMINOLOGY a book which shall become your steady companion for... ever . The hostess will also suggest you to pay a visit to the small Lefebure museum and the store, holding every single book of the famous researcher as well as marvelous devices and lamps reproducing natural daylight.
- Once you are back home , connect to phosphenic-center.com (bookmark it or add it to your favorites) to stay updated on news, novelties, the calendar of next transcenders' meetings. These meetings are organized everywhere, you are member of a large family and if you like to stay up late, go to the chat room and talk on line with transcenders all over the world, *Good night.*

Professionals in tourism and leisure, the virtual reality industry, the hospitality industry, investors with capital: become our partners and participate in the realization of the Phosphenic machine. Contact us at: bephosphenic@wanadoo.fr.

ANNEX:

What is Kundalini?

Kundalini is the supreme goal of all yogas and we can find its equivalent in the mystical practices of all religions as the awakening of this energy gives us direct access to the powers of the mind. The usual posture of yoga for awakening this energy is known as lotus (or half-lotus). It is in this posture that the historical Buddha Gautama Siddharta reached awakeness and got enlightenment by understanding the nature of the mind. This position is also practiced in ZEN and named "*zazen* " for obtaining the satori which is the awakening into the cosmic truth.

The origin of the enlightenment can be found in ancient texts of authentic yoga written in sanskrit, long time before hasty interpretations of occidental literature that emphasizes on

postures and lotuses descriptions. In the original yoga there are very few exercises, but they point out the awakening of a mysterious force called Kundalini. The word kundalini means to coil and is symbolized by a snake coiled at the base of the human spinal column. Kundalini is the universal feminine energy dormant in most of us coiled like a snake.

Kundalini appears at the base of the human spinal column, about 1 inch above the perineum and rises up to the brain. The ascension is described as a whirling force or a vortex force going up along the spine. When kundalini reaches the head, an enlightenment occurs. The arising of kundalini moves the chakras, a sanskrit word meaning "*wheels*". Chakras are psychic energy centers or vortices which connect between our psychic and physical energy systems. Chakras are vital centers generally represented like lotuses or wheels of light. The chakras are electromagnetic vortexes of energy; there are seven major chakras. Kundalini is stored as potential energy within the root or base chakra. When properly released it causes activation of all the major chakras of the body. We feel the chakras like voluptuous spinning vortex. Kundalini is in fact like a triangle with three points : oscillation or swaying - rotation and vortex - trembling ; its awakening is like all metaphysical experiences linked to neurological connections in certain areas of the brain due to the rhythmic generalization in all the body.

The Phenic System:

Every phene is a physiological intermediate between the physical sense to which it corresponds and a psychic sense. Once awakened, this psychic sense aggravates the perception of energies, intangible events or universes, which are unrecognized by the physical senses. Once the phenic system is stimulated, it provokes the perception of other dimensions, what tradition calls "beyond", "invisible world", or "subtle layers". There are equivalents of phosphenes in each physical sense, to which we must add the sense of balance, a peculiar quality of the skeleton, muscular activity, breathing and the perception of time. All these phenes, and probably others, which have not been discovered yet (such as a phene of the voice, formed by auditory thinking), are of course, linked among each other. This is why, if we stimulate a particular phene, we can clearly perceive the sensations linked to another phene. Moreover, there is a third sensorial system, which has been called until now 'psychic centers,' or chakras. This system is connected to the phenic system and as the third sensorial system to the consciousness. It has not yet proved, if these psychic centers or chakras are the organs of consciousness.

1. Phosphene
2. Acouphene
3. Gustatophene
4. Pneumophene
5. Osteophene
6. Myophene
7. Equilibrophene, gyrophone or statophene
8. Aromatophene or olfactophene
9. Tactuphene
10. Subjective perception of time

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Chasing the Elusive Worm: Neurotech and the Cerebellar Vermis

By James Clayton Roberts

This story begins in the year 1950, 17 years before I was even born. At that time, Dr. Robert G. Heath was implanting electrodes into the brain of his first study subject. Deep-implant EEG was a very new technology, and perhaps its best uses were seen in the next few years. Dr. Heath and his associates found the brain structures involved in irrational negative emotion: the amygdala, hippocampus and the cerebellar vermis. In an attempt to cure hopeless neurology patients, the criminally insane, Heath implanted electrical stimulators, like heart pacemakers, to try to normalize these people's behavior. At first, he focused on the temporal lobes, and then found the midline of the cerebellum, the vermis (Latin for "worm"), was a much more effective target. Later, people who might otherwise stab their wives or strangle their neighbors without provocation, returned home to normal life, thanks to the implants.

And, this marked the end of research into vermis stimulation. Heath continued to implant people into the late 70s, but that was about it. One would think that the entire medical profession and industry would insure that the procedure became an everyday occurrence, however the opposite viewpoint was promoted: that Heath was involved in ethically-questionable "mind control" research. Heath, and the biomathematician that analyzed the EEG data, Bernard Saltzberg, are now deceased.

One of Heath's colleagues, Dr. James W. Prescott, a neuropsychologist, conducted vast anthropological studies that found primitive cultures in which children were carried by the mothers for two years or more, they were practically devoid of domestic violence, violence as a rite of manhood, torture of prisoners of war, and the like. In those cultures where children were not shown the same level of maternal affection, violence was found to be commonplace. It was discovered that monkeys deprived of maternal affection during formative years had underdeveloped vermis, with abnormal electrical activity, becoming irrationally violent. This is key to understanding the overall situation with modern humankind and its violent antics, as it has been discovered that the vermis controls the limbic system, the brain parts involved in emotion. Specifically, the vermis, when stimulated by affection or electricity, deactivates the amygdala. The amygdala most often becomes active during moments of trauma or fear, and the patterns of activity seem to last forever after such a stimulation. Dr. Prescott has provided me with assistance in the form of information concerning his studies and Heath's research, and he has sacrificed and suffered much in an effort to bring his information to the child-bearing public, including persecution by the government. I believe that those in power have a stake in having populations with malfunctioning vermis.

Damaged or undersized cerebellar vermis have been implicated in such diverse illnesses as autism and drug-seeking behavior. Blood flow in the vermis has been found to be inversely proportional to that in the caudate nucleus, which has been posited as mediating some positive

body feelings.

Dr. Carl Anderson, of McLean Hospital in Massachusetts, has investigated the effects of sexual abuse and violence on the development of the vermis, and McLean has had research studies concerning the link to drug addiction. Dr. Jeffrey Schmahmann, of Harvard, and others, have explored the vermis' cognitive properties. This overlooked, primitive brain structure apparently has a hand in higher thinking.

I have studied neurotech since I was about 21, fourteen years ago. I've taught myself the sciences (the parts I feel I need to know, which are many): electronics, chemistry, neurology, and I have spent thousands on books and equipment. I have lived in sleeping rooms, and once I lived in an enclosed porch in order to spend more money on my studies. I bought and built many devices designed to alter neurological function through electricity, magnetism, sound and light. I had the Super Mind, by Zygon, Beck's Brain Tuner, Flanagan's Neurophone, the Nova Dreamer, and so on.

A friend first mentioned Heath's research to me over a year ago, and I knew then I had to find a way to stimulate the vermis without cutting holes in people's heads. It seems obvious to me that everyone could use a device that stimulate the brain part acted on by maternal affection, and the search might someday end in a machine that produces profound pleasure at the push of a button.

I was familiar at the time with the work of Dr. Alex Thomas in Canada, regarding the use of complex magnetic fields of low power as a strong modulator of awareness, behavior, and certain neurophysiological processes. Magnetic fields seemed a good place to start, so soon I was winding coils and attaching them to headbands. For the signals, I found pictures of EEG tracings, and audio recordings of deep-implant EEGs, and set about adapting them to the method I had chosen using waveform editing software. In some cases, I filtered out certain frequency components. In others, I increased the abruptness of amplitude transitions.

The results were more than I expected. I had experimented with simple frequencies and electromagnet transducers before, without results. With these new signals, I experienced changes in vision, taste and smell, and had extremely vivid and protracted dreams. These dreams were full of content relevant to past positive and negative events in my life. There also was perspiration at the area of magnetic signal application, some at the time of the sessions, and much more upon awakening from a magnetic dream. The dreams were often personal, and some were/are hard to deal with. Some of them, however, are quite beautiful, and there is much interaction with other characters, conversing, often animatedly. In these dreams I have full sensory awareness, feel the ground under my feet, hear sound, experience odors. Tactile sensation and the olfactory sense are some of the rarest reported in dreams. I had seizures in youth, some febrile, some not, and these dreams match any vision I had then (I had many). The dreams are distinctly recognizable as being induced by magnetic signal exposure. I can divide my dreaming into two parts: before and after magnetic stimulation. The dreams seem to have removed a great deal of emotional baggage from my mind, and off of my back, they are possessive of unresolved emotional issues, in fast forward mode). I theorize that these dreams are caused by the vermis' intimate connection to and control over the limbic system, and an apt metaphor for the processing

of past problems might be “productive coughing”. Not all who are exposed to these signals have these dreams, but report positive change nevertheless. It is a truism that every brain is different.

Over time, I added noise, and made experimental signals based on VLF (Very Low Frequency) radio emissions caused by lightning strikes, solar winds, and magnetic “storms”. Also, the geomagnetic field of the earth, and other biological signals have been tried. Bob Beck, inventor of the Brain Tuner, experimented with geomagnetic signals applied to the head in electrical form, and found them to be dramatically psychoactive. The noise addition was based on studies of Stochastic Resonance and neurology, in which mechanoreceptors from crayfish tails responded much more to sine waves with added noise than sine waves by themselves (I despise animal experimentation, but I believe that if it has already been done, some good should come of it).

I also felt that, as with any mind-altering device, drug or practice, the information one is exposed to before, during and after the altering event should be controlled, and it should be strongly positive. Thus, I applied stochastic resonance to voice recordings, and in doing so created a new form of subliminal messaging, which I feel is extremely effective. I listened to the recordings during my magnetic sessions, and this caused more and more vivid dreams, and more transmutation of old griefs into internal balance and peace.

I began to give the devices to people in exchange for donations last April, and many have acquired the first model, called the 4th Eye. I am in the process of making the second version, called The Affection, which has two electromagnets and a battery-powered blue LED which flashes in sync with the signals. The color blue was chosen because of a magnetoreceptor, Cryptochrome, which exists in plants, and in animals that use the earth’s magnetic field to navigate, and also in the human retina. The chemical is sensitive to magnetic fields and blue light, and I feel there is a synergy when the two are used in concert.

I am also investigating the use of acoustically-modulated plasma tubes which emanate Extremely Low Frequency (ELF) radio waves, and externally-applied non-linear electrical signals as means of stimulating the vermis. And, the use of infrared light, which has been shown in NASA studies to regenerate various kinds of tissue. In specific studies, it is shown to have the power to regenerate neural cells. Sound applied directly to the head over the vermis is another possibility, and combinations of all the above. I believe I have a good chance of finding a way to simulate some aspects of the experience an infant has when receiving maternal affection, which should be something like bliss.

I would like to thank Dr. Prescott very much for his help, also Tom Kasper, Dr. Anderson, Dr. Thomas, the folks at xbrain and mind-1 (particularly Percy, Michael, Juju, Alice, Wille, Chris, etc), and those who have the devices. Without these people, this article would be a moot point.

And, lastly, of course, though the origins of my devices lie in the realm of medicine and doctors, I do not offer them to diagnose or cure any medical illnesses, or for any medical purposes whatsoever. Neither do I offer medical advice.

For more information: xeno_tropic@yahoo.com or <http://yahoo.groups.com/group/magstim>

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Thursday, January 20th 2000.

The Cerebellar Vermis and Psychopathology

Attention & Learning: Part 3

By Dave Siever

Michael Joyce's storage box containing the DAVID Multiple System has an audio-mixer that mixes a microphone and CD player into the multiple system for the children to hear. His system is on wheels so that it can be easily transported throughout the school for use in different classrooms. Michael's storage system is currently being used in several primary schools.

Academic Performance and the Alpha Rhythm-Revisited

Several studies have been completed showing the comparison between peak alpha frequency and intelligence. In 1996, Anoukhin and Vogel observed 101 healthy males ranging from 20-45 years of age. They discovered that those who scored well on the Raven's IQ tests had a scant 1 Hz faster alpha rhythm than did the poor performers. In 1971, Oloffson reported that healthy human alpha production was in the range of 9.3-11.1 Hz. A 1990 study by Markand showed that a dominant alpha frequency of 8.5 Hz or lower reflected a state of mental dysfunction. Other studies by various research teams; Vogt, Klimesh and Doppelmayr (1998), Jausovec (1996), Giannitrapini (1988) showed a distinctive relationship mental performance and peak alpha frequency. Roughly speaking, peak alpha production of less than approximately 10 Hz can be associated with poorer than average academic performance while dominant alpha production higher than 10 Hz is associated with better than average academic performance.

Some AVS manufacturers claim that 'super-learning' can be achieved with their 'learning sessions', however there is no research available to support these claims as of yet. While there is enough research now to support that learning can be accelerated following a treatment program of AVS, it cannot be assumed that AVS can produce 'super-learning'. We have observed that the best method to improve academic performance is to study after an AVS session has ended, as shown by reductions in excess brainwave activity. Figure 23 shows high EC theta (up to 28 uv) and increased theta (inversion) when reading (RE) in this struggling college student. Following an 8 Hz AVS session (Figure 24), her EC theta fell to a much improved high of 19uv. During reading, her pre-frontal theta fell from 11-9uv, almost ending the inversion and her comprehension improved as well. Peak alpha frequency and A3/A1 ratios also improve (see Budzynski next section). AVS is also effective for inducing hypnotic trances where we can learn new study habits and emotions.

Anxiety and Stress

As mentioned earlier, family dynamics are critical in child development and in particular when dealing with an ADD child. The three main characteristics of ADD are described as hyperactivity, impulsiveness and distractibility / inattention.

The three main characteristics of stress and anxiety are hyperactivity, impulsiveness, and

distractibility / inattention. Notice the similarity between ADD behaviors and behaviors related to stress and anxiety? Often within dysfunctional families, family members project their dysfunction onto the ADD child, believing the child has the problem that is upsetting the family and not realizing that the family has a problem that is hurting the ADD child.

When a disruptive child is causing havoc within the family it can be extremely difficult for the parent to not take it personally. As a result, the parent reacts emotionally and all sorts of name calling, 'getting even' type behaviors and punitive actions can occur from the parent in coping with his / her wounded feelings and fears that the child is going to grow up a 'failure' or 'disappointment'. These emotional reactions are next to impossible to control, especially for parents who were abused as children themselves. That is why it is so important for parents to receive counseling to help them deal with their child's behavior in a non-fearful, non-reactive way and to get on with doing the best parenting they can.

Typically with stress and anxiety, the percent time of beta activity (cognition) drops while theta amplitude (ADD behaviors) increases. Figure 25 shows two examples of increased theta (and ADD behavior). The upper trace shows a child's theta activity dropping with neurofeedback. At about session 12, his theta increases with the stress of a family conflict. As the conflict is resolved, his theta activity reduces (along with ADD symptoms). The lower trace shows a similar reaction when the mother begins drinking alcohol and becomes dysfunctional. Upon resolving her drinking problem, her child's theta begins to improve. These are temporary or *state* changes that rectify themselves when the problems are resolved.

Long-Term Effects and Traumas

The aftermath of child abuse manifests itself in several different ways. Inwardly, it can show up as depression, anxiety, PTSD and suicidal tendencies. Outwardly, it can show up as aggression, impulsiveness and substance abuse. Survivors of child abuse often develop borderline personality disorders often characterized by viewing others in 'black-and-white' terms. After meeting someone, they typically put that person up on a pedestal, then after some perceived (real or imagined) slight or betrayal, they hate and damn that very same person. They often feel empty and unsure of their identity and have short-lived, intense relationships. They often try to escape through destructive behaviors and substance abuse.

It was thought that abuse-related behaviors were primarily psychological, but it has been found that when a child is frequently exposed to sexual, emotional or physical abuse, cortisol (a stress hormone) releases into the blood and brain in preparation for flight-or-fight responses. Repeated releases of cortisol damage portions of the hippocampus, amygdala cerebellar vermis, all limbic structures.

The main role of the hippocampus is to determine what incoming information will be stored into long-term memory. The primary task of the amygdala is to interpret and filter incoming stimuli (real or imagined) and help make decisions in terms of survival and emotional needs. This resulting over-excitation of the limbic system manifests itself as interpersonal dysfunction. This destruction is thought to be life-lasting, forming at least semi-permanent *traits* within the person.

Childhood Trauma and the Limbic System

Teicher, Glod, Surrey, and Swett (1993) used a checklist of limbic symptoms which was found to correlate with somatic, sensory, behavioral, and memory symptoms suggestive of temporal lobe epilepsy. They discovered that a history of physical abuse was associated with a 38% increase in questionnaire scores, sexual abuse with a 49% increase, and combined physical and sexual abuse with a 113% increase compared with non-abused subjects. Interestingly, physical or sexual abuse alone was associated with elevated scores only if the abuse occurred before age 18. They also conducted a retrospective study on 115 consecutive patients admitted to a child-adolescent psychiatric inpatient unit. Compared to non-abused patients, they discovered that abused patients had increased EEG abnormalities. It has been found that recall of a traumatic childhood memory shifts cortical activity from left-hemisphere predominance to right-hemisphere predominance and that the degree of the right shift is correlated with the severity of the early childhood abuse, producing left-hemisphere dysfunction.

The Teicher group's studies provide overall support that early abuse is associated with left-hemisphere abnormalities (e.g. with limbic structures such as the amygdala and hippocampus) that may prevent greater hemispheric inter-connectivity and foster specialization of the right hemisphere. The result may be one where the two hemispheres of the brain do not work as cooperatively. They suggest that this lack of hemispheric interdependence may encourage inner conflict or affective instability if the right hemisphere floods the left hemisphere with thoughts that do not make sense. Furthermore, they have speculated that recall of abuse could lead to a temporary worsening of symptoms if the recall exacerbated neuronal irritability.

Carl Anderson, Ph.D., and colleagues also found that repeated sexual and physical abuse affects cerebral blood flow and function of a key brain region related to substance abuse, the cerebellar vermis. The cerebellar vermis plays an important role in infant development. In other studies, this part of the brain has been found to affect the coordination of emotional behavior and to be strongly affected by alcohol, cocaine and other drugs.

Anderson and colleagues conducted two studies. The first looked at 32 young adults, 15 of whom had a history of child abuse. They found that childhood abuse impaired the development of the cerebellar vermis and these people were less able to regulate and control irritability in their limbic system. They also found in a further study of 537 college students that those that frequently abused drugs had higher limbic irritability than those who did not. These students also had higher levels of depression and anger.

The combined data from his two studies has prompted Anderson and his colleagues to conclude that childhood abuse impairs the development of the cerebellar vermis, one function of which is to control and limit irritability in the limbic system. These individuals are more likely to use drugs to compensate for this deficiency.

Bremner, from Yale, used MRI to examine the brains of 17 adult survivors of child abuse and compared their MRI's with a group of adults who had not been abused as children. The abused group displayed memory deficits and showed a 12% reduction the size of their hippocampus, a region of the brain known to be involved in memory.

We observed that adult survivors of child abuse showed similar damage as those with chronic fatigue syndrome (CFS), many of whom also have histories of child abuse. The damage generally shows a severe disconnection of the sites T3 and/or T5 with the rest of the brain. As in findings with CFS, abused people do poorly with word-finding tasks, recalling names, and learning a second language. T5 affects verbal understanding. Those with T5 problems often find themselves rereading paragraphs and having to re-explain themselves. Problems with T3 involve speech, reading difficulties and saying things that are different than one's intent.

As mentioned, people with ADD often experience family dysfunction, and taking the brunt of abuse. They develop impairments with auditory and reading (T3), speech (F7), putting names to faces and objects (T5), facial recognition (T6), in the ability to control anxiety (P3 and P4), in addition to the attentional problems they may already have. Figure 26 is from a 44-year-old adult with a history of child abuse and neglect. There is 'dissociation' or problems communicating with other brain regions at several locations. Notice how these areas are surrounded by a region of black. This person also shows a strong dissociation at the sensory-motor strip (C3 and C4) reflecting in a loss of body awareness as a way to cope with painful thrashings.

Using the DAVID Paradise for ADD / ADHD

To date, several thousand children and adults have used AVS to reduce their symptoms of ADD / ADHD. The 'rules of thumb' are quite simple overall and are as follows:

WE RECOMMEND DRINKING A GLASS OF WATER BEFORE EVERY AVS SESSION.

1a) It is very helpful to assess behavior every couple of weeks. The best and easiest way is with the Connors ADD Rating Scale for parents, the Burk's Behavior Index or other behavior indexes. Never look at a previously filled-out questionnaire until the present one is completed, then compare notes.

1b) Many well-meaning parents get into yelling matches and punishment based mindsets with their ADD/ADHD children, particularly if the child also has oppositional defiant disorder (ODD). These kids can be particularly distressing to parents. Remembering that the symptoms of anxiety are: a) inattention, b) impulsiveness, and c) hyperactivity (as is with ADD) it is important to pay close attention to the family dynamics to see to what degree anxiety and true ADD symptoms are present.

1c) If anxiety is present, then have both the parents and the child use the 'alpha' sessions. The heart-rate variability (HRV) Schumann (Session 76) and HRV @ 10 Hz (Session 77) are meant to be used while awake (although it is fine to fall asleep). The intent of these sessions is to promote relaxation and teach anxious/tense people how to breathe properly. It is primarily used with those tense parents who often experience shallow, rapid breathing and periods where they feel overwhelmed and anxious. This also applies to older children who have enough self-discipline to control their breathing. Listen carefully to the heartbeat sound played through the headphones. Breathe into the tummy (not the chest) for two beats and breathe out for two beats. The tummy should rise and fall three times the amount of rise and fall seen of the chest. The breathe cycle should take roughly 8 seconds at the beginning of the session and lengthen to 10

second cycles as the session progresses.

2a) If the child or parent experiences difficulty falling asleep, the 'Dissociative Schmann' (Session 78) is particularly effective in bringing about the onset of sleep. This is mainly due to the 'dissociative' aspect of the session. Increased dissociation is easily created in any session by splitting the left and right stimulation frequencies by about 1/2 Hz, then adding a 10-minute extension to the session. The user setting will be locked into the session for 10 minutes, and by this time most people are in quite a trance state. The 'alpha/theta' session in the DAVID devices also dissociates well.

3a) After a week or two have passed and the child is more relaxed, it is time to begin the morning sessions. These are higher in frequency and are meant to stimulate the brain to a higher level of arousal. Use these before noon and for the oppositional children, it's best to run the session before they wake up and are not yet in an oppositional state of mind. The early morning AVS session is generally the best approach for most parents and children.

3b) If the child is quite anxious by nature, begin with the SMR session in the DAVID Paradise for a week or two. Observe the child daily. As the child responds, increase the stimulation to either the 'SMR/Beta' session in the DAVID Paradise, the 'Brain Brightener' session or the 'ADD' session used in M. Joyce's study (Session 83). This ADD session may be the better choice if the child doesn't seem to become 'absorbed' in the session. Watch to see if the child is squirming or playing with his/her fingers or has shallow breathing. Breathing should become deep, slower and relaxed. Sessions may be alternated for variety. It can be helpful to play a tape or CD of relaxing music or nature sounds during the session. Do not play pop/rock or country music along with the session. Stay mainly to music without lyrics.

4a) Results normally begin to appear a week or two and improvements should continue to show for a few months. After a few months the improvements will begin to taper off. The number of sessions of AVS needed to produce maximal improvements seems to correlate fairly closely with that of neurofeedback, where most of the gains will have been made in about 40 sessions. Sometimes, children may be weaned down to just one session per week or even not at all, and other children must maintain continued use.

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The Thermodynamics of Hell

The following is an actual question given on a University of Washington chemistry mid-term exam. The answer by one student was so "profound" that the professor shared it with colleagues, via the Internet, which is, of course, why we now have the pleasure of enjoying it as well.

*****Bonus Question: Is Hell exothermic (gives off heat) or endothermic (absorbs heat)?*****

Most of the students wrote proofs of their beliefs using Boyle's Law, (gas cools off when it expands and heats up when it is compressed) or some variant, but fell short in producing a demonstration argument. One student, however, wrote the following:

"First, we need to know how the mass of Hell is changing in time. So we need to know the rate that souls are moving into Hell and the rate they are leaving. I think that we can safely assume that once a soul gets to Hell, it will not leave. Therefore, no souls are leaving. As for how many souls are entering Hell, let's look at the different religions that exist in the world today.

Most of these religions state that if you are not a member of their religion, you will go to Hell. Since there are more than one of these religions and since people do not belong to more than one religion, we can project that all souls go to Hell. With birth and death rates as they are, we can expect the number of souls in Hell to increase exponentially.

Now, we look at the rate of change of the volume in Hell because Boyle's Law states that in order for the temperature and pressure in Hell to stay the same, the volume of Hell has to expand proportionately as souls are added.

This gives two possibilities:

1. If Hell is expanding at a slower rate than the rate at which souls enter Hell, then the temperature and pressure in Hell will increase until all Hell breaks loose.

2. If Hell is expanding at a rate faster than the increase of souls in Hell, then the temperature and pressure will drop until Hell freezes over.

Considering then the postulate presented to me by Teresa K. during my Freshman year: that "it will be a cold day in Hell before I sleep with you," and take into account the fact that over two years later, I still have not succeeded in having relations with her; then, #2 cannot be true, and thus I am sure that Hell is exothermic and will not freeze."

The student received the only "A" .

Editors Note: 'Thank you' to the student who wrote this and the professor who posted it on the internet. We realize this has nothing to do with AVS, but got such a kick out of it we just had to share.

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