

AVS

Auditory / Visual Stimulation

Spring '01
Vol. 1, #3

An Interview with Chuck Davis
L/S and Relapse Prevention
Downloading Photosonix Sessions
& More!

\$12.95

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 and Canada



MindMachines.com

Offering a huge selection of gear including
Mind-Gear, Mindplace, Photosonix, and MindAlive
light and sound instruments and related accessories

We know our products.

Complete sales, instruction, and information.

www.MindMachines.com

AVS Journal Vol. 1, #3 Spring '01

Welcome to the third edition of the AVS Journal. To all of you who have subscribed - thank you! And to the authors and advertisers appearing in this issue, you have my utmost appreciation. Please feel free to contact these professionals in AVS research and sales to learn more about how they utilize and promote auditory / visual stimulation.

Our Spring issue begins with an article by Jeff Labno, who I am proud to announce has joined me in publishing this journal. Jeff is now Director of Marketing for the AVS Journal, amongst his many other responsibilities, and with his knowledge and experience in light/sound - AVS technology, the quality of this journal can only get better. And after reading his article "Personal Programming" the quality of your AVS sessions should also be enhanced!

Ruth Olmstead, M.A., provides a very interesting article about investigating the role of AVS in the reduction of medication intake of ADHD individuals. For those of you with an interest in ADD/ADHD disorders, Ruth has a large amount of information available at her web site: www.enlightenedbrain.com. It is definitely worth visiting. For all of you who have heard about the ROSHI EEG/neurofeedback system, here is your chance to read about the man who created it - Chuck Davis. In his 'e-interview', Chuck enlightens us all to the new features the ROSHI has, including the EEG/NFB - AVS interface. You'll also learn how the ROSHI came to be, along with Chuck's insights regarding the future of EEG/neurofeedback. For those of you who utilize NFB with AVS, Chuck Davis is the one to talk to.

Perhaps the most frequently asked question by those of us who own Photosonix instruments is how the heck do you download sessions into them??? Ray Wolfe, the manufacturer of Photosonix instruments, has come to our rescue. In his article "Downloading Sessions into Photosonix Products", Ray describes the complete process in simple to understand language. Hang on to this article, as it will make a nice addendum to your owners guide. Next comes an article by Anadi Martel, M.Sc., that is sure to arouse your curiosity. The Sensora is without doubt the most advanced, complete, multi-sensorial system made. You will be amazed to learn what this system contains and how it can be used. Sensortech, Inc. has definitely taken light, sound and tactile stimulation to it's highest level!

This issue would not be complete without an article by Michael Stevens, Master NLP Practitioner. Michael's "Heart of Quantum Linguistics" can certainly be used as a 'consciousness' tool. In our New Products section, two very inexpensive items are featured: a method for measuring your GSR and gel filters for adding color variety to your AVS sessions. And be sure to check out Synetic System's most recent information and product catalog. Robert Austin, President of Synetic Systems, manufactures a variety of high quality AVS and GSR instruments at very affordable prices.

I hope all of you find this issue of the AVS Journal enjoyable and informative. And again, thank you!

- Michael Landgraf
Editor

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

Table of Contents

Personal Programming
by Jeff Labno

Pilot Study Investigation of Auditory and Visual Stimulation
in the Reduction of Stimulant Medication Intake of ADHD Subjects
by Ruth Olmstead, M.A.

An "E - Interview" with Chuck Davis,
Creator of the ROSHI EEG/NFB System

Downloading Sessions to Photosonix Products
by Ray Wolfe, CEO of Microfirm, Inc.

Relapse Prevention
by Michael Landgraf

The Sensora: A Multi-Sensorial Therapeutic Device
by Anadi A. Martel, M.Sc., of Sensortech, Inc.

Heart of Quantum Linguistics
by Michael Stevens

New Products

Calendar of Upcoming Events

Cover design: created entirely by Chris 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). Chris' latest work "Audio Sessions for NFB Training" CD contains thirty-seven 1Hz sessions for specific brainwave frequency entrainment, with track 1= 1Hz, track 2= 2Hz and so forth. Chris is also a Microsoft software instructor and accomplished web site designer.

Readers: All information contained in this AVS Journal is copyrighted. All articles are used with the permission of the authors. No duplication of this journal, in part or in whole, may be made without prior written consent of the respective author(s) or the Editor. Michael Landgraf, the publisher and editor, and Jeff Labno, the marketing director of the AVS Journal, assume no responsibility, whether financially or otherwise, for any misleading or incorrect information contained within this journal. Warning: People who are photosensitive or epileptic, whether knowingly or not, should not use a pulsed light device.

“For all of you who have children that enjoy coloring books, we have a free 49 page coloring book in pdf downloadable format. No personal information is needed to download. Just visit www.mindmachines.com and click on “Free Download” located on the entry page to our website. It is something we wanted to make available for kids. For those interested, we hope you find it enjoyable.” -Michael Landgraf

Light, Sound & Fun

The Original Light & Sound Coloring Book



Grab Your Crayons and Enjoy Light & Sound!

The Fossil Phil Way

Personal Programming

by Jeff Labno

To do your own programs; or not to: that is the question. Fewer than 5% of the people I talk to ever get around to do their own personal programs.

One of the most talked about reasons to do personalized programs is to make the length of a program longer, or shorter. Some machines now have a feature which allows you to quickly compress or expand program times.

The easiest way for you to do your own programs is to plug your AVS machine into an external sound source (see your manual for details). When you do this, turn the volume of the strobe sound down so it is in the background, around 15% of the volume of your music.

External sound is the most obvious way to personalize programs. After you select your music, then select a program which makes intuitive sense. For a behavioral modification tape, you might choose a theta or visualization program; for a language tape, an alpha or learning program; for your favorite music, a theta or visual program.

CD players have excellent sound, so look at your favorite CDs for a musical escape or get-away from the mundane. Your favorite music is an excellent choice at night when you've finished everything you have to do.

Cassette players have many options for foreign language tapes, behavioral modification, yogic guided visualizations and more.

If your radio has a headphone jack, try using it for foreign language broadcasts, radio dramas (guided visualizations), popular music for energy and mood enhancement, classical music for inspiration, and "oldies" to exercise memory acuity.

Try using your AVS machine while watching television. Late at night, there may be a program which really interests you, but you are too tired to pay attention. Select a beta or energy program on your machine, use the headphones only, and put the volume very low. Now watch your program and see if your ability to stay alert and focused is much better.

Making your own programs from scratch can be done manually on some machines, or by using computer software. Each machine manufacturer has its own unique software and computer language.

Here are some guidelines to help you make your own programs successfully:

The more changes in frequency and mode/phase, the more colors and patterns you will see. When the mode/phase is set so that the eyes flash simultaneously, the patterns tend to be more square, alternating produces

round patterns. The slower the frequency, the larger the geometries; the faster, the more intricate and complex.

Most programs consist of ramps (gradual frequency change of a set time) and target zones (the same frequency set for a period of time). Using this model, you ramp the frequency from 18 (alert) down to 6 (visual), leave it at 6 for 20 minutes, then ramp back up to 18. This is obviously the simplest of possible models.

Brainwave Chart (there are no precise state descriptions, these are averages):

Beta 13+Hz.	High (18+Hz.) Medium (15-17Hz.) Low (13-14Hz.)	Focus Energy Thinking, personal magnetism
Alpha 8-12Hz.	High (12Hz.) Medium (10-11Hz.) Low (8-9Hz.)	Read fast, self-esteem Super learning Memory, free-flow, peak performance
Theta 5-7Hz.	High (7Hz.) Medium (6Hz.) Low (5Hz.)	Bliss, altered states, sensual, balance Creativity, remote viewing, lucid dreaming Serenity, tranquility, inspiration
Delta 0.5-4Hz.	High (4Hz.) Medium (2-3Hz.) Low (0.5-1Hz.)	Pain reduction Sleep, healing Trance, deep rest, enlightenment

Another important factor in programming is mixing the parameters correctly:

Mode 1: Synchronous - active
Alternating - passive

Mode 2: Eyes - logical
Ears - emotional

Mode 3: Left brain - analytical
Right brain - artistic

To mix the above modes here is a chart to help you:

Eyes	Simultaneous	Alternating
Ears	Active logic	Passive logic
Left / Right	Active emotions	Passive emotions
Front / Back	Focused thinking	Synthesized thinking
	Balance	Contemplating

Finally, here is a music chart to help you select the correct music for programming:

Music selection suggestions:

	Delta	Theta	Alpha	Beta
Nature	X	X		
Voice		X	X	X
Gregorian	X	X	X	
Baroque			X	X
Classical		X		
Romantic		X	X	
Impressionistic	X	X	X	
Jazz				X
Popular		X	X	X
Mood		X		
New Age		X		
Ethnic		X		X
Original Instruments	X	X		
Children's Music	X	X	X	

Enjoy programming!

Copyright: Jeff Labno, April, 2001.

Pilot Study Investigation of Auditory and Visual Stimulation in the Reduction of Stimulant Medication Intake of ADHD Subjects

by Ruth Olmstead, M.A.

ABSTRACT: This pilot study compared the effects of auditory and visual stimulation (AVS) produced by light and sound on individuals who were taking stimulant medication for the treatment of attention deficit hyperactivity

disorder (ADHD) symptoms. These symptoms include inattention, impulsivity, and the onset of such symptoms often resulting in poor academic performance. Stimulant medications are widely used to treat ADHD symptoms, but have drawbacks. The most serious is that symptom reduction is only temporary unless the medication is taken indefinitely. In addition, stimulants have physical side effects, and long term compliance with taking medication is poor, especially amongst adolescents. Results suggest that AVS treatment demonstrates a reduction of ADHD symptomology as evidenced by the significant number of subjects who were able to reduce or discontinue stimulant medication intake.

Introduction

The purpose of this pilot study was to examine the efficacy Auditory and Visual Stimulation (AVS) in reducing stimulant medication intake in subjects diagnosed with Attention Deficit Hyperactivity Disorder (ADHD). Psychostimulants are the most widely used treatment in the symptomology of ADHD (Barkley, 1990). AVS is hypothesized to effect the brain in a similar manner as neurostimulant medications. This pilot study proposes that AVS, also known as brainwave entrainment and stimulation, appears to be an effective non-drug approach in the treatment of Attention Deficit Hyperactivity Disorder (ADHD) symptoms.

Auditory and visual brain stimulation is induced through the rate of flickering lights that are applied at varying frequencies to the brain through the use of white light emitting diode (LED) glasses. The rate of the flickering lights within the goggles worn over the eyes, causes the brain to "entrain" or match the set rate of flickering to a desired frequency, depending on the preferred outcome. Increased brain activity is theorized to be produced by the light stimulus as it enters the brain through the optic nerve into the visual cortex.

AVS is thought to produce new neuropathways and increase high arousal brainwave states. In a related series of studies, Diamond (1988) demonstrated that environmental stimulation in rats increased dendritic growth and brain weight, which resulted in improved performance on tasks such as maze learning and memory.

The induction into certain brainwave states has been found to increase brain activity and reduce hyperactivity and feelings of anxiety through the decrease of high-arousal brainwave states, or the increase of under-aroused brainwave states. For example, brainwave entrainment within alpha states allows for relaxation, and a decreased stress response to occur by providing a slower and more relaxed brainwave state. A faster brainwave state, produced by faster flickering of the LED lights, induces a higher brainwave state, and is theorized to provide enhanced brain stimulation, resulting in a decrease in hyperactivity much like the paradoxical application of neurostimulant's, increases in memory, problem solving, and information processing abilities.

Cunningham (1981) reported improved reading and math scores as well as increases in self-control in children following Electroencephalograph (EEG) biofeedback training. EEG biofeedback training also demonstrates effective alterations in brainwave frequency through the process of focusing, learning, and practice of increasing or decreasing brainwave activity. Lubar (1985) demonstrated significant improvement in overall academic performance

in learning disabled (LD) students using EEG biofeedback. Additional studies by Tansey (1990) and Carter and Russell (1981) investigated the effects of biofeedback training on LD boys, and noticed significant gains in intelligence quota (IQ) scores. All of these EEG studies have demonstrated that brainwave entrainment within higher or lower arousal states, depending upon the target symptoms, result in increases in overall cognitive abilities and IQ, as well as increased self-control of negative behaviors.

There is some evidence that auditory and visual stimulation, which includes brainwave entrainment, can be duplicated in terms of physical phenomenon such as dendritic enhancement or neurodevelopmental growth. Carter and Russell (1993) conducted a pilot study using AVS and measured changes in academic performance and behavioral functioning of learning disabled (LD) boys. This study outcome suggests that AVS brought about neurodevelopmental changes as reflected in significant increases in IQ scores, achievement test scores, and self-control measures in LD boys.

Rossiter and LaVaque (1995) conducted a study comparing the effects of EEG biofeedback and stimulant medication in reducing ADD symptoms. The study compared treatment programs with 20 sessions of EEG biofeedback or stimulants as their primary components. An EEG group of 23 students (EEG) was matched to a stimulant medication group (MED) by age, gender, diagnoses and IQ. The Test of Variables of Attention (TOVA) was administered pre and post treatment. Both EEG and MED groups demonstrated improvement ($p < .05$) on TOVA change scores in measures of inattention, information processing, and variability, but did not differ from each other ($p > .03$) on TOVA change scores. These results indicate that EEG biofeedback is an effective alternative to stimulants, and may be a preferred treatment of choice if stimulant medication is ineffective, has negative side effects, or if compliance is problematic.

These studies indicate that brainwave entrainment such as EEG biofeedback, and entrainment and auditory and visual brain stimulation (AVS) can affect cognitive functioning and aid in behavior control. The purpose of this pilot study was to: (1) demonstrate the effectiveness of AVS treatment in significantly reducing the cognitive and behavioral symptoms of ADHD; (2) demonstrate that a significant number of subjects who were taking medication prior to AVS, to reduce or discontinue stimulant medication as a result of AVS treatment. Symptom reduction was based on post-AVS evaluation of the ADHD symptom criteria checklist in accordance with DSM-IV (American Psychological Association, 1994) diagnostic criteria.

Methods

The participants in this pilot study were 65 clients ($n=65$) from the Research Center for Alternative Medicine in Calgary. They were referred by their parents, physician, or were self-referred. The subjects were evaluated by a physician prior to beginning AVS, and received a primary DSM-IV diagnosis of Attention Deficit Hyperactivity Disorder (ADHD). Subjects consisted of 55 males and 10 females, and were between the ages of 6 and 45 years of age. Twenty-five subjects were on stimulant medication when beginning treatment.

Procedure

Each subject was administered a DSM-IV criteria checklist prior to undergoing AVS treatment, and again after treatment sessions commenced. AVS protocols were provided by the author, and are varied dependent on the age, presenting symptoms, and visual baseline test results obtained from each subject. AVS protocols were sometimes changed during the course of treatment as targets for intervention changed, e.g., from improving attention span to reducing impulsivity.

The Digital, Audio, Visual, Integration Device (DAVID) was the instrument used to induce AVS. This instrument comprises headphones for gaining audio stimulus, and eye goggles inset with full-spectrum, white LEDs for inducing brainwave entrainment and stimulation. To undergo AVS, subjects got into a comfortable position while reclining, and donned headphones and eye goggles. Systematic AVS treatment was administered in a designated room one day per week for a duration of 35 minutes.

Results

The first purpose of this study was to demonstrate improvement in ADHD symptoms using AVS treatment, and investigate whether there would be a significant difference among subjects who reported no progress or decrease in symptomology, those who showed mild progress, those who reported moderate progress, and those who showed significant progress. It was predicted there would be improvement in ADHD symptoms in subjects within the four progress categories. Table 1 summarizes the age break-down of the age of subjects, and the amount of symptom reduction reported by the subjects.

Table 1
Age Break-Down and Amount of Symptom Reduction Break-Down

	0	Mild	Moderate	Sign	Total
6 yrs.			50% (2)	50% (2)	4
7-8 yrs.		42% (5)	33% (4)	25% (3)	12
9-10 yrs.	12% (2)	18% (3)	41% (7)	30% (5)	17
11-12 yrs.	17% (1)	17% (1)	33% (2)	50% (3)	6
13-15 yrs.	7% (1)	20% (3)	53% (8)	20% (3)	12
16-19 yrs.				100% (2)	2
20 yrs.+		63% (5)	12% (1)	25% (2)	8

A chi-square test (3 df) was statistically significant $\chi^2(3) = 13.83$, $p < .01$. It appeared that greater percentages made moderate and significant amounts of progress.

It was noted that of the 65 subjects undergoing AVS treatment, 68% demonstrated moderate to significant progress as a result of treatment. A chi-square test (1 df) was statistically significant $\chi^2(1) = 8.14$, $p < .01$. This demonstrates a significant difference from the 32% who made no progress. Table 2 summarizes the results of progress break-down in regards to reduction of stimulant medication using AVS.

Table 2
Progress in Medication Reduction Break-Down (n = 25)

0 change in medication intake: 6 (24%)
Able to reduce medication intake: 11 (44%)
Able to go off medication completely: 8 (32%)

The age break-down indicated in Table 2 demonstrates that 6 subjects experienced no change in medication intake (24%), eleven subjects (44%) were able to reduce medication intake, and eight subjects (32%) were able to discontinue medication completely. A chi-square test (6 df) was not statistically significant $\chi^2(6) = 6.45$, NS. This demonstrates that there was no relationship between age and the four categories of amount of symptom reduction.

The second part of this study was to compare the effectiveness of AVS with that of medication in reducing the symptoms of ADHD. It was predicted there would be a reduction of medication intake in the subjects on stimulant medication after AVS treatment. The hypothesis was confirmed. Analysis of data gathered utilized a chi-square test, with a level of significance of .05. Of the 25 subjects taking stimulant medication prior to beginning AVS treatment, 76 percent reduced or discontinued stimulant medication, and 24 percent did not. A chi-square test (1 df) was significant $\chi^2(1) = 13.0$, $p < .001$.

Discussion

This pilot study suggests that an AVS treatment program can lead to significant reduction in ADHD symptoms. Based on DSM-IV criteria checklists that were completed pre and post AVS treatment, it was reported that there was a significant reduction in cognitive and behavioral symptomology. AVS treatment resulted in significant change in the reduction of medication intake within the subjects who were taking stimulant medication prior to treatment.

The results of this pilot study indicates that Audio Visual Stimulation appears to be a viable, non-drug approach to the treatment of ADHD symptoms. AVS intervention is also a cost effective alternative to the long term use of medication, if it results in long term symptom reduction. This study did not measure specific academic improvements, thus further studies need to be conducted that include the implementation of more varied quantitative testing in many areas, such as standardized academic testing, behavior rating scales, and measures of social functioning. There was no control group so between-measures could not be compared in terms of reduction of symptoms between subjects on stimulant medication and those who were not. This study also did not include follow up measures, so the long term efficacy of AVS is unknown.

Current studies in the search to identify the correlates of ADHD such as inattention, impulsivity, and hyperactivity, have been inconclusive in their findings due to many inconsistencies within brain research findings. Further studies utilizing auditory and visual stimulation need to be conducted with more precise measures and larger samples utilizing brain imaging and EEG correlation, as well as neuropsychologic measures and academic and IQ testing to determine the overall effectiveness of AVS for neurological and academic enhancement and treatment.

References

American Psychological Association. (1994). Diagnostic and Statistical

Manual of Mental Disorders (4th ed.). Washington, D.C.: Author

Barkley, R.A. (1990). Attention Deficit Hyperactivity Disorder: A Handbook for Diagnoses and Treatment. New York: Guilford Press.

Carter, J.L., & Russell, H.L. (1993). A pilot study investigation of auditory and visual entrainment of brain wave activity in learning disabled boys. *The Texas Researcher*, 4, 65-73.

Carter, J.L., & Russell, H.L. (1981). Changes in verbal-performance IQ discrepancy scores after left hemisphere EEG frequency control training. *American Journal of Clinical Biofeedback*, 4, 66-68.

Cunningham, M.D., & Murphy, P.J. (1981). The effects of bilateral EEG biofeedback on verbal, visual, spatial, and creative skills in learning disabled male adolescents. *Journal of Learning Disabilities*, 14, 204-208.

Diamond, M.C. (1988). *Enriching Heredity: The impact of the environment on the anatomy of the brain*. New York: The Free Press.

Lubar's study (as cited in Carter & Russell, 1993).

Rossiter, T.R., & LaVaque, T.J. (1995). A comparison of EEG biofeedback and Psychostimulants in treating attention deficit hyperactivity disorders. *Journal of Neurotherapy*, 2, 48-59.

Tansey, M.A. (1990). Righting the rhymes of reason: EEG biofeedback training as a therapeutic modality in a clinical office setting. *Medical Psychotherapy*, 3, 57-68.

Copyright: Ruth Olmstead, April, 2001.

An "E - Interview" with Chuck Davis, Creator of the ROSHI EEG/Neurofeedback System

Editors Note: Within the AVS / light and sound community, Chuck Davis is known for his knowledge and experience in developing brainwave measurement and entrainment systems. I was fortunate to meet Mr. Davis during a Winterbrain conference a few years back and try his ROSHI EEG/Neurofeedback system. Having used other EEG/NFB systems before, I tried the ROSHI, and taking into account the large number of interested people in the room, found achieving the targeted alpha frequency difficult to attain

at first, but after a few minutes felt capable of maintaining that frequency easier than on all the other systems. The ROSHI is definitely "user friendly".

Chuck has developed one of the finest EEG / NFB systems available in the ROSHI and has recently, in conjunction with Ray Wolfe, created an EEG / AVS interface that will certainly enhance any neurofeedback training session. Before reading Chuck's replies to those questions, let's begin with a little background and contact information:

"After having spent a couple of "lifetimes" in aerospace and the music business, looking for an alpha training instrument, I met Hershel Toomim, of BioComp, in 1979. He was developing BioComp system, on an Apple.

We got into some interesting ideas. After hours of rapping, he hired me. Thence came his BioComp 2001. I designed the infrared communications part. Most anytime, one can find me at 1.323.292.2550."

Q: How did you initially get involved in eeg/neurofeedback? Did you start out in light/sound or biofeedback? When was that?

A: "During the late '70s, while in the music business, I started hangin' out with the 'consciousness' crowd, est, Esalen and the Perls gang, Reichian folk and knew the Late Robt Monroe. Experienced and studied his stuff. Hung out w/ Glenn and Lee Perry and their Samadhi Tank, before they went big time. My first "snap" into pure space, no time, was in the tank. While working for Hershel, my intuitions started to make sense to me. One day, at Hershel's, this guy came in with a Synchro Energizer. The light bulb flashed on. What better way to set the flicker rates than the brain, itself? This new technique is not concerned with single frequencies, per se, but /any/ total number of stationary frequencies. Well, almost. Ten years ago, while scanning thru patents, to be sure that I wasn't going to be stepping on any toes."

Q: What does ROSHI stand for?

A: "In zendos, there's a robed fellow that walks around with a little stick. If, during your "sesshin", you should start dozing off to la la land, you get to experience a whack from that stick. He's called the Roshi; same as the Maharishi. A teacher/trainer/guru who's been there, done that. I've told a couple people that one of the reasons that called the system, ROSHI, is that I didn't have the balls to call it "Maharishi". I went to school on those folks, with my design rules following the TM® model. The power of the mantra to organize the brain/mind/spirit interface."

Q: What gave you the motivation for creating the ROSHI?

A: "What is meditation, really? While in Japan, in the '60s, I asked why

those monks sit like that all day. "It toughens you up." Huh? Needless to say, that stuck with me, for twenty years. I couldn't afford the other stuff, not even Hershel's, so I designed my own. In late '85, I bought an Amiga A1000. It was a perfect opportunity to teach myself efficient real-time programming, while putting all of my neurofeedback design rules into one program. It was a truly personal project that went commercial."

Q: What aspects of your system (ROSHI) are unique, ie, what other NFB systems lack?

A: "First, there's response time. When I first started writing the code, in 1988, 'Visceral' or *pre-conscious* control of a screen display was on my mind. I figured that the feedback had to be fast enough that the brain operator couldn't trick it. I've received a few barbs about ROSHI's response time not being that relevant. How would 'they' know, since 'they' don't know how to do it?"

Q: Could you please explain, in simple terms so us neophytes can understand, what the ROSHI does and how an individual can learn how to operate it?

A: "When a person is deeply, deeply relaxed, into just "blackness"; from there, you use your talent to coach the client to do the ROSHI General Practitioner Protocol [RGPP], or whatever modality you choose to use. From this "space", with the subject's critical-logical mind is "quieted", the client is learning to (Witness the training, rather than 'trying to do' the training. Learning to focus one's attention, with the least amount of effort; the zone. From this "space", the immune system, too, can do its "housekeeping", as it is not being /disturbed/ by the noisy incoherent "conscious mind". The Complex (adaptive), C (a), EEG coupled L&S protocol, appears to induce the brain towards focused attention, it appears to accelerate the boost of the brain's metabolism, blood flow, enough that the subject is able to maintain awareness, during training, without falling to sleep; whereas the average person would have long wandered into zzz land. With this ability to induce the brain to "normalize" itself, through time, the brain begins to produce the neurochemistry necessary maintain this "new" operating region. You can call it a "neuro-mantra". This EEG driven/coupled protocol is a time domain kinda system. It uses partial wavelet/chaos stuff, as it adapts to whatever the raw EEG is doing, even up at subcortical brainstem speeds. With this wideband C(a) protocol, the brain becomes an active phase error detector. With the brain inside of this "closed loop", phase corrections begin to take place. This takes energy, bloodflow. Wake up, wake up! Now, when the subject has approached this state of "samadhi", quietude, the trainer can begin coaching to whatever NFB protocol is chosen. On the other hand, one can boost the performance of their tapes, CDs or whatever. This combination, along with your current TOVA, MMPI, Beck or whatever, makes for a most powerful training system that you'll have, IMHO, of course ;)"

Q: I understand that you and Ray Wolfe have developed an interface for the ROSHI that allows for the synergistic integration of l/s stimulation. Can you tell us about it?

A: "Yes, indeed! About a year ago, my source for EEG

amplifier boards "lost" the ability to deliver anymore of these boards to me. After that gut wrenching revelation, hooking up with Ray Wolfe, of Photosonix, was a stroke of real genius, in my case. He's the best in the L&S business. The structure of the ROSHI(AVS) software is segmented into three parts. None of these three protocols "knows" that the other exists. It is left up to the trainer/clinician/Roshini to integrate them into any protocol they should decide to mock up, for their client's situation. By moving just the C(a) subroutines onboard the EEG unit, this new EEG front-end gets to be operated as a stand-alone EEG coupled L&S system that can operate on top of, or with *any* BFB/NFB setup. As the serial port communications will be "open platform", this will allow other "neuro- hackers" to do their programming thing. The ROSHI(AVS) software is a different kind of thing, I think. When coupled to the stand- alone ROSHI2 front-end, it becomes a full blown interhemispheric NFB training system. Briefly, regardless of training modality, it is always pushing the brain operator to be in synch. It brightens things up."

Q: How often do you personally use the ROSHI? What are your personal goals for doing so? Do you incorporate other modalities while training (light/sound, tactile stimulation, etc.)?

A: "Myself, I do C(a), with EMDR. The ultimate goal of ROSHI is to vanish. I'm not a clinician or a trainer. Yes, ROSHI will drive magnetics and CES."

Q: What's your definition of the perfect eeg/neurofeedback instrument? If light/sound are part of it, what color LEDs would you use? What type sound stimulation?

A: "Heck, the ROSHI(AVS) NFB system, of course. I leave the choice of LED colors to the clinician. I use a simple beep, at training threshold. When I tell people to /make/ the tone beep, they can't. But, when I instruct them to find a mind "space" where they can *allow* the feedback tone to happen, a little grin comes over their face and, for them, the concept of time begins to vanish; first order meditation. Two different sets of Tru-White® HemiStim type of LED frames are shipped with the system."

Q: What considerations should someone new to NFB take into account when shopping for NFB equipment?

A: "This is a general response from an exhibit I attended, at Winter Brain, in Miami: "Roshi (tm?) and the Roshi Roshi (Chuck Davis) were present and, as usual, inundated with requests for demo's. The new model of the Roshi, which runs independently of a computer, is going to be a really neat device. Can't wait to get one. My Roshi(AVS) session really woke me up, in mid-afternoon, when presentations were putting me to sleep, and left me lucid well into the wee hours." This recent report was from a Ph.D. clinician who had heard of the ROSHI(AVS), since '95. From another clinician: "Oh yeah!! That's what I love about ROSHI. If one is ready to go transpersonal, the ROSHI is ready to take you there.". As usual, a person should look for price/performance."

Q: Of all the research studies you have been involved with, is there one in particular that has left a lasting impression on you?

A: "The Tibetan Book of the Great Liberation", Evans-Wentz "Neurofeedback Treatment of Depression with the ROSHI" has been published, by D. Corydon Hammond, Ph.D., Vol 4(2), in the _Journal of Neurotherapy._ Being able to take a person from the deepest near suicidal depression, to peak performance, without drugs, and to outperform other protocols, is quite a reward for me."

Q: What do you believe are the most important issues facing NFB today?

A: "Getting more public and HMO acceptance. Zero Prozac, zero Ritalin, please!"

Q: What do you see the future of NFB being?

A: "Strong. NFB is just beginning to look at expansion into more areas, the chiropractic, physical therapy, golf..."

Downloading Sessions to Photosonix Products

by Ray Wolfe, CEO of Microfirm, Inc.

The capability of downloading sessions to a Light/Sound device can greatly expand the usefulness of the device, and allows it to be set up for special situations, personal preferences, etc. We sometimes get calls from people who are having problems downloading for a variety of reasons, this article is intended to give some background information and helpful hints to make downloading go more smoothly.

What is Downloading?

Downloading is a computer term that refers to transferring information from one computer to another. The term downloading is generally used when a larger or host computer is transferring information to a satellite or smaller computer, uploading is generally used when the smaller computer is transferring information to the larger computer. The difference in terms is usually inconsequential.

In the case of light/sound sessions, there are two levels of downloading:

1. Sessions and software can be downloaded from the Photosonix web site (www.photosonix.com) to a personal PC computer. This process is the same as

any download from the web, and is supported by your browser and by software from a large number of vendors, mostly available free.

2. Sessions can be downloaded from your PC to a downloadable Photosonix machine (Nova Pro, Nova Pro 100, Muse#, or Pro Tutor). This process is controlled by Photosonix software, either Light/Sound Librarian, Light/Sound Designer, or Light/Sound Designer 100. Light/Sound Librarian is available via a free web download. Light/Sound Designer 100 is furnished with the Nova Pro 100.

Both types of downloading will be discussed here.

Organizing Directories, Photosonix software, and sessions on your computer

Photosonix distributes light/sound sessions and libraries, and software for supporting session creation and downloading. This software will work no matter how you organize the folders on your computer, but it is set up with certain assumptions and following those assumptions will make it easier to get things working.

Create a light/sound folder LS at the top level on your hard disk—this will normally be C:\LS. Light/Sound Librarian, Light/Sound Designer, and the supporting HELP files should go in this LS folder. For each session library, create a folder inside the LS folder with the name of the library. For example, the learning library would go in folder LRNLIB in the LS folder. Each session library consists of a number of light/sound session (.LSS) files, and a light/sound library (.LSL) file. The library file is a list of the sessions in the library, with the folder (path) information that allows Light/Sound Librarian to find the sessions on the hard disk.

If you choose to store the sessions in a different folder structure or with different folder names, the main consequence is that the library files will no longer have correct pointers to the sessions. When you open the library in Librarian, you will see a warning message that some of the file pointers are not correct. Light/Sound Librarian has a menu function, Edit-Path Check, that will assist in locating the sessions and correcting the library file pointers. In Light/Sound Librarian, click Edit on the menu bar, then click Path Check. Path Check will call out the first problem session and ask if you want to correct the pointer. If you say OK, it will search the nearby folders for the session file. Answer the questions, and all sessions will soon be located and the library pointers corrected. If you have stored the sessions far from the library in the folder structure, the Path Check function may not be able to find them. In this case, take the option of finding the first session yourself, and Path Check will then have a new place to look for the remaining sessions. Be sure to save the corrected library file.

Downloading from the Internet

On the Photosonix web site there is a Download page. Starting from the Home page, there is a "Download" link on the left side of the page, and also a "Download Session Software Here". Click on the Download link, or on the "Here" in the second message, to get to the Download page. The links on this

page allow you to download Light/Sound Librarian, and/or the Fun&Games, Learning, and Meditation/Creativity session libraries. Additional libraries are being added bimonthly, so all Photosonix libraries will be available from the web, free of charge, after a few months. Third party libraries, such as the Ruth Olmstead and Art Leidecker sessions, will continue to be available on floppy disk on a paid basis.

To download sessions to your Light/Sound machine, you will need Light/Sound Librarian. If you don't already have it, then step 1 on the Download page, "Do you have a copy of Librarian?", has a click here to download link. Farther down the page are "Click here to Download Learning Library Sessions", and similar links for the Fun&Games and Meditation/Creativity libraries.

When you click on any of these links, the selected item will be downloaded to your computer, and a window will open asking you where you want to store the file. The default selection will typically be the "My Downloaded Files" folder. This is a good place to put it, as the downloaded file is a compressed intermediate file (*.zip extension).

All downloads transfer a compressed intermediate file (*.ZIP extension) to your computer. You will need a decompression (unzip) program, such as Winzip or Ezip, to extract and store the actual files you want. The Photosonix download page has a link (WINZIP) to a web site that allows you to download a free copy of Ezip for this purpose. This is a handy program to have, a lot of downloaded material is available in the ZIP format. After downloading Ezip, run it, load the downloaded ZIP file (LSLIB.ZIP, F&GLIB.ZIP, LRNLIB.ZIP, or MDCRLIB.ZIP, and do an EXTRACT ALL function. You will be asked where to put the extracted files - if you are extracting the librarian (LSLIB.ZIP), put it in the LS folder. If you are extracting one of the library files, put it in a folder within the LS folder, with the same name as the library (e.g., extract LRNLIB.ZIP to the c:\LS\LRNLIB folder).

Downloading to a Light/Sound Machine

Once you have Light/Sound Librarian and a session library on your computer, you can download to your light/sound machine. The rest of this article covers this process.

Connect the Download Cable

First you need to find and identify a COM port on your computer. The download cable shipped with your system has a 9 pin mini-D connector the will fit the COM port connector on current computers. If you have an older computer, your COM port may have a similar appearing connector, but with 25 pins. If so, you will need a 25 pin to 9 pin Modem adapter, available at computer stores for about \$5. Connect the cable (with the adapter if appropriate) to the COM port connector on your computer. Connect the stereo jack end of the download cable to the download connector on the L/S machine (srl on the Muse# and Pro Tutor, RS232 on the Nova Pro, COM on the Nova Pro 100).

Load the Library File into Light/Sound Librarian

Run the Light/Sound Librarian program, click the introductory message windows to clear them, until a blank window with the title "Photosonix Light/Sound Librarian" and a menu line is displayed. On the Menu line, click File, then Open. An Open File dialog box will appear. You must select the library you want to open. The folders panel should show C:\LS and some library folders. If not, double click the C: drive designation to get a list of all first level folders, then double click the LS folder, then double click the desired library folder, then (in the file name panel on the left side of the window) double click the *.LSL file in this folder. That will open the library in the Librarian program. If you have opted to use a different folder structure, modify these instructions to find the library you want in your folder structure.

Read the Librarian Help file

The Help system in the Librarian has a lot of information about downloading to a light/sound machine, and is worth reading. It is always available as a reminder when you are using the Librarian.

Finding the right COM port.

Once you have a library (*.LSL) file loaded in Librarian, click the Librarian Download menu item, and then the Select COM Port item. This gives you a choice of four COM ports, of which your computer probably only has two (COM1 and COM2). If you don't know which COM port your cable is connected to, you will have to guess at the numbers until you find the right one. Click a COM port selection. If the selected COM port is internally connected to a modem or printer, Windows will usually tell you the COM port is unavailable. Try another one. When you find a COM port that Windows allows you to access, try the download (details follow below). If there is no response from your light/sound machine, try another port. When communication is established, record the number of the COM port. It is the wired in COM port number of the connector you are using on your computer. We have never seen a computer where the manufacturer labels the connectors. The Librarian remembers the COM port you have selected, so once you find the right port, there is no need to change the selection again.

Downloading options

The download menu item gives you four options for downloading:

- download session append - download a selected session, and append it to whatever sessions are already downloaded.
- download library append - download all the sessions in the current library, appending them to whatever sessions have already been downloaded.
- download session clear - download a selected session, after clearing any

previously downloaded sessions.

- download library clear - download all the sessions in the current library, after clearing any previously downloaded sessions.

The download clear options clear only downloaded sessions, the built-in sessions are not disturbed. The recommended procedure is to use download library clear, and to use the Print Library function to get a listing of the downloaded sessions. The other functions are available for special situations and may occasionally be useful, but download library clear should be your workhorse function. (see special notes for the Nova Pro 100).

If you just want to download a single session without bothering with a library, do a File - New menu action to create a new (dummy) library, then press the Add Session button in the upper right hand corner of Librarian, and add the session. Click the session name to select it, and do a Download Session Append (or Clear) download. Don't save the dummy library.

Which Light/Sound Machine Do You Have?

You must tell Light/Sound Librarian which type of Light/Sound machine you are downloading. There is a Device selection box on the left side of the Librarian window, Click it and select the device you are downloading.

Download capacity

All Photosonix machines have a limited amount of storage for session segments, and also a limited amount of storage for the session index. The Nova Pro 100 has room for up to 100 sessions, and up to 1000 session segments. The other machines have room for up to 25 sessions, and 250 session segments. If you are downloading small sessions, you may run into the session limit first, but normally the segment limit is the controlling factor in the size of downloads. The librarian displays the total segment count of all sessions in the current library, and issues a warning if it exceeds the limit. If you use the download library clear function, then you can be sure of having enough room. (see special notes for the Nova Pro 100)

Prepare the Light/Sound Machine for Downloading

Turn the L/S machine on. The Nova Pro 100 is immediately ready for downloading, the other machines must be placed in the download mode. To get the other machines in the download mode: Nova Pro - press the DOWN arrow key until dnL is displayed, Muse# and Pro Tutor - press the UP arrow key until dL is displayed. Once dnL or dL is displayed, press PLAY or ENTER, all lights will go out, and the machine is ready for downloading.

Start the Download

Once the Light/Sound machine is ready for downloading, start the

download by clicking the appropriate function in the Librarian Download menu (normally Download Clear). You will get a dialog box reminding you that this will clear all previously downloaded sessions, click ok.

If you have selected the correct COM port, communication will be established, and the LEDs on the L/S machine will blink during the download. If the lights do not blink, wait for the machine to time out (about 20 seconds from the time you pressed Enter or Play to clear the display), press Enter or Play to clear the error message, select a different COM port, and start over at the previous paragraph.

Things that can go wrong

On all machines except the Nova Pro 100, if 20 seconds elapses after you press Enter or Play to make the lights go out, and the download does not start, the machine will indicate a timeout error. Press Enter or Play to clear the message, and try again.

If you are doing a Download Append, it is possible to run out of storage during the download. Reduce the size of the download and try again.

It is possible to get a checksum error if the data transmission loses bits. The cable is short and the data rate slow, so this seldom happens. Wipe the stereo jack end of the computer cable with a soft cloth to remove any contamination, and try again.

Read the Librarian Help - Download page to see the error messages for the various errors.

Special Notes for the Nova Pro 100

The Nova Pro 100 has some additional features. There is a capacity of 100 downloaded sessions and 1000 session segments. To make this large number of sessions easier to find, they are organized by Session Type - when you download a library, all sessions are loaded into the same session type, and the session type must be selected before you can download. If you wish to download more than one type of session, separate downloads are required, and downloads after the first should be Download Append functions.

The Nova Pro 100 has two way communication with the Librarian, making determination of the COM port easier. When downloading a Nova Pro 100, an extra button appears on the Select Com Port dialog - "NP100?". Clicking this button will interrogate the Nova Pro 100 if it is connected to the currently selected COM port, and a message is returned to the operator, either "Nova Pro 100 not found" (meaning the correct COM port has not been selected) or a message with the software release level of the Nova Pro 100, and the remaining download capacity of the machine will be displayed. With this function, you do not have to attempt a download to find out if you have selected the right COM port.

The Nova Pro 100 does not have to be in the dL or dnL mode for downloading. When you turn it on, it comes up displaying "P01", and is ready for downloading with no further action. It cannot download while playing a

session, or while displaying a status message. Double click Play to end a session, single click Play to clear a status message, to get the machine ready for downloading..

Summary

Once you get the hang of it, downloading is quite easy. The detailed instructions come out long because of trying to cover all eventualities. I hope this write up helps you get over the initial hurdles.

Relapse Prevention

by **Michael Landgraf**

What makes my opinion any more meaningful than those on staff at rehabilitation centers? I've been there. I am an alcoholic. I have been sober since July 10th, 1985. That anniversary means more to me than my actual birthday. And I am proud of my 15+ years of sobriety, but every time I think of that accomplishment, every time I tell vodka you are just a part of my past, a part of me feels sad. Sad for the friends that went through rehab with me and are no longer here to share mutual joy and tremendous relief for getting that devil of a monkey off our backs. Yes, even today those stinking thoughts still hit me out of nowhere, and although I reject such thoughts, they are an involuntary occurrence that makes me think "where the hell did that thought come from?" After 15+ years of sobriety, they still happen, albeit less frequently, and I now know those thoughts will always crop up. It's just the way it is.

When I went through rehab, twelve of us were going to graduate within days of each other. We felt a common bond, a camaraderie that we all wanted to have continue past our stay at the rehab. Within months, literally, ten of those graduates stopped communicating with Debra and me. Two had died, eight reverted to their old ways. Soon after, Debra disappeared, having kept her return to alcohol a secret. I was the only remaining sober graduate. What made me the fortunate graduate? What caused me to succeed when all my beloved rehab companions failed? It wasn't the rehab center! My counselor said I'd receive a follow-up call in 6 months, again at my one year anniversary, then again after two years. She never called, no one from that center called. It made me feel like they didn't care. They appeared only to be concerned with in-house patients because that's where the money is. Heck, at least with a follow-up phone call I could have been a statistic. And a positive statistic at that!

So what did I do differently than my companions once we were back in society, trying to build a new life? I was the only one who utilized a light and sound instrument. An InnerQuest IQ-III to be exact. Bless the late Rob Robinson for having his products available! I firmly believe having a l/s instrument at my immediate disposal for use when those 'bad thoughts' started infiltrating my mind, my thought processes, and my mental and emotional disposition made all the difference in the world. I was the only one to use a l/s unit out of our graduating class of twelve, and I am the only one still sober, still alive. I don't care how administrators or therapists feel about that statement, because I know it, firmly believe it

as the one variable that helped me maintain my sobriety whereas my friends, who did not have l/s instruments at their disposal- failed.

It's time to put as much emphasis on staying clean/sober after graduation as it is for getting clean/sober while being an in-house patient. Light/sound technology has the sessions that can help control addictive behaviors, to help lay the foundations for a positive mental and emotional attitude, and for giving the recovering addict instant access for overcoming that stinking thinking thought pattern that strikes at any time, anywhere. Put stronger emphasis on relapse prevention and you will see less failure rates among rehab graduates, which in turn improves the credibility of rehabilitational programs. Think about it: I was the only one to use light and sound after graduating and I am the only one still sober.

So you are probably saying that's just one example. Phooey! I went through it, have you? What of all the others I've met since my graduation who also experience addictive behaviors? Be it for sex addiction, cocaine, downers, meth, you name it. They've all taken to using light and sound instruments because it personally helps them cope. So the next time you are sitting in a staff meeting, discussing how to improve your success rate and increase your funding, look no further than your local light and sound dealer. You'll find a very cost-effective and highly beneficial tool that can improve your program's success rate, which in turn will help when submitting paperwork for additional funding, and oh yes, actually give your graduates a fighting chance at staying clean and sober for quite possibly the rest of their life.

Over the years I have been involved with several rehabilitation centers as a consultant for getting neurofeedback and/or light and sound programs initiated (learning / relaxation). Basically, I would show them what these instruments look like and how to use them, how they can be incorporated into their existing methods of treatment, and instructing them on how to maximize the sessions for the benefit of their patients.

Why I choose to do this is to open the eyes of therapists and administrators to the cost- effectiveness and benefits that these technologies offer. Especially when many rehabs are facing extreme cutbacks and even closure. But more importantly, I do this because as beneficial as the treatment patients receive while staying at a rehab center are, most rehabs tend to turn their patients loose after fulfilling their time at the center, telling them good luck and to call if they feel setbacks approaching. Shouldn't graduates be given tools to take home with them for preventing relapses from occurring?

Once out, patients find themselves in a world that hasn't changed. Only they have changed. Granted the only way an addict can truly stop their addiction is to really want to quit, to change their routine once back in society, and to abstain from visiting the places they frequented before checking into a rehab. But it is so hard for an addict to do this without mental and emotional support. This is where I believe most rehabs fail. They put so much emphasis on treatment while the patients are attending the rehab, and seemingly have little time to keep track of what happens to their patients once they graduate.

I have seen too many individuals fall back into their addictive behaviors because such mental and emotional support groups are not available

in time of need. Is that a cop-out reason to revert to old ways? Sure. Not being able to make new friends who are clean and/or sober causes them to seek out old friends that shared the same addiction? Yes, that too is a pretty lame excuse. But when the urge to revert to old ways is strong, when that old addictive 'friend' is beckoning for their return, the addictive cycle rears it's ugly head. A large percentage of ex-patients become new patients once again.

With the cost of rehabilitative treatment being so astronomical, and the time necessary to stay at these facilities lasting from several days to several weeks, even months, I would think more rehab centers would put a stronger emphasis on relapse prevention; meaning once an individual graduates, greater importance should be placed on assisting them re-integrate into society, re-integrate with themselves, and make available more tools for the graduate for immediate utilization of overcoming that 'stinking thinking' urge that can pop up at any time, for any reason. Those thoughts just occur out of nowhere, and when they happen, it is an anxious and frightening experience for the newly clean/sober individual. They don't get these thoughts because they want to, they get these thoughts because addictions are waking nightmares. Stinking thinking, in my opinion, falls short in describing just how awful these urges and thoughts can be.

It is not my intention to upset the administrators of rehabs, but with many rehab counselors and therapists themselves once being addicted to 'their favorite friend', and often experiencing personal relapses themselves, rehabs must wake up to the increased need of having tools accessible for their graduates. Tools that can help overcome those sudden urges faster than calling a counselor and being told they will get right back to you after they finish their in-house group counseling session.

That is the potential of light and sound in relapse recovery. It is just one tool to help maintain a clean/sober life. It has worked for me, it has worked for the dozens of people I've met since beginning my own recovery, and it can work for today's addicts trying desperately to quit the very addiction that is killing them. It's time you give this modality serious thought, that is, if you are actually serious in helping your patients remain clean/sober.

If you would like to learn more about the role of light / sound instrumentation in relapse prevention, please feel free to contact Michael Landgraf at: store@mindmachines.com.

The Sensora: A Multi-Sensorial Therapeutic Device

by Anadi A. Martel, M.Sc., of Sensortech, Inc.

Abstract:

This article presents the "Sensora", a new multi-sensorial device having therapeutic applications. The Sensora is a whole environment integrating 3 sensorial sources: a colored light projection system, a

spatialized sound system and a multi-transducer chair for kinesthetic stimulation. These 3 sources are driven by multi-media programs that allow the generation of a rich sensorial experience, with the potential of facilitating various processes such as relaxation and creativity enhancement, as well as more specialized therapeutic techniques. A description of the instruments comprising the system is given, followed by an explanation of the operating principles involved in the programs, and their applications.

1 Introduction

The Sensora is an electronic system belonging to a new class of devices that can be called, for want of a better name, "mind machines". The purpose of these devices is to use technical means with the intention of having a beneficial influence on the mind, or more precisely on the body- mind, of users. Such beneficial influence can include relaxation, creativity enhancement, ... as well as more specialized therapeutic processes.

The Sensora's distinguishing characteristic is its integration of 3 different sensorial influences, hence it is being described as a "multi-sensorial" system. Many of the concepts involved in the Sensora are quite unique, and the technology it uses is amongst the most advanced in this relatively new field. In this article we will attempt to describe the operating principles of the system, so that a better understanding of what distinguishes it from other mind machines may be obtained.

2 Description of the System Components

Originating from early work on sound spatialization and EEG monitoring, the development of the Sensora has been ongoing for the past 15 years. Relying on experimentation with hundreds of individuals, we gradually evolved a method of combining sensorial stimuli into an integrated whole. Along the way we had to create and refine our own proprietary instruments, which now enable a multi-sensorial process involving light, sound and kinesthetic sources.

In this section we will briefly describe the different components that together make up the Sensora installation:

2.1 Light Projection

In the Sensora the user is exposed to light projections covering the whole field of vision. This is achieved using three components:

Light Controller:

A dedicated microcomputer, which we call the SD-1 Sensor Driver, generates the light patterns in real-time.

Light Projector:

The SD-1 digitally feeds a special light projector, which we call the LPA-1 Light Projection Array. This compact projector houses 15 discrete

light sources with their associated digital power dimmers; the light sources are merged through fiber optic bundles into 5 groups of 3 primary colors, allowing the creation of any color through additive synthesis. The use of dichroic color filters ensure an excellent chromaticity, essential to the quality of the overall process.

Projection Screen:

The light patterns are projected on a large hemispherical screen, with a diameter of typically 3.5m for an individual installation. The screen has an inclination of about 45°, and the user reclines under it at a distance optimized to cover his/her field of vision. Its surface is coated with a special silvery compound to enhance the apparent depth of the light projections. When combined with the LPA-1 projector this results in an exceptional light quality, with an intensity and texture reminiscent of the vivid colors sometimes perceived in dreams.

The light patterns used in the Sensora are divided into 5 independent and overlapping zones, distributed horizontally along the width of the projection screen. The center of the screen is fitted with an extra independent point light source, which serves as a focal point around which the user can anchor his/her gaze.

2.2 Spatialized Sound

The Sensora soundtracks are re-mixed with our own Sound Spatialization Processors, which have already been used around the world for audio research and design. This enables the creation of a sound field surrounding the listener, where each sound can be positioned and delicately moved at will. The Sensora uses a 4-channel audio system to store and playback these spatialized soundtracks.

2.3 Transducer Chair

The kinesthetic stimulus of the Sensora is sound-based, generated using the following two components:

Transducer Controller:

A special microcomputer-driven audio processor, which we call the TD-1 Transdriver, extracts low-frequency information from a dedicated audio track. The TD-1 first stabilizes the audio signal through a sharp (48dB per octave) low-pass filter and a 2-stage AGC circuit; it then distributes it in programmable patterns across 8 discrete amplified channels.

Transducer Chair:

The 8 outputs of the TD-1 drive a special reclining chair, which we call the VIA Transducer Chair. The VIA chair contains an array of 8 audio transducers which can create a wave of vibration felt along the body as a kinesthetic sensation. The transducers are positioned in 2 rows of 4 across the chair surface, allowing transversal as well as longitudinal wave patterns.

Taken together, the TD-1 and the VIA chair can create a wide variety of vibration-wave patterns (e.g. up-down movements from head to feet, circles, crosses,... at varying speed and direction) which the user will perceive as having relaxing, stimulating or balancing effects.

2.4 Sensora Programs

All the instruments composing the Sensora system are digitally controllable and are designed to be driven by special multi-sensorial programs.

These programs contain the following elements:

- A digital track driving all the Sensora instruments
- 4 audio tracks containing the spatialized soundtrack
- A low-frequency audio track driving the Transducer Chair

This information is encoded using a proprietary technique and stored on special CDs. A Sensora session is played by simply accessing and starting the desired program. The process is then entirely automated, and does not require an operator.

We have already developed a library of Sensora programs that explores a good portion of the system's vast possibilities, and new ones are being created as the research grows.

2.5 Room Environment

All the components of the Sensora system are installed in a dedicated room, typically with a 15m² area for an individual installation. The appearance of the room is carefully designed to contribute to the quality of the process.

The walls, floor and ceiling of the room are all black (either painted or carpeted). This has two functions:

- It enhances the optical quality of the light projections by minimizing reflections.
- On a subjective level, it contributes to the perception of the Sensora as a womb-like space with somewhat diffused, undefined boundaries which can also be felt as limitless; this helps to open the user's mind to an "extra-ordinary", deeper experience.

The large hemispherical screen obviously dominates the environment; with the black room surfaces and a subdued ambient lighting, it actually appears to be floating in a void.

Depending on the application, Sensora installations can be configured with one chair (for individual sessions), two chairs (allowing couples to share a Sensora session) or multiple chairs (such as for waiting rooms and other public installations).

Session Procedure:

The user sits on the Transducer Chair, under the screen. As the session starts, the chair reclines and the ambient lighting softly fades out. For the duration of the session the user simply rests, letting the light, sound and kinesthetic sources perform their function; he/she maintains an unfocused gaze towards the screen, letting the eyes occasionally close and open at will.

As the session ends, the room is left for a short while in quiet darkness, giving the user an opportunity to feel and savor the state in which the session has brought him/her. The ambient lighting then softly fades in, and the user brings the chair back to an upright position when he/she feels ready.

3 Operating Principles

In this section we examine the operating principles that have guided the design of the Sensora system. The intent behind the Sensora is ambitious: it is an attempt to blend art and science, using objective, scientific means to create a rich, aesthetic experience. The system's development has drawn on many new fields of research, on the borderlines between technology, medicine, psychotherapy, psychology and art.

It must therefore be emphasized that while some of these operating principles are based on clearly established science data, a number of others are working hypotheses that have arisen out of both our own experimentation and of currently available worldwide research. These are presented here as pointers towards further research in this fascinating field.

3.1 Light Modulation:

"Light Modulation" is a unique process developed and patented by Sensortech, which is at the root of the effectiveness of the light projection patterns used in the Sensora.

Essentially, Light Modulation applies to light the type of modulation processes that have long been applied to sound in audio synthesizers. This is achieved by using structures of Low Frequency Oscillators (LFOs) to control (i.e. to modulate) the intensity and color of light projections, in configurations of various complexities.

Programming Light Modulation patterns is somewhat similar to programming sound synthesizers, with a large number of parameters (up to 100 in the Sensora's SD-1 Sensor Driver) defining the exact frequency, waveshape and phase of the many oscillators involved in the modulation structure.

The end result of this technique is the creation of shimmering, ever-changing light patterns that can have a remarkably organic quality of aliveness, or give a fleeting astral-like impression. This imbues them with the ability to exert a visual fascination that is an essential factor in some of the operating principles described below. Also, the oscillatory nature of the modulation patterns naturally leads to the brainwave entrainment process described next.

When experimenting with such a powerful light-generating tool, it quickly becomes obvious that the frequencies used in cyclic light patterns

can have a deep impact on the brain. A large portion of the expertise developed over the years of research into the Sensora is related to the selection and combination of sets of frequencies optimized for different types of sessions, whether for relaxation, stimulation or integration purposes.

In fact, organizing sequences of Light Modulation patterns to lead to pleasant and inspiring inner experiences has turned out to become a fascinating new art form in itself.

3.2 Brainwave Entrainment

The human brain generates weak electric signals called EEG (Electro-Encephalographic) waves, covering a frequency range of about 1 to 30 cycles per second (Hz). When the brain is exposed to pulsations of sound or light in the range of EEG wave frequencies, it tends to spontaneously harmonize with the pulsed frequencies. This phenomenon is known as photic driving (in the case of light) and has been widely studied. It has been found, for example, that stimulating the senses with pulsations in the Alpha range will help the brain to move toward the relaxed state normally associated with Alpha waves.

The Sensora is ideally suited to make use of this brainwave entrainment. A subset of the frequencies available in the Light Modulation process overlaps the frequency range of EEG waves, and the Sensora light projections can perform excellent photic driving. Sound entrainment can also easily be integrated in the Sensora soundtracks by embedding appropriate audio binaural beat frequencies.

While the research linking EEG waves and their associated mental states is complex and ongoing, their basic properties are by now well known and established (see the Table below). Their use in the programming of Sensora sessions is therefore one of its most systematic and objective operating principle.

EEG Phase	Frequency Range	Associated Properties
Beta	14 to 30Hz	Brain waves in this range indicate the normal waking state. This is a state of mental activity and attention turned out towards the world. Most of us spend the majority of our waking hours in this state.
Alpha	8 to 13 Hz	Alpha waves accompany relaxation. This state indicates attention turned inward, as in meditation and deep unwinding, let-go.
Theta	4 to 7 Hz	The hypnagogic state just before falling asleep. This state plays an important role in visualization,

creativity and learning.

Delta	1 to 4 Hz	Delta waves appear during the deepest portions of sleep. They are also associated with states such as trance mediumship.
-------	-----------	--

EEG Phases and their associated mental states

The complex nature of the Sensora light projections enable unique refinements in photic driving, not found in other simpler devices:

Modulation Depth Control:

Our experience has shown that some individuals find the use of raw light pulsations (such as in common brainwave entrainment light goggles) rather unpleasant or too intense; the Light Modulation parameters of the Sensora provide a fine proportional control over the modulation depth of light pulsations, allowing the generation of gentler pulsations which are more universally appreciated. This lower intensity does not detract from the overall experience, since brainwave entrainment is not the primary purpose of Sensora sessions but is only used as a support for the multi-sensorial process.

Enhanced Laterality Control:

It is well known that laterality is critical in brainwave activity, since each of the brain's hemispheres is linked to different mental functions. In implementing effective brainwave entrainment, it is therefore important to be able to act on each hemisphere separately.

The optical nerve linking the retina of each eye to the brain is divided in two separate bundles channeling each eye's left and right field of vision. The left and right bundles from each eye are then merged and crossed before reaching the brain's visual centers. Therefore the combined left field of vision from both eyes reaches the right-brain hemisphere, while the combined right field of vision reaches the left-brain hemisphere.

Simple goggles with pulsing lights for each eye cannot completely resolve each brain hemisphere even when separately pulsing each eye, since each eye is partially linked to both hemispheres.

By contrast, the Sensora light projections are viewed on a large external screen and simultaneously reach both of the user's eyes with the appropriate laterality: for example a pulsation projected on the left side of the screen will reach the same side of both eyes' retina, and will be relayed through both left optical nerve bundles to the right-brain hemisphere only.

Peripheral Vision Temporal Sensitivity:

The retina's central region (the fovea) has an enhanced spatial



mindaware

The place to shop for light and sound machines

www.MindAware.com

resolution, while the lateral regions have a higher temporal resolution: they can detect faster movements, but with less spatial details. A proposed explanation for this phenomenon is that it is an evolutionary adaptation to the need to react quickly to predator movements at the vision's peripheral edge.

We have found that brainwave entrainment seems less obtrusive - while still remaining effective - when primarily performed on the peripheral lateral vision, and de-emphasized on the central vision. This makes sense since it optimally uses each vision's specialization: the spatially sensitive fovea is less distracted by reduced central pulsations, while the peripheral vision is most tuned to the fast temporal variations of brainwave frequency pulsations.

As illustrated by the preceding three examples, the Sensora may be the only current instrument permitting such fine-tunings on brainwave entrainment light patterns.

3.3 Color Therapy

The use of colors for therapeutic purposes is as old as civilization, and many traditional color systems have been developed over the ages. Modern science has both broadened and more clearly defined the use and the effects of color. Extensive psychological research allows us to specify the arousing, relaxing, awareness sharpening, or pacifying effects of various colors. Fields of medicine such as Syntonic Optometry have been deepening our understanding of the therapeutic use of light and color.

While the Sensora does not espouse any specific color system, it can be used as a sophisticated delivery instrument for many such approaches since it is fully programmable. Its LPA-1 light projector is optimized to generate saturated colors across the complete rainbow spectrum and has the capability to create color patterns covering the user's field of vision. This gives the perceiver the sensation of being inside an encompassing field of light, thereby greatly enhancing the psychological impact of colors.

Physiological effects of color:

In addition to their subjective perceptual effects, colors appear to have more direct physiological effects on the body. Ongoing research provides intriguing glimpses into possible mechanisms for such effects.

One operational vector is indicated by studies which have demonstrated the existence of an "energy section" of the optic nerve connecting the retina of the eye directly to the pineal and pituitary glands. This nerve fiber network operates in parallel to the normal "optical section" of the visual system, and transmits the effects of light directly to the hormonal system, which is an essential mediator and modifier of metabolism and mood.

Another biochemical avenue is indicated by the fact that the transparent capillary vessels in the retina directly expose the blood to light coming into the eyes. The blood flow through this channel is surprisingly large: it has been established that the body's entire blood supply runs through it every 2 hours. This provides ample exposure to any

potential catalytic effects of specific light frequencies on the blood's chemistry.

Color properties:

While the exact properties of specific colors are open to debate, certain broad tendencies are pretty much universally accepted; these have been extensively applied in the creation of the current generation of Sensora programs.

Red, Orange	Energizing, invigorating colors
Yellow	Considered to be an excellent facilitator for intellectual work
Green	The color of nature, associated with heightening the emotional qualities of the heart
Blue	Contributes to the creation of ordered thought and harmonious mood
Pink	Has a calming and soothing effect on the disposition
Violet	Associated with feelings of being uplifted; accessing higher spheres of consciousness
Ultraviolet	Stimulates concentration and the ability to learn

Known characteristics of the main colors

3.4 Open Environment

All along the Sensora's development, we have considered important to design it as a whole environment surrounding the user. Obviously this approach is costly, since it requires rather large-scale multi-sensorial equipment and the dedicated use of a Sensora room, but we consider that it brings significant advantages that cannot be obtained with other approaches.

- The quality of the Sensora light projections would be impossible to duplicate on smaller display systems (whether of video-screen or LED goggle type), and its spatialized sound environment could not be effectively reproduced through headphones.

- We have found that an open environment is more readily accepted by

the population at large than smaller enclosing devices. Being wrapped-up in light goggles or being enclosed in a small space such as a flotation-tank sometimes brings up claustrophobia-like feelings in people, and it requires a certain dedication to persevere in using them; whereas an open space often feels less threatening, more welcoming, for people uninitiated to mind-machines.

- For most people, the striking impression felt when walking into the Sensora space and being fully immersed in its multi-sensorial field results in a psychological readiness to be touched more deeply by the experience.

To summarize this principle, we like saying that comparing the Sensora environment with smaller mind-machines is somewhat like comparing the experiences of cinema and TV: the film being watched may be the same in both cases, but the immersive cinema experience will obviously have a greater impact than that of a small TV.

3.5 Sensory Sweeping

This operational principle evolved out of our observations while working with Sensora multi-sensorial programming. It is a working hypothesis that, while not necessarily scientifically established, seems to point to an interesting field of study.

The idea behind it is quite simple and is based on the well-known principle according to which "what you don't use, you loose": neuronal pathways in the brain need to be used and exercised in order to develop, otherwise they gradually whither away. It is also known that many neuronal structures in the brain have a continuous mapping to parts of the body: for example in the significant portion of the brain dedicated to skin perception and the sense of touch, contiguous skin areas are mapped to contiguous brain areas. Therefore sweeping a kinesthetic stimulus over a continuous area of the body activates matching neuronal pathways over a corresponding continuous circuit in the brain. In certain types of therapy, such continuity is thought to help in restoring and developing neural interconnections.

From these factors it can reasonably be inferred that repeatedly performing such a sweeping pattern can bring about a beneficial "exercising" of neuronal pathways.

The Sensora instruments allow many different types of sensory sweeping, which are extensively used in the sessions:

-The Transducer Chair is optimized to perform kinesthetic stimulus sweeping over programmable patterns; in fact to our knowledge it may be the only existing instrument permitting this type of work. Our ongoing tests are helping to understand which types of patterns, speed and rotational direction bring about different responses in subjects.

-The Light Modulation projections allow the generation of precise sweeps across the color spectrum. These effects are amongst the most spectacular and subjectively pleasing to the eye. In a related phenomenon, sweeping patterns combining complementary colors have been found to be

especially potent.

-The spatialized soundtrack allows the generation of sounds continuously moving across the surround sound field. Here again, various types of patterns, speed and rotational direction bring about different responses in subjects.

3.6 Multi-Sensorial Synergy

We are all familiar with the synergetic capabilities of our senses: under the right circumstances different senses can merge and blend. The Sensora fully exploits this phenomenon: being simultaneously immersed in fields of light, sound and kinesthetic sensations brings about an effect that is greater than the sum of each individual sensation.

In a Sensora session this multi-sensorial synergy has important subjective consequences:

- It can bring a sense of fusion and unity to the experience
- It can heighten the overall intensity of the experience
- It can facilitate the letting-go that brings a deeper relaxation

As an interesting note, we can add that we also experimented with integrating olfactory sensations within Sensora sessions. As is well known, the sense of smell has a high synergetic capability, and we indeed obtained excellent results. However we had to abandon this path for practical implementation reasons: odors cannot be turned off as easily as sound or light, and eventually permanently permeate the session room.

3.7 Bypassing the Mind

We consider that a key aspect of the success of the Sensora process is its ability to create an environment in which the user can remain at rest, essentially doing nothing, without becoming bored.

If someone can be brought to a state of restful inactivity, relaxation will naturally unfold. The problem is that in our "MTV age", most people's attention span is notoriously short: this state of inactivity quickly becomes monotonous and dull, and it cannot be maintained for any length of time. Some stimulation, something interesting is required to hold one's attention... But stimulation will automatically disrupt the restful state.

A way out of this paradox is to use stimulation that is fascinating and beautiful enough to hold the attention, while presenting a minimum of form or message capable of triggering the mind's activity. In the Sensora this is achieved with the correct blend of selected sensory elements.

The primary factor in this approach is the use of light projection with only pure colors. Recent PET-Scan studies have shown that most of the brain's visual centers and associated cognitive processing centers, which are normally activated by forms or images, remain quiet when the eyes

are viewing pure colored patterns. This suggests that the experience of color is a sensation complete in itself, not requiring subsequent analysis or interpretation by the brain, permitting most brain centers to rest.

Another factor involves the rhythm of sensory transitions, which when held within a certain range maintains an aliveness while not disrupting the restful state.

3.8 Stimuli Dosage

In the course of our experimentation we have found a very wide spectrum in people's sensitivity to multi-sensorial environments. On one extreme are individuals who are easily overwhelmed by the slightest stimulus; on the other are individuals for whom the most extreme effects remain bland... A guiding principle in the development of Sensora programs has therefore been the careful dosage of the different sensorial parameters.

Each of the 3 sensory sources in the Sensora has the potential to be rendered so intense as to become unpleasant, and their combination synergistically even more so. With this in mind, we have carefully calibrated each operating parameter of the Sensora instruments so that they can be used over a full proportional range, from a null value up to the maximum setting.

For example, at its minimum settings the LPA-1 light projector is capable of generating a precise range of very low phosphene-like light levels, near the limit of the vision's sensitivity threshold. We have found that occasional phases using these evanescent light levels, disappearing into darkness, are particularly valuable.

Similarly, although the Sensora's brainwave entrainment light effects can be set to a full stroboscopic pulsation, we have found it advantageous to be able to reduce them to a subtle, barely perceptible shimmering in the light patterns, with most applications falling somewhere in between these extremes.

As a way of dealing with people's various sensitivities, we have created a library of Sensora programs with gradated relative intensities. The "Relaxation Series" programs are soft enough to be enjoyed by all users, while the "Energy Series" programs are designed for users looking for more intense experiences.

Epilepsy Risk:

Exposure to pulsating light may increase the risk of an epileptic seizure in a small proportion of the population. This risk is minimal (current research indicates that 1 in 20,000 adults over 25 have this photosensitivity) but must still be considered.

In the case of the Sensora, since the light pulsations used for photic driving are generally softer than those used in common brainwave entrainment device (such as light goggles), the risk is further minimized: not a single case has ever been encountered since the beginning of our experiments. Nevertheless, to accommodate people who are known to be at risk, the SD-1 Sensor Driver provides a control allowing the removal of

brainwave entrainment modulations from Sensora sessions while maintaining all other sensorial aspects intact.

3.9 The Aesthetic Factor

As a rule, mind machines are designed to bring about results by applying certain basic mechanisms, such as generating light or sound pulsations for brainwave entrainment, or projecting specific color sequences: their intent is to implement objective and scientific processes, as do laboratory instruments.

With the Sensora, we attempted to develop an approach that merges such objective processes with the subjectivity of the mind's perception - somewhat more like developing a musical instrument. This approach works by considering a session both as an objective process involving precise sensorial parameters and as a work of art to be enjoyed aesthetically.

This in turn defines certain new requirements for the instruments involved: they must be able to generate aesthetically pleasing sensations as well as performing their objective functions. In order to be successful, the system must be composed of high-quality elements: colors with a high degree of chromatic purity, excellent sound system, well-designed environment in the session room, programming capable of dealing with the subtlety of delicate sensations.

Under appropriate circumstances, people can rarely avoid being touched by the beauty of pure colors and sound. The Sensora works at a broader level than simpler mind machines, because it can provoke an emotional response of this kind. This opens wider possibilities - but also makes the quantification of its effects more difficult.

3.10 Archetypal Evocation

This last operating principle completes the shift towards a more inner-oriented, psycho-sensorial perspective. Pure colors and sounds are fundamental building blocks of our perception; in the Sensora programs we have an opportunity to use and combine them in order to evoke timeless universal experiences that can be described as "archetypal".

Here are a few examples illustrating this principle:

- The heartbeat rhythm is immensely potent. Light pulsations based on this frequency (at about 1.3 Hz) and its harmonics have a powerful impact, especially when accompanied by matching sound beats. This is a rhythm that has been used for ages in shamanic rituals around the world.

- The resonance frequency of the Earth electro-magnetic field (known as the Schumann Resonance frequency, at about 7.8Hz) creates especially pleasing and harmonious light and sound pulsations. This may be understood when one considers that this frequency has always been pervading the atmosphere and is probably deeply embedded in the organic processes of life itself.

- The innate fascination exerted by light pulsations can be linked to

the flickering of fire, which has been a symbol of security and comfort (as in gazing at a camp fire) from the earliest days of human evolution.

-When used at low intensities the Sensora light projections can be reminiscent of a starry night, creating the impression of floating in the infinite expanse of the Milky Way.

-The hemispherical projection screen of the Sensora presents a round shape that we have found instrumental in bringing about an overall impression of wholeness. It helps create for the user the sensation of being at the center of a cosmos; an archetypal analogy would be the feeling of being at the center of a "Medicine-Wheel".

-Natural sounds have an unparalleled capacity to open the doors of one's imagination, and can help to tap into a wide variety of archetypal and ancestral memories. We have been creating our own spatialized recordings of exceptional natural sounds from around the world, which are extensively used in Sensora soundtracks.

All these elements contribute to extend the perceptual context of a Sensora session towards a more "magical" experience.

4 Therapeutic Applications

4.1 "Inner Entertainment"

The most obvious applications of the Sensora are sessions designed to simply enjoy its multi-sensorial environment, as a kind of "inner entertainment" that helps to harmonize the user's mood.

Each Sensora session is a self-contained multi-media program, with a complete process unfolding and coming to a conclusion. We have found a session duration of 20-25 minutes to be an optimal compromise: it is long enough to allow the user to shift into a new, refreshed mental state, while remaining short enough to ensure the installation's cost-effectiveness.

We have created a number of sessions optimized for the following processes:

Relaxation:

This is a very natural application for the Sensora, with numerous therapeutic applications. Relying on pacifying colors, slower rhythms, Alpha/Theta brainwave frequencies, flowing soundtracks, the Sensora "Relaxation Series" sessions can efficiently bring users to a state of deep relaxation.

Creativity Enhancement:

These sessions, which we call the "Energy Series", use a range of colors, frequencies and sounds that have more stimulating and invigorating effects. By nourishing the senses while giving the mind a rest, they can constitute an energizing and centering prelude to activities requiring mental

creativity.

Guided Meditation:

Each session from the "Meditation Series" guides the user through a simple and effective meditation technique. They provide an enjoyable way to experiment with meditation and its inner exploration.

The Sensora as a hi-tech relaxation space can be used in numerous locations:

- Spas and Resorts
- Health Centers and Private Clinics
- Corporate facilities for employees
- Waiting lounges for airports

4.2 Mind Machines and Meditation

The therapeutic properties of various types of meditation are gradually being established. But in order to be effective, meditation techniques must be learned and practiced: meditation requires a certain discipline and effort. What role can "mind machines" such as the Sensora play in enhancing meditation?

In essence, meditation can be said to be a purely subjective process of consciousness looking into itself. Taking this into consideration, our point of view is that no external stimulus introduced by a machine can "generate" meditation: the meditator has to "do" the looking, no machine can do it for him/her...

What a machine can possibly do is to generate an environment where this process of looking is facilitated, i.e. where the meditator will find it easier to remain present and aware. This will happen in an environment where the brain's mental activity is quieted down, where an atmosphere of harmony and security dissolves current worries and leads to greater inner ease.

So while we would certainly not claim that the Sensora "produces" meditation in users, it has been our experience that it can be a beautiful support to meditation. We have also seen many instances where people having no prior knowledge of meditation have "accidentally" been drawn during a session to a state of inner silence that has left them quite baffled...

4.3 Support for Psychotherapeutic Processes

Our experience has clearly established the potential of a multi-sensorial tool such as the Sensora as a support for psychotherapeutic processes. The exact mechanisms through which this support operates remain to be explored in details, and promise to reveal valuable insights into the burgeoning

science of applying light and sound to therapy.

One possible interpretation relates to the fact that the Sensora environment can often lead to semi-hypnagogic mental states, where one floats in intermediate stages between waking and dreaming. In these states the boundary between the conscious and unconscious mind seems to become more permeable, and the unconscious can occasionally release memories, feelings or insights.

In practice we have found the Sensora to act as a kind of amplifier, capable of intensifying various psychotherapeutic processes through the totality and focus brought about by its immersive environment. We have for example successfully used it together with techniques involving counseling, as well as early-childhood regression, and hypnotherapy.

As a support to psychotherapy sessions, the Sensora can be used in various ways:

- Before a session: the Sensora brings the client to a state of deep relaxation and receptivity, from where it is easier and faster to move into real issues during the subsequent psychotherapy session.

- After a session: the Sensora is a safe space where the client can settle down and integrate whatever issues may have come up during the psychotherapy session. We have seen cases where a client came to a spontaneous resolution of inner conflicts brought in focus by a session, while simply relaxing in the harmonious Sensora environment.

- During a session: our experiments with conducting sessions in the Sensora room, alternating between therapy and multi-sensorial breaks, indicate that there are a multitude of creative ways to combine both.

One of the most touching events in our research has been to witness the broad smile and tears of a deaf and dumb young woman, who explained that while lying on the Transducer chair she had for the first time been able to sense sound and music through her skin. This type of feedback has all along helped us to persevere in this work.

4.4 Future Prospects

No medical application can be claimed for the Sensora, since no systematic research in this field has as of yet been performed. Some doctors have however expressed interest in exploring possible applications in fields where relaxation and sensory stimulation are known to be beneficial.

For example, simpler sensory stimulation devices are already in use in a number of countries for the treatment of autistic and multi-handicapped children. Other potential applications mentioned relate to:

- Treatment of sleep disorders

- Treatment of addictions
- Rehabilitation of cerebral poly-traumatism
- Pre-surgery preparation and relaxation
- Experimental cancer healing modalities involving positive visualization
- Behavioral Therapy
- High-performance sports training

In all these cases, the Sensora could potentially be a valuable tool both with its existing programs and especially as a hardware base for developing optimized multi-sensorial programs.

4.5 Call for Research Projects

We are convinced that the science of using light and sound for therapeutic purposes will greatly evolve in the coming century: systems such as the Sensora are but the beginning of a whole new field of research.

We invite any researcher interested in exploring the application of the Sensora to his/her field of work, including psychotherapy, psychology and medicine, to contact us. We are open to supporting research projects in various ways.

Readers wishing to obtain further information on the Sensora are invited to browse our web site at www.sensora.com and/or to contact the author.

About the Author:

Anadi A. Martel entered University at the age of 16 and completed graduate studies in Theoretical Physics. After spending a few years in India he decided to become an independent researcher, specializing in electronics design. During the 1980s he developed a variety of unique sound and light devices. He then gradually experimented with ways of bringing them together in multi-sensorial systems. The outcome of this research is the Sensora, which was developed in collaboration with Ma Premo, a psychotherapist. He can be reached at Sensortech Inc. (PO Box 5042, Ste-Adèle, Québec, Canada J8B 1A1, Tel/Fax: 450-228-8508), or by email at amar-tel@sensora.com.

Copyright: Anadi Martel, April, 2001.

Heart of Quantum Linguistics

By Michael Stevens

The purpose of this article is to give you enough of a basic understanding of the processes so that you can use this linguistic pattern for yourself if you desire to expand your consciousness on any thought or issue you're dealing with.

Quantum linguistics implies a "movement" of thought patterns, or exploring multiple dimensions or quadrants of any issue or thought. The four basic dimensions or quadrants to quantum linguistics (or virtually any issue) are the Theorem (AB), the Inverse ($A\sim B$), the Converse ($\sim AB$), and the Non-Mirror Image Reverse ($\sim A\sim B$). These quadrants are based on Cartesian Quadrants from Calculus. The " \sim " simply denotes the word "not", or a negation, so the Theorem reads "A, B", the Inverse reads "A, not B", the Converse reads "not A, B", and the Non-Mirror Image Reverse reads "not A, not B". To help translate this to language (the English language in our case), we can use the following sentences as simple examples. For the Theorem, "What would happen if you did?". Notice the two positives in there, "would", and "did" (would = A, and did = B).

Now let's try the Inverse. An example would be: "What would happen if you didn't?". Whoa!...a whole new world of possibilities just opened up, didn't they! Notice the negation in "didn't", and notice how it changed the focus of your thought pattern! In this situation, the "would" = "A", and the "didn't" = " $\sim B$ ". The next quadrant, the Converse, would be "What wouldn't happen if you did? ("wouldn't" = $\sim A$, and "did" = B). Finally, the Non-Mirror Image Reverse. "What wouldn't happen if you didn't? ("wouldn't" = $\sim A$, and "didn't" = $\sim B$).

So you see, much of this pattern has to do with shifting the point of negation to shift the focus of the thought form..fun and effective, huh? Does it sound like it has interesting possibilities?..What would happen if it didn't have interesting possibilities? Or, What wouldn't happen if it did have interesting possibilities?.. Wait!. What wouldn't happen if it didn't have interesting possibilities?..made you think!

Now, you may be wondering how you can use this to help you produce the results you desire in your daily life and/or in a light & sound session. In your daily life, pick any action you're contemplating taking that keeps running through your head .if you have no thoughts that do that, just pull up something you've thought about recently where you'd like to explore the possibilities of the thought. This can work WONDERS for "worry" issues, so if you have something on your mind that you're worried about, pick that. Got it? Great! Now as you think of that thought or action you are thinking of taking, simply ask yourself "What would happen if I did do it?" Notice the thoughts that this generates. Repeat the question to yourself and notice that your mind comes up with one (or hopefully more possibilities). Then after you can't think of anymore thoughts in that area, ask yourself "What would happen if I didn't do it?" Once again, notice the shift in consciousness. How does this affect your thought and feelings? Notice where and in what location of the mind or body these feelings/ sensations occur. Let your mind give you all the possibilities it can for

each question!!! Continue of to ask yourself "What wouldn't happen if I did?" once again be conscious of the shifts in your mind. Again, feel free to repeat the question to yourself and spend several minutes (or all the time you have) on it. The more time you play with a question and the more time you allow your mind to explore each quadrant, the better and more satisfying the results usually are.

For the final question, ask yourself "What wouldn't happen if you didn't do it?" You'll probably feel a huge expansion at this point! That's great! Just let your unconscious mind do it's job! That's what your unconscious mind does best. Once again, let your mind play with this last question for as long as you are able to.

In a light and sound session, the process is almost identical. Pick an issue before you start your session or if you're doing a session and an issue comes up (it happens!), you can use this pattern right then and there. Once you have the issue ask yourself the four questions and notice what happens.

Personally, I've found that asking these questions during a light and sound session can have profound effects on the user. One of the most interesting variables to play with during a session while asking these questions is to play with the light speed. I've found that when the frequency is in the Alpha to Gamma range, your mind seems to give you answers quite quickly. Remember to explore the slower frequencies too. Some of the best answers that I've come up with came to me when I was using a Delta or Theta frequency. This is probably because when very low frequencies are used, such as Delta, or Theta, the conscious mind's intrusions to the thought process are minimized. The reason I don't give specific numbers is because there seem to be no exact frequencies that produce the same results in everyone, but the general brainwave states do seem to provide fairly consistent results.

Using close eyed glasses versus open eyed glasses tend to make a difference too. As one would expect, the user tends to get deeper answers when using the closed eyed glasses, probably because there's less distraction from the outside world. The open eyed glasses, however, I've found extremely invaluable because I use this linguistic pattern quite often at my desk while I'm working. Both the open eyed and close eyed glasses seem to be equally valuable in this linguistic process, yet can produce different results.

In conclusion, have as much fun as you will allow yourself to have. Playing with this set of four questions seems to be one of the best ways to approach this pattern because the unconscious mind likes to play, and by utilizing these questions; you're discovering possibilities you may not have been conscious of, till now. Possibilities that can raise your consciousness and possibly solve all your "problems". Have fun, and remember to trust your unconscious mind.

Adapted from material by Tad James/ Advances Neuro Dynamics- Used with Permission.

Michael Stevens operates Mind EFX. Mind EFX specializes in making trance-formation fun and entertaining. Michael is a Certified Master

Practitioner of NLP, Certified Master Hypnotherapist, and a Master Practitioner of Time Line TherapyT. Michael may be contacted via email through his web site at: www.mindefx.com; direct: 818/367-8447; toll-free: 866/MIND-EFX.

New Products

Liquid Crystal GSR:

Remember Mood Rings? And more recently Aware Squares? Liquid crystal sheets are the same thing! They are an effective, reusable and cost-effective means for determining your physical state.

Many of us who use light and sound instruments would like GSR devices to measure our physical reaction to states of stress and relaxation, but the only choices available outside of spending a couple of thousand dollars are audio-based / tone-stimulated units that are battery operated. And most of them are pretty good. But what about those of us who prefer visual stimulation over audio, and want it fast. Liquid Crystal GSR is the perfect indicator of how you are affected by a light/sound session.

Place your hand on the sheet, count to 30, remove your hand and compare it to the color interpretation chart. Do the same right after the session and see if any changes occurred. Very basic method, and accurate.

Liquid crystal sheets are quick acting and provide an accurate gauge for monitoring blood flow and physical stress. These sheets are a versatile and economical tool for those who are personally concerned in controlling stress and pressures encountered in their daily lives.

Liquid Crystal GSR general color interpretation of skin temperature:

- Violet = Relaxed
- Blue = Tranquil
- Green = Normal
- Yellow = Upset
- Brown = Tense
- Black = Stressed

Each sheet is 12" x 6" with a peel-off backing and can be easily cut with scissors. By cutting into small squares and peeling off the backing, you can adhere the liquid crystal between your thumb and forefinger for an indefinite time. This allows you to visually track your physical responses to stressors when it matters most. For example, any golfers out there? How's your putting game? Do you inhale or exhale before you putt? Visibly check your physical state as you play your round. Be aware of your physical responses to how you play, it could lower your score. And what about students studying for an exam? Studies have shown being in a relaxed state is more conducive to learning than being anxious. Having a liquid

crystal square affixed to your hand could help you in maintaining a more relaxed and focused state.

Liquid Crystal GSR is available in the following activation temperature: 77-86 degrees Fahrenheit. Each sheet is 12" x 6" and comes with an adhesive, peel-off backing. \$29.95. To order or for further information, please contact Michael at the AVS Journal.

The Cheapest and Most Diverse Color Therapy Device Ever Devised!

Color Filter Gels

At long last, you can choose from a variety of colors to suit your goals and moods. Simply use any color filter gel in front of your white light AVS glasses! That's all there is to it.

This is the cheapest and simplest, yet most phenomenal color therapy device yet devised. You use your AVS machine in tandem with these gels. Set your light glasses on any table top or desk and put any color gel right in front of the white LEDs. Use your AVS machine in manual mode so you can change the frequency to whatever makes you comfortable.

The color light shines into your eyes. Colored light shining into your eyes is extremely powerful. You will notice shifts right away. Determine which AVS frequency makes you feel the best, set the frequency there.

Why use different colors?

Colors are very significant factors in our environment. We buy cars, paint our homes, and buy clothes based on colors which make a statement about who we are. Each of us has colors which we like, and colors which we dislike.

Now you can choose the color which suits your mood, or experiment with different colors for different effects. Meditation programs, for example, work well with blue light.

Color Chart

Based on a person's upbringing, colors have "attached" meanings. Below are some examples:

	Traditional (positive)	Traditional (negative)	Natural	Sense (smell)
Red	love, energy	cruelty, wrath	fire	rose
Orange	harmony, social	danger, risk	sunrise	citrus
Yellow	light, gold	mean, deceit	sunlight	lemon
Green	growth, life	jealousy	plants	leaves

Blue	truth, wisdom	despondency	sky	berries
Violet	royal, spiritual	depression	sunset	eggplant

How to use the different colors:

Choose different colors based on your mood. Use the chart above, or simply use your own intuitive approach.

A number of users of the Color Gel Collection have reported using the different colors as follows:

- Red: energy, migraines
- Orange: cheerfulness
- Yellow: focus
- Green: healing, transformation
- Blue: sleep, meditation
- Violet: spiritual, transforming

Choose any of the above colors to transition to a specific mood, then select a light and sound program which matches your goals.

Here is an interesting depiction of color by Dr. Morton who reviews the historical use of color in society, religion, sociology, psychology, spirituality, and in medicine:

-Red- stimulates endocrine gland, blood flow, increases pulse, increases rate of breath, enhances appetite, heightens smell.

-Orange- increases appetite, induces relaxation, increases potential to sleep, slows blood flow.

-Yellow- quickens electrochemical transference of light energy from eye to the brain.

-Green- soothes allergic reactions, elevates blood histamine, dilates blood vessels, reduces food allergies, reduces distress from eczema, diarrhea, and gastrointestinal problems, restores vision chemicals.

-Blue- causes brain to secrete 11 neurotransmitters that tranquilize, slows pulse, deepens breathing, reduces perspiration, lowers body temperature, reduces appetite.

Each gel filter in our Color Gel Collection is affixed with velcro for quick and easy application. Simply match the velcro on each filter to the velcro (included) on your white LED glasses. To clean, simply wipe with a damp cloth. Color Gel Collection: \$24.95. To order or for further information, please contact Michael or Jeff at the AVS Journal.

Calendar of Events

- June 8-9 BFE: "Heart Rate Variability Biofeedback & the Psychophysiology of Asthma."
Paul Lehrer, Ph.D. Chicago, IL. Contact:
800/361-3651.
- June 9-10 BFE: "Surface EMG Evaluation & Feedback Training in Physical Therapy." Glenn
Kasman, P.T., M.S. Chicago, IL. Contact:
800/361-3651.
- June 9-10 BFE: "Pelvic Floor Muscle Rehabilitation for Vulvovaginal Pain." Howard Glazer, Ph.D. Contact: 800/361-3651.
-
- July 21-25 Stens Corporation 5-Day St. Paul, MN 800/257-8367
- July 23-28 AAPB: "Fundamentals of EEG/Neurofeedback" Denver, CO
303/422-8436
- July 24-28 AAPB: "Fundamentals of General Biofeedback" Denver, CO
303/422-8436
- July 26-27 Stens Corporation 2-Day / Pediatrics St. Paul, MN
800/257-8367
- July 28-Aug. 1 Stens Corporation 5-Day / EEG St. Paul, MN 800/257-8367
-
- Sept. 7 AAPB: "New Approaches for ADD/ADHD" / "Migraines and IBS- Are They Both Brain Disorders?" Washington, DC 303/422-8436
- Sept. 8 AAPB: "Neurofeedback and Biofeedback to Normalize/Optimize Performance for Work and Play" / "Biofeedback and Anxiety" Washington, DC 303/422-8436

Do you sponsor AVS related workshops, seminars or conferences? Utilize our free posting service by providing us with the usual information: who / what / when and how to contact. For deadlines on posting, please call: 818/831-7931.

Relax to the MAX!

EXPERIENCE effortless stress relief like never before with AV3X. Feel deep, therapeutic relaxation as you view soothing imagery, while listening to ethereal music mixed with natural sounds and gentle brainwave pulses



Now featuring optional pulsed light stimulation, widescreen format and improved picture and sound.

"An enjoyable mind-ride of instant relaxation."
- Michael Landgraf, author of "Mind States"

"The visuals are simply stunning!"
- Zoe Seven - author on shamanic mind states

"My TV just became a meditation device
and portal to complete relaxation."
- Skunk Magazine

www.AV3X.com

"The AV3X DVD is safe, effective and offers a truly enriching and transcending mind/body stress-reducing experience. I recommend it with great success, to my patients suffering anxiety symptoms."
-Nicholas Soffron, Ph.D., A.M, Psychotherapist



AV3X



DIGITAL
Meditation®

WIDESCREEN

16:9

www.AV3X.com

"AV3X", "Digital Meditation", and the AV3X logo are registered trademarks of AV3X LLC.