The Cave Alchemist:

Biochemical Brain Shifts And Mental Images Associated With Extended Periods Of Darkness

By

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Abstract

Sensory deprivation, in the darkness of the cave, has a long history in spiritual traditions. This project explores the mental imagery, which occurs from the mind altering mechanisms occurring in darkness, from the perspective of the experiential and the neurophysiological. The body, especially the brain, becomes an alchemical chamber of biochemical and neural impulses when living in the dark for two weeks. This paper looks at the parallels to the mental images formed in the dark with those reported from psychoactive plants used in shaman journeys, recent research in transcranial stimulation, and near-death experiences. The author proposes the levels of consciousness are similar to the layers of a graphic software program. Stacks of layers are hidden from our perception until the transparencies and masks have been removed. The darkroom experience is one of the methods of altering these filters.

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The Journey Begins

Darkroom Lights - (Goodwin, 2007)

The Experience

"*Let the light that shines without be lighted by that light which is created from within*."

(Cayce, Reading 262-40)

The pain shot through my forehead causing me to clasp my hands on my head, as if this would keep my frontal cortex from exploding. The light beamed with the intensity of a searchlight cutting through the darkness and blasting me in the face. This ball of light hung in the air like a giant moon, which followed me everywhere I went. Whether, I closed my eyes or buried my head, the bright moon still remained, and so did the fireworks shooting through my head. "I must relax," I told myself, "continue to breathe deeply." This is where all my training with moving the energy through my body, and meditative practices should payoff. "Take control, not by force, but just ease the ball of light downward to my lower Tan Tien in the abdomen," I kept reassuring myself. I know there is no external light; it is just the hypersensitivity of my retinal and cortical neurons firing from the increase in biochemicals flooding my brain. However, no matter how much I rationalized, my internal sensors kept firing wildly, and images of objects appeared to glow, and flow into a mosaic of colors and shapes. I felt like I needed to shift my consciousness level to become grounded in the physical, and

yet I still wished to experience this other world, the worlds of shamans and mystics.

The moon, or light ball, was about a foot in diameter as it hung in the air. This circle of light started to alternate from being light in the center with dark edges to a dark center with light feathered edges, each enveloping the other as it pulsated between the two contrasting images every few seconds. The cycling pulsation seem to grow in rapidity to the point where I could "will" the image I preferred to appear. This was much like the visual illusionary trick of the "young lady and the hag," where you can see a picture of one, or the other depending on your visual perspective.

The edges feathered out from the center like shooting rays of light, or dark, depending on my choice. I thought of the theories of black holes in outer and inner space, and the subsequent revelation that light springs from the deep stillness within the blackness; the meaning of "nothing" but containing "everything; the falling into the super small quantum states, which opens into the interconnection of everything. Many theories and philosophies raced through my mind in an endless stream of awareness.

Geometrical shapes started to form, and the lights danced around like fireflies on a still summer night across the glassy reflective surface of a pond. It was like thousands of tennis balls stacked on top of each other, or the cellular matrix under a microscope. Then, the images transformed into various molecular and DNA strand-like shapes. There were shapes of purple, blue, and pink. Then, there were all manners of colors, and finally, no color at all.

Lights formed shapes around people and objects, and appeared to pulsate in an exaggerated 3-D world making it almost impossible to judge where a person's physical body actually existed. What was space, or time for that matter, in this state? Which way was up, or down? It was hard to tell as all my perceptions had been scrambled like a living *Alice in Wonderland*. Yet, I also was in a strange sense of peace, content to be transfixed upon the parade of stars, lights, forms, and alien landscapes that appeared before me like some high tech visual display.

The difference being, I was not outside of this world, but very much sitting in the middle of it all.

Shadows leaped from a moonlit cave entrance. I saw what looked like an angel out of the corner of my eye. Soon, there were many angels all around me. I was able to shift my consciousness back to the physical enough to realize that I wasn't being brought home, in the heavenly sense, but these were the energies emitted from other people near me. The intense light centered over their heads; their bodies glowed with a heavenly radiance, and their outstretched arms formed angel wings.

Our perceptions formed by memories consciously and unconsciously do truly create our view of the world. “Mind is the Builder,” as the words of Edgar Cayce flashed through my mind, as an assurance that I was making the decisions. I can make the choice of creating this *world* (experience) to be one of terror, or one of fascination.

I struggled with the ever-present pressure at the top of my head as the intensity of my “head lights” continued. I was hoping I would not be visited with images of a pale man with snakelike features laughing as he tortured his victims, like a terrifying Harry Potter dream. This thought made me laugh, which to my surprise eased the pain. It was then I remembered how a good “belly” laugh was a technique used in the Universal Tao, to prepare the activity of the inner channels. I continued to mentally bringing the light down to my lower Tan Tien. I added the feeling of compassion and joy as the energy channeled through my heart. I guess all the work on thrusting channels, steaming the meridians, and movement of chi through the body, was handy after all.

The pain started to leave my head. I would stay in touch with my heart energy, and the *mind* of the lower Tan Tien. My goal was to find my inner self, the knowledge, and or wisdom that could be gained, and I didn’t want to be sidetracked by the trifle insignificance of physical pain.

- Personal experiences of the darkroom-

This "experience" was not the visual images induced by drugs, or an NDE (near-death experience); although, they are similar from my understanding (Rätsch, 2005; Greyson, 2006). Instead, they are the result of chemical changes in the brain when one has descended into the darkness of the cave for two weeks. My hermitage was not a form of punishment, but was rather of my own choosing. I wanted to experience the often dramatic bodily changes that occur with extended periods in the dark, like those sought by the many spiritual traditions of the past. This was a way of passage for disciples, forcing the initiates to face their own parts of light and dark by spending time in caves, tunnels, or other means of total darkness[1]. After all, sensory deprivation, along with meditative practice, is thought to be a type of fast lane along the journey to altered, and hopefully, enlightened states (Lilly, 1996).

The Dark

"What Light was in Him that is Light, that is Life, that is out of darkness?"

(Cayce Reading 275-39)

Nighttime has long been associated with danger and mystery. This is the time when all manner of creatures roam such as snakes, scorpions, spiders and spirits. With all these objectionable attributes associated with it, the dark would seem a rather odd place to go for enlightenment. Caves, tunnel-mazes, forests, and jungles have many dangers, but the greatest danger maybe in confronting the devises of our own mind.

This step into the unknown in search of greater wisdom is what studying the transpersonal is all about. A step taking us to new realities. A place where what is considered to be real becomes a quagmire of illusions in itself. The imagination of the mind becomes yet another world. A world that we cannot only perceive, but one in which we can also exchange ideas,

energies, and wisdom. If we learn to recognize the secrets the "dark" possesses, we can manifest our ideas into our own physical world. "Mind is the builder," to quote Edgar Cayce, and this speaks directly to the area of consciousness development we are exploring in the dark (Frejer, 1995; Thurston, 2004).

Spiritual traditions have used the retreat into darkness as the ultimate inner alchemical chamber that lifts us from our physical body to that of the spiritual body (Kaiguo and Shunchao, 1998). It takes us beyond the gates of death to another layer of perception or consciousness. Nikos Kantzakis said, "The real meaning of enlightenment is to gaze with undimmed eyes on all darkness." This was most commonly achieved by the hermit-like retreat of spiritual seekers, and one of the steps in the initiation to enlightenment. They would divorce themselves from the endeavors of daily life and seek solace in mountain caves, tunnels, pyramids, jungles, or even isolation huts.

The Shinto tradition in Japan has the discipline known as komori (seclusion) that is practiced in windowless huts called *komorido*. In this tradition, the sacred power is manifested in darkness within a sealed vessel, where it gestates and grows until in emerges into the light of the world. (Buxton, 2005) I experienced this in the *womb of the cave* in growing the *immortal fetus*.

All of these traditions are hoping to stimulate the inner changes that are triggered by surrounding oneself with Earth's energy, in darkness, and isolation away from the world that bombards the five physical senses. In the darkness, another vision opens in this space where physical sight is useless. The Tao says, "When you go into the dark and this becomes total, the Darkness soon turns into light" (Chia, 2006, p. 48).

In the darkness, the mind wanders into unexplored areas of our unconsciousness, and all of our personal villains are exposed. Our "shadow" or "darkside" introduces themselves to our awareness, and we are faced with the choice of transforming or dissociating from the encounter. (Jung et al., 1968; Underhill, 1999, Wilber 1996) However, one must pass these treacherous psychological paths to open the wisdom, and the divinity that lives within us awaiting our discovery. Another Taoist saying repeated during my darkness training, states, "Do not search outwardly for love from others, but to search within the naked and abandoned self." After all, we are all Buddha's waiting to be discovered. (Burtt, 1955)

Manly Hall (2003) in *The Secret Teaching of All Ages* explains it this way:

> In symbolism the body is divided vertically into halves, the right half being considered as light and the left half as darkness. By those unacquainted with the true meaning of light and darkness the light half was denominated spiritual and the left half material. Light is the symbol of objectivity; darkness of subjectivity. Light is a manifestation of life and is therefore posterior to life. That which is anterior to light is darkness, in which light exists temporarily but darkness permanently. As life precedes light, its only symbol is darkness, and darkness is considered as the veil which must eternally conceal the true nature of abstract and undifferentiated Being (p. 229).

Tao Garden

Tao Garden, Chiang Mai, Thailand (Goodwin, 2007)

> *In the spiritual discipline of the Tao, the body is not only a physical container but also a spiritual womb.* (Chia & Huang, 2002)

Thus, I trekked off to northern Thailand to study and meditate in the darkness under the discipline of the *Universal Tao*. Master Mantak Chia's *Universal Tao* training follows the Taoist spiritual tradition, but acknowledges the technological advancements of the West. This openness to technology makes the Tao Garden resort more comfortable to western seekers, and explains the retreats popularity with European visitors. There are many cave type retreats around the world, mostly in India and Tibet, but they are not as adaptable to the western mind. Besides, Thailand was only a little over five hours by plane from my home in Guam.

Thailand with its many temples and shrines has a mystic quality all its own. As I traveled into the country's interior, I felt the enchantment of the land, and the serenity of the people, which only enhanced the mindset for a meditative retreat. Once within the sanctuary of the walls of the Tao Garden, I found meditative pavilions, Tai Chi exercise areas, a modern alternative healthcare facility, and an open-air buffet area with food prepared specifically for a person's

blood-type. Just outside the walls, one could enjoy the greenery of rice fields, forests, and the nearby mountains. [2]

I was among approximately 40 seekers, mostly veterans of various spiritual studies, who would call a darkened condominium complex home for two weeks. Fortunately, this was more like a five-star version of the cave retreats compared to the haunts of the spiritual initiates of the past. I couldn't help but think of the austere conditions described by Lhalungpa (1977) in *The Life of Milarepa*, or those detailed in Paramahansa Yogananda's (1946) autobiography as I settled into my comfortable bed after a relaxing, hot shower.

I stayed in a room on the second floor of the square-shaped brick complex. The rooms were arranged around the outer rim of a center court. The center court was covered with meditation mats, and formed the meeting place for all the group meditations.

The meals were delivered in plastic containers, which were bundled into one plastic bag to make it easier for participants to pickup at the entrance of the large common area. A gong would be sounded to indicate the arrival of the meals, but the sound of movement in the great hall was normally enough to alert us of the food delivery. For me, the trek to the staging area meant I had to negotiate along the wooden rail overlooking the court, down two flights of nine stairs each, then weave through the meditation mats on the common area floor, all in total darkness.

My home in the dark before the mats were laid down in the center area. My room was on the second floor just to the left of the pillar, and to the right of the three balloons. The balloons were hung over any open areas to warn of obstacles, stairways, and doorways. The padding around the corners was much preferred to the hard 'wrap' on the head of solid brick. (Goodwin, 2007)

The training was divided into week long sessions progressing through the Kan-Li practice. The first week began with the Lesser Kan and Li (Chia, 2006), followed by the greater Kan and Li (Chia, 2006), and finally the greatest Kan and Li (Chia, 2006). The first week covered much of the background needed in the darkroom and was a requirement before entering the other practices.

The diet is an important component in helping the body achieve an optimal biochemical state. Therefore, the meals were specially prepared and consisted of a variety of juices, fruits, vegetables, and occasionally some fish or chicken. The nutritional needs for developing DMT, which is one of the biochemical goals of the darkroom, in the brain consists of foods rich in the amino acid tryptophan to encourage melatonin synthesis. Tryptophan is one of 20 amino acids making up the building block of proteins, and is one of the "essential" amino acids. An essential

amino acid cannot be synthesized from other amino acids, and must be obtained in the diet. Fortunately, tryptophan is found in several foods, such as, fish, bananas, chicken, peanuts, cottage cheese, brown rice, and milk products (http://en.wikipedia.org/wiki/Tryptophan). I took supplements of vitamins B-6, B-12, and folic acid to aid in the conversion of typtophan to serotonin. Clinically, we see low levels of tryptophan in the blood being associated with depression, so if my levels of seratonin and melatonin were reaching adequate levels, I should be in a really, good mood. (Chia, 2006; Strassman, 2001)

Once inside the condominium, everything had to be accomplished in complete darkness. The Tao Garden support staff would wear night vision goggles to negotiate the spaces when delivering food, or supplies, and if assistance was needed by any of the participants. The outside windows, and the only entrance was blocked with black plastic, allowing no external light. Of course, no light emitting devices, such as watches, clocks, and cell phones, were allowed inside the complex. With the outside world blocked out, I would have had no sense of the time of day, except the gongs sounding for the beginning of the day, for meals, and for meditative sessions.

Some of the changes experienced in the darkroom include: disorientation, decreased sleep, body temperature changes, and heightened senses. During the darkroom training, I found I was perfectly happy with a diet of drinks, fruit, and some vegetables. Although, I did not consciously restrict my diet, I did find I needed to eat less and felt better for it. Consequently, I lost 10 pounds in the little over two weeks of my stay. I maintained hydration by drinking, 8-10 glasses of fluid per day.

When it was time to leave the darkroom training, I emerged at night with sunglasses to protect my supersensitive eyes. I had an immediate sense of being "land-sick," much like the

experience of coming back to shore after several days at sea on a boat. This caught me off-guard a bit, and it took me several steps to regain my bearings. The brightness of the stars and path lights were incredible, but also magnificent. The trees glowed with a purple haze, which would reach out to me from all directions, and the stars completely lit up the sky. The freshness of the night air was a welcome relief to the mustiness of the complex. The magnified sounds of the night; animals, leaves rustling, even the distant sounds in the mountain village, all were flooding my brain and body with sensations. Of course, I avoided artificial lighting as much as possible for the next few hours to allow me some time to adjust.

The next morning, I awoke at my usual time, around 0430, which I was finally able to confirm with a clock, and continued my normal routine of morning exercises and meditation in my room. However, I was eager to venture outside to bath in natures start of a new day. The gradual subtle shifting of light, and the gentle sounds of the early morning was a perfect way to reintroduce my body to the sensory world. I was thankful to take in all the beauty and serenity of my surroundings, and wait for the rising sun. I had a full day at the retreat before I would make my way back home and into the rapid pace of society.

Young rice fields at sunrise. Chiang Mia, Thailand (Goodwin, 2007)

Kan-Li

The Kan and Li practices of the Tao are designed for the alchemist in the cave (Chia 2001, 2002, 2006). The cave acts much like the mother's womb, as it serves its purpose in the

development of the immortal fetus. During this process, the Tao student meditates for long hours in the solitude of darkness. It is here that he or she will meet another aspect of themselves in a way, which brings together the body, mind, and spirit. Deep within the dark, the Tao practitioner seeks a light, which is eternal. The sensory depriving of vision, and to some extent the other senses, helps to concentrate the mind inward, opening a different vision, and tuning internal frequencies to resonate throughout the body.

Kan and Li literally mean "Water and Fire" but are two types of Chi (Chia & Huang, 2001, p. 47). The Kan and Li practices in Taoism points the spiritual seeker back to the *Source, or Wu Chi*. In this system, the fire energy is normally positioned above the water energy within the body. It is through these meditations that the Taoist reverses the positions to enable the alchemical transformation to take place (Chia, 2001). All the representation of Kan and Li to different organs, as well as the pure yin and yang subtle energy, work as aids to help the student bridge their physical world perceptions, much like the humanizing of deities.

The characteristics attributed to Kan and Li by the Taoist give some clues to the understanding of this internal process. Kan is termed as the "life essence" and orgasmic energy. It is the True sense, which is outwardly dark but inwardly light, and the masculinity within the femininity. We attempt to raise the sexual energy to transform it into the immaterial, and connect to the Universal Force, or *Wu Chi* (Chia & Huang, 2002).

Li is the Spiritual Essence, the Heart of Compassion Fire, which is outwardly firm yet inwardly flexible. The Fire of Heart Compassion, the pure energy transformed into virtue, love, joy, happiness, gentleness, kindness, fairness, and courage combined at the heart, makes the

material into the immaterial. When this energy is raised to the mid-eyebrow it becomes the spiritual essence (Chia, 2006).

The essential aim of the Kan and Li darkness practice is to give birth to the soul and spirit. To accomplish this task, a reversal of the normal "fire and water" locations within the body needs to take place. For example, the lower cauldron is formed by transferring the compassion fire from the heart center below the sexual energy water of the kidneys at the connection point in the lower Tan Tien.[3] Unless this inversion takes place, the fire simply would move up and burn out the body, and the water would flow down and outward loosing vital energy. In the Taoist practice, the energies are combined and steamed in virtual cauldrons located at the three Tan Tiens. Each time, the fire is moved below and the water above. These Tan Tiens are located at the midbrow or third-eye, the heart, and the abdomen, which correspond to the Center of Observation, the Center of Consciousness, and the Seat of Awareness (Chia & Huang, 2001, Chia & Huang, 2002).

In the Tao, the body is not just a physical container, but also serves as a spiritual womb. Self-love, or self-intercourse, as opposed to the normal trait of seeking outwardly love from others is necessary in giving birth to the Immortal Self (Chia, 2006). The Taoist practitioner is utilizing the strong sexual energies to open to the Universal Chi, Wu Chi. "Tao gives rise to one; one gives rise to two; two gives rise to three; three gives rise to all things" (Chia & Huang, 2001, p. 139)

This explanation of the visualizations used in the meditative practices of the cave is only a glimpse of the process, but it is helpful to give insight into the way the Taoist practitioner views the energy moving through the body's meridians, and throughout the universe. The *Chi*

movement is important in healing practices, but also plays a vital role in becoming aware of subtle shifts within the body during the darkroom experience. “When you learn to see things through the back of your brain, listen to sound through the center of your brain and breathe through the navel, you become one with yourself and the universe” (Chia & Huang, 2001, p. 71).

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[1] Jung called this the *shadow personality.* A modern version of this struggle has made it to the theaters of late. (see Appendix *Heroes*)

[2] In formation on the Universal Tao and Tao Gardens can be obtained from their website, http://www.tao-garden.com.

[3] “Tan” is Chinese means “elixir” and “Tien” means “field or place.” The Tan Tien is the place where all the energies of body, earth, and the universe come together (Chia & Huang, 2002, p. 63)

Dark Changes

Vision

I was fascinated by the visual imagery I had experienced in the cave and curious about how the images materialized without sensory input. In the months following my trip into the darkness, I reasoned that many of the visual images must have been the result of a biochemical change in the brain, and not from any spontaneous enlightenment. Although, I also felt that these bodily changes left me more connected with some type of *Universal energy.* So, what had started as a simple experiment to experience the darkness in the cave, turned into a tangled web of mystery involving neuroanatomy, biopharmacology, psychiatry, psychedelics, shamanism, and the transpersonal.

In the cave, there are descending stages, or levels, into the mind, which are aided by the alchemistry in the brain. Within the first 30 minutes of total darkness, the sensory end organs shift gears from the light dominated world, to a world better suited to creatures of the night. First, the eye goes through a number of chemical processes in dark adaptation. Usually, it takes about 25 to 30 minutes in the dark for the eye to shift from a cone centered functioning to that of rod domination, and from central vision's fine detail to peripheral vision's gross detection. The pupil, the sphincter controlled entrance into the eye, is given its orders to open wide by the lateral geniculate body from its command post deep in the thalamic region of the brain.[4] This allows the maximum amount of light to strike the photoreceptors, rods and cones, in the back of the eye. The rods take center stage, as they are more sensitive to movement, and to dimmer light emitting objects. The macula, most notably the fovea at the very center of acute visual detection in the retina, is blind to dim lights after dark adaptation. The high concentration of cones in this region

is not well suited to the low light levels. This is a well-known phenomenon to astronomers, as looking directly at a dimly lit star causes it to disappear from view. Instead, one must look a little off-center to allow the sensitive rod receptors to make it visible again. (Kaufman et al., 2002)

Moving deeper along the visual pathway, we enter the brain, and the point where the nerve fibers of the two eyes meet and cross to the respective hemispheres, which correspond to our right and left visual field. The suprachiasmatic nucleus (SCN) has a unique position just below this juncture so that it can sense the reduction of light passing through the optic nerve, and sends a signal to the pineal gland to increase the production of melatonin (Axelrod, 1974).

This small neuron bundle (SCN) situated in the hypothalamus, is the master clock in the sleep-waking cycle. In daytime, it begins the chemical process to suppress melatonin by the pineal gland. At night, the SCN stops producing the inhibiting effect (monamine oxidase) on melatonin, and it flourishes. This begins an avalanche of biochemical changes as the true mini-laboratory of the brain begins to apply its magic. A magic only known to those who have ventured to these regions of mystics and shamans, and stretched the boundaries of normal space and time.

Smell

It is amazing how much we take for granted everyday, and smell is the Rodney Dangerfield[5] of the senses. We receive so much information from our olfactory sense at a subconscious level that we seem to pay attention only to the odoriferous smells. However, we do know that aromatherapy can affect our moods, behaviors, and possibly aid in reaching altered states (Maxwell-Hudson, 1999).

A new study links activity in the hypothalamus of subjects when exposed to certain human pheromones of the opposite sex resulting in psychological and physiological changes (Wyart, 2007). I could generally tell the sex of a nearby person by their smell, unless it was masked by the smells of cologne, which not many participants wore. Interestingly, even the same soaps used in bathing smelled differently on a man versus a woman. For my sensitive nose, I was just glad they showered.

My olfactory gland sensitivity supplemented my taste buds as a substitute for the lack of being able to see my food. Part of the darkroom training entailed being aware of our food by making each bite an experience. So, I became more of a connoisseur of my food. Smelling its bouquet, like a fine wine, before blessing my taste buds with a bite, or a drink. The other added benefit to this meditative eating was in aiding digestion. Smell triggers our digestive enzymes, and therefore, maximizing our nutritional sources and preventing gastric upsets.

Different air conditions, like mustiness, or a whiff of fresh air brought in by the circulating fans, became more noticeable as the days progressed. I began to understood how our native ancestors were able to tune their sense of smell to their environment, differentiating the shifts of aroma on the slightest breeze. This was a skill for self preservation for them, but offered an additional perspective for me.

Smell can also give us hints to health conditions, like a rise in blood sugar giving a distinctive fruity smell to a person's breath, or the musty odor of bacteria. Shaman medicine men and women around the world use the smells from their patients to guide them in healing. Moreover, the shaman can influence their patient's subconscious by using a variety of incense (Whittle, 2007).

Hearing and Sounds

The hearing of sounds in the darkness can be helpful for location and orientation purposes. For instance, the sounds of the water cooler, the air-conditioner, a person walking, and even my own steps, served to give me feedback. Every sound had its own vibration signature. Although talking was limited to observe the meditative discipline, small sounds carry a long way. Isn't it strange how much can be heard in silence?

Sound vibrations are recognized as another method to achieve altered states. (Monroe, 2005; Johnson, 1994) I can confer from my own experimentation with the use of the Hemi-sync technique and other brainwave type generators. In the cave retreat, the specific vibrations of the various "gongs" were used as a preparation to meditation. In this closed area, the ringing of the gong would send a scintillating vibration that ran through my bones, including my skull.

Taste

The taste of foods and drinks seem to be more acute in darkness, whether this is a function of just becoming more aware of the process, or an actual physical change is debatable. We were not consciously trying to deprive our sense of taste, so it is an interesting phenomenon. I followed the suggestion to become fully conscious of the food and drinks, by savoring every bite as if it might be my last, and letting the drinks linger in my mouth as if it were an expensive wine. Granted some of the drinks were more like sour wine, but nonetheless the intent was there.

Taste is another sense organ that can wake-up our system. Meditative and spiritual masters like to shock their student's senses to achieve a scrambling of their perception, which allow shifts in consciousness states to occur. (Castenada, 1999; Burtt, 2000) I am not sure if some of the bitter and sour drinks were meant for that purpose, but it definitely was shocking.

The other interesting use of taste in the cave retreat had to deal with mixing your spiritual essence in your saliva. *The Universal Tao* teaches that Chi is circulated through the microcosmic channel and mixed with the universal energy, which enters the crown, at the roof of the mouth (Chia, 2002). Saliva is mixed by moving it rapidly back and forth in the mouth with the tongue until it is sweetened. This mixture allows for a greater stimulation of Chi in the body when the saliva is swallowed. (Chia, 2004)

Touch

Touch is used extensively in the dark to determine the textural differences, firmness, and temperature of the flooring, walls, and fixtures. These clues help tremendously in orientation and negotiating. I preferred to walk barefoot, so I could feel the variation of floor textures in different parts of the complex. Walking barefoot also aided me in detecting the edges of steps as well as other objects on the floor. Having the soles of my feet run free from normal coverings has always been a good way for me to connect with the earth's energy. I normally walk barefoot on the beach, or around my home; so, going shoeless in the cave seemed rather practical at the time. It also had a psychological component by letting me perform a familiar act in this new environment, and thus, making me more relaxed.

The darkroom training included becoming aware of the sensations of our bodily hairs to the subtle vibrations of the universe and the universal energy force. The first step in this technique is to be aware of the changes that occur in the environment. This is a great practice in the dark as the slightest change in air circulation can be sensed if you remain very still. I could feel the breeze of someone walking past me, and at times, I even thought I could feel a person's presence.

Part of the meditation practice is to draw the universal force in through our skin and hairs with the power of the mind. It is more of an exchange between the *Chi* inside the body and the universal *Chi* outside the body. Inside and outside are relative terms in this sense, because in the Tao, they exist as one. However, feeling the running of the Chi within our body requires a perfect stillness of our active thoughts as we attempt to become one mind. This is reminiscent of the scene in the movie *The Last Samurai* (2003), where Tom Cruise's character is attempting to learn the art of sword fighting. His Japanese friend tells him: "he has too many minds," referring to his attention running in too many directions, and that he needed to have just one mind, purely focused.

Psychological Challenges

One-second, you are enjoying wasting your life away, the next minute, your mind is forcefully being thrust toward a bright light. The light can seem very knowledgeable and friendly, it can possibly represent an easy way out, a way to resist the madness and pain that your living mind is encountering. Past and future events in your life flash before your eyes in fractions of a second. You see deceased loved ones and they seem to tell you to go back to reality. You do so, and come out of your daze a changed person, with a new agenda for your life. A new, often happier outlook. These are all reflections of NDE subjects (http://www.iands.org).

Individuals who have had a near-death experience and users of Dimethyltryptamine, or 5-Methoxy-N,N-dimethyltryptamine, known as DMT and 5-MeO-DMT respectively, seem to share in these mystical visions and insights (Callaway et al., 1999; McKenna 1984, 1992). The darkroom experience attempts to increase the DMT levels that are naturally produced in the body and lead to some of these effects, but in greatly diminished intensity. So, it is no surprise that my

darkroom journey had many of the same mind twisters reported by the users of psychedelics, and NDE's.

The most difficult part of any meditation, and in particular darkroom training, is to still the mind from external rambling. This is especially true with a room full of intellectuals, who want to pick everything apart. We want to analyze instead of becoming the observer (Burtt, 2000; Speeth, 1988). We want our control, instead of letting go into the experience. Here lies the conflict. As we are attempting to let go of our fears, we find ourselves in a vulnerable situation, which is dependent upon others for our food, safety, and sense of time. Our trained natural instincts of survival are instigated and we seek to remain in control. The question of self-control opens into another labyrinth of mind mazes.[6]

In the dark, there is no sense of time, and to some extent, even space is relative. I am glad I had the experience of my training at Atlantic University involving meditation, dreamwork, hypnosis, remote viewing, creative writing, and other methods for internal discovery. Through these methods, I have needed to face my emotions, past anxieties, and fears.[7] However, those who were not prepared had to endure many mind trips on the emotional roller-coaster that awakens in the darkness. Isolation in the dark is both the springboard to enlightenment, and insanity.

When we are deprived of something, we can become quit possessive of what we do have. Whether this took the form of guarding your pillows and blankets on the meditation mat, having your favorite tea, knowing the time of day, or even as subtle as obsessing over where you were in the room. Becoming disoriented was more the rule, than the exception in the dark. Therefore, all participants had varying degrees of insecurity issues in which to deal.

I did find it comforting to be able to identify my meditation mat, *my home*, a life-raft in a sea of darkness. It was not enough to simply count the mats from the end, I needed to have a pillow placement, or some other method, to confirm that it indeed was my mat in the dark. Again, it was easy to get confused about the room's orientation, and find yourself walking in the opposite direction from where you intended.

Sometimes, I would realize my insecurity tics and make adjustments accordingly. For instance, I gave away my blanket to someone who had lost their own. The blanket was meant to be used to keep us warm when lying on the meditation mats. However, it had become a prize to be coveted, and consequently caused too many territorial issues. Furthermore, the blanket had too many connotations of being a security crutch, like the object held by the *Peanuts'* character *Linus*, which needed to be let go.

I didn't let go of every possession, though. I liked my pillow to be placed in a certain position so I could easily recognize, and confirm I was in the right spot. In addition, the pillow served as a cushion for the many hours of sitting cross-legged, and lying down on the hard mat. This experience gave insight into how important it is for everyone to have a "home" spot, no matter how expanded, or contracted the concept might be. It gives the person a little emotional comfort in the dark, both actual, and metaphorical.

When the mind begins to still, we have mental side trips to the outside world. We think about what and how our family, business, or friends are doing.[8] It was also easy to drift into the planning mind, and work on the activities of next week, next month, or even the next year. I have struggled with these *mind wanderings* before during meditation. So, this concentration exercise was nothing new. I just had more time to deal with them in the dark.

The cave is a double-edged sword. The environment is great for getting deep into a meditative state, but also easy for the mind to wonder to "real world," or even imaginative problems. Not all of this is bad, as we can solve many problems when we set our intent to seek answers for them in the greater subconscious realm. However, my greater goal was to seek the answers to the questions that remained outside of the physical world. For that, I needed to recognize those thoughts dealing with the drama of life, and let them slowly quiet down. I would have time to deal with them after I came out of the dark. This was an intuitive choice, to appreciate the moment in the dark, and to reach a deeper level.

Stages of Alchemical Changes

Four primary stages of progressive chemical changes are thought to occur in the brain during its retreat into darkness: the melatonin stage, the pinoline stage, the 5-MeO-DMT stage, and the DMT stage. (Chia, 2006) The melatonin stage, in the stages of *darkness enlightenment*, occurs around the third day of continuous darkness when the neurotransmitter accumulates in the body at a rate of 2 to 5 mg/day. This stage is marked by the primal urge to hibernate as the body seeks solace in regenerating through sleep. However, once the body receives adequate rest, only brief periods of sleep are needed to sustain oneself.

By the third day of continuous darkness, we enter the pinoline stage, when melatonin reaches concentrations of 15 to 20 mg. This begins the internal phenomenon of lights, sounds, and the reception of universal information. In the pinoline stage, many visual images are present. A new type of knowing begins to take shape, where past and future events seem to appear simultaneously, or in alternating sequences.

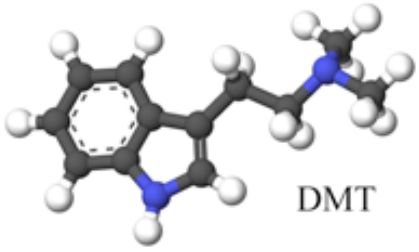
The pinoline stage could have been called the beta-carbolene stage, since the effects of pinoline are so much like its chemical cousins harmaline, and harmine. Harmaline containing plants are used for their inhibiting action on MAO's in the trance drink of ayahuasca used by South American shamans (Christian, 2005) The beta-carbolenes have also shown to be beneficial in fostering health with their anti-oxidative, antibacterial properties (Ahmad et al., 1992) as well as anit-peroxidation, which is related to the treatment of Parkinson's and Alzheimer disease (Frederiksen, 1998).

Pinoline, 6-MeO-THBC, has been linked with the mysterious and widely acclaimed Soma plant. Pinoline, the Soma plant, and the pineal gland have been shown to resonate at the familiar 8 cycles per second. The 8 HZ cycle is also associated with the alpha cycle in meditators, (Hoffman 1998, 2001) and found to be emitted from the brains and hands of healers. (Puharich, 1978)

Meditation may serve as a way to jump start the process of the synthesis of seratonin to DMT, and synchronizing the brain hemispheres (Greene & Furjanic, 2004). Not only does the pineal gland produce more melatonin and pinoline during the cave meditations, but these neurohormones switch on our pituitry glands, which releases the life hormone somatropin. In turn, somatropin goes to the adrenal glands and stimulates cholesterol to convert to pregnelenone, and pregnelenone into DHEA.

At approximately one week of total darkness, the pineal gland starts to produce 5-MeO-DMT. This psychoactive typtamine is luminescent and extremely phosphorescent as it transmits to the visual cortex. Thus, the internal light intensity increases as well as the ability to reach profound meditative states. (Chia, 2006)

The DMT stage is reached in 9 to 12 days when its levels reach around 25 mg. DMT, dimethyltryptamine, starts visions of infra red, and ultraviolet signatures around individuals and objects. (Chia, 2006) An effective dose of pure DMT when smoked, or vaporized and inhaled, is around 20 mg. However, ayahuasca analogs used for shaman journeys can range from 50 to 100 mg in concentration (Rausch, 2005). DMT appears to be responsible in part to ecstatic visual images and altered states known to the mystics. Clifford Pickover (2005, chap. 4) writes in the chapter entitled, *DMT, Moses and The Quest For Transcendence*, "DMT in the pineal glands of Biblical prophets gave God to humanity and let ordinary humans perceive parallel universes."



Eric Strassman (2000) labeled DMT "the spirit molecule" because it is believed to be at least in part responsible for bringing one to an enlightened altered state. Well, at least an altered state, enlightened may be too strong a term, with many of the same effects described by mystics, who have attained what we like to think of as an enlightened state (Underhill, 1929; James, 1902). Near-death experiences are also reported to trigger an increase production of DMT in the body (Strassman, 2000), and there is speculation that DMT may play a part in the visions reported from NDE subjects.

Well, I was relatively certain I didn't want to go as far as having a near-death experience for the endeavors of scientific research, nor was I ready to use illegal substances. So, I settled for complete darkness of 14 days to produce a similar, if not a more beneficial, experience.

Of course, there are many more changes occurring in the body as it adapts to an environment, which severely limits external stimuli. By adding dietary changes, meditation, chi

movement, and dream work, we produce an alchemical chamber within our own bodies. Our bodies are constantly in a state of change, for better or for worse. The body is affected by the food we eat, the thoughts we think, the type of physical and mental exercise we partake, and the type of environmental bombardments, which we are exposed. I am a big proponent of attempting to stack the odds in my favor, when it comes to development of the mind, body, and soul. The regimen of the cave certainly shifts the odds in our favor to induce change, which I think is the goal of all initiates.

Theoretical knowledge won from books, or teachers pales into insignificance besides that deep, unassailable "knowing, that burning brush with truth" so realistically expressed by St. John of the Cross (insert).

"The higher I ascended
The less I understood.
It is the dark cloud
Illumining the night.
Therefore he who understands
Knows nothing ever,
All science transcending.

He who really ascends so high
Annihilates himself,
And all his previous knowledge
Seems ever less and less:
His knowledge so increaseth
That he knows nothing,
All science transcending.

This knowing that knows nothing
Is so potent in its might
That the prudent in their reasoning
Never can defeat it:
For their wisdom never reaches
To the understanding that under-
standeth nothing.
All science transcending."
- St. John of the Cross -

These words of wisdom help keep this research in perspective. When I, or any one for that matter, brings our understanding of science into this vast realm, we are humbled by its scope. This project will still attempt to bridge our conscious understanding with what physical science offers little explanation, and which transcends all knowledge.

Biochemical

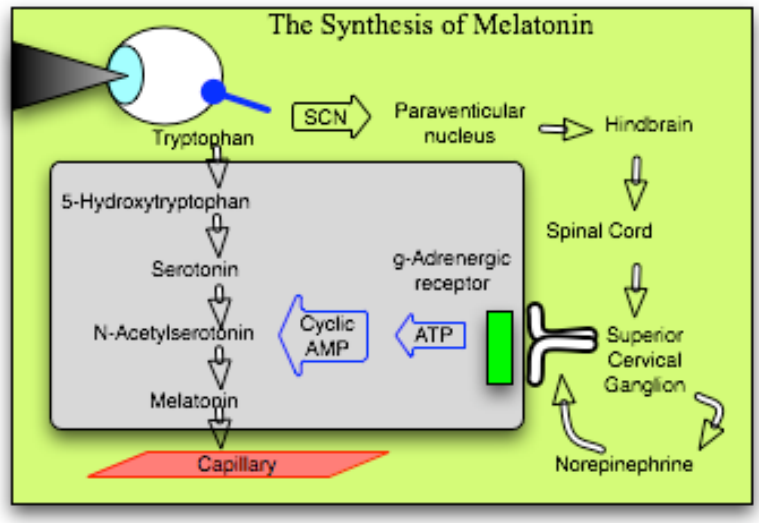
This journey into the biochemistry of the brain begins to get really interesting with the tryptophan derivatives, serotonin and melatonin. Serotonin, 5-hydoxytryptamine, is synthesized through 2-step process involving a tetrahydrobiopterin-dependent hydroxylation reaction, catalyzed by

tryptophan-5-monooxygenase, also called tryptophan hydroxylase, and then a decarboxylation catalyzed by aromatic L-amino acid decarboxylase. The hydroxylase is normally not saturated and as a result, an increased uptake of tryptophan in the diet will lead to increased brain serotonin content, which is the science behind the darkroom diet (Axelrod, 1974).

Although serotonin's highest concentrations are found in platelets and in the gastrointestinal tract, I was more interested in the increased amounts in the brain and the retina. Serotonin containing neurons have their cell bodies in the midline raphe nuclei of the brain stem, and project to portions of the hypothalamus, the limbic system, the neocortex, and the spinal cord. This location in the brain, the midbrain, coincides with what is known as *the communication center to higher consciousness levels* in the ancient wisdom of the Tao where it is often referred to as the *Crystal Palace*. Along with the brainstem, the midbrain is the area associated with autonomic, or subconscious, control (Chia & Tao Huang, 2001). This mid and lower brain region will also be key to my theory into the various types, and causes of visual imagery experienced in altered states.

After release from serotonergic neurons, most of the released serotonin is recaptured by an active reuptake mechanism, MAO (monoamine oxidase). The function of antidepressants, like Prozac, is to inhibit this reuptake process, resulting in prolonged serotonin presence in the synaptic cleft. Pinoline is secreted by the pineal gland to inhibit MAO in a natural response to prolonged darkness. Therefore, we have more abundance of serotonin, which in turn will result in more melatonin and a euphoric mood that enhances our meditative state (King, 2006).

Melatonin is synthesized within the pineal gland from tryptophan, where the necessary N-acetyltransferase enzyme is found, by the pathway shown in my diagram. The secretion pattern is



generated within the suprachiasmatic nucleus (SCN). Synthesis occurs upon exposure to darkness, with the increased activity of serotonin-N-acetyltransferase. By the action of hydroxyindole-O-methyltransferase (HIOMT), N-acetylserotonin is converted to melatonin. Melatonin is then rapidly secreted into the vascular system (Reiter, 1990).

Groenendjk (2001) states that the pineal parenchymal cells also secrete melatonin into the cerebrospinal fluid, including the ventricles that surround the midbrain, which provides the interaction with the pituitary gland, and the endocrine system. This is also leads to the adrenal glands that lie above the kidneys, which provides the connection in the Kan-Li meditations, and energy centers.

Synthesis and secretion of melatonin increases during the dark period of the day and is maintained at a low level during daylight hours. This diurnal variation in melatonin synthesis is caused by norepinephrine secreted by the postganglionic sympathetic nerves that innervate the pineal gland. The diurnal phasing is very important for bodily function and a study by Lewis and colleagues (1999) show the phasing gets out of balance in Alzheimer and schizophrenic patients. Interestingly, treatment facilities seemed to exasperate the condition due to inadequate lighting. Von Someren's (Kraft, 2007) research team in the Netherlands found that when "daylight" lighting was installed in treatment centers, the patient's conditions improved.

Melatonin functions by inhibiting the synthesis and secretion of other neurotransmitters such as dopamine and GABA, and controls the various biorhythms of the body. It also works in harmony with the hypothalamus gland which directs the body's thirst, hunger, sexual desire and the biological clock that determines our aging process.

Third Eye, Plus

The pineal gland has a long history in spiritual traditions, and it has a vital role in the production of melatonin, and probably DMT (Strassman, 2000). Highly regarded as the "Third Eye," it is located slightly posterior to the geometric center of the brain, and in the Tao teachings it is the switch for the Universal Force, the tip of the "Crystal Palace," and the yang to the yin of the hypothalmus gland. (Chia & Huang, 2001) It is the balance between the pineal and the hypothalmus glands, which serves as a switch to spiritual awakening when both resonant at the earth frequency of 8 Hz. Resonant frequency researchers, Matthew Greene and Sean Furjanic (2004), agree that the alpha rhythm of 8 Hz is significant to many brain changes. Also, this is the same frequency reported in pinoline research by Puharich (1978).

The ancient Greeks believed the pineal gland to be our connection to the Realms of Thought, which led Rene Descartes to call it the 'Seat of the Soul.' When the pineal gland awakens, the adepts claim a person will feel a pressure at the base of the brain. This pressure is said to be the result of connecting to a higher frequency.

Increased brain electrical and blood flow to certain regions of the brain during meditation may also be associated with pressure in the head (Hoffman, 2001; Newberg, 2004). With the brain imaging techniques available today, we are able to view the increase in blood flow associated with increased activity in the brain, during various cortical activities. Increase blood

flow in the prefrontal region during meditation does seem to make a good fit with the "third eye" opening reports of the spiritual adepts. This positioning also corresponds well with the head pressure I experienced while in the dark.

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[4] More specifically, there are branch fibers running to the superior colliculi nuclei in the area of the Edinger-Westfal nucleus.

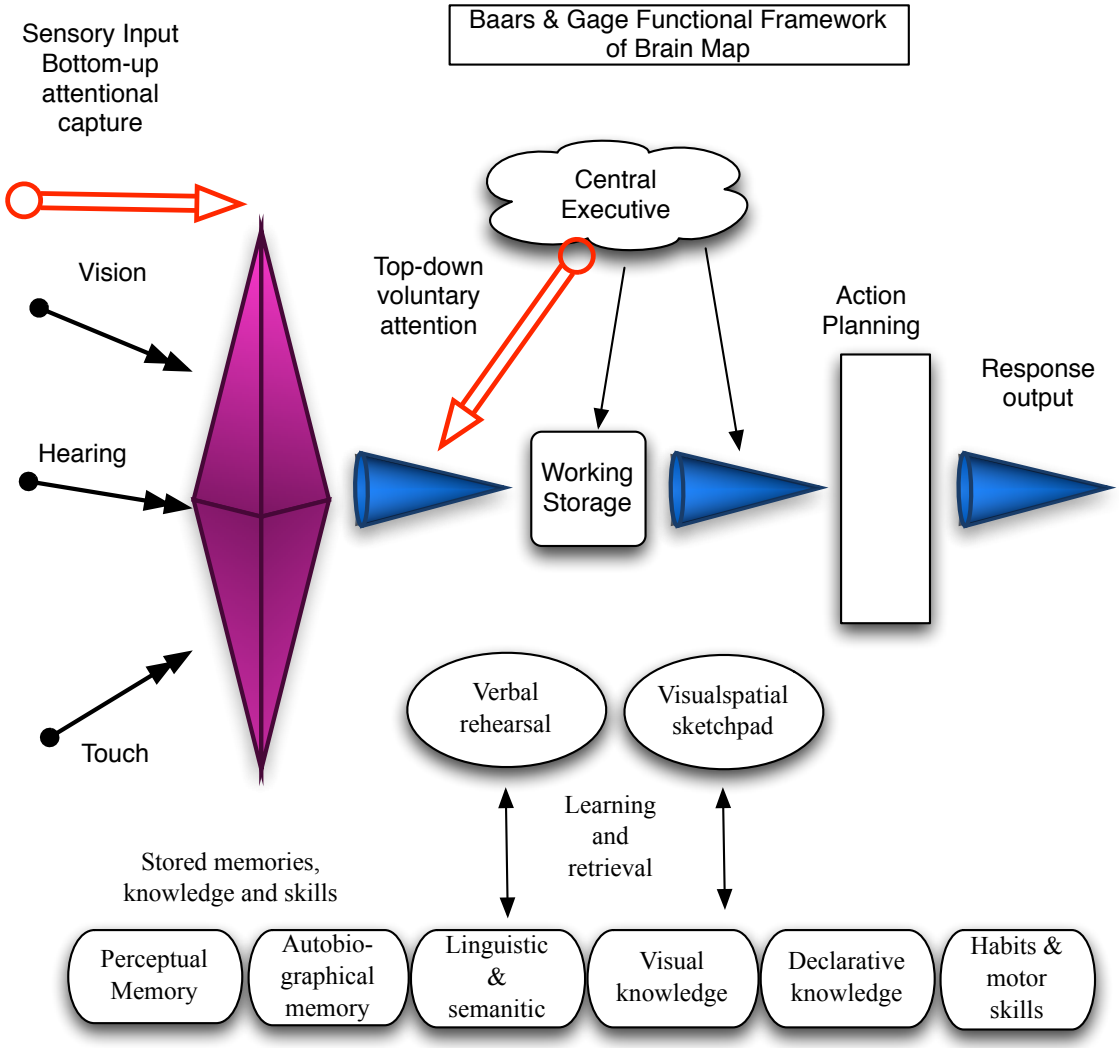
[5] Rodney Dangerfield is a comic best known for his phrase, "I don't get no respect."

[6] See the Appendix articles entitled *Heroes of Light and Dark, Struggles of the Universal Mind, and Conflict of Conceptual VS. Experiential.*

[7] See the Appendix article on *Conscious Dreams*.

[8] I did have to allow myself to practice my remote viewing though.

Perception



B. J. Baars and N.M. Gage developed a functional framework of the brain by combining the models of cognition from Baddeley and Hitch, 1974; Atkinson and Shiffrin, 1968. I have only made slight modifications here to their design found in Cognition, Brain, and Consciousness, 2007.

I think it will be easier to refer to the above diagram as I delve into this section on the workings of the brain. The three major contributors to mental imagery, vision, hearing, and touch, fire their input into the left side of the purple prism in the diagram, which represents the entrance into the brain processing center. The interconnections within the cortex, midbrain, and primitive brain happen to the right of the prism. The response output may be an external action,

or an internal thought, or image. Stored memories, knowledge, and skills are represented in the rectangular boxes at the bottom of the diagram. It is interesting to note the many different types of knowledge and memories, which makeup our perceptive abilities.

The Central Executive Control center is primarily related to the prefrontal cortex, but may also include associated areas involved in planning and control. The "red-colored" arrows are indicating something that calls us into awareness, or gains our attention. Finally, the "blue-cones" are showing the general flow of information. As the diagram attempts to give a "birds-eye" view of the cognitive processes in the brain, I found it helpful to keep as a handy reference when getting into the finer details of the brain.

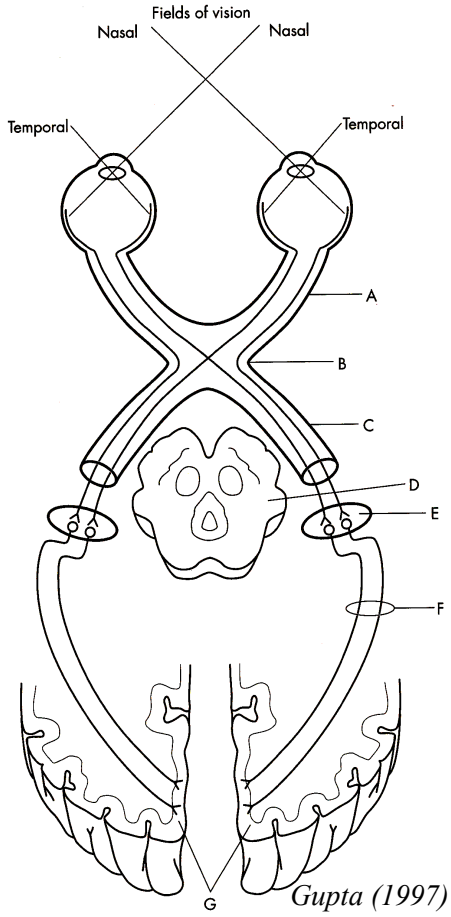
Visual Processes

How do we form our mental images in the brain initially? The visual system is a perfect place to start sense it has one of the most direct relationship to the formation of images in the brain.

In the normal lighted world, light is reflected off of an object, or emitted form a light source, and then is received by the retina of the eye. Of course this is barring any distortions or opacities of the cornea, lens, and vitreous, which would block the light from reaching the retina. At this point, we may be either aware or unaware of the raw information arriving to the photoreceptors, the rods and cones in the back of the eye, since the input has to reach a threshold of awareness.

The input from the eyes are converted to nerve impulses through the ganglion cells, and passes along the optic nerves (A), where the nasal fiber cross at the optic chiasm (B). The optic tract (C) then carries the impulses from their contralateral (opposite side) fields to the lateral

geniculate bodies (LGB) (E). The LGB is the principal thalamic visual nucleus linking the retina with the striate cortex. There are two LGB's, one in each hemisphere of the brain. The left LGB receives images from the right visual field of both eyes and the right LGB receives the left visual field, or all retinal photoreceptors to the right half of the fovea.



Gupta (1997)

There are two main ganglion systems, the magnocellular and parvocellular. The magnocellular is concerned with the location and motion of objects; the parvocellular is concerned with the fine resolution, form, and color of objects. These fibers leave the LGB along the optic radiations (F) to the visual cortical areas V1 through V5 (G), and then there are feedback loops from the visual cortex to the LGB (E), superior colliculus (D), and associated areas in the cortex. (American Academy of Ophthalmology, 2004)

I have to backup here just a little, because it is important in the dark adaptation of the eye, and consequently, the brain chemical shifts to the reduction in light. Part of the nerve fibers from the retina branch go to the superior collicular nucleus (SCN) (D) before reaching the LGB. You may recall that the SCN works in the diurnal biochemistry, moreover directing the light control mechanism of the eye, the pupil.

The pupillary light reflex has four neuron arcs. The first neuron connects the retina to the pretectal nucleus in the midbrain at the level of the superior colliculus (SCN), which

communicates to the pineal gland in the regulation of diurnal rhythms and the sleep/wake cycle (Crossman and Neary, 2006). The second neuron (internuncial neurons) connects each pretectal nucleus to both Edinger-Westphal nuclei, thus explaining why a unilateral light stimulus evokes a bilateral pupil constriction. The third neuron connects the Edinger-Westphal nucleus to the ciliary ganglion. The fourth neuron leaves the ciliary ganglion and innervates the sphincter muscle (Goldberg, 2007).

Another area of subtle interest here is the loopback from the visual cortex to the innervation of pupil constriction and accommodation at the ciliary body. The reason this is important is because of the need for a cortical response in focusing the eye. Barring a physical problem in the eye, or age (presbyopia), the eye should be able to shift the focusing from far to near fairly efficiently. However, clinically I find this response is reduced in some children and young adults with no pathologically obvious reason. I see this now as having a connection to cortical awareness relating to the development of the prefrontal cortex, and the quieting of the limbic region's reactions from hormonal and emotional influences. This will make more sense when we look at the studies of the maturing brain a little later (McAuliffe, 2007).

Let's get back to the processing of visual information. The primary visual cortex (V1) sends information to the higher visual areas for processing like the motions-sensitive area, MT, (Felleman and Van Essen, 1991), and area V4, which is important in the perception of color (Zeki, 1977) and complex features (Pasupathy and Connor, 2002). Without bogging down in more specifics, there are two major pathways of the projections to higher cortical regions from the visual cortex; the *ventral pathway* to the temporal lobe, which relates to 'what' objects are; and the *dorsal pathway* to the parietal lobes, representing 'where' objects are located. (Baars and

Gage, 2007) Visual consciousness, awareness, seems to be the combination of the two theories; the *hierarchical theory* (Crick and Koch, 1995; Rees et al., 2002), where higher visual areas are closely related to our internal conscious experience, and the *interactive theory* (Bullier, 2001; Pollen, 1999) that emphasizes feedback loops at each stage, which constantly adjust the feed forward information and form our conscious awareness.

The interconnections of the visual processes are immense within the brain, which is why it is so vital in mental imagery. Even when the eye cannot transmit data from the "sighted world" as in blindness, the brain still possesses the network to form mental images.

Fear and the emotional brain

One demonstration of the remarkable ability of the brain to develop interactions in the learning process is by studying one of our basic instincts for survival, fear. Joseph LeDoux (2007) in his post-doctural research at Cornell came across two pathways of fear, called the high road and the low road (Johnson, 2007).

He began studying the auditory pathways, and found when the auditory cortex was removed, animals retained the ability to learn, but when the thalamus region was injured, the learning ability stopped. LeDoux traced the pathways out of the thalamus to a connection with the amygdala, an almond-shaped region in the medial temporal lobes of the brain long associated with emotional states.

The central nucleus of the amygdala, which is considered a part of the limbic system, links to the areas in the brain stem controlling autonomic functions involved in the fear response, like accelerated breathing and heart rate. This indicated two pathways in the brain: one conscious and rational and the other unconscious and innate. The strong emotional memories, which are stored

in the nearby hippocamus, are mediated by the amygdala, which determines the significance of the event.

David Amaral (1992), professor of psychiatry and neuroscience, University of California, Davis, has demonstrated a major difference between rats and monkeys in the links between the amygdala and the rest of the brain. Amaral's work pointed out a strong connection between the amygdala and the neocortex, particularly the visual cortex and the prefrontal cortex.

Amaral, as well as others, believe the amygdala plays a protective role, since it is phylogenetically an old structure. The amygdala was primarily involved in protecting organisms, as organisms evolved, it became more highly connected with the neocortex. Thus, more high-level information is used in the interpretation of what's going on in the environment.

Ochsner and his colleagues (Ochsner et al., 2004) found correlates in up and down regulation of a negative event. The subconscious can be moderated by substitution as in hypnosis for a short time, but needs to be reinforced with the cortical associations that build the rest of our perception (Kappas, 2001). Morris and Dolan used reversal conditioning to explore the role of the amygdala and orbitofrontal cortex in fear conditioning. (Baars & Gage, 2007, p 382) They found that the orbitofrontal cortex was capable of rapid reversal of fear responses, but the amygdala was persistent in reverting to previous fear-related stimuli.

The cortex and limbic system follow different programs. We are really of two minds. Our experiences and memories are the feedback we receive from our physical interactions of daily activities, and how we interpret this information. The world may not change, but I may change my view of the world. Memories, including those associated with fear, become permanent through protein synthesis consolidation, and are open to manipulation when revived. (Nader et

al., 2000; Baars & Gage, 2007, p 382) This forms the neurological basis for psychoanalysis and hypnosis therapy.

While the amygdala is involved in current emotional responses, it is also heavily involved in emotional memory. It gives a boost for long-term memory of emotional events and puts an emphasis on what is important at the time. Cahill and associates (2001) explored the differences between the sexes to an emotional charge. The brain images of women and men were recorded while they were shown emotionally upsetting films, such as plane crashes or killer whales dismembering and eating baby seals. Men showed an increase in glucose metabolism on the amygdala's right side; women showed the increase on the structure's left side.

This brings a valid point in giving too much significance on any particular brain location shown to be associated with a particular response. Although, there are certain areas of the brain, which are associated with a particular function or response, there still exist differences between sexes, generations, and genetic variations.

Developing Brain

The brain is very fluid in its development and shows different influences over our life span. We start life where all the senses are firing without them being attributed to a certain organ or location. It has been described as a “state of psychedelic splendor, similar to an acid trip,” by Daniel Levitin (2007) from McGill University in Montreal. (McAuliffe, 2007, p 6)

We learn from our environment and by mimicking our parents and others around us. The organization of the brain gradually develops to filter out signals that are confusing in our physical environment, or is not conducive to survival. It is no wonder that many psychic abilities would be lost, or at least hidden, so the child can find acceptance with the social family.

Then just as we start to get a few things figured out, along comes the teenage years and scrambles it all apart. The limbic-system, which is heavily involved in primal responses to fear, rage, and sex, reigns supreme in the teen years. Research by Yurgelun-Todd (2007) finds that maturity brings a more developed prefrontal cortex, which modulates the lower brain responses. However, the teen brain is still under the control of the lower brain's impulses and desires.

Because melatonin is released an hour later at puberty, teens become night owls and like to sleep until late morning (Carskadon, 2002). However when they wake-up, teens are more experimental and creative, on the plus side. They are more prone to risk taking and pushing the envelope, on the questionable side (Kuhn et al., 2003).

The *experimental stage* of testing limits seems to run in cycles in our lifetimes, but in the teen years to early twenties it is tested to the maximum. The age of coming into an adult body that is probably at its peak in combination of flexibility, fast reflexes, and recovery times, noted by the peak years of many professional athletes, is combined with a brain that is bombarded with a changing chemistry of emotions and drive. No wonder the insurance industry labels them as high risk.

They are also ready to make an impact and leave their mark on the world, which makes them vulnerable to the influences of idealism, and wars. However, there is always the plus side of the equation. In this stage of our human development, we are open to new ideas and enjoy making our own creations. These experimental years give new directions and a boldness that moves us to new directions. If we temper this with the knowledge and wisdom of the middle aged brain, we will have a great combination.

In summary, brain regions that underlie attention, reward evaluation, affective discrimination, response inhibition, and goal directed behavior undergo structural and functional reorganization throughout late childhood and early adulthood. Evidence from recent imaging studies supports a model by which the frontal cortex adopts an increasingly regulatory role. These neurobiological changes are believed to contribute, in part, to the range in cognitive and affective behavior seen during adolescence (Yurgelun-Todd, 2007).

In midlife, the brain has myelinated its favorite routes in the cortex. Myelin boosts signal transmission more than 13-fold with 30 times the bandwidth. Conversely, demyelination is seen in the motor fibers as early as the mid 30's. It was once believed that there was a loss of neurons by the age of 50 or 60; however, it was found that MRI's were fooled by the high degree of myelination in the cortex. There is no loss of neurons in the frontal and temporal lobes found on autopsies (Bartzokis, 2004; Kochunov, 2007). Dennis, Daselaar, and Cabeza (2006) showed that young adults favor one hemisphere, or the other depending on the mental task, but by middle age the strict division of labor breaks down and both hemispheres can be involved with the same task. This corresponds well to Piaget's (2001) and other's work, who found that while young adults are more concerned with the solution, older adults can entertain even contradictory solutions. The perspective becomes broader as the integration of the two hemispheres become more into balance.

This gives us pause to reflect on how the development plan of the human life-cycle plays out, and whether the struggles to regain our youth are misguided at best. It is true that an active body is much more likely to keep an active brain into our old age. However, the evidence for

maturity of the frontal lobe, and a bi-hemispherical balance is also a good thing, giving us a holistic view of the world.

The mental imagery that we develop is a confluence of all of these brain interconnections, and the associations and imagery changes over our lifetimes.

Executive Control

The human condition is one of looking to the future, being proactive rather than reactive. We have our goals, hopes, plans, dreams, and ambitions. We seek to gain knowledge and understand the world around us, ourselves, and others. Our cognitive powers depend largely on the frontal lobes, and this what sets us apart as unique in the animal kingdom. The frontal cortex accounts for 29 per cent of the human cortex compared to 17 per cent in the chimpanzee, 7 per cent in the dog, and 3.5 per cent in the cat (Squire et al., 2002). Even though whales and dolphins have large brains, it is the parietal lobes rather than the frontal cortex that is enlarged.

To continue to evolve, the human brain has to be more than a receiver of information. The brain has to be able to form internal representations of the outside world. It has to manipulate and transform these models to accomplish something new that has no corresponding structure in existence. We need to imagine this new tool, or model; turn it around in our mind's laboratory making alterations along the way. We draw from memories stored from a long history of experiences, conscious and unconscious, to form this something new, a construct of the mind that has no parallel.

The prefrontal cortex has a vast reach into every unit of the brain (Baar, 2007), which include:

- Dorsomedial thalamic nucleus; the highest level of integration with the thalamus

- Hippocampi and medial temporal structures; critical for memory
- Cingulate cortex; critical for emotion and dealing with uncertainty
- Amygdala; regulates most emotions and social cognition
- Hypothalamus; controls vital homeostatic functions of the body
- Brainstem nuclei; involved with wakefulness, arousal, alertness, regulation of sleep and REM dreams

In order for us to become more proactive, rather than reactive to stimuli, we have to form mental images of future events and store them as a memory; thus the term coined by David Ingvar (1985), 'memories of the future.' We can then anticipate future events that are based on our previous experiences. Patients with damage to the frontal lobe show an inability to plan and anticipate consequences (Baars, 2007).

Common prefrontal functions

- Planning, setting goals, and initiating action
- Monitoring outcomes and adapting to errors
- Mental effort in pursuing difficult goals
- Interacting with other regions in pursuit of goals (basal ganglia, thalamic nuclei, cerebellum, motor cortex)
- Having motivation, being willing to engage in action
- Initiating speech and visual imagery
- Recognizing others people's goals, engaging in social cooperation and competition
- Regulating emotional impulses
- Feeling emotions
- Storing and updating working memory
- Active thinking
- Enabling conscious experiences (Deheane, 2001)
- Sustained attention in the face of distraction
- Decision-making, switching attention and changing strategies
- Planning and sequencing actions
- Unifying the sound, syntax and meaning of language
- Resolving competition between plans (ambiguities)

Source: Moss et al., 2005

Darkroom Experience and Enlightenment

During my darkroom experience, I had this extreme head pain in the frontal lobe with the intense light. This has a good connection with what we know about neurobiology. The excitation of hypersensitive neurons in the visual cortex and associative areas; along with all the saturation

of serotonin, melatonin, pinoline, and possibly DMT, especially in the limbic region, makes for a tremendous flood of new information to be analyzed in the prefrontal cortex, and subsequently, an increased blood-flow.

Headaches, like migraines, are the result of the dilation of blood vessels in the brain. Migraines are well known for their visual phenomenon of flashing lights and squiggly lines. Adding what we have discovered about the vast reaches of the visual cortex, we can begin to understand how these images are produced by the firing of sensitive neurons along the way. This neuron firing could be the result from physical, chemical, electromagnetic, or the combination of actions that stimulate the neurons. I would experience head pressure as the area of the brain became more active and required more of an energy infusion, which is brought by the nutrients in the blood. The studies done with positron emission topography (PET) and fMRI's work by following the blood flow as cerebral activity increases (Baar, 2007), which may cause blood vessel dilation and my head pain.

Now remember, through all of this experience I am meditating a minimum of eight to ten hours per day. Andrew Newberg (2003) found brain images of meditating Tibetan Buddhists using visualization meditative techniques increased the area of blood flow in the frontal area of the brain. This also corresponds with Mantak Chia's description of his brainwaves using the *Universal Tao* method of meditation, which I was following at the darkroom retreat. In Chia's instance, they also found more of a balance in beta, alpha, and theta waves of the EEG demonstrating a more cognitive awareness in a meditative state (Chia, 2005, Vol 4). This is not surprising as much of the brainwave research supports the benefit of an increase in alpha and

theta waves being generated by the brain (Cowan, 1993). So, my meditative practice following Chia's instruction would tend to favor the type of experience I was having at the retreat.

Of course, the lights and images would have been the result of the combination of an increased blood flow, neuro-chemicals, and neurological pathway changes. The activation of the frontal lobe, in these circumstances, would make it likely for me to have the sensations in the front and top of my head. I have since experimented with this in my meditations, and can confirm that my sensation in the frontal and premotor (top) areas of the brain does increase with my meditative techniques. I have also learned to shift the sensation around to different brain regions, which also shifts the emphasis of the mediative images. This shift in mental imagery by changing my awareness will correspond well with my later discussion involving transcranial stimulation.

The premotor region, which lies posterior to the prefrontal cortex, has an important role in the imaging of the rest of the body during my meditations and visualizations, which also involves action or movement. This close connection of premotor and prefrontal cortexes enables us to train our muscles and reflexes for an activity by using mental rehearsal through visualization, such as practicing a tennis stroke, or dance step. Even in the throngs of science, we still hear Edgar Cayce's themes that *Mind is the builder*, taking *action,* the *Will*, and *Choice* (Cayce Readings on CD, 2006; Reed, 1989). All pointing to the ability to plan, conceive, and then to act upon that image.

Cortical activities have a two-way communication net with the rest of the body. The close connection of the thalamic region to the endocrine glands, and the cortex makes much of this possible. The major endocrine glands are: the pineal gland, pituitary gland, thyroid, thymus,

adrenal glands, pancreas, ovaries, and testes. The adrenal glands, which sit over the kidneys and is largely implicated in stress and fear situations, secrete adrenaline (epinephrine), norepinephrine, dopamine, corticosteroids, DHEA, aldosterone, and testosterone (http://en.wikipedia.org/wiki/Endocrine_system).

In Cayce terminology, the executive control center of the frontal lobe, the *Will* then moderates the influences of our reactive nature over all of these systems. We have to *build* our mental images around *Ideals* and use the *Will* to direct those actions. The unconscious becomes conscious, until it is practiced and becomes the known (Thurston, 2004).

Executive control in the brain is a great delegator of tasks. When a task is novel the frontal lobes light up, and then diminish as the task becomes familiar (Petersen et al., 1998). When learning or experiencing something new, cognitive control shifts from the right hemisphere to the left, and from the front to the posterior parts of the cortex (Goldberg and Bougakov, 2005). Using my MBA personality, I can apply this knowledge of how the brain operates to the "organizational brain." When I bring something new into my office, I need to use my expertise to workout "the kinks" in the operation, then I can train my staff and delegate much of the new task. In fact, I soon forget about the technical operation of that task, and concentrate on the whole.

Back to my darkroom experience, the sensation of the opening of the crown and "Third Eye" chakras became more comfortable when I learned to integrate these newly opened pathways. I was able to regain control of the process and direct it to follow my goals of becoming more attuned to the transpersonal aspects of the experience.

Ambiguity and Choice

Cognitive neuroscience recognizes two main types of situations. One is called *deterministic*, which is like much of our educational life, where there is only one correct answer. We like to put things into this category to make decisions easier, since there is no decision to make. It could be also why we like to view our perspective, religion, philosophy, party, country, etc., as the one correct way, but that is another topic.

Unfortunately, life is not so clear-cut, and that is why the second situation called *ambiguity* makes up a good part of the *true* interactions in the world. Consequently, we are called into the adaptive decision-making process called *choice.* Interesting how *free will* and *choice* seem to keep cropping up in discussions of the mind.

Goldberg (1994) designed a procedure called the 'Cognitive Bias Task' (CBT), and tested patients with frontal lobe lesions against a normal population. In tasks that were *deterministic*, the subjects with the frontal lesions performed well. However, when there was a free-choice situation, *ambiguous*, the subjects performance suffered greatly, or could not be performed at all. This was found to be the case in early signs of dementia as in Alzheimer's, as well, when adaptive decision-making declines before veridical decision-making.

Intentionality and volition seemed to have followed the development of the frontal lobe. Thus, Cayce's discussion of *Intent*, *Will*, and *Choice* again show a basis in neuroscience (Cayce Readings on CD, 2006). I know I have repeated this connection quite frequently, however, we often think of Cayce in the paranormal sense, yet, his readings have a strong scientific basis.

Mental Images

Images of the Mind

We have seen that there is a *sensory pathway* (bottom-up) arising from any our external senses; visual, auditory, smell, tactile, or taste, which are associated with their cranial nerves in the brain stem. The impulses are then routed to different neural areas and eventually arrive in the primary cortical areas specific for their particular sensory system. The primary cortical areas then send and receive signals to associative areas for further processing.

We also have a *cortical pathway* (top-down) that creates of our mental images in the cortex, and then spreads them down to the limbic system connections, and, finally, to the stimulation of the sensory nerve receptors themselves. So, we can perceive a similar experience to one produced by an external stimulus. In other words, we can taste and salivate, our eyes might dilate, or twitch, we can feel, hear, or smell. All of these sensory end reactions produced by the mental images of the brain, without any external stimulus being present.

Types of Imagery

In an attempt to conceptualize the brain's imagery, I categorized different types of imagery that we might experience. I labeled *Visual Imagery* as those images formed from the stimulation of the sensory organ reaching the cortex (V1). *Mental Imagery*, on the other hand, are images formed in the brain without the stimulation of the sensory receptor. Although, I will limit my discussion to the visual process, it could very well apply to any of the senses.

Visual Imagery is the only one of our types of imagery that is purely bottom up, continuing from the sensory organ to V1 in the occipital region, and corresponds to the points of sensory discharge. Even afterimages still belong in this area, because, the afterimage is the result of the

firing of neurons associated with the original stimulus. Including, anything originating from the endpoint organ such as the eye, which causes a firing of retinal photons. This would encompass the sensory hyperactivity occurring in dark adaptation, as well as pathological conditions such as a retinal tear, or vitreous artifacts bumping the fragile receptors on the back of the eye. Therefore, visual imagery will not necessarily present a true picture of what is occurring in the outside physical world, but only what the sensory receptors detect.

Mental Imagery will apply to all the rest of the imagery types, as the image is formed in the brain without the sole involvement of the occipital area. They do involve associated visual areas, and must in some capacity to form an image.

Guided imagery such as that used in hypnosis, where the subject is given the images to form by the hypnotist. We are very familiar with this type of imagery as we use it when reading a book, or being told a story. There are some subjective variations, but the visualization is kept within some type of boundary by the information supplied. This is processed through the auditory sensory channel, and calls forth our ability to use mental images formed by the description given by the reader, hypnotist, or therapists.

Semi-free form imagery is that used in much of the Monroe Institute's Gateway program (2005) using the Hemi-sync technology. This technique leads one to the various levels of consciousness, *Focus levels* (www.monroeinstitute.org). The Gateway program uses guided imagery a great deal, but also leaves room to explore the images developed by one's own mind. This can be said for many forms of hypnosis as well, especially as part of a past life regression session, or when seeking higher-self guidance. Semi-free form imagery has some interaction with the thought processes of the prefrontal lobe. I include in this category meditation

techniques, which allow our thoughts to span into the inner or outer reaches of our consciousness; the "blank mind" approach of emptying our own thoughts for the communication with the higher self.

Memory release imagery would best be seen as that imagery that forms at least some component of our dreams. As the brain relaxes it replays the day's or week's events and places them in some system of order. Maybe, this "memory replay" is a miniature life review. These images are not a free form imagery, because they are tied with memories. Granted, they may not appear as coherent as the memories would appear in a fully aware state. This imagery could be easily confused with fee form, but since it is tied closely with physical world activities; I have kept it separate.

Free form imagery may typically be associated with a deep dream state, and has very little front cortical activity. Psychotropic induced images may contain a fair amount of free form images. However, unless a person has prepared their mind, stripped away all their internal dialogs, and stored their playbacks of the days events, they will just be experiencing the memory release stage. That would partially account for the lack of enlightenment received by the social drug users, and conversely, the sometimes frightening confrontations with their internal visions when they meet their own *shadows* (Wilber, 2000).

Hallucinations are a combination of the memory release and a free form imagery, because they form a new association with other areas not normally tied with the image. This is the result of a change in brain chemistry creating a kind of arc jumping across boundaries in the brain. This would also intensify images, since our normal associations are thrown out of balance, and objects

could appear distorted to various degrees. We could also expect a shift in the association of space and time to be dramatically altered.

Any of the imagery types are not totally exclusive of any other type of imagery, and may involve multiple combinations of imagery. Consciousness studies suggest to me that all types of imagery are necessary for proper health and development of the mind, body, and spirit. However, the influence and affect can be controlled by our own practices, or lack thereof. To achieve the best benefit from our mental images, we have to maximize the use of such practices as diet, exercise, stimulates, meditation, and other internal observations, to name a few.

Dreams VS. Meditation

There are different dream stages, but I am going to keep it basic and just discuss the REM and NREM stages. In brain chemistry, the REM stage, which has been associated with dreaming, is noted by a decrease in seratonin, an increase in acetylcholine, a shutdown of the frontal cortex, and a paralytic effect of the motor system. Conversely, NREM was once thought to have no dreams associated with it, but has since been shown that people indeed dream in this state of consciousness. NREM does not show the decrease in seratonin levels and has less of a paralytic effect on the motor system. This would allow a person to sleepwalk, or act out their dreams, which does not occur in REM dreams (Hobson, 2007).

In meditation, the prefrontal cortex is shown to be very much active and provides our thought process within the dream. The prefrontal activity is heightened in “lucid dreaming” and waking dreams since there are interactions within the dream. This interaction provides a mechanism of control, and allows us to alter the dream outcomes.

I have already discussed Newberg's (2003) brain imaging research showing areas in the prefrontal cortex being more active in visual meditation, which varied with that of Franciscan nuns using a verbal based prayer. Newberg also found decreased activity in the parietal lobe, which is one of the parts of the brain that helps orient a person in three-dimensional space.

Dale Power in his paper "The State of Consciousness as Related to Brainwave State, as Pertains to Psychic Phenomenon," (healing.worldispnetwork.com) indicates that the EEG patterns to achieve a psychic state are similar to spiritual meditative states, at least in the deeper stages of the Theta and Delta range. Powers found that all states will allow a person to use psychic abilities to some level, but the data indicated a better psychic effect in the delta and theta range.

This indicates to me that as I alter my brain chemistry in the darkroom, I am approaching a level of a dual-consciousness. One level is aware of my surroundings, and the other is in the subconscious levels.[9] It would set the stage for a greater receptive range, and a wider connective net in the brain system, which would allow for mystical and psychic effects to occur.

Near-Death and Out-of Body Experiences

What happens when we drop out all of our known brain functions? Classically, this is termed brain dead, and is of interest in near-death experiences (NDE). Since, the brain is not showing a measurable response, it would be hard to deduce that it (the brain) can be the originator of the experience. So where do we get those mental images?

Bruce Greyson (1983, 1998, 2007), who is the editor of the *Journal of Near-Death Studies*, has studied and written extensively about the phenomenon of NDEs. Greyson developed

a scale (1983) to aid in the recording, and study of the near-death experiences, which I have reproduced here:

Table 1: Greyson's NDE Scale: Occurrences are reported by the subjects as having occurred either definitely, equivocally, or none at all. A score of 7 or more points indicate the occurrence of an NDE.

Cognitive features: · Time distortion · Thought acceleration · Life review · Sudden understanding	Affective features: · Peace · Joy · Cosmic unity · Light
Paranormal features: · Vivid Senses · Extrasensory perception · Precognitive visions · Out-of-body experience	Transcendental features: · Unearthly realm · Mystical presence · Visible spirits · Border

However, despite the evidence, or lack of evidence, of any brain function, it has not deterred people from attempting to affix a transpersonal event to a physical system. Two of these explanations should be enough to get some understanding of the attempts to hang on to what we perceive to be real.

Ocular Hypoxia

Stefansson, Traustason, and Eysteinsson (2006) claim that NDE's mental imagery are caused by the difference in ocular arterial blood pressure to that of the brain. It is well known to eye care professionals and physiologists that in hypoxic conditions, subjects will experience a tunneling effect in their visual field. This is due to the peripheral vasculature of the eye having less arterial pressure to perfuse the blood than the central foveal region. You can also have some photoreceptor stimulation as the retinal layers attempt to adjust, which causes streaks of light, spots, and geometric light shapes. There are a number of ways that this condition can be induced

such as the G-force in high performance aircraft, anoxic seizures (both of which the authors referenced), and even hyperventilating. The authors use the occurrence of the 'visions of tunnels and seeing bright lights' reported by some NDE subjects as proof of this mechanism.

Nice try guys! We know from our quick tour of brain neurology that there are a number of mechanisms that can have an impact on the visual pathway, and visual cortex to produce this phenomenon. It is more likely that the reported visual effects are due to the visual pathway disturbance rather than being solely based within the eye itself. Although, the visual artifacts can be a combination of both, eye and visual pathway. I think the visual disturbances from migraines and transient blood sugar drops are even closer to the described visual effects seen in NDEs. Both of these, migraines and transient blood sugar drops, occur along the visual pathway inside the brain. I have experienced both causes of visual effects, and the effects are rather strange and could be frightening, if you did not understand the mechanism. However, none of these visual disturbances are the same type and quality of what is reported in NDEs. In addition, these effects are only seen in a conscious patient, with brain activity. Oops!

TMS (Transcranial Stimulation)

Transcranial stimulation is a fascinating way to study the different brain responses without opening the skull and sticking in probes. In addition, this technique offers a way to study a 'normal' brain doing everyday tasks, which allows more freedom of movement for the subjects. TMS uses a mild electomagnetic pulse from a probe next to the cranium (skull) of the subject and stimulates the area of the brain under the device. The stimulated area is not exactly precise, since stimulating one portion would lead to stimulation of associated areas, as well. However, it

does correspond well with other brain research in localizing the regional functions of brain activity.

Michael Persinger and Todd Murphy developed a device called *Shakti* that is a head-mounted magnetic stimulus oriented to study the brain and spirituality (www.shaktitechnology.com). The study is called neurotheology and has gained a following among scientist attempting to understand this intertwining of the physical and spiritual. Persinger (2002, 2007) has published several articles on using transcranial stimulation to illicit *mystical* experiences, as well as the other electromagnetic influences on the brain involving remote viewing, and psychic phenomenon.

TMS proofs to be another method of stimulating the brain, and by-passing its normal filters in much the same way as the darkroom, and psychoactive plants. It has several advantages over using psychedelics; it is quickly started and withdrawn, it can be better localized, it leaves fewer lingering aftereffects, and, most of all, it is not illegal.

However, from the standpoint of looking for the consciousness aspects of an NDE, TMS does not explain much more about the source of our mental images, since there is a lack of brain activity during the near-death experience.

Bruce Greyson describes many of the deficiencies in the physiological models in his talk recorded at the University of Virginia Medical School entitled “Explanatory Models of NDEs” and available at the International Association for Near-Death Studies, IANDS (www.iands.org). He found that some of the core items in the experiences of an NDE occurred across different cultures, beliefs, and social experiences. Research in cognitive neuroscience suggest that the interpretation by the frontal cortex and memory centers will create a personalization to the events

of the mental images. When we attempt to incorporate the NDE visual images into our physical lives, we need some grounding into the physical, even if the basic premise of the NDE remains. It is remarkable how the reports of near-death experiences are similar, even across generations. P.H. Atwater (1999) reports that children report many of the same core features of an NDE as do their adult counterparts.

We also know that EEG's measure surface brain activity, but cardiac arrest and anesthesia abolish activity of normal consciousness, especially in the hippocampthus. So this evidence dampens the hopes of a physiological model explaining the mental images during a NDE, because of the lack of measurable neural activity.

Futhermore, NDE subjects seem to show a better mental clarity, than when they are in their physical state. This is especially noted in those patients suffering mental disorders before their NDE. It would seem that the physical brain may act as a filter in our waking state to let us attend to the state of survival. However, by doing so, it slows the capabilities of gaining deeper understanding. The near-death experiences appear to bypass the filters, and the physical limitations of a deteriorated brain.

Brain relaxing filters, such as in LSD, DMT, sensory deprivation, and TMS are random and somewhat unorganized. In meditative practice, we are attempting to apply a the 'executive control' at the same time the filters are removed. In NDEs, we seem to have a consciousness with greater resources at its disposal. These signals may not be really filtered out, but may just not be brought to the level of our physical consciousness. If a signal does not reach a certain threshold in the brain's neural network, the subject will not be *aware* of the reception. (Baars, 2007)

Truly There is a Veil

Following this pattern of thought, I can look at the brain filtering mechanism like the layers in a graphic software program. All the layers have a certain opacity setting, which control how much of the images in lower layers are allowed to pass through. I can also make a mask to block selected areas in a particular layer. In the brain, these various layers of mental images might cause some confusion (hallucinations) at some level if only a partial filter is opened. The other conscious state layers would bleed into and mix with the imagery of another conscious layer, say that of the physical senses. However, if I can separate and put together many layers in an organized fashion, I might be able to see how the complete picture could fit together, and thus, unlock the mystery of these dimensions. I would then gain a global type of clarity, like that gained from an NDE.

In this model, there are major layers composed of sub layers, which are continued forming finer and finer detail. This follows a theme similar to Steiner's (1994) seven bodies of man, Cayce's divisions of consciousness (Reed, 1996), and to Wilber's (2006) stages and states of consciousness. In this theory, the various layers of consciousness are available at all times, but are only integrated by the control of the filters and masks.

Remote viewing is an example of moving our conscious to other localities in time and space (McMoneagle, 1997). We have a connection to other points and sometimes other layers, but the view may be cloudy as the opacity filter is not opened fully. So, we get a hazy mental image of the location, or partial pictures of the scene.

This can be applied to other areas of mental imagery as well. We draw on our memory maps, and consequently those perceptions will apply to our mental images. We create our own

interpretations of the raw data that streams through, because it is brought into our world of knowledge, memories, and skills (refer to the brain map on perception on page 36). Even if, the aperture is opened wider revealing a larger data base, or the density of the filter is lessened allowing the images become clearer, we still may color that information with our existing knowledge and memories. An example of this *coloring* of information would be the personalization of channeled information throughout the ages. Although, the unfiltered information maybe the same, they are reported with the differences that are inherit to the individual channeler.

In NDE's, we are further shifted away from the physical body receiver and therefore stripped of our cultural biases. Some of these biases will be entered back into the physical recollection of the experience, but would need to be put at bay during the actual occurrence in order for a life-changing form of knowledge to be received.

However, if the brain is practically inert during the experience, then what is receiving the information? If we look at how ectoplasm in space forms a DNA helix, how light follows the form of DNA as well, we might view the receiver to be within our own DNA layers, as Lee Carroll's channeled source, *Kryon,* suggests (Carroll, 2000; www.kryon.com). The physical state is only one layer and there are finer and finer layers proceeding both up and down the spectrum of form and non-form. The attempt to bring the spiritual to the physical is the opening of these filters, while remaining in a physical body.

Robert Brumblay, M.D at the 2001 North American Conference on near-death experiences gave a presentation entitled, "Hyperdimensional Imagery in Out-of-Body & Near-Death Experiences," which follows a congruent line of thought. Brumblay cited that the recent theories

of modern physics predict the universe to have more dimensions than are apparent to us, which is confirmed by near-death experiencers, who report the perception of more dimensions.

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[9] I have experimented with this "dual consciousness" and have found it to be quite effective, as well as disturbing. Preparatory work in remote viewing, lucid dreaming, and waking dreams helped me to reach another step with the shaman technique called *journeying.* Castaneda (1987) describes the process in great detail in *The Power of Silence* (pp 200-218; 234-236). Roughly, if you let your consciousness shift to another point, like in remote viewing, you can gain clarity only by letting all awareness shift to that point. Attempting to be aware of your physical presence and remote consciousness will cloud the mental image of both. However, I find going back and forth between the two states relatively quickly is the most useful, even though it loses clarity. I do not claim to be very proficient at this technique, but it is rather interesting when I can achieve the dual state.

Conclusions

I began this project with the intent of seeking an understanding of consciousness through a darkroom experience. I encountered many mental images and sensations, which I had never observed before. Then of course, I had never stayed in total darkness for two weeks before, either. Nonetheless, I went about putting down my memories of the *cave* with the intention that this was all there was to it, just recording my experience. However, in the weeks and months that followed, I was not satisfied with just recording the sensations and mental images. I wanted to know where and how these images came into being, and from what, if anything, did they contribute to my consciousness, my spiritual, development.

I agree with Andrew Weil's (2004) notion that we are all driven to fulfill our natural desire for altered states. Fortunately, I have been schooled in the scholarly as well as experiential side of many forms of altered states since beginning my transpersonal studies at Atlantic University. So the idea of three or more bodies of being, transference of thoughts, and levels and dimensions of existence is nothing new. I have experienced self-hypnosis, various meditations, dreams (lucid, waking, and few other varieties), shaman journeys, remote viewing, and even out-of-body episodes. From these experiences, I know that attempts to determine what is physical, mental, and spiritual is not as clear-cut as it would at first seem. Did I just experiencing normal biochemical changes of the body and brain; or, was I expanding my consciousness?

This lead me to study the neurobiology and cognitive sciences to find what we know about the levels in the complex organization of the brain. I have accepted the tri-fold existence of the human being, so I am not looking for proof or disproof, as so many men of science, who are much wiser than I, attempt to accomplish. No, I wanted to avoid falling into the reverse trap of

thinking every experience was arising from the paranormal, when indeed I was merely observing changes within the physical body. Understandably, I recognize that this is not a clean division. The interactions and meshing between body, mind, and spirit is more like a mist weaving between the three than any demarcation line arbitrarily drawn.

My study of the brain and cognitive neuroscience uncovered some very interesting studies of the human body's capabilities and limitations. My inductive and deductive reasoning draws these conclusions:

1. The brain can fill in information that is missing, like the blind spot in the visual field, partial words, or pictures. This is done by the anatomical structures, associations, and memory of experiences, which are in turn influenced by emotions.
2. Somewhat related, the brain has a predictive nature. The brain has mirror neurons (Baars and Gage, 2007, p 395), which fire when it picks up deception, type of movement, or gaze interpretation. It can also produce its own image of what it perceives, whether it happens physically, or not.
3. We are capable of autonomic learning and survival instincts. Once we have a pattern learned, we turn it over to the limbic brain functions, which allow us to free the processes of the frontal lobe, and speed our reaction times by "running on autopilot."
4. The brain processes information that are not even recognize at a conscious level. Electromagnetic stimuli, retinal rivalry, and other stimuli may not reach the threshold intensity for conscious awareness. The brain will respond to impulses that are either too fast or too conflicted for its internal guidance map (Moutousisis and Zeki, 2006; Pasley et al. 2004), but mask the image to form our perception. Using binocular rivalry, pictures of fearful

faces were presented invisibly to subjects. The subjects, unaware of seeing the fearful faces, still produced measurable brain activity as an emotional response in the amygdala was triggered. Conversely, brain activity can be recorded with a fMRI scanner when we think we see an image, even though it was not physically presented. (Watkins, 2007)

5. External influences can fire the brain neurons, or setup chemical changes to fire neurons in unexpected ways. Chemical stimulation through DMT and other psychedelics, the serotonin-melatonin process in the darkroom, transcranial stimulation, and other less defined electromagnetic sources can, and do effect our brain's imagery.

6. Once the brain's system has been engaged, the perception is *real*, whether it is observed in the physical world by others, or not. Therefore, input from the senses, or input from direct stimulation creates our mental world. Thus, electrode stimulation and transcranial stimulation can elicit out-of-body like sensations of floating and being detached from the physical body.

7. We can learn to direct our perceptions. The prefrontal cortex can moderate ingrained responses, as with meditation and hypnosis.

8. Our conscious memories are those brought to the level of the prefrontal cortex. However, we still have unconscious memories of events that can influence our perception. NDE's, dreams, meditations, and hypnosis sessions that are not remembered consciously still provide an influence on our perceptions. These unconscious, but registered events, guide our future interactions toward the physical and nonphysical worlds.

9. The brain is a receiver for the work of the physical body, even at a very subtle level. Our brain recording instruments are unable to detect brain activity in NDE's, but that does not rule out very subtle messages to mRNA and subsequently DNA memory.

10. A layered model may give us a framework of the complexities of the mind and consciousness as it applies to the universality of the cosmos. It is how we mask or apply the many levels of transparencies that gives us our mental imagery. Sensory deprivation as in the darkroom experience, Transcranial stimulation, psychedelic drugs, meditation, hypnosis, lucid dreaming, and using the observing self can help us change the masks and the transparencies to peer into another layer.

What Is Real?

The study of NDE's has given some valuable insights into the extension of the levels of consciousness outside of the brain. There are several groups dedicated to writing observations and coding near-death and out-of-body experiences, such as *The International Association for Near-Death Studies, the OBE Research Foundation,* and the *NDE Research Foundation*. From my point of view and for this project, I find the greatest value was the reports comparing other altered states with an NDE.

When we alter the brain chemistry or fire neuron bundles, we get some unexpected pathways opened and illicit mental images and/or sensations. However, many of these images are distorted, vague, or very much the *Alice in Wonderland* motif. They are hard to follow and do not make much sense to the person's rational mind, and certainly not to the researcher. Granted, the experience can seem very lifelike *during* the trip. However, once we are in a rational mode; we know they are not real.

On the other hand, a person following an NDE, and some out-of-body experiences without death, are very sure the experience was real. They have an active consciousness outside of their body, which also maintains a rational mind. In a neuroscience lingo, they seem to have their

prefrontal lobe intact, and maintain executive control over the mind. This, to me, is the key point of recognizing a brain stimulated experience from one achieved outside of the physical body.

We can truly say that we are in a transpersonal consciousness state when we maintain a lucidity that may exceed even our present physical one. NDE subjects can report what was happening around their dead physical body, and they can also recall interactions with other conscious beings in another plane of existence. Now, this is being aware!

Cognitive brain studies have shown our experiences and memories give us a perspective, which to base any new experiences. So, we have a preset view of reality. In turn, we have a choice, by activation of the prefrontal lobe, in how we use this new information. We can either allow the new information signals to readjust our perspective completely, to ignore it completely, or choose a to combine it with our accumulated knowledge base.

If we have no other experience to draw upon, a new one with a flood of emotions and neurostimulations will seem rather special. Like our first love, we think there can be no other, and this, truly is the real thing! Then as we harden to life's experiences, and suffer many loves and loses, we tend to soften our stance somewhat to declaring the same feelings as just okay, but not all that special. It is no wonder why teenagers have such a hard time; everything seems special, and when it crashes, it is the end of the world.

Thus, it is the same with experiencing the paranormal and alter states of consciousness. Each higher state brings with it a certain amount of specialness, and places our previous highs into a new perspective. I know this sounds like Ken Wilber's *Integral Spirituality* (2006) stages of development and states of consciousness, where each state is perceived from the stage of consciousness development that a person has reached.[10] From this, I conclude that much of my

darkroom experience was rather ordinary, from the view of the normal biochemical adjustments of the brain undergoing sensory deprivation. At the time, some things seemed novel and might have been taken as a great achievement in advancing consciousness states. Now, I have the opportunity, with the passing of time, to evaluate the experiences and weigh it against the knowledge we have of the workings of our internal chemistry and neurology. I perceive the experience as not being so much of a mystical one, but as a growing experience grounded in the physical.

This does not mean I do not experience other states of consciousness in the dark, or in meditation, hypnosis, and shaman journeys. I believe I do. However, another state of consciousness is not necessarily higher or better it is just different. A psychic person does not gain *wisdom*, they just gain an *ability*. Furthermore, one of my objectives is to access more channels, states and stages, while still remaining grounded in the physical. The sort of *heaven* on *earth* philosophy.

The accounts of those having NDE's, and having experiences with other with psychoactive agents, are very adamant that the near-death experience was much more real and clearer than any other experience. They have a new experience to use as a barometer to measure past and future events. They also can live with a new purpose, centered on aid to others in their own special way, since their own personal death or destruction has been faced and absorbed into their whole being. They recognize their consciousness lives without their body, and it is *truly free* in that state of being.

Thus, we see various experiences occurring at different brain arousal states, and even when the brain does not show any physical activity. So, as a student of consciousness, I felt compelled

to form some conceptual model, which could give *me* some piece of mind. This lead me to the "layers and transparency" model, which I explained earlier.

The mind opens like the various layers and filters of a graphics software program to allow us to view other dimensions with the brain acting as the receiver.[11] Neuroscience has great value in the study of the transpersonal as it grounds us into observing the vastness of the physical body and how it may interplay with the images formed in mystical experiences (James, 1902; Underhill, 1999). Separating what is the result of physiological changes and what is not has long been a controversy between physical sciences and paranormal science, especially when dealing with the mind. I contend that they are both important and tightly interwoven. We only make the sharp division as an academic exercise for the linear mind to grasp, and often forget that it is only a portion of the whole.

So what did I gain, from this darkroom project? I found that the techniques and methods, both ancient and modern, can be used to bring a new awareness. This new experience offers us a choice of how to use these new subtle signals. We can use them for our own self-gratification for how they make us feel, or we can take this as one experience to add to our *Akashic record* (Frejer, 1995, p. 1-7) for the development of our soul. I will not return to the dark, for this purpose again. However, I am not afraid of the dark, and its experiences. It has been beneficial in many ways, which I have yet to fully understand. However, it is not a badge of glory that I wish to seek out regularly just to say, "I did it." There are other experiences I want to mix into my memory melting pot.

The darkroom is like many other experiences in life; each person takes something different from it, and some, nothing at all.

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[10] Considering past lives may exhibit any stage of conscious development, we can only refer to this lifetime's development. The soul is already developed, just not *awaken* to the whole. Therefore, it is not a *personal* consciousness development, but a group consciousness unification.

[11] I used layers in most of the graphics in this paper. The word labels are on one layer, and various parts of the diagrams are on other layers.

Appendix

Heroes of Light and Dark

I could not help but notice a common theme, a type of perennial philosophy, that emerges in all spiritual disciplines of note. It is the struggle of meeting the evil and darkness that appears to threaten the world's existence. We ultimately find the root of this evil lives within as our dual nature. Three modern fables have caught the essence of this dilemma, which is felt by us all but admitted by few, the *Star Wars* series (Ltd, Lucasfilm), the *Harry Potter* series of books (Rowling 1998, 1999, 2000, 2004, 2005, 2007), which carry this theme better than the movie versions, and a recent ABC's TV mini-series called *The Fallen.*

First we start with our young and reluctant heroes, who are orphaned at birth and have had to face many hardships and adversities since birth with little factual knowledge of their birth parents. We can see the parallels to the notion of our souls on earth feeling uneasy and not in its rightful home. This forced abandonment at birth bestows a certain humbleness in our young heros, and exposes the inherit goodness in their characters despite their antagonistic upbringing in their early years of child development. The stories take them through the turbulent teen years and their coming of age. Jo Rowling started Harry Potter a little earlier in his life span, but still showed us this critical period, quite explicitly, including the roller-coaster moods of emotional swings.

This is right at the time when melatonin decreases are found in pineal gland secretions, which seem to prompt the onset of puberty. A correlation to the susceptibility of the pineal gland to fluoridated water and the early onset of puberty in girls in the Netherlands warrants some consideration on fluoridation. (Groenendjk, 2001) Melatonin sedates the endocrine glands under

stress in adults, but a child has higher melatonin levels until the time of puberty, which is believed to allow for the child's sexual development. Melatonin shifts are also used in the explanation of turning teens into "night owls," as the timetable of secretions shift. (Carskadon, 2007, *Discover* magazine, p. 11)

At this very emotional period, we struggle with our self identity, experiment by pushing limits, and struggle with peer-pressure. The limbic-system, which is predominately in the lower brain, and is known for its primal responses to threats, reigns supreme in the teen as opposed to an adults prefrontal cortex moderating the response (Yurgelun-Todd, 2007; *Discover* magazine, p. 10), at least in some adults. This is also a time of when we come face to face with our darkside, as it seems to explode forth unexpectedly. The conflicts of two minds, which brings forth unexpected results that can kill us or propel us to great heights.

In our three hero stories, we find them disturbed within, moreover, disturbing to others. This is a period where their choices determine their ultimate fate. Their battle with their evil and darkside is portrayed as the villain of the series. A villain that is subversively closely connected with our heroes, and take the form of a father, *Darth Vader* in *Star Wars* and the *Light Bearer* in *The Fallen*, or attaches a part of his soul to the hero, as *Lord Voldemort* in *Harry Potter*.

Spirituality and Enlightenment

> "The ancients did not believe that spirituality made men either righteous or rational, but rather that righteousness and rationality made men spiritual" (Hall, 2003, p. 231).

Spiritual is subjective from the standpoint of it being a personal transformation, which one feels, or senses deep internally. At the same time, spirituality is objective, as the observable phenomenon bears a life of its own with little conscious effort by the person. I must conclude

from my personal experience, plus the observations and comments from other participants, that the darkroom experience by itself is not a direct transformational vehicle to enlightenment. It is like all other forms of training, a tool to use to help us open our pathways and internal insights to a deeper more spiritual being.

The Taoist practice states it very well, in that it is working to change the material to immaterial, and the immaterial to a finer and finer refinement through the distillation process of spirit, called internal alchemy. Edgar Cayce's Reading 410-2 states a similar theme, "For, each soul goes on from things celestial to things terrestrial, from things material to things mental and spiritual, and in each of these realms the consciousness of the soul seeks that desire of expression in that particular field of activity which it has builded in its own inner self. " We basically attempt to transfer the energy normally used in the sensory and emotional realm of the outside physical world to be utilized in attuning our physical, mental, and spiritual bodies to that of the universal force, Great Spirit, or Ultimate Creator.

Because of this transference of energy resources, the darkroom becomes the ideal environment, or the womb, for the immortal fetus to develop. However, it is just like any other pregnancy, if you do not feed the fetus with the proper nutrition of bodily, emotional, and spiritual needs it does not develop properly, and may even be aborted from the process. The Taoist training in the darkroom is the necessary means to form this development of integrating the body with the spirit.

I found it increasingly easier to drop into a meditative state, the hypnogic state where lucid and waking dreams occur. The place in the mind for the shaman journey to transpire. You become aware of the energy rivers that flow through every cell and fiber of your body. You also

attach a new importance to each part of the body, and its part in the alchemical process to accept the spirit within. You become aware of the "smallness" of the concerns we refer to as "big" things in life, and long for that infinite connection of the "All." The Force that pervades everything in all universes with unconditional Love and Compassion. Compassion is encompassing that balance of all the emotions and forces that condenses to our own personal "black hole" and then equally expands in all directions with a magnificent light filling every corner of the universe. The Dark and Light alternately enveloping each other in an infinite loop of the fantastic activity of creation.

We can see light, hear voices and music, or go on amazing journeys, but they are only a small part of the transformation that can only occur within. This is manifested with the combination of the 1) *original spirit* working with 2) the *vision* or creative insight to form a blueprint, 3) the *intent* to develop this blueprint for the universal good, 4) the *courage* to continue upon this path no matter what the obstacles, and 5) the *will power* to have patience and endurance to see it through. In the Taoist discipline this process is connected in the order above by way of the heart, liver, spleen, lungs, and kidneys.

Struggles of the Universal Mind

The cave experience has always been about discovering yourself by eliminating the external influences, so that one could focus on the internal. To succeed at entering the realm of the *Big Mind* (Wilber, 2000), or *silent knowledge* (Castaneda, 1987), we have to still the chatter of the ego and win the battle of our little “I’s” from Gurdjieff (Speeth, 1988). However, if we only shut out the world of day-to-day affairs without recognizing that the world “out there” relates to the world “inside,” we become just a loner and a recluse, without an enlightened path.

This would only magnify the distrust in others and drive us into a depressed state, which may culminate in the ending of our life as well as others. Could this be the psychological trap of feeling overwhelmed that is unloaded to the outside world, and results in a shooting rampage? These *mind snaps* appear to be the conflict of our inner and outer world, or if you would, minds.

The creative mind gives us so many clues to the understanding of the universal mind, our greater consciousness. Our dreams, art, writings, and songs can show us a reflection of our inner guidance, and our conflicts. The outer world is the stage where the play is revealed, a reflection of our inner world. They are like the yin and yang, which are not opposites or separate, but are the cycling of the enveloping darkness and light. Perception of our reality is the accumulations of our associations and experiences; "living in what has often been called dreams, by those that understand not, and the unreal world; yet they are more real in thine own experience." (Cayce, Reading 410-2)

The struggle is that fine line that defines our sanity, and leads us into despair or hope. The same signs can be interpreted as *life is not worth living and the world is corrupt and evil* or *life is the magnificent work of the Cosmos that holds a great secret for us to discover*. Perspective can lead us to view everyone as our enemy, or our enemies as our greatest teachers; death as the only alternative to ending misery, or death as a constant reminder to strive for all that life gives us in the moment; death is the end, or death is the graduation of one stage to the next. Ken Wilbur's (1996) discussion of Eros and Thanktos in *Up From Eden,* gives us the framework of the cycle of "living a thousand deaths" on the smaller scales of just one life. Just as we learn in our human life of giving up one aspect of ourselves to evolve into a more complex individual, we can look at our soul as living on to gain in its evolution with each succeeding lifetime.

Conflict of Conceptual VS. Experiential

Another aspect of the struggle in dealing with the universal mind, big mind, big heart concept, is the facilitating between our conceptualizing the experience to that of actually staying within the experience itself. This becomes very evident when a group of intellectuals gather at one retreat, such as seen in the “darkroom,” or in the "The Big Mind Experiment" at the second gathering of the Teachers of Integral Spiritual Center hosted by Ken Wilber on May 12, 2007 (isc.integralinstitute.org).

We are all human and carry with us our own perceptions from our pasts, and consequently, how we have shaped those to form a belief structure. Anything that challenges this structure, whether by what a facilitator says while leading a meditation, or by what we are presented in the experience itself, can cause us to drop out of our altered state of mind and shift to our analytical mind.

When I was faced with this dual-mind challenge, I recalled my reading *There is a River* by Thomas Sugrue (1942), and how he described Edgar Cayce’s conflicts in dealing with his new found talent. Just like Cayce, anyone facing new thresholds of consciousness must resolve them in an acceptable relationship to their own psyche, or they are faced with mental turmoil. So, we have to live in a balance of facilitating between our universal mind and our analytical mind to continue our journey of awakening. Otherwise the experience is too frightening, or disagreeable for us to continue causing us to disown this part of ourselves, and form yet another “shadow.” (Jung, 1977; Wilber, 1996)

I could see this very evident within my darkroom group. When a person hit this point of conflict, they become judgmental and questioning of not only the point of disagreement, but

almost anything, related or unrelated. This effectively blocked them from further benefits of the experience, and was also felt throughout the group as a negative energy. Accordingly, I have mixed feelings about group exercises in this type of retreat, with the goal of seeking isolation from external influences to concentrate on internal energies. This is one of the reasons I believe it has limited value in achieving higher consciousness *stages*, borrowing the term from Ken Wilber (2000). On the other hand, I realize the necessity of commercial viability and making the experience open to a larger audience.

The technique that I use to help me overcome the obstacle of the dual mind is best described as a spiral meditative cycle, or cycles. I attempt to take my meditative session (this may be hypnosis, hemi-sync, shaman journeys, etc.) as far as I can with no analytical involvement. Afterward, I attempt to resolve any conflicts from the experience with my analytical mind. You must realize that I view everything now as relative, since each world, mind, or consciousness forms the context that I view it from. For example, if I am doing a shaman journey to the *underworld,* I leave all the rules of the day-to-day waking consciousness behind. I become totally engrossed in the underworld that I am visiting. It is like doing a remote viewing (McMoneagle, 1997) and concentrating on what is revealed, but not interpreting any meaning outside of that location.

Continuing the spiral cycle, I learn something new with each journey or meditation, and how I need to operate within that environment. This is much like a person would do when traveling to a foreign country. We gradually learn the customs, culture, and language to become more comfortable and effective there. Even in doing this, I will eventually hit upon something that is too inconsistent with my internal guidance. I then have to work on the disturbing portion,

shifting from my analytical mind and the universal mind to sort out the differences, and work out a newly revised belief structure.

Conscious Dreams

There are many ways to use and interpret dreams (Thurston, 1989; Reed, 1990; Van De Castle, 1994). Waking dreams and lucid dreams are in a special category pertaining to the time when we are conscious and interactive within the dream. We become active participates, and become the director of the "play in our minds."

The real benefit of lucid and waking dreams occurs when we do not manipulate the outcomes, but ask questions, and communicate with the other subjects in the dream. It is a fine balance of not being swept along by the flow of the dream stream, and allowing the dream events to tip its hand in showing us something new. This is similar to using the observing mind, as in Gurdjieff (Speeth, 1988) and Buddha (Burtt, 2000). The mental gymnastics of eliminating judgment, but also being active in creating the builder of the mind. The shaman journey is the ultimate practice of this exercise in "waking" dreams (Harner, 1990).

In the cave, there is ample time to drift in and out of dreams, conscious states, and realities. The lucid dream is the course of the day, rather than an unusual occurrence. I guess it was appropriate for us to have exercises in guided lucid dreaming. Although, I thought it an exercise I was getting far enough of on my own. The guided portion may have been helpful to some participants, but for me it was just an interruption upon my already involved journeying process.

I would dare say that many times I lost track whether I was in a lucid dream or in real life. I only refer to our "normal" daily life as real, so that I can make a distinction from altered states. Neither state may be any more real than the other, but each has its greatest plane of action. I

often wandered to unchartered regions, and often found the worlds separated by only the finest thread of demarcation.

Training in self-hypnosis and autogenic training allowed me to easily drop into a light hypnotic state. So, I was literally *sleep walking* in the favorable conditions of the dark. I found myself walking along the balcony rail to my room on the second floor, shifting into an altered state, then coming back to this consciousness to find I had walked almost past my room. It would take me a few moments to regain my bearings, which is a lot harder in the dark. One of the side-effects of drifting between states is amnesia. I found that slipping between states causes me to lose certain tracts of time in the waking world. I cannot maintain full awareness in both states, although I am physically present in both.

This was a revelation to me, although it has been described in more drastic measures. The yogi that can appear in a physical form to another person in a separate location (Kaiguo and Shanchao, 1998; Lhalungpa, 1977; Yogananda, 1946), or, one person's appearance to another in physical form through their dream state (Hudson, 1912). It makes me postulate on remote viewing and out-of-body travel as being evidence of this in a subtle form. They are both a form of detached consciousness that interacts with the senses. I further reason that if someone was sensitive to subtle energies, they might be able to detect the presence of the remote viewer. This was described by Castaneda (1987) in *The Power of Silence* when Don Juan relates the story of being caught by his *nagual*[12] Julian, while he was experimenting with split consciousness (p. 235).

I guess you could say that since I dreamed while I slept, and dreamed while I was awake, that I literally dreamed the whole experience. Until I got the bill, then I knew it was tangible, as well.

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[12] Nagual is the sorcerer master, or guru to his apprentice sorcerers.

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