Forgetting About Enlightenment

Enlightenment is a rare experience, and so are visions of God. The experience of God has been produced in the laboratories of Laurentian University's neurosciences program, and is the subject of a book by the program's director, Dr. M.A. Persinger. The book's conclusion, that the 'God-experience" reflects specific neural activity, is quite a radical notion for the western world. Much of the East, on the other hand, places it's crucial emphasis on enlightenment. The theories and hypotheses used to explain the experience of God should also be able to account for Enlightenment. If not, then they cannot be the platform for a synthesis of science and spirituality. Neurotheology should include the traditions of Asia along with those of the West.

I think that there might be something to the notion of enlightenment, even though I might not be able to induce it using Shakti, or any other method I've tried.

The Buddhist and the Hindu concepts, like other ideas from the middle ages, may not be a very good approximation of reality. The astronomy, anatomy & physiology, biology, meterology, and geology (just to name a few) of the ancient cultures were, without exception, all discarded as science progressed.

No matter how poorly they may describe reality, older ideas linger until a replacement appears. The cognitive science of Asia has been an effective tool for changing human consciousness, but it's replacement has only appeared recently.

We'll be discussing enlightenment in terms of this new science in this article. It took so long because none of the brain's activities; the phenomena that cognitive science studies look at, can be seen directly. Astronomers could see the activities of the stars and planets, but medieval works dealing in emotion and cognition were mostly for spiritual practitioners. And they can't see their brains, but they can see the phenomena that different states of consciousness produce.

The medieval discussions of consciousness were always goal-oriented; In the West, it was to prevent 'sinful' thoughts and feelings and to unite as closely to God as possible. In the East, their purpose is to help conquer anger, greed, sadness, 'ignorance' and to 'seek enlightenment'. Of course, I'm speaking of the mystic traditions, not the popular religions.

Because the contexts for these ideas were always sacred, questioning them can seem a bit profane; even crude. But, now that the understanding of consciousness is coming out of the dark ages, we need to have a fresh look at the phenomena and experiences they address..

Sure, God's creation was brought down a notch when 'his' earth stopped being at the center of the universe, and that may have detracted from it's beauty. But only for those whose concepts of beauty were limited to seeing "His" creation. And the satellites, that could never have flown in an earth-centered cosmos, work just fine.

In the same way, the new view of spirituality will replace the old one in the minds of many, and for some, this will seem crude. But the spiritual practices and techniques will only become more effective.

If you look at the Hindu and Buddhist tales of enlightenment you'll find that they aren't quite sure what it is. Many words are used to describe it, all of the sounding equally exalted in English. Liberation, perfection, freedom, the 'cessation of the illusion of self", "crossing over to the other shore", "truth - consciousness - bliss" (satchitananda), "the supreme awakening", "great orgasm" (mahamudra).

Some "Arahants" - enlightened ones, as they are called, can remember their past lives, and others can't. Some of them have psychic skills, and others don't. Some are so articulate they can help others reach 'it' effectively. Others don't say a word. Some of them can do that water-into-wine thing. Others can't. Some of them live in perfect, unending bliss, and others are beyond all emotions, even the positive ones. Some attain 'it' and see the futility of the consciousness in which almost everyone lives. They just go off and die somewhere (approved by the Hindu "Laws of Manu" as an acceptable form of renunciation). Others are said to practically become immortal. For some, the sensation of having a self is changed, now somehow 'perfect'. For others, it dissolves and become 'at one' with 'the father' or 'the one'. In Buddhism, it's said to have ceased to exist altogether.

The only thing that all of these traditions all agree on is that to get there is to end a discomfort intrinsic to being alive.

And I have a feeling that, although it's possible to arrive there, what the many teachings seem to present as one state of consciousness is actually a whole range of states.

States of consciousness are supported by patterns of brain activity. And all brain activity takes place within thresholds. The enlightened states may only be available to a few people with unique neural profiles; people with especially high or low thresholds in crucial brain parts.

For people who are 'seeking' enlightenment, the crucial question is HOW high or low. If it's too difficult, normal brains might not be able to manage it. But, normal brains don't care very much about it either, so there's no loss, really. People who are not prone to altered states don't get the sense that their fulfillment lies in developing their consciousness. For them the peak moments of their lives, the ones they are most likely to try to achieve again, will lie within the range of normal states of consciousness.

So even to be interested makes it a little more likely. But the very extremes in states of consciousness are usually quite rare. No matter how frightened or overjoyed you may have been, the annals of neuroscience can find someone whose had it more intensely. The odds are good that unless you are prepared to put unrelenting efforts, you're not going to make it.

If we pretend that a healthy mind is one that's always changing in some way, and enlightenment is a coping mechanism for adjusting to the sensation of bliss once it

appears, then we're left wondering if it's all that healthy to be "enlightened".

When an acolyte attains a new state, they are usually a bit bowled over. "It's all just too much!". Like a shy teenager who turns away from the person the have a crush on (even though they might be in total bliss), they often want to stop.

Enlightenment might be a way of stopping it, when its all too much, and of avoiding what lies ahead.

There may be real states that fit some of what's been said about enlightenment. And they might even endure, some of them.

But they could be enduring the way an image endures when the you push the <pause> button on a video machine.

Of course, that's no way to watch a movie. And trying to get enlightenment is no way to enjoy having a human consciousness. What would you think of a carpenter who spend so much time sharpening his tools that he never got around to woodworking?

I need to be frank on one point: I am not enlightened.

We need to drop the idea that we're not allowed to talk about enlightenment unless we are enlightened ourselves. That only a Buddha (that's REAL Buddha) can talk about Buddhahood. While many of it's experiences are 'beyond words', the meeting of science and spirituality will demand that nothing be beyond discussion.

However, even though I am not a Buddha, I know a bit about the brain. So let's get started.

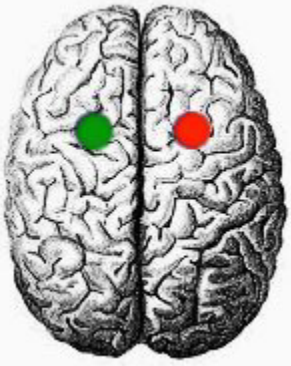
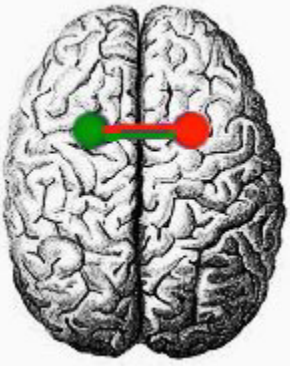
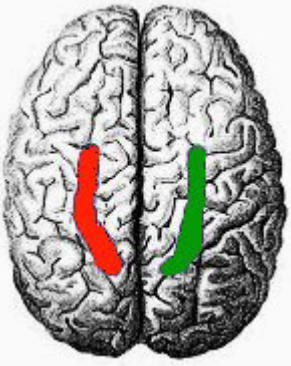
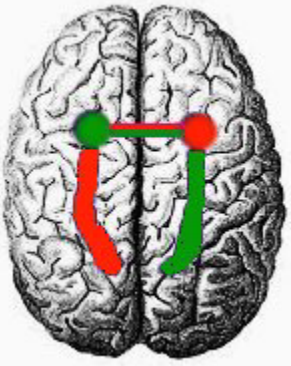
The sense of self is said to change when a person becomes enlightened. They no longer 'identify' themselves with, or take their identity from, the 'old'.

No matter what else they may be, they are now "another person".

The human sense of self is maintained in the limbic system, and the limbic system exists on both sides of the brain. Each structure on one side that feels good to us (when it's busy) is complimented by another on the opposite side that feels bad.

So, for most people, an emotional structure called the amygdala feels good on the left, and bad on the right.

And, for most people, a cognitive, thinking structure called the hippocampus feels better on the right and worse on the left (11).

			
The Amygdala - an emotional structure. The left is specialized for positive emotions, and the right for negative ones.	The Anterior Commisure is dedicated to two-way communication between the two amygdala(s). It's 38% larger in women than men.	The Hippocampus is a cognitive structure. The one on the right is specialized for positive expectations (and cognitive style) and the one on the left for negative ones.	These structures are the foundation of the limbic system, here coded with the ones that feel positive when activated green = Positive red= Negative

These two brain parts are next to each other. Intergrown, in fact. And a normal brain has a positive and a negative one on each side. However, some people have 'left-handed' limbic parts. For them, the positive amygdala will be intergrown with the positive hippocampus. Communication between the two will be much easier than in a normal brain. The other side of the brain will have strong communication between the negative hippocampus and the negative amygdala. Such an individual might find themselves very emotionally labile, or sensitive.

But when we stop to recall that most spiritual practices exclude negative thoughts and emotions, then it seems possible that long-term practice might eventually stop their occurrence. More likely, a threshold might be passed that will leave positive emotions with lower thresholds than negative ones, and positive expectations for ongoing events becomes easier than the opposite.

The idea that meditation 'works' by starving negativity rather than feeding virtue is supported by a recently-published study.

A group of meditators were given questionnaires that asked how often they experienced a range of altered-state experiences. Surprisingly, the study found that the whole group, no matter how long they had been practicing, were no more prone to altered state experiences than anyone else (1) . Their practice was transforming them, but they were not experiencing meditation-like moments in their daily lives. So what changed as they 'grew' in their practice?

The answer, for which the group was not queried, may be that they experience less negativity; fewer moments when they become caught up in fear, anger, sadness, etc.

If we accept that meditation is conducive to enlightenment, and that the moments when meditation appears "in daily life" are moments when negative states are wholly absent, then we get a new definition of enlightenment.

The complete absence of all unpleasant subjective states. This is why it takes such unrelenting efforts. Fear, for example, is a powerful adaptive ally. Each thing that enters our perception is 'scanned' to see if it's a threat or not. A threat to our social status, self-esteem, livlihood, authority, or even our lives, when we have to. Becoming enlightened would mean not doing this any longer. To stop 'scanning for danger' will mean changing the bunches of pathways ("matrices of neurons") that support the human sense of self, because both 'you' and 'your fear' share crucial brain parts.

In all but a very few human brains, seeking enlightenment is looking for water to flow uphill.

However, the appearance of a few brains in the population for whom the experience is easy, or impossible to avoid, is also bound to happen. The spectrum of human 'types' is very wide, and if there are those whose negativity is special enough that they need to be locked away, then there will also be those whose positivity will be equally special. And the most extreme among them might be prone to buddhahood. But, life can improve a lot for those who do not indulge in fear, anger, and sadness. That way MIGHT lead to final liberation, but it SURELY leads to less of what the Buddha called "suffering", the discomfort intrinsic to being alive.

The absence of negativity as a definition for enlightenment is consistent with most Hindu and Buddhist teachings, even though it is, in fact, a different definition. Most older meanings for the word come from the bliss and freedom, or the truth. Or the appearance of a new self. Or the elimination of the old one. At best, these aren't very clear. They all sound quite exalted, but any of them could be used to talk about several states, not just the one the Buddha attained.

One clue for looking at the enlightened state in terms of the brain is that it can happen gradually or suddenly. The Zen Buddhist tradition even goes so far as to categorize enlightenment in these very terms.

Gradual enlightenment is easily explained in terms of more ordinary neural mechanisms. The consistent practice conditions the individual to suppress negativity, so that more positive (and adaptive) emotional and cognitive responses can appear. Over time, changes on the smallest levels of brain activity (such as synaptogenesis, kindling, synaptic dropout, etc.) alter the sense of self that relies on our thoughts and feelings.

Change the brain parts where 'self' happens gradually, and you will slowly change the sense of self. Change them quickly, and 'you' will, too (10).

It might be a good idea to look at what the phrase 'sense of self' means. The sense of self, whatever else it is, is disturbed in 'disorders of self'. These are the ones where a person's identity is lost in their symptoms. Schizophrenia and dissociation are just two examples. These are now being found to involve specific disturbances in the limbic system. Further, there is a characteristic EEG signature that occurs in waking and in dreams, states in which the self is coherent enough to process present experience into memories. It's called the 40 Hz component, and it involves the limbic system, too.

Another limbic set of phenomena is hallucinations. Limbic stimulation has elicited hallucinations in scores of studies, using a variety of stimulation techniques. The limbic system is heavily intergrown with the surface of the temporal lobes, and there are even maps of the temporal lobes, showing what areas are most likely to yield which kinds of hallucinations.

So, following the rule of science that the simplest explanation is probably the closest to the truth, two things about the sense of self stand out.

One is that the sense of self is partly made up of language. Although it's different for each person, we maintain a constant stream of inner dialog, talking to ourselves. We rehearse conversations before we have them, and when we lose an argument, we then spend time thinking of what we should have said.

Our self-esteem is VERY sensitive to what other people say to us. The phrase 'self-esteem' uses the word 'self'. Here, too, if the phrase has any meaning, then our sense of self is a very linguistic thing.

The second simple thing about the sense of self is that it may be an hallucination. The brain parts that support it are also the ones behind hallucinations. And, in looking for the human 'self,' science is coming up empty-handed. Cognitive science understands quite a lot about the modalities in which it operates, but not much about what holds them together.

There is some understanding about the brain's activity keeping consciousness 'bound' together (5), but the mechanism that makes us feel we are real to ourselves is still something of a mystery.

What we can talk about this area is the sense of self. We experience ourselves as real the same way we experience anything else, through our senses.

But which sense do we use to perceive our "self"?

The answer I suggest is that there is a sense that uses all the neural substrates of the other senses as it's organs, and that has no 'percept'. Instead, it only hallucinates. And it has only one hallucination. The self. Or rather, the selves. We have two of them, one on each side of the brain.

The one on the left (where the language centers are) is the most active, so our experience of ourselves is shaped by words. Our own inner dialog and the words we

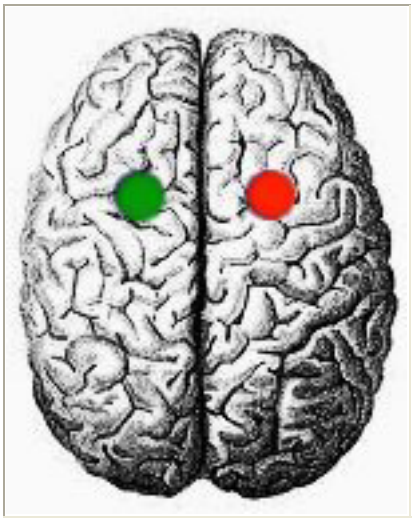
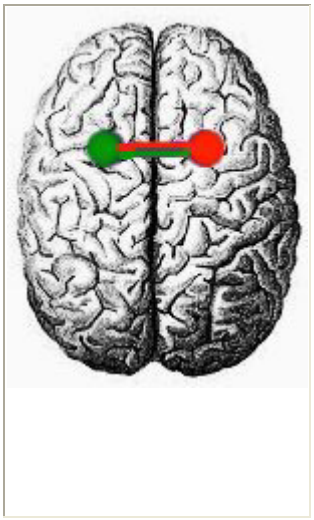
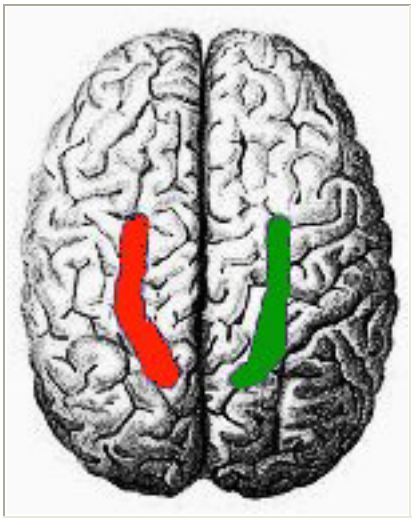
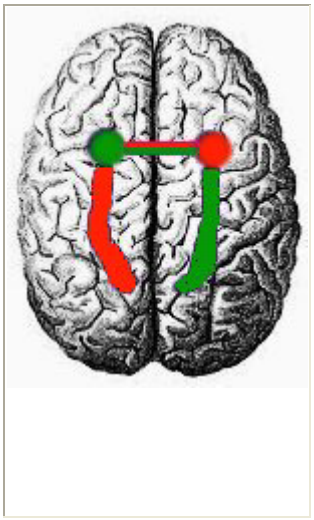
hear from others. The one on the right, the silent 'self' is constantly overwhelmed by the verbal 'self'. It remains subordinate.

Now, lets' return to our subject. Enlightenment. We mentioned before how gradual enlightenment might be seen as a slow suppression of negative thoughts and emotions that can change the sense of self through rather ordinary neural mechanisms.

Sudden enlightenment is quite another story. There, only one neural mechanism is really implicated: the interhemispheric intrusion (2, 3, 4).

Very few models of brain activity can encompass really sudden shifts in states of consciousness. While a seizure might be invoked to explain the suddenness of the event, the moment of enlightenment is not a recurring event the way seizures are. In the classical descriptions, enlightenment forever alters the sense of self. In a good way. And only once.

The idea behind the "interhemispheric intrusion" is that when the activity in one brain structure becomes so elevated that it goes past a certain threshold, it needs to escape or vent into another. It gets it name from the notion that right-hemispheric phenomena temporarily crowds out phenomena from the left. The right-sided phenomena intrudes on it, so to speak. Now the Map of the limbic system

			
The Amygdala - an emotional structure. The left is specialized for positive emotions, and the right for negative ones.	The Anterior Commisure is dedicated to two-way communication between the two amygdala(s). It's 38% larger in women than men.	The Hippocampus is a cognitive structure. The one on the right is specialized for positive expectations (and cognitive style) and the one on the left for negative ones.	These structures are the foundation of the limbic system, here coded with the ones that feel positive when activated green = Positive red= Negative

An interhemispheric intrusion can precipitate an event called 'synaptic dropout'. This is when synapses (connections between nerve cells) actually drop out of service after excess input. "Burn out" might be a better term, except that the event, and the following dropout do not happen at random.

The limbic system is composed of structures, and the structures are composed of nuclei (or layers).

It's possible that the specific nuclei (or layer) within any limbic system that can bear the least activity will be the one to initiate an interhemispheric intrusion, and that will be different for different people. A chain is only as strong as it's weakest link. And an overloaded limbic system may well 'dump' it's load of electrical activity when it's most unstable nucleus reaches it's limit. The specific nucleus that's most unstable may well reflect an individual's history.

When we look for interhemispheric intrusions in other people's tales of spiritual transformation, we're looking for epiphanies of any sort that follow VERY negative episodes.

In many cases, we find them. The Buddha was tortured by the demons of Mara the night before his enlightenment. Jesus emerged from the desert after a meeting with Satan. Ramakrishna's moment happened following an episode of extreme dysphoria that left him convinced he was about to die.

For the limbic system, there are extensive connections available for shunting the activity to the opposite side if the brain. The most important of these is the anterior commissure, which connects the amygdalas on each side of the brain.

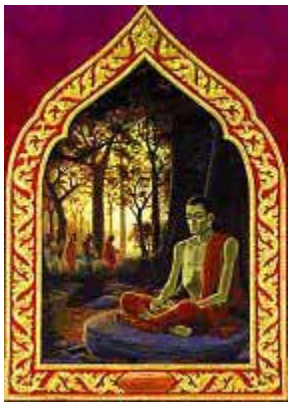
When the phenomena of the dysphoria are cognitive, then the dropout seems most likely to be cognitive, as the specific signals embedded in the blast of activity may well be 'coded', so to speak, to cognitive functions. If the dark night of the soul is made of emotions, then the enlightenment that follows should find itself with an emotional quality.

This seems to predict something we see in the Hindu and Buddhist traditions. Some teachers (like H.H. The Dalai Lama and the Teacher Ammachi) emphasize compassion and a state called "lovingkindness". An emotional orientation. Others, (like the Zen masters and the Vedanta teachers) emphasize awareness of the present moment. A 'cognitive' orientation.

Each broad approach recognizes the validity of the other, but still retains its own emphasis.

Back to our theme.

The Buddha's life story has already been told many times. Here, we need only to recall that he was the son of a king, highly educated, and had a very sheltered childhood. His sheltered childhood is literally legend. His father tried to protect him from anything that might shock or disturb him. In neural terms, this meant his right amygdala was quite quiet.



Later, he saw some things that disturbed him, including a dead person. These experiences shocked him so deeply that he renounced his title to the throne, and became an intinerant monk. He studied with several teachers, and learned techniques that all involved concentration. The scriptures say that he practiced meditation with real dedication.

Before the Buddha's enlightenment, he practiced several techniques, including long periods of intensive fasting while in concentration

Imagine a person were to do long periods of meditation in which they spend many hours a day suppressing all negative ideation and emotion. With time, their right (fearful) amygdala would become increasingly quiet

One day, they stop their practice, as the Buddha did after seeing that his had gone too far. Their right amygdala, and the whole set of things it's wired to, would soon begin to activate themselves. After the long history of inactivity, all the negative emotions that belong to the right amygdala would emerge into the person's awareness. A dark night of the soul, so to speak. Especially if an outer stress were to activate it naturally. And the Buddha had one. His disenchantment with the ascetic path caused him to lose all his friends. All at once.

A spiritual discipline that 'tasks' the left amygdala, such as remaining aware of an emotion without acting it out in any way, or responding to all negative emotions with a verbal prayer (ex: Jesus, have mercy on me) will be raising the level of the left amygdala's activity, as right amygdala's functions are increasingly suppressed. As one amygdala's activity increases, the opposite one decreases, according to the theory of vectorial hemisphericity (6).

But, we should remember that the right amygdala, (whose activity supports low self-esteem and fear) is wired to many other parts of the brain, not only it's left-hemispheric counterpart. As it's activity decreases, all the parts it's connected to must adjust themselves to accommodate, including the opposite amygdala. Scores of brain parts are involved, with varying degrees of intimacy.

And it's less work for the brain to try to re-establish the older amygdaloid settings, which will involve adjusting only one brain part. (Older means before spiritual practice) While

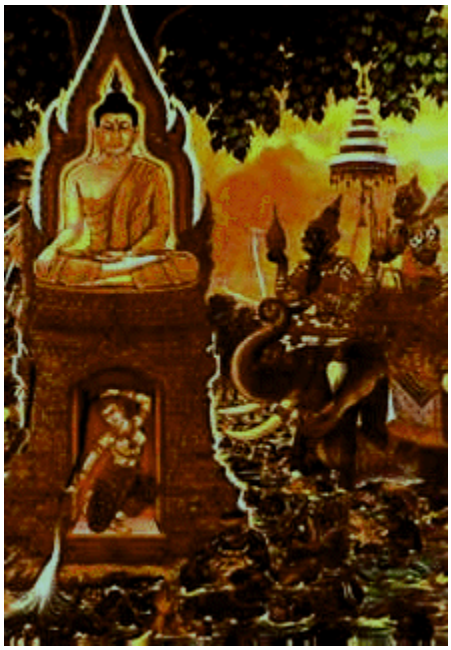
this is happening, the right-sided amygdala; the one that sustains negative emotions, including sadness and fear, must be active (according to the principle that neural structures must be activated in order to grow or learn - including learning NOT to do something.)

And the right amygdala is connected to many other brain parts. When they're held off by ongoing spiritual practice, they're quiet, but as soon as any of them are initiated, the whole matrix of right amygdaloid activity can burst into activity, in an attempt to re-establish themselves. Metabolic snapback is the name for this process when it happens in response to magnetic signal stimulation, and when it happens (in theory) to keep rarely used matrices of neurons active, it's called dynamic stabilization. Remember, the amygdala itself is much more labile than the structures it's connected to. It's more prone to localized seizures than any other part of the brain (7).

If the suppressed matrix of right amygdaloid connections were large enough, their re-emergence might elicit enough activity to overwhelm it.

First, the activity would spread to the right hippocampus, a brain part that's involved with inner imaging, most importantly, the visual components of memory. (It also consolidates short-term memory into long-term ones.)

As the right hippocampus becomes more active, the fearful over-activation of the right amygdala will take on a visionary component, if the right hippocampus becomes active enough to color the experience.



The Buddha touched the Earth to call on her to witness his vow to become enlightened. In this Thai image, the Earth mother is shown

Now we need to look at another amygdaloid function. Or set of functions. Relating to others. It helps us recognize what facial expressions mean, and in the emotional 'charge' of words. These are very social functions. They're initiated while relating to others

Now, what do you get when you 'socialize' a 'vision' with an extremely elevated ("maxed-out") right-amygdaloid emotion?

A vision of another person. One that you don't like. Like a demon. Or Mara, lord of Evil. Or Satan (8).

The hippocampus is important in contextualization, a crucial component of almost all cognitive processes (9). When the negative emotions from the right amygdala spill into the right hippocampus, they are given a context. A demon of one sort or other. The amygdala's social functions favor anthropomorphic hallucinations, so the appearance of a 'bad guy'

appearing to flood the demons of Mara, and Mara himself is shown on his war-elephant offering his devotion after his defeat.

.

becomes more likely as the experience gains in intensity.

OK. Now we're up to the night of the Buddha's enlightenment.

If you know the story, you know that Mara is said to have disappeared after the Buddha touched the earth, calling on her to witness his vow to attain enlightenment. If our definition of enlightenment is valid, then this would have included continuing to condition the suppression of fear, sadness, etc.

The activity in his right hippocampus, we might guess, now had nowhere to go but back into the right amygdala.

But it was already loaded to the max. So it took the next available route. Across the brain to the left amygdala. With so much force that large numbers of synapses that had previously functioned to inhibit traffic from the right amygdala to the left were overloaded and dropped out.

The Buddha became enlightened at dawn one day, gazing at the morning star.

As the left amygdala bursts into activity, the pressure is taken off of the one on the right, and the right hippocampus no longer needs to vent its activity. It remains busy. That enhances non-verbal cognitive processes at the expense of verbal cognitive ones.

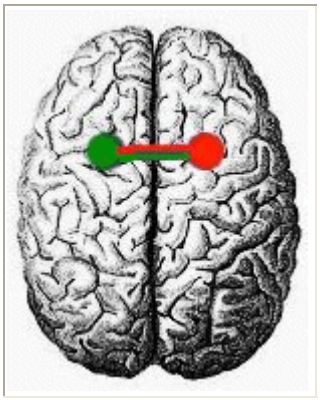
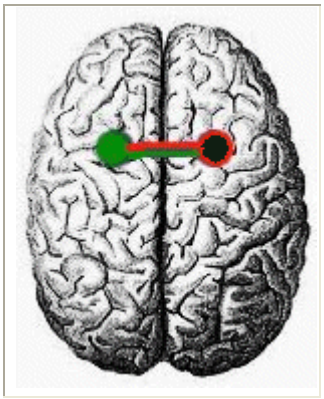
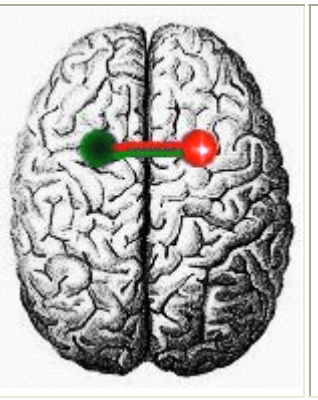
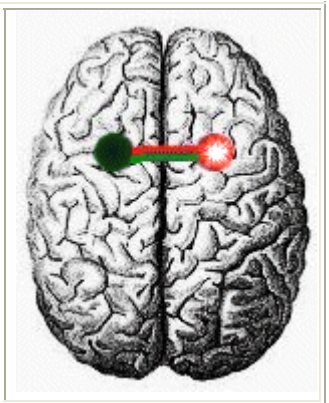
The mind is 'silent'. "Suffering" is 'ended' as the left amygdala's positive emotions now predominate. Bliss, ecstasy, unconditional love, etc.

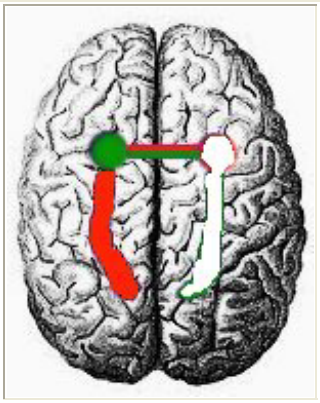
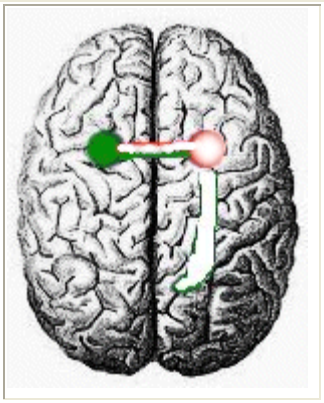
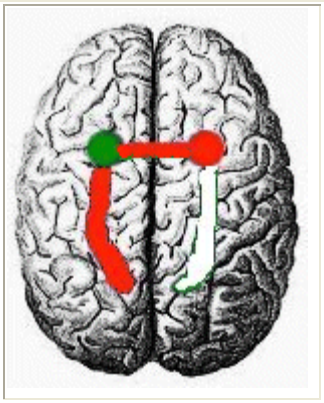
The story tells that he sat and looked at the morning star, venus. This suggests how he might have gotten hold of himself. By engaging a cognitive task. Putting all his attention into looking at a point of light, a common introspective task for meditators who experience inner points of light. However, Venus is not as bright as the sun. When the sun lights up the morning sky, venus will disappear. I would suggest that his limbic system was very labile just then, and given it's contribution to the sense of self, it might

have facilitated an interhemispheric intrusion; one that followed the cognitive context created shortly before, when he ended his episode with Mara. In the new context, a new sense of self emerged. One that wasn't based on language any longer. His non-linguistic sense of self became dominant. His choice to look off into space after touching the earth activated his right hippocampus again (due to it's involvement with spatial perception). This time, it's phenomena combined with the left amygdala's (affective) contribution to the sense of self. So that the dominant sense of self acquired a non-linguistic cognitive basis.

In other words, when The morning star vanished, so did he.

THE BUDDHA'S ENLIGHTENMENT AS A NEURAL MAP

			
To begin, the Gautam Siddartha's brain finds Both amygdala active, and both are fully connected to each other. (Adolescence to renunciation)	He Begins Meditation. With time, his RIGHT amygdala becomes less and less active. His emotional life is dominated by his left amygdala. (Period spent 'seeking' - several years)	He stops his practices, after seeing that they're too extreme. His RIGHT amygdala bursts into activity. He becomes forceful with himself, and vows to reach his goal or die under the Bodhi tree. (Abandonment of harsh practices - a few days)	The RIGHT amygdala becomes active enough to dominate his state of consciousness, and he experiences many unpleasant states. (Night of enlightenment - a few hours)

			
Right amygdaloid activation spreads to the right hippocampus, a crucial contributor to inner vision, including visual memory. His experience takes on a visionary character (The demons and daughters of Mara). (Night of enlightenment - a few hours)	His right amygdaloid and hippocampal activity goes past it's maximum threshold, and with no where else to go, the activity bursts across the brain to the left amygdala with such force that synapses that inhibit right-to-left activation drop out. So do the ones from the right hippocampus to the right amygdala. (Moment of enlightenment - Venus is obscured by the Sun)	Now, he's enlightened. Most RIGHT amygdala activity is shunted to the left. There are still ways to access the right amygdala, but they're now routed through other parts of the brain. His right hippocampus now has as much or more access to the left amygdala than it does to the one just next to it. Synapses inhibiting activity towards the left no longer function.	

The neural event happening with the Buddha's enlightenment would have consisted of a dramatic spillover from the right amygdala to the left. So dramatic that synapses operating to inhibit communication in that direction were overloaded and dropped out.

Thereafter, ALL right amygdaloid activity is shunted over to the one on the left. All experiences evoke positive emotions. And, because of our postulated hippocampal information embedded in the blast of amygdaloid activity from right to left, we're forced to draw a conclusion. The dropout of right-left inhibition will also have facilitated right to left hippocampal communication (intercalation), but not in the opposite direction.

The Buddha's limbic system now lacks some of the valves that limit the flow of activity from the right amygdala to the left. The other direction now has much lower thresholds. All events now have a positive emotional meaning, or at least no longer have negative

ones. With no significant use of the right amygdala, crucial in the maintenance of fear, there is literally nothing to be afraid of.

We should expect that the dropout would favor those synapses that communicate with the right hippocampus from the left amygdala, via the right amygdala, because we've already theorized that the right hippocampus would have been more active than the left just before the moment of enlightenment. The Buddha's education and intelligence would have contributed to his hippocampal activity overall before his renunciation. His developed cognitive skills would have left him predisposed to a strongly cognitive component to his new state.

The Buddha's limbic system now has all activity in it's right side immediately recruiting the left amygdala. The left amygdala, in turn, can still recruit both left and right hippocampus. His left amygdala could now access both linguistic and non-linguistic cognitive modalities equally. Evidently, it was an either / or proposition at first.

The story goes that he sat under the Bodhi tree for a week after his enlightenment without speaking to anyone.

In neural terms, this make sense. Remember that his enlightenment seems to have involved changes in the amygdalas on both sides of the brain, but the hippocampus on only one of them. The right side. The non-verbal side. The one that "knows not through words."

The Buddha saw, we are told, that his sense of self was an illusion. He compared it to a house whose ridge had been broken by his new perception "never to be rebuilt". What he was experiencing as the illusion of self emerges, in this discussion as the removal of the left-hemispheric, linguistic sense of self from dominance. The sense of self that's reinforced through language ended it's dominance over the Buddha's subjective experiences. His enduring command of language and frequent use of logical analysis in debating other teachers evidences that he still had a fully functioning set of left hemispheric faculties.

The Buddha ended his enlightenment, we're guessing, with a very quiet left hippocampus, and a right amygdala so compromised by his enlightenment that it could no longer 'contain' any significant activity. Remember that the synaptic dropout will have occurred in one direction only. Right amygdaloid activity can still be initiated, but only driven by the one on the left. Adaptive right amygdaloid functions would remain (one example might be the recognition of negative emotions in other people). But now, they are accessed by far fewer surrounding parts.

Now, when the non-verbal hippocampus is activated, it is far more likely to activate the amygdala on the opposite side of the brain.

The story tells that he looked at his new state, and concluded that, NO WAY could this be taught or explained to anyone.

This Statue, found at Sarnath, in India, shows the Buddha giving his first sermon, "Turning the Wheel of the Law".

Then, we're told, he was visited by the gods. Another 'visitor' experience, just like the ones the night before his enlightenment, only this time, the left amygdala predominates, and he is visited by the gods instead of the demons of evil. The gods ask the buddha to make the effort to teach, because there were a few people who were so ready for the experience that his words, if he could find them, would be of help. So the Buddha sat and developed his first sermon. The sutra of the turning of the wheel of the dharma.

Not surprisingly, the subject was how thoughts, feelings, the senses, and psychological tendencies instantiate the illusion of self (as it recapitulates itself in response to each experience). And how that introduces a discomfort intrinsic to being alive.

In order for this model of the Buddha's sudden enlightenment to work, we have to suppose that his non-verbal hippocampus was heavily involved; more so than his verbal one.

If he had a 'left-handed' hippocampus, that would have made enlightenment much easier in neural terms. The positive amygdala and the non-verbal hippocampus would already be closely interconnected (now being on the same side of the brain). The thresholds that the episodes in his enlightenment would cross will be much lower. The period of his practice, when he trained himself to stop indulging in fear and sadness, would also have been much easier in this case, too. More positive cognitive and emotional responses to things would have fed back on each other, leaving one hemisphere neatly out of the picture. Supressing negative ideation and emotion in a brain with a 'reversed' or 'left-handed' brain part means taking activity away from two parts on the same side of the brain.

The Buddha claimed to have helped many, many people become enlightened. However, these claims of large numbers of "Arahants" don't appear in later scriptures.

The Buddhist scriptures may have bent the truth a bit to make the Dharma; the teachings, seem more effective than they really are. There is also the possibility that the Buddha's own presence, while he was alive, may have provided crucial support that was absent after his death.

The present time finds enlightenment as a rare phenomena at best.

One possibility is that the Buddha was prone to the experience due to a unique neural profile.

And that his teaching makes enlightenment seem much more probable than it really is. Not because the dharma contains any serious mis-apprehensions in it's field, but because it contains no measures for the thresholds that have to be crossed. While some scriptures acknowledge that there are various personality types more prone to sudden enlightenment, there has never been any way to distinguish how prone someone is to the experience. Except to try it.

Perhaps, for normal brains, the experience is not possible at all. Or rather, that it's so unlikely that a life spent chasing it may only induce gradual changes, but fail to attain the radical change in their sense of self they're looking for.

So, what's a poor seeker to do?

A much more intelligent approach, if you think that enlightenment may not happen in this lifetime, is to forget about the maximum potentials for your states of consciousness, and to focus instead on your most immediate potential.

You really can't say that there's anything wrong with your life because you're not enlightened. Something might be wrong, but it's not unenlightenment. More likely, it's too much anger, sadness, loneliness, sexual frustration, fear, or patterns (anacastic traits) you keep repeating to your own detriment.

If your life were totally comfortable, why would you bother with spirituality?

I don't want to discourage anyone from trying to become enlightened, but it might be more germane to focus on what you want to get rid of in doing spiritual practice, instead of what you want to attain.

So why meditate?

Because it increases your sensitivity to your own anger, fear, sadness etc.. In meditation, you learn to be aware. As that happens, you become aware of your own emotions and feelings along with everything else in your experience, right as they happen.

And you will probably find that you're in some sort of discomfort most of the time, and that most of it comes from within.

As you get more aware, you see that each negative thing you create for yourself is a process. It starts off with hearing somebody say something you don't like. You have an emotional response. Your body gets tense. Your thoughts sprint into looking for a response. It's a whole process, not just one event.

The more aware you are, the sooner you notice that it's happening. If you notice it quick enough, you can re-route things. The Buddha put his attention into two acts, if we can believe the stories. He remembered his vow. That's memory retrieval. That's a hippocampal task. Then he looked at the morning star, venus. Far off in space. That's spatial perception. Another hippocampal task.

He re-routed his brain's activity away from his amygdala in the process, and that's what you can do, too. In response to your own negativity. One of the functions of the hippocampus is monitoring inner state. Just stopping to look at what's actually happening during a moment of negativity can change it's course.

Do it enough, and you may find that you get the habit of not completing your negative patterns.

If your negative patterns don't go anywhere, you might find that as the brain parts that support negativity become less active, the sense of self these same brain parts support will also change.

According to one Buddhist tradition, the Buddha became enlightened through:

"....the Middle Path of moderation based on the practice of virtue (sila), concentration of the mind (samadhi), and the intensive analysis of all psycho-physical phenomena that finally leads to full understanding of things as they really are (panna). "

Virtue could easily mean the supression of negative thoughts and feelings. Not by tensing up while they happen, but by choosing different responses when they occur. Respond to anger by choosing to think about things that evoke compassion. Respond to sadness, anger, or fear by looking at what your body is feeling when they happen. Negative thoughts are not prevented so much as ignored in both of these practices. Mental concentration refers to meditation, but not for it's own value. Rather, it sharpens one's alertness so that the transition from angry feelings to angry words becomes explicit. While the transition is happening, anger can be re-routed. But it takes an adroit mind and a certain amount of training. Seeing things as they really are refers to the new, non-linguistic sense of self, whose perception is no longer filtered through their inner dialog.

Let me offer a metaphor.

Evolution (I mean Darwin's theory, not the spiritual kind) works by selecting the members of a species best suited to their situation. They live longer. They breed more. They get away from tigers better. Whatever.

The species changes in response to the reality of death. Without any planning of who they want to be, each species focuses on death, according to how it's most likely to appear for them, in order to avoid it.

Each species ends up being whatever it is. No planning to their bodies, behaviors, and minds. Each feature is a response to something in their

evolutionary history. It helped them survive. Right at the time it appeared. "In the moment", so to speak.

It happens because the priority is avoiding death.

When the priority is really being in one's life; LIVING in each moment, without negative thoughts or feelings, the same thing happens. If the person avoids anything that feels like it goes against that the way a gazelle avoids a leopard or a brush fire.

In time, that individual is going to become a different person.

If they believe that there is an absolute limit on the process, like:

Enlightenment
Oneness with God
Complete purity
Liberation
Being guaranteed a place in heaven
Unconditional love
Final Realization

....or anything like these, the person will no longer have any notion about what to do to continue the process once they reach their goal. Or rather, that it can be continued at all. And far worse, failure to reach enlightenment becomes a kind of personal failure. Worst of all, other people's failure to try to reach it makes them seem a bit .... coarse.

When an enlightened one teaches their process as 'the way', they fail to see that their state might not be as fulfilling for others. One 'enlightenment' is about love because the PERSON is about love. Another one is about 'being here now' because the person is about that.

Darwinian evolution uses navigation by dead reckoning, away from death. Each species developing in its own direction.

"The Process", if I can call it that, does the same thing.

A species that's really improving its ability to live isn't trying to arrive at a 'perfect' form.

And neither am

SEX AND STATES OF CONSCIOUSNESS

We're not really going to be talking about sex here. We're going to look at the states of consciousness (or *states* for short) in which people want sex. In a culture where people are expected to ignore the possibility of sex with most potential partners, we have to expect that sexual behavior won't give us much insight into sexual states. We have to focus on sexual feelings, not behavior.

In academic studies, this view has explored by Swartz (1993) with reference to the difference in the states of consciousness experienced by men and women, and by Davidson (1980), more generally.

Although it's hard for some people to believe, different individuals experience sexual desire with very different intensities. Its not that some people have better controls, its that some have more to control. Nobody can choose how horny they are. While its possible to suppress sexual interest when it appears, nobody can choose how often it happens. There are people who try to suppress all of their sexuality, for example. Some monks and nuns, to name only one such group. They can often stop their sexual thoughts and feelings before they have really formed. But even they cannot choose how often they will have to do it. Mohandas Gandhi, who choose the path of total celibacy, felt he needed to put himself to the test even after decades of practice.

One contemporary spiritual teacher, Paul Lowe, often tells of how he was so horny that sex was simply never out of his mind, but so shy with women that he did not have the courage to ask them to make love with him. The dilemma was so bad that he resolved to kill himself (Lowe, 1988). Eventually, he broke through without a suicide attempt, and began to have the relationships he needed.

Was he just being self-indulgent in feeling his need to be so great? No. He was simply at the extreme ends of two spectrums at once. One was low-self esteem. He thought women would never want him. The other was the spectrum of sexual interest. Sexuality, as its called in clinical parlance. He was experiencing his sexuality almost constantly.

The spectrum runs from a total disinterest in sex, called hyposexuality, to the burning, unrelenting, desire that never lets up, called hypersexuality. Most people, of course, fall somewhere in the middle. And again, I want to emphasize, its not a matter of choice.

Hyposexual individuals often don't have an easy time in life. They are still fully capable of feeling romantic love, often quite deeply. They are liable to think that sex is a crude thing, and that ‘real love' should not depend on sex. After all, they can live without it, and still be deeply romantic, so to them, it can look like sex isn't really an important part of a relationship. When they do begin a romance, they find that they are either having more sex than they want to, or imposing a degree of celibacy on their sexually normal partners. This doesn't make for fulfilling relationships.

Hypersexual people also find life challenging, too. Their unrelenting needs can disturb a relationship when they have a relationship, and make them unattractively needy when they don't.

In Woody Allen's film, *Manhattan*, there is a scene where he is talking to his therapist saying "we almost never have sex. It only happens two or three times a week." Then the film cuts to his partner talking to her therapist saying "we're always having sex. Its two or three times per week!" When two people with differing levels of interest in sex have a relationship, they may end up with each thinking that the other really should change. Each might think that the other is wrong, and believe themselves to be normal. ‘Something is wrong with her, she never really wants to have sex.' "Doesn't he find me attractive anymore?' The hyposexual one, already having sex more often than they would choose freely, doesn't do anything to make it happen more often. Their partner begins to wonder why they are always the one to initiate sex.

The hypersexual person is not being self-indulgent. The hyposexual person is not just ‘repressed.' Actually, there is no such thing as a right level of interest. Its different for different people, and nobody can change their obsession or indifference about sex just by wanting it to be different. It can change, as we will see, but not by working on sexuality itself. No amount of ‘sensuality training seminars' will make sex exciting for a hyposexual person. And no amount of talk therapy will put sex ‘into proper perspective' for those who are hypersexual.

Sexual arousal is an altered state of consciousness, but it's a normal, healthy altered state. The degree of interest in sex is directly related to how much time a person spends in non-ordinary states of consciousness.

One study (Waxman, 1975) found that temporal lobe epileptics (who go into altered states of consciousness, often very intense ones, during their seizures) were much more likely to be hyposexual than others. The normal states of consciousness for these people are different from those of others. They often have lower self-esteem. They tend to be irritable. They have a burning desire to express themselves that comes out through writing diaries and journals or in doing art, sometimes obsessively. They usually have a preoccupation with spirituality, philosophy, and religion.

I believe that what's happening with these people is that they are spending so much of their time in altered states that their consciousness isn't available to the sexual ones. Its already engaged with states that rule it out. Probably there are many states of consciousness that inhibit sexual interest. Others seem to invoke it.

One researcher (Miller, 1986) has even gone so far as to suggest that changes in sexual behavior should be seen as a possible sign of brain injury.

Why should altered states of consciousness rule out feeling sexual so often?

Altered states are almost always either positive or negative. The positive ones range from a mild mania to total bliss. Fear is the most common emotion in the negative ones, and can include anything from mild anxiety to stark terror. When a person is filled with a

sense of well-being, a lack of sex won't won't make them feel that anything is wrong. If a person is carrying that foreboding feeling that something is wrong and/or the sense that they're in some kind of danger, sex isn't going to make them feel better. For both types of people, there won't be any sense that sex is a real need.

Others who are prone to altered states have a different pattern for both sexuality and their experiences of non-normal states. For these people, altered states are not an ongoing thing.

They experience altered states once in a while. While they are having an experience, they, like the group that's having them all the time, are not likely to feel sexual. However, when they are not having an experience, they will still have a sensitive trigger for changes in state.

This group will notice the experience, whatever it is, more pointedly than the first. So like the hyposexual ones, hypersexual people often find spirituality compelling.

These people will have exercise the parts of the brain that change their state, giving them more sensitive triggers. They will be more likely to alter their state towards another normal one in their ordinary range, instead of going into non-ordinary states,

For a physically healthy and normal person, one of the most likely directions for consciousness to shift is towards sex. If the trigger is sensitive enough, the person might be very horny anytime they are not having an experience of an altered state. They might labeled as a nymphomaniac, or as having satyriasis (the male equivalent), as though they were being influenced by sex rather than their consciousness.

The evidence that sexuality relates to our states of consciousness is overwhelming.

The temporal lobes are the portions of the brain that manage our states of consciousness. Rhesus monkeys which have had their temporal lobes removed often demonstrated hypersexuality, including homosexual and solitary sexual behavior (Kluver, 1958).

Hypersexuality has been seen in people with lesions in their frontal and temporal lobes (Huws, 1991), and has been observed in association with limbic seizures (Andy, 1991 & Persinger, 1994).

Most TLE seizures begin in the amygdala, an emotional control area (Gloor, 1992), which explains why they have such intense emotions accompanying them. The amygdala has a large number of sexual phenomena associated with it. One of the more interesting is the observation that gay men have more connections between the amygdala on each side of the brain than straight men.

Just as importantly, the amygdala manages our emotions and helps to manage our states of consciousness.

To state a rough rule of thumb, those who spend all their time in altered states tend to be the hyposexual ones, while those who go back and forth tend to be the hypersexual ones.

One behavior worth looking at is voluntary celibacy. The ordained priest, monk, or nun who has chosen not to have sex at all. Ever. Why would someone make such a choice? Because they have positive altered state experiences, and they give them a religious interpretation. Their joy, they believe, is a gift from God.

While they are actually experiencing life as a gift from God, the idea of looking for pleasure or fulfillment in sex or romance seems just stupid. The trouble with this type of celibacy is that it usually depends on regular, positive, religious experiences. When these are absent, or stop happening for whatever reason, the vow that was easily kept at ordination becomes a burdensome travail later on (Slawson, 1973). When these experiences are kindled through prayer, meditation, or contemplative exercises, they are likely to stop if the practice stops. At that point, the change from regular altered states to occasional ones begins, and the person is likely to change from hypo-to-hyper in their sexuality. They might think that God was testing them, or that Satan was trying to bring about their downfall through temptations to ‘the pleasures of the flesh.'

If their altered states are appearing as a result of a brain difference, like a tumor, birth defect, head injury, or a sclerosis, then these states are much more likely to endure, and celibacy might be quite natural for such people. Some of the brain differences in these people could be quite minute, and might not create any other traits worth mentioning.

The brain comes in two varieties: male and female. They differ in many small ways, but there is a pattern to these differences. The male brain is specialized for doing one thing at a time, and the female brain is more truly a ‘multitasking environment.' Take an average man (if you can find one) and an average woman (if you can find one). Give them both a PET scan. Have them each do something, the same thing, during their PET session, and then look at the brain activity. The woman's brain will almost always show more active regions than the man's brain will. Women ‘cross-reference' things through more parts of their brain than men do, most importantly the emotional control centers in the limbic system (Moir, 1991). Women can often see the subtler implications of things more readily than men can. Because the process involves the whole brain, and isn't localized or stronger in its language centers, women can often find it more difficult than men to put their perceptions into words. Women are more likely/able to make associations than men. While many of these associations might be irrelevant to anything practical, there will usually be something meaningful that an ‘average' man might miss. The sexual regions of the brain are more likely to be recruited into the seizure in women than men. The point is that the involvement of sexuality in enhanced TL sensitivity is different for men and women.

In fact, the range of epileptic phenomena in wider for women than men. For example, women may have orgasms during TLE seizures, while men do not.

Some readers might object to the way we are using the terms normal, average, typical, and so forth. Many object to what are called ‘sweeping generalizations'. The intention here is to state ‘rules of thumb'. Rules with so many exceptions that they really can't be called rules at all. These are not rules for obedience, either. They are more like descriptive rules of grammar, which describes how people are probably going to speak, not how they actually speak. I'll bet that there are as few people who ‘typify' their genders as there are who speak with perfect grammar. We have to make generalizations if we want to see the patterns in human behavior and consciousness. After that, it is much easier to see what's really happening when a specific person is different from those around them. For many of those who experience themselves as different, their differences can be the source of alienation, low-self extreme, and can hinder the growth of ordinary relating skills. To forbid generalizations is to cut off a potential source of healing for these people. Problems only come up when we forget that our general statements, something like working hypotheses, aren't complete.

Finally, we should look at how hypersexual and hyposexual people can respond to their dilemmas.

The hyposexual person who wants to change should look at the chance that their condition might have to do with epilepsy, and that it might respond to an antiepileptic medication. Many psychiatrists miss the proper diagnoses for the types of epilepsy that can create hyposexuality. An epileptologist is a good place to look for a second opinion.

I know of one case where a woman never experienced sexual desire until she became a massage therapist, and began spending several hours a day doing massage. She had been in an ongoing state of fear for almost 25 years. After doing massage for just a few months, she found that her anxiety had dropped to the point where she found herself feeling horny for the first time. At age 41.

The hypersexual person has fewer options. They, also might respond to antiepileptic medications, but stopping the altered state experience that lie behind their intense sexual interest usually has little appeal. Many people who have contacted me about this issue have said that they feel a stronger need to allow the other states than to lower their sexual energy.

I know of a couple of cases where women have taken up Yoga practice only to find that they became overwhelmed by sexual desire for the first few months of their practice. Other women, with more experience in Yoga, found that their desire had become so low that they almost didn't care if they had sex or not.

This may sound good to some readers, but one such case includes a woman yogi hearing her husband tell her that he wanted her permission to sleep with other women, and that if she didn't give it, she was about to become a single mother. He also bluntly refused to leave his kids and settle for 15 years of paying child support and weekend visits.

Some months earlier, she had told me that one of her goals was to "sublimate" her sexuality through yoga. I asked her how her husband felt about this, and she said that was his problem.

But when he faced his problem, it turned out to be hers as well.

Because hypersexuality seems to rely on going in and out of altered states. One simple measure for these states is to look at how often the person has simple, comon altered state experiences. These include deja vu, and the feeling that there is someone standing behind you, but when you turn to look, you find nobody is there ("The Sensed Presence"). There is also "Jamis vu", the sensation that everything is strange, unfamiliar, or a bit alien. There are 'parasthesias'; like the 'pins and needles' or electrical sensations that run through the body, or the chills that run up one's spine when listening to music or that might fill one's body during orgasm. Then there are vestibular sensations, like vertigo, or the sensation that the bed is moving while you are falling asleep. There is also the experience of sudden bursts of intense emotion.

If a person is hypersexual, they may also be prone to these things, or were prone once in their lives.

This suggests a simple and easy response. When they enter a sexual state in moments when their culture or life circumstance doesn't allow, they should change their state. While a 'shot of whiskey' may have the desired effect for some, a more universal approach seems to be cognitive and emotional training.

And the most popular approach to that, across the world and through human history has been spirituality. Spiritual practices such as yoga, meditation

Because sexual desire seems to associate with activation of the left caudate nucleus (deep) in conjunction with the left temporal lobe (surface), spiritual practices that 'task' the left hemisphere so as to activate other structures deep in the left hemisphere might easily provide cognitive alternatives. Choices that can be made right in the moment.

Language centers are on the left, and spiritual practices that rely on it offer one alternative. Many religions offer reciting prayers as an efecive way to avert 'temptations of the flesh'. Mantra practive- repeating short invocations over and over- is found all through the Hindu and Buddhist traditions.

I once spoke to a "Hare Krisna" Devotee, who told me a story about how he had gone to a woman's home and how she had begun to seduce him, being quite forward with her hands and mouth. He began to become aroused, and remembered his vows. First, in his mind, he began to chant Hare Krishna. In spite of his long sexual deprivation and possibly hypersexual past (he had been a pornography addict), he not only 'dropped' his desire, but had an episode of bliss.

He started chanting aloud, and the woman, he said, threw him out.

He said he felt like he'd been chanting the whole day - "totally blissed out". The high levels of left-limbic activation brought on by sex were 'shunted over' to the language centers on the left surface, which long practice with Hindu chanting had connected to the left amygdala (associated with bliss, ecstacy, and other positive emotions).

It's more likely that (Murphy, 2001) his chanting resulted in a supression of other states that demand activation of large portions of the left temporal lobes and limbic system.

When he wanted to supress sexual desire, he had only to "Chant Hare Krisna and be happy". The same held true for him with anger or his desire for tobacco.

Other left-hemispheric practices include Yoga, Sufi dancing, and service to others. Positive socialization involves having other people around and having conversations, both left-hemispheric 'tasks'.

In principle, solitude, which seems to task the right hemisphere, might turn out to make bursts of sexual desire more likely. The appearance of a trigger, such as an attractive person, or even just a picture of one, could trigger a jolt of left hemishperic activity. It's relative quiet after a period of solitude leaves it open for the task. No need to clear one's mind at that time. The left hemisphere is so available that sexual desire can recruit is many pathways through several structures almost instantly, and supress competing tasks more readily.

Choosing activities that engage many people might easily serve to lessen the intensity and frequency of true hypersexual episodes, most importantly the kind that facilitate high-risk sexual behaviors. A day spent with other people, at work or socially, might easily lessen the chances for risky behavior in the evening. Of course, it warrants emperical study.

Prayer, talking to the god of one's belief, can also re-task the left hemisphere away from sexual desire, being both social (self-and-other) and linguistic.

These are all intervention techniques, but they would need practice before the states they create are available at will.

The most important technique will probably prove to be empowerment training that teaches people how to meet their need in a positive way, instead of fending them off.

The most popular and widespread approach to human psychology throughout it's history has been religion, however backward it's beliefs may often appear. It's not surprising that it's traditional practices, when seen as approaches to 'cognitive and emotional managment', emerge as worthwhile. Not to say that modern science can't do better - anticonvulsant medications can treat hypersexuality in many cases, but when these are not available or practical, a return to traditional religious approaches seems much more practical than surrender to high-risk behavior.

Studies among those who engange in high-risk sexual behavior are in order to test the various hypotheses offered here. Nevertheless, if validated, they might also find that

patterns of limbic experiences (as evidenced through questionairres) might indicate specific spiritual techniques for specific individuals.

Both hyper- and hypo- sexuality offer severe challenges, and in spite of the cultural biases that continue to surround them. Insights that take their neural bases into account are bound to offer more effective choices when put into practice than the techniques that appear when they are regarded as either addictions or psychiatric cases. If they are instances of human consciousness at it's extremes, then they can be classified as spiritual dilemmas as much as behavioral problems.

The End

I Do Not Exist.

(Or: Demystifying mysticism)
Stimulating my brain as a spiritual path.

Todd Murphy NOTE: This is a personal account. There are no references, bibliography or any of that.

My experiences with the temporal lobes of the brain started when I was seven years old. While living in a Catholic orphanage, I came down with temporal lobe epilepsy. Finding myself living in that place, which otherwise was a very good home for children, created a lot of stress, and I think , triggered the disorder.

I was not an orphan, though. The circumstances of my parents' divorce had placed my brothers and I there. We still had a family, and we visited them whenever we could.

One Sunday evening, sitting in my grandmother's dining room, eating vanilla ice cream, I suddenly left my body. I floated just below the ceiling and looked down on my brothers and my father all having their ice-cream. I was completely terrified. I now know that I was feeling fear because the "fear center" in my brain was involved in the process. During the seizure, my thoughts filled the gap. I was very sure that something was wrong with being out of my body. Actually, I was afraid that I would get punished somehow. My upbringing was Catholic; fairly traditional, and nowhere in the Catholic dogma I had learned was there any talk of out-of-body experiences. I felt very sure that out-of- body experiences were not allowed, and if you got caught having one, you'd get in trouble.

So there I was, floating beneath the ceiling, terrified, and wanting nothing more than to get back into my body. I don't know how I did it, but somehow I "willed" myself back

into my body. But the seizure was more forceful than I was, and I couldn't stay there. As I remember this experience, which was the most powerful out of body experience I had, I spent some time being in my body and out of it at the same time. Since then, I've read about other experiences like this. But at the time, I thought I was the only one.

I didn't have a lot of out-of- body experiences, but there was another experience that I did have often, and I remember being sure that they happened every single night. I told an adult that I didn't sleep at night, but they refused to believe me.

What would happen was that I wake up in the middle of the night with a feeling that everything was very dense and heavy. I was amazed and frightened at my own strength at being able, say, to move my arm. I laid absolutely still, afraid to use my own body. With my eyes open, I experienced macropsia. Macropsia is a visual illusion that everything around you is very large and very far away. When my eyes were closed, I seemed to be looking into an infinite space. At the center of the space, and unimaginable distance away, there was a point of light. And absolutely brilliant, incredibly powerful light. Its presence before me seemed to have a tremendously emphatic quality; as if it were shouting something at me. I had a strong sense that it was trying to say something very specific. And, whatever it was, I did not want to hear it. I actually has a strong feeling wanted to kill me. Now I know that it was quite a valid perception. That infinite space, and the light that I was seeing, both happen in the near-death-experiences. My intimation that it had something to do with dying was actually quite accurate.

I experienced other strange things during my seizures, but nothing else with quite so much impact. I felt strange electric buzzes and tingles running through my body and a very-difficult-to-describe sense that the inside of my body was white. The word refers to a color, but this was not a visual experience. I "felt" white on the inside. As though it were a sound I was 'seeing'.

The workers at the orphanage knew that something was wrong with me. I began to manifest the syndrome, very much like schizophrenia, that a lot of temporal lobe epileptics have. I was in a state of anxiety almost all the time. I developed an unfortunate liking for smelling bad, and I became very interested in religion. I was all of 7 years old at the time.

I went to Mass is often as I could, I attended benediction, donated to lots of my pocket money to charities, and began to want to be a priest. I was sure that I was not really good enough for the job, though. I felt sure God must have been angry with me, or else he would not given me all those experiences. Still, I enjoyed the Catholic ceremonies, and I felt good attending them as long as I didn't have to wear a tie.

Eventually, I left the orphanage, and went to live with my father and stepmother. Slowly, the seizures tapered off. And so did the strange behaviors I enacted between them. I continued to have a brief seizure-like events for a long time afterwards. During my seizures, the point of light had an emphatic quality. As my epilepsy tapered off, almost anything that had an emphatic quality could send chills and tingles running through my body. I became psychic for awhile, too. If an object was missing, I could

mentally divide the House in half, and I would " know " which side of the house to was on. And I could divide that space in half, and know which side it was on. I could repeat the process until only a very small area remained. Then, I would walk over and pick up the object I was looking for.

All of these things stopped when puberty began. Later I learned that this is the typical pattern; that most pediatric temporal lobe epilepsy stops with the onset of puberty.

I think what happens is that sexual arousal is an altered state of consciousness. Many of the neural structures involved in temporal lobe epilepsy find themselves with new jobs to do when puberty begins. these structures will have worked harder in the brains of children with temporal lobe epilepsy, so when they take on the new duties of managing sexuality and romantic love in adolescence, their thresholds are much lower than they would be for others. In adulthood, these individuals often demonstrate hyper sexuality, an intense vulnerability to romantic feelings and sensitivity to its disappointments, as well as a predisposition toward spiritual traditions that emphasize love. I have several sets of data, awaiting collation, the to test whether this hypothesis is valid or not.

While I'm on the subject, I think the same idea can be used to explain hyposexuality. There, pathways and microstructures involved in normal sexuality are involved with seizural activity. Or, alternately, lower thresholds in the wake of seizural activity keep these pathways better connected to portions of the neural matrix outside those that support sexual functioning. and what might be a sexual trigger for normal individual could actually inspire anxiety in another.

My temporal lobes stayed pretty quiet for about the next 15 years. When I was 28, I visited the Rajneesh ashram, in Oregon. on my first visit, I had a very powerful mystic experience while talking to a man who, at the time, was considered to be the next in line to the master himself.

Later, this same man was to become one of my most important subjects, even though he never filled out even one or questionnaires, underwent a formal interview, or even understood the point of the research he was participating in.

Nothing in particular happened while I was talking to this man, named Paul Lowe, but a few minutes after I spoke to him, I had my first experience of enhanced visual acuity. As well as my first taste of pure left amygdaloid activity. In other words, bliss.

Enhanced visual acuity is a very pleasant experience. While you're having it, it's as though your eyes have been polished from the inside. Textures appear incredibly rich, the edges of objects sharpen. Three-dimensional effects, like the way the branches of trees seem to move against each other as you walk by them, become very compelling. You notice the contours in people's faces. Bright light isn't very nice for people with enhanced visual acuity, and its more intense in shaded light.

Enhanced visual acuity has to do with the the visual portion of the brain's vestibular system. This is the system that accommodates for your eyes ' movement when you're walking. Without it, you'd see the world shaking with each step you took. Enhanced

visual acuity turns on the the accommodating mechanism even when you aren't walking.

People with enhanced visual acuity are usually very positive people. people at the other end of this spectrum, with suppressed visual acuity, often shows signs of depression. In fact, they have a higher-than-normal-suicide rate.

The first time I've experienced Enhanced Visual Acuity, I could only say: "Yes! This is it! This is a spiritual awakening, just like the ones I've read about!" Later, "Spiritual awakening" turned out to be only one of several ways to describe the experience.

I found a meditation technique that worked for me, and I practiced it for several months. After each session, by experienced enhanced visual acuity for a couple of hours afterwards. I also experimented with several different Yoga techniques during this time, so that I was actually doing five hours of spiritual practice a day. One night, as I was falling asleep, I felt strange sensation in my chest that lasted for just one second. When I awoke the next morning I was in a state of enhanced visual acuity, and feeling a tremendous, even blissful, sense of well-being. It lasted for quite a long time. Over a year.

While all of this was happening, I was going through another process. When I was in college, I had studied the history and philosophy of science. I really like its overriding philosophical message, that every experience, or set of phenomena, could be seen in different ways. In ancient Greek, and a modern astronomer, looking at the sky viewed the same things, but saw something completely different. Each view is valid in its time and place. The process where one of view of the world is replaced by another followed certain rules. The truths of today are and the discarded myths of tomorrow. We hold these myths in respect, but we no longer use them in any practical way.

Before I ever learned any spiritual teachings, I knew that they were only one way of explaining to the phenomenon people call spirituality.

Seeing a glow around a person is an experience. Having an "open a third eye" is an interpretation of that experience. Having your body respond to your intentions fluidly is an experience. Saying that your Chi is 'centered' in your 'Tan Tie'n' is an interpretation. I'm not saying that is anything wrong with these interpretations. I'm only saying that they *are* interpretations.

And everything I knew about science told me that other interpretations were possible. You see, years earlier I had done studies that no other spiritual practitioner had done, at least that I was aware of. I studied the history and philospohy of science. I was taken by Thomas S. Kuhn's model of what truth is, and how science tries to get as close to it as it can. I also read Karl Popper, who made it clear that 'truths' are nothing more than what stands up to attempts at falsification. Against this background, I was now being offered spiritual truths. I knew they weren't too far from the truth, because they had helped me to do some real spiritual work on myself.

The spiritual teaching that I had the most trouble with was one that I really believed in. Reincarnation.

But when I wanted to know how it worked, I could only find silence or some very poor theories for an answer. I thought that the Buddhist answer was the most intelligent. The Buddha said that what happened after death could not be described in words. At the level of the most sophisticated Buddhist psychology, the answer was "don't ask".

Then one day, day, I found a question, and this question changed the way I thought about spirituality forever. Once I had the question, I knew that no spiritual teacher, sacred tradition, or religion would ever be able to answer my questions about spirituality.

The question was: if reincarnation is true, and Charles Darwin was right, then is reincarnation an evolutionary adaptation that contributed to the survival of our species at some point in our evolutionary history?

If I wanted to offer a new way of seeing reincarnation, then this would be the starting point. I tried to figure out how reincarnation might have appeared. And eventually I arrived at an answer.

I wrote up the answer, and was recommended for an audience with his holiness, Samdech Mahaghoshananda, the patriarch of Cambodia. He responded to the paper by saying that it had no conflicts or disagreements with the Buddhist teachings as he understood them. later, he sent an envoy to visit His Holiness, the Dalai Lama, with the sole mission of presenting this paper.

The Dalai Lama reviewed the paper, and was a very pleased with it. He did have one criticism, however, and this prevented him from putting his name on it or from writing a forward to the article. Eventually, after I studied Dr. Persinger's work, I worked on this paper again and the point that the Dalai Lama objected to evaporated in the process. Now, the paper is awaiting publications by the (peer-reviewed) Journal for near-death studies. It should appear next year under the title : " The Structure and Function of Near-Death Experiences: an Algorithmic Reincarnation Hypothesis".

When a theory is accepted for publication by a peer-reviewed scientific journal, it enters the domain of science. Although many scientists might disagree with that theory, once a group of peers has decided that it's a valid theory, its critics must offer their debate in the scientific journals. Their private opinions no longer matter. By this reckoning, reincarnation is now science.

Receiving the approval of the Dalai Lama was a great inspiration to me. But in order to follow-up on the idea I presented him, I had to learn everything I could about human death and dying, not as it's spoken of in spiritual traditions, but rather what the scientific and medical evidence had to say.

And so I started studying near-death experiences. Along the way, I encountered the work of Dr. Michael Persinger. I also read accounts of near-death experiences that

included many of the episodes that I experienced as a child, while having temporal lobe epileptic seizures.

I went to a local medical library, and began collecting Dr. Persinger's journal articles. After I had read several of them, I began to call Dr. Persinger. I wanted to make a point of talking to him, as much as I could, in the language of science. My earlier studies had prepared me, but for the first year, every phone conversation was like an oral examination for a Ph.D. candidate. Eventually, Dr. Persinger's vocabulary and theories became second nature to me. Without classroom responsibilities or formal examinations, these conversations were the only way I had to see how well I was learning neuroscience, and I wanted to do well.

Many of Dr. Persinger's articles related to phenomena called "the sensed presence". In this experience, a person feels that there's some or something behind them. Or, they might feel that they are "not alone" or that they're " being watched ". In my work, I learned that some people can experience it simply by imagining it. I also found that imagining the presence on the left is usually more pleasant than it is on the right. This is a reflection of the ways of the brain usually parcels out different emotions to different sides of the brain. And a couple of occasions, I have used "the sensed presence guided meditation" to uncover cases of emotional "left-handedness." This meditation may one day find use in clinical settings as an inexpensive replacement for dichotic listening tests.

After about two years of study, Dr. Persinger decided that I was competent to begin work with his equipment, and my studies in neuroscience began a new phase.

I began applying complex magnetic signals to my own brain, and later, those of others.

For the first year, the lab at Laurentian and I both had a problem. We were both using 386 computers, while the equipment had been designed for the 286 series of computers. This meant that we were running our waveforms too fast.

Nevertheless, we both had some interesting results. We both got vestibular effects, some quite intense visual effects (including a couple of brief visions of aliens on my part), and some valid 'psychic' experiences.

Later, after Stan Koren at Laurentian found the problem with our computers, and designed a software to fix things, I no longer got these same results. Now, the effects are much more consistent, but these early results are very intriguing. I experienced visual phenomena I haven't seen since (some brilliantly glowing lines, both in patterns, and individually stretched across my visual field, like some kind of ethereal, inner, equator. I'd like to duplicate these results with a proper research group (I only worked with five people using an uncalibrated 386). One day, with funding, I will.

While all this was going on, I managed to gather some very interesting quantitative data. I'm not much good at math, even though I'm able to work with some complicated logic at times. So, I haven't been able to publish many papers. Nevertheless, Dr Persinger has been over some of the data, and expects that the ideal student will eventually appear who will take things to the next stage.

I went to Bangkok and administered our standard questionnaires to a 1) group of university students, 2) a group of Buddhist lay people practicing 'Dharmakaya' meditation, which relies on visualization, 2) a group of student monks practicing Vipassana meditation, which relies on paying attention to perceptions in the present moment. and 4) a group of free-lance prostitutes operating out of a public coffeehouse. The questionnaire was adapted for the prostitutes by adding an item to discover how many of them had experienced abuse when they were growing up. I hope to find out if abuse in childhood has an impact on hypersexuality in adulthood. One day, with funding, I hope to apply the same questionnaires to similar groups of Western people.

Some months later, I moved to Southern Lake County, California. I accepted an invitation to go on sabbatical there because it had three things that interested me. One was a School of Shiatsu and massage, the second was a "new age" community, and the third was 5 earthquakes or tremors of 1.5 on the Richter scale or more per day.

The area I was living in lay on the southern edge of the Callayomi fault, one of the most active fault lines in the world. Lake County is also one of the poorest counties in California. I collected a number of interesting anecdotes, including tales of:

A place where 'everyone' (or so I was told) experienced deja vu.

A place where 'the whole street' was crazy, and where one resident claimed that her horse ranch was visited by evil 'gnomes' with 'spiky bodies' every night.

UFO sightings that 'clustered' around a strip of land that ran parallel to the fault line.

One theme I heard from a lot of people in the area was that they didn't want to participate in the research, with its long questionnaires, without being paid. So, my lack of funding once again got in the way, and one day, I hope to return there and gather more extensive data.

The most intriguing single observation was that I asked nearly everyone I met how often they experienced deja vu, jamais vu, sensed presence experiences, vestibular experiences, and parasthesias. Nearly everyone said they experienced them a lot; several times a week.

I wasn't able to get data regarding the incidence of epilepsy in Lake county, but I was able to gather some interesting statistics. It has the highest mortality rate from cancer and AIDS of any small county in the State. It has the highest incidence of meth amphetamine in the state, and it has one of the highest domestic violence rates in the state, too.

The Tectonic strain theory predicts that such an area will demonstrate a high incidence of Epilepsy, especially Temporal Lobe epilepsy. I wasn't able to get the data, but I intend to try again

All in all, its a very interesting place, and as a field worker, I found that it well justifies

the effort and money that will be needed for a complete look at it. It will require research groups, geological measuring devices, a lab equipped with complex magnetic signal technology, and money for advertising and with which to compensate volunteers.

I didn't get very far looking at the epidemology of temporal lobe experiences, but I didn't originally go there to study it. I was just taking advantage of an opportunity that presented itself. It was a good experience, and both Dr. Persinger and I got a lot of useful information, even though nothing worthy of publication has come out of it yet.

I suggested to Dr. Persinger that when the right student appears, he could suggest a statistical analysis, based on examination of public records, as a project. No doubt, with time, someone will appear who wants to study temporal lobe phenomena from an epidemiological standpoint, and I hope to cooperate with them in producing a picture of this geologically active area that will be of help in other such places, globally. The growing fascination with aliens and related themes, together with the possibility that such areas may contribute to the mortality rates in some diseases, makes the effort well worth continuing.

Another possibility that emerges is that this area could be used to test the validity of the Chinese "Feng Shui" tradition, where mountains on one side of a dwelling are said to aid the well-being of the people who live there. The weight of mountains might possibly affect the distribution of tectonic strain, creating a characteristic set of TL signs and experiences in the people who live there. The Callayomi fault lies on one side of the Sonoma Mountains, and Its possible, that living on one side of these mountains might be more pleasant, in several ways, including physical well-being, than the other. Together with some data relating to Seasonal Affective Disorder (SAD), large portions of the Feng Shui tradition might actually be validated. Other portions might emerge as specific to the geological regions where Feng Shui originated. With over a billion people in the world believing in Feng Shui, it should be examined in terms of the Tectonic strain theory. Southern Lake County may well provide a natural laboratory for doing this.

It was the massage school in this area that provided me with the chance to really develop as a researcher at this time.

They accepted a proposal I wrote to look at the types of altered-state experiences that occur with massage and other types of bodywork.

To gather the data, I interviewed about 30 massage school students about their lifetime histories of altered-state experiences, spiritual episodes and spiritual beliefs. They also received our standard questionnaires, and did the 'sensed presence guided meditation.'

A few subjects showed really exceptional responses to the meditation, and had some very engaging stories to tell, but in spite of this, all of them seemed to show the patterns that Dr. Persinger's work (and of course, that of his students) would predict.

Those who has a lot of stories to tell showed the highest scores on our questionnaires, and also showed the most phenomenal responses to the guided meditation.

The purpose of the study is to find out if bodyworkers had any specific pattern of temporal lobe sings, and their results showed a preponderance of somatic TL signs (vestibular and parasthetic) and 'sensed presence' experiences.

I also started looking at "Watsu", a modern type of bodywork that's done in in water. People who've received Watsu have reported visionary experiences, changes in their sense of 'self', and remissions in terminal illness. The school of Shiatsu and Massage at Harbin Hot Springs is the leader in Watsu training at present, and still has Harold Dull, and Elaine Marie, the developers of Watsu, on their staff. The study is suspended at present because The present Watsu facilities have no office where I can work, and the school is currently building a campus, solely devoted to Watsu, where there will be a proper workspace for me. The school's willingness to do this study is a real example of 'vocation' in a new-age group. Vocation includes practice, teaching, and research, and very few alternative institutes embrace all three. I have no doubt that their school will develop into one of the more responsible and productive alternative healing institutes in existence.

Harbin Hot Springs, a spiritual community in the area, also provided me with a place where I could meet people privately, and invite them to experience the DAC technology. A number of them did, and their experiences, together with my own, are what made me really see just what this technology could do.

First of all, let me say that I will try things on myself that I would never try on a subject.

I've used untried waveforms on myself, placed them over parts of my head that Dr. Persinger's group haven't used yet, and combined DAC sessions with meditations and activities that nobody in neuroscience seems to know anything about. Some of these worked out, and some of them didn't.

DAC technology has a built-in safety valve, so I don't worry about it too much. If I don't repeat a given procedure, its-after effects taper off. It takes 6 weekly applications of a given DAC session to have permanent after-effects. If A session design doesn't work for a person, we just stop it, wait a bit, and then proceed with a new one.

One might wonder if people are willing to put up with this. The answer is yes. Each person who experienced a negative after-effect was glad to have done so. Without exception, they all found that they understood themselves more clearly, and gained valuable personal insights through the process. We should remember that this was a spiritual community, and that all of them had, at one time or other, placed the exploration of their consciousness at the center of their spirituality. They all held in common that spiritual learning was more important than having pleasant experiences.

But before I go into what my subjects/clients experienced, I should say something about my own experiences. You see, most of my session designs were based on my own experiences, and then modified at Dr. Persinger's suggestion.

When Stan Koren found that faster computers were distorting the waveforms, he quickly authored a calibration program, and I was provided with a copy. He walked me through

the setup and calibration process, and soon, I finally had a real DAC, just like the one I had seen on TV so long ago.

The Epiphany

There was a set of equations that said that I should be able to handle an hour's exposure, every other day.

I set out to try all the waveforms and presentations (Presentation refers to the specific placement of the solenoids) with the calibrated COMPLEX (the name of the software that generates the waveforms) that I had tried with the uncalibrated one.

I had wanted to see what would happen if I 'went for broke', but I knew I would be taking a chance, and I had held back. Up to then, I had been either living with housemates or a family. At that time, I was living alone, and I was not so afraid of the consequences.

I decided to exceed the limits. I did 40 minutes of exposure per day for 8 days. What happened for me next was to turn limbic architecture from a textbook illustration into a road map for high-speed driving through my own consciousness. In very bad weather.

I worked with two waveforms. One was designed to match burst-firing from the amygdala, an emotional control area, and the other integrated typical neural firing patterns.

The waveform derived from the hippocampus didn't exist yet, and that meant that the primary after-effects I experienced were emotional. VERY emotional.

The sessions themselves were a little unpleasant. I had a brief vision of a horror-movie style dragon, rushing in to swallow me, and evaporating at the last second (whew!). I was using the solenoids over my temporal lobes, so I didn't get too many visual effects. Mostly, I experienced bursts of emotion. Joy, elation, anxiety, stark fear, love, and moments of poignant compassion that weren't directed anywhere or towards anyone in particular. I had some very intense experiences while falling asleep, too.

Right at the end of these sessions, I experienced a romantic disappointment. I loved her, but she didn't love me. So sad.

I spoke to her on the phone at this time, and she told me that she had a new boyfriend. I was crushed. I suddenly entered a depression; the worst one I had ever experienced. It was much stronger than its cause could account for. While falling asleep, I hallucinated her face against the ceiling, and, in despair, watched it disappear, leaving

for a moment, only her smile, Cheshire Cat-like, floating above me.

It was because of the sessions, not the woman. It lasted for about 10 days. I thought of killing myself. I could only imagine failure as a scientist, and I found that if I didn't stay focused on doing something, I was pulled back into it. I also experienced incredible bursts of anxiety.

And it didn't get better, either. On the tenth day, I pulled myself together enough to realize that my childhood seizures, having been terrifying experiences, had probably given my right amygdala low thresholds, and that my own epileptic locus (the place where my seizures started) was probably being hit the hardest. I knew, because the right amygdala is involved in both anxiety and depression, that my locus was on the right.

I turned on the DAC, plugged in the solenoids, verified my signal, and put them on, both of them, over my left ear.

What happened next was to change my life, change me, and help me re-affirm my commitment to understand human consciousness. I literally became a new person in a matter of three minutes.

Within seconds, I was filled with an amazing joy, bliss, even ecstasy. There was nothing manic about it, though. I've had moments of mania in my life, and they always had a sense of being a burden, as though I were so elated that nothing I could do could express it.

In this experience, I felt that there was no need to do anything to act it out. It was smooth where mania was rough. It was fluid where mania was cumbersome.

I was HUNGRY, too. I went to the grocery store, where I met a friend and her kids on her way out. I was filled with a cheery sort of hail-fellow-well met feeling. The kind you see on Christmas cards portraying winter in Victorian England, where jolly rosy-cheeked gentlemen wish each other well. "....let nothing you dismay".

Everything seemed wonderful. The woman could be let go of, though I never felt really good around her again. The depression lifted, but I still had episodes of anxiety. These, too, had changed. The day before, I was anxious. that day, anxiety was happening to me. I wasn't as involved. I saw, in an immediate insight, how thoughts and emotions interacted with one another. I saw how emotions began with a trigger, which brought the body into it in a flash. I could observe, directly how emotions were actually parasthesias that invited certain kinds of thoughts to appear, and that allowing the thoughts created a cycle in which thoughts and emotions fed on each other.

The Buddha was right. Being aware of these processes can stop them cold. And in that moment, one can choose to feel good. Compassion is as available as anger when someone does something nasty. Just disconnect from the thoughts, and be aware.

I had been doing insight meditation (Also called Vipassana, Ch'an or Zen) for 14 years at

that point, though not with real diligence. All of a sudden, I had the powers of insight and introspection that I thought might be there at the end of my life. There it was, fully-formed.

That's not all I had. I noticed that my hands were tingling a lot, and I had heard that these sensations were used in spiritual healing. Years earlier I had lived with a healer, called Karmu in Cambridge, Massachusetts. He had told me how to use these sensations as a part of his healing work. I mentioned it to a friend, who had a muscle cramp in one leg that had been bothering him for several months. I put my hands on his leg, and imagined that there were holes in the palms of my hands, and that I was breathing through these holes. In no time, I was overcome with a wave of emotion, and my hands began to tingle more intensely than they had before. I also felt heat coming out of my hands. Soon, I felt that I had done 'it', whatever 'it' was. My friend stood up to announce that the cramp was gone. It never came back, either. I have continued to use this skill once in a while, but I don't think that being a healer is my true calling in life. I am what I want to be: a brain scientist exploring consciousness, and healing is only one of the things my consciousness is capable of learning.

I went on using this session, with both solenoids over the left ears, for some time. Eventually, I abandoned it. It created too many anxiety attacks. Just to show the power of an interhemispheric intrusion, I'll tell you a story. One day, I was in the middle of an anxiety attack, trying to stay focused on the sensation of anxiety, instead of going into fearful thoughts, I decided, consciously, to simply relax. At the time, I was looking at a television program where a pretty overweight woman was talking about something. As I relaxed, the sensations became more intense for a moment, and then sort of 'cracked'. All of a sudden I was looking at this woman and thinking "how gorgeous!". This woman, who I never would have looked at before this way, was SEXY!!!! The fear was completely gone, and replaced with .....well, you know.

To this day, I can admire and be attracted to many more 'types' of women than before. It seems to permanent. The point is that an episode of fear can induce its opposite In this case, pleasant desire. It can happen when an emotion is denied the usual cognitive outlets, so that the only place for it to go is into the same structure on the other side of the brain. The amygdala is associated with both recognition, and sexuality. I had simply experienced a lowering of the thresholds associated with recognizing potential sexual partners, so that now, I have broader tastes. I had put a strain on my amygdala, and it was released in an instant. A bit like an earthquake, leaving the landscape premanently changed..

I had told some people about this experience, and they wanted to try it. I didn't have the heart to take them through the preceding phase where their right side was given more stimulation than the left.

Without going into it in detail, I found 5 people who were willing to receive 6 sessions of 20 minute stimulations with both solenoids over their left ears. All of them felt that they had been a bit depressed and that their self-esteem was on the low side.

Their responses were very different from mine, and I attribute it to the sessions I had

had before. I had had a sudden recruitment of my left amygdala, we were attempting to gradually kindle these same structures.

Their responses showed an improvement in their moods for the first week. One of them talked about feeling 'lighter'. The second week was very different. All of them without exception reported extreme irritability. One of them actually had to lock himself into his room for a couple of days until he calmed down.

Another nearly lost her job by yelling at a co-worker. A third was "just plain cranky" as he put it. Another finally called the police on her ex-husband, who had been having temper tantrums while visiting his kids. She wondered aloud "Why didn't I do that a long time ago?", thinking about how she no longer had to worry about her ex-husband.

As the sessions proceeded, this tapered off. By the time the fifth week came, all of them were much more relaxed. I thought the sessions would help these people to achieve a more relaxed state. It did, but only after each one got angry at something. Two of them, a couple with HIV, decided they were worth more than the small cabin, threw out their friends who used their home as a place to gather and get drunk while watching martial arts movies. One night, in the second week of his sessions, he turned off the television, turned to his friends and said (as his girlfriend put it): "In case ya'll forgot, me 'n my girlfriend might 'jes be dying from AIDS, you assholes. When the fuck are you going to find another place to party?"

He said that he picked up a stick and he was ready to use it on them right then if they didn't get out that instant. His girlfriend restrained him, so he didn't get any farther than words. His friends stopped coming around to party, and soon they moved to another house. One that was twice as big for about the same rent. They were a bit surprised at themselves. They had been living like that for a long time. The man said that he didn't feel that his desire to live in peace and quiet was something new. Rather, he felt that he had always had it, and now he could feel it more clearly, and he had the motivation to do something about it.

He actually thanked me for "using that thing to get me so pissed off. I shoulda' done all that years ago. Them people were bringing me down."

The woman who exploded at her job, an experienced meditator, was a bit more articulate. What she said was the her self-esteem had gone up, and her patience for situations that put her down, like being asked for favors all the time, a situation she felt she had been encouraging by being too 'nice'. Abruptly, she stopped, and lashed out at those who had been taking advantage of her. Principally, her boss. She found that people started showing her more respect than before, and that not unexpectedly, she had to let go of some of her friendships.

I was a bit perplexed by these results. These people were thanking me for doing something I felt bad about: leading them into anger.

I took out my collection of abstracts of studies related to the amygdala, and looked at them again. This time, something stood out that hadn't before. The amygdala mediates

the recognition of facial expressions, including those of anger. These few subjects, each in their own way, had said that they felt that the sessions had let them see and respond to things that they had already been feeling, but were unable to act out.

One of the most obvious things about anger is that the boss can show it with fewer social consequences than can the employee. The master can show all they want. The slave can't show it at all.

I realized that the two amygdala were specialized for different types of emotion. I knew that relating to social inferiors is less stressful than relating to social superiors. So, I decided that the simplest way to explain these results was to suppose that the left amygdala is more likely to dominate during interactions with social inferiors, and the right with social superiors. The slave is supposed to be afraid of the master. Then there's the result, obtained by Dr. Persinger, that right hemisphericity correlates with low self-esteem.

By enhancing the activity of their left amygdala, I had raised their perception of their own social rank, and their self-esteem. I'm beginning to suspect that 'self-esteem', might be nothing more than what we think others think of us.

Some Client Histories.

Most of my clients were residents of Harbin Hot Springs, a spiritual retreat center and community. I either invited them, or they heard about what I was doing, and asked to experience the sessions.

T.P.

T. was a 73 year old man with a lifetime history of depression. He was one of the people who had received a series of sessions with both solenoids over the left ear. When he was an adolescent, he had had some visions of God, and he wanted me to help him to re-capture the experience. Dr. Persinger has a theory about how the brain participates in these experiences, and I thought this might be a good chance to test it. He made it clear, over many conversations, that he was willing to do whatever it took to attain it. After his third session, I asked him to do the 'sensed presence guided meditation' for the second time. (The first was before his first session, to establish that his amygdalae showed the normal specializations).

Within a minute, he had tears rolling down his cheeks. Although I hated to do it, I called him back within the usual time (3 minutes), and he said that he had felt God's presence just as he had when he was 14 years old.

I suggested he take on the 'sensed presence guided meditation as a part of his regular spiritual practice. He did, but to both of our disappointments, he did not experience God's presence again so directly. He had an intense episode of depression in this period,

and decided to go check into a hospital. He was put on Paxil, and went home. Feeling nervous, I went to visit him, and found that he wanted to go on with his sessions. I asked him to wait three weeks, to allow temporary effects to taper off, (and to give me time to design a session for him). I didn't want to refuse out of concern for him, because he was very highly motivated to explore his consciousness. He also told me how his latest depression had given him new insights about himself, and that somehow, he would've missed out on them if it weren't for his sessions with me. I knew that if his hippocampus had become entrained with his amygdala during his sessions, he would experience an enhancement in his ability to introspect; to look within. Because the amygdala is important in the sense of meaningfulness, I knew that he would find almost anything he realized while in the hospital would mean a lot to him. While I was still looking at this, Dr. Persinger provided me with the hippocampal waveform. I offered it to him, after telling him that it was quite new and more experimental than his previous sessions. We talked about the hippocampus and its functions, and he became more interested. So, we left his amygdala alone.

We started doing hippocampal sessions. He enjoyed them immensely, right from the start. After his third session, I asked him to try the sensed presence meditation again. This time, things were different. He found himself looking at a diamond in his mind's eye. It was, he said, brilliant, and fiery. It could make light in any color he thought of, and he could imagine it pointing in any direction he liked.

We even tried a little experiment. I lay down on his sofa, and went into meditation. He imagined his inner diamond pointing different colored lights at me, and then I told him which colors,he had used, and in what order.

We made about 6 trials like this, using up to 4 colors. I got them right every time.

T.'s 'diamond remained with him, even though his goal, that of meeting God face-to-face, still eluded us. In the end, we never got it. When it came time for me to leave the area, I asked him how he felt about his sessions overall. He said that the diamond was the greatest inward blessing he'd ever received. He played with it constantly. I haven't kept up on him, but I did ask him about it some months later. He said it was still there, and still a source of bliss.

B.B.

B. was actually referred to me by T. She came to me saying that T. told her I could do things with the brain that nobody else could. While that wasn't entirely true, I am able to find new things on my own from time to time. She told me that her problem was that she had been in an accident and sustained one of those injuries where a person's head is suddenly twisted to one side, and the brain is violently rotated. Afterwards, she had both short-term and long-term memory deficits. She also said that she had a lifetime history of depression.

After going through the usual speeches; that all of this is experimental, and that I had more experience with spiritual work than traumatic brain injuries, and that above all, I

am a researcher, and not a clinician.

She said, in her smooth Texas drawl, "I come from a long line of psychics, and I'm just as interested in my spirituality as I am in my memory". After what T. had told her, she wasn't going to let me talk her out of it. And besides, I didn't want to.

I designed a session for her that combined a design by Dr. Persinger with the hippocampal waveform. And she responded to it. She felt that her recall was improved.

One of the reasons I consider this to be an important case is that she responded to the sensed presence guided meditation oppositely to most people. She felt the presence on the left to be unpleasant, and the one on the right to be protective. I used the opposite presentation for the amygdaloid portion of the session, and that worked out fine.

I had successfully used the sensed presence meditation to establish a non-typical amygdaloid specialization, and confirmed it using the DAC.

I had also found that hippocampal stimulation may be of real use for people who have sustained traumatic head injuries. The hippocampus is an elongated structure, running more or less front to back. Its more likely to move and sustain damage, than other, more compact, structures. Increasing its activity might speed the process of recovery, or create the possibility in cases that don't respond to more conventional therapies.

Investigating new treatments for these injuries needs to be done in a proper clinical environment, and although the theory is sound, and I do have a valid case history, funding for such a study is absent at present. When opportunity presents itself, I'll follow up on this. Or perhaps, as always, the right student might appear.

Paul Lowe

Paul Lowe never actually participated in my work directly. He is a group leader, who had regular events, called gatherings, at Harbin Hot Springs. Paul taught 'being in the present moment' as the main theme in his work. He used a number of approaches to bring his message across, including, he said, working "on a level that very , very few people could understand." This level, whatever it was, had something to do with what he called "The source." He said he was able to evoke the experience at will. In it, he said, he experienced a vibrant, almost shimmering infinite blackness. When he was in this state, he would see images, and over the years, he had learned that these images were meaningful for the person he was talking to just before he entered 'the source'.

I knew that inner imagery and the experience of inner space were both derived from the right hippocampus. He also claimed that what he said to people was less important than the 'energy' he was 'making available' to the people who attended his groups.

I reasoned that this 'energy' was, in fact, a state of consciousness, and that its availability referred to the possibility of other people's states of consciousness entraining onto his.

Paul claimed to be so in the present that his past no longer had anything to do with the present for him. Hmmmm, I thought. He also told of his childhood, and how he had spent years feeling that everything was 'just strange'.

Together, these two statements suggested to me that he was living in a kind of ongoing Jamais Vu. Jamais vu is something like the opposite of deja vu. While its happening, the present is utterly disconnected from the past. What's happening now isn't referred to, or compared with, the past. The places in the brain that render long-term memories are temporarily cut off from the places that maintain our experiences in the present.

He also talked about how music and singing had been an absolutely enthralling experience at times for him as a child. He loved being in his church's choir, where he was the voice the other singers were told to follow. He said that while he was singing at times, 'everything just turned into light.' If you know the limbic sytem, you know that processing music involoves the right hippocampus and that "The light" is most likely to appear in association with activity in the amygdala, the structure next to the hippocampus.

I asked Paul if he would allow me to distribute our questionnaires in his group, and he agreed. The forms were passed out before the group began, and collected the first day.

Eventually, I looked at the data, and I was a bit stunned at what I found. When I compared how often Deja vu and Jamais Vu happen to the people who do Paul's groups with how often they happen to two groups of temporal lobe epileptics (for whom these two experiences are diagnostic signs), I found that Paul's group experienced jamais vu six time more often than the TL epileptics, compared to how often they had deja vu. Some of the people who did the questionnaires in Paul's group were attending their first such group. and when I looked at their numbers, I found that their 'relative incidence' was much closer to normal.

So how to explain this? I looked at the possibility that the practice of remembering to be in the present (one way of putting paul's main message into words) could create such a neural profile, but the extremely slow rates at which these things are 'kindled', cognitively seems to rule this out.

Although its implications may be hard to accept, I found that the simplest explanation was that Paul was doing exactly what he said, except that in neural language, it comes out like this: His frequent entry into 'the source' during his work creates a non-random, recurring set of magnetic signals around him, and that these signals entrain the electrical and magnetic activity in the brains of those around him, bringing them closer and closer, over time, to the state of consciousness which Paul spends most of his time. At least, if he's telling the truth about it.

Paul's subjective state seems to be dominated by his right hippocampus, and the data from his group suggests that they make real progress in moving closer to his state, over time. Some incidents that have occurred during his groups seems to bear this out, and seem to rule out previous histories of jamais vu as the explanation. It could be that these people were predisposed to accept a spiritual message that said "Be Present", but

the case of L.H. seems to rule this out. He had a lasting change in his right hippocampal functioning in just 5 days, and neither the mental exercise of being in the gathering nor a 'predisposition' to jamais vu will explain it.

L.H.

L's own story of his history of altered-state experiences starts in his teen-aged years when he used to listen to rock 'n roll music, and find himself having visions. He also used to have strong visual experiences while falling asleep. He said he used to try to keep himself in the twilight state to prolong these visions, and felt they were the high point in his life in many ways.
While he was living and working At Harbin Hot Springs, he attended one of Paul's gatherings, and although he found them to be a bit insipid ('all these people sitting around and talking about their childhood 'stuff'), he stayed in the group, partly because he had a series of intense dreams while it was going on. He had an intuition that his dreams had something to do with his participation in the gathering. One of his dreams included seeing Paul and his partner placed on an arm of a spiral galaxy, floating in space (note that spatial perception is a right hippocampal function). He felt that this was the most important dream he'd had at the time.

Towards the end of the group, he began to feel unwell, and it got steadily worse. He felt lethargic and uncomfortable in his body. It reached the point where he barely had the energy to get up and go to the group. He managed all the same. He arrived in the group room, and immediately lay down. He sank deeper into his lethargy until something happened. He had the shortest out-of-body experience I've ever heard of. He was sure it couldn't have lasted more than a second or two.

When it was over, he found that his low-energy state had lifted. He felt wonderful. As he tells the story, Paul looked him and said; "Sometimes everything can change. All at once."

He found that everything looked beautiful to him after that. His eyes took in the world with incredible, sharp, detail. He also found that his visual field was covered with little dots. Everywhere. All the time.

He said he felt good all the time, but he said he was depressed, too. He couldn't really explain just what he meant by this, but he was sure it was so. He felt happy and depressed at the same time.

He was interested in the sessions, like most of my subjects/clients, as a means to consciousness exploration. Besides, he said, the dots were beginning to get boring.

After so many altered-state experiences, I suspected that his depression might be a variant of the low self esteem that comes up for 'right hemispheric' people.

I gave him a series of sessionsusing the amygdaloid waveform, combined with the hippocampal waveform. The amygdaloid waveform alone didn't change the dots, but after a couple of sessions with the hippocampal waveform, he began to have moments

when the dots seemed to become fainter, and a week after that, he had moments when they stopped altogether. He also told me that he was having visual experiences while falling asleep once again, too.

We stopped the sessions when I moved from Lake county. We had changed the 'dots' a bit, but we hadn't stopped them. L. enjoyed the sessions, but he wasn't too bothered when it was time to stop. You see, he felt good all the time, so not too much bothered him.

The story didn't stop there. Some time later, I needed to test a new generation of the technology we use to create the waveforms. This time they were run off of a computer soundcard, instead of the DAC built by Stan Koren. I didn't want to give my amygdala any stimulation, so I selected a series of six hippocampal sessions, applied over the right side.

During the third week, I began to see dots everywhere. These continued until I took the soundcard-based signal generator to the next step, and utilized the soundcard's stereo capability to generate two signals simultaneously, one for the left side of the brain, and one for the right.

Of course, I used the amygdaloid waveform over the left, and the hippocampal waveform over the right.

The dots stopped.

The 'dots' are a rare phenomena. Dr. Persinger had never heard of them, and neither had I. Probably they relate to Enhanced Visual Acuity, which appeared for him at the same time. That implicates the right hippocampus.

That's not enough, by itself, to point to the right hippocampus, but one other detail seems to make it seem much more certain. When L.'s 'dots' started, his twilight state experiences stopped. And his visions while listening to music did, too.

And that means the right hippocampus was involved; no question about it. The explanation could be that entrainment between the magnetic signals from the group leader and L. during Paul's gathering had its rare and unusual effect because L. already had portions of the pathways involved primed for the experience.

I spoke with L. recently, and he said that he was taking a course in psychic development, and doing very poorly. He was supposed to learn some visualization exercises, and found that he couldn't visualize anything.

He also mentioned that the 'dots' were fading a bit, and that he was becoming more depressed again. Whatever is behind the dots may have something to do with the subtler aspects of depression, and that, together with the rarity of the phenomena, makes this a special case. And of course, L. enjoys the neurological approach to his spiritual process, so I hope to continue working with him. Subjects like L. are every researcher's dream. To him, being a subject is fun.

Bhagwan Das

When I told Bhagwan Das that I'd keep his identity secret, he just laughed at me. He said "But I want to be famous! Use my name wherever you want. In fact, use it all you can."

Nobody I know looks quite like Bhagwan Das. He's over six feet tall, heavily built and he has a booming voice. He has the matted locks of a Hindu Sadhu, and keeps any number of images of hindu deities in his hair, which he wears piled on his head in a tall topknot.. I had talked to him about his spiritual experiences earlier, and he had told me that he entered the state that I called The Void, and that Paul called The source, whenever he was in prayer. He called it "The Womb of Kali."

Bhagwan Das has published his spiritual autobiography under the title : "Its here now. Are you?" He had been a disciple of Neem Karoli Baba, an Indian saint credited with the power to do miracles. Ram Das's book, "Miracle of love" is devoted to stories about him.

For once in my laboratory experience, I had a chance to apply evidence drawn from a scripture right into a session design. The scripture was "The Vissudhimagga, or the path of purification." Its the Buddhist text that describes how to do miracles. Like the Western traditions on the same subject, it says that a person's visualization skills must be developed to a very high level.

But unlike other texts on the subject, the Vissudhimagga gave very precise instructions about how to do it. It said that there was a state of consciousness one had to attain first, called 'the realm of infinite space'. It also said that the space was a dark one. Of course, I recognized this description. It might well refer to the Void, or The Source.

Bhagwan Das knew the Vissudhimagga: he had studied it during his stay in India. When I read the parts that discussed this to him, he was very interested. If his Guru really had done miracles, then Bhagwan Das had been exposed, just like the people who attended Paul's groups, to a non-random signal created by a mind with an exceptional neurological profile, while in an unusual state of consciousness. If miracles, or even just believing that they have occurred, is a matter of visualization, then it falls within the sphere of the right hippocampus.

Bhagwan Das received three hippocampal sessions, and during his series, he lead several Hindu events called 'satsangs'. He had been working with a visualization exercises where he would imagine his Guru touching people, giving them blessings.

After his second session, Bhagwan Das told me that when he was singing devotional songs during the satsangs, (when he would usually enter the void state), he imagined his guru, using the sensed presence guided meditation, and imagined him moving around the room, touching people. When Bhagwan Das' imagined guru touched people, he told me later, they began having 'kriyias': dramatic, powerful 'peak' experiences. These, he told me, included visions, bliss attacks, and spontaneous body postures, like

those taught in Yoga.

In Hindu vocabulary, Bhagwan acquired the ability to give "shaktipat": the direct transmission of 'shakti' from Guru to disciple. By the traditional rules of disciplic succession, Bhagwan Das had become a "Satguru" in his own right. He did not need to use words any longer to do his spiritual work with others.

He even claimed that he manifested a flower out of thin air, after his third session, just like another famous Indian Saint, Satya Sai Baba. But whereas the people who went t o his Satsang could go up to him afterward, and tell him what they experienced, the flower could not.

I wish I could believe, as a scientist, in that flower. If it really happened, I may have stumbled onto the neurological basis of miracles. Water into Wine. Feeding the multitudes from a small basket.

For now, the most I can say is that right Hippocampal activity plays an important role in the production of reports of miracles. And that's a start.

Myself, Again.

I need to go back in time a bit here, to the point when I first started doing hippocampal sessions on myself.

At first, I wanted to be cautious. My previous experience with the amygdaloid waveform made me cautious about applying any waveform over both sides of my head. I was afraid I'd activate my 'locus', and that was fairly sure to be unpleasant. So, I put both solenoids over my left ear, and ran the waveform.

I found that I began to have visions almost immediately. They were relays of scenes I had either seen in movies, or that my imagination had created while reading books.

Unfortunately for those moments, the visions were horrific. Samurai were cutting their stomachs open. Aztecs were waiting in line to have their hearts cut out. Jews were walking calmly into gas chambers. Hindu widows were climbing on their husband's funeral pyres. These were all images of suicide either by necessity or by proxy. Something like suicidal ideation, but not quite.

I did this twice, with the same effect. each session lasted about an hour, with the images beginning about halfway through.

The next day, I reviewed my abstracts about the hippocampus, and found one by Dr. Persinger that I hadn't noticed before that said that this waveform was more pleasant when applied over the right. I had gotten it from a different database that most of his

others, and hadn't filed it properly.

I learned a valuable lesson, then. When dealing with neuromagnetic waveforms, always read the label.

The next night, I put both solenoids over the right and ran the hippocampal waveform. I was concerned that I was approaching the threshold where I would wake up my locus, so I figured I wouldn't let it go on if I didn't feel anything, or if I felt anything unpleasant. But I needn't have been concerned.

I found I was suddenly energized. For the next several nights, I was up until 4:00 am, aggressively learning everything I could about my new computer (running Windows95). I will tell my computer story later on, but I simply couldn't sit still right then. I needed something to occupy my suddenly energized and dynamic mind. I was in a very good mood, too. I found I had a lot to say to anyone I met, and I felt compelled to exercise. Several times per day.

I repeated the session over the next few weeks, trying to hold on to that state (it was a lot of fun.) Soon, however, my locus was activated, and I began to experience anxiety attacks, so I stopped.

I waited three weeks, and tried it again, this time using the amygdaloid waveform over the left, and the hippocampal waveform over the right. Like before, I had some sessions followed by pleasant weeks, and then I began to get more and more anxious moments until I decided to stop.

I have a miniature neural highway connecting my right hippocampus with my right amygdala, burned into the limbic landscape by childhood seizures. And when it got a lot of traffic, I feel anxious.

If I stimulated my left amygdala, it spilled over into my right amygdala because it was kindled during my seizures, leaving me with lower-than-normal thresholds there. If I stimulated my right hippocampus, the locus itself would bleed the activity into my amygdala on the right.

So, I asked myself, how could I keep the right amygdala out of the picture?

The answer came back: entrainment. If I could find a way to get the left amygdala and the right hippocampus to work together, I might be able to avoid bringing up fear and irritability, These, I knew were unique to me and other TL epilepsy patients. But finding a way around them would increase the safety and pleasantness for everyone who received them.

Shakti

In order to maximize the chances for real entrainment to happen, I knew I'd have to abandon using two waveforms, one after the other. I'd have to apply both at once.

The DAC built by Stan Koren could only put out one signal at a time, and I wanted two. Dr. Persinger had told me about an unsuccessful attempt to get the DAC output to run from a cassette tape, and another using Mp3 format.

Mp3 was developed for it compression capabilities. Long songs could fit in small computer files. If that one failed, the solution might lie in the more massive formats, the ones that were developed before the music industry became interested in computer-based players.

I ended up working with personal computer media wave files, the standard Windows format. They had all the technical parameters, and most soundcards were up to the intensity of the signal. The only question was how to get the file player on the soundcard to match the output from the DAC.

I was to go through 6 drafts of these files before I had one that had the same effects on me, subjectively. I had to learn about the hardware limitations of commercial soundcards, and explore strategies for overcoming them, and the effort paid off. I did 6 sessions, once per week, using the hippocampal waveform. I wrote about this series earlier in this article. This is when I saw client L.'s 'dots', among other things.

When I was satisfied that I had it, I developed an HTML software called "Shakti". It included three files, a player, and some sound utilities. I sent it in to the lab, and it seems to be passing the tests.

One interesting by-product of this effort is that, although the files have the same effects, so far, the outputs don't match exactly. To account for this we are looking at the possibility that it may not be the electrical impulses that drive the brain on a microstructural level. It might be the intervals between them. Stan Koren's DAC, together with Shakti, might provide just the right tools to test this hypothesis. If its valid, Shakti's development will have added to our understanding of brain function at the finest level.

But more to the point: as complex magnetic signals are explored more we should reasonably expect to find more and more clinical applications for them. Shakti generates these waveforms from a soundcard, and there are literally millions of them already in use in hospitals and clinics around the world. In many cases, they were provided with pre-assembled computers. In cases where there are no sound cards, new ones can be installed very inexpensively. In developing countries, second hand soundcards can be purchased very cheaply, and Sound Blaster sound cards can still be purchased, wholesale for just a few dollars each. While the 16-bit card needs adjustment to get proper response in the low-frequency range, and some just won't perform below 30hz at all, most soundcards will be able to make waveforms that create the effects we're looking for. Some tests with really bad hardware are in order, to see how far we can push them, but for the most part, its a success.

Dr Persinger continues to do experimental trails with affective disorders, and his discoveries can be applied in countries where other approaches are too expensive.

If that's not global medicine, I don't know what is.

Theories:

The 'sensed presence' and the ego-alien 'other'.

One of the ideas I want to develop is that the sensed presence is only one example of a much larger group of phenomena in which we project our non-verbal self. I think children do it when they pretend their toys are alive.

Perhaps lovers do it when they idealize their beloveds, making them into more than they really are. Devotees do it with God, and disciples to it with their masters. I am beginning to wonder if we ever really see other people. Perhaps, instead, we usually see ourselves as we are when we are with them, and project that onto them.

To look more deeply into this, I'd like to investigate the phenomena where children project presences onto their toys, so that a crayon becomes "Mr. Crayon." Adults who work with small children and are able to enter this state should experience the 'sensed Presence' more often than other adults. Also, adults who are prone to romanticism and/or 'love at first sight' should also feel the 'sensed presence' more often than others.

We shall see. I believe that romanticism and devotional spirituality are made of the same 'stuff', and this line of inquiry might lead to their integration, at least, in the eyes of neuroscience.

Intralimbic intrusions.

Dr. Persinger developed the concept of interhemispheric intrusions to explain how some kinds of mystical experiences occur. These happen when activity in the right limbic system, primarily the amygdala, crosses a certain, crucial, threshold. When this happens, the activity spills over into the left amygdala, initiating a very emotionally charged positive experience.

I could see that the left side of the limbic system was positive where the amygdala was concerned, but for as the hippocampus, it was the opposite.

I'd like to see how many aspects of limbic function can be explained by the notion that the amygdala and hippocampus on each side of the brain serve to attenuate one another. When a given positive emotion becomes too intense, it will initiate negative, especially anxious ideation. Such limbic architecture would, when functioning properly, reduce the chances of mania. negative emotions could be similarly reduced in normal life as the right hippocampus responds to elevated right amygdaloid activity.

Language.

I'd like to do some more studies in the neurology of language. Even though its one of the best-understood functions in the brain, the exact mechanism whereby the brain presents words to consciousness is still unknown. I'd like to look into the possibility that language is an hallucinatory and synesthetic phenomena. Words might be auditory hallucinations which are synesthetically matched to different perceptions from various sensory and cognitive modalities. The important language centers include many structures in the temporal lobes, areas that are known to support hallucinatory phenomena.

This idea is really engaging to me because if it works out, it will point to the existence of an almost invisible level of limbic function. One where the structure of grammar and syntax are created. These never appear except to express vocabulary. If all the various phenomena based in the limbic system were also subject to such subtle structuring, we would find ourselves looking at an almost figmentary level of brain functioning. One where the phenomena seen in temporal lobe experiences is only the outward face of an inner, still unseen structure. The limbic contribution to grammar and syntax might also lend order to many other temporal lobe phenomenologies.

This looks like a big project to me. In doing it, I might enter a library and never come out again. So, for now, I'm just letting it simmer

Consciousness.

I have a thought, which I've started to develop, that consciousness functions to mediate states of consciousness, and that states of consciousness are the way evolution has found to adjust our senses, thoughts, emotions, body tension, heartbeat, breathing, etc. all at once, as a group.

If I'm on the right track here, then we experience the world and our own subjectivities because in order to adjust all these things at once, a single interface is necessary. And we experience this interface as the phenomena of subjective awareness. And that leads us to my next hypothesis-awaiting-development.

The human sense of self.

The human sense of self is an amazing thing. Its there when we are awake, and its there when we're asleep and dreaming. Its absent while we're in dreamless sleep. There is a characteristic EEG signal that appears in both waking a dreaming. Its called the 40hz component, and its disrupted whenever either the amygdala or the hippocampus isn't working properly. One of the things these two structures do is produce hallucinations. To simplify limbic design, it might have made the sense of self, not to be confused with consciousness itself, out of the same things it uses to produce memories, dreams, and hallucinations. All of these things rely on inner imagery. The self, on the other hand might be an inner hallucination extrapolated from cognitive and emotional phenomena, just like more normal hallucinations are extrapolated out of sensory information.

The Buddha looks right to me once again. There is no self. Its an hallucination. An

ongoing, inner hallucination in a sensory modality that only has one percept.

I think that's enough theory for now. This is supposed to be an article for non-specialists, so I'm going to stop at this point.

Thanks for reading this. I enjoyed writing it.

Out of Body Experiences and the Angular Gyrus of the Brain.

Commentary on the Press release following a study by Dr. Olaf Blanke

Todd Murphy, 2002 | HOME

"A new study suggests these "out-of-body" and "near-death" experiences may be explained as a portion of the brain misfiring under stress. It's based on one epilepsy patient's visions."

FAQ:

Do OBEs happen ONLY in the brain?

No. There have been cases where people have had OBEs, and seen things from an out-of-body perspective that tey could not have seen from their body's location. This writer holds that the brain is involved in triggering OBEs, but once they're happening, other mechanisms predominate.

A nurse at Hartford Hospital states that she worked with a patient described an NDE in which she saw a red shoe on the roof of the hospital during her OBE, which a janitor then retrieved. Kenneth Ring describes three such cases involving shoes, shoelaces and a yellow smock and also tells a story from a Seattle social worker who also retrieved a shoe outside a window ledge that was identified by a patient during an NDE.

Ring, Kenneth, Ph.d. & Lawrence, Madeline, R.N., Ph.D. "Further evidence for veridical perception during near-death experiences", Journal of Near-Death Studies, 1993 11 (4)223-229

Morse, M.D., Dr. Melvin, & Perry, Paul, "Parting Visions" Uses and meanings of pre-death, psychic, and spiritual experiences. Harper paperbacks, 1994

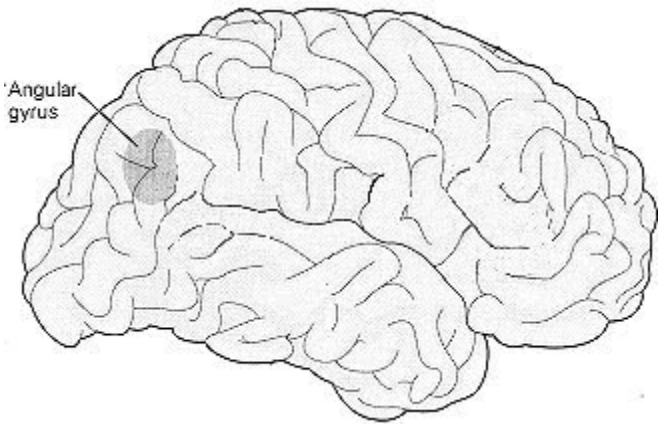
One explanation, which these (and other) researchers failed to consider, is that out of body experiences may be a natural, organic function of the brain. Their occurrence in near-death experiences seems to suggest that they are a part of the human death-

process. That they also happen during seizures may have more to do with the unique pathology of epileptic electrical activity, which can recruit sets of pathways that otherwise would only function in rare states of consciousness. Almost any part of the brain can be involved in an epileptic seizure. If we suppose that out of body experiences represent a rare but functional kind of brain activation, then it's not so unreasonable to suppose that epilepsy triggers them, but that the reason that they are possible is that our brains are pre-wired to produce these experiences. The seizure may only spread into it's areas, triggering the experience. Further, the fact a few individuals are able to have out of body experiences at will suggest that the reason for their existence is not epilepsy.

Out of Body experiences are one of the best-known episodes in Near-Death experiences. That they are reported from many cultures, and that they are so similar from one to the next suggests that they are neither accidental nor random. Rather, they constitute a human behavior, one that like all common human behaviors, are a part of our unique evolutionary history. In other words, they contribute to our survival in some way. This concept has been more fully explored in another article. Click HERE to read more about this.

The researchers involved said that the brain-mapping results don't complelely explain these strange reports.

One explanation for these experiences includes the notion that they represent a very unusual activation of our brain's spatial perception. In this explanation, a person who's having an out of body experience perceives themselves as having a different location in space than their body. If this model is valid, then activation of any one of the brain areas responsible for spatial perception may be required for an OBE. The angular gyrus is a small area in the temporal-parietal-occipital region of brain's surface. One possibility is that the epileptic who was having an out of body experience in this study was one whose seizural activity included the angular gyrus so that particular area of their brain was more sensitive than other areas (that also contribute to the experience). In addition to this area, there are other candidates. One of them is the hippocampus, and the other is an area of the brain's cortex which is directly connected to the hippocampus called the parahippocampal region.



They point to an area on the surface of the brain known as the angular gyrus. The angular gyrus is thought to play a role in the way the brain analyzes sensory information that allow us to percieve our bodies. When it misfires, they suggest, the result can be a sense of floating, and seeing the world from outside of the body. The findings were published in the respected science journal "Nature".

While the angular gyrus is involved in our perception of our own bodies, its function in this regard does not exclude other brain structures from being involved.

"We do not fully understand the neurological mechanism that causes OBEs," conceded the study's lead researcher, Dr. Olaf Blanke, a neurologist at two Swiss University Hospitals in Geneva and Lausanne.

Althrough the mechanisms behind of body experiences are not fully understood, this study seems to imply that there is less known than is the case. Some participants in the Shakti project, as well as many research subjects at Laurentian University's Behavioral Neurosciences program have had out of body experiences following low intensity magnetic brain stimulation. While the evidence does not yet allow a complete picture of the mechanisms of the out of body experiences to be formulated, it does remove it from the realm of total mystery.

The experiment goes a long way toward providing a scientific explanation for what some believe is a paranormal phenomenon, even if the study is based on only one patient.

"Since all of our brains are wired in a similar manner, there is no reason to think that stimulation of this brain region in other patients will not corroborate the finding," said psychologist Michael Shermer, of the Skeptic Society, which seeks to debunk alien abductions, ESP and other, similar claims.

This is quite a valid point. however, because there is a possibility that several areas of the brain must work together in order to produce out of body experiences. Stimulating this brain region in other people may not reproduce these results. If stimulation of the angular gyrus did not produce out of body experiences, there would still be other areas of the brain that might produce the same effects to be explored. If and when the experiment is replicated, the final result may be that there are several areas of the brain which can produce out of body experiences on stimulation. A negative result from the Angular Gyrus would not be conclusive.

"It's another blow against those who believe that the mind and spirit are somehow separate from the brain," Shermer said. "In reality, all experience is derived from the brain."

Neurologist Dr. Bruce Greyson of the University of Virginia said the experiment does not necessarily prove that all OBEs are illusions. He said it is possible that some OBEs occur in different ways than the scientists suspect.

Dr. Bruce Greyson is also the editor for The Journal for Near-death Studies, which has published several accounts of veridical of body experiences. These are cases in which a person has an out of body experience, sees something that would not be visible from their body's location, and then later has their perception validated. In one case, an elderly woman in intensive care had a heart attack followed by a near-death experience which included an out of body experience. During her out of body experience she saw

the roof of the hospital and noticed are red tennis shoe. A maintenance worker and some medical observers went to the roof of the hospital where they retrieved the shoe. While this seems to prove consciousness can exist separate from the brain, it leaves open one possibility. It may be that the mind, when it is outside of the body has a structure, and that structure reflects the structure of the brain. Proving the existence of consciousness outside the body, or separate from the brain may prove to be very elusive, even if the ideas that support it are valid.

The Swiss researchers mapped the brain activity of a 43-year old epileptic woman who had been experiencing seizures for 11 years. They implanted electrodes to stimulate portions of her brain's right temporal lobe.
The angular gyrus is an area of the surface of the brain close to the temporal lobe, and is associated with perception of sound, touch, memory and speech.

In the 1950's, the Canadian neurosurgeon Wilder Penfield also succeeded in eliciting an out of body experience using electrical stimulation, but he was stimulating a very different area of the brain, the sylvian fissure. The sylvian fissure divides the temporal lobes from the rest of the brain along its length. Dr. Michael Persinger has elicited out of body experiences through stimulation of the temporal lobes using magnetic signals derived from the EEG signature of one of the structures deep in the temporal lobes. Clearly, there is not a single "brain center" that supports out of body experiences but rather a widely-distributed set of pathways. An individual's unique neural history leave any one of these most likely to produce the experience for that individual.

Blanke said that at other times during the same session, , the patient screamed, because she "saw" her legs shortening, and "saw" her knees about to hit her face.

This experience is very similar to an experience called "micropsia", in which a person may experience things as being closer than they really are. The opposite experience, called 'macropsia' is the name for the perception that things are larger and farther away than they actually are. The same areas of the brain we are discussing here are also involved in this experience. This writer has personally experienced macropsia as preceeding OBEs. Read the story HERE.

Millions of people have reported OBEs, but only a few have been studied in laboratory or clinical settings.

Other researchers have offered the explanation that OBEs can happen when brain cells die from lack of oxygen, or when the brain releases pain-reducing chemicals called endorphins.

Now that out of body experiences are entering the domain of real science, a simple question emerges. Will it be possible to develop technology your procedures that will induce out of body experiences on demand? The answer is yes. Magnetic Brain Stimulation, directed towards the angular gyrus, the temporal lobes, or the hippocampus may have a chance of making this experience available to all. Not all people would be equally prone to the experience, even with correctly targeted stimulation. Out of body

experiences have been elicited by these means in the past, and even though there were not designed specifically for that purpose. Click HERE to obtain theis technology for yourself.

This interpretation of Dr. Blanke's observation of out of body experience is based on newer easily obtainable technology which offers different conclutions, his work constitutes a substantial step forward in our ability to understand out of body experiences and eventually, to induce them.

The spiritual adage "You are not your body " is easy for anyone who is ever been out of their body to understand, and this understanding has been of great help to many people who are developing spiritually.

Technology that can help induce out of body experiences may also be of service in helping people to develop their overall spiritual lives. In the end, this can only be of benefit to the world. It's also an experience that for whatever reason, people simply want to have. It's intriguing, engaging, and many people have devoted huge efforts to practicing techniques designed to bring them out of their bodies. The spiritual insights reserved for those who have had the experience can be available to all.

End

GLASSES FOR ENHANCED VISUAL ACUITY

Todd Murphy, 2001

The experience of enhanced visual acuity is one of those experiences people often choose not to talk about. It creates a feeling that doesn't go into words very well.

Like most altered-state experiences, it invites a spiritual or religious interpretation. One of the best known is "Seeing the divine in creation". During enhanced visual acuity, everything seems to glow, without having any lights around them. Things seem sharper. Colors are more engaging, and one notices the contours of faces much more. It's very pleasant. In fact, in studies of visual acuity, people with lower acuity tend to be depressed, and people with higher acuity tend to have positive emotional styles.

I first began experiencing enhanced visual acuity shortly after I began meditation practice. I always felt very good whenever I was a having it. my eyes took in more detail, my gaze tended to linger over interesting textures, and 3D effects of any kind really stood out.

I understood how a simple visual experience could be so compelling that mystics could describe it as "seeing the divine in creation."

I began to look into it, and soon learned been enhanced visual acuity had something to do with the ocular vestibular system. This is the system that keeps the the our visual world continuous even while our heads are moving up and down as we walk. Without it, we would see the world "jerk" with each step we took.

I wondered: "If enhanced visual acuity is really higher state of consciousness, then shouldn't at least some spiritual teachers experience it?"

I looked at a few photographs of noted spiritual teachers. I noticed that many of them showed a single trait, over and over again.

Da-Free John (Da Love-Ananda), Bhagwan Shree Rajneesh (Osho), Suma Ching Hai, Ramana Maharishi, Gangaji, and a man named Paul Lowe, a noted human potential worker; all of them were visually atropic.

This only means that if you look at their pupils, you'll notice that their two eyes aren't pointing in the same direction.

And this suggested something to me. I did some simple experiments; crossing my eyes. I noticed that if I crossed my eyes while looking in a mirror, I could control which eye moved.

I also noticed that if I closed one eye and did this, the eye that moved was the closed one, and not the one that stayed open.

That seemed odd. Like just about everyone, I made funny faces as a child, and crossed my eyes, trying to make them more frightening. I had seen that things went blurry when I did this, but I had always assumed that the blurry vision was from the eye(s) that were seeing off-center.

Looking in the mirror, with my eyes 'lightly' crossed so that only one of them actually moved, I was seeing out of the one eye that hadn't.

And it was giving me blurry vision, even though it was oriented to see straight ahead.

So, I practiced crossing my eyes with one of them closed for a while, until I had some control over the process.

I soon reached the point where I could move one eye at a time. I noticed that when one eye moved, the other seemed to sharpen a bit, if I let the right side of that eyes visual field dominate my vision.

This calls for a little explanation.

The two sides of each eye seem to be specialized for different levels of visual acuity, but the quadrant with higher acuity may have it's sharpness 'cut' by input from the other eye or the other side of the same eye.

To follow up on this, I created an exercise. I would close one eye, let my gaze become a bit diffuse, and then (this is hard to describe properly) 'throw' all of my visual attention into one side.

Then, I would let that eye 'dominate' my vision after opening the other one. When I could get the right half of my right eye to dominate my vision over all, I was able to see with enhanced visual acuity, but at the same time, I saw with blurry vision.

It was blurry, but sharply so.

Eventually, I was able to create this experience with BOTH eyes at once, throwing my attention into the right quadrant of each eye.

But, I still had blurry double vision.

Nevertheless, there was a sharpness at the same time.

I was intrigued. The next step was to visit a cooperative optometrist, who did a special eye exam for me.

While I was being examined, I crossed my eyes and kept one of them closed.

The open eye, pointing straight ahead, was examined alone. We found that the optometrist was able to correct for the blurriness, bringing things clearly into view, and making that extra sharpness stay available without the effort of crossing my eyes.

We did this for each eye, so that I was able to have a pair of glasses made that gave me enhanced visual acuity, but only one eye at a time.

They gave me extreme double vision, too.

So I had two more sets of glasses made. One had the enhanced right lens, and my normal prescription on the left, and the other, vice-versa.

Each of these also induced enhanced visual acuity immediately when I put them on, but my eyes kept defaulting back to letting the non-enhanced eye dominate, so that it took an effort to remain in the state.

I left the problem for a while, and took it up again some time after I was provided with a hippocampal wave form by Dr. Persinger.

I noticed that I often experienced EVA after sessions using it, and I recalled that EVA relies in part on hippocampal activity.

I also recalled that each eye is wired into both side of the brain. The right quadrant of each eye is patched into the right hemisphere, and the left quadrant of each eye is patched into the left hemisphere.

I returned to my 'eye-crossing' exercises.

This time, I practiced crossing my eyes, one at a time, so that the right quadrant of each eye could dominate.

Then, I went back to the optometrist, and we found the 'prescription' to correct each eye while the other is crossed.

This time, he asked if I wanted to try a mock-up pair. I said yes, and looked into the glasses, seeing the most intense EVA I had ever experienced ! I think it is because both eyes were putting their non-ordinary input into the same hippocampus, and because it's the one on the right (specialized for positive and non-verbal cognition), it felt really, really good.

But I still had double vision.

I mentioned this to the optometrist, who substituted another lens on one side. Things improved. A couple of more trials, and we had them.

A pair of glasses that induced, for me, the experience of enhanced visual acuity. They also, by inference, task the right hippocampus.

The EVA is not quite constant, though.

It keeps refreshing itself, each time my eyes accommodate for distance. You see, each side of your eye's input to you brain is also specialized for seeing near or far.

I waited a few days to get the glasses themselves. They work perfectly. For the last five days, since I got them, I have been living in another, much more beautiful world.

I'm not the only one they work for, either.

Most people just see a blur, but one woman, who also wore glasses for nearsightedness, commented: "It's a whole new world." One subject, with better than 20/20 (20/15) vision, experienced macropsia.

I believe that these glasses may have to be custom made for each individual.

After I had the glasses for a few hours, I knew what the difference between normal visual acuity and enhanced visual acuity was.

I just took them off.

Suddenly, I could see something new. Or rather, old.

There was a thin, diffuse, milky-white layer covering my vision. I had been seeing through it my whole life, and I never noticed it until it was gone.

I knew that the amygdala, on stimulation, can sometimes produce "The Light" for a person, and that the amygdala is directly connected to the hippocampus. An amygdaloid contribution to vision might emerge as a layer of light, and in very extreme cases,might feel like the constant presence of a being of light.

Why?

Because the amygdala is implicated in the 'sensed presence' experience.

It's too soon to tell if the glasses I'm wearing now are disturbing my ocular vestibular system, or if they are activating it more than usual.

Either way, I live feeling a new clarity now, one that goes a bit past my vision.

And "Seeing the divine in creation never stops for me.

Just cross your eyes, one at a time, and look out into a blurry world.

Have an eye doctor correct that incorrect vision, and then make the double vision single, and there is should be for you.

I hope to have a person with 20 / 20 vision go through this process, and eventually find a prescription that will work for most people.

NOTE:

I attest that the above story is true, and that these glasses ("hippocampal" glasses) are designed according to fundamentally different principles, and for different application than corrective lenses.

It constitutes a patentable invention which I alone may legitimately claim.

Effective immediately, I place this invention in the public domain.

For the record, the prescription for the hippocampal glasses I'm wearing now is:

Sphere: (R) -4.50 (L) -5.50

Cylinder & Axis = N/A

Further note:

I accept no liability for any damages caused by these glasses to anyone whatsoever.

How the Brain Creates the Experience of God: An easy to read explanation of a controversial hypothesis. The God effect.

Todd Murphy

E-mail

The word God has two meanings for some, and two connotations for others. In one, God is the savior. He 'saves' people. You can pray to 'him' and 'he' will give you what you want, or perhaps the wisdom do go on with your life if you don't get it. Or, perhaps, 'he' will hear your prayer. The savior offers you the option of not being alone. For some, he's 'always present'. For others, he's there 'when they need him'.

In the other meaning of the word, God is the creator of the universe.

In Asia and India, and many of the cultures in the rest of the world, the 'personal savior' and the creator aren't the same thing at all.

In the west, the God who made the universe, and the God who saves, are one and the same. It's quite an awe-inspiring thought. That the creator of the cosmos is personally interested in YOU.

However, when science looks at God, this gets to be a bit of a problem. The personal savior is a matter of personal experience. The creator of the universe isn't. Although I've met people who claimed that they 'know' that the universe has a creator, I've never met anyone who claimed to have been there when it took place. Science responds to the question 'where did it all come from' through its search into the origins of the physical universe. That turned out to be a matter of cosmology, and eventually brought us to the Big Bang Theory.

On the other hand, many people have had experiences of God as the

personal savior. Mohammed and Moses both heard his voice, they say. So did Saint Francis. So did Saul on the road to Damascus.

The list of historical accounts is long, but it's nothing compared to the list of people who have had the experience of God in the course of Near-Death Experiences.

Thousands of people have had the experience of meeting God while they were clinically dead. Not all Near-Death Experiences (NDEs) include meeting God, and not all people who were revived from clinical death had NDEs to tell about.

Nevertheless, now that there is a body of evidence about 'seeing God' for science to study, there is a picture emerging about how it happens.

The conclusion that's taking shape has a lot in common with the traditional Hindu view (shared by many Buddhists) that if one comes face-to-face with God, one is actually being confronted with one's self.

And the self is now a matter of brain science. It has fallen to the neuroscientists for two reasons. There's a neurological disorder that sometimes leaves people seeing god, or at least claiming to. And there's a neurological picture of the self emerging.

Within neuroscience, both the self, and the disorder that seems to make visions of God concern the limbic system, the middle and lower portions of the temporal lobes, parts of the brain that are activated very easily. More easily, in fact, than any other parts of the brain.

There are two pieces of evidence behind this. One is that psychological 'disorders of the self' usually involve differences in the limbic system. A schizophrenic hippocampus is different from normal one. A depressed person's amygdala (there's two - one on each side) works differently from a normal one.

The other important evidence is a thing called "The Forty Hertz Component." It's a component of a typical EEG readout. It appears from the temporal lobes, and its there when a a person is awake, there when the person is in REM sleep, but it's absent when a person is in dreamless sleep.

We cannot remember dreamless sleep, but we can recall dreams, and what happens in ordinary, waking consciousness. And those are the times when the 40hz is present. A conclusion follows. One that a lot of people don't like too much. The 'self' is what we experience when a specific pattern of brain activity is happening. It might BE that activity, or it might only require it. In either case, "we" aren't completely made of any sort of spiritual or divine energy. Some of what we are, at least, can be measured, recorded, 'logged in as data', and all that.

I've seen evidence that 'we' can exist outside the body, as well as the brain, during the out-of-body experiences that can happen during near-death experiences, but that's a rare circumstance. Throughout most of our lives, most of us are living within the framework of our bodies, including our

brains.

when 'we' exist, we're always using our brains in specific ways, and one of the few constant ways we do it is by maintaining the '40hz component The 40hz activity appears out of the temporal lobes. It's pathways have come to be understood after studies of people who had trouble in the temporal lobes (epilepsy, head injury, etc.). It involves the surface of the temporal lobes, and two of it's deeper structures, the amygdala and the hippocampus.

More to the point, it involves these two sets of structures, on two sides of the brain. We have, two selves, or two senses of self. One on the left, and one on the right. They're not equals, though. The left-sided sense of self is dominant in most people. It's the one where language happens. It becomes dominant when we learn to speak in childhood. After that, we use language as our main way of relating to others. We maintain an almost constant stream of inner words, inner monolog and thoughts, in words, about almost everything we experience.

One the other side of the brain, following the rule that each thing on one side of the brain does the opposite of what the same thing on the other side of the brain does, we get the conclusion that there is a non-linguistic sense of self on the right side of the brain.

Ordinarily, our two 'selves' work in tandem with one another. The one on the left is sort of in charge of things, but constantly gets input from the sense of self on the other side. Both of them are accustomed (or habituated) to this arrangement. But, once in a while, (or for some people, quite often) the two fall out of phase with one another, and the left-sided 'self' manifests by itself.

When this happens, we experience our own, right-sided, silent sense of self coming out where the left sided sense of self can and does experience it.

The experience has many forms, possibly a different form for each person who has it. And maybe a slightly different one each time they have it. Dreams do that too. And so does the sensation of having a self. Of being 'me'.

All together, they're called 'visitor experiences'. In it's most subtle form, it appears as the feeling that one is 'not alone' or that they're 'being watched'. They might feel a 'presence' in the room with them. When they turn to look to see who's there, they find themselves alone. In another one of it's many faces, a person who's engrossed in a job, like writing or doing art, might find that they no longer feel that 'they' are doing it. The words they write; the pencil lines that appear; seem to be coming from somewhere else. The right-sided self has taken over the job, and it's presence is manifested through it's behavior. Absorbed, the person working with such a 'muse' has no attention left with which to stop and 'sense a presence'.

The sensed presence is on one end of a spectrum. Actually, it's two spectrums (spectrii?).

One spectrum is of intensity. The other is of feeling.

Let's look at intensity first. How 'powerful' the experience is. The Sensed Presence is at the lower extreme. It's easily 'shaken off'. The experience involves the few brain parts we mentioned before.

However, if there is enough electrical activity in these structures, (the experience gets more intense), it will 'spill over' into other, nearby structures.

And that's when things get REALLY interesting.

How the experience unfolds from here depends on which brain parts the activity spills into.

If it catches some of the visual areas, the experience can become a vision of an entity of some kind or other.

If it involves the olfactory areas, the person can find that the visitor has a unique smell.

If it involves the parts of the brain that help us perceive our own bodies from within, we might find ourselves having tingly feelings. Or that we are being lifted up, or thrown down.

If it involves the language centers, we might hear a voice, or music, or noise.

If it involves areas that deal in long-term memory, we might find that the experience includes an episodic 'vision'. Not just a flash of an image, but an inner world where the person interacts with others, feels real emotions, an so on.

That's all in the spectrum of intensity. The other spectrum is of feeling.

There doesn't seem to very much in the middle of this one. Just at the extreme ends.

On one extreme, there is the 'demonic' or evil visitor, and on the other extreme, there are more angelic visitors. It depends on which emotional center (amygdala), left or right, is more active.

If the negative one (meaning the one that supports fear) is more active, the visitor experience will become a visitation by a demon, Satan, or a terrifying ghost. On the other extreme, it could be an angel, a spirit protector, or even God.

THE VISITOR EXPERIENCE

	Emotion	feeling of movement	Feeling Tingles	New Insight	smells	Vision	Voices	Sounds	episodic vision
Extreme Negative	Terror, fear.	Falling	Body seems to burn or have chills	I am worthless, a sinner.	Sulfur, stale tobacco	Seeing a demon	words that inspire fear	grinding noises, screams, etc.	Tours of hell, negative NDEs
Extreme Positive	Bliss, Ecstasy	Being uplifted	'Body Tingles'	I am worthy of unconditional love.	Perfumes, incenses	Seeing an angel or God	Words of salvation, healing, safety.	Ethereal Music	Interacting with God

The experience of God seems to be an extreme example of the visitor experience.

It takes extreme circumstances to manifest the experience, of course, but the experience of God doesn't have any features that don't also occur in other brain-derived experiences.

If God is actually a part of our own selves, then prayer might just be a way we talk to ourselves to bring out that silent self. There are types of prayer that traditional spirituality respects most, like those of thanksgiving, prayers for others well-being, and healing, and prayers to be granted spiritual gifts, like healing skills, wisdom, insight and faith. When a person prays in these ways, they divide their attention between positive thoughts, and positive feelings.

..... **Because positive thoughts (involving the right hippocampus), and positive feelings (involving the left amygdala) are on opposite sides of the brain, prayer changes the balance of activity on the two sides. Whenever that's happening, the chances of the activity on the two sides (for these areas) falling out of phase with each other goes up substantially. Sensed presence experiences become more common until the day arrives when God's presence is something the person feels at all times.**

Their behavior matches the mood of their prayers more and more. Eventually, the day can arrive when the person's experience of God goes past just feeling his presence, and begins to appear as a guide, even one with a voice, The person can surrender to what they feel is 'divine will', and 'let go of their ego'.

Remember we're talking about the sense of self here. this process can unfold to the point where 'they' are all but gone, and the boundaries between their self, and God's

presence begin to blur. Carry that to it's extreme, and you might find people saying things like "I and The Father are one". And we all know where THAT can lead.....

In this small neuroscientist's opinion, there is no God separate from the believer. But there is such a thing as godliness.

And one of the simplest and most widespread ways of achieving it is to believe unreservedly in God, and to make God one's constant companion.

END.