

Why Violence Begets Violence and Love Enables Love

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Abstract:

Research in Cognitive Science is revealing interconnections among consciousness, brain biochemistry, reason and the emotions. I focus on the physiological manifestations of two specific, and directly opposed physiological conditions; religious ecstasy and post-traumatic stress disorder to demonstrate the opposing effects of peace and violence on human emotions, cognition, and ability to love.

In post-traumatic stress disorder, a victim's neuronal response to perceived attack is chemically altered by catecholamines and CRF, a stress hormone, which interfere with higher-level thought processing. In contrast, states of meditation or religious ecstasy stimulate the amygdala and autonomic nervous system in productive ways, that make people more creative, intellectually focused for problem solving, personally appealing and compassionate toward others.

Biographical statement:

Laura E. Weed, Ph.D. is an Associate Professor of Philosophy at the College of St. Rose, in Albany, NY. She received her doctorate in philosophy from Syracuse University in 1992, and has taught for Russell Sage College's JCA division, Siena College and Maria College before becoming tenured at St. Rose.

Dr. Weed is currently a committee member of the Mysticism Group of the American Academy of Religions, and a vice president of the International Institute for Field Being, an organization for Asian-Western philosophical discussion. She is also an assistant editor for the IIFB's on-line journal, *The International Journal for Field Being*, and has recently edited a special edition of the *IJFB* on Whitehead and process philosophy. She has one book in print, *The Structure of Thinking*, published by Imprints Academic, UK, and is now doing research for another book, *The Epistemology of Religious Experience*. Some of her research for this book will be presented in this paper.

Dr. Weed is active in interfaith dialog in the capital district area of New York State, and is on the planning board for an interfaith workshop conference, *Building Peaceful Communities*, which will be offered at the College of St. Rose on October 13, 2003.

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Abstract: Research in Cognitive Science is revealing interconnections among consciousness, brain biochemistry, reason and the emotions. I focus on the physiological manifestations of two specific, and directly opposed physiological conditions; religious ecstasy and post-traumatic stress disorder, to demonstrate the opposing effects of peace and violence on human emotions, cognition, and ability to love. In post-traumatic stress disorder, a victim's neuronal response to perceived attack is chemically altered by catecholamines and CRF, a stress hormone, which interfere with higher-level thought processing. Victims of PTSD, thus, become biochemical tinderboxes primed to explode, who misjudge others, and who are less rational and loving than others. In contrast, states of meditation or religious ecstasy stimulate the amygdala and autonomic nervous system in productive ways, that make people more creative, intellectually focused for problem solving, personally appealing and compassionate toward others

“Why violence begets violence, and love enables love”

Research in Cognitive Science is revealing interconnections among consciousness, brain biochemistry, reason and the emotions. I focus in this paper on the physiological manifestations of two specific, and opposed physiological conditions: religious ecstasy and post-traumatic stress disorder (PTSD), to demonstrate the opposing effects of peace and violence on human emotions, cognition, health, and ability to love. I discuss the physiological mechanisms in the brain by which violence begets violence, as Mohandas Gandhi pointed out, and love promotes and enables love.

I. HOW VIOLENCE BEGETS VIOLENCE

A. SYMPTOMS AND BEHAVIORAL EFFECTS OF POST TRAUMATIC STRESS DISORDER

The American Psychological Association (APA) initially defined PTSD as "...the development of characteristic symptoms following a psychologically traumatic event that is generally outside the realm of human experience" (DSM-III, APA 1980, p. 236). In the DSM-IV the definition was altered to focus on two items:

- a) a person experiencing, witnessing or being confronted with an event involving actual or threatened death or serious injury, or a threat to the physical integrity of oneself or others, and
- b) the person's response involves fear, helplessness or horror. (Lunden and Lofti, 1996 p.12)

Cases of PTSD have been documented as resulting from war-related traumas, crime victimizations, disasters such as earthquakes and fires, child abuse, domestic violence, and rape cases. Diagnostic symptoms of PTSD listed in the APA's diagnostic manual include recurrent dreams or flashbacks of the event, psychological distress when

encountering internal or external cues that resemble or symbolize the event, avoidance of stimuli reminiscent of the event, numbing of affect, loss of memory of the event, detachment from contact with others and feelings of estrangement from others. Also, PTSD is marked by diminishment in participation in activities, a sense of a foreshortened future, increased levels of arousal causing sleep difficulties, outbursts of anger, concentration difficulties, hyper-vigilance, and an exaggerated startle response.(Lunden and Lofti 1996 p. 13)

One of the surprising facts about Post Traumatic Stress Disorder is that not everyone who is exposed to an extremely traumatic situation will suffer from it. In even extreme cases of traumatic victimization, such as the torture of prisoners of war or of victims of concentration camps, issues such as prior victimization, age of victim (generally, the older the worse) absence of social support, and absence of control in the situation, contributed to the likelihood that a trauma victim would suffer long-term psychological stress from the trauma. Low levels of victim self-esteem, poor socioeconomic status, and prior health or psychological problems, have also been highly statistically co-related with the development of PTSD after trauma.(Foy, Osato, Housekamp, and Newman 1992, p. 28-35) The research shows that individuals with many of these risk factors can show symptoms of PTSD after relatively modest traumatic experience, while other victims of trauma will exhibit no PTSD even after having suffered much longer under more intense levels of stress. But both the intensity and duration of suffering are related to the likelihood of a victim developing PTSD. Comparisons of rape and combat cases indicated that the symptoms exhibited and the rates at which victims developed PTSD in both types of cases were similar, and that the

most severe symptoms developed in cases in which the victims had been traumatized in circumstances of overwhelming danger to self-preservation and high risk of physical injury.(Foy et. al; p. 37-38) When the abuse is on going for many years, one might expect considerable PTSD effects, even in victims with few predisposing conditions.

B. NEUROLOGICAL ANALYSIS of PTSD

In this section of the paper I will highlight just a few of the symptoms of PTSD listed in the last section, and describe their neurological basis. I will zero in on the startle reflex, response to attack, social withdrawal symptoms, and intellectual and learning effects of PTSD for neurological analysis.

a) **The startle reflex**

There are two uniquely identifying biochemical marks of PTSD: exaggerated startle response, and low cortisol levels. PTSD often co-occurs with clinical depression, and some authors have apparently argued that there is no difference between PTSD and major depressive disorder. But in depression, the exaggerated startle response does not occur, and plasma and urinary glucocorticoid (cortisol) levels are often high, rather than low.(Yehuda, Giller, Southwick, Lowey, and Mason 1991, p. 1034-1035)

The excessive startle response is a state of hyperreactivity that is traceable to a specific reflex that follows a defined neural pathway through the spinal cord and brain. Charney et. al. specify long term potentiation of the amygdala as the most likely culprit in the excessive startle reactions of victims of PTSD. They explain the mechanism involved as follows.

The central nucleus of the amygdala plays a critical role in the fear-potentiated startle response because it projects directly to one of the brain-stem nuclei necessary for startle.(Charney, Deutch, Krystal, Southwick, and Davis 1993 p. 295)

This alteration in brain chemistry tends to be permanent. Research in long term effects of PTSD indicated that veterans from World War II and the Korean War who had led long and productive lives, would return to PTSD even after many years, when they experienced losses of friends, spouses, health or jobs in their seventh or eighth decades of life (Schnurr, 1994,p. 1-3) For most people, past indignities and painful memories fade and eventually vanish. Not so with PTSD victims. Daniel Goleman's report on holocaust victims is as follows:

Close to fifty years after...the haunting memories were still alive. A third said that they felt generally fearful. Nearly three quarters said that they still become anxious at reminders of the Nazi persecution, such as the sight of a uniform, a knock at the door, dogs barking, or smoke rising from a chimney. About 60 percent said they thought about the holocaust almost daily, even after a half-century; of those with active symptoms, as many as eight in ten still suffered from repeated nightmares.(p.202)

The excessive startle reflex makes victims of PTSD irritable and jumpy, overreacting to neutral or mildly annoying stimuli.

b) Reaction to attack

In post-traumatic stress disorder, (PTSD) a victim's neuronal response to perceived attack is chemically altered by catecholamines and corticotropin releasing hormone (CRH), a stress hormone, both of which interfere with higher-level thought processing. The alteration occurs through the functioning of the hormonal system: the reactions of hypothalamic, pituitary and adrenal glands, and the reactions of portions of the limbic system, such as the hippocampus and amygdala. Goleman explains the role of catecholamines, neuro-chemicals produced on the cortex of the adrenal gland, in producing the PTSD inclination towards a violent, explosive response to perceived attack:

The main symptoms of learned fearfulness, including the most intense kind, PTSD, can be accounted for by changes in the limbic circuitry, focusing on the amygdala. Some of the key changes are in the locus ceruleus, a structure that regulates the brain's secretion of two substances called catecholamines: adrenaline and noradrenaline. These chemicals mobilize the body for an emergency; the same catecholamine surge stamps memories with special strength. In PTSD, this system becomes hyperreactive, secreting extra large doses of these brain chemicals in response to situations that hold little or no real threat, but are somehow reminders of the original trauma.(p.205)

For victims of PTSD, the thinking process is by-passed and reactions to perceived threats become more rapid and automatic, as well as more explosive than they are for other people.

c) Withdrawal and estrangement

Distrustful withdrawal from most social relationships is another key behavioral symptom of PTSD. Daniel Goleman explains this symptom as anhedonia, dissociation, a general sense of emotional numbness, or of being cut off from life. Chemically, it is the result of neurotransmitters like dopamine:

...the brain's opoid system, which secretes endorphins to blunt the feeling of pain. [In PTSD] it also becomes hyperactive... When experiencing high levels of opoids...people have a heightened tolerance for pain-- an effect that has been noted by battlefield surgeons who found that severely wounded soldiers needed lower doses of narcotics to handle their pain than did civilians with far less serious injuries.(p.206)

So, victims of PTSD experience pain less acutely, and as a consequence, empathize less with pain felt by others.

Cortisol levels tend to be far lower than normal in victims of PTSD. This is a surprising result because the stress hormone, corticotropin releasing hormone, (CRH) and its target hormone, adrenocorticotrophic hormone (ACTH), are both high in conditions of stress, indicating that cortisol levels should be high, as they are in cases of clinical

depression. Two mechanisms, focusing on the receptors for CRH and ACTH, are under investigation to account for the surprising cortisol levels in PTSD. One proposal is that ACTH response to CRH may be blunted by long term or acute response to stress, and the other is that some patients may be acutely sensitive to the ability of dexamethasone, which blocks cortisol uptake in cells, to suppress cortisol.(Charney et. al. p. 300) Shelia Wang describes the effects of low cortisol levels on emotions and attachment as follows.

Low cortisol appears to be related to those coping mechanisms associated with emotional withdrawal, e.g. denial, avoidance, emotional numbing, detachment, restriction of affect, estrangement, etc. Furthermore, emotional involvement is reflected by a responsive, not suppressed, cortisol system, as suggested by Price, Thaler and Mason (1957)...

Emotional withdrawal, emotional numbing and denial can anesthetize our sense of compassion, empathy and humanity. In this state violence can be inflicted upon others without remorse or conflict.(Wang, 1997, p. 166)

Wang points to research by Woodman et al (1978) and Vanukov et. al.(1992) that showed a high correlation between low cortisol and criminally deviant and cruelly psychopathic behavior.(p. 166) Further, Wang discusses Henry's analysis of biological synchronicity and its repercussions for victims of chronic stress, pointing out the consequences of long term stress.

When the environment is safe and vigilance is not necessary, biological synchronicity between organisms is possible and species preservative behavior including grooming, sleeping, playing and sexual activity can emerge. When there is a perception of loss of control and threat to safety, self-preservative behavior begins to take over. Henry speculated that this shift significantly inhibited access to the right brain's attachment system, including biological synchronicity.(p. 168)

Wang argues that domination of the brain by self-preservative mechanisms in the left brain, driven by chronic stress, compromises a human's ability to be regulated by significant others, and may result in a variety of psychosomatic diseases.

Lewis, Amini and Lannon point out the repercussions of inadequate interpersonal

attachment in their book, *A General Theory of Love*. They argue that the limbic system is an open-loop system in which people regulate each others' limbic systems and play vital roles in each other's immune responses, heart rate and blood pressure, body temperature, oxygen saturation, and levels of hormones, salts, ions and sugars(2000, p. 85). A person with a damaged limbic system cannot participate in the interactive biological regulatory mechanisms. These authors claim that personal interrelations with parents are vital to child development, especially in the brain and limbic system. But adults are still dependent on limbic regulation by significant others.

Adults remain social animals: they continue to require a source of stabilization outside themselves. That open-loop design means that in some important ways people cannot be stable on their own... Total self-sufficiency turns out to be a daydream whose bubble is burst by the sharp edge of the limbic brain. Stability means finding people who regulate you well and staying near them.(Charney et. al. p. 298)

d) Higher-level thinking and learning

Other researchers have pointed out that the medial prefrontal cortex, where higher level thought takes place, is especially vulnerable to stress, and dopamine release and metabolism will be increased in that area of the brain, after comparatively little exposure to stress. Since the medial prefrontal cortex is the region of the brain in which intellectual planning, moral choice-making, and social skills development take place, the intellectual repercussions of damage to this region of the brain will be devastating, as they were in the case of Phineas Gage (Damasio, 2000, p. 5-51).

While no differences in overall IQ levels were found between PTSD victims and control subjects, difficulties in remembering facts or lists and declarative memories were found between controls and PTSD victims. Victims also suffered from fragmented memories especially related to the trauma or abuse.(Bremner, 1999, p. 798) The

memory loss is attributed to the fact that stress destroys the hippocampus; a section of the midbrain that regulates the creation of new memories. Autopsy results on vervet monkeys that died of severe stress showed severe neuronal degeneration in the monkeys' hippocampi.(Charney et. al. p. 299) Since the hippocampus processes and stores new learning, after it has been processed through the amygdala, scientists are assuming that stressed monkeys (or humans) will suffer the same types of learning deficits that effect people who have suffered strokes in the hippocampal region.

C. CONCLUSIONS: HOW VIOLENCE BEGETS VIOLENCE

People whose Hypothalamic-Pituitary-Adrenal systems are dysfunctional as a result of too much stress become biochemical tinderboxes primed to explode, who hyper-react to stimuli, misjudge others, and are less loving and rational than others. Victims of P T S D are often held up in our society as exemplars of humanity. Think of the Marlboro man, or the hero roles often played by Arnold Schwartznegger, Clint Eastwood, Vin Diesel or other 'action heroes.' But in fact, these 'action figure' characters and their activities represent an image of a badly damaged and damaging, degenerated and biochemically dysfunctional, type of human being, not paradigms of human excellence. The victims of violence suffer, in addition to their physical injuries, reduced capacity for love, empathy and participation in a human community, diminished prospects for health (Schnurr, 1996, p. 1-3), safety and intimacy, and diminished rational capacity accompanied by increased rage, hyperreactivity to stimuli and tempermental proclivity to violence. Thus violence begets violence.

II. HOW LOVE ENGENDERS LOVE

A. D'AQILI AND NEWBERG ON RELIGIOUS EXPERIENCE

Eugene d'Aquili and Andrew Newberg have been arguing that God won't go away(d'Aquili, Newberg and Rause 2001) because many of the same neurological and hormonal systems that produce PTSD also produce religious experience, hardwiring some people for experience of states of unity and integration that are the antithesis of the states produced by PTSD. Newberg and d'Aquili have been studying the effects on the brain of religious rituals, myths, meditation, and experiences of pure consciousness, as reported by mystics from many religious traditions. They use the term Neurotheology for their research, characterizing it as a type of meta-theology that specifies what any religion must do for human brains in order to enable both the lower level emotional and intellectual transformations that count as spiritual healing and the higher level experiences that religions refer to as 'enlightenment,' or 'salvation.'

Newberg and d'Aquili focus on states of deafferentation, in which the limbic and mid-brain regions of the brain remain active while input from cognitive left-brain operations and incoming sensory stimuli become quiescent. Either the sympathetic or the parasympathetic divisions of the autonomic nervous system can achieve these states, and in states of high-level stimulation of either branch of the autonomic nervous system, when joined to a deafferentated state, spillover may occur from either the sympathetic nervous system (SNS) to the parasympathetic nervous system (PNS) or from the PNS to the SNS. In this situation, both SNS and PNS become excited together, although under normal circumstances their effects are antithetical.

Myths achieve deafferentation by offering resolutions to contradictory, paradoxical or conflicting situations. In proposing paradoxical solutions to life problems, myths produce a shift of concentration from left-brain logical, quantitative, causal and

binary (dichotomous) thinking(1999, p.52) to right-brain holistic, abstractive, emotional and value-oriented thinking. The shift in orientation can be so radical that the person undergoing the shift feels ‘reborn’ or like a new person. The accompanying change in thinking can bring about conversions in lifestyle, as when St. Paul embraced Jesus as savior on the road to Damascus.(Acts:9: 1-17,1985) D’Aquili and Newberg explain,

From the neuropsychological perspective, these resolutions are caused by a subtle shift in cognitive dominance from the dominant (left) hemisphere to the non-dominant (right) hemisphere of the brain. ... We propose that the cognitive unification of logically irreconcilable opposites presented in the myth structure (such as god and human in a solar hero or Christ figure,) represents a shift of predominating influence from the left hemisphere to ...the right...which allows the antinomies to be perceived in a more unitary or integrated mode.(1999, p. 87)

Zen koans also come immediately to mind. But this is not merely an intellectual activity in frame shifting. D’Aquili and Newberg insist that unless a myth were embedded in rituals, that make the myth existentially immediate for the religious practitioner, the intellectual exercise of frame shifting would accomplish little.

Rituals existentially ground the myths through rhythmic stimulation of the PNS and SNS. Prolonged rhythmic stimulation, such as is produced by chanting, repetitive movements or ritual dancing, creates a situation in which both parts of the autonomic nervous system are stimulated. The result is a pleasurable state that creates:

...a sense of union with conspecifics and a blurring of cognitive boundaries. We suggest that such driving of the autonomic nervous system by rhythmic stimuli powerfully activates the holistic operator, allowing various degrees of gestalt perception This occurs through deafferentation of the orientation association area with concomitant functioning of the holistic operator. (1999 p. 90)

So we see in brain states created by the combination of myth and ritual, the opposite effects from those produced by PTSD. Ritual and myth produce the states of biological

synchronicity (Wang and Henry) and limbic reinforcement of the open-looped system (Lewis, Amini and Lannon) that are disenabled by PTSD. D'Aquili and Newberg explain how this occurs in the following passage.

Thus it seems that rhythmic or repetitive behavior synchronizes the limbic discharges (i.e. the affective states) of a group of conspecifics. It can generate a level of arousal that is both pleasurable and reasonably uniform among the individuals so that necessary group action is facilitated.(1999 p. 90)

Thus, the social and neurological benefits of ritual and myth have opposed effects on human neurology to the deleterious effects of stress, even without considering higher levels of religious experience, that would be characterized as more mystical. The social support provided by rituals, alone, would provide one of the supportive factors that reduces the likelihood that a victim of trauma will suffer from PTSD, or increases the likelihood that a victim will recover more quickly, should PTSD occur. A research result that has been surprising in PTSD, and for which no one has described the effective mechanism, has been the finding that rapid eye-movement desensitization has proven to be an effective therapy for PTSD.(Shapiro, 1995) But this result is not surprising at all in light of d'Aquili's and Newberg's observations that rhythmic movements have opposing effects on the brain to those of stress. Rocking irritated babies has been known to calm them, as well, for a long time.

B. THE NEUROLOGY OF RELIGIOUS EXPERIENCE

D'Aquili and Newberg propose an understanding of consciousness according to which ordinary consciousness is a functional primary circuit through the brain, utilizing most of the brain's resources for sensations, cognitions, orientation in space, and distinction of self from others and from the environment. They identify the

consciousness produced by the primary circuit with the ego, and claim that it has the task of coordinating most everyday activities that a person performs. But the primary circuit is subserved by other subsidiary circuits of communication through the brain of which the person normally does not become conscious. They claim that schizophrenia may be a lack of capacity to distinguish the primary circuit from subsidiary ones, and split-brain and blind-sight research points to other subsidiary brain circuits.(1999, p. 64-66) These subsidiary circuits are suppressed during normal mental operation, when the person's orientation is directed at interacting with the outside world.

The primary circuit of the brain involves the motor and sensory areas of the brain, the limbic system, the cognitive operators, the integration areas for motor and sensory activity, and the orientation/association area that helps to distinguish self from not-self, and the attention-association area that helps to focus attention on one aspect of the environment rather than another.(1999 p. 68-69) The structure of the primary circuit gives dominance to the cognitive operations of the left brain, but this is not an exclusive dominance. Even those cognitive operations do not function exclusively of the integrative functions of the right brain.

SPECT, CAT and PET scans of the brains of monks and nuns doing meditation indicate that the attention association area and the orientation association area of the brain are quiescent, and the right side of the brain is more active when people are praying. The effect of the inhibition of these areas of the brain is to allow neurons in other areas to fire by themselves, independently of the sensory or cognitive stimuli that would normally direct their activity. The hippocampus has the inhibitory nerve fibers that inhibit the communication of messages between the two hemispheres of the brain, and that suppress

impulses originating in the attention association area, to achieve deafferentation.(1999, p. 41) And, it is the hippocampus, together with the amygdala and hypothalamus that are most active in generating dreams and hallucinations, within the brain. Art and music and most creative or synthesizing activity are processed in the right side of the brain, as opposed to analytical or quantitative reasoning, which originates in the left side of the brain. So when the deafferentated neurons in the hippocampus, amygdala, and hypothalamus, and the right side of the brain are active, while the cognitive, sensory, and association areas are quiet, states of numinosity, visions, voices, Jungian archetypes, and senses of peace, creativity, integration, and wholeness develop. These states represent an autonomous capacity of the brain to become aware of its own states that exist subsidiary to or outside the normal range of the ego-driven primary circuit. In my own research on religious experience, respondents to interview questions are showing a clear pattern of value for ego-renunciation, shutting down cognition and shutting down sensory perception as preparatory steps for religious experience.(Note deleted for blind review)

D'Aquili and Newberg cite two ways in which the deafferentation of the primary circuit can occur. One way is through passive, quiescent stimulation of the parasympathetic nervous system, which corresponds to the *via negativa* in classical texts on mysticism. Neurologically, what is occurring is:

...a reverberating circuit is formed, most simply defined by impulses originating in the right attention association area, going to the right orientation association area, to the right hippocampus, to the right amygdala, to the quiescent parts of the hypothalamus, and then back to the right amygdala, to the right hippocampus, and back to the right attention association area directly.(1999, p. 112)

As an advanced level meditator continues to meditate or pray, this circuit begins to repeat, recruiting more neural activity, and accelerating the levels of parasympathetic

stimulation within the brain. Eventually,

A maximal level is reached in the quiescent system, which results in spillover and instantaneous maximal stimulation of the arousal system, as has been shown to occur in third stage autonomic tuning. This maximal stimulation of both systems results in ecstatic and blissful feelings through intense stimulation of the quiescent structures in the hypothalamus.(1999 p. 112)

Because the primary circuit is shut down by the deafferentation of the left orientation-association area, the self-other dichotomy breaks down. Also, because the outward-oriented right orientation association area is deafferentated while this brain activity is taking place, it is common for quiescent meditators to have the feeling of spacelessness, and of there being no objects, or no-thingness, in the resulting pleasurable state. States of immanent divine presence, of absolute unity or wholeness, or of void or empty divine reality, and of self dissolving into a great unity or void are thus developed.

The *via positiva*, achieved by focusing attention on an image, results from a slightly different subsidiary circuit through the brain. D'Aquili and Newberg describe the arousal circuit in this passage.

...continuous fixation on the image presented by the right visual association area begins to stimulate the right hippocampus, which in turn stimulates the right amygdala, which in turn stimulates the arousal parts of the hypothalamus, generating a mildly pleasant sensation. ... Impulses then pass back to the right amygdala and hippocampus, gathering intensity as they go along. This then feeds back to the right attention association area, reinforcing the whole system with progressively intense concentration upon the object. Thus a reverberating loop is established, similar to that in the *via negativa*.(1999 p. 114-115)

This stimulation of this autonomous subsidiary circuit also results, ultimately, in maximal stimulation and spillover, but the resulting state is ecstatic rather than quiescent, and tends to be of a transcendent object, rather than of nothingness. The reason for the difference is that in the case of arousal mechanisms, developed through concentrating on an object, there is a conflict between facilitatory mechanisms and inhibitory ones for

deafferentation, which can, for a time, prevent spillover and complete deafferentation of both the right and the left orientation areas.(1999, p. 116) But even this does not prevent eventual full spillover, and the result of that, is a state of numinousness and absolute unitary being that d'Aquili and Newberg call absolute unitary being (AUB)

C. STATES OF NUMINOUSNESS AND ABSOLUTE UNITARY BEING (AUB)

D'Aquili and Newberg argue that complete deafferentation results in a state of absolute unitary being that is necessarily the same for anyone who experiences it, because it is neurologically the same for anyone who experiences it. They argue against philosophical constructivists, such as Steven T. Katz,(1978) who claim that religious experiences are a product of social expectations and tradition-bound theological ideas. Socially constructed theological ideas may enable or begin the deafferentation process, just as various rituals from a variety of religious backgrounds may stimulate the beginnings of the deafferentation process, according to D'Aquili and Newberg, but once the reverberating neurological loop of impulses is established, it is a specific physiological condition that would be the same for all experiencers, no matter what sociological or theological route was used to achieve it. At lower levels of religious experience, the cultural and social differences may account for different qualities being attributed to transcendent beings from different world religions. But once the deafferentation becomes complete, and completely ineffable, (because the language parts of the brain are not involved,) the experience is universal in the human race. The state produced is a state of great ecstasy and peace, in which one feels both completely loved and completely loving.

Further, this state is regularly judged by those who experience it to be 'more real'

than reality as experienced through the primary circuit of the brain. D'Aquili and Newberg point out that people rarely judge their ordinary dreams to be 'more real' than their waking existence, but it is a common phenomena that people who have experienced AUB re-evaluate primary circuit experience as 'inferior,' 'illusory,' or 'unreal,' and subsequently refer to the AUB as a higher form of consciousness that has direct contact with a reality that is more real than waking life. They explain.

Once again, this experience represents the subjective awareness of the total functioning of the holistic operator. This state is so ineffable that the person who experiences such a state almost invariably affirms that it represents the only true reality. The everyday awareness of the non-wholistic, individuated reality is affirmed to be only illusory. The absolute functioning of the wholistic operator is associated not so much with the concept of God as with the *experience* of God.(1999 p. 152 emphasis theirs)

The authors proceed to argue that there is no completely objective basis that anyone could use, apart from the experiences within their own brain, to determine what is or isn't real, or to what degree our subjective representations do reflect an objective external world. The case, they argue, is no worse for religious experience than it is for cognitive or sensory experience. In addition, they claim that the parallel is exact between people rejecting dream experience in favor of cognitive and sensory experience, and people rejecting cognitive and sensory experience in favor of religious experience. We have nothing other than this type of concurrence of opinion on which to base any judgment of the ultimate nature of reality.

D. WHY LOVE PRODUCES LOVE

The fact that the spiritual transformations that are brought about by states of religious healing and ecstasy are typically judged 'more real' than primary circuit experiences has results in human lives and behavior. Lifestyles change as a result of

these experiences, and people become more ethical, more gentle, and more concerned for the welfare of other people. The literature on spiritual healing abounds with stories of reformed alcoholics, thieves, profligates and liars. In my own research on criteria for spiritual progress I have found that among the qualities most often used by religious experts as methods for judging whether novices are making progress on a spiritual path are:

1. Enduring compassion, peace and bliss
2. Discontentment with ordinary life. (Socrates; Philosophers are lovers of death)
3. Improved virtue
4. Enhanced sensitivity and increased suffering.(Weed in progress)

While some guarantees that someone is **not** making spiritual progress are:

- 1.“Sins and lack of love; desires for fame, honors, or ego aggrandizement”
(St. Theresa of Avila)
- 2.“Petty jealousies, lack of openness to others, attachment to honors, money or possessions” (Eiko Hanaoka, Zen Master, Kyoto Japan)
- 3.“Ego attachments and sensory demands” (Yoganand: yoga master, Kripalu Center, Lenox, MA)
- 4.“Ego attachment, sensory demands and absence of service to others”
(Swami Dayananda Saraswati, Arsha Vidya Gurukulam, Saylorsburg, PA.)(Weed in progress)

Although more research needs to be done, preliminary indicators point to a potential for using religious rituals, myths, prayers and meditation as treatments for PTSD. Researchers Drescher and Foy have found that prior religious commitments sometimes serve as a preventive for PTSD, but often victims of severe traumas abandon the faith of their childhood when simplistic religious beliefs or platitudes are proven untrue by the traumatic events.(1995, p. 1-5) Drescher and Foy explain;

Traumatic events often lead to dramatic change in survivors’ world views so that fundamental assumptions about meaningfulness, goodness, and safety shift negatively. ...How can belief in a loving, all-powerful God be sustained when the innocent are subjected to traumatic victimization?(1995, p. 1)

The result is that 51% of Vietnam veterans reported abandoning their religious faith in Vietnam, while only 25.8 % of Vietnam veterans reported that the experiences they had as members of the military made their faith stronger(1995 p.2)

CONCLUSION

In this paper I have argued that PTSD and transcendent religious states have antithetical effects on the brain. The research suggests that encouraging the types of rituals, myths and meditative practices that turn off cognition and sensation and encourage right-brain subsidiary circuits to operate may aid victims of trauma in their recovery.

If religion or spirituality is conceived of only in terms of belief-sets or propositional claims, the rejection of religion by trauma victims seems quite reasonable because the belief claims of many religions tend to attribute Pollyanna-ish qualities to the world as a result of the belief's origins in antique texts or cultural views. But if spirituality is thought of in terms of experiences, rather than beliefs, it makes sense to encourage the type of practices that promote biological synchronicity, attachment, compassion, sensitivity to the needs of others, ego-reduction and peacefulness. I'll end with a quote from Drescher and Foy on the goals of spiritual treatment for PTSD victims:

The ultimate goal for the individual participants is recovery of a sense of hope, and a more realistic, balanced view of the world as a place of both danger and safety, evil and good. Facilitating patients' re-connect with the roots of their childhood faith or discovering new avenues of religious expression, may provide ongoing meaning and comfort. Patients may also identify spiritual practices which ultimately provide release from guilt, comfort for pain and loss and support for the struggles of healing which lie ahead. (1995, p. 5)

This would be a good goal for spirituality for anyone, PTSD victim or not, I think.

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