Theoretical

PSYCHOPHYSIOLOGIC SELF-REGULATION AND HUMAN POTENTIAL

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ABSTRACT

Seven converging lines of thought are synthesized in support of the perennial theory of spirit-mind-body unity and control, namely 1) ethology, 2) Freudian psychodynamics, 3) perception, 4) psychoneuroanatomy, 5) autogenic training, 6) yogic subtle-energy theory, and 7) Jungian psychology. Biofeedback training and visualization therapy are seen as simple and natural ways of becoming conscious of, and modulating, normally unconscious body/mind processes.

Keywords: Psychophysiologic, self-regulation, volition, human potential, yoga, psychoanalysis, ethology, archetypes, biofeedback, perception, subtle, energy, mind, matter

For most people, Human Potential relates to an undeveloped capacity in humans to control their own lives, their own health, and their own destiny. Exact agreement may not be found, but most of us, when we think of human potential, think of greater individual freedom from genetic limitation, environmental conditioning, and from "fate." Fate, in the present context, is what we are forced to submit to, if we remain passive and do not develop volition. Ideas of self-power and volition are contained in the phrase Human Potential.

Biofeedback, on the other hand, is a new word. There is little common understanding of the term and specific definition is required. Biofeedback is the feedback of biological information to a person. It is the continuous monitoring, amplifying and displaying to a person (usually by a needle on a meter, or by a light or a tone) of an ongoing internal physiological process, such as muscle tension, temperature, heart behavior, or brain rhythm. Biofeedback is *not* conditioning and it is not therapy, any more than looking at one's weight on a scale is conditioning or therapy.

Biofeedback *training*, on the other hand, is the use by a person of his or her own physiological information in learning voluntarily to control the process being monitored. If anyone insists, the procedure might be called instrumental self-conditioning, though linking "self" with "conditioning" may seem paradoxical. "Psychophysiologic self regulation" is a more useful phrase.

The main focus of this paper is on the *rationale* of psychophysiologic self regulation, on the relation of states of consciousness to body control. For a Yogi, neurologic terminology may not be useful. He usually has a cosmological and anthropological view that satisfies his need for a theory of mind-body coordination. But rational, logical, discursive, intellectual persons, have a different mythology, and a modern explanation of psychophysiologic self regulation is useful.

Some people in the West, and some in the East, who have been opposed to mind-body explanations, say, "Who needs a rationale? *Being* is what is important, not thinking." Nevertheless, let me propose that a left-brain

rationale concerning self-regulation is critically important at this time. The need to know is not limited to physicians, psychologists and scientists, however, patients learning self regulation skills have the same need. If the patient does not understand the theory of what he or she is doing, then the training procedure is of little more value than conditioning, or a placebo. Those medical methods sometimes have good initial effects, but they generally fade away to zero as time passes. With proper understanding, however, the self regulating patient develops a skill which, like riding a bicycle, is not lost as time passes, but improves.

Not all biofeedback therapists in the United States are clear about the patient's need to understand. Without understanding, it is almost impossible for biofeedback patients to realize *they* are the ones who regulate the physiology, not the doctor, not the medical procedure, and not the biofeedback machinery. If this realization does not develop, their psychosomatic problems cannot be brought under their own control, or if placebo-like gains are made, they cannot last.

Even when the left cortex is not very bright, it has veto power over almost everything the right cortex wants to do, or try, or visualize. How remarkable. In this metaphor, the part of our brain which knows very little on an experiential basis (except the recording and analysis of facts, and thinking, giving learned opinions, and talking), has executive control over the part of ourselves that intuitively but a-rationally knows things. The left cortex, by itself, seems never to be happy until it either knows everything, or is defended against everything it does not know. Within bounds that is a virtue, or course. If correct true-to-natural-law understanding is achieved (and that is certainly the goal of science), then genuine self-control becomes easier.

Providing an adequate explanation to a grade-school student is simple compared to providing an adequate explanation for a neurologist, but in both cases it is necessary for them to understand how it is possible to do what they are trying to do. As training progresses, they begin to *know* that they have the power to effect change. When these two conditions of successful self regulation are fulfilled, understanding and knowing, then the self regulation skills which are being learned tend to become

permanent acquisitions, and can be generalized to many problems in life, not merely to psychosomatic disorders.

In addition to wanting to know, most humans want to be able to make things happen, at will. At least this has been the Western orientation, and it seems to have usefully accelerated world evolution[1].

In honor, then, of the "rationale of psychophysiologic self regulation," and the need to understand, to know, and to make things happen, I discuss seven converging lines of thought which, to me, account for most experiential and scientific data in the area of mind-body relationships. We have previously discussed some of this material in other contexts[2-4]. The present paper is limited mainly to conclusions and I have not cited, in our traditional left cortex manner, the dozens of germane references.

The converging lines, which to me seem especially significant, are: (1) ETHOLOGY, the comparative study of learning and instinct in animals and humans, including subsidiary factors of behavioral genetics, physiological genetics, conditioning, and general learning theory; (2) classical FREUDIAN PSYCHODYNAMICS; (3) PERCEPTION in animals and in humans; (4) PSYCHONEUROANATOMY, neuroanatomy, neurophysiology, biofeedback and the neurological and hormonal correlates of perception and visualization; (5) AUTOGENIC TRAINING, developed by German psychiatrist Johannes Schultz and extended by Wolfgang Luthe; (6) YOGIC THEORY of mind-body coordination; and (7) JUNGIAN PSYCHOLOGY.

1. **ETHOLOGY:** In Chapter 2 of W. H. Thorpe's book, *Learning and Instinct in Animals*[5], there is a comprehensive summary of the mechanisms of perception, learning, and behavior in animals. It concludes with the thought that ethological research provides "a very strong a priori case for explanation of animal behavior in terms of 'expectancies'." Expectancies, it should be noted, appear in humans as correlates of autogenic (self generated) visualization, and are responsible for much of our behavior.

Until 1940, or at least until the days of ethologists Tinburgen and Lorenz, the concept of instinct in animals was avoided by biologists and psychologists. As Thorpe points out, instinct, as a scientific puzzle, was considered disreputable because of its postulation of forces which now are known as biochemical gradients, but which then were not understood. Ethologists (and other scientists who focussed primarily on brain structure and learning theory) were beginning to express the idea that "drives" are essentially the activity of specific neurological and hormonal mechanisms, and that a general drive of some kind is actually the partial expression of a very specific sensory-motor mechanism of the central nervous system (CNS). Ethologists began talking about "fixed action patterns" and the fact that, at least in humans, "habit mechanisms may become drives." Such action patterns, according to Thorpe, are "items of behavior in every way as constant as anatomical structures."

Then the idea began to develop that drive originates from specific patterns, not the patterns from the drive, and researchers began to talk of "action specific energy." In addition to action specific energy, there arose another group of ideas related to "action specific exhaustability", biochemical exhaustion of a specific nervous coordination mechanism, and whether we look at the problem from the psychological side as exhaustion of psychic energy, or exhaustion of neuro-chemicals, behaviorally we have the same thing. We begin to understand some of the relationships between brain processes and psychological processes. Between perception, neurochemistry, and behavior.

The important fact learned from ethology is that "there is a continuous interplay between the perception of the environment and the kinds of behavior displayed, external and internal." It is noteworthy that in biofeedback training one's inner self generated *visualization* is often as powerful as a perception in bringing about physiological change.

"Perception of the environment," to use Thorpe's phrase, is correlated with what appears to be "the potential for specific kinds of behavior," which we can sometimes identify as associated with specific changes in concentration levels of neurohumors.

2. FREUDIAN PSYCHODYNAMICS: In a uniquely insightful article called "Behavior Correlates of Neural Function," psychiatrist Mortimer Ostow discusses the similarities of theory in ethology and psychoanalysis[6]. The first general understanding of brain and behavior resulted from the many brain damage studies which began to appear after World War I. Then came Penfield's work with epileptic seizures. Bilateral temporal lobectomies and frontal lobotomies also added to the brain-behavior data bank. It was Ostow, though, who first pointed out that the empirical discipline of ethology and the theory generated from those observations, correlated remarkably with the behavioral observations made by psychoanalysts, and with the psychodynamic theory that sprang from those observations. As Ostow points out:

> *The responsiveness of instincts to symbolic stimuli are formulated quite similarly in ethology and psychoanalysis despite their completely independent evolution... in a sense, this result must be inevitable if both disciplines are based upon precise description of behavior in the natural state rather than in laboratory isolation... it would be disappointing if there were really significant divergences between the principles of ethology and the principles of psychoanalysis. The differences that do exist arise from the fact that ethologists do not assume the existence of any kind of psyche whereas the psychoanalysts attempt to account for the behavior they observe by antecedent psychic calculations. They are in a position to do this because they possess reports of these psychic changes which they can correlate closely with overt behavior. What may seem to be abstruse psychoanalytic theory is merely a set of hypotheses constructed for the purpose of explaining and predicting overt behavior.*

Ostow also points out that anticipation, which we may not be conscious of (such as that associated with unconscious visualization during the use of placebos), has psychic and somatic mobilizing or demobilizing effects, often "mediated by the autonomic nervous system." In other words, Ostow realized over three decades ago that there is a Psychophysiology of Visualization. In animals it depends on

perception, but in humans it depends not only on perception, but also on non-perceptual symbolic processes, namely visualization.

3. PERCEPTION: This fascinating branch of psychology would be useful to analyze in depth, starting with Helmholtz and Fechner over 100 years ago, but there is no space. Only conclusions can be reviewed. Many writers have pointed out that a pure image of the world, as registered in the sensory apparatus, never comes to consciousness. What *does* become conscious is the internal image resulting from the fusion of sensory percept and the fantasy which represents the emotion or the instinct. As Ostow neatly put it:

> *To the fused image, the sensory percept contributes the conviction of reality and the fantasy contributes the affect. In fact, consciousness may be thought of as the organ of apperception.*

Apperception, please note, is defined as the relating of new to previous knowledge. The main point here is that perception of outside-the-skin events combines with inside-the-skin fantasy to create a perception/fantasy gestalt that triggers the behavioral mechanisms of ethology. This is the mechanism that visualization triggers in bringing about self generated autonomic change.

4. PSYCHONEUROANATOMY: To the best of my knowledge, the first modern paper in the field of neuroanatomy, behavior, and states of consciousness, was Papez' 1937 article titled, "A Proposed Mechanism of Emotion"[7]. During the Forties and Fifties, the main features of brain-mind inter-relationships began to be more clearly seen, and relationships began to be delineated between the cortex and subcortical structures, voluntary and involuntary, conscious and unconscious. Finally, through years of neuroanatomical studies, the most critical aspects of motivation and emotion focused directly on the limbic system, indicated in the lower left corner of Figure 1.

New data on limbic structures continuously come into the picture, involving neurotransmitters, biochemical gradients, glial electro-potentials, psychoneuroimmunology, and solid-state diode-like behavior of

living membranes, but MacLean's early view of the limbic system[8] as the visceral-emotional brain involved in every kind of behavior, has not significantly changed.

Of particular significance in the theory of self regulation training is the fact that the major difference between humans and animals seems to be: Animals appear locked into the machinery of objective sensory systems and into the tightly correlated limbic-hypothalamic-pituitary behaviors, whereas humans are able to inject, through self-generated imagery and visualization, biochemical and neurological perturbations into these CNS structures.

In other words, animals are controlled mainly by what they sense, genetic configuration and conditioning taken into account. Humans, however, are controlled not only by what they sense, but also by what they *visualize.* The caption of Figure 1 explains how the primary controller of behavior, the limbic system, is itself guided and controlled to a significant extent in humans by visualization. This is the neuroanatomical and theoretical basis, of course, of visualization training, of biofeedback and psychophysiologic self regulation training.

Visualization coupled with volition seems to enter the brain-body system through the box in Figure 1 called the "Emotional and Mental Response to Inside-the-Skin Events"[9]. In humans, visualization can enter the nervous system as a self-induced psychological event, and can initiate physiological change just as effectively as if it were an outside-the-skin sensory event.

Reductionists have argued that what is really going on inside-the-skin during visualization of physiological change (as in biofeedback training), is merely a biochemical process having epiphenomenal correlates. That is, a person merely *imagines* that he or she is visualizing something at will. What is referred to as visualization, they say, is actually the involuntary psychological correlate of endogenous biochemical and neurological processes. They maintain it is impossible to do anything volitionally because there is no such thing as volition.

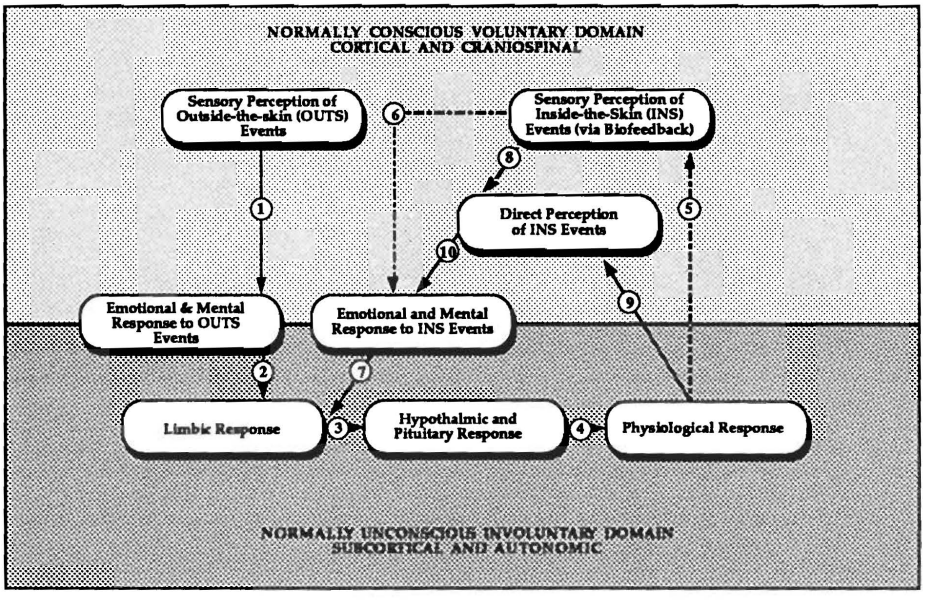

Figure 1. *Self-regulation of Psychophysiological events and processes*

Sensory perception of OUTS events, stressful or otherwise (upper left box), leads to physiological response along Arrows 1 to 4. If the physiological response is "picked up" and fed back (Arrow 5) to a person who attempts to control the "behavior" of the feedback device, then Arrows 6 and 7 come into being, resulting in a "new" limbic response. This response in turn makes a change in "signals" transmitted along Arrows 3 and 4, modifying the original physiological response. A cybernetic loop is thus completed and the dynamic equilibrium (homeostasis) of the system can be brought under voluntary control. Biofeedback practice, acting in the opposite way to drugs, increases a person's sensitivity to INS events and Arrow 8 develops, followed by the development of Arrows 9 and 10. External feedback is eventually unnecessary because direct perception of INS events becomes adequate for maintaining self regulation skills. Physiological self-control through classical yoga develops along the route of Arrows 7-3-4-9-10-7, but for control of specific physiological and psychsomatic problems biofeedback training seems more efficient[9].

To holders of that self-defeating theory we say: As soon as colitis, or hypertension, or migraine begins to ruin your life, let us know. We can show you how to get out of that bind, if you will. We can help you: 1) formulate specifically what you want to have happen in the autonomic

nervous system, 2) train you how to visualize what you want, and 3) help you learn how "to let it happen." In consequence, your "uncontrollable" physiological dysfunctions will begin to come under your own voluntary control. If a left-cortex *theory* is the only thing standing in the way of your return to good health, give it up.

5. AUTOGENIC TRAINING: The psychological side of physiological self regulation was known to Johannes Schultz early in this century, though his handbook, Autogenic Training, was not translated into English until 1959[10]. In Autogenic Training there are six standard exercises, involving the feeling of heaviness throughout the body, peripheral warmth, heart rate regulation, respiration control, abdominal warmth, and cooling of the forehead. When the standard exercises are mastered, the trainee experiences the body as a "resting mass which is heavy and warm, the heart slows, deep and slow respiration is perceived, and the head is sometimes experienced as being separated from the rest of the body." After learning the basic standard exercises, a series of meditative formulas are sometimes used, ending with one called, "Answers From the Unconscious"

The parts of Autogenic Training I wish to draw particular attention to are called Organ Specific Formulas and Intentional Formulas. They are far beyond simple deep relaxation. After the patient learns to move easily into the deeply quiet state, target-oriented visualization can then be used successfully. The chapter called "Biofeedback and States of Consciousness"[4] includes some useful examples of this kind of visualization training and its physiological correlates.

With the information of Figure 1 in mind, it is clear how biofeedback training works. Inside-the-skin physiologic information that was previously "known" only to the hypothalamus and other deep-brain structures, is fed back to the cortex via outside-the-skin biofeedback devices. This feedback tells the cortex how to change its visualization so as to bring about changes in the physiology. Biofeedback accelerates Autogenic Training because the cortex finally is able to find out, rather than just guess, what is going on "down below" in the limbic-hypothalamic-

pituitary domain. We must remember that the body is a puppet of the CNS, and feedback from the body to the cortex is really feedback to the cortex of subcortical processes in the CNS. Thus, biofeedback implements, at least partially, the dictum "Know thyself." When properly used, that knowing sets us free of subcortical distortions of homeostasis and the associated psychosomatic dysfunctions. For some patients, freedom from subcortical distortion leads, often unexpectedly, to transpersonal experience, to a far deeper knowing of themselves[4]. This was an unexpected result in biofeedback training, but one that is now understood.

6. YOGIC THEORY[11]: But how is it possible for an idea held in mind (a visualization) to become an enzyme in the body? Here Western science is at a loss. An interesting theory which may help solve this puzzle, comes from yoga. Namely, the body is a special case of the mind. Every cell of the body is a cell of the mind. Further, the body is the spacetime percept of the human energy structure as projected into "consciousness" by a spacetime organ, the brain. Data from our physiological study of Yogis tends to support that theory. For instance, in 1971 we had a chance to examine some of the psychophysiological skills of Swami Rama of Rishikesh, India. Consider the following excerpt from *Beyond Biofeedback*:[9]

> *. . . as I was taking Swami Rama with wires draped over his shoulders into the experimental room, he turned and said to Alyce, "When my heart stops, call over the intercom and say, 'That's all.'" I asked why he wanted that, and he said, "Since I am not prepared in the ordinary way for this experiment, I do not want to do it too long. I want to be reminded to stop so that I will not forget what I want to do. I do not want to damage my subtle heart." I asked him to explain that, and he said that the heart seen in surgery is only the physical appearance of the heart. The way he described it, the real heart is a large energy structure, of which the physical heart is only the dense section.*

In yogic description, the "subtle heart" is only one organ of a "subtle energy body," which many Yogis claim to be able to see. According to

their description, this energy body is our "true" physical self. It is made of Prana (a relatively dense form of mind, which itself has many gradations of density). The human spacetime brain perceives this "subtle body" with physical sensory systems which detect only a small slice of the total spectrum of substance, so the open-heart surgeon naturally sees only the "dense" physical heart when the chest is opened, unless he has had specialized yogic training and is able to "see" the entire heart.

Since prana is a form of mind in this theory, it is not difficult to understand why Yogis find nothing miraculous in the Biblical events called "miracles." To them, everything is natural, under natural law, and all natural law is, in their estimation, Divine Law, whether it pertains to gravity, electromagnetism, body, mind, or spirit. With this "subtle energy" theory as a base, Yogis are not surprised by the idea that a single cell of the physical body can be manipulated by mind (by visualization), as in single-motor-unit firing[12,13]. This control of a single nerve cell is simply the control of a cell of the mind, a single pranic entity. And in the yogic theory, that entity responds to visualization because it "is" mind.

Jack Schwarz, founder and director of the Aletheia Foundation, Ashland, Oregon, was another early research subject in our psychophysiology lab at the Menninger Foundation. He demonstrated voluntary control of bleeding and pain (at least control of the craniospinal and autonomic correlates of pain) when he pushed a sail maker's needle through his biceps, and held burning cigarettes against his forearm until the skin sizzled. When asked to explain his physiological control he said, "The body reflects the mind, and when I make up my mind that something either is not going to happen in the body, or is going to happen, then that is what the body does." When questioned about the body as a reflection of mind, Jack's explanation was identical with the yogic view--mind and body are not separate. It is an error, he said, to think of the body as a "physical" structure rather than as a subtle energy structure, a part of mind. In his view, this error forces us, binds us as in hypnotic trance, to see the world in a distorted way, that is, forces us to see the world in our usual down-to-earth common sense way.

For a period of three months, in 1973-74, our Voluntary Controls Research Team from the Menninger Foundation, had a chance to measure, with a portable psychophysiological lab built into two suitcases, the physiological self regulation prowess of seventeen yogis in India. The explanations they gave of their body-mind skills were in no essential way different from those given by Jack Schwarz. And it is of interest that when Doug Boyd had a chance to study an American Indian Medicineman, Rolling Thunder, in the field rather than in our Topeka laboratory[14], he got mind-body explanations which translate well into Jack Schwarz's idiom, and into yogic concepts. As we see it, biofeedback implements yogic theory.

7. JUNGIAN PSYCHOLOGY: Although we went to India in 1973 in order to contact yogis and to test as many as possible with our psychophysiologic recording devices, we took the opportunity (as we traveled 7000 miles in a minibus) to photograph many ancient and modern temples. And as we did this, I was struck by the juxtaposition in the temples of the Jungian archetypal symbols of good and evil.

At Bodhgaya, where the Buddha is said to have attained "enlightenment" while meditating under the Bo tree, the main temple is surrounded by a spacious courtyard containing many small statues. Some of the carvings are of demons rather than devas (angels).

In old Hindu temples in the jungle, almost cut off from view by foliage, there were devil figures scattered among angels. And in Visakaputnam, where we had a chance to study the physiological performance of a Yogi who meditated in an airtight box for seven and one-half hours (in the laboratory of Professor K. Ramakrishna Rao), I had an opportunity to photograph a relatively modern temple. Malevolent beings had been given a prominent position in a melange of divine, semi-divine, and hellish figures.

While I was taking telephoto shots of these stone forms, an Indian in an orange robe walked up and said, in flawless British English: "I hope you understand that when the peasants who live around here come to

meditate or pray, they think they are praying to those beings out there. But those of us who know something understand that those beings represent the various parts of our own nature. We must integrate them to become whole, and blend with spirit."

Succinctly, there is the essence of Jungian psychology[15]. What a clear, straight, uncluttered idea. As he spoke, my mind spun through some of the Greek myths. The temple is Mount Olympus. Zeus is at the peak. The gods and goddesses, demi-gods, and forces of every kind are arrayed below. At the bottom is earth. Below that is Hades. This hierarchy of immortal divine and anti-divine beings is in each of us. The temple "is" us.

Recently it has seemed appropriate to say, "The edge of the temple against the sky is the cortex; the central part (gods, goddesses, and demigods) is the limbic system; the base is the hypothalamus and pituitary; and the earth is the body." Where Hades is, I cannot say, but the old idea that "the body is the temple of the spirit" perhaps was a correct intuition of human structure, a concept which we are just now beginning to consider with the left cortex.

A problem for many, however, arises with the word "spirit." Some feel that there is no such thing, or that in the absence of scientific evidence, we should not refer to spirit. Others say, the world is the world, the spirit is the spirit, and ne'er the twain shall meet. So speaking of the central nervous system as the abode of the gods is, in their view, sacrilegious.

The late Indian existentialist and philosopher, Sri Aurobindo, resolved the difficulty, however. According to yogic theory, there is no problem because the infinite unknowable God (Brahman), which lies behind all manifestation, can be known only as His body (Brahma), which *is* all manifestation. And Brahma is composed, says Aurobindo[1], of a continuum of energies from densest physical matter to most rarified spirit. The twain meet because they were never separate. Aurobindo suggests that if we are embarrassed by the word "spirit," then we should not use it. Instead, we should speak of the subtlest form of matter. On the other hand, if we are not embarrassed, then we can think of matter as the

densest form of spirit. Aurobindo's view is not inconceivable to many modern physicists, who, as we know, have seen the "solid earth" disappear in a complex dance of quantized energies[16,17].

Returning to the familiar: Our problems in life (which are mainly problems within our own nervous systems if we go deeply enough into the theory of perception, motivation, and action), are problems of integration and transformation of sections of our human/animal nature, of our cortical, limbic, hypothalamic, pituitary nature. And it seems quite clear that unconscious indentification with the limbic system's fight-or-flight reaction, with its genetic fear-first response to unexpected change, and our identification with the limbic brain's me-first orientation, is a major cause of misery on this planet.

Since humans are the highest form of planetary life, it is obvious that this globe can be characterized as a limbic domain. It is certainly not a rational planet, as many people like to believe. Most civilized, scientific societies and states are governed by their leader's limbic responses. For instance, cortical explanation of "weapon needs," is often a justification of limbic "survival" decisions of which they are not fully conscious. Weapons have a place, but weapons plus lack-of-consciousness does not seem to be a useful combination.

In the context of the temple, the solution of our own individual problem is to become conscious of cortical-subcortical relationships, and know something about the gods and goddesses within us, whatever their exact neurohumoral representation in the brain. The solution to the problem of global unrest is for this kind of enlightenment to pervade society, unlikely though it may seem. Interestingly enough, machine-aided biofeedback training for health is one of the avenues of progress.

The idea that the forces of the temple are simply "projections" of human nature, is not the full concept, however. Hindus and Tibetan Buddhists, alike, and also Carl Jung, say the forces in us are representations of subtle planetary energies which are "real." That is, the gods are real, and we are the projections of the gods, not the reverse. What we

perceive of them, though, and what we perceive of ourselves, are projections. So, they say, we *are* the gods. Carl Jung had some useful ideas about this paradoxical other-dimensional reality which he gleaned from translations of Tibetan manuscripts[18].

> *For years, every since it was first published, the Bardo Thodol (The Tibetan Book of the Dead) by Evans-Wentz[19] has been my constant companion, and to it I owe not only many stimulating ideas and discoveries, but also many fundamental insights... Not only the "wrathful" but also the "peaceful" deities are conceived as sangsaric (substance) projections of the human psyche, an idea that seems all to obvious to the enlightened European, because it reminds him of his own banal simplifications. But though the European can easily explain away these deities as projection, he would be quite incapable of positing them at the same time as real... The ever-present, unspoken assumption of the Bardo Thodol is the anti-nominal character of all metaphysical assertions, and also the idea of the qualitative difference of the various levels of consciousness and of the metaphysical realities conditioned by them. The background of this unusual book is not the niggardly European 'either-or,' but a magnificently affirmative 'both-and.'*

With this, my synthesis ends. These seven basic lines of thought, however partial, outline a picture of human nature which, no doubt, will be much clearer by the end of the century, though probably not much changed in broad outline. In the meantime, it is good to know that even if we do not know everything, at least we know *something*. Human potential, released and enhanced by yoga, meditation, and biofeedback training, makes it easier to live in a cluttered and polluted world. Studies in human potential encourage us to believe that humans will, after all, successfully develop some of their inner nature and save the planet, rather than destroy it.

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