

The human experiences, beliefs and behaviors categorized as religious or spiritual have persisted throughout history. Despite predictions that religion would fade with the rise of science, it has not done so in most nations. Recent research in cognitive science and evolutionary psychology point to the likelihood that in some form both religion and spirituality will continue to exist. A transhumanist research program into the functional origin of religion and spirituality will be proposed under the title Trans-Spirit. Trans-Spirit researchers seek to achieve a complete scientific understanding of spiritual phenomena and, based on that understanding, to develop techniques and technologies for inducing spiritual experiences at will. The purpose, scope, protocols and aims of this research program will be outlined in general terms which other investigators will be encouraged to elaborate upon.

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### **Introduction**

Traditionally, religion (by which I mean any given religion) has usually been discussed in terms of its claims to truth, the credibility of the historical evidence for its purported origins, and the benefits (or lack thereof) it provides for its adherents in this life or after death. Spirituality, which often overlaps religion but is not identical to it, has usually been discussed in terms of personal beliefs and practices (such as prayer, meditation, fasting, etc.) engaged by an individual in order to achieve some desirable transformation, usually in terms of consciousness, but also very often with the hope of a desirable outcome after death. The research program I propose, Trans-Spirit, aims to avoid any extended discussion of the history or credibility of religion and spirituality, while focusing

almost exclusively on the physical mechanisms that predispose human beings to believe and behave according to religious and spiritual norms.

For the purposes of Trans-Spirit research, religion shall be defined as communally-shared practices and beliefs concerning supernatural beings, magical forces, life-after-death, and even the forces of nature. Similarly, spirituality shall be defined as personal practices and experiences of an individual, which may or may not overlap with religion.

While philosophical considerations are always important, the method of Trans-Spirit sidesteps many basic metaphysical questions. We do not consider, for example, how to resolve the philosophical conundrum of solipsism (i.e., "the view that 'I am the only mind which exists', or 'My mental states are the only mental states'" [Thornton 2004]). Nor do we deal with the possibility that we are immaterial entities existing only in the mind of God (Berkeley 1998), or that we are living in a computer simulation (Bostrom 2003). Trans-Spirit research assumes that physical, physiological and psychological explanations are preferable to non-physical, mystical and supernatural ones.

The Trans-Spirit approach I take toward religion and spirituality is explicitly Transhumanist, with a positive orientation toward science and technology, and the aim of overcoming hindrances to human well-being (World Transhumanist Association, Transhumanist Declaration 2002). This approach precludes the acceptance of many traditional religious beliefs about the value or necessity of suffering, for example, while admitting that some degree of suffering may be unavoidable, but is certainly not desirable. The Trans-Spirit approach can be viewed as coinciding with the central thrust of all spiritual seeking, which is to find personal transformation and blessed happiness, and then share them with others.

The main tools of Tran-Spirit are neuroscience and evolutionary psychology, together with the burgeoning new field emerging at the intersection of these two fields with religion: neurotheology. I seek to avoid joining those who have entered into the millennia-long debate over religious claims about God, the soul, life after death, and similar topics. Looking at the long history of religious conflict up to the present time, I see little value in watering this tree of argument that has born so few good fruits. Rather than debating the truth value or instrumental utility of religious claims, I would bypass them in silence. Then, using the tools of science, I would dig into the roots of religion, analyze the type of soil in which it grows, and try to understand how the best branches of it might be cultivated and the worst pruned away for good and all.

### **The Nature of Religion**

In the modern era, skeptics and atheists have challenged the ancient creeds by disputing their historical, cosmological, and supernatural claims. Such challenges rarely caused any believers to abandon their faith because their faith did not arise from a rigorous study of history, or a scientific investigation of the cosmos, or anything like a randomized, double-blind, placebo-controlled study of spiritual phenomena. Religion arises from a wholly different level of human experience. *Religious faith arises from a particular interpretation of experience that occurs naturally because of peculiar aspects of human cognitive systems.*

At the level of simple, intuitive belief, it seems that most people tend to be philosophical dualists: they believe in a separation between the physical body and an immaterial mind or soul. Psychologist Paul Bloom explains the situation this way:

Some scholars are confident that people will come to accept the scientific world-view, and reject the notion of an immaterial soul. I am much less optimistic. People do believe all sorts of things that violate common sense. ... Some suggest that each brain contains two conscious entities (one for each hemisphere), and some doubt that consciousness even exists. We can add to this list of crazy views what Francis Crick called 'the astonishing hypothesis'—the view that dualism is wrong, that mental life is the product of a purely physical brain.

People might sincerely believe these things. (I certainly believe the last one.) But such beliefs exist at a different level than gut feelings. They are more fragile, and less embedded in our everyday lives. ... People can reject dualism at a conscious level, but the intuitive sense that body and soul exist is here to stay.

What about the more modest proposal that people will come to reject dualism at an explicit conscious level? In the domain of bodies, after all, most of us accept that common sense is wrong. We concede that apparently solid objects are actually mostly empty space, consisting of tiny particles and fields of energy. Perhaps the same sort of reconciliation will happen in the domain of souls, and it will come to be broadly recognized that our dualist belief system, though intuitively appealing, is factually mistaken. Perhaps we will all come to agree with Richard Dawkins and Daniel Dennett and join the side of the "brights": those who reject the supernatural and endorse the world-view established by science.

But I am skeptical here too. The notion that our souls are flesh is profoundly troubling to many, as it clashes with religion. Dualism and religion are not the same: You can be dualist without holding any other religious beliefs, and you can hold religious beliefs without being dualist. But they almost always go together. And some very popular religious views rest on a dualist foundation, such as the belief that people survive the destruction of their bodies. If you give up on dualism, this is what you lose (Bloom 2004).

One possible explanation for the continued prevalence and tenacious staying-power of scientifically implausible beliefs, such as dualism, is that certain cognitive systems that evolved for survival purposes will tend to be recruited quite naturally by religious memes. (A meme is a replicating unit of cultural or informational transmission; for example, tunes, ideas, catch-phrases, clothing fashions, ways of making pots or of building arches [Dawkins 1989].) The human mind tends to make inferences in which it ascribes agency and motivation to natural phenomena that lack such attributes, to believe in personal survival of death, and to experience altered states of consciousness when under conditions of stress, exhilaration, awe, passion or the influence of external factors such as electromagnetic fields and certain patterns of light and sound. While particular interpretations will vary somewhat from one religious culture to another, in general religious memes will always involve a tendency to ascribe intelligence, agency and motivation to natural phenomena that lack these attributes. In addition, as Boyer points out (2001, p. 300) people often fall prey to such psychological pitfalls as the:

- **Consensus Effect:** People tend to adjust their impression of a scene to how others describe it; for instance, they may perceive a facial expression as one of anger, but if various people around them see it as one of disgust, they too will say that they perceive it as expressing that emotion.

- **False Consensus Effect:** This is the converse effect, whereby people tend wrongly to judge that their own impressions are shared by others—for instance, that other people’s emotional reaction to a scene is substantially similar to theirs.
- **Generation Effect:** Memory for information an individual generates by himself/herself is often superior to memory for perceived items. In a particular scene you imagined, the details you volunteered will be recalled better than those suggested by others.
- **Memory Illusions:** It is easy for experimental psychologists to create false memories, whereby people are intuitively certain they did hear or see some item that was in fact imagined. Also, imagining that you perform a particular action, if that is repeated often enough, may create the illusion that you actually performed it.
- **Source Monitoring Defects:** People in some circumstances tend to get confused about the source of particular information. (Was it their own inference of someone else’s judgment? Did they hear it, or see it, or read about it?) This makes it difficult to assess the reliability of that information.
- **Confirmation Bias:** Once people entertain a particular hypothesis, they tend to detect and recall positive instances that seem to confirm it, but they are often less good at detecting possible refutation. Positive instances remind one of the hypothesis and are counted as evidence; negative instances do not remind one of the hypothesis and therefore do not count at all.
- **Cognitive Dissonance Reduction:** People tend to readjust memories of previous beliefs and impressions in light of new experience. If some information leads them to form a particular impression of some people, they will tend to think that they had that impression all along, even if their previous judgment was in fact the opposite.

Although the belief set of any religion can be intellectualized, acceptance of those beliefs is fundamentally a matter of psychology (and evolutionary biology) and not of reason. An intellectual dispute about the ideological content of religious faith is a category error. It is like trying to debate someone who is madly in love. One cannot be argued into love any more than one can be argued out of it. Love is fundamentally not something one decides on the basis of the intellect. Similarly, religion is not something that one chooses by studying all the available faiths and choosing one. Most people are raised in a culture where a particular religion is dominant. They tend to adopt that faith automatically as part of their normal acculturation. Then, when they have certain experiences, such as eerie coincidences, or feelings of a sensed but invisible presence, or encounters with dead bodies, or dreams of the recently deceased, their faith in their culture’s religion will either tend to be strengthened, or else they will seek another religion that seems to provide better explanations for these experiences.

### The Nature of Spirituality

The cognitive systems that can be recruited by religious memes are based on brain structures featuring excitation thresholds that vary from one individual to another. In some people, these brain structures can be triggered more easily to produce unusual states of consciousness. The temporal lobe is one such structure that has been linked to experiences of sensed presence (when no one else is nearby), feelings of elation, and other states of consciousness generally categorized as spiritual (Persinger 1987; Murphy 2004).

Other researchers have shown experimental evidence that during meditation and prayer additional brain structures are affected. Increased activity in the frontal lobes and decreased activity in the posterior superior parietal lobe have been found (d'Aquili and Newberg 2001). The discovery of this neurological activity pattern prompted researcher Scott Atran to speculate that "this may have something to do with the most outstanding aspect of mystical experiences: namely, a vivid but diffusely conceived awareness of a boundless universe, centered on (joined to, merged with) a self that has no physical markers or constraints" (Atran 2002, p. 181).

Neurons outside the central nervous system may also play a significant role in mystical experience. According to researchers d'Aquili and Newberg (2001, p. 40) "the autonomic nervous system may be fundamental to religious experience" because different types of meditation differentially affect its two components, the arousal (sympathetic) and quiescent (parasympathetic) systems.

Significantly, perhaps, Zen Roshi Gudo Nishijima also asserted that balancing the autonomic nervous system is essential to spirituality, especially for understanding what Buddhists call the "storehouse consciousness" or *alaya-vijnana*. (The *Oxford Dictionary of Buddhism* [p. 8] defines *alaya-vijnana* as "the substratum of consciousness" from which all "the remaining seven consciousnesses arise and produce all present and future modes of experience" but which "at the moment of enlightenment" is "transformed into the Mirror-like Awareness or perfect discrimination of a Buddha".) Nishijima wrote of his belief that "the functioning of the autonomic nervous system, which is ordinarily beyond our conscious control, was none other than the functioning of the unconscious itself: the *alaya-vijnana*" (Nishijima 1992, p 55).

It is not yet clear to what degree this neurological tendency toward spiritual experiences is genetic or environmental. At this time it is probably still too early to speculate on which genes might be associated with a propensity for spirituality, although at least one researcher claims to have found a modest (less than 1%) correlation between a personality trait known as "self-transcendence" and a certain version of the VMAT2 gene (Hamer 2004). No doubt, both heredity and environment are important factors for the determining the entire set of individuals who have spiritual experiences to a significant degree. But such general knowledge is not helpful in the case of any individual, just as a public health warning cannot substitute for an individual diagnosis rendered by a competent physician.

Regardless of how much heredity or environment may affect the propensity for spiritual experiences, however, there is one factor that clearly works to increase the frequency and intensity of such experiences: personal spiritual practices. This should not be surprising, since the promise of having such experiences has been presented enticingly by the books and teachers of spiritual traditions since time immemorial. As Boyer suggests (2001, p. 308) "we will learn a lot about religion by asking mystics or devotees about their specific experience, about its special features, about the way it connects with other thoughts."

Prayer, meditation, chanting, fasting, contemplation of sacred images, and the ingestion of mind-altering substances have been prescribed for spiritual aspirants for millennia. Countless individuals have used these means to alter their minds, their moods and their personalities. (But as we shall see, not all of these alterations are permanent nor are they without some costs.) Study of these "spiritual technologies" is ancient. The new aspect of

this study is our present capacity to examine the physiological, neurochemical and neurological correlates of spiritual experiences.

### Trans-Spirit Levels of Analysis

"Game theory is for aliens."

—Pascal Boyer, *RELIGION EXPLAINED*

Applying insights from game theory and evolutionary psychology to our own selfish genes is contrary to what comes naturally. We want to believe that we act consciously, that we make choices freely rather than being subtly influenced by biological, psychological and memetic forces about which we still have but little knowledge and over which we have even less control. Similarly, viewing our religious and spiritual beliefs objectively is, in most faith traditions, considered to be dubious at best and sinful at worst. We must make a conscious effort to overcome our natural tendency of self-deception. We must overcome our pre-conscious motives that impel us to see ourselves in the false but flattering mirror of our own self-regard. Gazing into this fun-house mirror, we also blind ourselves to the objective reality of the world around us. Or, as George Orwell (1946) put it, "To see what is in front of one's nose needs a constant struggle."

As a first step in dealing with these tendencies, I shall analytically divide religion and spirituality into three levels: Abstract (A), Basic (B) and Concrete (C) as shown in Table 1.

Level	Name	Description
A	Abstract (Theology, Theory, Philosophy)	Systems of religion and belief intended to codify doctrines and to establish official rationales for group practices.
B	Basic (Daily Life, Social Relations, Spiritual Practices)	Personal practices intended to induce subjective states characterized by feelings of unity, ecstasy, bliss, etc.
C	Concrete (Physiology, Neurology, Neurotheology)	Explanatory model of spiritual phenomena and the tendency to create and accept theological systems. Neurotheology employs scientific understanding of the brain, including all of its component systems down to the finest level of detail available.

Table 1: Trans-Spirit Levels of Analysis

Level A is practically useless for the purpose of understanding why most human beings are religious and how spiritual phenomena occur on a causal basis (unless one assumes that some sort of divine revelation has indeed taken place, which is an assumption Trans-Spirit does not make). The explanations given by theology will differ depending upon which religious group (religion, sect, or faith community) has created them. These explanations come *after the fact* of spiritual experiences, or else *in place of* those experiences. Theological explanations are designed to accomplish at least two things: 1) to give to the experiences of every individual the grandest interpretations possible; and 2) to answer people's questions with the most comprehensive, cosmic answers imaginable. However, theological systems often fail to explain adequately or to satisfy completely, which is why members of many religions are so often encouraged to "pray for faith." Theological explanations often fail because they are not causally linked to the experiences they attempt to explain. In addition, theology itself is often internally

contradictory (if not simply incoherent) since most world religions evolved organically from the teachings of one or a few founders and their later followers, few of whom had in mind the creation of a logical and philosophical or scientific system. Rather their goal was the creation of a community of believers.

Level B practices from different religious traditions (or from human self-experimentation) are often similar to one another because, while religions differ, human physiology is highly uniform. Nevertheless, there are some differences. And both the similarities and the differences are worthy of careful study. Prayer, chanting, repetitive movement, meditation, fasting, bodily postures and gestures, each exploit the possibilities inherent in the human organism to produce changes of mood, perception and conception. *The aim of Trans-Spirit is to explain the mechanisms of the body and brain affected by these practices in terms of Level C analysis, not from Level A.*

The reason for seeking Level C explanations is that neither those of Level A nor of Level B can explain scientifically why a given spiritual practice yields the effects that it does. Level A explanations, while perhaps sophisticated and religiously plausible within a particular faith tradition, do not explain why members of other religions or no religion can achieve the same, or similar, effects by employing the same practices. Level B practices are themselves often given in terms of operational definitions, which simply instruct individual practitioners to perform certain actions. Although operational definitions do not require causal explanations, most Level B practice instructions are embellished with fanciful ideas that describe psychic energies, mysterious cosmic forces, and invisible beings. Remove such superfluous packaging and the practices would still have the same effect, but perhaps would not be as attractive to potential practitioners.

Historically, Level A analysis was thought to explain Level B in almost all cases (except, perhaps, for cases of clinical psychopathology with a religious component, such as may occur in patients suffering temporal lobe epilepsy). We might say that Level A analysis was always used in the past because it was the only set of explanations available. In every pre-modern religious tradition, the parochial religion provided Level A explanations that seemed to suffice because a) no other religious tradition was widely available in that particular time and place; b) science in the modern form did not yet exist; and c) philosophical explanations were neither widely known nor easily understood by most people. In addition, we must acknowledge that many ancient philosophical explanations were in reality no more accurate than Level A theological analysis. In terms of their respective degrees of development, Level A is the most sophisticated, having been refined over millennia of elaboration in the most ancient religious traditions. Traditions that have grown over such a long period of time are the work of many minds and many hands, with large bodies of written scripture and commentaries, as well as theologies (both systematic and dogmatic), stories, visual arts, music and ceremonial practices. Altogether, these comprise a magnificent edifice built by generations of human effort. Although impressive to behold, this edifice also functions as an oppressive pyramid of complications. A newcomer to the religious tradition is overwhelmed by the size and complexity of it, and confused by the various sects within it, each claiming to be the sole possessor of right understanding relative to that religion. And that religion, of course, also typically proclaims itself to be the one true faith.

Level B exists beneath the pyramid of the past. At this level, most people simply accept the religious tradition in which they were raised. They don't worry overmuch about how religious claims might be proven. And they tend to be highly resistant to arguments attempting to disprove such claims. But they will sometimes be curious about spiritual

practices that are supposed to yield experiential evidence in support of religious claims. If such practices are engaged intensively, they do indeed produce experiences of an unusual kind. When these experiences appear, most experiencers accept them as confirmatory of religious claims. However, in some cases an experiencer may question whether what has been experienced is truly related to some cosmic reality, rather than being a neurophysiologic response that has been colored by a pre-existing interpretive scheme. Thus, an experiencer may wonder why, if he happens to be a Christian, he sees a vision of Christ, while a Hindu undergoing a similar type of experience sees a vision of Krishna.

Some spiritual traditions, especially those from India, Tibet and East Asia (ITEA), have developed elaborate systems of spiritual practice (e.g., many forms of meditation, breathing techniques, yogic postures, t'ai chi chuan, etc.). These practices go far beyond anything in the Judeo-Christian-Islamic (JCI) traditions when ITEA and JCI are compared in terms of the number, and variety, and complexity of their spiritual practices. The ITEA meditation practices are far more elaborately detailed, with precise instructions on posture, breathing and mental focus. The ITEA traditions also have long lists of experiential phenomena that practitioners must watch for and engage with (i.e., either foster or dampen). Scientific study of advanced practitioners of the techniques developed in ITEA traditions is already underway in Western laboratories. This is leading to an understanding of how Level B practices affect Level C physiology.

While the ITEA practices had often been developed to fit into certain religious niches defined by Level A thinking, the practices themselves will work with or without a Level A superstructure. In fact, they can work outside any religion. But the fact that they rarely do exist outside a religion indicates that most human beings are not comfortable engaging in consciousness-modifying practices for the long term without some kind of broad explanatory structure to support them. For the short term, however, many people are willing to spend a weekend or even a week undergoing some kind of intensive regime of spiritual practice. (Similarly, many people were—and some still are—willing to try psychedelic drugs in an attempt to reach these altered states more quickly and easily, albeit with so many drawbacks that relatively few have been willing to risk their health and sanity by persisting in such dangerous behavior over the long term.)

### **The Costs of Discipleship**

Traditionally, spiritual practitioners have placed themselves in the hands of spiritual masters whose guidance and demands were to be accepted without question. The results of this type of utter submission have been mixed. Dietrich Bonhoeffer, the brave German Lutheran pastor who was martyred by the Nazis for his anti-Hitler activities, gave the title *The Costs of Discipleship* (1959) to his memorable book on the responsibility of Christians to live their faith no matter how high the personal costs. With all due respect to Rev. Bonhoeffer's courage and his cause, I will appropriate his title for broader application. Bonhoeffer called Christians to their moral duty to oppose evil even at the cost of their own lives. He saw this as an essential requirement for true disciples of Christ.

Unfortunately, such bravery even unto death is not limited to the side of the angels. There were others, including the Nazis who persecuted Bonhoeffer, whose discipleship was to a different master. They, too, were fervent and willing to endure self-sacrifice even unto death for their cause. The value of self-sacrifice lies not in the sacrifice itself, but in the rightness of the cause for which a person chooses to make this, the ultimate sacrifice. The nobility of the deed is not in the deed itself, but in the cause.

A religiously-motivated terrorist, of the type currently active among militant Islamists, wraps himself in explosives, walks into a public place, and detonates the explosives, killing both himself and many of his so-called enemies. We cannot deny that the terrorist displayed the courage for self-sacrifice. But we certainly cannot claim that his action was a morally good form of self-sacrifice. This is the dark side of religion, lit only by the Luciferian torch of the fanatic. It is destructive, yet also seductive, as it offers many of the same benefits to its members that can be had from more benign religion affiliations: a firm belief structure, group solidarity, and a higher cause to follow that is greater than oneself. The terrorist, the suicide-bomber, the assassin, the murderer of abortion doctors, may belong to different faiths or traditions, yet they all conform to the same cult of death.

Individual spirituality that includes practices to induce altered states of consciousness does not usually lead to that cult of death, and so may seem to be free of dangerous side effects. But individuals can harm themselves and injure their familial and social relationships by excessive engagement with these practices. A teacher of various forms of meditation reports having encountered several students who were damaged by these practices over the course of his 25 year career. He writes that:

...psychosis may develop if the student over meditates, say several hours at one stretch. If the meditation is too intensive and the focus is on one or two chakras, then ill effects may arise. ... Many lay people in the Far East would like to go to Thai monasteries and be monks for a month or so. There are no radio, television or books to read in these monasteries. They meditate about 8-10 hours a day and stop eating after midday. This monastery practice can drive quite a few crazy, especially if they are not guided. Most of them are not properly guided. So the answer is not to meditate unguided for long periods of time (Khoo 2005).

Practices such as meditation and prayer that may help most people in moderate amounts could impair other people whose peculiar neurological structure predisposes them to conditions such as temporal lobe epilepsy (TLE) (Persinger 1987). But even for the healthy majority for whom these practices are beneficial, excessive engagement can have deleterious effects. Remember the medical dictum: "The dose makes the poison." People who spend many hours every day in prayer and/or meditation over a period of many months or years could cause themselves harm. It is also possible that people who are already neurologically damaged may have a propensity to engage in such practices excessively as a side effect of their pre-existing impairment. In other words, overdoing prayer and meditation (or fasting, chanting, etc.) could either induce, or be the result of, pathology.

### **Spiritual Transformation: An Enlightening Discussion of Enlightenment**

Are there any genuine benefits to meditation practices? Yes. A moderate daily practice with only occasional sessions of intensive practice can have quite salutary effects. I say this based on my own experience as a practitioner of Soto Zen Buddhism as well as on the physiological and psychological benefits of meditation that have been well-documented by reputable scientific researchers (Blackmore 2004). But some meditators are not seeking the kinds of modest benefits that have been demonstrated. They are looking for something much, much more grand and cosmic. They seek Enlightenment!

What is Enlightenment? On this question there is much debate. (For an excellent discussion of this topic, see Blackmore, p. 401-414.) At one extreme (among those who believe in it at all) are those who claim that Enlightenment is a radical and permanent

transformation in consciousness that relieves one of all fear, sorrow, anger, hatred, lust, unhappiness, ignorance and even death. And along with Enlightenment, these claimants assert, come supernatural powers. But at the other extreme (where I place myself), there is the Soto Zen Buddhist view as propounded by 13<sup>th</sup> century Zen Master Dogen that *zazen* meditation is itself “practice-realization”:

The *zazen* I speak of is not learning meditation. It is simply the Dharma gate of repose and bliss, the practice-realization of totally culminated enlightenment. It is the manifestation of ultimate reality (Dogen 2005).

The quest for Enlightenment is the great spiritual lure that draws some people to overindulge in meditation, prayer and often unwise discipleship to any of a large number of questionable gurus who populate today's spiritual marketplace. Indeed, the biggest lure leading into the cultist trap is the promise of Enlightenment. Many poor unfortunates have lost their money, their friends and family, their careers and even their minds to these insidious groups. A cult may deliver the security of group membership, the confidence that comes from adopting dogmatic beliefs, and the comfort of self-righteousness. But the one thing a cult can never deliver is Enlightenment. Detailed first-person reports and documented evidence of cultic abuse are not difficult to find (see for example Falk 2005, and the online Daim Research Index).

Properly understood, Enlightenment is nothing more than the simple, unobstructed awareness that one is alive in this great universe. There is no informational content to it, no secret knowledge suddenly revealed about the origin and destiny of the universe. It is not “the secret of life” —as if life even had such a secret. Enlightenment is simply being awake *and knowing that you are awake*. Therefore, Enlightenment is a sort of cognitive realization. Enlightenment is the *re-cognition* of experience from a different perspective.

Meditation can be helpful in preparing one for this realization. Again, as Master Dogen said, *zazen* meditation is practice-realization, which may be more intense for some individuals than for others. But meditation does not guarantee that one will have that extra, more intense experience of Enlightenment. And that more intense form of the recognition called Enlightenment *often does not occur during meditation*. (For first-hand reports of Enlightenment, see Merrell-Wolff 1994 for realization outside formal meditation, and Morinaga 2002 for Enlightenment during meditation.)

So the attempt to reach Enlightenment by means of relentless, self-punishing, excessively intensive meditation may succeed in some cases, but is more often either futile or dangerous. The Buddha taught the Middle Way. Excessively long and frequent periods of meditation are not the Middle Way, nor are greed for any experience, or for what is conceived to be Enlightenment itself, conducive to its realization.

### **Transhumanist Spirituality**

Transhumanists may choose to engage in spiritual practices. But there is no compelling transhumanist reason to do so. Transhumanists are practical, scientifically-oriented, rational beings who seek to enhance themselves and bring about benefits for others who voluntarily accept them. So transhumanists are already fulfilling at least one of the religious vows of the Mahayana branch of Buddhism, which is the Bodhisattva vow to “save”—or bring about abundant good for—all beings (Kalsang 1995, p. 83).

Many transhumanists are atheists or agnostics who tend to reject spiritual practices because of historical linkages with religion. I would point out to atheists/agnostics that spiritual practices such as meditation can be engaged without any religious component whatsoever. We can study the practical guidelines for meditation that have been handed down by religious traditions and use these guidelines for their empirically-tested value. But we should not stop there: we must use the best current scientific techniques to test the usefulness of the ancient guidelines. Where possible, we must improve on the old ways of doing things.

One of the signal failures of traditional spirituality was its mass character: it was a one-size-fits-all set of practices for most people. Transhumanist spirituality can overcome this limitation. It can be highly personalized, thanks to our growing scientific ability to distinguish individual differences in psychology and neurophysiology. In the past, only a spiritual master was said to be able to give correct individual instruction in spiritual practice, telling one person to use one technique and instructing another person to use a different one. This required a lot of faith on the part of the spiritual practitioner who possessed few intellectual tools for distinguishing between competent spiritual masters and cunning frauds. Unfortunately, as we know so well from the record of modern cults, such faith is all too often misplaced. A scientifically-based, transhumanist spirituality would not require such unquestioning obedience. The reasons for recommending any spiritual practice could be explained rationally based on empirical data and scientifically verified techniques. The effectiveness of the practice could be measured. Guesswork and faith could be reduced to arbitrarily low levels if not eliminated completely.

Will there be a transhumanist religion? Probably not in any sense that corresponds to the traditional definition of religion as a set of propositions accepted without evidence. Rationally, transhumanists cannot accept the myths and religious dogmas of the hoary past. Yet at the same time we must acknowledge the findings of evolutionary psychology that explain how and why these beliefs arose and persist. Crucially, we must not fail to see that for very many people these beliefs and their power to motivate human behavior are unlikely to diminish significantly in the near future. If we seriously want to achieve our transhumanist goals, we must acknowledge that we are not likely to do so by turning the majority of religious believers against us.

### **What Is to Be Done?**

Trans-Spirit researchers have two goals: 1) to achieve a complete scientific understanding of religious and spiritual phenomena, and 2) to develop techniques for inducing and controlling these phenomena for the good of individual practitioners and for society as a whole. I believe that these goals should comprise an important part of the transhumanist program for human advancement.

In proceeding toward these goals, we must begin by deciding how to deal with the phenomena I have categorized in the Trans-Spirit Levels of Analysis. I assert that we should:

- 1) Ignore Level A analysis for the medium term. It offers little to investigators who seek a neurological explanation for spiritual experiences.
- 2) Examine Level B practices using the best available scientific methods, especially by employing brain scanning equipment and biochemical analysis (i.e., monitoring changes

in hormones and neurotransmitters, electrical patterns of neuron firing, etc.). Also, Trans-Spirit researchers should conduct experiments aimed at inducing spiritual experiences. We should consider all available technologies for these experiments, including (but not limited to) transcranial electro-magnetic stimulation of the brain, visual and auditory stimulation to induce altered states of consciousness, and where allowed, chemical agents.

3) Focus on Level C as it relates to spirituality. Very few of the first-hand reports of spiritual events in consciousness have included detailed information about the physical circumstances surrounding such events. The person who experiences spiritual transformation of some kind naturally tends to focus on that subjective event. He or she either ignores, or is literally ignorant of, the surrounding weather, geomagnetic fields, alterations in diet, changes in brain chemistry, etc. that may have contributed to the subjective experience. Events at this most concrete level of physical reality may be causative of the spiritual phenomena that manifest at the next highest level (and probably beyond that, as well, to Level A). In essence, this means trying *to understand Level B in terms of Level C*. (See Appendix: Trans-Spirit Protocols)

Science is still far from having a complete understanding of how the brain functions neurologically. A complete understanding would extend from fundamental phenomena, such as the actions of calcium channels in individual neurons, all the way to the highest levels of conscious awareness. Once these are understood concretely as mechanisms, they can be monitored, manipulated and managed benevolently as a living art.

Before we reach that level of control and beneficence, we must deal with the present confused and dangerous state of human affairs. Transhumanists cannot ignore the evolutionary psychological reasons for human religious beliefs and the organic reasons for spiritual practices. We must work to cool the fires of tribal passions and cultic zeal, while we seek to understand the mechanisms that give rise to these phenomena so that we can both explain and utilize them. The human propensity for religion and spirituality, if understood and properly used, can become part of a benign, progressive and truly liberating way of life.

## Conclusion

In keeping with the transhumanist spirit of free inquiry, the Trans-Spirit research program will not proselytize. Trans-Spirit researchers will not engage in theological or metaphysical disputes with the proponents of any religion. Rather, Trans-Spirit seeks to cooperate with people of religious and spiritual orientations who wish to better understand the phenomena associated with those pursuits.

Transhumanist spirituality will be possible without mythology or religious belief. It will be highly personalized, and based on spiritual practices that have scientifically verified value. Transhumanist spirituality will be the ultimate fruit of the Trans-Spirit research program.

## ***Appendix: Trans-Spirit Protocols***

### **Retrospective Studies**

- Ignore the person's interpretations of his/her spiritual experiences
- Focus on the circumstances in which spiritual experiences occurred
- Look for information about patterns and frequencies of light, sound, motion in each case
- Investigate possible influences from magnetic fields
- Consider possible effects of diets, diseases and drugs
- Note reports of side-effects on balance, perception and mood-swings
- Look for admissions of other negative after-effects\*
- Consider self-reports of feelings that occur during some spiritual episodes:
  - extreme self-confidence (arrogance of authority)
  - absolute certainty (unquestioned intuition)
  - sensation of floating
  - disconnection from external reality ("It's all a dream")
  - sense of mission ("It's vital to spread the word")
  - sensation of internal energy flows ("current")
  - apparent capacity to "induce" similar experiences in others who are receptive

*\* NOTE: Of particular interest are sexual side-effects. Many deeply interiorizing experiences will cause a loss of libido. An exception is the so-called kundalini experiences (generally associated with the sensation of energy rising up the spine). These may cause heightened libido.*

### **Prospective Studies**

- Coordinated surveys of spiritual practitioners who engage in different types of meditation and prayer
- Functional magnetic resonance imaging of practitioners meditating or praying
- Transcranial stimulation of the temporal lobes under controlled conditions
- Long-term follow-up studies of practitioners of meditation and prayer which track psychological, physiological and social parameters
- Tests based on the latest discoveries about brain functioning

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