

# YPM

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YOGA PSYCHOLOGY MAGAZINE

PHILOSOPHICAL AND CLINICAL STUDIES

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**Editorial: The Evolution of Knowledge Toward A Culturally Synthesized Perspective**

*Adam M Cohen*

**Moving Beyond Conventional Wisdom: The Exploration of New Paradigms**

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**The Psychic Structure of the Universe**

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*Swami Jnaneshvara Bharati*

**The Koshas: Delving into the Elementary Composition of Human Nature**

*Swami Shivajnanam*



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## YOGA PSYCHOLOGY MAGAZINE

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### Published By:

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**Yoga Research Center, Dept. Of Philosophy,  
The Madura College (Autonomous), Madurai, TN**

**P.O. Box 43**

**Gandhi Nagar Post • Madurai 625020**

**Tamil Nadu, India**

**Email: [mail@yogapsychologymagazine.com](mailto:mail@yogapsychologymagazine.com)**

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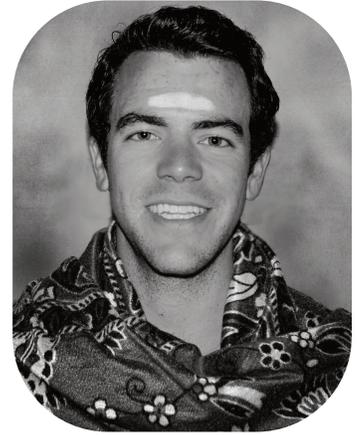
## EDITORIAL: THE EVOLUTION OF KNOWLEDGE & SCIENCE TOWARD A CULTURALLY SYNTHESIZED PERSPECTIVE

Every New Year initiates a prospective opportunity for exploring the evolution of our knowledge while also providing us with an opportunity to reflect upon the weaknesses of our past. The beauty of the evolutionary process is the development of new entities, those which are synergies of past generations but also expressions of a new form of existence. New species evolve from the achievement of previous generations whilst weaning out the undesirable traits that inhibited the success of the preceding generations. Ideas express themselves in a similar manner, forming compositions of old knowledge to create geneses for a whole new field of metaphysical development.

Now more than ever, the human race is confronted with the challenge of synthesizing existing bodies of knowledge to form prospectively unique and foundationally stout disciplines of inquiry into the world and humanity. Technology and cross-cultural integration has presented endless opportunities for humanity to question its previously held beliefs about life and the universe; ideas which were once held as unquestionable truths are now being put to the test by fundamentally distinct bodies of knowledge. This re-examination is in unison with the process of philosophical exploration, as opposing perspectives to hypothetical inferences within our held

beliefs and ideologies challenge the foundation of fundamental concepts sustained by various disciples of knowledge.

Many examples of assertive beliefs being significantly altered by pressing counter arguments have been arising quite frequently within the modern arenas of knowledge, science, and perception. Their appearances have arisen in books, research papers, journals, and newspapers, presenting alterations in systemic social and scientific ideals that have existed for centuries together. Many such examples have presented themselves even with our own field of research, the studies of yoga and wellness. For example, recent scientific evidence suggests that physiological dysfunctions such as Insulin Resistance Syndrome (IRS)—which commonly causes complications such as obesity, high blood pressure, cardiac disease, and abnormal cholesterol and/or triglyceride levels—can be managed and even treated with the practice of yoga, replacing dependencies on drug treatment to cure IRS.<sup>i</sup> A daily routine of yoga asanas (postures) is sufficient for managing IRS and preventing complications like Cardiovascular Disease. Further research from the yoga sciences shows that a regular practice of yoga postures, relaxation practices, breathing techniques, and meditation can substantially reduce the conditions of depression, anxi-



Adam M Cohen,  
CYP

ety, and stress, securing a healthy mental disposition<sup>ii</sup>. Together, these two research papers form a minute portion of the expanding research conducted within the functionally cooperative fields of medical science and yoga.

Transition from one field of thought to another by the bonding of two existing fields is a form of quantum leap; energies of thought, sometimes polar to one another, merge to carry a theory or science to a new quantum level of experience and wisdom. Although these polarized elements of thought may be highly opposite from one another in basic principles, their contrasting compositions conceal a kinetic potential great enough to transform two independent fields of knowledge into a synthetic development of an evolutionarily enhanced perception of truth. This is an enforced process of evolution that exists within nature: two strong traits that have prominently established themselves, and have proven them-

selves to be both practical as well as adaptive, bond together to form a higher, more perceptive, and more holistically complete entity. When this entity manifests itself, the once competing elements of independent entities unify to become a symbiotically



cooperative foundation for a more profoundly intuitive and complete entity. This qualitatively distinguished form of manifestation withholds a greater potentiality for achieving a state nearer to virtuous perfection.

The responsibility of the evolution of science and thought is retained within the internal motivation of every researcher, philosopher, and thinker who seeks to expand the possibilities of human thought, experience, and wellness. These explorers of human capabilities must go beyond the limitations of predefined notions of reality in order to holistically explore unique opportunities for the synthesis of knowledge. They must question their understanding of reality, and be receptive to counter arguments, which may present formidable opposition to maintained beliefs and hypotheses that sustain the developed structure of thought and perception. It is the responsibility of any researcher, whether scientist or theologian, to absorb and contemplate all testaments of opposing inquiries, objectively retesting their formed beliefs by applying

the components of the existing and conceptually possible antitheses to the functions of their established hypotheses. Yet we see today, in the end of 2009, instances where neglect has arisen to established theories on the basis of subjective opposition to cultural differences. We see this prominent in the fundamentally distinct views of 'western' and 'eastern' cultures, especially in fields such as philosophy and science where life's purpose and means to wellness are the vital subjects that have been argued upon. It is not a one-sided debate either, 'eastern' fundamentalist claims the 'west' to be a corrupt materialist society, and the 'western' fundamentalist claims the 'east' to be entangled in ambiguous metaphysics and archaic mysticism. Of course, neither of these views is right, and both require significant reformations in order to provide themselves with the greatest opportunities of success in the future.

Yet reformations are underway within societies eloped in the exploration thought and science. Their efforts are becoming present within the fields of physical science, where eastern 'mysticism' is merging with

the methodological scrutiny of empirical science of the west. For example, the Dalai Lama, a prominent figure in Buddhism and an adamant student of western science, has proposed that quantum mechanics' theory of particle matter

and the Buddhist's perception of the impermanent state of the phenomenal phenomenic world are highly consistent with one another.<sup>iii</sup> Of course, variance remains between the philosophical nature of Buddhism and the meticulous mathematics of quantum physics, yet we are seeing commonalities between two philosophies that grew independently from one another for thousands of years, suggesting that fundamental truths may exist that expand beyond the limits of one form of inquiry. If it is true that what may seem false today is going to be proven as a truth tomorrow, then what have we to lose in questioning what we believe by exploring systematically different approaches to understanding?

Although many of the unifications between science and eastern philosophy may be more of a comparative analysis between similarities of established systems, they nonetheless indicate opportunities to meet on common ground, forming a starting place for further questioning of various theories of knowledge and science. As a thinker or researcher of

any field of knowledge, it is always healthy to contemplate established beliefs. Outwardly attesting to opposing views on the grounds that fundamental differences exist has never proven to be a sound thought process, and surely does not cooperate with the natural process of evolution. In yoga, it is always believed that of all entities that exist within the world, it is *ahamkara*, or the ego, which is the most difficult to cross in the process of controlling the mind. The ego runs wild within humanity, defying attempts at objectivity by introducing the subjectivity of opinion into the equation of right and wrong, truth and falsehood. Just because fundamental differences exist does not mean that we can immediately negate the credibility of another system, whether it be based on metaphysical or empirical science. Rather, it is the duty of the thinker to confront the pressing challenges that exist in an antithesis and apply them to their established ideological system to see what results are produced. There should never be apprehension to question what we know, even if it requires the time necessary to meticulously deconstruct all of our established beliefs about a field of knowledge that we have based our whole lives, nay even our whole societies, upon developing.

Any great scientist will attest that analysis of the strengths and weakness of a theory must be established before we can recognize the underlying components that have established the system. As Albert Einstein has stated, “A person who never made a mistake never tried anything new”. When the weaknesses are openly discussed, growth is easily accomplished, when they are repressed, downfall is inevitable. Surely then, in an era where infinite amounts of knowledge are being

passed through the earth, air, and space in fractions of a second around the world, researchers and scientists of all fields of knowledge must welcome opposition into their laboratories, because if they do not they will likely confront greater problems in the future.

As we come into a new year, we, as thinkers and people of the science of wellness, must admit the opportunity for evolution to sprout from our long held beliefs about life and the universe. We must be willing to contemplate inspirations of knowledge from many sources, and welcome a synthesis of ideas. In turn, knowledge will be enforced by greater truths, truths that can give humanity deeper insights into things as basic as the microcosms of human life and as diverse as the functions of the universal. In the process of exploring knowledge, success unfolds when we objectively contemplate all present theories without subjugations based upon social stigmas and ideological differences. Such open-mindedness is an ideal environment for the discovery of new knowledge and truth. As, Vishvasara Tantra beautifully exclaims, “What is here, is elsewhere. What is not here, is nowhere.”

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Adam M Cohen, CYP  
[adam.cohen@cohenfi.org](mailto:adam.cohen@cohenfi.org)

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## MOVING BEYOND CONVENTIONAL WISDOM: THE EXPLORATION OF NEW PARADIGMS

By: Swami Tureyananda

“The truths of the unconscious mind are never to be invented but on the contrary, to be reached by following a course which all previously cultures, from the most primitive onwards, have described as the path of initiation.” ~Carl Jung

Since the rise of the modern brain some 50,000 years ago, humanity, according to evolutionary science, has possessed the capacity to cognitively perceive the nature of its existence. The expression of self-knowledge has since fed a consistent urge to know and explore fundamental truths about the world, the universe, and the human race. Amongst this search for knowledge rests the dawn of understanding and contemplation of the direct, but vastly complex question “‘who am I and why am I here?’” Without this scientifically irreducible and relatively peculiar question, no other questions regarding nature and the universe would likely exist; for what is the point of exploring anything without first understanding why I am here and what causes me to think I am here. Realistically, we are far better off ignoring why the universe is expanding and instead focusing on how to cook the best meal and where to raise our children. But humanity will always be in search of greater

meaning and purpose and will try to fulfill this by exploring every fathomable detail and question within our minds and our hearts.

What is humanity truly searching for? All of humanity is fundamentally seeking *freedom* in one form or another. People want freedom from the burdens of depression and sorrow, freedom from the hardships of life, freedom from the unknown, and of course the freedom to understand the world they live in to the greatest extent possible. And the answer to this perplexity of freedom is yet to be known, at least on a socially universal level. Over the last several thousand years, humanity has developed the fields of science, religion, politics, philosophy, and commerce all with the hope of discovering freedom, yet it is arguably true that we have received the blunt end of the stick, existing today with perhaps more problems than what we started with. Of course, one could easily argue in favor of each of these disciplines, claiming that they are on the path to reaching their fullest potential. Once the potential has been reached, these disciplines claim that they will be able to provide us with the freedom and salvation we are looking for. Science offers nanotechnology and precision medicine for a longer life; cosmology offers insight into the fundamental constructs of the universe; religion promises salvation after death; poli-

tics suggest methods of social equality; and commerce, the ability to fulfill our desires to their ends.

But as of today, humanity is still craving freedom in whatever form it may appear. Dietary pills, anti-depressants, remote vacations, social clubs, and online fantasy worlds are all indications that we are still unsatisfied with the present circumstances of our lives, still seeking liberation from the limitations of our own thoughts and desires. For what is freedom really other than the freedom to be at peace? We want to be happy, we want to celebrate every moment of life, and we want to know the answer to the fundamental question ‘why am I here.’ Indeed there are many promising conceptions that already exist within our resource of knowledge; however we, as a human race have not consented on how happiness can be provided through one way of thinking or one form of living.

Freedom, as part of the experiential reality of life, always begins with the mind. The search for freedom begins with a thought and later turns into action. Action is the deliberate attempt to manifest the ideals of our perception of freedom. First the idea enters the mind: ‘I would love to have an ice cream right now,’ suggesting that the ice cream would in fact fulfill the desire to be satisfied by tantalization of something sweet,

leading to freedom and fulfillment of the desire. It is because of this process that we can assume that every journey in life begins with the mind, and later leads to our outward expression of what we believe will fulfill our perception of freedom. And yet, no matter how delicious the ice chocolate chip crunch ice cream may be, our freedom is still yet to be achieved, at least in a holistic manner, as by dinner time we are already craving another ice cream cone.

In order to understand freedom, we must first explore the contents of what the mind is seeking in the first place, and we must explore this to the very core of its being. As the simple metaphor exclaims 'you cannot kill a weed simply by cutting off the leaves, you have to dig into the earth and pull out every last root. Then only the weed will not appear again.' Our desire to know freedom must come from the roots, and we must explore the roots to the very origins in order to understand where the desire for freedom is getting its nutrients from. Only when we know the source can we kill the weed—i.e.

our sense of un-fulfillment—and find freedom once and for all.

So now that we know where our journey must begin, we can initiate our exploration of the mind in a holistically different way, a way in which we are coming to terms with the freedom we seek within our lives on the most elementary level. Knowing such, we venture into the realm of psychology, the exploration of the consciousness and the operations of the mind relative to the source of all our desires. When we know the source, we know the content, limitation, and capacities of the mechanism, and when we know the mechanism we can develop the full potentiality of its operations. With such ability both freedom and creativity can work hand in hand to fulfill humanity's search for knowledge, equality, and everlasting joy.

Our understanding of the human mind, its desires, and abilities must be addressed on an entirely new level, one that includes the metaphysical insight of ancient eastern

wisdom but also encompasses the scrutiny and diligence of western science. Ancient wisdom is a gem amongst the branches of the tree of knowledge as it possesses insights into unquantifiable aspects of nature, while western science is a workhorse in producing consistent and measurable means for reproducing experiences and perceptions on a credible and sustainable level. As Able Glance once wrote in a letter to his sister in 1955:

Nothing is great, nothing is small. Our eyes have misled us ever since they cast their first glance while emerging from the depths of the sea. Our ears are mistaken. We have to start everything anew, do things differently.

Only with a fresh perspective will we be able to evolve knowledge of the human mind to a level in which all of humanity may receive benefits from, regardless of intellect, economic status, religious beliefs, or social dispositions. We must avert the digested forms of traditional thinking that have yet to provide us with



the freedom they promised and open the doors to an exploration for an innovated process towards the truth and the genuine experience of freedom. We have used a wrong perception of thinking to live our lives, following superficial notions of freedom that provide temporary satisfaction but do not provide the wholesome experience of liberated freedom we know exists dormant within us. The old patterns of life have provided some insights, but generally they have misled us, taking us into the furrows of meaninglessness. We must start things anew and explore life from a whole new angle, generating momentum for a basic conception of freedom and expanding from our insight into the fundamental roots of existence.

Ancient wisdom could be the entry point for our exploration of basic freedom, for it holds insight into some of the fundamental aspects of reality. While modern sciences have proven some of the basic qualities of physical reality on a micro and macro level, they still remain generally ignorant to the highly complex nature of consciousness, a level of existence that is arguably not manifest in an elemental sense of 'existing'. This cardinal aspect of life that guides human existence is the one part of reality every human being on earth experiences every moment of every day, from the moment they were born until the day they die. It defines our lives, and guides our actions; yet through modern science we know neither its source nor its limitation. Skeptical hypotheses point to underlying affects that manifest in an 'elemental' sense of existence, leaving the empirical observer with a genuinely obscure understanding of the existence of consciousness. We need to address this fundamental entity from a sociably new, yet traditionally old, level of

exploration: metaphysical intuition and observation.

Yoga, amongst other traditions of research into the existence of consciousness and freedom of the mind, approaches consciousness through a process of systematic involution. A metaphorical "peeling of the onion," as maharishi Ramakrishna promoted, is the procedure through which one can explore the fundamental elements and composition of consciousness; removing each layer of the onion takes the explorer closer to the underlying essence that was the source of creation. And just as the peeler of the onion might eventually reach the core of the onion which is void of any material manifestation, so too will the explorer of the mind and consciousness discover an unmanifest level of existence that forms the rudimentary composition of the mind. From this unmanifest level of creation we can then begin to understand what the meaning of freedom is as we will know, fundamentally, the foundation from which the desire to be free arose. When we know the source, we know the approach. When we know the approach, we know how to ask the questions to discover the fundamental answers. We know the fundamental answers when the path is unified by one holistically complete embodiment of perception.

Together we must challenge ourselves to look beyond our body, explore beyond a material sense of the world, and turn our awareness inwards to the one form of manifestation we know to be real: our experience of experiencing. Consciousness is the one tool that every human being has but few understand and even less use to their fullest potential. Yet each of us is composed of the same fundamental 'essence,' and with this principle commonality

we can together explore a freedom that is free of any condition and be liberated to the degree that the duality of freedom and bondage is terminated once and for all.

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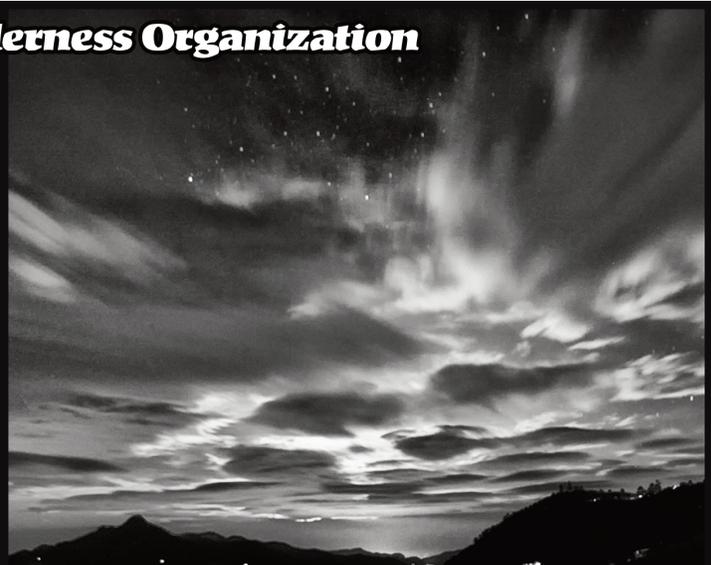
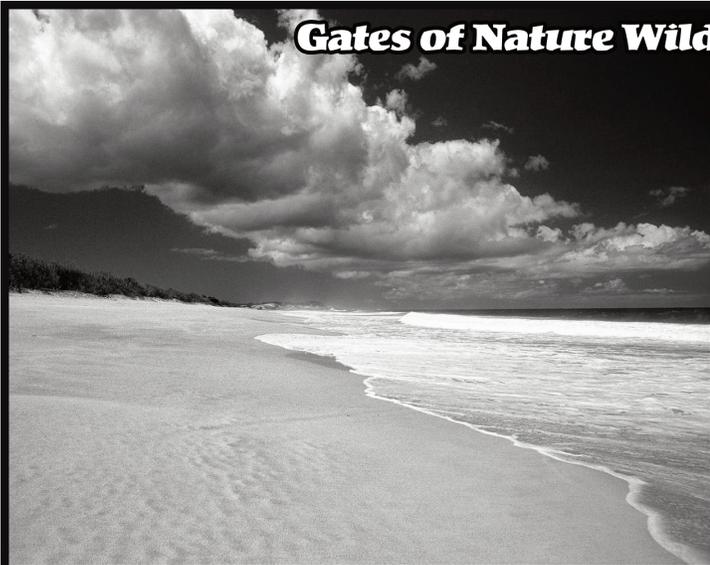
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## UNRAVELING THE INCURABLE: A HEART-MIND VIEW OF DIFFICULT ISSUES

More often than we would like, we find ourselves facing symptoms, conditions, obstacles or stumbling blocks that do not go away no matter how clear, focused, motivated or skillful we are. Once we exhaust the search for “what am I doing or thinking that is creating this” we realize that what we are dealing with does not have a single cause. Rather, it is a side effect of how we are handling the complexities of life.

These difficult issues can be called, Incurable Non-Existent Disorders (IND). Imagine a large tree with lots of green leaves but it doesn't have any roots. Even though you can imagine it, it is a tree that cannot exist. In the same way, when you have real symptoms but no cause can be found that can be treated, you may well have an IND.

Our global research reveals a simple and powerful method for unraveling these conditions. Since practice without theory has limited flexibility and creativity, I will weave an introduction that integrates modern scientific systems thinking with some of the most valuable and useful models of the ancient East.

I would like to begin with a classical alternative view of the human experience. This is because immersed in the Western mindset, as we tend to

be, it is extremely difficult to believe that our treasured conception of mind and body is a cultural construct.

One day, almost thirty-five years ago, Joe Miller, a true homegrown American spiritual master, whispered in my ear something that changed everything. “Did you know that the word mind which runs through the Zen Buddhist texts is actually a translation of the Chinese character heart?”

With this simple bit of cross-cultural knowledge, the structures of my thinking began to reconfigure. It was clear that my head-mind could and did have difficulties with “the body,” but the heart-mind could not. In other words, your heart is in touch with life – always – even if your head tries to tell you otherwise.

So then, how do we get into these impossible difficulties? One theory says that an IND is “created” by the intersection of impossible desires, inadequate interpretation and undigested karma. In other words, what and how we think multiplied by what and how we feel multiplied by how we handle tension and effort either supports or sabotages our desires and dreams.



Dr. Stuart Heller, Ph.D.,  
6th Dan

Because we are so much more familiar with the verbal dimension of our lives and have already gathered a multitude of methods, I will emphasize the lesser-known factors.

Another important view is that Incurable Non-Existent Disorders tend to be “created” when we are asleep at the wheel. According to classical Yoga psychology, there are four forces or temptations that can lead us astray (the Kleshas). They are: holding on to what we have (past its time); moving away from what we dislike; moving toward what we do like; and identifying with our beliefs and stories. Keeping us asleep is our ignorance of these forces and of the natural cycle of waking up and going to sleep in order to waken again.

In the Chinese tradition, the heart-mind is a thinking-feeling organ best understood and worked with from the perspective of the movements

and configurations of Qi – the energy aspect of matter. When the flow of Qi is blocked, unwanted phenomena can grow. From this view, the combination of influences that sustain an IND can be worked with as patterns of movement-energy.

I have one last story to tell that opens the way to using our IND unraveling method well. It is a systems view of our biological senses that categorizes them from the point of view of distance.

We have senses that operate at a distance. These include: smell, hearing and sight. We have senses that operate closer in, at the surface. These include: touch, temperature and pain. And we have senses that operate internally. These include: the sense of balance, the muscle sense and our visceral (or organ) senses. For each of these senses, there is a corresponding state of “mind.”

## **THE METHOD: NOTICE, TOUCH, ACCEPT, REALEASE**

### **Step 1: Notice.**

Instead of trying to “solve” the difficult dilemma in which you find yourself caught, turn your attention to the dynamic field of thought, feeling and energy you call your “body”. As if from a distance, let your attention be drawn to a spot that intuition suggests is connected to the IND you wish to unravel.



And, gently and easily – so as not to trigger a defensive reaction, let this spot grow clearer and stronger in your awareness.

### **Step 2: Touch.**

Now, recalibrate your awareness to emphasize your tactile senses. (If this is unfamiliar, then first, extend your awareness to your arms and hands. I have shoulders, elbows, wrists, palm and fingers. And breathe.)

As if you were literally reaching toward it, use your mind’s hand to touch the spot. Feel its shape. Feel its texture. Feel its temperature. Let sensations that might be called pain be translated as intensity. And let the energies of this encounter grow in strength and size as your thoughts and feelings enter this space to re-connect with it.

### **Step 3: Accept.**

Now, as if a door has just opened, let the energies of this spot flow inward to spread all throughout you. Main-

taining your focus on this spot, let what has been awakened and activated flow to your legs and feet – to your arms and hands – to your spine and head – to your torso.

Maintaining your focus on this spot, let your integral intelligence listen to the stories told by this spot. Let this deeper and fuller awareness speak to the mass of confusion that has

sustained the difficult condition we want to change.

Maintaining your focus on this spot, let your spiritual heart open to embrace the pain and suffering of this limited viewpoint. And let the Qi of your heart sooth and heal the knot that locks you into this unwanted condition.

### **Step 4: Release.**

Now, let your awareness release its hold on this spot and this experience. Let the Qi flow without your attention. Let your muscles shift and change without undue self-consciousness. Let your feelings remember the touch of the spiritual heart. Let your thoughts begin to re-configure with a better story and with new hope and possibilities.

And let go of this practice. Open your senses to the outside world. Relax and re-engage what you were doing. And trust that even if you do not remember what happened or felt it was not powerful enough, you were touched by your whole self.

And if you get too serious about all this, remember that laughter opens the heart. And with your heart open, everything is truly easier. Now, all you need do is to do what you've always known you have to do.

So just as your heart and lungs pump continuously and like a gentle stream can wear down rocks, give yourself permission to repeat and repeat this simple practice.

And remember, that which took a lifetime to develop takes time to unravel.



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## INCREASE WELL-BEING: STOP OUR DESTRUCTIVE MASS HALLUCINATORY FANTASY

### INTRODUCTION

A drunk one night lost his watch in the middle of a city block; he never found it because he searched for it at the street corner where the light was much brighter."

In industrial society, isn't the light we see misleading us? Do we even know what we are really looking for?

Most of our populace and all of our leaders are not reacting appropriately to a mass, hallucinatory, nature-disconnected fantasy in which:

-the megatons of waste that we dump in our rivers and bays are not poisoning the water, our body or our spirit.

-the hydrocarbons we pump into the air are not changing the climate of the world, our natural security, or deteriorating our health.

-over-fishing is not depleting the oceans, over-consumption does not hurt the environment.

-living estranged from the balance in nature's grace and self-correcting powers does not reduce our resilience or result in our dysfunctions

-fossil fuels will never run out; the loss due to our fossilized thinking, that demeans nature, in and around us, does not motivate our excessiveness, abusiveness and greed.

-our natural sensitivities and sense are not part of the way natural systems work; disconnecting them from nature does not make us excessively want so that we feel we never have enough, or that we never are enough.

-wars that kill masses of civilians are an appropriate way to keep our hands on what's left and the economy rolling; wars against people do not result from an undeclared war we wage against nature and the natural.

-we are not desperately overdrawn at the environmental or emotional bank; we are not conditioned to be prejudiced against nature or against the renewing ways of our living planet and its systems.

-sensory activities that connect our thinking to nature's healing powers don't help us increase our well being; our separation-from-nature wanting, excessiveness and greed do not place our natural resources or our economy at-risk.

-and really, although by the age of seven our kids bond to this mass hal-



Dr. Michael J. Cohen,  
Ph.D.

lucination, addict to questionable technologies and need to be drugged, they are all right.

~ Barbara Kingsolver

If you, the reader, have ever had a good experience in nature, you will find it helpful to remember how it made you think and feel. Then note whether the truth of your experience in that natural area -land, sea, air or backyard- tends to confirm the points that this article identifies.

The reason we unwillingly continue to suffer our most pressing problems is because, like a drunk, our thinking is disturbed. Industrial Society won't admit that it contains an irrational and disconnecting bias against nature, against the flow of the natural, in and around us.

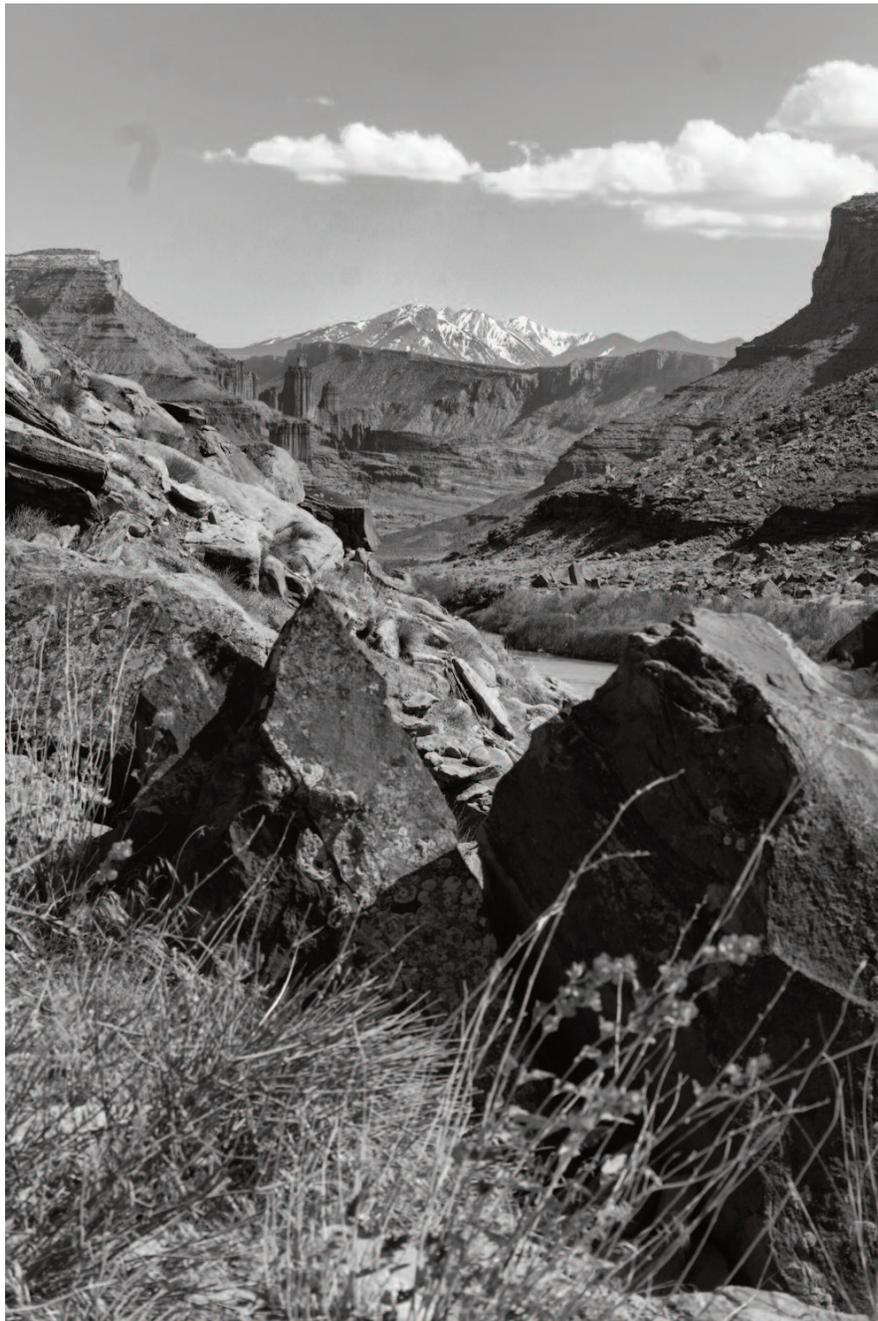
## THE SIN OF OMISSION

Because we prejudicially believe that the way we think in Industrial Society is "far advanced," we can't find in our thinking process the unreasonable, nature-conquering and exploiting parts of psychology and education that cause our personal and environmental troubles. They have recently been identified. We must now use the appropriate tools that are available to address them.

Indisputably, we inherit from nature the ability to sense attractions like the color of a flower, the grandeur of a mountain or the invigorating scent of a fresh breeze. Like the self-evident fact that you are reading these

words at this very moment, when we are in a natural area, backyard or backcountry, each of these natural attraction sensibilities is also a self-evident experience, and experience that registers in us, an experience that we own.

Each experience in nature is a unique and absolute empirical truth about our personal life in conjunction with nature and all of life on Earth.



Our thinking learns to omit information we obtain through and about our natural attraction sense and sensibilities. This desensitizes us and the result is that we suffer from deprivation of our natural sensation fulfillments. For example, we seldom keep in mind that each atom in the world almost entirely consists of space filled with natural attraction energies. We and the world, almost 100 percent, consist solely of space filled with attraction. Attraction interconnects, binds and unifies every-

thing, including us. Our psyche registers it as 53 natural attraction senses, sensations like "hunger," our natural attraction to eat food and survive, and "excretion," our attraction to remove toxic wastes from our body as well as nurture the rest of nature.

When we fulfill our natural attraction senses, we feel good and experience an increased degree of happiness because the fulfillment naturally triggers the release of neurotransmitters such as Endorphins and Dopamine. They are naturally therapeutic and they reward us for connecting to our natural surroundings and relating to their callings.

In and around us, natural attraction creates, sustains and recycles nature's perfection, nature's desire to remain healthy and grow stronger.

We suffer because we excessively disconnect our psyche from nature's pristine perfection. We, instead, gain rewards from nature-substitutes, from questionable stories and relationships that often posture us against nature.

Nobody can take a self-evident truth, such as "hunger," away from us because this attraction is real. It has expressed itself. It has happened and registered in our consciousness. It is a trustable fact, one that our sense of reason can consider, once we consider hunger to be reasonable rather than "subjective" "flakey" or "touchy-feely."

Each accurate natural fact helps us think more clearly. Each enables us to more effectively increase personal, social and environmental well-being. This explains how and why a short walk in the park helps us connect our senses to their natural attraction origins, how it "clears our head," and temporarily renews us. Too often, we learn to take the significance of this experience and its good feelings for granted. We deem it when we identify it as "getting away from our problems."

**LEARNING BY CONNECTING**

There is no doubt that our thinking improves when what we register emanates from direct sensory contact with nature itself, with natural attractions in a natural area. This is because nature is the fountainhead of authority about its perfection. It is the supreme expert about how its attractions have worked in balance over the eons, about how it has produced the attractiveness of life on Earth in optimums of cooperation, diversity and well being that seldom produce our physical or mental garbage, or our disorders.

As part of nature we inherit the self-correcting attributes of natural attractions and systems, but we learn, and get paid, to disconnect from them. To reverse this irrationality, the organic felt-sense way of think-

ing in the science of Natural Attraction Ecology enables us to make genuine sensory contact with natural areas and systems. This helps our thinking and feeling interlace with, and benefit from, the restorative ways and wisdom of natural attractions.

**WHO ARE WE?**

We seldom learn that our human body contains ten times more cells of other organisms than human cells. Over 115 different species, alone, live on, and help maintain, our skin. Our genetics include the genetics of plants and animals and more than half our body weight is that of the non-human cells of "foreign organisms."

Few of us are aware that every five to seven years, through natural attraction, every atom in our body is replaced by an atom from the environment, and vice versa. We become the environment, it becomes us. This is because, via natural attraction, humanity is part of the nature's web of life, the global ecosystem, and it is part of us. We must recognize that, to our mutual benefit, in our psyche, and materially, we and nature flow into each other; that what we call "garbage" or "excrements" for one thing is actually food or support for something else.

Industrial Society usually forgets to teach us that in order to be part of the global ecosystem, or any system, our thinking must somehow be in communication with the system. Without some form of inter-communication, we detrimentally trespass the system and it, us. This form separation and disrespect is like our amputation from a major source of sanity. It cre-

ates many disorders in us and the global ecosystem.

Since we are part of the perfection of nature's global ecosystem, it means that, inherently, we are in communication with it, that somehow its renewing ways speak to us. We usually overlook that we have experienced that communication, we





rarely know how and why it happens.

Industrial Society's well-kept secret is that the global ecosystem communicates with us, as part of itself, through at least 53 natural senses and sensitivities. For example, the sense of thirst intelligently "turns on" to tell our awareness that we

need water. In addition, it intelligently "turns off" when we have enough water and feel satisfied. At least 52 additional natural senses and sensitivities sensibly provide us with similar information. They include our natural attraction senses of community, gravity, reason and trust; smell, place, consciousness and color; balance, motion, belonging and sound.

It is unreasonable for Industrial Society to identify these sensitivity intelligences of nature as the "fuzzy thinking," "non-scientific" "subjective" mentality of "hippy" folks who are "Earth Muffins."

Each one of our 53 sensory sensibilities is a self-evident, basic, love-of-life experience that we own, a unique and absolute truth about our life in conjunction with nature and life on Earth. However, Industrial Society socializes us to think and relate with only 15 percent of our natural attraction sensitivities. The loss of 85% of our ability to naturally make sense explains why we think up our non-sense and suffer accordingly.

### **HIDDEN GLOBAL CONSCIOUSNESS**

Very few of us realize that the hidden origin of our runaway disorders is Industrial Society's bias against the natural, its refusal to help our multiple natural attraction senses connect with their nurturing origins in nature. As part of Industrial Society's conquest of nature, most of us learn to reject these supportive connections yet they give our psyche the means think and act while in genuine sensory contact with the healing grace of nature's self-correcting

peace, balance and beauty. That's why a walk in a natural area momentarily clears our mind.

The brutal truth is that we suffer our greatest troubles because, on average, Industrial Society's prejudice against nature has taught us to disconnect over 98 percent of our time, thinking and feeling from nature's renewing and supportive ways. This habitually isolates our psyche and thoughts from the balance and beauty of how nature works. It stops the flow of natural attractions from recycling the garbage or pollution too often found in our mind and heart.

Being severely disconnected from the gratifying rewards of nature's self-correcting benefits distorts how we think and feel. With these profound contributions missing in our lives, we want, and when we want there is never enough. Our unfulfilled wants spawn our greed, stress and abusiveness as well as our excessiveness, lack of self-worth and disorders.

The discipline of Natural Attraction Ecology recognizes that our prejudicial, excessive disconnection from the web of life is the problem. Reasonably learning and teaching how to authentically reconnect our thinking with the web of life is the solution. The therapeutic, mutually beneficial familiarity our reconnecting produces is the best remedy for our unreasonable prejudice against nature.

The application of Natural Attraction Ecology (NAE) is a powerful way to increase personal, social and environmental well-being. The conclusive research found in the web-of-life sensory exploration book,

Educating, Counseling and Healing with Nature and its synopsis at <http://NaturalAttractionEcology.com> scientifically validates this observation. It empowers us to use the NAE antidote via on-line courses and degrees.

Although it makes a unique contribution, NAE is not alone in its nature-connected reasoning. Echoing advanced thinkers throughout history, Psychologist Stephen Aizenstat has noted that,

"Human behavior is rooted most deeply in nature's intentions and desire. The rhythms of nature underlie all of human interaction: religious traditions, economic systems, cultural and political organization. When these human forms betray the natural psychic pulse, people and societies get sick, nature is exploited and entire species are threatened."

"We are dysfunctional socially and environmentally because we are cut off and isolated from the world of nature and the natural."

~Albert Gore,  
Vice President, USA  
Author, Earth in the Balance

"What we are doing to the forests of the world is but a mirror reflection of what we are doing to ourselves and to one another."

~Mahatma Gandhi

By strengthening our natural values, hopes and dreams, NAE provides extraordinary leadership and guidance to ourselves and our community. To enable ourselves in this regard, and to increase the public's trust in Environmental Education, it makes sense to learn to use the Or-

ganic Psychology of Natural Attraction Ecology as a tool to help us reverse our dilemmas. To this end, its dedicated efforts and benefits are readily available in an introductory online course "Psychological Elements of Global Citizenship" The course begins a healing process that enhances wellness in the industrial world. It helps caring individuals help their community to live in reasonable balance with people, habitats and the web of life. It enables us to beneficially add NAE to our personal, academic or professional life and transitioning.

For those who question the validity of Natural Attraction Ecology, again, think of at least one good experience that you have had in nature, backyard or back country; mountain, forest or field; brook, ocean or shoreline, pet, garden or aquarium. Try to remember colors, sounds, aromas, textures or flavors that might have been part of the experience. Did the experience contain comforting motions or attractive feelings of community, trust or place? Did you feel it was enchanting, self-enhancing or spiritually pleasing? Was it supportive, peaceful or both? Did it help you feel renewed or purified, or that you were part of a greater whole or being? These are some of the results that many individuals have reported from remembering their attractive experiences in nature, experiences they would welcome repeating. NAE holds his truth to be self-evident.

Many individuals have also conveyed that they did not need a teacher, class or book to teach them to have an attractive nature experience; its qualities seemed to be innate, some could remember

wonderful experiences from early childhood.

For those of us who have had a good experience in nature, doesn't that experience tend to confirm the things that this article has suggested? If we don't trust our own experiences what can we trust? Isn't the NAE Organic Psychology process a worthwhile tool to add to how we relate to the world locally and globally? Won't it help us make a difference?

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## BEYOND SUFFERING: THE THIRD NOBLE TRUTH

An excerpt from *The Courage to Be Present*

According to the Buddha, we can stop perpetuating the cycle of death and rebirth, characterized by suffering, that the Buddhists call samsara. Even if we don't believe in repeated rebirths, we may still find his teachings on ending suffering valuable. It is possible, he taught, to realize the wakefulness and compassion described in the Mahayana teachings on bodhichitta.

### PROGNOSIS: THE TRUTH OF THE CESSATION OF SUFFERING

As we have seen, the direct experience of discomfort, "pain," is not the same as the struggle against it, which we have been calling "suffering." The Third Noble Truth is the truth of the cessation of suffering. Cessation of suffering means we can interrupt the habitual patterns, which keep planting the seeds of confusion and suffering. According to the teachings on karma and interdependent arising, which we explored in chapter 3, each time we experience or do anything, we plant seeds in the storehouse consciousness. Then, those seeds get "watered" by similar circumstances at a later point in time, and we find ourselves mindlessly feeling and acting in similar ways. It is these patterns of repeti-

tion that the Third Noble Truth addresses. Moreover, we can see through the illusion of ego and rest in the natural compassion of our awakened heart, our bodhichitta nature. The cessation of suffering doesn't mean we won't experience pain. In fact, the more awake we become, the more vividly we experience everything, including pain. One traditional teaching says that at the beginning of the spiritual path, pain feels like a hair on the palm. In the middle, it feels like a hair on the tongue, and at the end it feels like a hair in the eye. When I think of this description, I sometimes wonder why I would pursue such a path! And yet that longing to not lie to myself, to know the truth, and to alleviate unnecessary suffering keeps reasserting itself.

### OUR INCLINATION TO WAKE UP

An aspect of our inherent bodhichitta is just this persistent inclination toward waking up. Because bodhichitta is even more fundamental than our confusion, it keeps showing up. We can go beyond our habits of confusion. Ego, and its resulting emotional dramas, can be seen through. As these two obstacles become less and less thick (through the practices that will be described in the next chapter, with the description of the Fourth Noble Truth), bodhichitta shines forth more and more clearly.



Dr. Karen Kissel  
Wegela, Ph.D.

One way of talking about the Third Noble Truth that I especially like is the notion of "nowness." Instead of being caught up with thoughts about the past or worries about the future, Buddhism emphasizes the present moment: right here, right now. It is a deceptively simple idea. Nothing else is real, only now. When I began my meditation practice, I was shocked to see how little of my time was spent in the present moment.

When we are willing to be present, we tap into direct experience: that is, experience that is not filtered through our thoughts, expectations, hopes, and fears. Instead, we see, hear, taste, touch phenomena, and recognize thoughts and images in the mind without adding judgments or preferences. Things are just what they are. Putting nowness and direct experience together means being awake in the present moment. This is such a straightforward notion that it is practically simpleminded. And yet, it is difficult for most of us to let

things be just what they are.

Often, instead of tapping in to our direct experience, we substitute concepts. An exercise we sometimes do in one of my classes at Naropa University to highlight this phenomenon involves mindful eating. Many Buddhist teachers encourage their students to try this exercise on a regular basis. In class, we might take a tangerine and begin by silently looking at it. We examine the texture, color, and shape of the particular piece of fruit in front of us. We pick it up and notice what it feels like in the hand. We might hold it up to our ear and see what sounds occur as we roll it in our fingers. Slowly, we begin to peel it. We sniff and notice its aroma. When thoughts arise of past tangerines or imaginings about how this one will taste, we notice them and let them go, by coming back to this tangerine in this moment. Carefully, but not too carefully, we separate out a section, and taking our time, we bring it to our mouth. We continue the exercise by noticing the spontaneous preparations that the mouth takes as the section of tangerine approaches. Then we taste it as if we've never tasted a tangerine before—and in fact, we never have tasted this tangerine before. We continue in this way until we've eaten the entire tangerine, letting each moment be unique.

This exercise highlights not only the details of the present moment of eating a tangerine; it also reveals, often rather pointedly, how often we miss the present moment. All too often, instead of tasting the tangerine, we taste our ideas about it. For example, I “know” that I don't like tangerines. I even have good reasons for my distaste: tangerines are acidic, they sting my chapped lips in the winter, they can be messy. However, if I just do the above exercise, and taste a

particular tangerine, it is quite different from my mental tangerine. You might like to try this exercise for yourself.

### **SOME CLINICAL IMPLICATIONS OF THE THIRD NOBLE TRUTH**

The Third Noble Truth directs the therapist's attention to what is happening right now in the therapeutic encounter, both for the therapist and also for the client. When we bring our attention to the present moment, we may find that both we and our clients tune in to our direct experience and natural wisdom.

### **OFFERING UNDISTRACTED ATTENTION**

To begin with, simply being present with my clients is probably the most valuable thing I can offer them. We live in a time when the invitation to be distracted from the present moment is especially strong. Cell phones, MP3 players, the Internet, satellite and cable TV, and so on, all offer innumerable possibilities to forget where we are and what we are doing. No doubt other technological challenges to remembering ourselves will be coming along soon.

Being able to offer my clients undistracted attention is a rarer gift than it used to be. Simply being with someone else and feeling recognized and heard is a relief for any of us. It lets us relax and recognize what our experience actually is. Therapy provides an occasion when both therapist and client can focus on direct experience. It gives us a chance to slow down and let go of our habitual speediness enough to do some self-scrutiny and see “how we really are.”

### **THE OPPORTUNITY TO CONNECT WITH DIRECT EXPERIENCE**

I have worked with a number of clients in recent years whose main complaint is the urgency they are always feeling to get from one thing to the next. They feel overwhelmed and pressured by all of the demands on their seemingly shrinking time. In response, they go faster, eat more fast food, sleep less, and see their partners mostly as they pass in the doorway. They suffer with a sense of missing their lives, and, indeed, that is what is happening. Only rarely do they feel like they are where they are; they barely recognize a pleasant moment before they are rushing to get to the next thing on their list.

When they come into my office and give themselves the opportunity to slow down and simply be present, they often feel relief and sadness. For a moment or two, they drop the struggle to be somewhere else. They notice feelings that they have ignored, and often just recognizing what they are feeling is enough to show them what really needs to be done and what can be let go. Recognizing and letting go of the distractions from their direct present experience is, in itself, helpful.

For artists—writers, painters, musicians, and other creative people—a connection with direct experience is usually an important aspect of their art. But both artists and non-artists benefit from learning to tune in to direct, non-conceptual experience. The Third Noble Truth suggests that the awakened state of mind is always available; it is merely covered up with our habitual habits of clinging to a nonexistent ego. As therapists, we can have confidence in our clients' potential wisdom and compassion. Our job is one of uncovering and helping nurture qualities that

are already present in our clients.

At the same time, having a healthy respect for ego's creation of confusion, and our addiction to it, is important, too. I remember a client who once stormed out of my office threatening to kill herself by driving into a tree. I had called the police and given them her car's license number. After the incident, when she had calmed down, she wanted me to promise that I would never again call the authorities about her. I told her I couldn't make that promise.

"Don't you trust me?" she asked.

"No," I said. "I don't trust anybody's confusion." To my surprise, she agreed that confusion was never to be trusted. Instead, she vowed that she would never give me a reason to call the police again. That was fine with me, and I hoped she was right.

### **RECOGNIZING NATURAL WISDOM**

Finally, an important implication of the Third Noble Truth has to do with recognizing the expressions and manifestations of our clients' underlying wisdom and compassion. It is quite tempting, I find, to focus on confusion. It is easier to describe and identify. We can even classify it neatly into various diagnostic categories. Recognizing our clients' natural wisdom, by contrast, can be more challenging, since it is not reducible to words or concepts. Yet, if we have learned to recognize our own glimpses of bodhichitta, we are better able to recognize inherent wisdom in our clients.

### **FROM THE BOOK: THE COURAGE TO BE PRESENT**

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Dr. Karen Kissel Wegela, Ph.D.

Contemplative Psychotherapy  
Professor at Naropa University



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## "FUNDA-MENTALITY" IS THE CONSCIOUS MIND SUBTLY LINKED TO A BASIC LEVEL OF THE UNIVERSE?

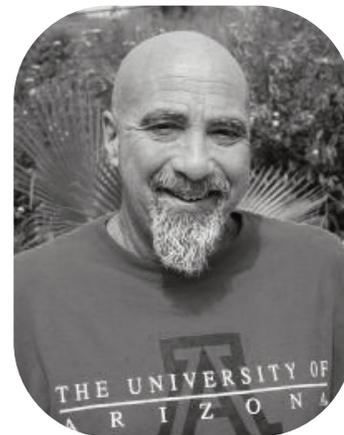
### SUMMARY

Age-old battle lines over the puzzling nature of mental experience are shaping a modern resurgence in the study of consciousness. On one side are the long-dominant "physicalists" (reductionists, materialists, functionalists, computationalists.) who see consciousness as an emergent property of the brain's neural networks ("brain = mind = computer"). On the alternative, rebellious side are those who see a necessary added ingredient: proto-conscious experience intrinsic to reality, perhaps understandable through modern physics (panpsychists, pan-experientialists, "fundamentalists"). It is argued here that the physicalist premise alone is unable to solve completely the difficult issues of consciousness (e.g. experience, binding, pre-conscious conscious transition, non-computability and free will) and that to do so will require supplemental panpsychist/pan-experiential philosophy expressed in modern physics. In one such scheme proto-conscious experience is a basic property of physical reality accessible to a quantum process associated with brain activity. The proposed process is Roger Penrose's *objective reduction* (OR), a self-organizing "collapse" of the quantum wave function related to instability at the most

basic level of spacetime geometry. In the Penrose-Hameroff model of "orchestrated objective reduction" ("Orch OR"), OR quantum computation occurs in cytoskeletal microtubules within the brain's neurons and links cognition with proto-conscious experience and Platonic values embedded in spacetime geometry. The basic idea is that consciousness involves brain activities coupled to self-organizing ripples in fundamental reality.

### INTRODUCTION - A BURNING ISSUE

Can conscious experience—feelings, qualia, our "inner life"—be accommodated within present-day science? Those who believe it can (e.g. physicalists, reductionists, materialists, functionalists, computationalists) see conscious experience as an emergent property of complex neural network computation. Others see conscious experience either outside science (dualists), or believe science must expand to include experience (idealists, panpsychists, pan-experientialists, "fundamentalists"). These philosophical battle lines were originally drawn in ancient Greece between Socrates, who believed the cerebrum created consciousness, and Aristotle, Democritus, Thales and others who argued that mental qualities be-



Dr. Stuart Hameroff, MD

longed to fundamental reality. Perhaps both sides were correct.

### BRAIN = MIND = COMPUTER?

The basic physicalist idea is that the mind is a computer functioning in the brain's neural networks. The current leading candidate for a computer-like "neural correlate" of consciousness involves synchronously oscillating feedback loops of thalamo-cortical neurons. Higher frequencies (collectively known as "coherent 40 Hz") have been suggested to mediate temporal binding of conscious experience (e.g. Singer, Gray, Crick and Koch, etc.). The proposals vary, for example as to whether coherence originates in thalamus or resonates in cortical networks, but "thalamo-cortical 40 Hz" stands as a prevalent view of the substrate for consciousness.

But how do synchronized neural firings and synaptic transmissions pro-

duce experiential qualia, emotions or free will? Physicalists believe this to be relatively straightforward (brain = mind = computer) however others find the question intractable, or as vexing as trying to coax a reluctant genie from a magic lamp. I see three problems with the brain = mind = computer analogy:

1. *Is consciousness classical computation?* In a controversial stance Roger Penrose<sup>1-3</sup> has asserted that essential aspects of consciousness are non-computable. But regardless, classical computers appear to be evolving toward quantum computers. Beginning in the early 1980's Benioff, Feynman and others proposed that states in a system - bits in a computer - could interact while in quantum superposition of all possible states, effecting near-infinite parallel computation. Rather than classical Boolean bit states 1 or 0, quantum computers would utilize interactive "qubits" of 1 and 0. If quantum computers can ever be constructed they will have huge advantages in important applications. As the brain/mind has always been cast as current information technology, consciousness may inevitably be seen as some form of quantum computation.

2. *Are neural firings the "fine grain" of consciousness?* Cells and synapses are far more complex than simple on off switches. Consider the paramecium, a single cell organism which gracefully swims, avoids predators, learns to escape from capillary tubes, and finds food and mates. Observing intelligent behavior in unicellular creatures C.S. Sherrington said in 1951: "Of nerve there is no trace. But the cell framework, the cyto-skeleton, might serve." Lacking synapses, parame-

cium utilizes its cytoskeleton for communication and organization. Neurons have a rich and dynamic set of cytoskeletal microtubules which regulates synapses, and tremendously increases potential computational capacity (e.g.  $10^{16}$  bit states/second/neuron)<sup>4</sup>. More importantly, neurons are alive and we don't yet know what that implies for consciousness.

3. *Details which don't fit the brain = mind = computer scheme are overlooked.*  
or example:

a. *Neurotransmitter vesicle release and cognitive reaction times are "noisy", and exhibit apparent probabilistic randomness (?non computable quantum indeterminacy)<sup>5</sup>.*

b. *Axonal firing patterns (rather than average frequency) and dendritic processing may be relevant to consciousness<sup>6</sup>.*

c. *Apart from chemical synapses, primitive electrotonic gap junctions couple neurons and glia synchronously and may play an important role in consciousness.*

d. *Glial cells (80% of the brain) are ignored in the brain as computer view.*

Quibbling aside, the physicalist view fails to address difficult issues. For example the problem of 'binding' in vision and self is often attributed to temporal correlation (e.g. coherent 40 Hz), but it is unclear why temporal correlation *per se* should bind experience without an explanation of experience. Regarding transition from pre conscious or implicit processing to consciousness itself, the

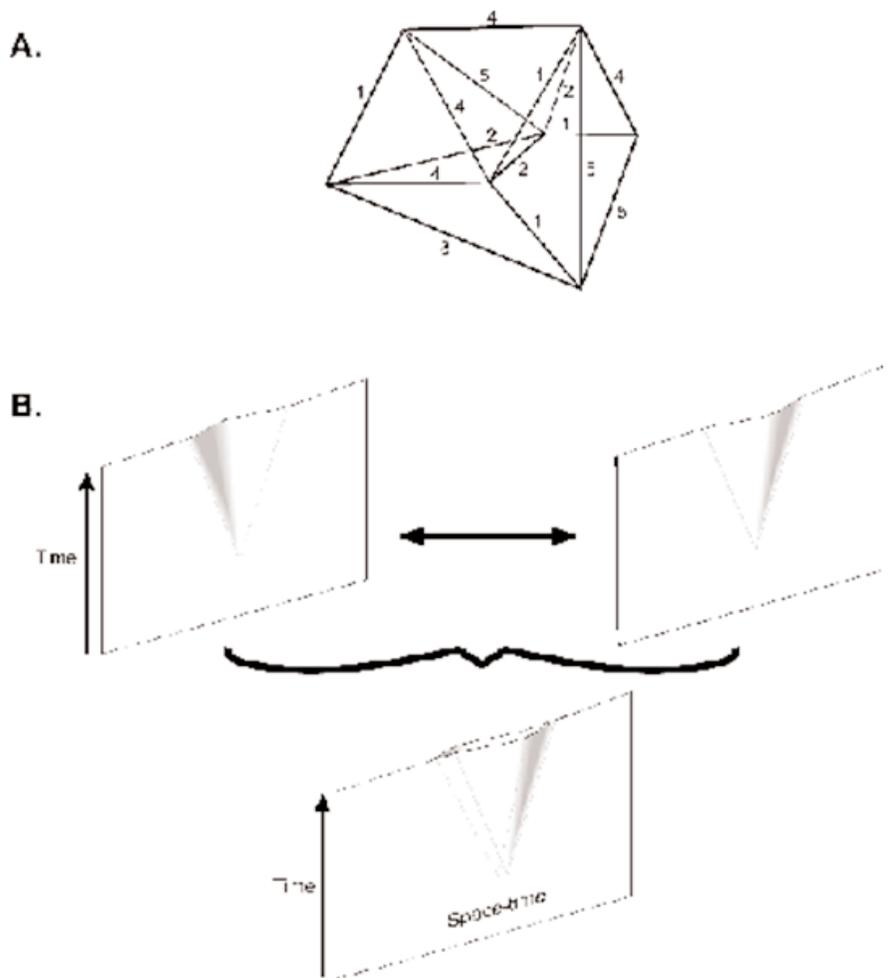
physicalist view sees emergence at a critical level of neural-level computational complexity. But no conscious threshold is apparent, nor is there a reasonable suggestion why such an emergent property should have conscious experience. As physicalism is based on deterministic computation, it is also unable to account for free will or Penrose's proposed non computability. But the major problem remains experience, for which physicalism offers no testable predictions. Something is missing.

## PANPSYCHISM MEETS MODERN Physics

Perhaps panpsychists are in some way correct and components of mental processes are fundamental, like mass, spin or charge. Following the ancient Greek panpsychists, Spinoza (1677) saw some form of consciousness in all matter. Leibniz (1766) portrayed the universe as an infinite number of fundamental units ("monads") each having a primitive psychological being. Whitehead (e.g. 1929) was a process philosopher who viewed reality as a collection of events occurring in a basic field of protoconscious experience ("occasions of experience"). Abner Shimony<sup>7</sup> observed that Whitehead's occasions were comparable to quantum state reductions-actual events in physical reality (see below). But what of Whitehead's "basic field" of proto conscious experience? How could experience (qualia) simply exist in empty space?

What *is* empty space? This question also stems from ancient Greece. Democritus argued that empty space was a true void whereas Aristotle

**Figure 1.** Two descriptions of fundamental spacetime geometry. a) A quantum spin network. Introduced by Roger Penrose<sup>8</sup> as a quantum mechanical description of the geometry of space, spin networks describe a spectra of discrete Planck scale volumes and configurations<sup>9,10</sup>. Average length of each link is the Planck length (10<sup>-33</sup> cm). b) Four dimensional spacetime may be schematically represented by one dimension of space and one dimension of time: a two dimensional "spacetime sheet." Mass is curvature in spacetime, and the two spacetime curvatures in the top of Figure 1b represent mass (e.g. a tubulin protein) in two different locations, or conformations respectively. In quantum superposition mass separated from itself is simultaneous spacetime curvature in opposite directions, a separation or "bubble" of spacetime. At a critical degree of separation, the system becomes unstable and must select either one state or the other.



contended that it was in fact a plenum (background filled with substance)-a medium in which heat and light traveled. Siding with Aristotle, Maxwell’s 19<sup>th</sup> century theory of the luminiferous ether described a plenum that carried electromagnetic waves. However attempts to detect the ether failed and Einstein’s special relativity in 1905 reverted to Democritus in that empty space was an absolute void. However ten years later Einstein’s general relativity with its curved space and distorted geometry reversed his stand to opt for a richly-endowed plenum termed the spacetime metric.

We now know that at very small scales space and time are not smooth, but quantized. This granularity occurs at the incredibly small dimensions of the “Planck scale” at

10<sup>-33</sup> centimeters and 10<sup>-43</sup> seconds. Roger Penrose portrays this basic makeup of the universe as a dynamical spider-web of quantum spins<sup>8</sup>. These “spin networks” create an evolving array of Planck scale geometric volumes defining four dimensional spacetime (Figure 1a). Penrose applies Einstein’s general relativity (in which mass equates to curvature, or perturbation of spacetime) all the way down to this near-infinitesimal geometry (Figure 1b). Thus everything is *in reality* particular arrangements of spacetime geometry. Building on these ideas, Lee Smolin<sup>9,10</sup> likens spin network volumes to Leibniz monads and suggests that self-organizing processes at this level constitute a flow of time, raising the issue of whether the universe is in some sense alive. Could infinitesimally small, weak and fast processes be coupled to biology? A

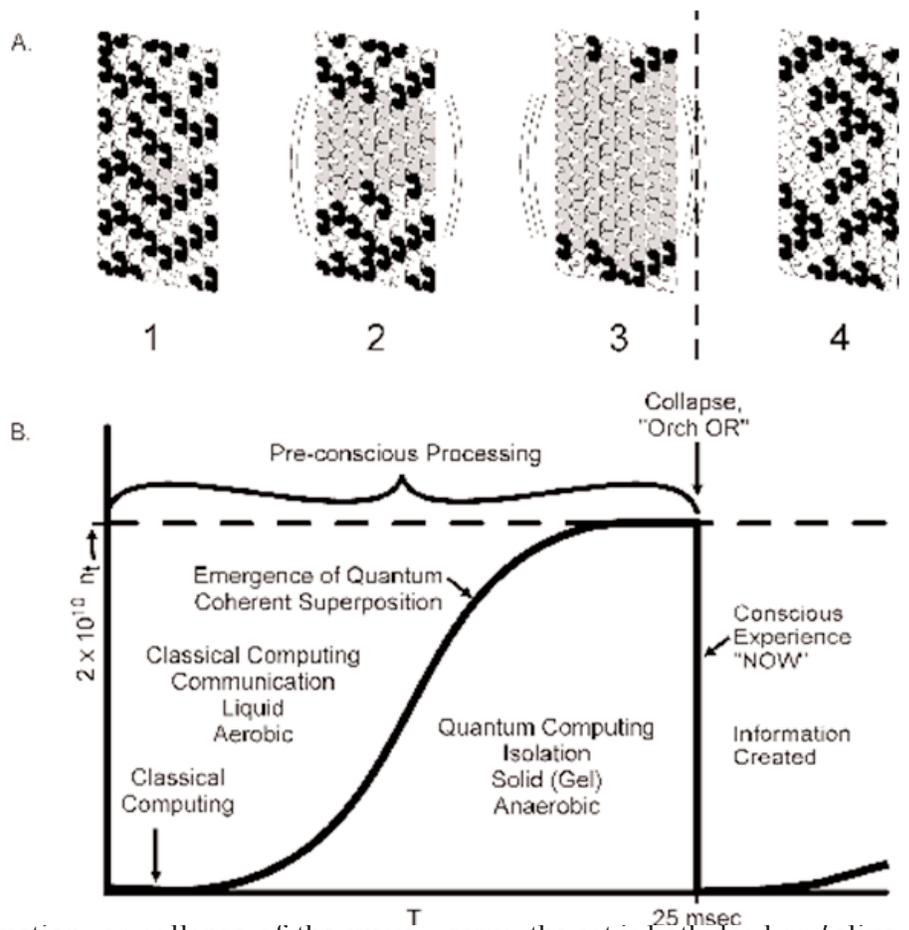
reasonable possibility for such a link is Penrose’s objective reduction-a particular type of quantum state reduction in which new macroscopic information emerges.

**AT THE EDGE OF REALITY: QUANTUM STATE REDUCTION AND CONSCIOUSNESS**

Quantum theory describes the bizarre wave/particle duality of energy and matter at very small scales. The behavior is so strange that the American physicist Richard Feynman once commented “anyone who claims to understand quantum theory is either lying or crazy.”

Strange as it is, quantum theory offers features which may be relevant to consciousness. One is that large collections of quantum particle/waves can merge into uni-

**Figure 2.** Schematic of neural synapse showing cytoskeletal structures within two neurons. Left: Pre-synaptic axon terminals releases neurotransmitter vesicles (black spheres) into synaptic cleft. Thick, black rod-like structures at top indicate microtubules; thinner filaments (e.g. synapsin) facilitate vesicle release. Right: Dendrite on post-synaptic neuron with two dendritic spines. Microtubules in main dendrite are interconnected by microtubule-associated proteins. Other cytoskeletal structures (fodrin, actin filaments, etc.) connect membrane receptors to microtubules. Based on Hirokawa14.



tary coherent states of macroscopic size and influence. Superconductors, Bose Einstein condensates and lasers are unitary states in which component atoms or molecules give up individual identity and behavior. Such coherent quantum states have been suggested to occur among brain proteins to provide unitary “binding” in vision and sense of self<sup>11,12</sup>.

Another feature involves “quantum superposition.” Components of isolated small scale systems can exist in different states or locations simultaneously. This is contrary to our perceived macroscopic world in which objects have well defined positions and are decidedly concrete. The problem is the transition-why and how do microscopic quantum superposed states become classical and definite in the macro-world? This problem is called quantum state

reduction, or collapse of the wave function, and it may be the key to both consciousness and reality.

Experimental evidence in the early part of this century led great theorists Bohr, Heisenberg and Wigner to conclude (the “Copenhagen interpretation”) that objects remain in wave-like quantum superposition until observed by a conscious human being-consciousness causes collapse of the wave function! To illustrate the apparent absurdity of this conclusion, in the 1930’s Schrodinger devised his famous thought experiment Schrodinger’s cat. A living cat is placed in a box into which poison can be released by a quantum event, e.g., sending a photon through a half-silvered mirror. So after the photon has been sent there are equal possibilities that the cat is either dead or alive. But according to the Copenhagen interpretation until a conscious being opens the box to ob-

serve, the cat is both dead *and* alive. Schrodinger’s point was that the conscious observer interpretation was incorrect.

Many physicists now believe that intermediate between tiny quantum-scale systems and “large” cat-size systems some objective factor disturbs the superposition to cause collapse, or “objective reduction (OR).” According to Roger Penrose<sup>2,13</sup> this objective factor is an intrinsic feature of spacetime itself (quantum gravity). As mass is equivalent to spacetime curvature, Penrose begins with the notion that quantum superposition actual separation (displacement) of mass from itself is equivalent to simultaneous spacetime curvatures in opposite directions, causing “bubbles,” or separations in fundamental reality (Figure 1b). Penrose reasons that these bubble-like separations are unstable and reduce to specific states

and locations after a critical degree of separation. If proto-conscious experience is rooted in the Planck scale, then objective reductions (Whitehead's occasions of experience) may ripple through an experiential medium.

Could OR events occur in the brain? The critical spacetime separation precipitating Penrose's OR is given by the uncertainty principle  $E=h/T$ .  $E$  is the energy of the superposed mass,  $h$  is Planck's constant over  $2\pi$ , and  $T$  is the coherence time until reduction. The size (and energy) of a superposed system (degree of spacetime separation) is inversely related to the time  $T$  until self collapse. If isolated, a large system (e.g. Schrodinger's one kilogram cat) will undergo OR very quickly, e.g. in only  $10^{-37}$  seconds. A small system such as a single isolated superposed atom would undergo OR only after  $10^7$  years. OR brain events would be linked to neural processes with  $T$  in the range of tens to hundreds of milliseconds (e.g. 25 msec intervals in coherent 40 Hz). For  $T=25$  msec (40 Hz) OR events,  $E$  corresponds to roughly 3 nanograms ( $3 \times 10^{-9}$  gram) of superposed brain mass.

Nanograms of what? Which biological structures could function as both classical and quantum computers, avoid environmental decoherence and couple to neural-level activities? Microtubules are the logical candidates.

### ARE MICROTUBULES QUANTUM COMPUTERS? THE PENROSE HAMEROFF "ORCH OR" MODEL

Interiors of neurons and glia are functionally organized by webs of

protein polymer—the cytoskeleton<sup>14</sup>. Its major components are microtubules, actin and intermediate filaments. Microtubules are self-assembling hollow cylinders whose walls are crystalline lattices of subunit proteins known as tubulin. Evidence links the neuronal cytoskeleton to cognitive functions, and theoretical models suggest interactive microtubule subunits function as molecular automata capable of nanosecond-scale computation (Figure 2a)<sup>4</sup>.

Roger Penrose and I have developed a model in which quantum superposition, objective reduction and quantum computation occur in microtubule automata within brain neurons and glia. Microtubule associated proteins (MAPs) provide feedback and "tune" the quantum oscillations; the proposed OR is thus self-organized ("orchestrated" objective reduction "Orch OR")<sup>15-21</sup>. In the Orch OR model microtubule quantum computation is isolated from decoherence (Box 1) and continues until threshold is met ( $E=h/T$ ) and an OR event occurs (Figure 2b). For example an OR event coinciding with one 40 Hz cycle ( $T = 25$  msec) would require  $E = 2 \times 10^{10}$  superposed tubulins (roughly 20,000 neurons).

Quantum computation in the Orch OR scheme differs from technological proposals in that superpositions in the latter will reduce to output states by environmental decoherence computation is terminated by intervention and choice of states has an element of randomness. On the other hand, in the Orch OR scheme isolated superpositions self-reduce due to instability in spacetime separation. The choice of outcome states, according to Penrose, is therefore

neither completely deterministic nor random, but has an element of non-computability influenced by Platonic logic embedded in spacetime. Penrose has also suggested that aspects of human understanding and consciousness involve non-computability, a controversial and widely assailed claim. Although outnumbered by his critics, Penrose has thoroughly and systematically answered them<sup>3</sup>. Non-computability is a clue, a delicate thread with which to unravel the mystery of consciousness.

### ORCH OR AND COGNITION

Each proposed Orch OR event consists of 1) an isolated quantum computing phase identified with pre-conscious, implicit processing which culminates in 2) instantaneous reduction corresponding with a discrete conscious "now" event—a Whitehead "occasion of experience."

Each event selects (non-computably) particular configurations of Planck-scale experiential geometry and corresponding classical states of microtubule automata which regulate synaptic/neural functions (Figure 2; Figure 3a,b). Sequences of discrete conscious events (e.g. at 40 Hz) can provide a "stream" of consciousness.

Consider Orch OR in the context of two cognitive tasks: facial recognition and ordering dinner (Figure 3c,d). Each may occur in a series of steps yielding intermediate solutions, however for the purpose of illustration consider how single Orch OR conscious events could accomplish these tasks. (Although classical neural level parallel computation can partially explain these functions,

the Orch OR scheme provides far greater information capacity, conscious experience, binding, and non computability consistent with free will.)

Imagine you briefly see a familiar woman's face (Figure 3c). Is she Amy, Betty, or Carol? All possibilities may superpose in quantum computation. For example during 25 milliseconds of pre conscious processing quantum computation occurs with information (Amy, Betty, Carol) in the form of "qubits", superposed states of microtubule automata. As threshold for objective reduction is reached, superposed tubulin qubits reduce (collapse) to definite states, becoming bits. Now, you recognize Carol as a particular experiential geometry is selected! (Many more than three possibilities, in fact an astronomically high number of possibilities could be superposed in microtubule quantum computing.)

In a volitional act possible choices may be superposed. Suppose you are selecting dinner from a menu. During pre conscious processing, shrimp, sushi and pasta are superposed. As threshold for objective reduction is reached, the quantum state reduces to a single classical state whose selection results from deterministic quantum computation influenced at the moment of reduction by Platonic logic embedded in the Planck scale. A choice is made. You'll have sushi!

## CONCLUSION

The Orch OR model is consistent with known neurophysiological processes, generates numerous testable predictions<sup>18,19</sup> and is the type of multi-level, trans-discipli-

nary theory required to address the mind's enigmatic features. Consciousness may involve subtle links between the brain and fundamental spacetime geometry.

## ACKNOWLEDGMENTS

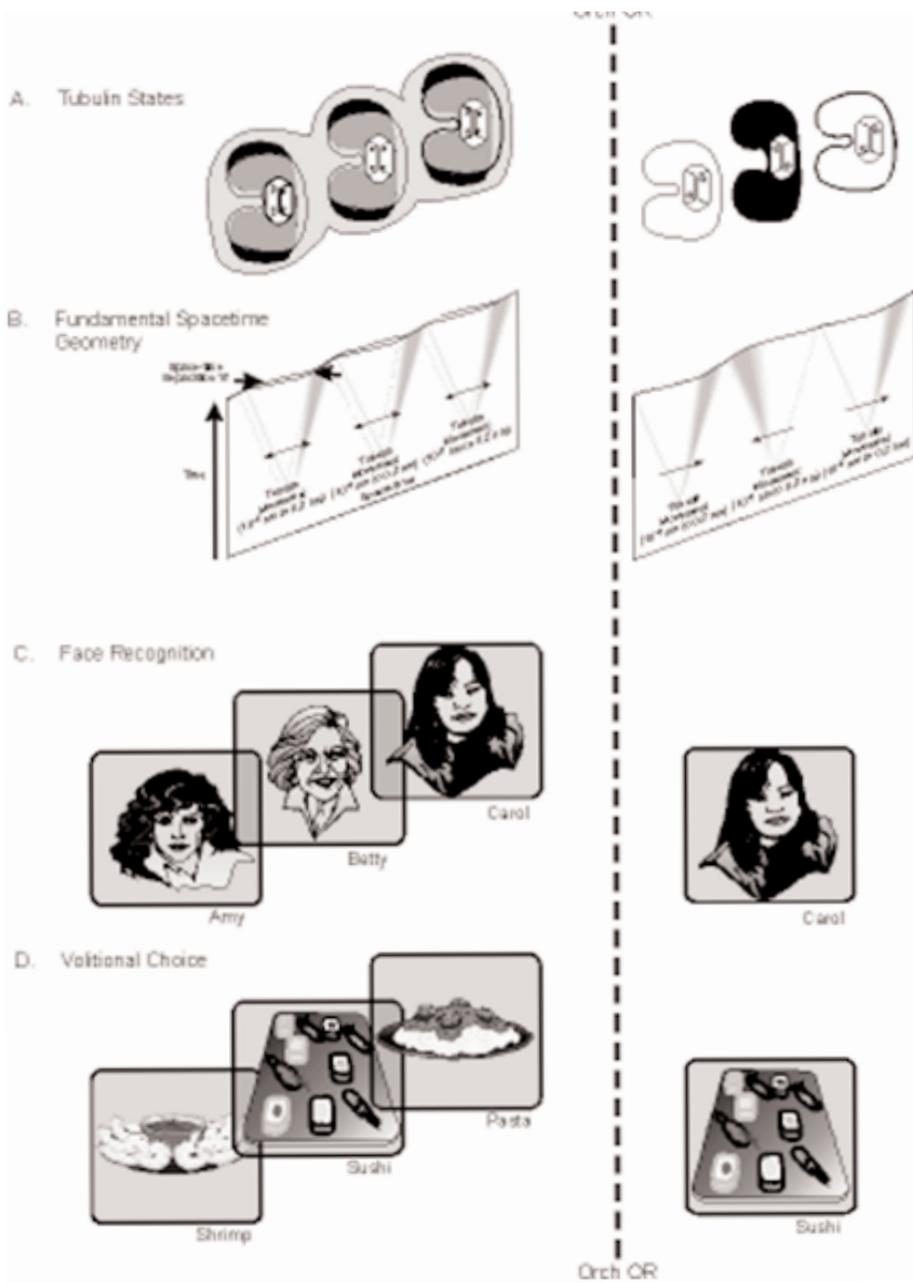
Thanks to Roger Penrose for collaboration and insight, to Carol Ebbecke for expert technical assistance, and to Dave Cantrell for artwork. Discussions with Scott Hagan and Avi Elitzur are also appreciated.

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**Figure 3.** Orch OR events in conscious experience. a) (left) Three tubulins in quantum superposition prior to 25 msec Orch OR. After reduction (right), particular classical states are selected. b) Fundamental spacetime geometry view. Prior to Orch OR (left), spacetime corresponding with three superposed tubulins is separated as Planck scale bubbles: curvatures in opposite directions. The Planck scale spacetime separations  $S$  are very tiny in ordinary terms, but relatively large mass movements (e.g., hundreds of tubulin conformations, each moving from 106 to 0.2 nm) indeed have precisely such very tiny effects on the space time curvature. A critical degree of separation causes Orch OR and an abrupt selection of single curvatures (and a particular geometry of experience). c) Cognitive facial recognition. A familiar face induces superposition (left) of three possible solutions (Amy, Betty, Carol) which "collapse" to the correct answer Carol (right). d) Cognitive volition. Three possible dinner selections (shrimp, sushi, pasta) are considered in superposition (left), and collapse via Orch OR to choice of sushi (right).

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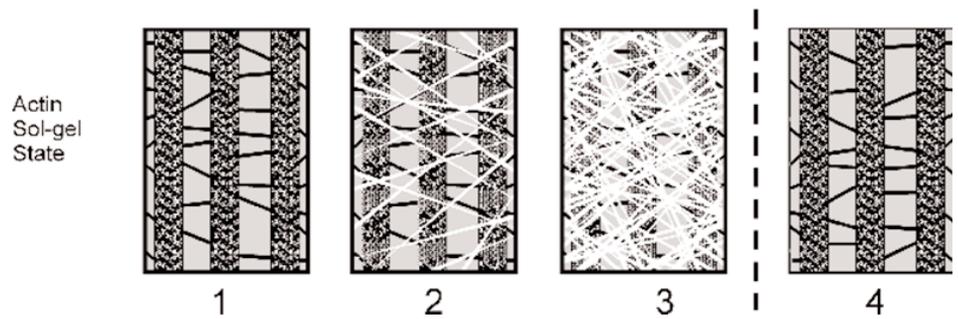
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### Box 1

**Figure** Schematic sequence of phase of actin gelation/quantum isolation (1-3) and solution/environmental communication (4) around MT. Cycles may occur rapidly, e.g., 25 msec intervals (40Hz).



## ISOLATED MACROSCOPIC QUANTUM STATES IN THE BRAIN?

At first glance the brain is a noisy, thermal environment, hardly hospitable to delicate quantum effects which require (in the technological realm) extreme cold to prevent thermal excitations and environmental decoherence. However nature may have solved the problem of quantum state isolation. For example Dan Sackett<sup>a</sup> of NIH has recently shown that microtubules may be insulated from thermal noise by a surrounding sleeve of plasma-like charge condensation.

But how could isolated cytoplasmic quantum states traverse membranes and synapses to occur macroscopically among microtubules in (e.g. 20,000) neurons throughout the brain? One possibility involves quantum tunneling through gap junctions, primitive electrotonic windows between neurons and glia. Neurons interconnected by gap junctions form networks which fire synchronously, “behaving like one giant neuron”<sup>f</sup> (possibly accounting for synchronized 40 Hz neural activity<sup>g</sup>). Unlike chemical synapses which separate neural processes by 30-50 nanometers, gap junction separations are 3.5 nanometers, within range for quantum tunneling. Gap junctions are widespread but unevenly distributed. Immunolabeling

of gap junction protein (connexin) precursor demonstrates high levels in thalamic sub nuclei, layers 2 and 3 of cortex, and midbrain<sup>h</sup>. Thalamo-cortical networks of gap junction connected neurons with sol-gel phases coupled to synchronized 40 Hz activity could isolate microtubules across large brain volumes and provide cycles of isolated macroscopic quantum coherence.

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## QUANTUM CONSCIOUSNESSES

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## THE PSYCHIC STRUCTURE OF THE UNIVERSE

By: Marco Ferrini

What is the structure of the universe? What are life and consciousness? A mere combination of atoms and molecules? Are living creatures enlivened by a spiritual essence? If yes, is that true only for man or for all living manifestations? These are eternal questions, for both science and religion.

The highest minds of Western science have understood the great value but also the limits of experimental knowledge and have indicated that there are two ways of understanding: besides the scientific-deductive method, there is intuition, accessed through contemplation.

Vedic rishis have conducted their research starting from the very same mechanism of understanding: the investigation in the deepest self leads to a level of consciousness where perception realizes a unified vision of the various levels of reality, enabling us to understand the fundamental laws of universe.

The tale of cosmogony told by Vedic texts describes in three stages the explosion of a seed: germination, expansion and finally disintegration - or in other words: creation, maintenance and dissolution. Understanding the nature of Vedic cosmogony is itself journeys where we witness

an invisible seed<sup>1</sup> expand while differentiating itself in cosmic space, to the point of its dissolution.

Just like the human being is a combination of physical body, mind and spirit, so according to Yoga and Samkhya philosophy, the entire manifested world is nothing but a thought created by the Cosmic Mind crystallized in energy and matter, created with the purpose of allowing the realization of the person. The transformation of energy into matter and matter into energy, according to the formulae revealed to the West by Einstein over one hundred years ago, and the most recent discoveries of quantum physics, describe through a Western scientific language the identical great realizations of the Vedic sages. The universe is therefore expanding consciousness, a project realized by the thought of the Cosmic Mind.

The Vedantic paradigm recognizes two categories of knowledge: the knowledge of matter and its components, like atoms and quarks (the bodies) and the knowledge of spirit (the knower of the body or field of activity). The first category studies what is changing, temporary and external to the self, while the second category studies what is unchangeable, eternal, transcendent -- the self.

In the last analysis however, according to Vedic psychology there is no real dichotomy between matter and spirit, as they both originate from the same supreme consciousness, pervading the entire universe (virat, the cosmic body) and animating all matter (prakriti), just like individual consciousness pervades the entire body of any species. The world is therefore a tight net of correlations: the subject is connected to the object, spirit to matter, beings among themselves and each one of them to the supreme Being, individual bodies to the cosmic body, individual minds to the universal mind.

The thorough understanding of these tight correspondences and correlations between micro and macrocosm constitutes an unavoidable premise to the penetration of reality and the attainment of a full realization of the self, through the development of an organic and integrated world view. Vedic works in fact teach that each individual's well being necessarily depends on his own level of harmony with the macrocosmic dimension, the divine source of all energies.

Samkhya philosophy describes the process leading to the manifestation of the phenomenal worlds, starting

<sup>1</sup> It is precisely *avyakta* (non manifested).

from the interaction of prakriti and purusha. In fact, the dynamic activity of the universe is due to the interaction between spirit and matter, purusha and prakriti. Their contact is necessary because spirit is inactive without matter and matter is blind without spirit. They are observed as consciousness and non-consciousness, subject and object, knower and known. The entire process of creation is an act of gradual evolution and development from one element to the next, until the attainment of the variety of nature as we know it.



Especially in the Upanishads we find the description of the stages of a process that can be described as psychic involution or development in matter, depending on the perspective of observation. For the sake of clarity we will call it evolution, a concept that cannot be equated to the Darwinian concept of evolution of the species.

Rather, it is a thickening, an increasing materialization, which brings the elements to become perceivable by the senses. This development characterizes the path of whatever is manifested, and goes from an implicit stage to the full actuation of one's own expressed reality, perceivable by the set of senses. This implicit stage is not perceptible by the senses, and is only attainable through intuition in the so-called extra sensorial perceptions, those faculties that develop at higher consciousness or super-consciousness levels.

Samkhya philosophy describes potential elements, fundamentals of the so called subtle manifestation defined as tanmatras. As a rule they are not perceivable but can be deduced by means of inference. They represent potential elements, archetypes, and correspond to the fundamentals of sound (shabda), touch (sparsha), form (rupa), taste (rasa) and smell (gandha). From this potential energy, through a process of extroversion, the following develop: the sense of hearing, the sense of touch, the sense of sight, the sense of taste and the sense of smell, and then the respective organs of perception -- ear, skin, eye, tongue and nose, and ultimately also the five bhutas, or ether, air (the gaseous elements), fire (the warm and radiant elements), water (the liquid elements) and earth (the solid elements).

Material energy (prakriti) is composed of the five bhutas or physical elements just described (ether, air, fire, water and earth) and the three subtle elements composing the psychic structure of the individual be-

ings and that of the Universe: manas, buddhi and ahamkara (mind, intelligence and false conception of self).

The gross physical elements derive from the tanmatra as follows: from the sound tanmatra (shabdatanmatra) the akasha is produced -- the element of ether-space that originates from the interaction between sound and its object and reveals the characteristics of the sounds perceivable by the ear, exactly because the perception of space is connected to the hearing apparatus<sup>2</sup>.

From the touch tanmatra (sparshatanmatra), combined with the one of sound, the air-wind element is produced (vayu, air), with the attributes of sound and touch: it can also be perceived by hearing, but it is specifically detected by touch.

From the color tanmatra (rupatanmatra) mixed with the ones of sound and touch, the light-fire element develops (Agni, light or fire), having properties of sound, touch and color; it can be perceived by hearing and

<sup>2</sup> The perception of directions in space is a function of the inner ear; sound is also perceived through a vibration of the space contained within the ear (see M. Piantelli, *Lo hinduismo. Testi e dottrine, in Storia delle Religioni*, ed. G. Filoramo, Editori Laterza, 1996).

touch, but it is specifically detected by sight.

From the taste tanmatra (rasatanmatra) mixed with the preceding three, the liquid-water element is produced (apa), having properties of sound, touch, color and taste; it can be perceived by hearing, touch and sight, but it is specifically detected by taste.

Finally, from the smell tanmatra (gandhatanmatra) mixed with the preceding four, the solid-earth element is produced (gandha, earth), having properties of sound, touch, color, taste and smell; it can be perceived by hearing, touch, sight and taste, but it is specifically detected by smell.

The combinations of atoms that we find in nature are further transformations of these five elements, the result of processes with several stages of elaboration, reaction and synthesis.

It is therefore from the imperceptible, the subtle, archetypal elements that physical bodies and organs are created; it is the sense function or faculty which develops the sense organ and finishes it to perfection.

Sense organs are energy transducers: they are stimulated by an external energetic source and transmit it to nervous centres. They are channels through which coded information passes, directed to mind and intelligence. Physiologically, once these sense stimuli reach the nervous centres in the cerebral cortex, the connection to the rest of the physical body is activated.

Samkhya teaches that every tangible physical structure which is perceivable by the senses derives from a subtler reality, from an imperceptible psychic structure, substratum to all things. The subtle body composes a mental framing against which the physical body is sketched and structured. Startlingly but evidently, this concept recalls one of the most advanced hypotheses in modern physics: that of the so called implicit order. In Vedic literature in fact, introspection and mystical intuition are pictured as the major instruments to grasp transcendent reality, beyond the reach of the human senses and logic, capable of revealing only the epidermic strata of reality (this perception is defined pratyashka and is on the psycho-physical plane). What is perceivable to the great majority of people is the superficial level of existence, defined by Bohm as explicit or revealed order. Underneath

it is the implicit or concealed order, origin to all objects and appearances of the physical world.<sup>3</sup>

Indian thought and specifically Vaishnava Vedanta explain that consciousness reigns above matter, in micro and macrocosm. The individual body is subject to individual consciousness<sup>4</sup>, just like the cosmic body, the universe, is pervaded and sustained by the cosmic Consciousness. The individual consciousness is part of the cosmic Consciousness. Therefore, the Upanishads state: “It [Brahman]<sup>5</sup> is far yet close; it is inside and outside all things”<sup>6</sup>, or “You are That [Brahman]”<sup>7</sup>; from this we can gather that the spiritual essence sustains and pervades all things, that the individual self is originated from the cosmic Self<sup>8</sup>(as His expansion) and is indissolubly connected to It by an eternal relationship<sup>9</sup>.

Mystics of all traditions and all times have always seen and described some sort of unity, and interactive and interdependent relation among all cosmic components. Such a conception is surprisingly met and harmonized by the most recent scientific discoveries, especially in the field of quantum physics, pointing to a substantial interconnection of all natural elements and to the overcoming of the supposed separa-

<sup>3</sup> Cfr. Michael Talbot, *All is One*, 1997.2 *The perception of directions in space is a function of the inner ear; sound is also perceived through a vibration of the space contained within the ear (see M. Piantelli, Lo hinduismo. Testi e dottrine, in Storia delle Religioni, ed. G. Filoramo, Editori Laterza, 1996).*

<sup>4</sup> Cfr. *Bhagavadgita XIII.34: Descendant from Bharata, as the sun lights the universe all by itself, so the owner of the field [the atman] lights [with its conscience] the entire field [body]. Author's translation.*

<sup>5</sup> *The Spirit, the Absolute, supreme Reality (Paramatma), transcendent Truth (Paramtattva). The term Brahman is morphologically derived from the sanscrit root brih, meaning 'to grow, to expand', and it indicates the all-pervading spiritual essence, infinitely vast, without limits.*

<sup>6</sup> *Isha Upanishad mantra V.*

<sup>7</sup> Cfr. *Chandogya Upanishad VI.11.3.*

<sup>8</sup> Cfr. *Brihadaranyaka Upanishad V.1.1: "[There are] that complete [Brahman] and this complete [jiva]; this complete [jiva] springs from that complete [Brahman]. Taking this complete [jiva] from that complete [Brahman], the complete stays [thus]."*

<sup>9</sup> *Bhagavadgita XV.7.*

tion between observed system (object) and observing system (subject). Through his general theory of relativity, Einstein had already demonstrated that space and time are not separate entities but are harmoniously connected within a wider set, a four-dimensional continuum made of matter, energy, space and time. And eminent representative of modern subatomic physics have gone yet further. Bohm, for example, has stated that everything that exists in the universe is a continuum: things belong to an undivided set, though they possess peculiar qualities.

Vedic texts offer the great opportunity of taking to this fascinating journey of knowledge within us and outside, as they investigate the different dimensions of reality, spotting interactions, connections and correspondences. Not only do they explore the physical universe, defining the fundamental principles of Vedic cosmogony and eschatology, they describe the universe of interior experience, providing in-depth explanations on the different states of consciousness of the being and on the human personality in its multiple components: perception, instinct, thought, imagination, will, emotion, intellect, intuition, spirit.

In the Upanishads, the universe is observed and understood in constant relation to the individual; the analysis of the relation between macrocosm and microcosm thus gains a pre-eminent psychological connotation and opens up to a vision of reality founded on a deep interrelation

between self and Super-self, infinitesimal Brahman and supreme Brahman, within the frame of a peculiar characterization and conception of time and space.

The Upanishadic rishi precisely aims at unveiling the tight net of correlations connecting the world of things to that of consciousness<sup>10</sup>, object to subject, macrocosm to microcosm, by merging the multiplicity of the real to its unique source and pointing to Brahman, the supreme Spirit, as the ultimate essence sustaining everything, basis and unifying factor for the multitude of things and events we can observe.

Experimental sciences offer an important contribution in the field of perception, by providing sophisticated instruments of observation and research. Modern scientific research (specifically quantum physics) has already demonstrated that the observation of reality and reality itself depend also on the consciousness of the observer, on the viewpoint he has developed. For a thorough and reliable exploration, the study of the object need therefore be accompanied and preceded by the study of the subject, by the analysis of his psycho-physical apparatus, in order to understand the nature of his deep self.

Generally the Westerner tends to focus his attention outside himself, and therefore, although he has become expert in analysing with precision and completeness the phenomena of objective reality, still remains quite ignorant in the study

of his own self and of his inner reality.

In this regard, Hindovedic texts offer an inestimable heritage of knowledge that can integrate the acquisition of today's objective disciplines with a science that is extremely ancient and yet surprisingly modern. They explain in depth the dynamics of the inner world, of which external reality usually is a projection, by using an effective method, successfully tested for thousands of years, for the development of the perceptive instruments and the elevation of consciousness. In fact, ancient Indian culture and specifically Yoga tradition offers the most ancient school of psychology, capably describing the nature and functions of the psyche with accuracy, using a scientific system and specific language, and in such detail that even modern psychology will be greatly benefited.

According to the Vedas the mind is an object rather than a subject; it is the "filter" used by the conditioned being to see the world. Defined as "internal sense"<sup>11</sup>, the mind has a key role in determining the quality of existence for every individual, because it is the operative centre which directs every action. The quality of mental health determines the quality of perception, and hence the quality of behaviour and life, too. Vedic literature explains that neither time nor space is absolute realities, since they are lived individually according to specific modalities. Phenomena like old age, death, relationships between people, and between people and

<sup>10</sup> Cfr. M. Talbot, *All is one*, 1997: *I believe we have since time overcome, in particle physics, the concept of passive structure of the universe, I believe we are in a domain where the interaction of consciousness with the environment is verified on a primary scale and we are thus creating reality, under all the reasonable definitions this term can imply.*

<sup>11</sup> See *Bhagavata Purana III.26.14.*



things are therefore connected to subjective states of consciousness.

Hinduvedic psychology does not reduce the science of psychology to neuro-physiology as is the tendency of some modern psychology schools<sup>12</sup>.

This they do generally by negating the specific reality of the psyche in relationship to the reality of the

body, and equating the cognition product with 10 Cfr. M. Talbot, All is one, 1997: I believe we have since time overcome, in particle physics, the concept of passive structure of the universe, I believe we are in a domain where the interaction of consciousness with the environment is verified on a primary scale and we are thus creating reality, under all the reasonable definitions this term can imply a structure that can be reduced to the activity of the nervous system.

This then is considered to correspond to physical and biological laws, which are constructible according to objective and experimental parameters. According to Hindovedic psychology the psychic objects (ideas, thoughts, images, emotions, feelings, etc) are not less real and tangible than physical ones.

They are characterized by their own structure and function and can be studied through a methodology that is different from the methods used for tangible bodies and consists mainly in the epistemological method named *pratyaksha*<sup>13</sup> and based on sense perception.

Modern schools of psychology do not interpret the individual psychic process in a theoretical environment based on materialistic-positivistic duality, but Hindovedic psychological science is different because it recognizes the existence of a reality beyond the body and the mind - the living force, or the conscious subject - who is experiencing the acts of seeing, thinking, feeling etc, through the psychological and physical instruments.

This deep and unchangeable me, situated beyond space and time, simply defined as the self by the ancient sages, is the real reference point of the cognitive experience. This self is described, in different contexts, with the definitions of *atman*, *purusha* or *jiva*; all these names indicate the living entity: the spiritual self, or the real subject of perception, who is capable to give light to the intellect, vitality and consciousness to the body.

<sup>12</sup> See for example *Watson's Behaviourism* (in the chapter *Contemporary Schools of Psychology and Their Contribution*).

<sup>13</sup> This subject will be further elaborated in the chapter *Methods of Indian Psychology*.

In Indian psychology, the mind (just like the body) is constituted of material energy (prakriti) that has a particular and more subtle nature than the gross physical elements. Western psychology on the other hand identifies the mind (when its specific structure is recognized) as the subject of cognitive experience, and gives no consideration to the existence of an unchangeable self (spirit soul) as the place of consciousness and the “centre of gravity” of the personality.

Atman, being a pure spiritual principle, is beyond time and space so in its ontological essence it cannot undergo any form of limitation or conditioning. It is like a “spiritual monad” possessing the qualities identical to those of Brahman though not to such extent.

Thus perception, reflection and elaboration of data are enabled by this function of atman, whose main attributes include consciousness and which utilizes the mind as its organ of action. Mind, therefore, is not a reality having its own independent existence: it is not a subject but rather an object. Unlike the spiritual self whose intrinsic nature remains always unchanged, consciousness can be altered by the substances or psychophysical forces, but cannot be explained in materialistic terms as if a biochemical product. It produces biochemistry and not vice versa.

Consciousness uses the mind like an organ of action. The classic texts on Yoga, and in general on the Hindovedic tradition, emphatically state that a human being must learn to manage and utilize the psychic instrument, take full control of it and direct it in order to facilitate the acquisition of the deepest possible knowledge of oneself and the world.

In order to properly utilize and even to cure the mind, we must first of all know it deeply, understanding its structure, functioning, extraordinary faculties and limitations. To do that, the essential thing is not identifying with it. When the subject misidentifies his own psycho-physical instruments of thought and action as the self, he thus loses awareness of his own original individuality, which is spiritual in nature. As a consequence, the being becomes more and more alienated from his real self, and enters in a state of deep confusion and depression.

Hindovedic literature explains the psychological mechanism that misidentifies consciousness with the sum total of one's psychic contents and with the body, manifesting the ahamkara, the sense of ego or the reflected and conditioned consciousness.

The ahamkara constitutes the first stage of the personality splitting, and

subsequently the field of consciousness becomes isolated and limited to the body and mind, thereby losing its original integrity<sup>14</sup>.

Since these two are constantly changing - the body being characterized by a continuous flow and turnover of atoms, the psyche being characterized by a “river” of thoughts<sup>15</sup>, an endless sequel of verity or mind changes - the individual who is a victim of ahamkara identifies himself with a transitory and fleeting personality that is subject to continued oscillations, which inevitably become a source of suffering.

However, the Vaishnava Vedanta teaches that the ego produced by ahamkara should not be denied or removed, but rather de-conditioned and controlled by the self, so that instead of acting as a barrier it can become a bridge between the individual and his original identity of pure consciousness.

Without re-harmonizing the individual being with the Supreme Being, the individual mind with the Cosmic Mind, the finite intelligence with the Infinite Intelligence, we cannot attain a perception of the self and the world that is correct and including all the anthropologic and existential components: the physical, the psychic and the metaphysic. The dynamic and harmonic integration of

<sup>14</sup> In this case the individual, completely identified with a distorted and partial vision on himself, unable to perceive anything else, is not even capable of realizing his own conditioning and the fragmentation of his own awareness. This state of consciousness is typical in the most serious mental conditions, like psychosis.

<sup>15</sup> According to Bohm, consciousness constitutes a perfect example of undivided and flowing movement, the ebb and flow that cannot be clearly defined, but from which thoughts and ideas spring up to the surface. These products of the psyche are in a sense similar to the ripples or whirlpools produced in a running stream and, exactly like the whirling flow of a stream, some of them can repeat themselves and persist in a more or less constant way, while others are evanescent and disappear as quickly as they appeared. This tendency to crystallize in fixed and rigid patterns is also observed in the thought vortexes (ideas and opinions) which sometimes tend to become sclerotized in the consciousness.

these three dimensions of being is a fundamental prerequisite to re-establish a global state of health at all levels.

In the Hindovedic traditional understanding, the study of the mind cannot be separated from the study of the self<sup>16</sup>; in fact the psychic component and even the physical component can only be effectively and permanently healed in the context of the development of a deep awareness or spiritual consciousness.

In such process of research and evolution, great importance is to be attributed to the correct comprehension of the dynamics of perception, the nature and function of psychophysical instruments through which we can experience the phenomenal world. Perception is a complex phenomenon, fundamental for our consideration, as it determines the quality of life.

As we know from ancient Vedic science, each aggregate of matter has a certain psychic charge (pratyaya). Matter in fact, although in a way inert, lacking its own will is pervaded by powerful energies (gunas), the structuring forces of physical universe. These energies are inherent to nature and are called in Sanskrit *tamas*, *rajas* and *sattva*<sup>17</sup>, each of them determining differently the nature of things.

The psychic charge present in every object stimulates the sense organs of the observer and through them it en-

ters the mental sphere of the individual, thus generating waves or subtle rays of psychic energy, *vrittis*.

Sense organs prove to be the primary energy transducers through which psychic streams of objects reach first sense faculties (*jnana indriya*), and from there penetrate the mental sphere, *manas*, the seat of extroverted functions and gathering of the data collected by means of senses from the outer world.

*Vrittis* however, do not stop at the *manas* level, but proceed beyond, reaching further psychic levels: *ahamkara*, the platform of the historical ego, and subsequently, the platform of the intellect or *buddhi*, meant for processing and analysing the data received by *manas*. Still, the stimulus doesn't come to a halt at the *buddhi* level, as it proceeds down to the unconscious psychic plane, *karmashaya*.

What sort of objects inhabits the unconscious? Various impressions or traces of memory called *samskaras*, representing bits of perceptions or past experiences. *Samskaras* form psychic traces, *vasanas*, the source of tendencies or mental automatisms, extremely difficult to eradicate, as they are rooted at the unconscious level.

According to universal psychic laws, the impressions in the unconscious memory agglomerate and join other impressions of similar nature, thus forming the so-called complexes and

influencing the emotional state, thoughts and conceptions of life, up to determining character formation and individual personality.

These unconscious psychic contents re-emerge reinforced in consciousness, through the so-called returning *vrittis*, especially in moments when the ego is weakened, taken by surprise, fear or other strong emotions.

Thus the unconscious plays an extremely important part in our life. Our "I", acting mainly on the rational basis, has very little force when compared to the unconscious and its titanic power.

Vedic literature explains that at the moment of death the spiritual being or *atman* transmigrates from one physical matrix to another (*yoni*) on board the subtle psychic body (*sukshma sarira*), where innumerable unconscious impressions accumulated during the existence of the individual, are stored.

These impressions determine not only the quality of the previous life, but also the destiny of the being, the nature of the next physical body and natural predispositions otherwise unexplainable, inborn talents or congenital psychopathologies. At the moment of birth, the deep mind looks nothing like a *tabula rasa*, rather like an encoding with innumerable recordings.

According to Vedanta Vaishnava the different forms of psychic condition-

<sup>16</sup> It is interesting to note that in the Western tradition the term *psychology* originally meant 'science of the soul' (from the Greek *psykhé* 'soul', related to *psykho* 'breathe, blow').

<sup>17</sup> *Sattva-guna* is the force which takes up; it implies 'equilibrium, harmony, lightness, luminosity'. *Rajoguna* is the force working in expansion; it generates 'dynamism, frenetic activity, creativity'. *Tamo-guna* is the force pulling down, it produces 'inertia, lethargy, disorder'.

ings and sufferings deriving from this encoding (illnesses, anxieties, failures) are not inevitable. As a matter of fact neither physical nor mental body, constitute the real identity of the being; they are just instruments at the disposal of the self and not necessarily its cages. Through the Yoga science, the individual can learn how to make positive experiences in the world, managing to filter and select at his best the impressions before they reach the unconscious memory. Besides, it is possible to gradually recover all the psychic material lying in karmashaya and transform it in such a way that it could become propaedeutic to our evolutional progress, to the rediscovery of our deep identity, the comprehension of the fundamental laws of the psychophysical universe, the development of a harmonic relationship with ourselves, with others, with macrocosm and reality around us.

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## MASLOW'S NEEDS HIERARCHY AND ADVANCED YOGA PSYCHOLOGY

By: Swami Jnaneshvara Bharati

According to Yoga Psychology, there are three additional levels of development, experience, or being, which are beyond the five primary needs of Maslow's Needs Hierarchy.

Abraham Maslow introduced a model of developmental psychology that has become extremely well known not only in the field of psychology, but also in management and other human sciences. It describes five developmental stages, which are based on what Maslow calls human needs. Thus, his model is known as Maslow's Needs Hierarchy. In his later years, he expanded his model to include the higher levels of human experience.

Yoga is really about the mind and transcendence: In reading this article it is essential to understand that Yoga has been significantly misunderstood in recent years, leading people to believe that it is a physical exer-

cise program. It is important to know this so that you can openly read about the relationship between Yoga Psychology and Psychology as we usually perceive it, particularly focusing here on Maslow's model of psychological development. Authentic Yoga, while possibly including bodily work as a foundation, is actually about encountering, examining, exploring, integrating and transcending the many levels, currents and crosscurrents of mind.

Yoga Psychology is a developmental process: The comparison of the stages of Yoga Psychology to the stages of Maslow's Needs Hierarchy is being presented here as a way of explaining the nature of Yoga as a process of developmental self-awareness or unfoldment, which reaches still higher levels of human development or experience. Yoga Psychology deals with living in the world and also with transcendence

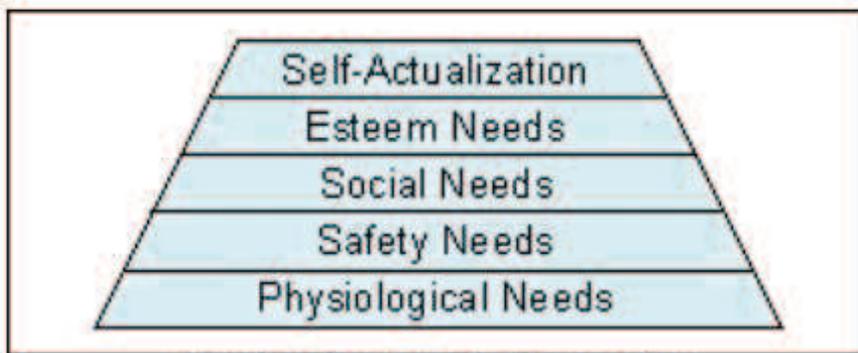
into and through the higher reaches of human consciousness.

**MASLOW'S NEEDS HIERARCHY:** Maslow explains that the human has five levels of needs, which build one upon the other. To develop a next higher level requires a reasonable level of completion, wholeness, integration, or stability at the previous level or levels. When this relative completion at a stage occurs, the desire or longing for the next higher level automatically emerges over time.

**PHYSIOLOGICAL NEEDS:** These are the primary needs, which include the needs for food, water, air, and sleep. Without these, physical life itself is not possible.

**SAFETY NEEDS:** Once the physiological needs are met, there are the needs for safe lifestyle and safe environments. These might include safe housing, financial security, job security, as well as physical, mental, and emotional safety and freedom from threats.

**SOCIAL NEEDS:** Beyond the safety needs arise the needs for belongingness, such as having family, friends, and community. It involves the giving and receiving of love and nurturing.



Maslow's Needs Hierarchy

**ESTEEM NEEDS:** With social needs intact, there comes the needs for self-respect, achievement, and recognition by others. Maslow later modified this somewhat, by explaining that between these Esteem needs and the need for Self-Actualization (below), there is also the need for aesthetics and knowledge.

**SELF-ACTUALIZATION:** The culmination of Maslow's original Needs Hierarchy is that of attaining one's full potential as a human being living in the world, involving the seeking and expression of justice, wisdom, benevolence, and creativity. This level of developmental recognition was a major cornerstone of the Humanistic Psychology movement, sometimes called the "third force" of psychology, following the "first force," which is depth psychology of the ego structure, and the "second force," which is behavioral psychology.

**MASLOW'S REVISED NEEDS HIERARCHY:** In his later years, Maslow added a sixth level to his Needs Hierarchy, that of Transcendence or Transpersonal. This was in recognition of realities that are "trans" or beyond all of the first five levels, including even the fifth stage of Self-Actualization. Transpersonal Psychology has become known as the "fourth force" of psychology.

It is interesting that while Maslow's Needs Hierarchy of five needs has become widely known, written about, and taught, there is very little written or spoken about his addition of the sixth level. Possibly it is not understood well enough to make it into most of the psychology, business, and other human development textbooks, magazines, or journals since few people develop to this

level in their current incarnation.

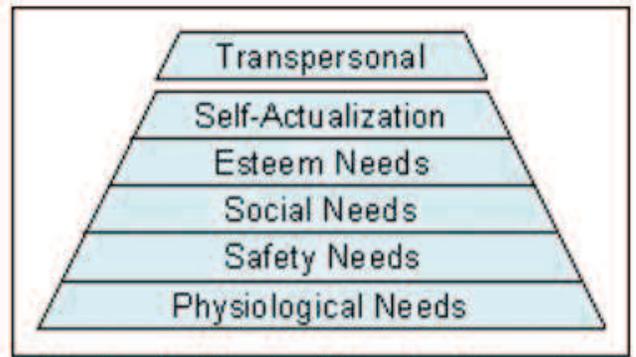
It is very important to note that there is a great difference between the terms Self-Actualization and Self-Realization, with the former having to do with higher levels of fulfillment at the personality level, while still in relation to worldliness. Self-Realization has to do with that knowing of pure consciousness (or many other such terms), which is beyond, transcendent, or transpersonal (Self-Realization relates to the Absolute, the highest of the three additional levels described below).

### NEEDS HIERARCHY AND YOGA DEVELOPMENTAL

**STAGES:** According to Yoga Psychology, there are three additional levels of development, experience, or being, which are beyond the five primary needs. Eventually, even these three sequentially emerge as needs, as the longing for deeper and deeper truths intensifies.

Just as with Maslow's five stages, each of these are sought one after the other. At first, one might seek the Subtle, then realize that there is more, the expansive, formless insight of the Causal. Then, even that is desired to be transcended, seeking nothing less than the direct experience or realization of the Absolute Reality, Truth, or Self.

Those involved with or familiar with the Transpersonal Psychology movement may or may not recognize each of these additional three levels known to Yoga Psychology.



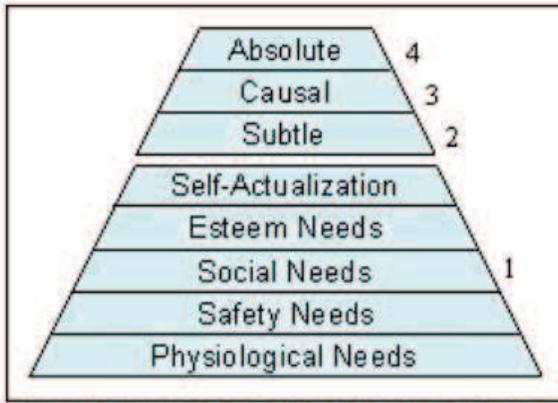
Maslow's Revised Needs Hierarchy

What many consider the Transpersonal level of Maslow is equivalent to the Subtle level of Yoga Psychology. This may involve subtle, psychic, occult, or astral plane experiences, while not yet evolving or climbing the developmental ladder to that of the Causal or Absolute (These are further discussed below and in other articles introduced in the next section).

As with the earlier five levels of needs, there may not be much recognition of the higher levels when one is still working on a lower level. For example, just as one might not be working much on Social and Esteem needs when having no food, water, or safety, one who is extensively engaged in exploring the Subtle, psychic, astral, or occult planes may have little awareness or seeking of the Causal or Absolute.

Similarly, one who is working on Esteem needs and Self-Actualization needs may not yet have much interest in Maslow's Transpersonal stage, much less the Causal or Absolute stages of Yoga, which, for such a person will likely not even be acknowledged as realities.

Each of the five needs described by Maslow can be said to be all operating in one domain or level of reality. Collectively, these five are operating in the Gross level. Yoga contains a total of four broad levels or stages,



Four Developmental Stages of Yoga

though each of these might be further subdivided by some who describe these levels.

**1. GROSS/VAISHVANARA:** All of the five stages of Maslow's Needs Hierarchy are experienced as part of the reality of the Gross world. The deeper levels (the other three levels of Yoga Psychology) are there, as the functioning substratum, but these are generally quite out of view by most people.

**2. SUBTLE/TAIJASA:** The Subtle level or stage is also there as a substratum, which is typically out of view. This level of development is commonly known in our culture as experiences of the astral, occult, or psychic planes. The experiences and skills developed in this level are part of this developmental process.

**3. CAUSAL/PRAJNA:** The Causal plane is seldom talked about or written about, even in the Transpersonal communities. It is the substratum out of which the Subtle and Gross spring. It is the fountain of intuitive and formless knowing, deeper than subtle experiences, visions, sounds, visitations, or voices.

**4: ABSOLUTE/TURIYA:** This is called the "fourth" state (which is a different usage of the

term "fourth" from that of the "fourth" psychology described above). Here, Turiya is that pure consciousness, which permeates and transcends the other three stages, including the five needs of the Needs Hierarchy, which are part of the Gross.

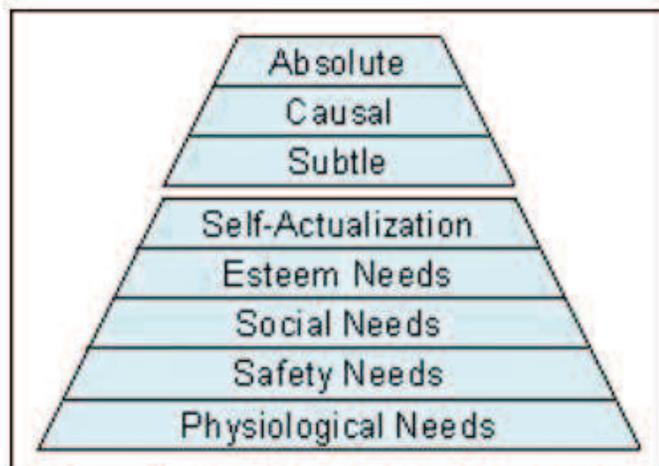
Turiya also permeates and transcends both the Subtle and Causal levels.

To study and understand these four levels of reality and Developmental Yoga Psychology may take a good bit of effort, along with sincere practices of meditation and contemplation. It is highly significant and useful to note and remember that these four stages of Developmental Yoga Psychology are symbolically represented in the four parts of the OM Mantra. These four parts are the three sounds A, U, and M, along with the silence that follows. Included in the articles below is an article on OM Mantra that will explain this further. OM Mantra is not being introduced here to promote the chanting of the mantra, although that can be useful and pleasant.

Rather, this four part framework of OM Mantra is one of the finest simple roadmaps of the four broad stages of Yoga Psychology.

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Needs Hierarchy and Yoga Developmental Stages



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**ASATO MA SAD GAMAYA  
TAMASO MA JYOTHIR GAMAYA  
MRITYOR MA AMRITAM GAMAYA  
LEAD ME FROM THE UNREAL  
TO THE REAL  
LEAD ME FROM DARKNESS  
TO LIGHT  
LEAD ME FROM DEATH  
TO IMMORTALITY**

## THE KOSHAS: DELVING INTO THE ELEMENTARY COMPOSITION OF HUMAN NATURE

By: Swami Shivajnanam

Yoga maintains the belief that life and the universe are made up of varying degrees of manifested energy. This energy, known as *Mahaprana*, is considered to be the universal energy that forms both the manifest and unmanifest realms of existence. As Mahaprana disseminates, it forms relatively different layers of material existence, starting from matter as tangible as the food we eat and can be as subtle as the energetic and immaterial properties of photons and anti-matter. It even extends to the extent of manifestation that has yet to be measured or perceived by scientific instrumentation.

Mahaprana is one in form, yet its layers of manifestation appear to be distinguishable from one another. Although they appear to be independent, they are in fact dependent and of the same source. There is a simple analogy to explain Mahaprana which is taught by Swami Niranjanandanda. He explains that Mahaprana is like white light: to the visible eye it appears to represent only one shade of color, but when put through a crystal, all of the colors within the light spectrum are seen. While the light is one in form, it is divided into many separate pieces.

In yoga psychology it is understood that all of the layers that form the human being are intertwined and ultimately unified within one structure. While distinctions between the

various layers within our being exist, the strata that qualify the human system are inevitably linked through the origins of their creation which is Mahaprana. Conversely, Western science's approach to human healthcare is primarily conducted by dividing the various aspects of the human being into separate parts, treating each as a separate entity with distinct problems. For the physical body medicine, surgery and therapy are used; for the brain, psychology is the treatment; for spiritual qualms, religion is the answer. However, in yoga psychology the practice and application of treatment are looked at holistically, and while it is believed that there are various distinguishing aspects within the human being, they are all ultimately interdependent and inseparable from one another; treating the mind will have an effect on the body in the same manner that treating the body will affect the mind.

Yoga psychology would not argue that understanding the operations of the various entities within the human being is irrelevant, as there has been considerable research in yoga on the functions of each of the constitutions within the human being. Instead, yoga psychology believes that a prognosis on a disease or disorder should be taken from the system as a whole rather than attributing a diagnosis to a single irregularity within one system. One common ex-

ample of interrelated systems that is explained in yoga psychology and yoga therapy is that of the relationship between constipation and lethargy/depression. It is believed that constipation within the digestive track leads to a depressed physiological function, as the organs within the body do not receive proper nutrients for their optimal performance. If the organs malfunction and the digestive track remains congested, the mind undoubtedly receives these signals from the body and tries to respond by encouraging a solution to the disorder. If no action is taken to treat the body, the mind will likely follow the same path as the body, entering into a state of mental constipation, leading to depression, lack of desire and will power, as well as reduction in vitality and stamina. In the end, the disorder of the mind and body are interlinked.

Thus, it is vitally important to understand all of the symptoms related to a dysfunction or disorder, not only within the physical body but within the mental body as well, as treating them independently may not provide a solution to the problem. A problem within the body and/or mind must be viewed from a complete perspective. This can be easily expressed through the metaphor of a tree. Like a tree, a problem may have many branches, limbs, and leaves. Treating the disorder by cutting of one of the branches is not going to solve the



problem as the branches can simply grow back. Rather, the problem must be traced back to its origins to the trunk or the roots; once this has been achieved then the problem can be eliminated permanently. A common example of this is back and neck pain. Although pain can be caused by physically injury, there are also many instances in which psychological traumas have lead to the onset of a specific pain. Individuals who try to treat such pain simply with medicine or message therapy have not found results, but once they pursue psychological help the pain often vanishes without any physical treatment. Therefore, understanding the complete nature of the problem is paramount to treating it. While using things like medication and intrusive surgery may help in some instances, greater efficiency and sustainability can be accomplished in human healthcare by applying a more complete and holistic approach to treatment. Yoga Psychology does not rule out the use of

western medicine, rather, it seeks to explore its fullest potential.

### **UNDERSTANDING THE BODIES WITH THE HUMAN SYSTEM**

In yoga psychology, the physical and mental bodies are not considered to be the only layers of the human being. Instead, there are believed to be five different sheaths, each with their own unique elemental form and structure. Again, although it may appear that each of these forms are separate, they are all derived from the basic cosmic energy Mahaprana, and they each play a unique role in constituting the form of the human being. These layers are called the *pancha kosha* or five sheaths. They are: *annamaya kosha* (the food body or physical body); *pranamaya kosha* (the pranic body); *manomaya kosha* (the mental body); *vijnanamaya kosha* (the astral body); and *anandamaya kosha* (the bliss body). Each of these bodies combines to construct the complete range of a human being's existence.

two main factors; the first is a constant intake of nutrients from the physical world, the second is a seamless supply of prana, without which annamaya kosha would not exist. The pranic supply to the body is believed to supersede the nutrient supply, as there have been many instances in which yogis have survived solely on the supply of prana without any consumption of food or water.

Pranamaya kosha is the next major body or sheath within the human being, and is referred to as the vital sheath as it is composed completely of pranic energy. Annamaya kosha and pranamaya kosha form the basis for the human structure. They are relatively the same size as one another. These two koshas are often referred to as the vehicle for all other bodies and are responsible for containing the soul or spirit. For a spiritual aspirant, mastery and understanding of annamaya kosha and pranamaya kosha are essential prerequisites to his/her spiritual

Annamaya Kosha is considered to be the food body; however, it is also justifiably the physical body. The reason it has been termed the food body is because of its nature, which is dependent upon food, air, and water for its survival—all elements of the grosser or more tangible forms of prana. The survival of the pranic body is determined by

growth and development. If these two layers are not controlled than it is nearly impossible to achieve the higher states of consciousness in spirituality. Because of this, yoga has many practices designed to discipline, vitalize, and control these two bodies, including the asanas (yoga postures), pranayama (breathing techniques) and kriya (purification practice). From a psychological perspective, the physical body and pranic body must be in good balance, otherwise there will certainly be dis-unification and potential dysfunction within the other 3 bodies.

As we proceed through the various kosha, the dispositions of each progressing sheath are more subtle than its predecessor. The pranic body is considered to be subtler in nature than the physical body. Pranayama kosha also supplies energy to the entire annamaya kosha, and the pranic body is supported by the manomaya kosha, and manomaya kosha by vijñanamaya kosha, and vijñanamaya kosha by anandamaya kosha.

Manomaya kosha is the mental sheath, and is responsible for regulating all thoughts and actions within the human being. It also acts as a mediator between the more material koshas (pranamaya and annamaya) and the elementally subtle koshas (vijñanamaya and anandamaya). Manomaya kosha relays information to and from the various bodies, and is responsible for absorbing all of the input from the external world as well as receiving information from the intuitive world. With such information, it regulates and executes decisions and moderates the activities of prana and the physical body. Manomaya kosha has various levels of its own including conscious, unconscious, and subconscious layers (similar to Freudian theories). These

will be discussed in greater lengths within other articles.

Whereas annamaya kosha and pranayama kosha are time limited, or dependent upon the movement and passage of time and space, manomaya kosha is not. It has the ability to transfer through the past, present and future, and therefore possesses greater freedom over the other two koshas (relatively speaking within the limits of the human being's structure and existence). The mental sheath is the first of the sheaths mentioned thus far that can also transfer beyond the limits of the human form, and can reach beyond the boundaries its own physical being. On a rudimentary level, thoughts can be expressed in imageries that extend beyond the direct experience of the human being. On a more advanced level, manomaya kosha can transcend beyond the physical and into the more cosmic and universal dimensions, starting with its relationship to vijñanamaya kosha.

Vijñanamaya kosha is the next substantial sheath within the human body, and is referred to as the astral sheath, as it is composed of material that is woven into the fabric of the cosmos. There is perfect continuity between the individual's vijñanamaya kosha and the universal's, thereby allowing the individual to be directly connected to the elements of the universal. When consciousness or the spiritual aspirant is awakened to the vijñanamaya kosha, they begin to experience life on a subtler plane of experience. The qualities of wisdom usually unveil themselves at this level as life is experience on an intuitive level and one is able to perceive the underlying mechanisms of the manifest reality.

The final kosha said to be existent within the human system is anan-

damaya kosha, or the bliss sheath. It is considered to be the subtlest sheath as it is composed of a primordial essence that extends beyond the duality of the manifest and unmanifest reality. It is also considered to be the causal and transcendental body because once it is awakened the human being is able to enter the limitless bonds of the universal consciousness.

In yoga psychology, we usually take direct action to influence annamaya, pranayama, and manomaya kosha as these three bodies contain the bulk of our samskaras (past impressions), individualistic perception or ego, and disorders and dysfunctions. They are the bodies that require purification, as the other 2 bodies remain—for the most part—inactive or unconscious until the mind is awakened to their nature and reality. Before life can be experienced through the effects of vijñanamaya and anandamaya kosha, the physical, pranic, and mental body must all be balanced and operating in a unified manner. For this reason, yoga has invented a plethora of practices and techniques that help create the conditions necessary for spiritual awakening.

Yet it is not just the spiritual aspirant who should pursue well unified and healthy annamaya, pranayama, and manomaya kosha; in fact, everyone can benefit from the wellbeing of all three of these bodies, as their health will lead to greater strength, vitality, longevity, concentration, happiness, and stability. Although one can pursue higher states of awareness by maintaining a healthy mind, body, and energetic system, this does not have to be the goal for everyone. It simply forms the conditions necessary to have a strong foundation for approaching more difficult and complex aspirations in life. It is also not

necessary for one to be spiritual or to believe in higher forms of creation in order to practice or receive guidance through yoga psychology. Rather, one must simply possess an openness to the potential of human life as well as a comprehension of the interdependence of the various bodies that exist within us. Yoga psychology pursues a state of harmonic continuity within the human system to help establish a strong individual, who is capable of facing life's situations with will, strength, and confidence. Yoga psychology is not a religious dogma nor does it require a secular devotion of any type; its practices are scientific and based upon relative logic and supported, in many instances, by western science. Therefore, yoga psychology is both a practice for the laymen as well as the student of spirituality who wishes to live a healthy and fruitful life.



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