

Advaita Vedanta and Quantum Physics: How Human Consciousness Creates Reality.

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The opening stanza of the Śiva Sūtra, states, “**Caitanyam ātmā jñānam bandhah**, or “**Consciousness (is) the Self, knowledge (is) bondage.**”¹

The aphorisms of the Śiva Sūtra, a pivotal text belonging to the spiritual tradition of Kashmir Shaivism – integral part of the larger Hindu monistic philosophy of Advaita Vedanta - was found, according to the legend, inscribed on a rock at the foot of Mahadev Mountain near Shringar, Kashmir, by the sage-mystic Vasugupta in the 8th century C.E, and it is claimed to be a “shruti” or a divinely revealed text sent by Śiva himself for alleviating the spiritual deprivation of man².

In order to make my point clear, it is indispensable to point out the exact meaning of this Sanskrit aphorism: **Caitanya** usually translated as ‘**consciousness**’ is the non-local, universally shared “witness” of the mind (profoundly different from **citta**, or mind, considered to be only another sense, the place where stored information, memory, is processed).

Atman is defined as the essential core of the human being, the soul, and it is emphatically equated, being in fact identical and inseparable, to Brahman, the Godhead, in all Upaniśadic philosophy. So, the first line of the Śiva Sūtra reinstates the core Vedantic concept of absolute monism, that our consciousness, the witness and agent of the workings of the mind, IS NO DIFFERENT FROM GOD, the “creator”.

The second aphorism points out that **jñānam**, or knowledge as the accumulation of facts and figures (essentially different from **prajñā**, or higher wisdom/spiritual insight) (from the same root from which we get ‘pro-gnosis’) is the cause of bondage, **bandhah**, to the illusory, immanent world we consider reality.

(Reductionist theory busted)The philosophy of absolute monism (non-duality, Advaita Vedanta) has been for century the sworn enemy, the antithesis, of the seemingly rational philosophy of scientific materialism and its methods of inquiry. According to such Newtonian paradigm, the universe is a machine based on stable, local and objectively verifiable matter **independent from the observer**. According to this philosophy, psychology is reducible to biologically discernable events, which in turn can be reduced to chemistry, and therefore to physics³.

This reductionist theory has impoverished our essence, and relegated the human potential to a random biological event with no potential for spiritual evolution. I think the

¹ Muktananda, pg 5-6.

² Ibid, pg 6.

³ ibid

reductionist theory is responsible for the nihilistic, self-annihilating rot we find ourselves in today, and **is the reason of the necessity for a new worldview.**

But here is quantum physics to the rescue! Almost one century ago a series of experimental discoveries were made in the field of physics that could not be explained by classical Newtonian physics and that, if taken seriously, require a paradigmatic change in the way we understand our relation to the phenomenal world.

It took about one century before this new paradigm entered the sphere of popular knowledge, but it is happening. Suddenly, maybe because we start to recognize the need for a more integrative worldview, the basic concepts of quantum physics and quantum mechanics are entering the popular culture through movies such as “*What the bleep do we know*”, the yet unreleased “*One*”, and various writings such as the Dalai Lama’s “*The Universe In A Single Atom*” among others.

Quantum physics have allowed our generation to enter into an era in which science and religion/metaphysics are not any longer antithetical endeavors. No longer is spirituality outside the scope of scientific inquiry, rather quantum physics may give the most accurate description of the power of human consciousness to create immanent reality, just like Vedantic literature explained 20 plus centuries ago.

The evolution from scientific reductionism to monistic idealism, known thus far as Advaita Vedanta, depends on the assumption that consciousness, not matter, is the building block of our universe. “The fact of the matter is that matter is no longer a fact.”⁴

This new paradigm for the working of human consciousness, if understood, has enormous epistemological repercussions and must change our view about our impact on the immanent world. Quantum physics is the link, the bridge, over the century-old chasm between science and religions, it is the “science of transcendence” we have been waiting for.⁵

Reality contradicts our view of the world. AS it has been proven many time in history (like in the case of the Heliocentric theory. In fact there is a deep disparity between how we perceive the world and the way things really are.

Quantum suggests that we abolish the absolute separation between the known and the knower and accept the fact that mind and matter are codependent, their existence depending on each other.

QUANTUM PHYSICS AND THE DEMISE OF MATERIAL REALISM

According to Newtonian physics, the universe is a machine made up of parts. When we have all the information about the parts, then we should be able to predict the future of this universe. But there are glitches in the system, there are questions that cannot be answered in such a simple, classical way.

⁴ Nisker, “Crazy Wisdom”, pg ?

⁵ Dalai Lama, pg (1st chaper, find exact page number)

At the beginning of the 20th century, **Max Planck**, German physicist postulated that the electrons emit and absorb energy in only certain specific, discontinuously discrete amounts – or quanta of energy- thus starting quantum physics.

Then Einstein, in 1905, wrote his first work on quantum theory, challenging the established belief that light is a wave phenomenon, instead he **suggested that light exists as bundles of energy, quantum**, whose energy is directly relative to its frequency.

The came Niels Bohr (Danish) in 1913, who solved the problem of the atom stability with the quantum jump:

The only problematic aspect of quantum jump is that we cannot know for sure when the electron jumps or where it jumps to, the best we can do is to figure a PROBABILITY curb. (that's why quantum physics is a science of probability!). So now we are left with the “uncertainty principle” or being able only to speak of probability for the location of an electron. The electron is more likely to be in certain places, but there is a whole range of probable places

But quantum gets even stranger when dealing with the ELECTRONS (tiny particles) EMITTED BY A LIGHT SOURCE.

The infamous “DOUBLE SLIT EXPERIMENT” (EXPLAIN IT HERE) OUR OBSERVATION COLLAPSES THE QUANTUM WAVE INTO THE PARTICLE STATE.

The electron change between a wave, whose location is spread over a wide area, to a specific position, or a the particle, comes into existence only when we observe it. In other words, when measured, the quantum object appears at some single place, probability distribution simply identify the most probable place, but when we do not measure it, the quantum object exists in more than one place at the same time, like a wave or a cloud.

The uncertainty principle and the wave-particle paradox threw a wrench in the Newtonian philosophy of determinism. It postulated and demonstrated that every time we observe something there is a new beginning or that every event of measurement, which requires a consciousness, is potentially creative⁶.

So now we can discard the foundational assumptions of material realism, such as;

STRONG OBJECTIVITY - or that thing exists independent from us- (although at the level of bulk matter, quantum probability and Newtonian physics work out the same results, called CORRESPONDENCE PRINCIPLE).

CAUSAL DETERMINISM, since behavior of quantum objects can be measured only by probabilities, a strict cause and effect description of the behavior of a single object is impossible. (Causal determinism is what we will discuss as a simple hierarchy.)

⁶ Goswami, pg 42

LOCALITY, crucial to classic physics in order to have object existing independently and separate from one another, but quantum objects spread like a cloud over great distances and collapse only when observed.

MATERIALISM AND EPIPHENOMENALISM, it is not longer the case that subjective mental phenomena are epiphenomenal of matter.⁷

Material realism can no longer be the only ontological explanation for our universe, and the input of human consciousness cannot any longer be ignored.

How is quantum physics related to the study of the consciousness?

“In the end all we experience is ourselves” F.Nietzsche.

The classical laws of mechanics affirm that there is always a separation between the object known and the knower, but that is only one aspect of the “big picture”. Quantum and Vedanta believe instead that there is a conventional, simply hierarchical world and there is also an ultimate reality, a quantum reality, whose laws are not simply hierarchical but are based on tangled hierarchies, in which the knower effects the known.

This concept is exemplified in the Upanishadic metaphor of mind and consciousness as **two birds on a tree branch**: one eats (or tastes the sweet and bitter fruit of wordly existence in separation) the other just looks on (this one operating outside the system, from the “inviolable level”, the true matrix of the first). The first one is essentially what we call the ego, the other is the quantum Self, the Atman, the bird that ultimately gives meaning to our existence.

In order to enter the “world” of the quantum self, the Atman, we need to experience its reality in the unconventional world of **meditation, which allows one to “feel” his transpersonal power of pure consciousness.** Meditation should be considered another method by which modern science can engage in a collaborative research with the spiritual teachings of Vedanta⁸. Meditation experiences can be verified, repeated and shared by using the same training and technique.

How the ego arises through tangled hierarchies

Our mind is trained to think through simple hierarchy, the common one-way ladder of cause and effect, which confirms all the postulates of classical physics.

When speaking about the brain, classical science has tried to understand consciousness with ontological reductionism, or simply a function, an operation of the brain, by which sensations and perception arise due to simple chemical changes. This is an irreversible simple hierarchy, since chemical changes affect perceptions, **but can thought change the chemical structure of the brain?** (tangled hierarchy, where effect affects the cause)⁹. Classic science says, “No way!” quantum physics says, “It does, and it is called the quantum collapse.” Again, this confirms Vedantic philosophy, by which

⁷ Goswami, pg 45

⁸ D.L., chapter 7.

⁹ D.L. pg 127

consciousness is an all-pervading agency, not a subset of the physical realm, as stated in the Śiva Sūtra.

The collapse of the quantum wave into the particle state, or the discontinuity in the quantum wave caused by the insertion of the observer considering the event from an “inviolable level” (personal consciousness), is the same collapse, the same discontinuity that is created in the brain, essentially a quantum computer operating on a tangled hierarchy.

Our mind creates self-reference, the ego, (**autopoiesis**, or self-making) through tangled hierarchies. A simple hierarchy is based on the common idea of cause and effect, the lower level of this hierarchy being the cause, the effect being the higher level (this is a constant, irreversible hierarchy).

Tangled hierarchy appears when the lower level, the cause, and higher level, the effect, are tangled, or cannot be separated. The system of tangled hierarchy does not point to anything outside of itself, it speaks only of itself and therefore becomes separate from the rest. Tangled hierarchy points to an autonomous thing.

What is a tangled hierarchy? Amit Goswami, in his book *The Self-Aware Universe*, gives a verbal example of a tangled hierarchy with this famously tangled statement ;

“Epimenides the Cretan said, “All Cretans are liars.”¹⁰

If this statement was to be fed into a computer and asked to verify the credibility of such statement, it would continue to respond “yes, no, yes, no, ...” ad infinitum because it does not have an ‘inviolable level’, or basic self-reference¹¹. But with the self-reference afforded by our self, we can get out of this loop.

The brain places a discontinuity in the hierarchy. From this discontinuity, (the inviolable level of self-awareness that the computer cannot reproduce) comes SELF-REFERENCE, or our many-splendored SELF. This feat would be impossible if our consciousness was a simply hierarchical, classical machine that materialists claim it is. The machine cannot get out of the loop until a conscious observer relieves it.

CONSCIOUSNESS COLLAPSES THE QUANTUM WAVE, RESULTING IN THE SEPARATION BETWEEN SUBJECT AND OBJECT.

THE SELF OF SELF-REFERENCE IS DUE TO A TANGLED HIERARCHY, BUT OUR CONSCIOUSNESS IS THE CONSCIOUSNESS OF BEING THAT IS BEYOND SUBJECT-OBJECT SPLIT.

THE SELF OF SELF-REFERENCE AND THE CONSCIOUSNESS OF THE ORIGINAL CONSCIOUSNESS TOGETHER MAKE WHAT WE CALL SELF-CONSCIOUSNESS.

¹⁰ Goswami, pg...

¹¹

In order for the ego to arise, the subject-object division is necessary. Such division is achieved in the brain by a tangled hierarchy and the identification of the self with the locus of past experiences. The brain-mind system is a measuring apparatus where the universe becomes self aware. In us, universe cuts itself in two (or by observation it collapses the quantum wave).

Jnana bandhaha: How it works.

The brain makes a memory, a file, for each quantum collapse. When a similar stimulus is presented, the brain replays the old memory, making a second stimulus to which it responds. Each previously experienced response reinforces probability of the same response for the next similar stimulus.

There is significant scientific research to support this idea: Brain surgeons Libet and Feinstein at Mount Zion Hospital in San Francisco used brain surgery patient data to show how the illusion of local and separate consciousness arises.

They gave a stimulus (like a prick on a toe) to patients being operated on and connected to an EEG machine.

This primary stimulus reached the brain and an electrical discharge is seen within a 1/1000's of a second. Yet the patients were not aware of it until 1/100s of a second (a lag of 900/1000's of a second, an eternity in the brain) because the stimulus had to be processed by all secondary memory stimuli similar to that, and then accepted.

This means that the secondary stimuli, practically only the memory of a similar stimulus, take charge and "interpret" the phenomenon. This results in habitual motor activity and the perception of self-agency.

This is essentially the cause of the false identification of non local consciousness (all-pervading) with limited individual self associated with the learned program – ego- of a classical self. By this we come to assume that "I am this body-mind" and we therefore lock ourselves up into the cage of self-assumed limitation.

In other words, LEARNING BIASES THE BRAIN-MIND, as our insightful Vedantic seers have postulated 35 centuries before quantum physics.

As an educator, I find this concept very important: maybe it is time to introduce/teach tangled hierarchies in our educational institutions, to introduce a new paradigm based on direct experiences of consciousness through meditation.

Meditation has the power to shorten the gap between primary and secondary processes, and when this happens, there always arises a certain exalted state, as if we recognize our inherent freedom to walk out of the self-created cage of the ego.

What do we do with this newly discovered freedom? We can create our day!

*"People are always blaming their circumstances for what they are. I don't believe in circumstances. The people who get on in this world are the people who get up and look for the circumstances that they want, and if they can't find them, they make them."*¹² G.B. Shaw

¹² I.N.S, pg 46

An example: In studies done at Harvard Med. School in the 80's and at the Richard Davidson's Lab, in Madison, WI, in the 90's with sophisticated machineries (MRI, EEG) it has been possible to see that particular external stimuli activate the elusive feeling of happiness in the left-frontal lobe of the brain. Subsequently it has been noticed that experienced meditators can achieve a heightened activity in the left-frontal lobe independently, without external stimuli¹³. Can we make ourselves happy? Could this fight depression, so common today among students?

What would it mean if the thoughts we have when we start our day actually affect what happens without our having to do anything about it? What if all thoughts influence the world?

Theoretical explanations for mind-matter interaction effects are yet not conclusive, yet many of us intuitively feel the power of intention. How do we 'infect the quantum field'?

Athletes know that after physical training, the difference between winning and losing is in our head. The mind is the playing field on which the real game takes place. There is a growing consensus that the next breakthrough in athletics will come from a combination of physical training and the powers of the mind, like meditation and visualization¹⁴.

How does intention influence our bodies and mind? Clinical studies on PLACEBO provide clues.

Traditionally researchers use placebos in clinical tests to investigate the effect of a new drug. The placebo, inert substance, is not intended to have any benefit, but only to provide a baseline by which to measure the effectiveness of the active drug. However, placebos do prove to have some beneficial effects. This is the power of suggestion. The placebo effect puzzles researchers, but it may turn out to be A KEY TO OUR UNDERSTANDING OF THE LINK BETWEEN INTENTION, BELIEF, EXPECTATION AND BODILY RESPONSES.

Scientists Amit Goswami and Peter Russell agree that the creativity inherent in the universe is also within us. We play a vital role as participants in the creative process of life of the whole Earth¹⁵.

The consciousness pervading the universe is immensely creative, it decisively informs the material world, and because we are expressions of that consciousness, we have the opportunity to participate with it in manifesting events in our daily lives.

(caution: we are creators, but also co-creators, we are gods but not the only ones). (Mind you, We are not exclusively responsible for the outcome of our intention, but we are part of a large chorus of creativity, we participate in the creative process that originates within

¹³ D.L. chapter 7.

¹⁴ I.N.S., pg 48

¹⁵ I.N.S., pg 55

our consciousness and is interrelated to the whole universe¹⁶. (A.N. Whitehead, Indra's net)).

Developing the skill;

Transformational changes take a certain kind of inner work which involves training the mind, or inner technologies. The mind potential must be intentionally cultivated, through meditation.

The Rhode Island experiment, in 1978, (affiliated with the transcendental meditation of Maharishi Mahesh Yogi), was one of the first to provide data on how collective meditation created a coherence in collective consciousness capable of neutralizing the stresses that are cause of social problems. According to this study, and many more have been conducted since then, it is claimed that R.I. showed a measurable improvement in the areas of crime rates, car accidents, alcohol or cigarette consumption, even unemployment. **(Rhode Island 1978: the ideal society? "Consciousness as a field" The Journal of Mind and Behavior, 8(1), 67-103)**

Vedanta and Quantum Physics

As the antithesis of material realism, Advaita Vedanta postulates that MATTER AND MENTAL PHENOMENA ARE DETERMINED BY CONSCIOSNESS.

VEDANTA posits a realm of PURE IDEAS as the source of material and mental phenomena, similar to the Platonic allegory of the cave. Before quantum, we are shadow watchers, shadows that we think are reality but are unreal immanent manifestations in human experience of an archetypical reality that belongs to a transcendent world. **If the shadows are the quantum particles, that which we see, the waves are the Platonic forms.**

The same idea is the fundamental philosophy of Vedanta, by which beyond 'nama' (name, or transcendental archetypes) and 'rupa'(immanent forms) shines the light of Brahman, the Godhead, the universal consciousness, the ground of all being, one without a second, or A (non) Dva (two)

In Ramana Maharshi's famous "**40 verses of reality**", practically a modern Upanishad, he writes:

"Awareness is all; seer, seen, real and apparent, nama and rupa.

The difference between God and individual soul disappears when ego is destroyed

Speculations and debate (on God) do not help

The world is what the mind conceives through the senses

The world rises and sets with the knowledge of it

Both have their source in the Self

¹⁶ ibid, pg 48

Not to seek the Self which is the source of both knowledge and ignorance IS REAL IGNORANCE.”¹⁷



In quantum physics, we cannot see both the particle and the wave at the same time, and in our daily life we cannot see things separate but united. We need to learn to transcend our senses for a while, to reconnect with pure consciousness. We are deluded when we see only separation, and meditation is the experiential method to reconcile reality with appearance.

What is the value of the experience of unity

FREEDOM FROM FEAR (the greatest gift we can give according to the Buddha), FREEDOM FROM ATTACHEMENT. If we were to realize that we are not separate, then how could we hate anyone?

THE EXPERIENCE OF UNITY IS SINE QUA NON, NECESSARY, BUT IT CANNOT BE ACQUIRED BY STUDY ALONE. ACTUALLY KNOWLEDGE OF FACTS AND FIGURES MAY TAKES US FURTHER FROM REALIZATION OF UNITY BECAUSE IT NECESSARILY REQUIRES THE DUALITY OF SUBJECT-OBJECT RELATION.

EXPERIENCE IS ACQUIRED BY ENTERING OUR OWN DEEP CONSCIOUSNESS BEYOND MIND. That is the purpose of meditation.

THIS MAY BE THE MOST CORRECT PHILOSOPHY FOR SCIENCE IN THE 21TH CENTURY. Quantum is the scientific philosophy that can revitalize rather than refute, Vedantic non-dualism.

¹⁷ R. Maharshi, pg 117

So here is the **NEW PARADIGM: THE FACT OF THE MATTER IS THAT MATTER IS NOT A FACT!**

Modern science is trying to validate the idea that consciousness, not matter, is the ground of all being.

The mystics remove the veil by being attentive to the field of awareness unhindered by secondary, learned stimuli, through meditation.

We lost Eden because we differentiated ourselves from the rest.

How to go back? Make the mystic journey, but now we can use science to lay down the groundwork in an objective fashion, and use religion to guide us through the PROCESS¹⁸.

This must be taught and it must be experienced individually; meditation should be an integral part of the educational programs of colleges as well as high schools, if not earlier.

Where to start: Now we have a scientific background for spiritual search.

Change paradigm of old school by which we are driven by nature, and instead understand we can have out-of-the-box unhindered creativity, insight, or ways of knowing other than perception and conception. **IN ORDER TO RECONNECT, WE MUST LET GO OF DUALISTIC MENTALITY, TRANSCEND ALL DOGMA AND SYSTEMS.**

We look for release from boredom and doubt, and fear, and we seek new belief systems and pleasure, but these are only more boxes. In my experience as an educator, I have found that many students are plagued by mental illness, depression, anorexia, addiction, etc, in their very young lives. To reconnect scientific mind with the mystical mind through quantum, and then experiencing consciousness and its power through meditation is extremely important and we as educators have the responsibility to offer this new paradigm to our students, the next generation of world leaders.

Can we handle the uncertainty of being beyond ego? Are we ready to change the paradigm. The next evolution, the switch from the mental to the supramental, according to Aurobindo, is unlike the one in the past, this time it must be willed, it must be sought out personally and collectively. Are we ready to do it?

¹⁸ Goswami, pg??

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