

MYSTERIUM TREMENDUM

If Wonder has assumed a form, what is the matter?

Exploring why the conflict between science and spirituality is trapped in a linguistic conundrum

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| Prologue |

Commencement Ceremony, Mt. San Antonio College, June 1990

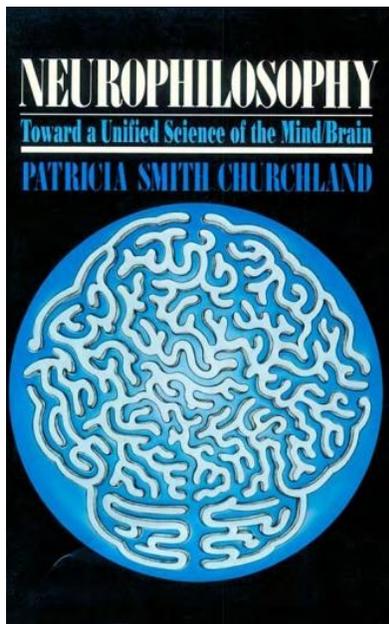
The conflict between science and spirituality primarily stems from a linguistic confusion over what the term “matter” means and what it ultimately implies. This first came into sharp focus for me when I was attending the annual graduation ceremonies at Mt. San Antonio College in June of 1990. I had only been hired the year before so I was relatively new to the proceedings. As I was getting ready to walk in with my philosophy cohorts, dressed as we were in our long robes and mortar boards, another young professor from another department came up to me in a visibly irritated mood. After we exchanged pleasantries, he pulled out an issue of *Plato's Cave*, the new journal that I founded along with some students a few months prior.



He queried, “Why would you allow this blasphemous claptrap to be published?” Before I could respond, he proceeded to rip the small magazine to pieces in front of me and threw it on the floor and walked away in disgust.

A mathematician friend of mine witnessed the spectacle, and asked, “What was that all about?” I responded that I didn’t exactly know, but I mentioned that it concerned a recent issue of *Plato's Cave*, which contained an interview with Patricia Churchland, an eminent professor of philosophy at UCSD who had more or less invented the new field of *neurophilosophy*

where ancient questions are examined in light of the latest discoveries in physics and neuroscience. The title of piece was *The Neural Basis of Consciousness, a Glorious Piece of Meat, and the Dalai Lama*. One of my star students, Meredith Doran (who is now a professor of French literature at Penn State), had conducted the interview and I thought she had done a superb job in capturing the ins and outs of Professor Churchland's scientific view of how philosophy should be conducted in the future.



Right then, another professor chimed in and said, “Oh, Dave, that guy who just verbally assaulted you is a fundamentalist Christian and he thinks your publication contradicts the Bible and insults his religion.” A few other colleagues also confirmed the same and it became clearer to me why he would be upset by Churchland's advocacy of eliminative materialism.

Yet, as I pondered over this episode, I couldn't help but wonder why certain religious persuasions are so troubled by science's reduction of man to mere material, given that matter itself was and is as mysterious and as glorious as anything conjured up in our spiritual imaginations. Before we tackle what matter is and why an updated definition of what it portends can radically upend the persistent and pernicious dualism driving much of our religious resistance to science and its naturalistic underpinnings, I would like to indulge the reader in a thought experiment.

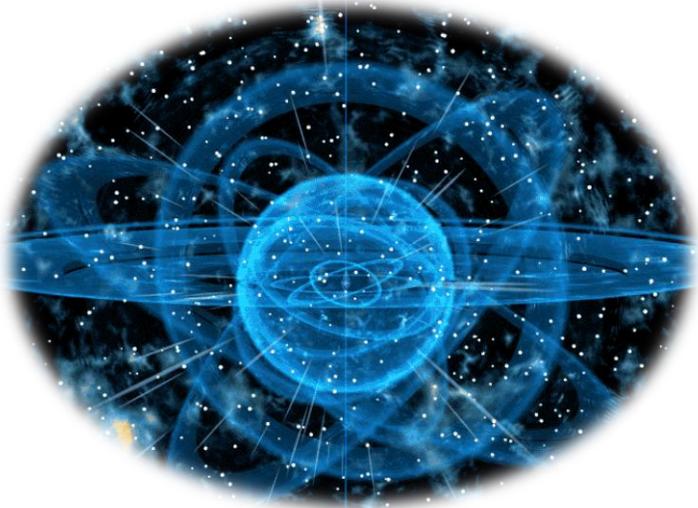
| A Dialogue In Sach Khand |

Clearly, the following is a metaphor pushed to its hyperbolic extreme, but I think it drives home an often overlooked point. Imagine finding yourself in a transcendental realm of bliss and that within this ultimate region you and your companions strike up a conversation soul to soul. You inquire,

“What are we made of?” And, one of your blissful friends replies, “Light, of course. We are beings of light and that is our core constituent.”

How would you hypothetically “feel” if someone did indeed inform you that you were a body of pure unalloyed light?

I have posed this question to both undergraduate and graduate students at various colleges and universities I have taught throughout my career, and invariably I get the same response. Almost in unison they said they would feel exhilarated and



boundless and happy. The idea that we are light gives us a deep sense of liberation.

However, let’s descend back to terra firma, and ask a different question. Now when we are in the here and now and a philosopher or a friend tells us that we are just material and just the body, or, when the Nobel Prize winner, the late Francis Crick says that consciousness is just a bundle of neurons or when Patricia Churchland indicates we are just three pounds of meat, how do we feel then? In sum, how do we feel when we are told that we are just this stuff, just this body, just the re-composition of this world?

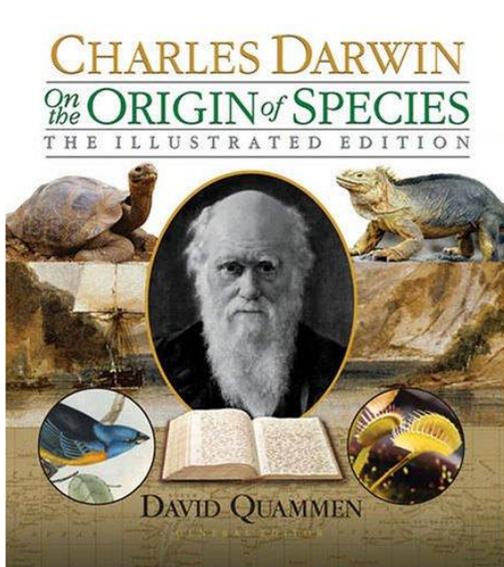
For most of my students there is a certain sense of deflation, a depression, a grayness or flatness, as if the air had been sucked out of a balloon. Unlike the notion that we are beings of light, the idea that we are just the body gives us a deep sense of entrapment.

One could, of course, argue at this juncture that this very feeling is why dualism arose in the first place. We feel that we are more than our bodies

and, as such, that there is something transcendent in us. This primordial distinction, which appears to have arisen in most *Homo sapiens*, has no doubt influenced much of our religious and philosophical outlook. But I think the real confusion is in our fundamentally distorted understanding of what matter actually is. We tend to think that matter and spirit are opposites and that focusing on one discounts the other and vice versa.

Yet, the real problem may be linguistic and not existential. In other words, it may be the outdated definitions and mythological remnants inherent in those definitions that have caused us so much unnecessary confusion. In order to make this point crystal clear, we will need to take a tour of “matter” and find out why it is so much more than gray and flat.

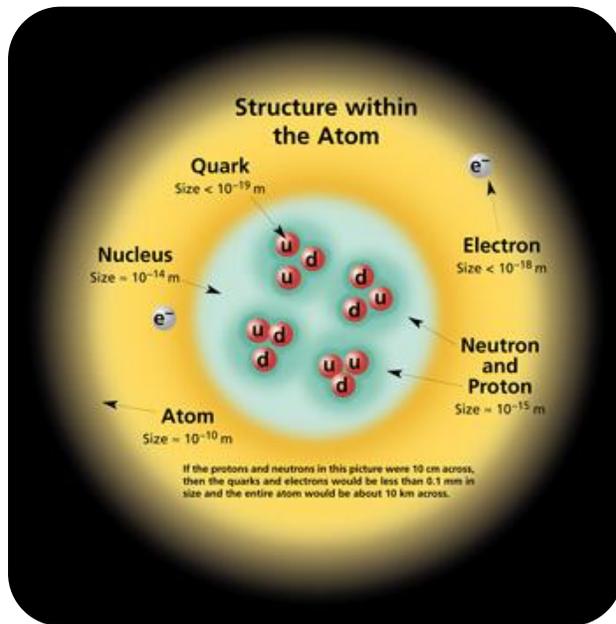
| What’s the Matter? |



Although the origin of the word matter (derived from *mater*) is of relatively recent origin, it is intriguing to note that it appears to have been derived from the word *mother*, which in light of this article is revealing indeed.

One can start from any object to get a glimpse into what matter may be, so for our example let’s use a book. On my desk right now I have a copy of the annotated edition of Charles Darwin’s famous *On the Origin of Species* published by the Belknap Press of Harvard University Press, which contains a complete facsimile of Darwin’s 1859 first edition. In examining the book, we not only discover a certain hardback binding, a nicely designed dust jacket, but 537 pages filled with small print. However, if we look at just one of the pages within this book, we soon realize that it is

made of a fine quality paper, which undoubtedly was derived from some dead tree for the purpose of utilizing pulp.



But what is a tree? A simple definition from a dictionary might explain it thus, “a plant having a permanently woody main stem or trunk, ordinarily growing to a considerable height, and usually developing branches at some distance from the ground.” Yet, if we probe further we discover that such a plant is made up of much smaller constituent parts such as millions of cells, which in themselves are made of even smaller bits called molecules which, in turn, are comprised of billions, nay trillions, of atoms. Indeed, every physical composition on planet earth is essentially the reconfiguration of atoms.

Now the question what is an atom will give us a deeper insight into what matter actually is. The term atom was first coined by Democritus (influenced no doubt by his teacher Leucippus) who argued that things are made up of indivisible particles which cannot be cut further. By the turn of the 20th century this view became modified when Max Planck and others realized that atoms contained smaller bits, such as a nucleus and an electron. And those in turn contained smaller units still, including photons, quarks, and so on. Richard Feynman, the famous physicist and architect behind quantum electrodynamics (QED) once quipped that if he had to reduce all of human knowledge into one intelligible sentence he would write, “Things are made

of littler things that jiggle” This is a profound understanding of material structure and not merely a humorous slogan as Feynman is getting right to the heart of the issue. Matter isn’t just one thing. It is rather a scaffolding project of many layers, each of which reveals a different aspect of what matter can do under differing circumstances.

For instance, if you are sailing on a 36 foot boat in the Pacific ocean, there are so many things occurring at once--the blue sky, the luminous sun overhead, the gathering clouds, the increasing onshore winds, the two to three foot waves, the innumerable forms of organic life lying just below the water’s surface, not to mention the navigating humans on the boat, attempting to steer and checking the compass and the GPS device in the cockpit. And all of these things are made of atoms.



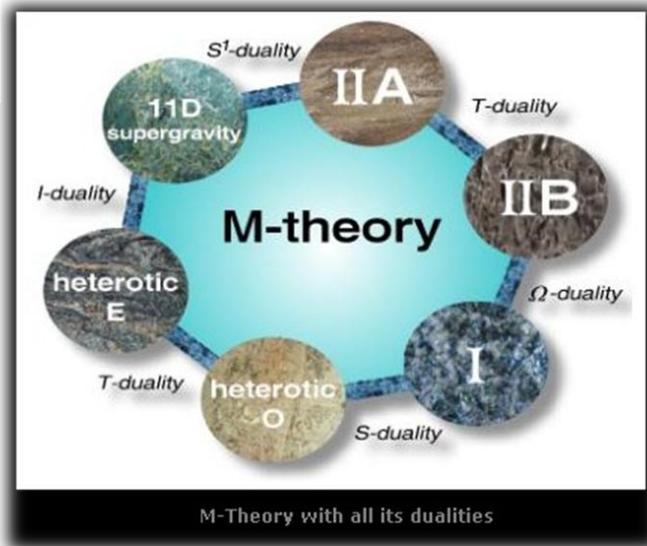
Reconfigure atoms in a certain way and you get iron, reconfigure another way and you get the Taj Mahal, reconfigure it still more and you get Mt. Everest, and reconfigure those same units and you get millions of different species trying their best to adapt to a whole eco system which itself is a larger network of reconfigured atoms.

And even the nucleus itself is, contrary to what Leucippus and Democritus opined some 2,600 years ago, divisible. Depending on the element, atoms come in different weights (depending on the number of protons within the nucleus and the number of electrons manifesting outside its chambers). Yet, even when we get to the very core of matter, we find yet another layer and our understanding of what is actually going on turns indeterminate. As Sir Arthur Eddington once stated concerning the strange underpinnings inherent in quantum theory: “Something unknown is doing what we don’t

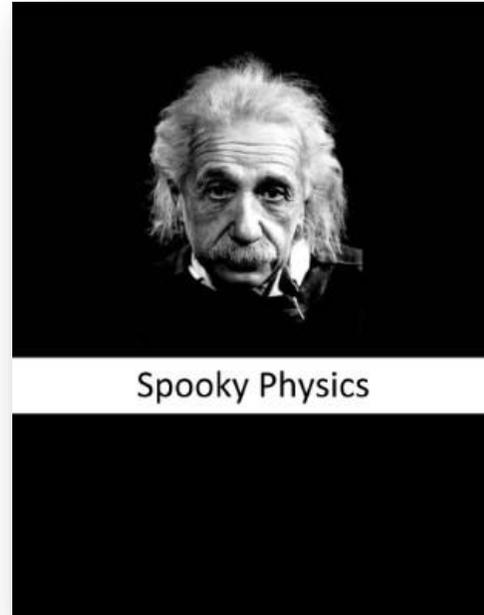
know.” The latest theoretical conjectures concerning the basis of matter has more or less coalesced around the four fundamental forces in nature: 1) gravity; 2) electromagnetism; 3) strong nuclear force; and 4) weak nuclear force. Einstein’s General Theory of Relativity is a radical explanation of gravity, whereas quantum mechanics has provided a remarkably accurate theory regarding electromagnetism, with strong and weak nuclear forces being also understood within its fold. However, scientists are troubled that general relativity and quantum theory do not mesh together, since one is classical and determinate whereas the other is revolutionary and indeterminate and being at odds with one another they together do not provide us with either a grand unified theory (GUT) or a theory of everything (TOE).

Thus for decades there has been a quest for a more fundamental theory which can reconcile the world of quanta with the world of gravitons. The most viable candidate so far has been a reworking of string theory which has evolved into a nested series of mathematical models most popularly known as M-theory. As Stephen Hawking explains in his latest book, *The Grand Design*: “M-theory is not a theory in the usual sense. It is a whole family of different theories. Ours is not the only universe. Instead M-theory predicts that a great many universes were created out of nothing.”

But even here the notion of nothing is itself caught in an epistemological confusion, since the very word nothing is literally nonsensical in this context and, as such, is merely a placeholder for the breakdown of both our physics and our language.



Most problematic for physicists is the upsetting discovery that pure and unadulterated objectivity breaks down at the quanta level where Heisenberg's uncertainty principle serves as a sort of information cul du sac. Yes, you may know relatively the momentum of a single particle, but at the expense of not knowing its position and vice versa. The absolute certainty that was bubbling forth since Newton's day as the hallmark of real science got obliterated when it was realized that *Chance* was at the heart of nature. This is why Einstein wrote to his Max Born that he didn't study physics to find out that God plays dice.



But in light of M-theory and the multiverse hypothesis not only does God (and God here is, of course, merely a metaphorical way of saying ultimate Nature or Reality) play dice but He/She does so in the dark countless times. Thus the laws of physics in this universe could be quite different in a divergent universe and given that M-theory implies a vast multiplicity of universes, it is odds, and not necessarily design, which gives rise to the peculiar circumstances of our present astronomical reflections. As Niels Bohr, one of the early pioneers in quantum mechanics, warned, "Those who are not shocked when they first come across quantum mechanics cannot possibly have understood it."

Bohr became the champion of the single most popular philosophic interpretation of the new physics, which would later be known as the Copenhagen interpretation because of the location of his institute. In many ways, Bohr's reasoning is akin to what we find in Plato's allegory of the cave, as found in his *Republic*, but with one very telling caveat. In Plato's

story we learn that prisoners shackled in the cave cannot actually see the light itself that is casting the varying shadows on the wall. And only later when unhinged can they progress from the rudimentary impressions to clearer shapes and outlines until the full luminosity of the light explains more fully how all these images were generated.

	bit	probabilistic bit	quantum bit
Configurations:	0 1	0 1	0 1
Description:	$\begin{bmatrix} 1 \\ 0 \end{bmatrix}$	$\begin{bmatrix} p \\ 1-p \end{bmatrix}$ $p \in \mathbb{R}$	$\begin{bmatrix} \alpha \\ \beta \end{bmatrix}$ $\alpha, \beta \in \mathbb{C}$
Observation:	0 certainty	0 p percent 1 $1-p$ percent	0 $ \alpha ^2$ percent 1 $ \beta ^2$ percent
Evolution:	$\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$ deterministic	$\begin{bmatrix} 1-q & r \\ q & 1-r \end{bmatrix}$ stochastic	$\begin{bmatrix} u & v \\ w & x \end{bmatrix}$ unitary

In the quantum mechanical world we are in a similar position, since we cannot actually know both the position and the momentum of any single electron, but

only its probabilities and even then how we measure such an outcome predetermines its wave or particle manifestation. What the electron is “really” doing nobody knows.

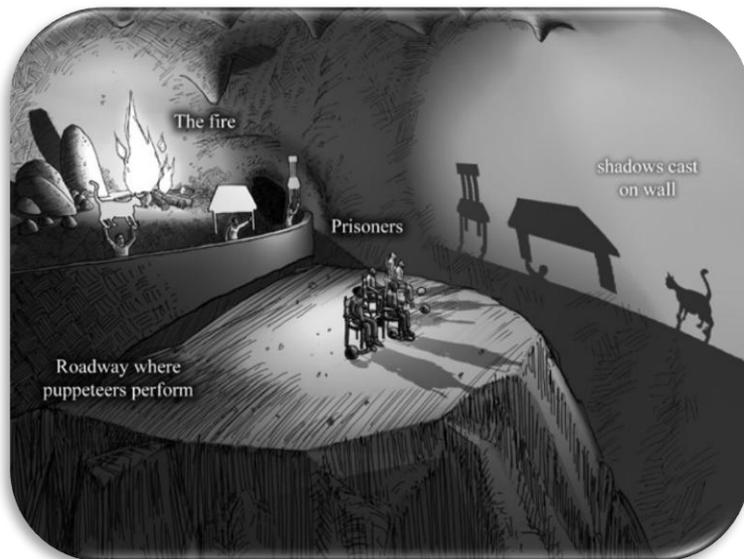
Apparently nobody can know what a single bit of matter is ultimately doing, since even that definition of “bit” of matter is itself a construct, a theoretical map in order to make sense out of one aspect of what appears at such minute levels of matter. What we get when we penetrate the subatomic realm isn't, to quote Kant, the thing in itself, but only what appears visible to our intervening devices. And since we cannot intrude into that realm without some type of instrument (even a single photon cascading off an electron causes a disruption of the assumed virgin state), we don't unlock nature pure and pristine, but as nature reacts to our measuring devices. In other words, we cannot unlock nature as nature, or electron as electron, or matter as matter, since we are invariably altering what we are examining.

We might occasionally acknowledge this interference even at the macroscopic level (sociologists and psychologists are well versed in interpreter's biases in grappling with raw data), but at the quantum level it looms so large and is so evidential that its impact cannot at any instance be ignored. Heisenberg's principle of uncertainty isn't merely a temporary limit to man's knowledge, according to Bohr, but a fundamental statement about what that knowledge is.

It is for this reason that Plato's allegory is instructive, since we are not in the position of the narrator to look objectively upon the cave from the outside and the inside simultaneously. Rather, we are the prisoners in the cave and only from that position can we both induce and deduce what may or may not be ultimately real, but in so doing we are still at the Kantian level of phenomena. What quantum mechanics revealed was precisely this epistemological limit

and how it plays out in trying to form a picture about reality. Reality we can never know, since that very concept is itself a fiction which implies that we can somehow act as an objective narrator to the entire cosmos, with a 360 degree purview and a level of certainty

which implies that we are impartial witnesses to a play with a beginning, middle, and an end. No, we are literally like the prisoners in Plato's allegory of the cave, limited by our very existence in what can and cannot know. For Bohr this wasn't merely a philosophical extension of his Kierkegaardian leanings, but the very result of what quantum mechanics revealed about our ability to come to grips with nature and how it



responds to our introspections. As Bohr put it, “It is wrong to think that the task of physics is to find out how Nature is. Physics concerns what we say about Nature.” Or, as Bohr himself discovered, “For a parallel to the lesson of atomic theory regarding the limited applicability of such customary idealisations, we must in fact turn to quite other branches of science, such as psychology, or even to that kind of epistemological problems with which already thinkers like Buddha and Lao Tsu have been confronted, when trying to harmonize our position as spectators and actors in the great drama of existence Everything we call real is made of things that cannot be regarded as real.” It is little wonder, therefore, that so many eminent scientists have had such ambivalent reactions and feelings to the implications of quantum mechanics. This is epitomized by a close reading of the following quotes garnered from the *Quantum World* website:

Quantum mechanics is magic. --Daniel Greenberger.

Those who are not shocked when they first come across quantum theory cannot possibly have understood it. --Niels Bohr.

If you are not completely confused by quantum mechanics, you do not understand it.
--John Wheeler.

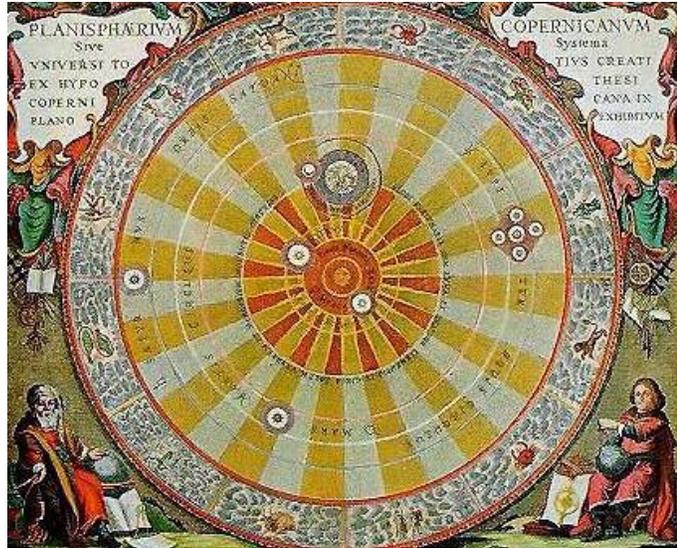
It is safe to say that nobody understands quantum mechanics. --Richard Feynman.

If [quantum theory] is correct, it signifies the end of physics as a science.
--Albert Einstein.

I do not like [quantum mechanics], and I am sorry I ever had anything to do with it.
--Erwin Schrödinger.

Quantum mechanics makes absolutely no sense.--Roger Penrose.

Hence, when we look at the very essence of matter we discover that it has no such essence, at least not something that can be related to our common sense notions of the world. In fact, our very common sense breaks down when we examine the rudimentary basis of matter itself. Our evolution has

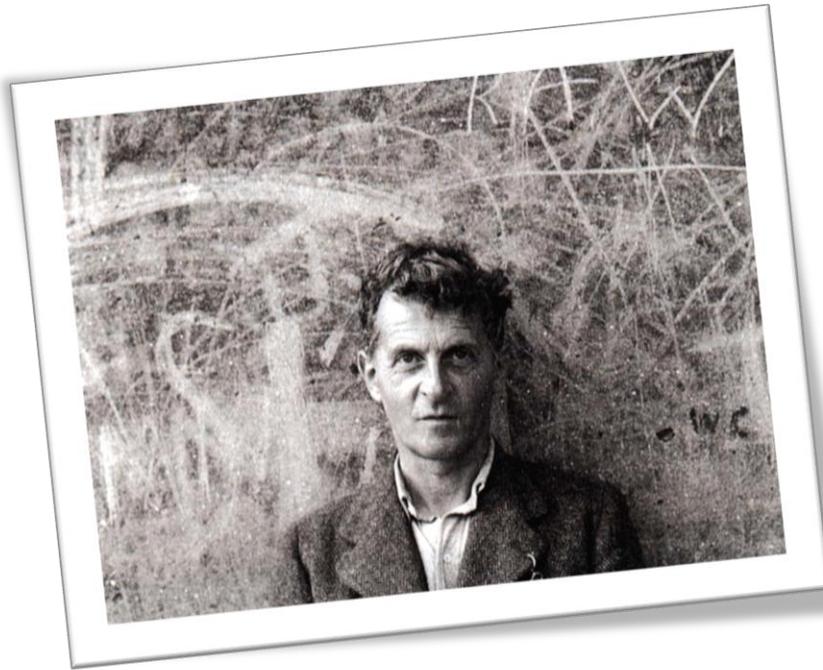


bounded what we can and cannot know about the world around us. Because of this our brains are not well adapted to understand either the very large or the very small. We are quite literally middling creatures that have been shaped for eons of time to survive in eco-niches where our food and prey are accessible to our five apertures. What this means, of course, is that whenever we venture beyond our middle earth by extending our senses to the very large or very small, we have to acclimate ourselves anew.

The history of science is a record of how man achieved such acclimations and how, in turn, such new insights transformed his understanding of how the universe actually works. Whether it was Galileo's telescope (seeing a pock marked moon versus a polished lunar surface) or Copernicus mathematical equations (indicating a solar based orbital system versus an earth centered one), in each case sensory or mental breakthroughs led to revolutions in scientific thought. It may be no exaggeration to say that whenever man has altered his bodily or cranial limits he has extended his world, a world which is forever linked to the limitations of what his senses can and cannot reveal.

To say that neurology is ontology is merely to state the obvious. But what sometimes gets lost in such clichés is that man's brain state is never static and thus his world is never the same as well. Change the neural apparatus

and one transforms the universe. Not necessarily because the brain creates such realities, but rather because the limitations of one's cranial capacities predetermines what is accessible or knowable about any given aspect of reality. Change those neural coordinates and thereby change one's



intellectual map.

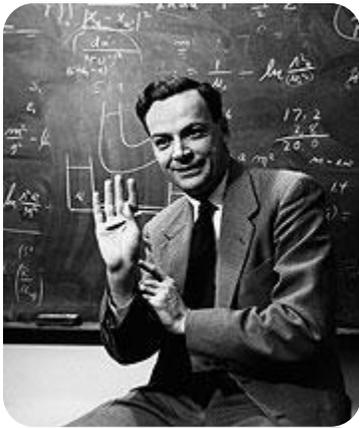
All of this is a necessary preface to understand why the human mind has an almost innate difficulty in understanding quantum theory—a theory which takes into account things

so infinitesimally tiny that even our best analogies freeze our minds in a state of wonder. Ludwig Wittgenstein gives us a fruitful glimpse of just how contradictory quantum physics can be and why it demonstrates prima facie its almost inherent illogical nature. Writing several years before the discovery of Werner Heisenberg's Nobel Prize winning discovery of the uncertainty relations in the subatomic realm, Wittgenstein states in his famous *Tractatus Logico-Philosophicus*:

“6.3751: For two colours, e.g. to be at one place in the visual field, is impossible, logical impossible, for it is excluded by the logical structure of colour. Let us consider how this contradiction presents itself in physics. Somewhat as follows: That a particle cannot at the same time have two velocities, i.e. that at the same time it cannot be in two places, i.e. that

particles in different places at the same time cannot be identical. It is clear that the logical product of two elementary propositions can neither be a tautology nor a contradiction. The assertion that a point in the visual field has two different colours at the same time, is a contradiction”

Today, of course, quantum physicists state the opposite of Wittgenstein's logical necessity about the behavior of matter and point out that indeed a particle can be in two places at the same time, even if that space and time is limited in its regional and temporal import.



What Wittgenstein captured (quite unwittingly since his *Tractatus* dates from the latter part of the First World War) was how a rational, logical mind would be upended by the implications of quantum theory. Moreover, he provides us with a framework for why it may be so difficult for many of us to actually “get” quantum theory. As Richard Feynman, the well-known architect behind Quantum Electrodynamics (QED) once quipped, “I think I can safely say that nobody understands quantum mechanics.”

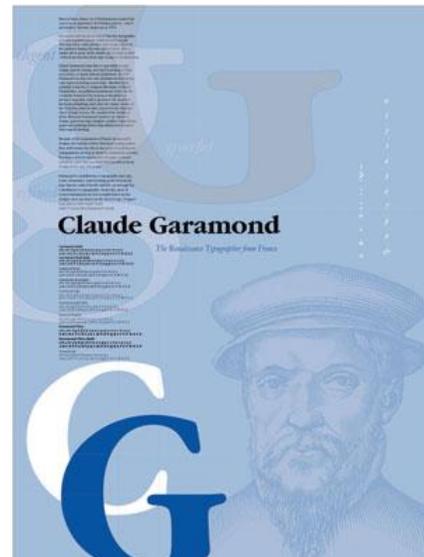
Therefore, a very strong argument can be made that the real problem with materialism (the idea everything that arises is nothing but permutations of matter) isn't that it is the exact opposite of spirit or that it somehow diminishes human consciousness, but rather that we do not properly appreciate what the word actually means and what it entails. To say something is “just” matter is akin to say something is “just” light (which matter, by the way, also contains).

Even when intertheoretic reductionisms hold true there is no “just” about it, since the very phenomena under inspection doesn't lose its mystery by being contextually or algorithmically comprehended. If someone says that the Atlantic is merely H₂O, the ocean and all its magnificence isn't lessened

by such molecular equations. The trouble isn't with matter or our tendency to ground all properties to it, but rather that we are assuming that matter is one thing when it is completely the opposite of that.

Science will undoubtedly expand our previous limits and horizons, but we will inevitably be stuck with our own neural constraints from the very beginning. And herein lays the great human dilemma: the limits of our skull are the limits of our understanding. Yes, we may augment our brains with artificial devices in the future, but even here we will only confront a new limit in time. If we don't know what a single thing ultimately is (even if we can know various things about a material item, we are circumscribed in our knowledge about comprehending all of its various dimensions and interconnections), do we even know where we are ultimately?

Yes, I may say something such as I live in Huntington Beach, but that is merely a section in Southern California which itself is part of a state of 50 in the United States which is part of a continent that is located on a planet that orbits a sun some 93 million miles away. However, where is that sun? It is but part of a galaxy which is part of a huge milky way which is expanding in a universe of untold size that some 13.7 billion years ago was collapsed into a space tinier than the 14 point size of the Garamond type on this page. Yet, where is that naked singularity located? Does it make any sense to even use such framing questions at this miniscule level? And, if some theoretical physicists are correct, then this universe of ours isn't singular at all, but part of a multiverse of unimaginable dimensions. Where are we has a simple answer it appears: We don't know.



What this means is that even if we forego religion and spirituality and opt for a purely materialistic understanding of what surrounds us, we are still

touching moment to moment a mystery that transcends our ability to grasp it. And, ironically, the dilemma isn't between matter and spirit, but the persistence of wholly inaccurate and misleading definitions of them. To echo the immortal words of Ludwig Wittgenstein, there isn't a philosophical problem inherent in this supposed dualism but a confused use of reifications embedded in our languages. Simply put, our use of the term matter is mostly a linguistic confusion and as such has blinded us from the radical mystery to which it consistently points us towards.



The implications here are enormous for spiritual disciplines which wish to be viewed as promoting a scientific outlook. Any meditational discipline that wishes to be seriously taken as a science must ground itself in the very thing it wishes to transcend. But as I wish to make crystal clear, nobody transcends matter as such. Instead what is transcended are bad definitions. To risk a reframed pun here, there is nothing the matter with matter as a grounding concept, if we

first understand that the term itself is under constant evolutionary pressure in that what it entails changes with more and more study.

What this means is that meditational traditions would be much better served if they stopped resisting a purely materialistic explanation of their given inquiries. At first this may sound heretical or even contradictory (given what the spiritual enterprise presumes), but it is not if we realize that a purely material explanation for inner experiences is precisely what we should expect if we understand science and its definitional aims in a larger purview.



Science cannot diminish the spiritual quest if that quest is concerned with truth and not merely dogmatic assertions taken at face value. However, spiritual paths must be open to varying interpretations and must (and this is the kicker that most paths tend to resist) be open to falsification. In other words, for any endeavor to be justifiably regarded as "scientific" it must be willing to be corrected, to be changed, to be wrong.

While much of spiritual literature advertises itself as scientific, we find that the very basis of almost all scientific endeavors, that of theory making, is dismissed since it interferes with certain strongly held religious beliefs.

For example, when a particular guru instructs the neophyte to go within the laboratory of one's own body to verify the factualness of their respective theology, he doesn't mention that such subjective experiences should be open to varying interpretations of what they could possibly mean.

This version of science is more akin to an elaborate food recipe, where the would-be chef needs to follow a set of given instructions in order to know how to make a chocolate cake or a vegetarian pizza. Applied science is successful only after certain facts are well established and known. But at this juncture, any proposed spiritual science is still in its infancy, even if some traditions would like to suggest otherwise.

Such versions of science are similar to a computer program like Basic or Unix where if you follow just the right set of protocols you will invariably end up with a repeatable outcome. But this leaves out the most vitally important aspect of science, something which only few meditational teachers seemed to grasp, which is that science isn't a thing but rather a

process of discovery and along that pathway there will be false starts, differences of opinion, falsifications, tentative hypotheses, and theories and even facts that are always subject to alteration or even wholesale elimination.



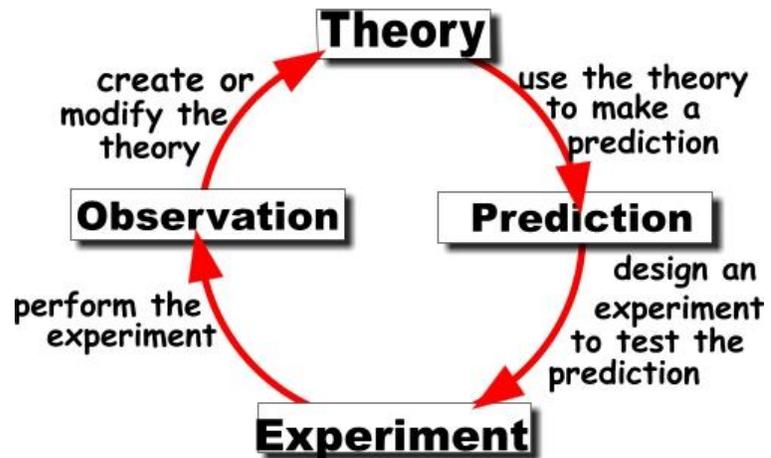
For instance, it may be one thing for a religious tradition to say, "There is no better method than that of the Sound Current, which is an ancient and natural science. It was designed by the Creator Himself, is within every one of us, yet whole nations and entire countries of the world are ignorant of it." But, it is quite another thing to then claim that such a description is part and parcel of a genuine science. Notice that the preceding quote concerning

shabd yoga isn't alleging to be merely a scientific endeavor to be placed alongside biology or chemistry, but rather is emphatically stating (quite categorically one might add) to be more fundamental than even physics since it was created by God himself as a path back to him. While a devotee may believe this to be the case, it is fairly obvious to an outsider that this assertion is not a scientific claim as much as a dogmatic one in the guise of scientific dressing.

This is important to understand since a genuine scientific endeavor worthy of its name cannot ad hoc cherry pick which aspect of science they wish to utilize. In cases like this it as if science is employed as a form of advertising to reach interested seekers who may have been turned off by more exclusive forms of religious dogmatism. While it appeals to the rational authority of science, it does so by claiming that shabd yoga is the highest of all sciences, apparently forgetting in the process that any scientific endeavor worth the appellation must be open to reevaluation and

correction. Nowhere do we find in most meditational literature a consistent theme of falsification, where past gurus and their ideas are corrected, changed, or overthrown. What we do find, however, is a paradoxical selection of quasi scientific language which appears to be offering a potential experimental procedure to validate inner spiritual experiences.

But as we have previously noted, when closely examined this type of rhetoric is more an instructional formula to achieve an already agreed upon result (similar to baking a pie) and less a scientific method with all its unforeseen trajectories.

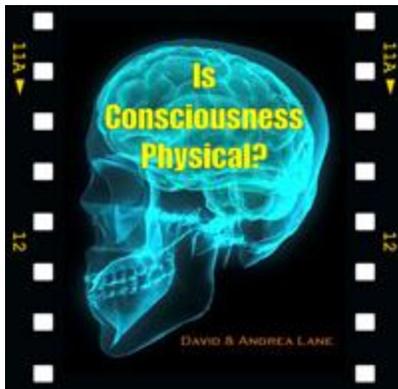


Surprisingly, shabd yoga or any meditational discipline that wishes to be viewed as a genuine science would be best served if, instead of first resorting to dogmatic axioms about its ultimate truth claims or appealing to unassailable authorities in its lineal past, it looked for ways to falsify itself. A good example of how to do this can be found in Charles Darwin's *On the Origin of Species*, where in just one sentence he explained how his whole theory of evolution by natural selection could be wrong. Wrote Darwin,

"If it could be demonstrated that any complex organ existed, which could not possibly have been formed by numerous, successive, slight modifications, my theory would absolutely break down."

Here Darwin points the pathway by which his whole theory could be turned upside down. Any spiritual endeavor desiring to be taken seriously as a science must do the same.

| Seeds for a future science of consciousness |

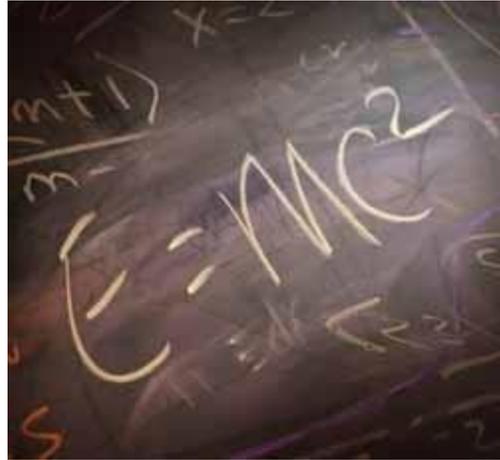


As for whether science can indeed decide the physicality of consciousness I think the answer is affirmative, even despite science's methodological naturalism. Quite simply, if consciousness is indeed beyond physics or anything within its known laws, then no matter how hard we try to ground mind to its neural structures there will always be something missing in such reductions. And, interestingly, this gap will loom even larger because our physical science will be unable to adequately explain it. Thus, one could argue that such a physicalist approach will shine a much more illuminating light upon the problem by showing exactly where, when, and how awareness is not the result of physical properties. But if we forego this grounded scientific quest prematurely because of already accepted quadrant categorizations (the type that religions wants to pose as already confirmed hierarchies) then we can and will succumb too easily and too readily and too naively to the Transcendental Temptation. Or, to invoke Ken Wilber's pithy parlance, you cannot make a pre-rational and trans-rational fallacy distinction (distinguishing that which is truly within the five senses from that which is not) unless you have a deep and rich and nuanced understanding of all that is indeed pre-rational. How else can one determine that which is truly trans-rational?

A science of consciousness, therefore, must start with the brain. Science, in other words, can indeed point to that which is not physical because of its ultra-focused aim. Science can upend itself quite easily. The fact that it hasn't yet is why we remain so confident in its methods and its discoveries. But if in the future it comes across something that cannot be reduced to the four forces of the universe, we will be forced to reconsider. But what has happened in the past and what is still happening today is that we want to

invoke transcendent explanations too quickly in order to salvage a sense of the numinous, forgetting in the process that even if all things are indeed material bits the mystery of all this (and here comes the pun) isn't lessened by one bit.

What is matter anyways?--from organisms to cells to proteins to molecules to atoms to electrons to light? The most famous equation in modern physics is Einstein's $E=MC^2$ which if we pause for a second is as mysterious as anything written in our ancient religious scriptures and measurably more radical. My point is that the resistance we have to reductionists who say, we are "just matter" is because we tend to think of matter as flat. It is, of course, anything but. Thus maybe the reason we opt for dualism or the idea that something must be "beyond" matter is because we haven't come to grips to the amazing plasticity and mystery inherent in matter itself.

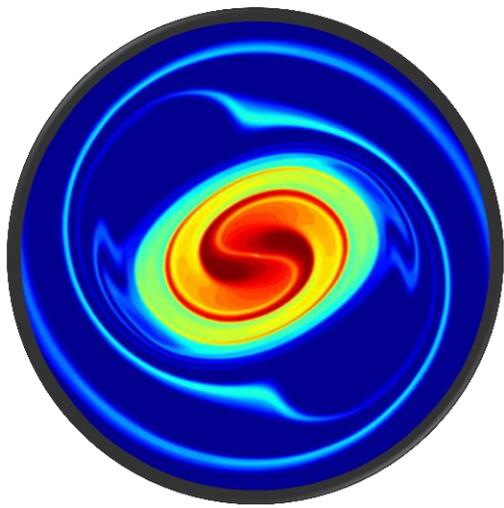


In other words, we are using an extremely outdated and misleading definition of matter and in so doing losing sight of the wonderfulness of what physics and neuroscience is saying. We are not lessened because we are just matter, just as we wouldn't be lessened in Sach Khand if we were made of just "light." Frank Visser, author of *Thought as Passion*, rightly captures our semantic confusion when he queries, "How on earth could cells and molecules lead to felt states? Forget about psi – psychology itself is as paranormal as you can get!"

At first glance it does seem to absolutely amazing how we could get from molecules to self-awareness. But, the same could be said about life itself. How can it be that a three letter sequence of DNA strung together in varying sequences can produce a giraffe, a shark, and a human being? Indeed, rearrange atoms and you can get a chalk board, a cruise ship, an

orange, and the moon. But get it we do. Likewise, getting from a cell to a self-aware human being isn't a stretch if we understand how the complex arrangement of atoms can indeed produce things that we cannot possibly imagine to exist, but which played out over time do indeed exist.

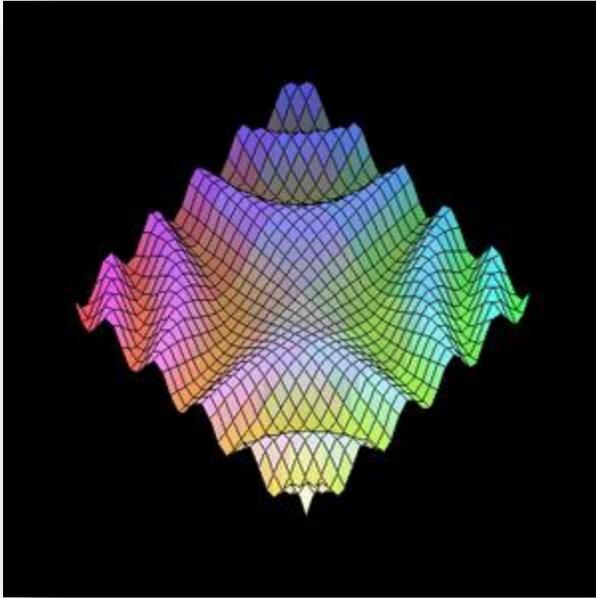
Therefore, the problem that we have with the physicality of consciousness is the same resistance that our ancestors had with understanding probabilities and how very simple algorithmic sequences can produce truly astonishingly complex varieties, the likes of which boggle our imagination.



That we cannot imagine how matter produces consciousness tells us how limited our imaginations are when it comes to the wonders of physics. We shouldn't confuse our intuitive limitations with how the world works.

Physics is the most mystical endeavor known to humankind, if one truly comes to grip with the multi-dimensional aspects inherent in any particle that arises. If one takes thinks of hydrogen and oxygen in isolation, it would be inconceivable to imagine that their combination would bring forth water. But that is precisely what occurs and nothing “more” is

needed. Therefore, the “inconceivability” of something shouldn't be used ad hoc as a precursor for invoking the divine. Patience, in other words, is a highly necessary virtue if we wish to avoid making pre/trans leaps. We have an almost built-in dualism within our awareness which gives us the convincing sense that our selves are not our bodies. This is what Visser is underlining when he mentions that destroying a television set wouldn't destroy television programs. T.V. shows come through the set but are not of it.



However, one could just as easily argue that if consciousness is akin to an electromagnetic wave then stopping production at its source would indeed cancel the television show. The brain, in this purview, is the production facility and because of its centrality to self-reflective awareness, it seems fairly obvious that if you destroy the central nervous system you have killed consciousness. Saying

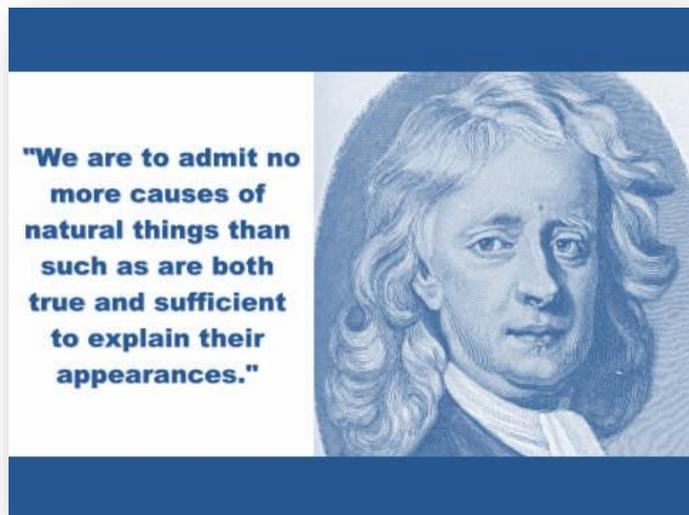
consciousness is physical doesn't detract from its majesty in the least, since as we have repeatedly mentioned matter itself is to use Rudolph Otto's religious terminology, *mysterium tremendum* and *ganz andere*. We have to turnaround our understanding of matter and also how we view ourselves in the process. Matter is multi-dimensional and if the reconfigurations of tiny atoms can give us nature's wide diversity (from a rose to an airplane to a sunset to a cup of java to repeated episodes of *I Love Lucy*), then a complex set of billions of neurons may also give rise to varying degrees of awareness.

Or, we could use reverse engineering to give us a clue about why awareness is directly connected to physics. The difference between a rock and a chimp isn't something transcendent, but rather due to the complexity of atoms and molecules clustered within the central nervous system of our simian friends. Look to the complexity of matter first and you will readily see why and how awareness arises in some material objects and not in others. Invoking gods or spirits or Eros is literally nonsensical, particularly when the physics of neuroscience is still in its infancy. Before we succumb to the transcendental temptation, maybe it would be prudent to show some

patience and let our empirical sciences have a deeper stab at the problem first.

Then, I would suggest, the science of consciousness would be on much firmer footing and would make much greater strides in its mystical search. The radical key for any newly emerging science is its willingness for self-correction. To assume, as too many meditational disciplines do, that the map has already been charted and all that is necessary is to embark on the voyage, is to neglect science's most vital feature: the unexpected. If all that is to come is already expected and predicted (without variation or exception) then we are no longer engaging in a scientific endeavor but rather a tautology designed to merely confirm a certain religious ideology. While such a religious ideology may indeed turn out to be true, it shouldn't be conflated with what science endeavors to do and thus confusing the religious impulse with the scientific impulse is doomed to failure.

Perhaps this may explain why some scientists feel that the most promising way to tackle the subject of consciousness is by a process of eliminative materialism. Simply put, if the phenomena cannot be explained fully and comprehensively by mathematics, then one turns to physics, and if that too is incomplete, then to chemistry, then to biology, then to psychology, then to sociology, etc. The old joke is that if none of these academic disciplines can explain it then it is perfectly okay to say, "Well, God did it."



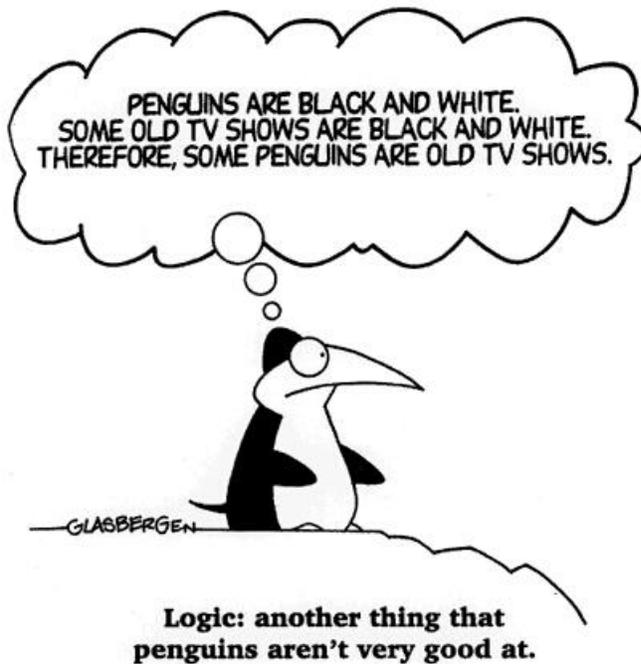
In other words, try to explain it simply first. This is why Occam's Razor (*Entia non sunt multiplicanda praeter necessitatem*, "Don't multiply entities

beyond necessity") is such a powerful weapon in science and why ideas such as Hume's Maxim ("That no testimony is sufficient to establish a miracle, unless the testimony be of such a kind, that its falsehood would be more miraculous than the fact which it endeavors to establish.") and Laplace's Dictum ("The weight of evidence for an extraordinary claim must be proportioned to its strangeness.") serve as helpful guide posts. Edward O. Wilson has captured this same spirit in his book, *Consilience*, which suggests that a unification of the sciences and humanities should be predicated upon a deep and robust understanding of what Bertrand Russell called "natural facts."



It is not that only simple things exist or that there may not be something beyond the rational mind, but only that to genuinely uncover these transcendent phenomena one must eliminate lower level categories first. When we scientifically advanced in astronomy, medicine, and physics

we replaced the old and outdated concepts of our mythic past with new and more accurate terminology which reflected our new found understanding of our body and the universe at large. Thus, instead of talking about Thor, the Thunder God, we talked instead about electrical-magnetic currents. Thus, instead of talking about spirits as the causes of diseases, we talked about bacteria and viruses. Thus, instead of talking about tiny ghosts circulating throughout our anatomies pulling this or that muscle, we talked about a central nervous system. In sum, we "eliminated" the gods or spirits in favor of more precise and accurate physiological explanations. Hence, the term: "eliminative" materialism.

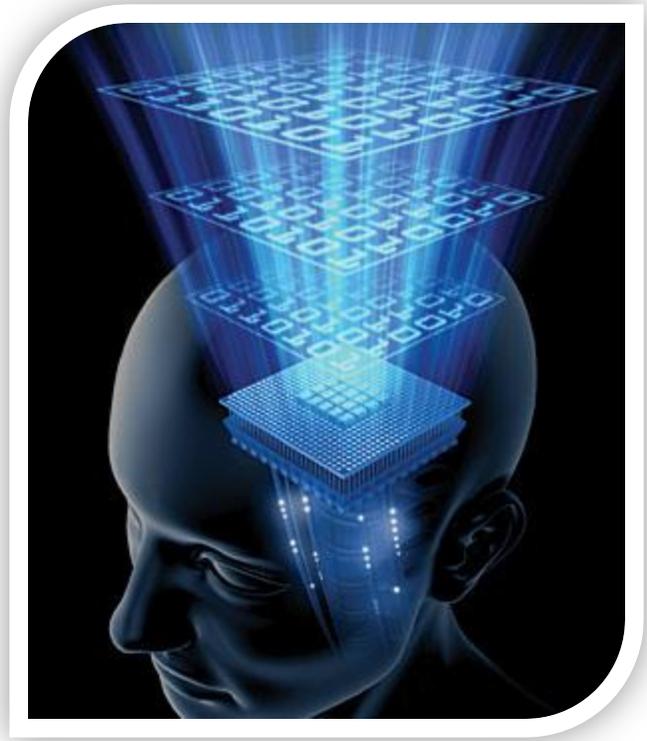


As a materialistic explanation evolves over time, it will either eliminate or reduce hitherto inexplicable phenomena down from the celestial region to the empirical arena. And in so doing, help us to better understand why certain events transpire in our body, in our mind, in our society, and in our world. Eliminative materialism is reason writ large. The glitch, though, is that we have allowed eliminative materialism to change our thinking about

almost everything except ourselves. When it comes to understanding our own motivations, we have (as the Churchlands' point out) resorted more or less to "Folk Psychology," utilizing terms such as "desire," "motivation," "love," "anger," and "free will," to describe what we believe is happening within our own beings. The problem with that is such terminology arises not from a robust neuro-scientific understanding of our anatomies but rather arises from a centuries old mythic/religious comprehension of our very consciousness.

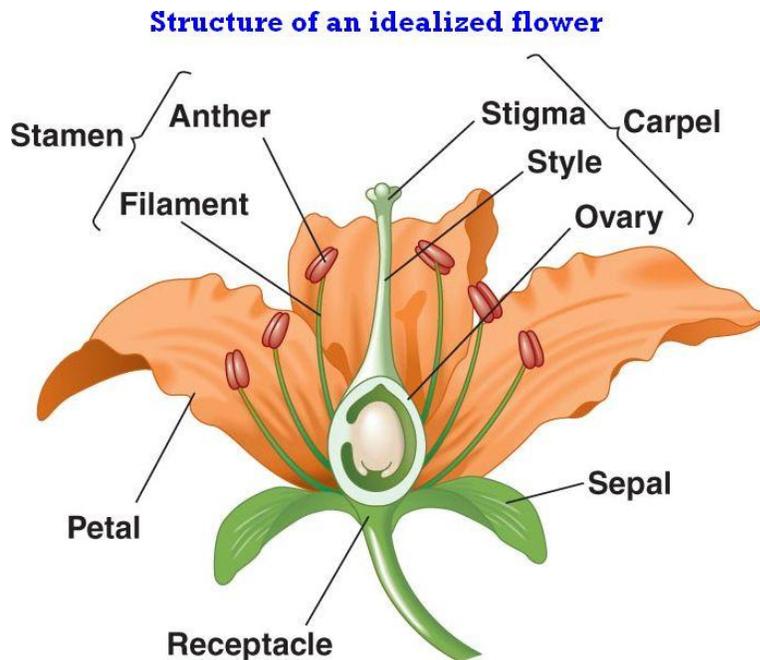
And that's the rub. Where we have moved away from such religious language in the fields of physics, astronomy, chemistry, and biology, in talking about ourselves we are still stuck in pre-rational modes of discourse. Where astronomy reflects the latest theories of the universe, where medicine reflects the latest theories of diseases, in talking about ourselves we tend to reflect ancient theories of human psychology. And in order to get a better understanding of human consciousness, neurophilosophy argues that we focus our attention on developing a more comprehensive analysis of the brain and how it "creates" self-reflective awareness.

In so doing, we can then come up with a more neurally accurate way of describing what is going on within our own psyches (pun intended). Thus, instead of using the term "soul" we might instead use phase-specific words to describe the current state of awareness which are more neurologically correlated. We have already done this slightly when it comes to headaches. Due to our increased attention to various pains and to the various drugs that are effective in treating them, we have become more aware of how to differentiate and thereby treat varying types of head pain—from *Excedrin* (very good for migraines because of the caffeine and aspirin combination) to *Advil* (very good for body and tooth aches).



Hence, the neurophilosophical way to understand one's "soul" is to ground such ideas in the neural complex. Now if consciousness cannot be explained sufficiently (Occam's Razor only works if it can indeed explain the given phenomena accurately) with just recourse to the brain, then that form of reductionism has actually helped, not hindered, the case for religionists or transpersonalists since it has exhausted the neuronal possibilities. What this implies, of course, is that any meditational discipline worth its salt is should be completely unafraid of what a critical and materialist science would make of it, since such skeptical scrutiny could only enable us to better differentiate illusory factoids from the truth.

Even the most profound spiritual experiences may themselves be the result of brain processes of which we remain unaware. This doesn't discount the



beauty or bliss of such numinous journeys, since there are many things we enjoy that are indeed the result of physical machinations. For instance, my fondness for surfing (even with my lack of smell) has not disappeared because I know something about the physics of waves. The majestic beauty of a rose isn't lessened by our deeper grasp of its

molecular parts. As Feynman once illustrated when he pointed out to his artist companion that a physicist's understanding of a flower doesn't detract from its beauty, but only adds to it since he can appreciate so many other levels that usually go undetected.

In light of how reductionism actually works when applied to real life situations, I am surprised that there are not more strong advocates of it coming from those most deeply interested in mysticism. Blaise Pascal once wrote that those with little faith will have little doubt and those with great faith will have great doubt. While I appreciate his religious syllogism, I don't think he extends it far enough. The logical consequence of his couplet should end with "And those with infinite faith, will have infinite doubt."

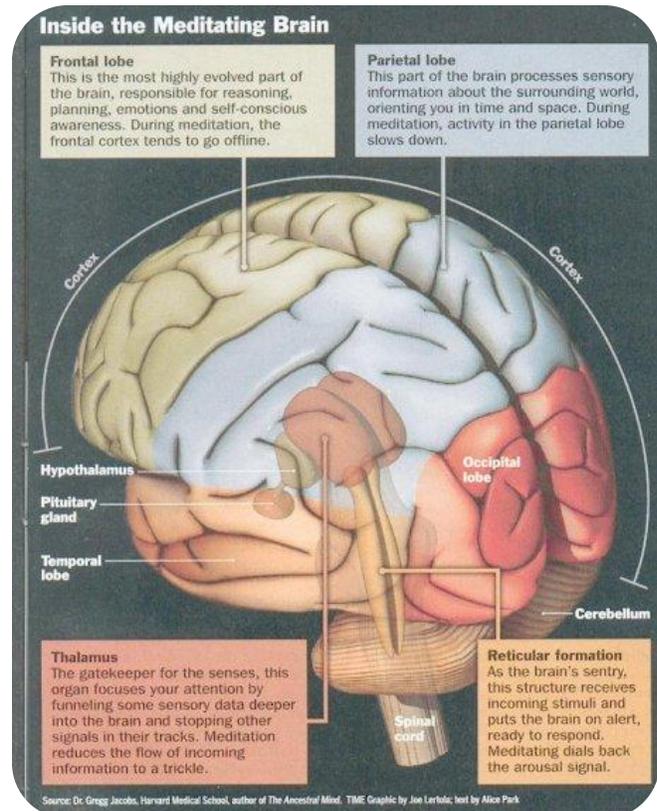
Because it is through doubt and skepticism where more, not less, evidence for the transcendent will arise since such critical scrutiny raises the bar for acceptable proof much higher than those who tend to believe on anecdotes alone.

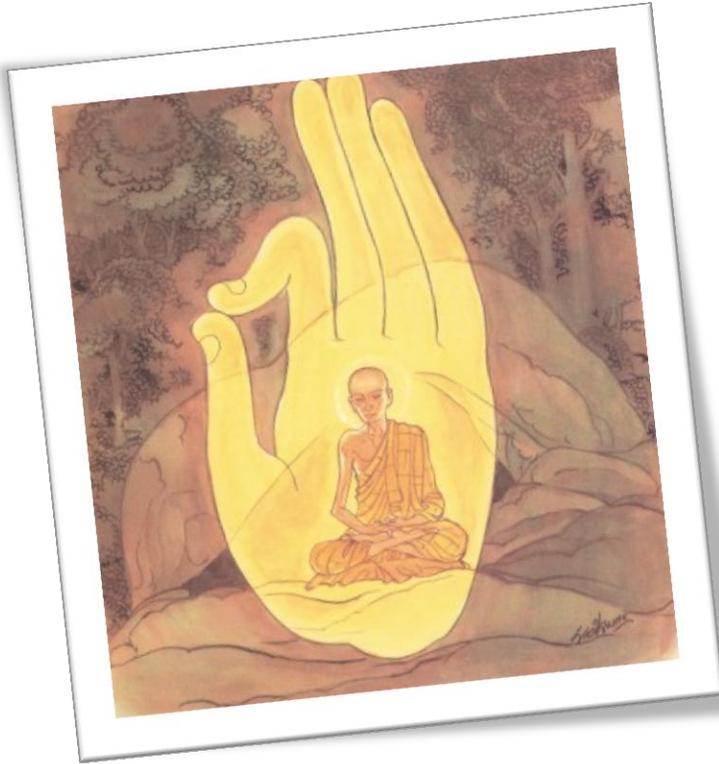
Yet, any deep understanding of matter as multi-dimensional must take into consideration the first person experience of one's own consciousness. If we think we can eliminate qualia, or what David Chalmers called the "hard

problem" in understanding self-awareness we are both deluded and mistaken, since it is our very awareness in which all questions of human affairs have arisen. In this regard, I think Indian mystical traditions, in particular, have offered us a radically new analogy by which to view consciousness.

| Levels of Awareness |

Imagine that the only state of consciousness that existed was, in fact, our dream world. Further imagine that in such a state an unusual person (we will call him Ramana) confronts you by claiming to have access to a hitherto unknown level of awareness which he calls the "waking" world. Ramana further argues that all experiences within the dream state are subsumed (indeed produced) by a waking brain which is inaccessible to dreamers. And therefore the attempt by the majority of dream materialists to reduce waking phenomena down to their dream stuff is completely wrong and misleading, since the truth of the situation is completely the opposite. The dream is happening because of the waking state brain (in another realm) not the apparent dream brain which looks to be generating awareness from itself and from its extended environment. Ramana's ultimate point is a very simple one. While it may seem to overwhelmingly clear that the dream brain causes the dream world, the fact is that a transcendent state of being is its real cause and origination.





What to make of such a claim? If one were grounded in “dream stuff” methodologies, one might ask for some convincing evidence of such a world (let’s call this thinker Churchland). To which Ramana might reply that it was impossible to actually transport such waking stuff into the dream world, since the very moment one attempts to do so it instantly transforms into dream material. Churchland, ever

the skeptic, might then rejoinder that Ramana’s bold claims lack proof and as such warrant no further attention. Or, she might argue that Ramana’s waking excursions were just modifications of his own dream brain and that what he thought was higher and transcendent was neither, since his numinous experiences were the result of neural dream discharges within his own dream skull.

At this juncture, Ramana may argue that to see the proof of his claim one must be willing to do a most radical experiment. One must literally “die” to the dream state in order to properly access the waking state. When that happens, then Churchland will actually have the extraordinary evidence she demands. Of course, Churchland might balk at this suggestion since dream death seems a bit extreme to prove a point.

Churchland may persist and query Ramana again and say, “Why can’t you produce something in our present state of awareness which would give us confidence that your claims are true?” In addition, is it not possible that you are wrong, Ramana, since your recollection of the waking state must

be recalled in and through your present dream brain? How do you possibly know that that the dream brain couldn't produce what you wrongly believe is higher?

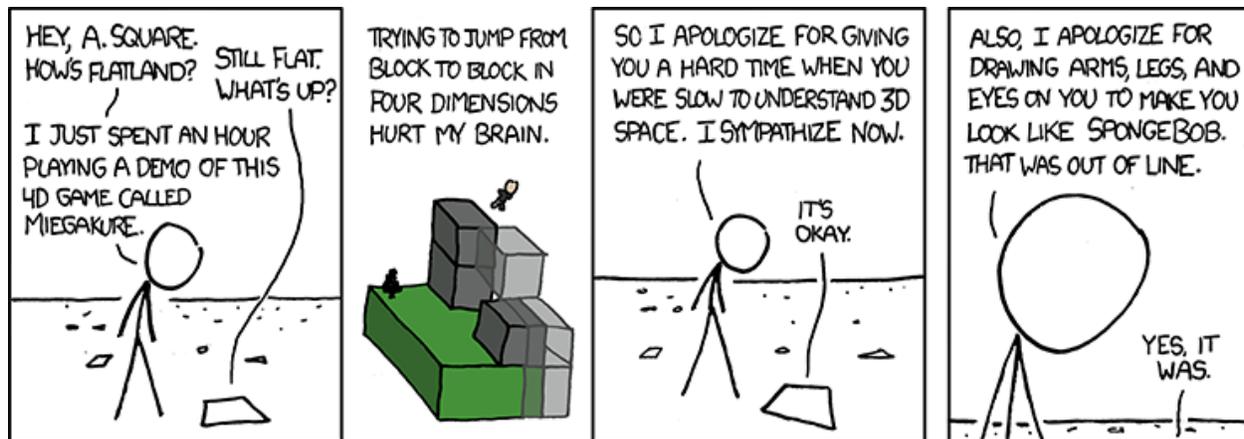
Ramana may then point out that the certainty of any experiment rests upon an uninspected axiom: that the present form of awareness is somehow the best and final arbitrator of all other states of consciousness. Why this is so isn't an ontological fact and if other super-luminal forms of awareness do exist then exploring them may help us contextualize our present dream state.



At this stage then Ramana could encourage Churchland to take up the experiment by practicing a method that he himself used. Using one's own self-awareness ask what is the source of such luminosity. According to Ramana, that very inquiry will lead to a deep questioning of what one takes to be "real" and "permanent" and will eventually prompt one to emerge into the waking state, which itself is the larger context behind the dream world. In such an awakening, the erstwhile skeptic will immediately discover that dream stuff was not the real cause behind dreaming. Rather, it was a physical brain in a completely different state of awareness.

The gist of this argument is that saying everything was caused by the physical brain may appear to be perfectly sensible in this present waking state awareness, but may in truth be completely wrong if indeed there were higher states of awareness in which this and other states were subsumed.

More precisely, even if a purely materialist position absolutely convinced us that matter and only matter gave rise to our self-awareness, we could still be quite mistaken. The dream analogy or Fritz Staal's "Three ants in a



room analogy" or Plato's allegory of the cave or Edwin Abbot's *Flatland* all address, to varying degrees, the idea of a multi-dimensionality to consciousness. The waking state does indeed seem certain until we fall asleep. Likewise, a lucid dream appears real until we wake up. If that is the case with two states, is it really that unreasonable to think of a third or a fourth state that would show the relativity of our present state?

I think the overriding reason that many of us find the previous analogy persuasive is because we intuit or know from our own experiences that when one is in a higher state of awareness it makes the waking state look like a dismal and shadowy dream. It seems as if neuroscience was merely the logical extension of Flatland thinking, of taking the dream brain too seriously, and snuffing out the possibility that deep meditation or self-inquiry could actually lead beyond the rational mind into realms thought impossible by physicalist thinking. Of course, a whole host of thinkers have postulated this as well, ranging from early Gnostics to modern day mathematicians and quantum physicists. But one of the great difficulties confronting such perennialist thinking (and this includes even present-day reinterpretations) is that arguing by analogy or by experiential inquiry doesn't easily translate as "evidence" or "proof" in the nuts and bolts world of everyday life.

Yes, there seems to be little question that amazing states of consciousness exist and that almost all humans can access such under certain conditions.



Even the most skeptical of scientists will concede the plasticity of awareness. But such a phenomenological acceptance doesn't mean that we have agreed upon what these experiences actually mean or portend. The impasse between materialists

and mystics isn't over whether UOE's (unified oneness experiences) or NDE's or OBE's or any other illuminated "E" experiences exist, but how to best interpret and explain them. In other words, how do we decide or know that consciousness isn't reducible to the known laws of physics and neuroscience? We have already reduced water to its chemical make-up of H₂O and nobody seems too concerned that we have more or less eliminated Neptune as a guiding explanatory principle. One could argue that science is one long (and quite successful) history of what occurs when humans discover a physical explanation for what was otherwise regarded as the province of god or metaphysics.

If this has been the case for explaining almost the entire known universe, from electromagnetism to gravity, why shouldn't science also be successful in explaining human awareness? And aren't mystics and spiritualists and religionists too prone to explain their numinous encounters with outdated modes of thinking? As I argued in the *Politics of Mysticism*:

"But, the argument goes, the devoted mystic will say that his or her experiences are authentic (because of the utter certainty of the encounter)

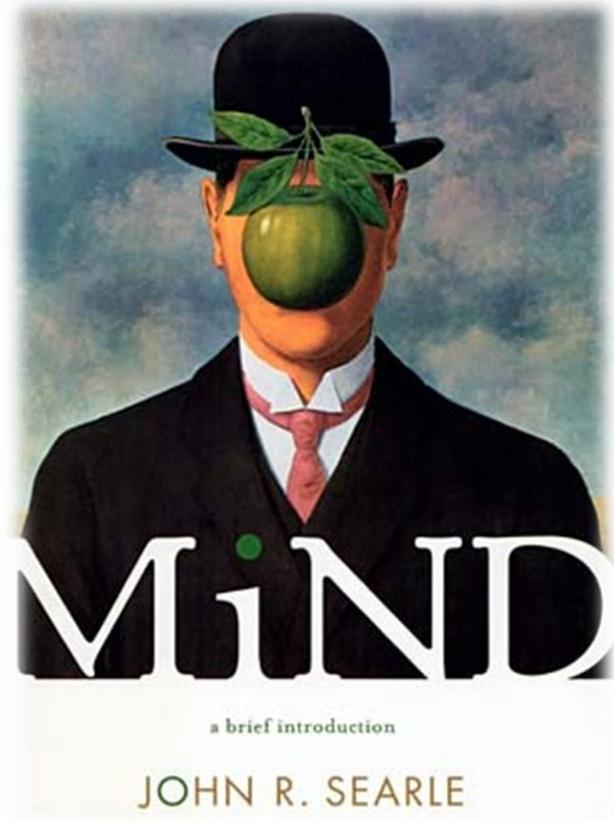
and the experiences of others, especially if they belong to a rival group which splintered off after a succession dispute, are misguided, secondary, or illusory. So what we actually have in effect here in terms of truth claims is not essentially different than that of a fundamentalist. The mystic is right by virtue of his/her inner attainment and everybody else is wrong (no matter how politely we may gloss over it: karma or chance?) because he/she happened to get the right guru and the right path (and by right we mean "highest")."

But notice how the mystic is not calling into question or doubt his/her own truth claims. For example, one rarely finds a completely agnostic posture among disciples about the relative status of his/her guru. Why not? Because just like the fundamentalist he or she is not trained to severely doubt interior revelations of truth, primarily because they appear so real when they occur. It is one thing to state that my inner experiences have convinced me that I am on the right track; quite another to then make judgments on the veracity of other meditators' experiences.

To strike a sociological note here, it becomes fairly apparent that culture plays a significant role in the ultimate interpretations of inner experiences. What at first glance appears to be a simple, sweet path to enlightenment, turns out to be on closer inspection a political contest over religious claims-claims, I should add, that have been transformed by the cultural landscape of when and where they take place. We may wish that mysticism was devoid of culture, or personal bias, or religious prejudice, but it is almost wholly entrenched in it.

Why? Because we never apprehend inner lights and sounds and beings divorced of their interpretative network. In other words, our socially conditioned minds are always flavoring, always transforming, always contextualizing whatever we perceive, whether those sights be inner or outer. And it is exactly when my experiences are personal and internal that I am most subject to error. We have yet to discern a normative corrective for mystical encounters. Sure we have templates to gauge inner experiences, their relative efficacy and so on, but since most individuals

have no mastery of leaving their bodies we are subject to tremendous imprecision and tremendous speculation. Yet do we admit to this impasse?



Do we acknowledge our immaturity in the spiritual arena?

But isn't the materialist agenda too myopic for its own good? John Searle, Professor of Philosophy at U.C. Berkeley, persuasively argues that third person descriptions of first person narratives cannot adequately do justice to the subjective nature of such experiences.

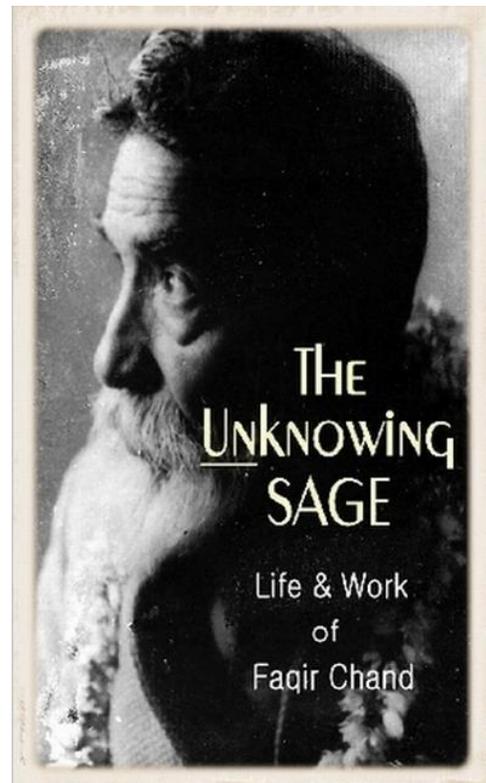
And even if analogies cannot constitute evidence, they can at the very least prompt unexpected voyages which can on their return trips provide the tangible evidence that was missing at the outset--

witness Charles Darwin and his five year journey on the H.M.S. Beagle or Captain Cook's encounters in Tahiti and beyond.

What kinds of evidence can a mystic proffer that would convince neuroscientists that their very paradigm may need to be transcended?

Perhaps the evidence we seek is by its nature transcendent and not amenable to empirical test claims? If so, then we are truly not in a Newtonian or Einsteinian world anymore and we should straight up admit it. That is, if mysticism is indeed a "transpersonal" science then it may just have to go it alone and forget convincing us flatlanders otherwise. I say this because if consciousness is indeed multi-dimensional in an ontological sense then it won't be possible to reduce one state to another without concealing its most important features.

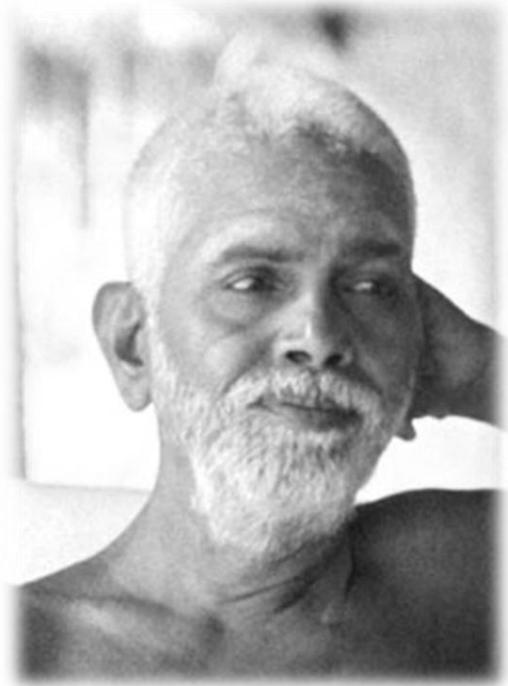
If this is indeed the case, as some mystics have argued, then we may be confronting the limits of what has been tantalizingly termed the *Chandian Effect*. It was so named because Faqir Chand was the first Sant Mat guru to speak at length about the "unknowing" aspects of visionary manifestations. In this context, the *Chandian Effect* designates two major factors in transpersonal encounters: 1) the overwhelming experience of certainty (ganz andere/mysterium tremendum) which accompanies religious ecstasies; and 2) the subjective projection of sacred forms/figures/scenes by a meditator/devotee without the conscious knowledge of the object/person that is beheld as the center of the experience. The Chandian Effect in the realm of mystical experiences is weakly analogous to Heisenberg's principle of uncertainty in subatomic physics. The more "certain" or "real" the mystical encounter seems, the less likely one is to believe that such is the product of subjective projection or transference. This invariably causes deep epistemological consternation, since what makes us certain that something is indeed real is the result of our own deeply felt subjectivity (even if dressed up in objectivist language).



This explains, albeit only partially, the great transformation that occurred to Ramana Maharshi of South India. Paul Brunton in his book *A Search in Secret India* retells it:

"He [Ramana] was sitting alone one day in his room when a sudden and inexplicable fear of death took hold of him. He became acutely aware he was going to die, although outwardly he was in good health. He stretched his body prone upon the floor, fixed his limbs in the rigidity of a corpse,

closed his eyes and mouth... 'Well, then,' said I to myself, 'this body is dead. It will be carried stiff to the burning ground and then reduced to ashes. But with the death of the body, am I dead? Is the body I? This body is now silent and stiff. But I continue to feel the full force of my self apart from its condition.' These are the words with which the Maharishee [Maharshi] described the weird experience through which he passed... He seemed to fall into a profound conscious trance where in he became merged into the very source of selfhood, the very essence of being. He understood quite clearly that the body was a thing apart and that the I remained untouched by death. The true self was very real, but it was so deep down in man's nature that hitherto he had ignored it."



As Ramana himself gracefully said:

"There is only one Consciousness and this, when it identifies itself with the body, projects itself through the eyes and sees the surrounding objects. The individual is limited to the waking state; he expects to see something different and expects the authority of his senses. He will not admit that he who sees the objects seen and the act of seeing are all manifestations of the same Consciousness-the 'I-I' [Real Self]. Meditation helps to overcome the illusion that the Self is something to see. Actually there is nothing to see. How do you recognize yourself now? Do you have to hold a mirror up in front of yourself to recognize yourself? The awareness is itself the 'I.' Realize it and that is the truth."

This mystical resonance is quite understandable since the experience brings forth its own definite and convincing certification, just as the waking state

does after a good night's sleep. But herein arises a pertinent observation. Our conviction that something is real or certain doesn't mean that we cannot be mistaken. We most definitely can be.

**if all a are b
and all b are c,
then all a are c**

If we can anatomically be mistaken when it comes to ordinary reality, which we can easily double check, then it seems we are confronted with much larger issues of literal confusion when it comes to alternative states of consciousness. Of course, Michael Shermer, founder of *Skeptic Magazine*, critiques the natural/supernatural divide from a different angle:

I don't think a union between science and religion is possible for a logical reason, but by this same logic I conclude that science cannot contradict religion. Here's why: A is A. Reality is real. To attempt to use nature to prove the supernatural is a violation of A is A. It is an attempt to make reality unreal. A cannot also be non-A. Nature cannot also be non-Nature. Naturalism cannot also be supernaturalism.

In a natural worldview, there is no non-natural or supernatural. There is only the natural and mysteries left to explain through natural means. Believers can have both religion and science as long as there is no attempt to make A non-A, to make reality unreal, to turn naturalism into supernaturalism. The only way to do this for theists is to posit that God is outside of time and space; that is, God is beyond nature—super nature, or supernatural—and therefore cannot be explained by natural causes. This places the God question outside the realm of science. Thus, there can be no conflict between science and religion, unless one attempts to bring God into our time and space, which is a violation of the principle of A is A.

If we substitute mysticism or transcendent consciousness for religion, Shermer's argument is that there is an indissoluble gap between science and spirituality. And any attempt to bridge the two is a violation of the simple principle that A is A. While I am not quite convinced by Shermer's verbal sleight of hand, I do think he is on to something that deserves closer inspection.

For instance, if consciousness is indeed brain based then neurology should be able to help us better understand how it arises from material structures. Mysticism or the pursuit of higher states of consciousness, therefore, will also be part and parcel of such neurological studies, and will not be beyond its jurisdiction. However, if consciousness (or some part of our awareness) is not physically produced then science will not be able to comprehensively explain it as such. This implies that science will eventually confront a border it cannot cross.



| Throwing a Sound Grenade at Skeptics |

Now scratch out everything I have just written and let's talk about a new application on the Apple I-phone called the "Sound Grenade."

Okay, before you think that I have just forced you into one very strange non sequitur (or, what I like to call a hypertext parenthetical), it may well be that the real difficulty in studying consciousness can be easily demonstrated without any words whatsoever.

My ten year old son Shaun downloaded this application which plays (I am told) one very annoying high pitched sound which can be quite irritating. Some commentators have even mentioned getting sick to their stomachs after hearing it.

Well, Shaun likes to randomly explode his sound grenade while eating dinner or watching television to both surprise and annoy his young brother Kelly, and his mother, Andrea.

However, it never works on me. Why? I cannot hear it. In fact, I hear absolutely nothing when he turns it on. At first I thought my family was in on some secret joke, since I didn't believe that the application was really emitting a sound. Later when I was convinced that they were not lying I was a bit wonder struck. Why do I hear absolutely nothing?

So, one day when I was playing Frisbee golf I secretly turned on the application to see if I could annoy my brother, Joseph, and throw him off as he went for a birdie. Nothing happened. I tried it again and again nothing happened. I finally told him about the high pitched sound that was supposedly generated by the application and he couldn't hear a thing. In fact, he too didn't believe that the device really emitted a sound and he proceeded to get a bit irritated with me as he thought I was playing some

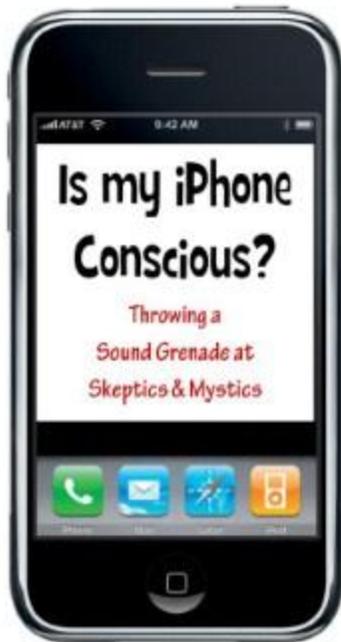


stupid joke on him. Even to this day, I still don't think he believes that the sound grenade really does work.

The other day I thought I would test the application on my Religion and Science students at

California State University, Long Beach. Everyone heard it except me and one other student, who was also flummoxed to be the only one of his colleagues to not hear it.

Why do I bring up this apparently silly example? Because I think it strikes at the very heart of the inherent difficulties in consciousness studies. For instance, how can one properly study the physics of the sound grenade application on the Apple I-phone if the one studying it cannot hear what everyone else is hearing?



Correlatively, how can one study higher states of consciousness if one has never experienced them? I understand that it might be theoretically possible to do so, but isn't something fundamentally lost by trying to apprehend a given phenomenon by way of a surrogate versus one's own immersion? Do we really think that someone who is not conscious can truly understand one who is?

Now, ironically, the sound grenade analogy doesn't mean by way of extension that higher forms of awareness are metaphysical (the I-

phone application uses real sound waves, not astrally generated ones), but only that a spectrum of variances may exist that shouldn't ad hoc be collapsed to each other.

If we prematurely do so, we end up with what Daniel Dennett rightly called "cheap" reductionism. It may look valuable but on closer inspection it offers us nothing useful in exchange.

To say my consciousness is merely the result of a bundle of neurons is neither enlightening nor useful. What we really want to know is how such a set of tiny physical on and off points could produce self-reflective awareness. This is a technical problem, not a philosophical one.

And it is for this reason that scientists such as Gerald Edelman have tried to see if it is possible to construct artifacts that are self-aware. As Edelman explained in an interview with *Elmundo Digital*:

Question: Do you believe that it will be possible to create robots that replicate the working of the brain in the future?

Answer: This is just what we are doing in my lab. We are trying to create a conscious machine. In fact, we have already built devices whose performance is based on the structure of the brain. They look like robots, but I wouldn't call them that way, because they don't have an automatic programmed behavior, they have an artificial brain whose design is based on what we know about the human brain structure. These devices, even not being living entities, are able to perform some cognitive operations that imply the usage of memory.

Question: For instance?

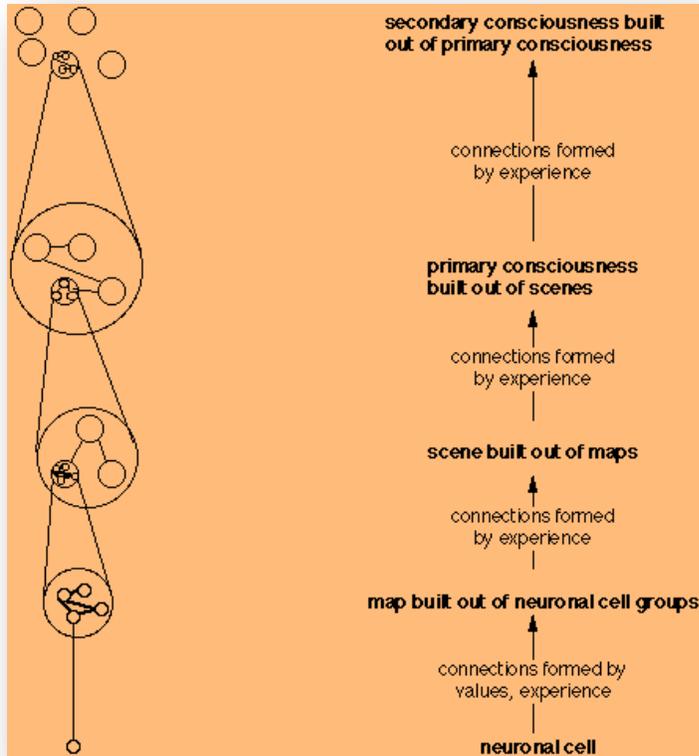
Answer: They can learn by heart different paths to an object, and apply learning to get to the object by the shortest path. In fact, our devices have participated in robot soccer tournaments, and they have won all the matches because they are able to learn and adopt strategies. In sum, today we can say that we have managed to build devices that are able to do certain things by themselves; this is something that 10 years ago I myself would have said to be science fiction. Therefore, nowadays I would dare to say that, once we understand more about the structure of the brain, we will be able to build conscious machines in the future.

Yet, on the other hand, the conviction of my own experiences (or lack thereof) is not an indication of its causation. Rather, we have an almost innate predisposition to confuse our own transferences and projections for objective realities or truth--neglecting in the process just how such numinous illuminations arise in the first place.

The problem with mysticism, therefore, isn't the lack of subjective experiences of extraordinary realms but the inability while in such exalted states to recognize the humble and ordinary bases for their generation.

This confusion of a neural system about its own interpretation of reality can be quite startling. As Gerald Edelman recounts,

"There's a neurologist at the University of Milan in Italy named Edoardo Bisiach who's an expert on a neuropsychological disorder known as anosognosia . A



patient with anosognosia often has had a stroke in the right side, in the parietal cortex. That patient will have what we call hemineglect. He or she cannot pay attention to the left side of the world and is unaware of that fact. Shaves on one side. Draws half a house, not the whole house, et cetera. Bisiach had one patient who had this. The patient was intelligent. He was verbal. And Bisiach said to him, "Here are two cubes. I'll put one in your left hand

and one in my left hand. You do what I do." And he went through a motion.

And the patient said, "OK, doc. I did it."

Bisiach said, "No, you didn't."

Of course, the problem for the scientist may be exactly the opposite—the inability while working in an ordinary state of awareness to recognize the superluminal bases for its very existence.

Perhaps the study of consciousness can benefit by listening more carefully to that ancient quip about spirit and matter. "The more I study the mystical, the more physical it becomes and the more I study the physical, the more mystical it turns out."

Excerpt from the Introduction

THE ENCHANTED LAND: *A Journey with the Saints of India*

Although I am mostly known as a skeptic, especially among followers of new religions, I don't think that skepticism is the only approach to life or necessarily the most important vehicle to discover truth. I think we are, as our evolution indicates, a wide spectrum of possibilities and there may well be several ways to approach life's mysteries. One of those approaches which I certainly advocate and champion is interior exploration. That is, the day to day practice of focusing one's consciousness to discover phenomenologically the source from which such awareness arises. This type of practice is usually known in the East as meditation and in the West as ceaseless prayer. In both instances, however, the neophyte is attempting to explore a hitherto unknown world.

Science is in many ways the extension of our five senses to explore the world without. Mystical religion is in many ways the inversion of our senses to explore the world within. They are not necessarily mutually exclusive, even though certain scientists and certain religionists have tried to act and argue as if they were. I have chosen to write about these yogis, saints, and sages of India because they are pioneers of "going within." They are heroes of the inner quest. In physics we admire Newton and Einstein because they transformed the way we see the universe without. Likewise, in religion and philosophy we admire a Socrates, a Buddha, a Jesus, a Shankara, a Kabir because they have transfigured the way we see the universe within.

Hence, the underlying bias of this book is that I really do believe there is something beyond the rational mind and that it is worth investing our time and energy in studying it. Now I don't think the reader should buy my line of argument hook, line, and sinker, and somehow believe that what these yogis and saints say is true. Rather, I would enjoin the reader to severely doubt what has been outlined here. Doubt it so much that you would want to conduct the experiment for yourself instead of relying on second-hand reports. Doubt it so much that you would want to learn the necessary technique for consciously inducing a near-death experience to see and hear what mystics have been proclaiming for millennia. Doubt it so much, in sum, that you would want to "test" the veridicality of mysticism itself.

We talk so much of "testing" in the sciences but very few of us ever take up the challenge. Instead we rely on "authorities" to convince us of the truth of calculus, the truth of quantum mechanics, the truth of molecular biology, the truth of evolution. Well, in each of those wonderful endeavors, which have greatly improved humankind's understanding of the universe at large, there comes a point where one has to devote time and energy to understand the intricacies involved. To go within, to engage the voyage of light and sound, to apprehend stages of consciousness beyond the waking state, demands exactly the same tremendous effort that we exert in any academic endeavor.

So this book is actually the natural extension of a truly skeptical mind which believes that science is not so much a body of facts as it is facet of being, an approach to discovery. Yes, there is a science to interior states; yes, there is a method to the madness of mystics. And if we have the courage to follow science in the outer world, we should also have the same courage to follow science in the inner world. To be sure, this book does not tell the whole story, or even a fraction of the adventure, but it does lay out an alternative route for those interested in taking religious claims seriously.

Although each of the mystics mentioned in this book may be partially a product of his/her time (with all the social and human limitations that such contexts entail), they do nevertheless point to something unique in human understanding. They point to a region well beyond the farthest reaches of our telescopes or our microscopes. They point to our very beings. Strange is it not that we have spent almost all of our time looking for the secret of life by extending our senses into the phenomenal cosmos and have spent comparatively little, if any, time probing the source from which these visions first arise. According to sages and saints, we are like Dorothy in the *Wizard of Oz* who is trying to find her way back to Kansas only to learn after a long and arduous journey to the Emerald City that, alas, her means of transportation was with her all along--her precious ruby slippers. We too have ruby slippers; it is our very consciousness. By exploring it directly we too may have the ability to go home. That home, the saints argue, is the source of our longing, our yearning, our nostalgia. That home, the saints argue, is our enchanted land.

--David Christopher Lane, Ph.D., Professor of Philosophy

California State University, Long Beach and Mt. San Antonio College

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Andrea Diem-Lane is a Professor of Philosophy at Mt. San Antonio College, where she has been teaching since 1991. She received her Ph.D. and M.A. in Religious Studies from the University of California, Santa Barbara. Dr. Diem earned her B.A. in Psychology from the University of California, San Diego, where she conducted original research in

neuroscience on visual perception on behalf of V.S. Ramachandran, the world famous neurologist and cognitive scientist. Professor Diem has published several scholarly books and articles, including *The Gnostic Mystery*, *When Gods Decay*, *Darwin's DNA*, and *Spooky Physics*. The Lane's have two sons, Shaun-Michael and Kelly-Joseph.

विस्मय

$$p_0 = \left[\frac{\lambda + \mu}{\mu} \right]$$

Putting in this expression

$$p_2 = \left[\frac{\lambda + \mu}{\mu} \right] \left[\frac{\lambda}{\mu} \right] p_0$$

$n = 2$; again (from

$$p_0 = \left[\frac{\lambda + \mu}{\mu} \right]$$