INVENTING REALITY WITH REPRESENTATIONS

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I

Ancient wisdom has it that whereof you cannot speak thereof you must be silent. Poets delighted or distressed with the complex web of often times incommensurable particularities of real or imagined experiences refuse to be silent and ignore Wittgenstein's dictum that what cannot be said cannot be whistled either. But between silence and poetic whistling there are the noises of the narrative fiction. Although philosophers are quite garrulous about their commitment to their exploration of truth and nothing but the truth, Rorty has assured us that philosophy is one of the varied types of narrative fiction. As if to make matters even more post-modern, philosophically sensitive, learned mathematician, Gian-Carlo Rota highlights the spuriousness of the distinction, if not between truth and lies, at least between truth and invention when he approvingly quotes the following (translation of a) verse of the Spanish poet, Antonio Machado :

> the reason people so often lie
> is that they lack imagination :
> they don't realize that the truth, too,
> is a matter of invention.

Those gifted with imagination feel obliged to claim and carry forward the burden of truth. In our times, science and technology has been granted exclusive rights for the manufacture of all truths. And it does churn them out at an alarming rate sometimes to the discomfiture of even those who invent them by throwing up issues of ethics, ecology, the very survival of man etc that seem to transcend the concerns of truth.

II

Philosophers from Francis Bacon to Foucaualt have been quick to notice that Knowledge engenders power (or to use a more sanguine term, authority) and power enables the generation of knowledge. But what is not often recognized, as Foucault pointed out, is that monopoly of truth claims give rise to forces that seek to resist that monopoly. Such forces in turn invite efforts that aim at their neutralization or appropriation. Western philosophical engagement with the

legitimization of the truth claims of science vividly illustrates this dialectic.

III

The celebrated scientïst, Einstein, is believed to have remarked that philosophy the mother of all sciences is disowned by her own daughters. We have already mentioned the eminent philosopher, Richard Rorty's pronouncement that philosophy is one of the varied forms of narrative fiction. There have been other options. Bertrand Russell, in his HISTORY WESTERN PHILOSOPHY, summed up his positivist position thus: "All definite knowledge - so I would contend - belongs to science; all dogma...belongs to theology. But between theology and science there is a No Man's land...This No Man's land is philosophy". In point of fact, however, philosophy has been a disputed territory alternately claimed by or forbidden to scientists (and theologians alike). Those whom we admiringly call scientists, before William Whewell, in 1840, coined the term 'scientist' used to describe themselves as natural philosophers. Contrariwise, metaphysics which Aristotle called the prima philosophia (the first philosophy), was disparagingly dismissed by the 'Vienna circle' as founded on logical errors of analysis. So much so, Professor Ayer in his LANGUAGE, TRUTH AND LOGIC declared emphatically that "The traditional disputes of philosophy are, for the most part, as unwarranted as they are unfruitful...For if there are any questions which science leaves it to philosophy to answer, a straightforward process of elimination must lead to their discovery". In a similar vein, if with a somewhat greater circumspection, Korner has said : " For the ancient Greeks 'philosophy' meant any attempt to solve theoretical problems by theoretical methods ... Of the questions about "the greater matters" (e.g. about the changes of the moon and of the sun, about the stars and the origin of the universe) mentioned by Aristotle, only the last is still partly philosophical, and even here much of what used to be philosophical cosmology has moved into physics, albeit into what is a rather speculative branch of it. Yet many problems which the ancient Greek thinkers regarded as philosophical and which engaged the attention of the thinkers of other ancient civilizations have remained philosophical problems until today; and some of these are likely to remain so for a long time". But then, in contrast, we have Thomas Storer arguing, "Briefly the view adopted here is that epistemology (theory of knowledge) is philosophy; ...Philosophers have made contributions generally ... Philosophy of science (as theoretical methodology of special sciences) and logic are parts of science. And history of philosophy is part of

general social science. Epistemology, however, is not a separate science. It is a precursive investigation, preliminary inquiry, that anticipates the current level of scientific discovery and common sense opinion". Thus, what was once excommunicated, what was left to feed itself on what science leaves to it begins once again to become part of science and even gets totally appropriated. George, in his SCIENCE OF PHILOSOPHY makes this appropriation explicit : "Our object is to try to look at philosophy as if it were a part of science - hence our title - since any subject can also be approached scientifically. Therefore we talk of the science of philosophy as being the study we propose". He approvingly quotes May Broadbeck, " ...But, except (such) "crises" when fundamental clarification is necessary before further progress can be made, the scientist works within his conceptual frame to formulate new truths, and does not philosophize about it". His only serious reservation to her statement is that it presupposes a distinction between philosophy and science which is not, in the light of the "gradualism" he advocates, wise! A gradualism which prompted Augustus Comte to declare, - about the same time that Whewhell coined the term 'scientist' - that the history of humanity may be divided into three stages: a theological, a metaphysical, and a positive (scientific), in the last of which the metaphysical is dissolved by science.

IV

The story of the attempted dissolution of metaphysics by science is the story of Western philosophy beginning with the age of Renaissance, if not earlier, through the epochs of Reformation, Enlightenment, well into the twentieth century. It is the story of the search and associated contestation for authority that would justify both the engagement in any chosen and pursued activity, and the outcomes (whether they be truth claims, cultural products, consumer gadgets, social or political or religious identities) of that activity. Take, as concerns us here, the hitherto prestigious human activity called philosophical inquiry. As Bartley reminds us, "The Western Philosophical tradition is authoritarian in its structure, even in its most liberal forms. This structure has been concealed by oversimplified traditional presentations of the rise of modern philosophy as a part of rebellion against authority . In fact modern philosophy is the story of rebellion of one authority against another authority, and the clash between competing authorities. Far from repudiating the appeal to authority as such, modern philosophy has entertained only one alternative to the practice of basing opinions on traditional and perhaps irrational authority, namely that of

basing them on rational authority. This may be seen by examining the main questions asked in these philosophies . Questions like: How do you know ? How do you justify your beliefs ? With what do you guarantee your opinions? - all beg authoritarian answers - whether those answers be : the Bible, the leader, the social class, the nation, the fortune teller, the word of God, the intellect or sense experience. And Western philosophies have long been engaged in getting these supposedly infallible epistemological authorities out of trouble ". That we have not so far found such an infallible epistemological authority even for our remarkably successful cognitive endeavour called modern science and technology only illustrates that the promised dissolution of metaphysics by science remains metaphysical.

V

Whether we call the legitimization of truth claims of science as philosophy of science or science of philosophy, science cannot but fail in its claim of describing the world as it really is - the doctrine (the grand narrative) of scientific realism - even as it largely succeeds when it restricts itself to stating useful regularities. For, as Max Planck had observed, " Now the two sentences: 1) there is a real outer world which exists independently of our act of knowing, and 2) the real outer world is not directly knowable, form together the cardinal hinge on which the whole structure of physical science turns. And yet there is a certain degree of contradiction between those sentences. This fact discloses the presence of the irrational or mystic element, which adheres to physical sciences as to every other branch of human knowledge. The effect of this is that a science is never in a position completely and exhaustively to solve the problem it has to face. We must accept that as a hard and fast, irrefutable fact and this fact cannot be removed by a theory, which restricts the scope at its very start. Therefore we see that task of science arising before us as an incessant struggle towards a goal which will never be reached, because by its very nature it is unreachable. It is of a metaphysical character, and as such, is always again and again beyond our achievement ". If we approach this insight from a different opening provided by Owen Barfield, we are led to the recognition that phenomena of the world or appearances are necessarily collective representations in as much as they are what are apprehended by us. Collective representations whatever else they may be, for the possibility of their very existence, must have in them an irreducibly non-categorical, pre-categorical, pre-philosophical participatory character. The Galilean doctrine which asserts that a scientific hypothesis (itself a product

of a selective cognitive orientation to some chosen domain of enquiry), if it saves appearances, is identical to a truth about the world independently of our existence empties our collective representations of their participatory character and seeks to impute to them and to the scientific truth an 'out there' existence. Galilean revolution in science does not consist in providing a solution to the traditional philosophical problem of comprehending the true nature of an object or being of the world as it really is. What Galileo succeeded in doing - at least as far as mechanics is concerned - was to constitute (through speculative analysis of the given objects, their states and relations) residual products which are presumed to exhaust the original objects and thereby can be used to substitute them. Galileo then went on to invent for the residual products a scheme of representation by mathematical symbols possessing the usual properties of identity of quantity, combination and transformation. This efficacious project had a name: mathesis universalis. What is really revolutionary about the Galilean project is that it has for the first time made available to man a powerful technique by which he can , -through a process of conjuring up of residual products by selective interrogation of given reality, through a rich repertoire of representations and manipulation of symbols and above all through an inexhaustible set of controlled experiments and observations -, not only save the appearances but also allow for the residual products an existence of their own and fabricate a new reality that simultaneously goes beyond the initial experience, ad infinitum. In this sense, modern technology based on modern science is not a byproduct but the very dynamic of modern scientific activity. If the imaginative invention, so to speak, breathes life into the residual products, it also performs what Hans Jonas had called the primary ontological reduction. The Galilean method, construed as the resolutory - compository method (resolution entailing primary ontological reduction, composition claiming substitutability of the original objects by their reduced products) had been a great success in capturing great many cognizable properties of the world when we as historically situated agents interrogated it the contingent way we happened to have done. From this it does not follow that such cognizable properties of the world as we have captured are the cognizable properties of the world (if it has any) as it really is. For we do not have the epistemological certitude that the inquiring mind does not, by its very effort, distort or fail to grasp the cognizable properties of the world as it really is. Our cognitive powers (in attempting to secure such cognitive properties of the world as may exist independently of us) cannot claim cognitive

transparency. This limitation of our cognitive enterprise called science is reflected in the endemic instability and relativism of the human sciences and in the controversies of quantum mechanical reality. Indeed it is showing up in our contemporary conflicting conceptions of Nature and may be already too late environmental concerns.

VI

Philosophy cannot provide the legitimization criteria for the truth claims of science and science cannot claim that it describes the world as it really is. But both philosophy and science continue to reinvent themselves. Scientific cognition carries this out through its unrelenting interrogation of all that comes under its gaze and its unending invention of residual products and representational relations between them. Philosophy manages to reinvent itself through its characteristic need to steer clear of the scylla of unwarranted belief on the one hand and charybdis of ancient skepticism in its varied forms on the other hand. Philosophy, as Deleuze had noted, strains toward the movement of concepts. But concepts don't move only among other concepts (that would be mere logical understanding) but also among things and within us which bring us new percepts or new ways of seeing or hearing and new affects or new ways of feeling that contribute to philosophy's own non-philosophical understanding. If philosophy, like science with its experiments and observations, is open to new percepts and new affects, it, like science, cannot but fail to incorporate that which is non-cognitive in our world. If our scientific theories in all their complexity can only 'save the appearances' without being necessarily true, our philosophical thinking can only be, in Heideggerian terms, clearing the path that points to the House of Being without ever reaching it. But this situation in no way prevents us from inventing reality if we understand by that term as that which gets revealed to us when we encounter the world in the only way we can and not as something that is antecedent to our encounters.

VII

I may illustrate the above situation with two instances of fictional narration and two of poetic whistling:

1. Mullah Nasruddeen was once seen searching for something.
   A passerby asked him, 'what are you searching for?'
   The Mullah said: 'A ring'
   'Where did you lose it?'
   'Over there' the Mullah pointed.

'Then, why are you searching here?'
Nasruddeen answered: 'Because there is light here'

2. A Middle-Eastern folk tale:

One evening, Khoja looked down into a well, and was startled to find the moon shining up at him. It won't help anyone down there, he thought, and he quickly fetched a hook on a rope. But when he threw it in, the hook snagged on a hidden rock. Khoja pulled and pulled and pulled. Then suddenly it broke loose, and he went right on his back with a thump. From where he lay, however, he could see the moon finally back where it belonged - and he was proud of the good job he had done.

3. Wallace Steve's poem:

They said, 'you have a blue guitar,
You do not play things as they are'
The man replied, 'Things as they are
Are changed on the blue guitar'.

4. T.S.Eliot's poem:

But how can I explain, how can I explain to you?
You will understand less after I have explained it.
All that I could hope to make you understand
Is only events; not what has happened.
And people to whom nothing has ever has happened
Cannot understand the unimportance of events.

VIII

The search for authority, even as it continues to be unsuccessful in securing the sought-after legitimization of knowledge claims, had resulted in two important developments. Firstly it led to claims of increasingly autonomous, self-legislating, internally constituted authorities in each of the currently prevailing, contingently demarcated spheres of human activities. The philosophical claim that questions concerning the ontology of theoretical entities (like fundamental particles in physics) in a science are matters internal to that enterprise is a case in point. The all too familiar disputes about the 'essential' differences between natural and human sciences provide another example. The declarations of autonomy by the various domains of literature, and arts are too frequent and loud to be missed (dadaism, cubism, surrealism , stream of consciousness, magico-realism ...).

The second related development arising from the search for legitimate authority has been the increasing differentiations accomplished by biologically embodied human agents endowed with perceptual and cognitive powers in cognizing their historicized selves and life-worlds. These differentiations are manufactured by converting perceptual differences into cognitive distinctions.

In Western cultures, this cognitive enterprise of drawing ever new distinctions infected through and through with human subjectivity and intentionality , has enabled the formation of two classical genres of fields of meanings or signifieds. On the one hand, there are all those fields of meanings constituting what has been traditionally called the genre of humanistic culture which strive to conform to the logic of the unity of experience of the meaning-seeking subject. On the other hand, there are all those fields of signifieds that may be conveniently collected under the genre of scientific culture which enforce (the so-called unity of sciences programme) any system of logic that respects the law of identity, the law of contradiction and the law of the excluded middle. Whatever else may be the differences between the two genres, they however shared two features in common. The first is that for any field of meanings or signifieds there is a language of signifiers and its grammar for forming strings of signifiers that are adequate to the task of embodying the meanings or signifieds of that field. We may call this the doctrine of representationalism. The second shared feature is the posit of a mind-independent real world whose entities serve as referents to the signifiers which however are the imaginative creations of the cognizing human mind. This roughly is the thesis of cognitive transparency.

Beginning with the early decades of the last century, validity of both doctrines, however, has become increasingly suspect, in both the humanistic and scientific cultures' productions. The four dimensional space-time geodesics of Relativity, the wave-particles of quantum mechanics, quarks, blackholes, anti-matter, gauge-fields and what have you have rendered superfluous all questions of meanings in their respective fields of scientific endeavour. What mattered most in any field are the operational intricacies if the syntax governing the 'freely chosen' abstract signifiers that no longer need to be connected to the concrete 'signifieds' of the lived world. The drive for self-legislating, autonomous legitimization has at least problematized the issue of representation if it has not altogether dissolved the issue. Likewise, in the humanistic culture,the high-priests of 'high-modernism', 'the

unacknowledged legislators of the world' and their allies, not to speak of the romantics, feeling increasingly threatened by and anguished at the fragmentation of meaning-seeking subject wrought by the encroachments of modern science and technology, contributed to the problematization of the issue of representation in their characteristically rhetorical manner. Unable to secure any sense of unity of experience of an increasingly fragmented subject in their works,they, whether in the fields of visual arts, music, literature, drama etc, have gone on exploring the aesthetic effects of fragmented forms, discontinuous narratives, random collages, mixed genres, multiply-narrated stories, impressionistic, morally ambiguous and self-conscious literary and artistic products generated by vocabularies and grammars of the new languages they invented. And thus literature and various arts have become, like the sciences, increasingly technical with their own agendas for the production of aesthetic effects of 'high' or 'low' cultural goods. But if man is to be ushered into the portals of postmodernity and is to be seen for what he is - a nominal locus or 'site' of truth-effects, philosophy must first be seen as nothing more than a rhetorical engagement. Paradoxical as it may seem, it is philosophy of science which has acted as the usher by arguing for the implausibilty of the cognitive transparency thesis.

The long and complex argument drawing on the actual practices of sciences need not detain us. For our purposes it suffices to note that following the detailed investigations of philosophers of science, Kuhn, Feyerabend and others it is no longer possible to ensure the ontological stability of entities in the real world which act as referents to signifiers of the specialized languages of a science. Thus,for example, the answer to the question, what does the signifier 'mass', refer to in the real depends on whether the signifier belongs to the language of the Newtonian mechanics or the language of Einsteinian Relativistic mechanics. Thereby, either the existence of the referent in the 'real' world is relative to the language which refers to it (and is not independent of it) or the real world has to accommodate all the population of theoretical entities that our imagination can cook up. In either case reality is problematized and the distinction between a signifier and its referent is collapsed. With this collapse and the absence of any fixities of the world, philosophy can at its best be only a rhetorical engagement (in the classical non-pejorative sense of the use of language aimed at persuading the other to agreement as contrasted with the polemical use of language).

The wreckage of the semiotic triangle caused by the modernist problematization of representation on the one hand and philosophy of science's problematization of reality on the other hand allow for free play of the signifier vertex of the triangle. The meaning/signified vertex of the triangle and along with it the meaning-seeking subject were banished into the oblivion of arbitrariness by the now 'autonomous' signifier vertex. Similarly, the referent vertex was either declared non-existent or more modestly pronounced to be indistinguishable from the 'free' signifier. Meanings, meaning-seeking subjects and reality are no more than shadows, in Plato's cave (with no one to watch them),cast by the invisible sun of differential play of signifiers. This postmodern incredulity of self-reflexive, self-conscious Western man toward any metanarrative of absent-presence (read, metaphysics of presence) is sufficient to ensure that the question, 'Can be there shadows without objects?' will not arise.

IX

One supposes that for such momentous gestures of postmodern aesthetic celebration and ascetic quietude in the affluent Western cultures there exist grounds more material than the abstract and abstruse proclamations of the semioticians, Sassurian linguists, structuralists, literary critics, avant-garde artists, aesthetic theorists, philosophers and cultural critics.

The ubiquitous color television screen and the color monitor of the personal computer provide one such ground. The images on the screen are simultaneously both referents and signifiers or, perhaps, in the secluded isolation of the cozy bedrooms of Western societies, signifiers are more intimate and real than the distant referents. Moreover, meanings can instantaneously be generated and displayed by the syntactic click of a mouse or the touch of a key on the key-board or the pressing of a button on a 'remote' that is so close. Speech-actuated systems are being developed in the market-friendly laboratories of the multi-national companies and programmable speech-synthesizer chips which are already mass produced will soon materialize the claim of the post-modernist that it is the language which speaks. The virtual reality is in fact the only reality. All that there is simulacrum and mimesis. That discovery, as one watches the endless succession of images that saturate the senses, is surely an occasion for aesthetic celebration that a modernist whose capacity for incredulity has reached post-modern dimensions cannot deny himself/herself.

The burden of Western history provides another ground. The Anglo-Saxon and continental philosophies from Locke to Bergson if not earlier refused to countenance the history of the 'other ' whether that other be men of different persuasions in their own societies or non-Western societies with their life-worlds or whether that other be Nature itself or whether that other be the pre-cognitive 'unrepresentable'(in the sense of that which does not admit of being represented while being the ground of all representations).The continental philosophies of phenomenology with its phenomenological-self and Marxism with its conflictual account of history, but both in their anthropological reading of Hegel, sought to appropriate the history of the 'other' by idolizing the figure of man as the central element in the historical process. However,the figure of man came to be seen peculiarly impotent to make history in a world in which personal intentions and actions appeared so feeble in comparison with modern age's great social and economic forces and in which the moral passion of Marxism had culminated in the Gulag and the phenomenological search for authentic being had ended in the Auschwitz. Western man's identity and character became increasingly less distinct. The Anglo-Saxon philosophy , in its refusal of the history of the 'other', is increasingly drifting towards the desperate doctrine of physicalism which seeks to reduce human history to natural history thereby denying not only the histories of non-Western men and their societies but also those of Western men and their societies. To claim that human history is the same as natural history is to assert that the distinctively human - the mental, the culturally formed forms of thinking, intending, acting, producing manifested in the life-forms of human societies - can be captured in the purely physicalist vocabulary of an yet to be completed science. On either consideration - the growing uncertainty in one's identity and character and the growing certainty about one's own incredulity about one's own subjectivity and intentionality in the era of assembly lines of computer controlled robotic machines - ascetic quietude towards self-incarceration in the prison-houses of post-modern knowledge in the most highly developed societies of the West is perhaps not such an incredible event.

We are born into a history that is always already made for us and die with a history to which we contribute in part. As constituted beings, we may never be able to escape the three great enclosures - philosophical, political and ethical -, erected by us, for us and, alas, against us in the flux of history. But as a species capable of thinking in a languaged way, while we must unceasingly construct and deconstruct those ever shifting enclosures even as we cannot escape

them, we may not put in jeopardy that which made that construction and deconstruction possible - thought's responsibility to itself, the ethics of thinking if you will. Thinking must always exhibit openness to difference, the as yet unthought thought. But it must also respect what exists beyond the pale of thought.

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Will Durant:

"Hindu Philosophy begins where European philosophy ends, with an enquiry into the nature of knowledge and the limitations of Reason."

Bearing in mind the Vedantha System of Shankara and not Nyaya-Vaiseshika or Samkhya, he continues "It starts not with the physics of Thales and Democritus, but with the epistemology of Locke and Kant. It takes mind as that which is most immediately known and therefore refuses to resolve it into matter known only mediately and through mind"

Einstein:

"Every one who is seriously involved in the pursuit of Science becomes convinced that a Spirit is manifest in the laws of the Universe - a Spirit vastly superior to that of man and one in the face of which we with our modest powers must feel humble."

Heisenberg (as narrated to his Student - physicist Jagadish Mehra) - 'Rabindranath Tagore' by K. Dutta and A. Robinson

"you know in the West, we have built a large, beautiful Ship. It has all the comforts in it, but one thing is missing; It has no Compass and does not know where to go. Men like Tagore and Gandhi and their Spiritual forbears found the Compass. Why not this Compass not be put in the Ship so that both can realise their purpose"

Central Concepts of Shankara's Advaita.

- Brahman is the only reality. - non-dual, Supreme Spirit, non-composite homogenous Consciousness.
- not an object of knowledge, but knowledge itself.
- It cannot be described in terms of other objects. because it is not composite, and is attributeless.
- It is self-manifest, Self-luminous.
- It does not need other instruments to make itself known.
- It makes known all other objects.
- There is no way of knowing Brahman except by Being it.
- All instruments can only negatively indicate that Brahman is not.
- The purpose of life is Brahman-knowledge - Brahman-Realization.
- Brahman is a unique type of absolute Consciousness which is neither Subject nor object.

- Brahman and the Universe :

Shankara does not accept that

(?)

(i) the universe was created by God
(ii) the universe evolved out of Prakriti or Nature.
(iii) the Lord transformed himself into the universe.

Shankara's Maya vada (Vivarta-vada)
One-sided theory of causation - the cause is independent of the effect. But the effect depends on the cause.

the faults, foibles and defects of the effect do not touch the cause.

- Shankara accepts a second metaphysical principle Avidya or Maya besides Brahman.
- Maya is not eternal, but is beginningless.
- Maya is co-eval with all experience.
- Maya has two powers: (i) to conceal Brahman and (ii) to project in its place an apparent world of plurality.
- The question why the Substrate (Brahman) appears as the Superimposed (Universe) is unanswerable. It is Maya that is responsible for this Superimposition. (Adhyasa)
- The world has no reality apart from its cause, which is the substrate on which the Superimposition appears.
- The world is not a dream, or phantasmagoria or a shadow-show.
- The world is objective and obeys the laws of morality and the laws of physical sciences.
- It is not real in the sense it does not exist a the world for ever.
- Because of the indeterminability in terms of the real and unreal it is anirvachaniya
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The Vyavahārika (transactional) and Pāramārthika (transcendental) levels:

In the practical day to day transactional level the Lord, the Souls and Īśvara (the Creator) are all real.
In the transcendental level, Brahman alone is real.

The Souls are called Jīvas - the empirical Selves ~~Self~~ of men.
Soul is the Complex of antaḥkaraṇa (internal organ) and Sākṣin (Awareness element)
The empirical Souls are many, but the transcendental Self is one.
Experience and knowledge are made possible because of the Sākṣin element in the Jīva.

- The Sākṣin element is present in all the three States - Waking, dreaming, sleeping.
- Sākṣin + (Avidyā) → Jīva (individual Soul)
- Īśvara = Brahman as seen in relation to the Lord, and epirical Souls. (The conditioning principle is Māyā)
- Māyā does not affect Brahman in any way. It is Brahman's own power. It is not apart from Brahman.
- Brahman is Īśvara in the Lord Context. Īśvara is the Creator of the Lord.

- The function of God (Isvara) in Advaita is significant:
  From the metaphysical point of view he is the substratum - the ground of the Universe.
  From the ontological point of view he is the object of Supreme meditation.

- Moksha: Brahman-Realisation is Moksha.
  Brahman-realisation is possible here and now
  Moksha is the birth right of all individuals.

- Authority of Vedas
  Shankara does not accept the entire Vedas as authoritative and as dealing with Spiritual truths.
  It is Reasoning which should determine which statement is meaningful, which initial passages are to be taken.
  He also examines the limitations of Reason.
  Reason can demonstrate, but not discover Ultimate Reality.
  He makes experience the final proof and Ultimate Criterion of things.

Indian philosophical tradition based on the Upanishads, that are part of the Vedas.
The four Mahavakyas (great sayings) of the Vedas are stated as follows:

• Prajnanam Brahma (Consciousness is Brahman)	Rig Veda	Aitreya Upanishad.
• Aham Brahmasmi (I am Brahman)	Yajurveda	Brihadaranyaka Upanishad.
• Ayam Atma Brahman (This Self is Brahman)	Atharva Veda	Mandukya Upanishad.
• Tat Tvam Asi (That Thou Art)	Sama Veda	Chandogya Upanishad

These four Vakyas convey the quintessence of Ultimate Reality by combining both one Brahman the divergent aspects of our daily experience I, Thou, Self, That, Consciousness – the active principles of the individual and the universe. The concept of Brahman is such that it transcends space, time, causation and the only characteristic, that of it may be called so, is Sat or existence.
There are many interpretation of the Vedas. One of them due to Sh. Shankaracarya, known as the Advaita School, (8th AD) has attracted similar to modern physics in looking at Reality from different frames of reference. The two main

In the above scenario of a universal substratum - from which even space, time, matter, radiation etc have emerged at different points of time and in which the substratum plays a major role in the various stages of evolution, particles, atoms, elements, compounds, stars, galaxies, biological evolution on planets like the earth, consciousness would be naturally regarded as emerging in one of the stages of biological evolution in the environments of individual brains. A crucial question is whether for that to happen the four known physical forces are adequate or whether there is need for yet another type of force which is ~~potentially~~ potentially hidden in the quantum vacuum and needs to be discovered by further research, in the same way as the weak and strong forces have discovered in the 20th Century through very elaborate and expensive research in cosmic rays and accelerators. It is also possible as already discussed that consciousness emerges as a result of coherent activity of neurons while the mathematics of quantum coherence is understood the precise physical mechanism is vague as is the case with many quantum phenomena. We have to remind ourselves the famous statement of Dirac that provision of pictures is not the aim of physical science.

Now that we have become familiar with the concept of a universal substratum for all activity in the universe, according to modern physics, let us look at a similar concept of oneness and a universal substratum that had been arrived at by an entirely different approach and is available to us as insights in some of the ancient oriental cultures. As a typical example, let us consider one school of

Frames of Reference for looking at Reality according to Advaita are

(i) the transactional (Vyavaharika)
(ii) the transcendental. (Paramarthika)

The transactual part of life is the one that is taken by all of us in our daily life. The world is Real. It is not a dream or fantasy, or an illusion. It is objective. Its experience is partial. From this point of view diversity is implicit in Brahman and becomes explicit after Creation. However, there is another part of life held by those who, by developing Spiritual mental powers, have been able to transcend the limitations posed by Space, time, Causation etc who Recognise a different level of Reality behind this transactual Reality and who realise the truth behind the Mahavakyas. From their point of view the only Reality is Brahman and they see Brahman everywhere and in everything - for them there is nothing but Brahman. They Recognise that they themselves are nothing but Brahman. It as much as by looking through more and more powerful microscope, he Recognizes that 99.999 % of even the densest substance he sees is nothing but empty space, and from modern physics he finds that this empty space is not just absence of everything is the potential reservoir of all the particles that go to make the universe, the profundity of the ancient insights can be gauged

Schrödinger : on the deficiencies of Science

Schrödinger had strong views on the deficiencies of Science. On this aspect he emphasized "Scientific picture of the world is very deficient. It gives a lot of factual information, puts all our experience in a magnificiently consistent order, but is ghastly silent about all and sundry that is really near our heart, that really matters to us. It cannot tell us a word about red and blue, bitter and sweet, physical pain, physical delight. It knows nothing of beautiful and ugly, good or bad, God and eternity."

Science sometimes pretends to answer questions in these domains, but the answers are often so silly that we are not inclined to take them seriously. So we do not belong to this material world that Science constructs for us. We are not in it. We are spectators. It allows you to imagine that the total display is that of a mechanical clock which for all that science knows could go on just the same as it does without there being consciousness, will, endeavours, pain, delight and responsibility connected with it, though they actually are. And the reason for this disconcerting situation is just this: that for purposes of constructing the world we have used greatly simplifying device of cutting our own personality out — removing it — hence it is gone - it has evaporated - it is ostensibly not needed"

Schrödinger: "External World" - "Vedantha."

"I get to know the external world through my sense perceptions. The same applies to every one else. The worlds thus produced are, if we allow for differences in perspectives, etc, very much the same. So that in general we use the singular 'world'.

But because each person's sense world is strictly private and not directly accessible to any one else, this agreement is strange.

Is it due to the existence of a world of bodies which are the causes of sense impressions and roughly produce the same impressions in every one?"

Schrödinger thinks that this not so.

"I have no hesitation in declaring quite bluntly that the acceptance of a really existing material world as an explanation of the facts that we find in the end that we are empirically in the same environment is mystical and metaphysical."

It is at this point, when he is considering the question of the reality of the external world that he refers to the philosophy of Vedantha and describes it as follows:

Schrödinger : On Vedantha.

" All living beings belong together in as much as we are in reality sides or aspects of one single being - which perhaps in western terminology be called God, while in Upanishads its name is Brahman. A comparison used in Hinduism is of the many almost identical images which a many faceted diamond makes of one subject such as the ~~Sun~~ Sun."

Having made this point about Vedantha, he emphasises :

" As presented in the Vedas, this idea is thickly overgrown with reference to bizarre Brahminic Rites and foolish superstitions as one can see who has recourse to the best available in German"

Schrödinger, however, comes back to the central theme of Vedantha with the following lines:

" But setting this aside, it seems to me that the really serious conclusion drawn by the Indian thinkers for this " doctrine of identity" are two (i) ethical to which we should gladly subscribe and (ii) eschetological which we must, I suppose, reject.

He condemns the ideas of cycle of birth and death, Karma

Description of nature is always given in terms of space, time, matter and energy.

Gravitational Force acts by virtue of the masses of particles — (Newton)

Einstein found that space, time, matter and energy are not independent of each other.

Gravitation according to E is not the interaction of the masses, but interaction between mass and the surrounding space.

- Einstein introduced Gravitation Repulsion at one time, but withdrew later

Einstein on Reality —

" When I compare all our theories to the reality, they are all trash. However, they are the most precious ones we have today.

and quantum theory to alter our concepts of object and causality. If we can learn to accept this ultimate absurdity, there may be hope for developing a formal approach that will permit a grand synthesis.

Further he says

"From the point of view of ~~evolutionary~~ evolutionary ~~biology~~ epistemology the principal lessons of both special and general theories of relativity is this "human beings are organisms capable of manipulating internal representations of the world by means of concrete operations and can transcend the bounds of their biologically given perception. They can liberate themselves and construct a view of reality that conflicts both intuition (easily accomplished mental operation) yet gives a truer more encompassing view."

Having familiarized ourselves with the Kantian view on oneness and its relation to consciousness, let us now turn now to some of the ancient Oriental insights on this question

The Yoga Vasista says:

Ekam vasu jagat sarvam
Cin-matram vastu ekam abadhitam
tad-eva spandate dhibhih
Suddha vastu eva vidhibhih

In a letter to ~~Sommer~~ Sommerfeld for his 60th Birth Day, Erwin Schrödinger, the famous quantum physicist wrote

" I do not believe that we can approach any understanding of the mind-matter problem on a dualistic basis. There is no reason at all for dualism.
Matter is construction from sense impressions and Representations [Vorstellungen] in a certain combination and that one calls an 'individual mind' consists of course of the same elements. It is the same material, merely comprehended in a different way.
In the first kind of comprehension the world is finally constructed, and in the second, the self. The world is certainly no dream, no phantasm and certainly the self is not merely a 'summation' of connected sensations in a peculiarly fluctuating sequence...
When I reflect carefully, two distinct things are not given to me at all. Both come to me uniformly from the same source. I find no incongruity in the flow, no separation of spiritual and material...
It is all the same substance.

Max Delbrück, the physicist turned biologist says
" The feeling of absurdity evoked by the question 'mind from matter'?, is perhaps similar to the feeling of absurdity with which we have learned to cope when we permit relativity theory to alter our intuitive concepts of time and space

Hindu Schools of Philosophy:

"Materialistic"

1. Charvakas - Lokayitakas of Brihaspati — 7th-6th Bc.
2. Samkhya - of Kapila — 6th-5th Bc.
3. Nyaya - of Gautama — 3rd. Bc.
4. Vaisesthika - of Kanada — 3rd. Bc.

These Recognized among other things

(i) Atomic nature of materials

(ii) Cause and Effect links → phenomena

(iii) Manifestation of the world at large is due to physical action and not through just ideas, magic, prayer

(iv) Did not believe in Supernatural forces

(v) Recognized Conservation principles of mass and energy — distribution of one with respect to the other.

(11) Complexity arises out of simple beginnings

(12) Hartle-Hawking Cosmology:

"There is a probability strictly less than 1 in $10^{10^{123}}$ and strictly greater than 0% of a Universe like ours coming into existence ex nihilo."

Grof and LSD Research

[of Prague, Czechoslovakia
Maryland Psychiatric Research Center.
John Hopkins University, School of Medicine.]

"I have concluded that the data from the LSD research indicate an urgent need for a drastic revision of the existing paradigms for psychology, psychiatry, medicine and possibly ~~in my mind the current understanding of the Universe~~ science in general. There is at present little doubt in my mind that our current understanding of the Universe, of the nature of reality, and particularly of human beings, is superficial, incorrect and incomplete."

* Stanislav Grof "Beyond the Brain"
(Albany, N.Y. State University of New York press 1985, p 31)

Founder along with A. Maslow → Transpersonal Psychology:

Transpersonal Experiences –

Consciousness transcends the customary boundaries of personality

"the feeling that all boundaries are illusory, the lack of distinction between part and whole, and the interconnectedness of all things – all qualities one would expect to find in a holographic universe"

In addition, the enfolded nature of space and time in the holographic domain explains why transpersonal experiences are not bound by the usual spatial and temporal limitations

Physics and Reality

Paul Davies:

"The philosophy that reality of the world is rooted in observation is akin to what is known as logical positivism. It seems perhaps alien to us because, in most cases, the world stu behaves as if it had an independent existence. It is actually only when we witness quantum phenomena that this impression looks untenable. Even then in their practical work many physicists continue to think of the microworld in a commonsense way." ....

"The reason for this is that many of the purely abstract mathematical concepts become so familiar that they assume a spurious air of reality in their own right. - example "Energy" - a merely mathematical concept that connects observations."

"What Bohr's philosophy suggests is that words like electron, proton, atom should be regarded in the same way as useful models that consolidate in our imagination what is only a set of mathematical relations connecting observations."

(* This is true of Vedanta too. Many superficial Vedantins speak of 'Maya' and 'Avidya' as if they are relations existing in their own right"

Physics and Reality

Einstein:

"Matter which we perceive is merely nothing but a great concentration of energy in very small regions. We may therefore regard matter as being constituted of space in which the field is intense ... Field is the only reality.

Heisenberg:

"In spite of the tremendous success that the concept of atom has achieved in modern science, Plato was very much nearer to truth about the structure of matter than Leucippus or Democritus

Leucippus:

Democritus: World is nothing but atoms moving in the void.

[When the Greeks discussed laws of nature, their thoughts were directed to static forms, geometrical symmetries rather than space and time. The circular orbits of the planets, the regular geometric solids appeared to be permanent structures of the world.]

"I think that on this point modern physics has definitely decided for Plato. For the smallest units of nature are in fact not physical objects in the ordinary sense of the word; they are forms, structures or in Platos sense Ideas, which can be unambiguously spoken of only in the language of mathematics"

Oneness

Heisenberg:

"Democritus and Plato both had hoped that in the smallest units of matter they would be approaching the "one" — the unitary principle that governs the world. Plato was convinced that this principle can be expressed and understood only in mathematical form"

Pauli

"To us ... the only acceptable point of view appears to be the one that recognises both sides of reality, the quantitative and the qualitative, the physical and psychic as comparable with each other and can embrace them simultaneously ... It would be most satisfactory if all physics and psyche / matter and mind) could be seen as complementary aspects of the same reality."

"But contrary to the strict divisions of activity of the human spirit into separate departments — a division prevailing since nineteenth century — I consider the ambition of overcoming the opposites, including also a synthesis embracing both rational understanding and mystical experience of unity to be the myths spoken or unspoken of our present day age"

Reality

David Bohm:

"Underlying the apparently chaotic realm of physical appearances – the explicate order – there is always a deeper hidden implicate order. Implicate order is the quantum potential – a field consisting of fluctuating pilot waves. The overlapping of these pilot waves generates what appears to us as particles which constitute the explicate order. Even such seemingly fundamental concepts as space and time may be merely explicate manifestations of some deeper implicate order"

"What underlies all is unknown and cannot be grasped by thought"

John Boslough calls this the Big Bang Mythology (Mathematical Mythology) and describes it as follows:

"At first there was nothing - no time, no space, not even emptiness, only a void beyond voids, a place that was no place, without colour, without shape, or substance, without passing a single moment or a prospect of eternity.

From this pure nothingness sprang a speck of chaos, a seed ~~of Something~~ seething with such raw energy that the thought capable of contemplating it has not yet been formed.

Within this speck of vibrating energy still many times ~~tinier~~ tinier than an atom were the dimensions of time and space although these concepts were then meaningless. There was no now, then and will be; no here, no there. The infinitisimal cosmos began to expand. As it grew it cooled and its energy dissipated. Almost at once one of the forces ranging within it seperated from the rest. Some pairs of particles capable of existing only in such extreme conditions flashed in and out of existence, colliding with each other in a shower of annihilation.

Suddenly the infant cosmos erupted from subatomic proportions to the size of a cantelope. Within a second, it was as big as Solar System, a

Crucible of matter and energy denser than a Star. Pure energised light blazed throughout the young Universe. As it grew and cooled, flying particles began coalescing into larger structures of hydrogen atoms, which eventually swirled into immense clouds of billowing gas.

Epochs passed. The Universe expanded. Its blazing light faded into darkness. A million years then a billion came and went. All at once millions of stars began emerging from the swirling clouds of hydrogen gas. Galaxies appeared, then more stars other worlds perhaps, Earth, Life and People."

(Searle)

The activities of our mind cannot consist in mental states so to speak, right down to the ground.

Any intentional state functions against the background of intentionality (many other intentional states) (network) - background of capabilities.

- Mental states that cause our behaviour may be unconscious

—

Mind-brain gap - is there a gap to fill?

Searle - No gap at all!

"Because we do not understand the brain very well we are constantly tempted to use the latest technology as a model for trying to understand."

- Brain is a computer. Mind is the hardware.
- Intelligence is just a matter of symbol manipulation. No essential connection with biological or physical hardware.

—

Searle: Mental states are biological phenomena. Consciousness, intentionality, subjectivity, and mental causations are all part of our biological life history, along with growth, reproduction, the secretion of bile and digestion.

Minds, Brains and Science.
John Searle
Penguin ~~Pelican~~ Books (1984)

How can it be that the world consists of unconscious particles and at the same time it contains consciousness?

Meaningless world → Meaningful beings (?)

Mind: (1) Consciousness
(2) Intentionality (Intentions, desires, beliefs, hopes, fears, love, hate, lust, disgust, shame, pride, irritation, amusement)

How can states of the mind represent objects?

(3) Subjectivity of Mental States. – I.

How can we accommodate the subjective reality with objective reality?

(4) Mental Causation –
Our thoughts, feelings... have some causal effect on the physical world.
Mental → physical (how?)
How do our thoughts provoke chemical effects?

From Subtle is the Lord — Abraham Pais — NIAS

E: "Do you believe that moon exists only if you look at it?
to exist — that is the meaning for inanimate objects.

P: Why does this man, who contributed so incomparably much to the creation of modern physics, remain so much attached to 19th. Century ideas of Causality?

E: Quantum Mechanics — only provisional in Character. —

(Der Mann ist ein Narr: that man is a fool)
X - could calculate. but not think)

P: The advent of Quantum Mechanics in 1925 represented a far greater break with the past than had been the case with the coming of Special Theory of Relativity in 1905 and of general Relativity in 1915. I belong to a generation of "Ready made QM".

E to Otto Stern: "I have thought a hundred times as much about Quantum Mechanics Problems as I have about General Theory of Relativity"

E: "The Scientist must appear to the Systematic epistemologist as a ~~typical~~ type of opportunist: he appears as a realist in so far as he seeks to describe a world independent of acts of perception; as an idealist in so far as he looks upon the concepts and theories as the free inventions of the human Spirit (not logically derivable from that is empirically given); as a positivist in so far as he considers his concepts and theories ~~as the free inventions~~ of justified only to the extent to which they furnish a logical representation of relations among sensory experiences. He may even appear as a platonist or pythagorean in so far he considers the high point of logical simplicity as an indispensable and effective tool of his research."

E: The more primitive the Status of Science is, the more readily can the Scientist live under the illusion that he is a pure empiricist.

E: "We now know that Science cannot grow out of empiricism alone that in the construction of Science we need to use free invention which only a posteriori can be confronted with experience as to its usefulness. This fact could elude earlier generations to whom theoretical creations seemed to grow inductively out of empiricism without the creative influence of a free construction of concepts. The more primitive the Status of a Science is the more readily can the Scientist live under the illusion that he is a pure empiricist. In the Nineteenth Century many believed that Newtons 'fundamental rule' "Hypotheses no fingo" (I make no hypothesis) Should underlie all healthy natural Science".

Causality NEWTON's theory: If you give precise position and velocity of a particle at a given instant and if you know all the forces acting on it, then you can predict for Newton's laws the precise position and velocity at a later time.

Quantum theory implies however that I am unable to give the information about position and velocity with ideal precision, even if I have the most ~~ideal~~ perfect instrument at my disposal.

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E's attitude towards QM was one of Skepticism

"It seems hard to look in God's Cards. But I cannot for a moment believe that He plays dice and makes use of 'telepathic' means as the current quantum theory alleges He does"

Is QM Consistent?

Bohr's theory of Complementarity: (1927)

The very nature of quantum theory ... forces us to regard the space-time coordination and the claims of Causality the union of which characterises the classical theories, as Complementary, but exclusive features of the description, Symbolizing the idealization of observation, and definition, respectively

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NIELS BOHR'S Times, in physics, philosophy and polity

BY Abraham Pais

p424 Bohr:

(1) Measuring instruments must always be treated classically, the Choice of measuring instruments determines the extent to which objects to be observed exhibit particle or wave behaviour; these two modes of manifestation are not Contradictory - but Complementary

(426)

(2) " The unambiguous interpretation of any measurement must be essentially framed in terms of the classical physical theories and we may say in this sense the language of Newton and Maxwell will remain the language of physics for all time"

(3) "There is no Quantum World. There is only an abstract quantum physical description. It is wrong to think that the task of physics is to find out how Nature is. Physics Concerns about what we can say about Nature"

The EPR Paradox (1935)

Definition: "If without in any way disturbing a System we can predict with Certainity (with Probability = 1), the value of a physical quantity, then there exists an element of reality — physical reality corresponding to this physical quantity. Every element of physical reality (Objective) must have a Counterpart in a physical theory. We shall call this the Condition of Completeness

Example: Two particles with respective momentum and position Variables (p_1, q_1) and (p_2, q_2) are in a State with definite total momentum P, definite relative position $q = (q_1 - q_2)$. This of course is possible since P and q Commute. The particles are allowed to interact. Observations are made on ~~part~~ particle 1 long after the interaction. Measure p_1 and one knows p_2 without having disturbed particle 2. Therefore (in that language) p_2 is an element of reality.

Next measure q_1 and one knows q_2 again without disturbing q_2. Therefore q_2 is an element of reality. But Quantum Mechanics tells us that p_2 and q_2 cannot simultaneously be elements of

Reality because of the non-commutativity of the momentum and position operators of a given particle. Therefore Quantum Mechanics is incomplete

(3) "One would not arrive at our conclusion if one insisted that two.... physical quantities can be regarded as simultaneous elements of reality only when they can be simultaneously measured or predicted.

(4) This (simultaneous predictability) makes reality of p_2 and q_2 depend on the process of measurement carried out on the first system which does not disturb the second system in any way

No reasonable definition of reality could be expected to permit this.

(Pais) Not a Paradox.
EPR simply and correctly concluded that their definition of objective reality is incompatible with the assumption that quantum mechanics is complete

Bohr did not believe that EPR paper called for any change in the interpretation of quantum mechanics.
" We are, in the "freedom of choice" offered by EPR, just concerned with a discrimination between different experimental procedures which allow of the unambiguous use of complementary classical concepts"

Bohr and "Phenomenon"

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Classical: "Phenomena" may be observed without disturbing them.

1929 : "The finite magnitude of the quantum of action prevents altogether a sharp distinction being made between a phenomenon and the agency by which it is observed.

(1938) Sharpened his language
"phenomenon" includes both the object of study and the mode of observation.

phenomenon ≡ the comprehension of the effects observed under given experimental conditions

(1949) Warsaw Statement

phenomenon = observation obtained under specified circumstances, including an account of the whole experiment.

=

Einstein's objections

In contrast to the view that the notion of 'phenomenon' irrevocably includes the specifics of the condition of experimental observation, Einstein held that one should seek for a deeper-lying theoretical framework which permits the description of phenomena independently of these conditions. This is what he meant by "objective reality"

‡ ‖ Quantum Mechanics is logically consistent, but it is an incomplete manifestation of an underlying theory in which an objective real description is possible = he maintained this position till his death

Complementarity : This development has essentially
(Bohr) clarified the conditions for an objective
account in atomic physics, involving the
elimination of all subjective judgments.

"Complementarity" : a new kind of Relativity

" our interpretation of the experimental material
rests essentially on classical concepts" Bohr. 1927.

p309

There exist Waves and Particles.
Bohr loved not like to say that Nature imitates the
mathematical Scheme, Nature does only things which
fit into mathematical Scheme

Complementarity – given titled by Bohr in 1927.
– Relation between the Wave and Particle picture

Heisenberg's Stand :

- QM should be founded exclusively on relations between quantities that are in principle observable.
- There exists limitations of principle on what is observable in the Region when Quantum Effects are important.
- We have to abandon (therefore) the Concepts of Waves and particles – our classical words do not fit the quantum Region.

Bohr Our interpretation of experimental material
rests essentially on classical Concepts.

Interpretation of experimental data:

In classical era one verified the validity of theories by comparing them with experimental observations made with balances, thermometers, voltmeters etc. In the Quantum era, theories have been modified, but their validity continues to be verified by the same readings of balances, thermometers, voltmeters etc.

- Detectors should be treated as classical objects
- Their readings continue to be described in classical terms

The concept of observation is in so far arbitrary as it depends on which objects are included in the system to be observed.

In classical context: the question whether an electron is a wave or particle is a sensible question. This is meaningless in QM.

In Quantum Mechanical Context: Does the electron behave like a particle or like a wave? - is the valid question.

An independent reality in the ordinary (that is classical) physical sense can be ascribed neither to the phenomena nor to the agencies of observation

Extended applications of "Complementarity"

Psychology: 1929 Bohr.

" The fact that Consciousness as we know it, is inseparably connected with Life ought to prepare us for finding that the very problem of the distinction between the living and the dead escapes comprehension in the ordinary sense of the word. That a physicist touches upon such questions may perhaps be excused on the ground that the new situation in physics has so forcibly reminded us of the old truth that we are spectators as well as actors in the great drama of existence

" In order to describe our mental activity, we require on the one hand, an objectively given content to be juxtaposed to a perceiving object, while on the other hand, no sharp separation between object and subject can be maintained since the perceiving subject also belongs to our mental content."

Biology "Light and Life" — Aug 1932.

Q: Would it be ever possible to push the analysis of living processes to the limit when they can be described in terms of pure Physics and Chemistry ?

Some biologists hold the view : No proper understanding of the essential aspects of life is possible in purely physical terms. — the Vitalists

Bohr: It is obvious that one would find no "features foreign to inorganic matter" by pushing the analysis of the constituents of living organism to molecular/atomic levels

It must be kept in mind, however, that the conditions in biological and physical research are not directly comparable, since the necessity of keeping the object alive imposes restrictions on the former. (living things) which find no counterpart in the latter.

|| The very existence of life must in biology be considered as an elementary fact, just as in atomic physics the existence of the quantum of action has to be taken as a basic fact that cannot be derived from ordinary mechanical physics

|| Indeed, the non-analyzability of atomic stability in mechanical terms presents a close analogy to the impossibility of physical or chemical explanation peculiar to the characteristics of life

"We are neither speaking of any such attempts of tracing an analogy to life in simple machinery nor of the old idea of a mystic life force, but of the approaches which only together exhaust the possibility of increasing our knowledge. — This is the lesson

|| derived from the progress in atomic physics concerning the logical aspects of man's position in existence

Bhar's position had to change after the discovery in 1953 of the structure of DNA and of the

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physico-chemical processes of biological replication initiated by that specific molecule.

After that all references to vitalism vanish, but complementary remains.

"In 1958" → A description of the internal functions of an organism and its reaction to external stimuli require the word "purposeful" — which is foreign to physics and chemistry --- attitudes termed mechanistic and finalistic are not contradicting points of view but rather exhibit complementary relation

(Complementarity) shifted from mechanistic vs vitalistic to mechanistic to teleological

(In 1959) "There appears to be no reason to expect any inherent limitation of the application of elementary physical and chemical concepts to the analysis of biological phenomena.

"Light and Life revisited."

(In 1962 — final verdict of Bohr) No reference to complementarity

Life will always remain a wonder.

What changes is the balance between the feeling of wonder and the courage to try to understand.

Evolution and Mutual interplay of Cultures:

Complementarity of instinct and reason:

The amazing capacity of primitive people to orient themselves in forests or deserts might justify the conclusion that such feats are possible when no recourse is taken to conceptual thinking. Their capacities are on a par, he thought, with those of animals who 'know' how to find their way over extraordinarily large distances.

"Such considerations ~~is evident~~ Is every child born with a predisposition for adoption of a specific human culture? Can any culture be implanted? Anthropological traits and spiritual traditions are independent.

Different human Cultures are complementary to each other Hardly any culture exists which is self-contained.

Conquest → Creation of new Cultures

Language

"We depend on our words. We are suspended in language. Our task is to communicate experience and ideas to others. We must strive continuously to extend scope of our descriptions, but in such a way that our message do not thereby lose their objective or unambiguous character."

"A new born baby can hardly be reconciled as a human being."

"Our task is not to penetrate into essence of things, the meaning of which we don't know any-way but rather to develop concepts which allow us to talk in a productive way about phenomena in Nature"

Self-Energy Problem

Pais → The Renormalization programme developed shortly after World War II had made possible to shunt this difficulty aside. This is not an issue on which to this day the last word has been said, however.

QED

~~Bohr to Pauli~~ "

Bohr to Gamow: "I hope it will comfort Lamb and Peierls that the stupidities they have committed in this respect are no worse than those which we all (including Heisenberg and Pauli, have been guilty of in this controversial subject"

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Planck's discovery: Einstein: This discovery (i.e. quantum theory) set science a fresh task - that of finding a new conceptual basis for physics

Seminar on
PHILOSOPHICAL CONSCIOUSNESS AND SCIENTIFIC KNOWLEDGE:
CONCEPTUAL LINKAGES AND CIVILIZATIONAL BACKGROUND

Centre for Studies in Civilizations, New Delhi March 1-3, 2002.

CONSCIOUSNESS: PHILOSOPHICAL & SCIENTIFIC ISSUES

Satya P. Gautam
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Folk-language version: " I have a vivid memory of my fifth birthday party."
Neuro-language version: " A strong resonance in my 8th peristratial cortex levels is reactivating an earlier bio state with a cognitive temporal verbal coding of ' fifth birthday party'."
Folk-language version: "You have some strange ideas."
Neuro-language version: " You have some abnormal levels of glucose consumption in your forebrain."
Richards, G. " On the necessary survival of folk psychology"

Consciousness is the most obvious and intimate feature of our being human. As we grow up, we become directly aware of our experiential, reflective and active capacities. Awareness of the world and an awareness of one's own self are two facets of human consciousness. Human consciousness, thus, includes experiences of the external world as well as an awareness of one's own mental states. However, we become so habitual to perform very many complex tasks without any conscious awareness of doing them. Many illustrations from everyday life, such as going for a walk, brushing one's teeth, driving for work and so on, can be cited. This situation tempts many to hold that consciousness serves no function at all in human activities as it is merely an epi-phenomenon of the neural processes in the brain. But our everyday experiences contradict the epi-phenomenalist position as we continue to experience our mental realm as a unified whole.

The nature, meaning and basis of our consciousness has been a subject of interest and curiosity in all civilisations and cultures since the very dawn of our humanity. Much of religious, philosophical and literary

writings have addressed the questions concerning the meaning and goals of human existence from different perspectives. However, contemporary trans-disciplinary interest in the study of consciousness extends beyond the traditional spheres of religion, philosophy and psychology to disciplines as diverse as artificial intelligence, information theory, neuro-biology, psychopharmacology and physics. Yet, consciousness remains one of the greatest mysteries as philosophical and scientific debates and discussions on the subject are full of conflicting characterisations and conceptual confusions. There may be little agreement among us as to what consciousness is, yet most of us would agree that we are conscious and chairs, tables, rocks, mountains, stars, clouds and rivers are not conscious.

Webster's Dictionary lists 12 different meanings and the *Oxford English Dictionary* lists 7 entries for the term 'consciousness'. The answers to the question "What is consciousness?" vary in terms of one's theoretical orientation, metaphysical presuppositions and conception of knowledge. The question is both familiar and perplexing. The familiarity stems from the fact that the question concerns our very being. The perplexity lies in the incompleteness of our understanding of our selves and the modes, levels, degrees and states of our consciousness. A little reflection and care makes it abundantly clear that we are far away from knowing ourselves than we think. The more we discover about ourselves, the more perplexed we may become about who and what we are unless we come to terms with ourselves. Coming to terms involves a quest for the identity, unity and wholeness of oneself.

There is a lot about consciousness that we still do not understand. How to draw a clear line between the realm of the conscious and the mental? How is it possible for the brain, a biological organ, to be conscious at all? How is it possible for a living organism to be aware of itself? How do we become capable of reflecting upon our own conditions and circumstances and evaluate them for future choices and decisions? How do we become capable of feeling sorrow, grief, love, joy, bliss and remorse? Are the other organisms capable of experiencing like us? Can

computers become conscious? These questions continue to get attention, and divergent answers are the sources of great debates in philosophy of mind.

According to the *Encyclopedia of Psychology*, " Consciousness is the subjective state of being currently aware of something, either within oneself. In this case, being aware or having awareness refers to cognisance or knowing. Consciousness is always about something. ...Consciousness has contents. The contents of consciousness may include perceived objects and events, retrieved memories, thoughts in words or mental images, bodily sensations, emotional feelings and desires, and our own actions." (Vol. 2, p.268). This characterisation of consciousness uses a storage metaphor, as if consciousness is a vessel or a container in which the contents are located. William James had used the metaphor of 'Stream of consciousness' to underline the dynamic character of consciousness. Many such metaphors have been in vogue. These metaphors provide insights into some feature or the other but also miss or neglect some other salient feature. For a proper study of consciousness, we must recognise clearly that consciousness is not a homogenous, monolith but a multi-dimensional, multi-faceted, multi-layered, multi-level phenomena. In not doing so, the distinctive functions of analytical or the holistic mode of consciousness are neglected in our study. The analytic mode involves viewing in sequence the parts of an object. The entities and events, that we notice, can be selected and analysed into orderly linear sequences. Valid inferences can be drawn from such systematic and precise selections and constructions. Ordinarily, this is how we organise and structure our experiences. Analytic mode, in which there is a separation of objects, and the self from others, has proved useful in individual biological survival and growth of scientific knowledge. To survive individually, human beings engage in active manipulation of their environment. This is geared to the consciousness of external events, their analysis, linearity and causality. It is necessary for planning into the future by taking past history into account. In contrast to the analytical mode, the holistic mode involves the comprehension of the

whole at once. Sometimes, we instantly view a complete pattern dawning on us in a single stroke. Such a unified perception of the totality is the working of the holistic mode. The holistic mode, like the analytical mode, is a part of our everyday life experiences. The consciousness of 'unity' or 'oneness' is perhaps the most fully developed form of this mode of experience. It is comprehensive, rather than fragmented. In the western intellectual history, these two modes of consciousness were separated. The analytical, verbal, linear and rational mode of consciousness was appropriated by modern science resulting in a neglect and devaluation of the non-verbal, non-rational, intuitive modes of consciousness. Modern Science is the very highest development of the analytic mode. Radically restricting the conditions of observation in order to achieve optimal precision, identifying causes and effects, modern science constitutes a very specialised development of human consciousness. Science as a mode of knowledge demands a limitation on inquiry. The essence of a good experiment is successful exclusion. One variable may be manipulated while a very few others are measured. But this method, though highly useful for the study of physical and biological phenomena, led to a very restrictive approach towards the study of human consciousness. To understand the limits of this approach, it would be helpful to refer to the historical context of the genesis and evolution of psychology as a 'scientific discipline'.

Wilhelm Wundt and Titchner launched the new enterprise of psychological research. Psychology was defined, for the first time, an independent field of study, separate from philosophy, biology and physiology. Consciousness, mental events and processes, feelings, perceptions, thoughts and recollections constituted the subject matter of psychology. It was obvious to Wundt and Titchner that there is no way for you to experience my thoughts, wishes, desires and feelings or for me to experience yours. Only you can experience your thoughts and feelings as I can do mine. They concluded, therefore, that only way to study conscious experiences is to make each of us to 'look within', to observe and record the sequences of our own experiences, which constitute our

mental lives. Initially, this style of experimental research was quite influential in the genesis of psychology as an experimental science. But the modern science insists on some method of testing its assertions, of confirming or disconfirming its claims, some way of resolving disagreements. For doing science, we need objective, repeatable observations, observations that we can count on. Science would not admit evidence that is not accessible to public scrutiny. It should be possible for me to inspect your evidence and for you to check mine. The method of introspection does not provide for the testability of the claims and, therefore came under strong criticism from the votaries of scientific method in psychology. The concern for restricting psychological investigation to observable public data resulted in the abandoning of introspection as a method of research in psychology.

It is obvious that my wishes, desires, beliefs, thoughts, and my intentions cannot be directly observed and objectively recorded through observation. Therefore, as a scientific discipline, psychology had to steer clear of the possibility of any speculative discussion of such **unobservable mental phenomena.** Restricting Psychology to the domain of the observable led to the emergence of the behaviourist approach. The others may not be able to watch my beliefs, wishes, desires, thoughts and intentions but they can definitely observe my behaviour and actions. No wonder, consciousness and mentalist discourse were exiled from the behaviourist psychology as data concerned with observable behaviour was the only 'objective' data available for study. Behaviourist Psychologists began to ignore, even to deny, the very existence of consciousness, as it did not fit into the dominant scheme of scientific research. But it did not take long to recognise that a great deal of what human beings do could not be adequately described and explained in terms of observable behaviour. The critics of behaviourism pointed out that when a human being responds to some stimulus from the environment, the response is invariably guided by the individual's understanding of the situation and significance of that stimulus. Without considering a *respondent's understanding* of the situation, stimulus and

response, it may not be possible to provide an appropriate and adequate description of the behaviour of the concerned individual. This serious limitation spell trouble for the behaviourist's approach in psychology. There is no way in which the teleological model of understanding goal-oriented activities can be replaced by a causal model consisting of descriptions of sensory events and bodily movements connected by law-like generalisations. The principal forms of behaviourism turned out to be inadequate to the task of an empirical psychology. Behaviourism proved incapable of eliminating mental terms at either the descriptive or explanatory level. In striving for the *scientific objectivity*, the behaviourists had sought to exclude invisible mental entities, which could not be done away with if we wanted to study human behaviour as human behaviour. We seem to be nearing an impasse. If we wish to describe, explain and predict human behaviour, we need to make reference to the mental life, the realm of perceptions, feelings, desires, understandings and intentions, of the person concerned.

The moral of the story is that if we wish to talk about consciousness in any significant manner, we cannot begin by doing away with the very concepts, which enable us to describe the functions, levels and modes of consciousness. Jonathan Shear has rightly pointed out that "Throughout human history there have been recurring reports of a group of remarkable experiences of what we can call the deep structures of consciousness. ...The major intellectual, aesthetic and spiritual traditions of Asia have for centuries held them to be central to the attainment of intellectual, aesthetic, moral and spiritual maturity. ... our modern western intellectual tradition, with its emphasis on scientific method and free, repeatable access to data, has until recently not paid much attention to them." (*The Inner Dimension*, p.1). A shift toward a comprehensive consciousness of the interconnectedness of life by adopting the holistic approaches available in the eastern psychologies can be a step in the right direction. Perhaps we can begin to see the significance of the complementary mode of consciousness where not the contents but its context and activities characterise its vividness and richness. For a philosophy of

consciousness, the main lesson from the limits of the scientific approach should be to make us recognise clearly that more than one ways of knowledge are possible. These different ways need not be competing modes. They can be mutually supplementary. As the proverbial story goes, each blind person touching only a part of the elephant can make his own limited analytic assessment of the situation but we cannot understand the nature of the elephant by combining these partial reports in any conceivable proportion. Without the development of an overall perspective, we remain lost in atomistic investigations. Such a perspective may seem strange in the province of the scientistic, *not* scientific, aspiration of limiting knowledge exclusively to the analytic mode. Our distinctively human achievements have been possible due to complementary functioning of the analytical and holist approaches. Our intuitive knowledge is never explicit, never precise in the scientific sense. It is time to utilise the synthetic, holistic categories of eastern philosophies of consciousness to make psychology return to its primary task – an examination of conscious experiences from a holistic perspective. The ability to reflect on our own mental states, in their unity and totality, with the help of categories available in the Indian traditions can open new possibilities of self-understanding and self-development. This self-understanding would be an outcome of a personal exploration for each witness of the self in harmony with the cosmos. This may be achieved by relinquishing the attitude of "each man for himself" inherent in the modern view of consciousness. Self-knowledge is that inner change or transformation of a self wherein a person finds himself. The self that we come to find is the way for one to be authentic. It is in this discovery that one realises oneself as one drops one's pretences, ceases to deceive oneself, one moves towards greater 'truth' by coming to be true to oneself. But this transformation is only evident in the changed pattern of life and not necessarily shown through self-proclamations of transformation. This shift towards a journey into the interior may enable us to arrive at a holistic perspective of unity of humanity missing in the modern, utilitarian, individualist, instrumentalist perspectives.

Views on Reality: Let us list some of the statements that have been made by some of the leading scientists on this subject.:

"The philosophy that reality of the world is rooted in observation is akin to that is known as logical positivism. It seems perhaps alien to us because in most cases, the world still behaves as if it had an independent existence. It is actually only when we witness quantum phenomena that this impression looks untenable. Even then in their practical work many physicists continue to think of the microworld in a common sense way." The ~~Paul Davies~~. reason for this is that many of the purely abstract mathematical concepts employed become so familiar that they assume a "spurious air of reality" in their own right — "Energy" is a good example of this - merely mathematical concept that connects observations.

What Bohr's philosophy suggests is that words like electron, proton, atom should be regarded in the same way - as useful models that consolidate in our imagination that is only a set of mathematical relations connecting observations." Paul Davies.

In Quantum Mechanics there is no material reality except at the time of observation.

Man is not a mere spectator to some vast cosmic clock work nor trivial cog in a machine whose every action is preordained. Man might be an active and vital player in determining what is real.

Conscious mind is crucially involved in establishing what is real.

"That which reaches our senses is at best a confusion of phantasmal energies - not sights, sounds, or any coherent qualities that we project on to the physical world. Until that mental construction takes place, reality must wait in the wings."

The wave function of a particle, a purely mathematical thing, is the only reality there is until observation takes place. (Wheeler)

All knowledge of reality starts from experience and ends in it. (Einstein)

Experience remains, of course, the sole criterion of the physical utility of mathematical construction. But the creative principle resides in mathematics. In a certain sense therefore, I hold it true that Pure thought can grasp reality as the ancients dreamed

Einstein.

In spite of the tremendous success that the concept of the atom has achieved in modern science, Plato was very much nearer to the truth about the structure of matter than Leucippus or Democritus. .... For the smallest units of nature are in fact no physical objects in the ordinary sense of the word; they are forms, structures or in Plato's sense Ideas which can be unambiguously spoken of only

in the language of mathematics.
Democritus and Plato both had hoped that in the smallest units of matter they would be approaching the "One" - the unitary principle that governs the world. Plato was convinced that this principle can be expressed only in mathematical form. Heisenberg

The world is a construct of our sensations, perceptions, memories. It is convenient to regard it as existing objectively on its own. But certainly does not become manifest by itself by mere existence.

Erwin Schrödinger.

The stuff of the world is Mind-stuff. The mind-stuff is not spread in space and time. Recognizing the entire world is abstract and without "actuality" apart from linkage to consciousness, we restore to consciousness a fundamental position

Eddington.

Consciousness and Matter are different aspects of the same reality

Von Weizsäcker

To us.. the only acceptable point of view appears to be the one that recognises both sides of reality, the quantitative and the qualitative., the

physical and the psychic, as comparable with each other and can embrace them simultaneously ---- It would be most satisfactory if all physics and psyche could be seen as complementary aspects of the same reality Pauli.

Matter which we perceive is ~~merely~~ merely nothing but a great concentration of energy in very small regions. We may therefore regard matter as being constituted of space in which the field is intense -- Field is the only reality. ... Einstein

Chance and Determinism :

Common sense tells us that every event has a cause and nothing can happen without a cause. This conviction and experience is so strong that many a time if we do not find the cause, we feel that there could be hidden reasons for our not seeing it rather than there being no cause at all. Much of philosophy and science is also based on the same hypothesis— "Though unknown, everything has a cause"

Among the philosophers, the realists hold that the cause of any effect is physical and not mental. The empiricists are of the opinion that cause and effect are really there in the world and the basis for this belief is our experience.

In classical physics both the formulations of the Newtonian dynamics, Maxwell's Electromagnetic equations and Einsteins theories of Relativity, it was thought that the past, present and future of every event can be calculated. The real difficulties were however the inadequacy of the initial information and the precise values of the physical Constants that were part of these equations and more importantly the difficulties in the finding analytical Solutions in the Case of many body interactions. To overcome Some of these problems Statistical methods were introduced both Remarkable Success Since meaningful and experimentally Verifiable probability distributions could be introduced.

Probabilistic Reasoning has become an integral part of modern Science. To illustrate, Consider the question of the Composition of the Sun or any Star. This is determined by a Comparison of the Spectral lines of the Star both those of various excited elements in the Laboratory & The temperature, pressure and Composition is determined this way using the famous equation of the Indian physicist, Meghnath Saha. One can never hope to go and determine these parameters directly. The probabilistic Reason is the only way out and this has worked very well in the advancement of the three field of astronomy, despite lack of absolute Certain knowledge.

Sometimes it so happens that several alternative hypotheses present themselves to explain a particular observation. In such situations, the <u>simplicity postulate</u>, also known as the Occam's Razor, has proved to be most valuable guiding principle. Nature seems to adopt this principle. But how to define what is the simplest among many alternatives for a judgement is involved.

Among the infinite alternative paths that are available for a beam of light to pass from point A to point B, the one that consumes least time and least action is the one chosen by the beam. Principles of least time and least action were formulated by Hero and Fermat in the 18th. Century.

From "Holographic Universe" Michael Talbot. (1)

David Bohm:

"The conceptual pigeonholes we use to parse out the universe are of our own making. They do not exist "out there" for "out there" is only indivisible totality, Brahman."

—

Put another way it suggests that our world and everything in it from snowflake to maple trees to falling stars and spinning electrons - are also only ghostly images, projections from a level of reality so beyond our own it is literally beyond both space and time

Michael Talbot 'Holographic Universe'

"Our thoughts are much more intimately connected to the physical world than I'd ever suspected."

David Peat page 3. in HU.

"In the last several decades, a remarkable body of evidence has accrued suggesting that our current understanding of reality, the solid and comforting bricks-and-stones picture of the world we all learned about in high-school science is wrong" Talbot. p5.

Behaviour of electrons in a plasma.

To his amazement, Bohm found that once they were in a plasma, electrons stopped behaving like individuals and started behaving as if they were part of a larger and interconnected whole. Although their individual movements appeared random, vast numbers of electrons were able to produce effects that were surprisingly well-organized. Like some amoeboid creature, the plasma constantly regenerated itself and enclosed all impurities in a ball in the same way that a biological organism might encase a foreign substance in a cyst.

"Electron sea was alive?"

Erwin Schrödinger:

(1) In a letter to Sommerfeld for his 80th. Birth Day.

" I do not believe that we can approach any understanding of the mind-matter problem on a dualistic basis. There is no reason at all for dualism.
Matter is a construction from sense impressions and representations [Vorstellungen] in a certain combination and what one calls an 'individual mind' consists of course of the same elements. It is the same material, merely comprehended in a different way.
In the first kind of comprehension the world is finally constructed, in the second, the self.
The world is certainly no dream, no phantasm, and certainly the self is not merely a 'summation' of connected sensations in a peculiarly fluctuating sequence .... When I reflect carefully, two distinct things are not given to me at all. Both come to me uniformly from the same source. I find no inhomogeneity in the flow, no separation of spiritual and material ... It is all from the same substance.

John Archibald Wheeler: Participatory Universe.

" The languages of Eastern Mystics and Western Physicists are becoming Similar"

" May the Universe in some Strange Sense be brought into being by the participation of those who participate !

The vital act is the act of participation. 'Participator' is the incontrovertible new concept given by quantum mechanics. It strikes down the term "Observer" of classical theory, the man who stands behind the thick glass wall and watches what goes on without taking part. It cannot be done, quantum mechanics says "

" The key to understanding the Universe is you"

" The distinction 'in-here', 'out-there' may not exist. What is 'out-there' apparently depends in a rigorous mathematics sense as well as a philosophical one, upon what we decide 'in-here'.

" What we experience is not external reality, but our interaction with it."

Max Delbrück

The feeling of absurdity evoked by the question "Mind from matter"? is perhaps similar to the feeling of absurdity with which we have learned to cope when we permit relativity theory to alter our intuitive concepts of time and space and quantum theory to alter our concepts of object and causality. If we can learn to accept this ultimate absurdity, there may be a hope of soon developing a formal approach that will permit a grand synthesis"

- What is a priori for the individual is a posteriori for the species. (Phylogenetic)

- "Every step of knowledge means taking off a pair of glasses. But we can never dispense with all of them" Konrad Lorenz

=

"But with science we can transcend our intuitions just as with electronics we can transcend our eyes and ears" Max Delbrück.

From the point of view of evolutionary epistemology, the principal lessons of both special and general theories of relativity is this:

"Human beings are organisms capable of manipulating internal representations of the world by means of concrete operations and can transcend the bounds of their biologically given perception. They can liberate themselves and construct a view of reality that conflicts with intuition, yet gives a truer, more encompassing view."

Max Delbrück

Intuition ≡ easily accomplished mental operation.

Heisenberg:

The concepts of 'soul' or 'life' does not occur in atomic physics and they could not, even indirectly, be derived as complicated consequences of some natural law. Their existence certainly does not indicate the presence of any fundamental substance other than energy, but only shows the action of other kinds of forms of modern atomic physics ... If we want to describe living or mental processes, we shall have to broaden these structures. It may be that we shall have to introduce yet other concepts

[Quoted in The Mind in the Mind
John. Barrow. p 303.
OUP. 1988]

Self

Vivekananda:

"The form is perceived and the eye is the perceiver.; the eye is perceived and the mind is the perceiver and the mind is perceived and the Witness (Self) is verily the perceiver. But the Witness is not perceived by any other"

SELF-CONSCIOUSNESS

From: Matter to Mind
J. G. Taylor
J.C.S. 9, No 4, 2002
p - 3-22

Dept. of Math,
King's College, Strand, London.

Mental States
|
'Naive' Level

- A person explores his immediate phenomenological experience and gives undirected report of it
- Alternatively a growing tradition of experts and Concepts is producing a more methodologically-based analysis of such immediate experience.

[Similar to Husserl, Heidegger, Sartre, Merleau-Ponty, Frank and Henry.]

Problem:
Language and tools to attack the question of SELF and Intentionality

- Alternate states of Consciousness - Yoga Meditation, Zen → PURE CONSCIOUSNESS
- Exploration of the Neural Architecture of the Brain - that create qualitative aspects of Conscious Experience.

—

- Naive Phenomenology:

gappy Series of eruptions of Consciousness from apparent Substrate of non-Consciousness.

(William James - Stream of C.
Buddhism - discontinuous feature.)

{Between moments of experience of Self
are gaps in which there is no Sense of Self
or of Separateness from what is experienced.

closer analysis — { absences between thoughts of few seconds. - I like myself and gain myself.

- Memory of a gap is there.

Neelon Cube experience. - one or the other but both at the same time.

Two forms of C — (i) Content is myself (as an object)
(ii) Contentless - (Pure Consciousness.) or Consciousness without contents. C

European Phenomenological School. - Husserl, Heidegger ...

"myness" of experience.

"To be self-aware is not to apprehend a PURE SELF Apart from the experience. - but to be acquainted with an experience in its first personal mode of given-ness - that is from "with-in" dimension of subjecthood — "ipseity"

- Self not distinct from experience.
- Experience IS and is present to itself
- Self in its most Original form - ipseity
- Ipseity is the intentional act's ~~of~~ awareness of itself.
- Owned and owner are identical.

Zahavi: How can a Self based on intrinsic structures be able to make contact with any external objects to imbue consciousness with intentionality?

No Answer yet!

Neural Correlates of Consciousness

(Conversation between C. Frith and S. Gallagher
JCS 10-9. No 4 (2002) p57– 80)

Fundamental Assumptions } If there is a change in the contents of consciousness, there must be a change in neural activity of some kind.

The opposite may not be true. There could be change in neural activity without change in C.

Only certain kinds of Neural Activity are associated w/ C.

Equivalently, how is it possible to Reconcile the phenomenon of constituted objects with that of self-manifesting Subjectivity?

Pure Consciousness:

PC is one in which contents dissolve away. —

- 'the Ultimate Being' in Meditative States.
- Absence of thought and Sensation
- Upanishads: One Remains Conscious. Becomes nothing but Consciousness itself

([Support - Zero oxygen in Isolation.
Imaging methods - Show distinct Regions)

—

Attention and the Brain

- Studies show how Unaware we are if we do not pay attention
  ↳ Selection of a part of a Scene at the exclusion of others

* Attention White necessary not Sufficient for C.
* Without it there is No C.

(bridge)
Brain ▨ Consciousness
?

According to Vedanta, there is no path to truth.
Truth is yourself. Not apart from you.
you have to recognise your intrinsic nature.
For this there are three methods
Karma yoga - action
Dhyana yoga - devotion
Gyana yoga - knowledge
} cater to different types of individuals.

Man

(mind-body-intellect)
matter
Subtle elements.
inert, insentient
No life

Self (Atman) (God?)
Life giving principle
Sentient.
(No life)

(Only Combination of the two gives rise to life,)
transcendental power.
which vitalizes the body.

Five organs of body
Five organs of perception.

Senses Send Stimuli
mind - integrator of experience.
intellect - discriminates and Responds. Right organs of action

Constantly changing.
you notice the change.
Change can only be w.r.t. something unchanging → This means there is something unchanging. This changeless factor is Self (Atman).

My body, my Mind, my intellect. → ∴ the possessor is different from body, mind, intellect. It is the I, the Self, the Atman.

Self in Advaita = Pure Consciousness.

Reality: That which exists in the past, in the present and in the future.
Therefore transients are not Real.
Waking State, Dreaming State, Deep-Sleep } all transient and therefore unreal.
The thing that persists in all the three states is Consciousness, your Self - your Atman.
Pure Consciousness is the Substratum of the three States of Consciousness.
Pure C + gross body → Waking
Pure C + Subtle body → Dream
Pure C + Causal body → Deep Sleep.

The Western philosophies are based mostly on the experience of the waking state only.
Vedanta takes up all the states.

"I" = Self. different from Waker, ~~Sleeper~~, dreamer., sleeper. that holds them together.
The State of Pure C is "Turiya" (=fourth)
you can know it only by experience of yourself.

Methods of gaining knowledge:
- Direct Perception : Pratyaksha
- Inference : Anumana
- Comparison : Upamana
- Tradition : Agama. (time-tested practices and teachings)

* Vedanta helps you to feel the light of Consciousness while you are groping here in the darkness of ignorance

"Elevated Mind"

Quantum Randomness and Consciousness

QR = We cannot predict which possibility will actualize. Identical situations give rise to different outcomes.

∴ Causes of any of QR will not lie in the physical world — no amount of physical examination will ever allow us to predict what an atom will do next.

∴ Ultimate cause of material phenomena is not material at all, but essentially stems from a mental realm.

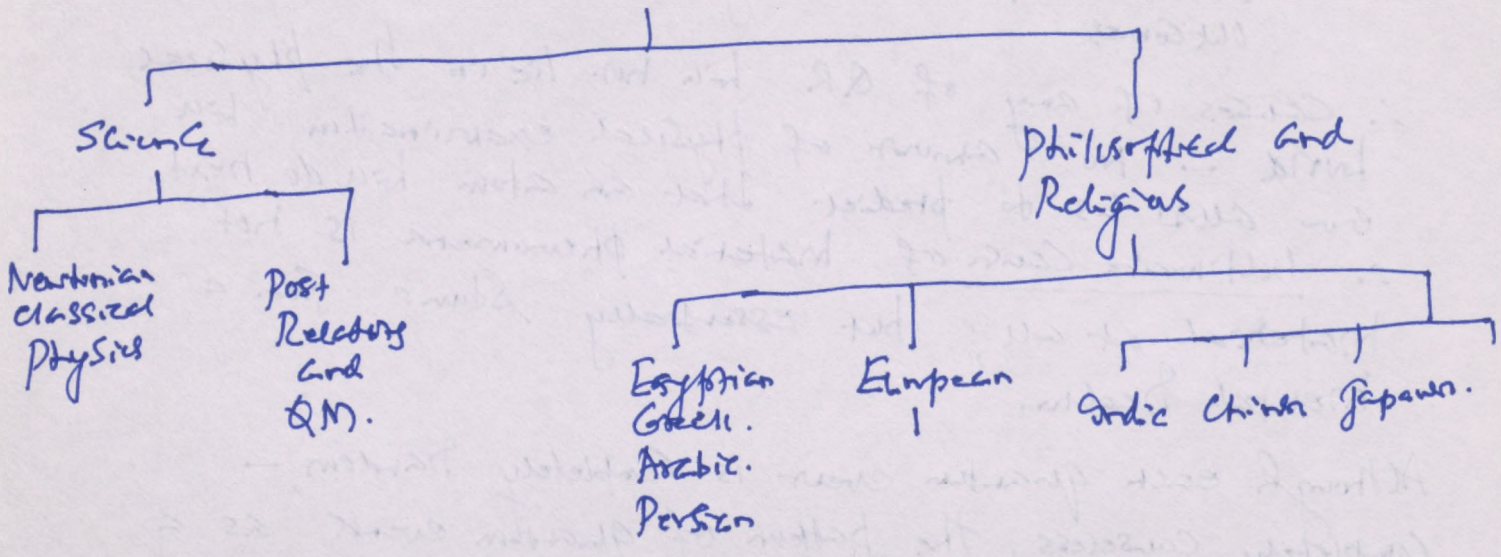
Although each quantum event is completely random, — completely causeless, the pattern of quantum events as a whole is constrained ~~by~~ statistically to follow the pattern of possibilities contained in the system's wave function. The pattern is precisely predictable, but each individual event is not.

Exerting free choice modified by statistical constraints may be compared to speaking or writing a language. (Bode's lab).

Heinz Pagels regards QT as the "Cosmic Code" — the language in which nature has chosen to express herself.

[Niels Herbert: Are the possibility waves - quantum possibilities specific statistics of a vast cosmic utterance?]

Do different Streams of knowledge Converge on the Same Ultimate Reality?



Vedanta: { Lord is Mithya (limited)
Brahman - ultimate reality

Heisenberg { Lord is real and Sole
The ultimate is just a
power of possibilities.

- Before an atom is looked at physicists describe atomic actions as "waves of possibility – a superposition of many possible atomic actions with in a range of variation set by Heisenberg's uncertainty principle.
- When observation is made one of the possibilities becomes real but QT does not tell which – only pure chance.

"
- the deep Substratum: it is made of tendencies, of possibilities, not actualities"
- "The Substratum's parts" are linked in a particular quantum way."

"... Scientific enquiry into the workings of the mind (study of consciousness) automatically means that human mental processes, human modes of acquiring knowledge are natural happenings in accordance with the causal laws as do all events in nature"

Peter Carruthers, Stephen Stich, and Michael Siegal in "The Cognitive Basis of Science" Cambridge University Press 2002. p. 3

From: Science, Order and Creativity { David Bohm and F. David Peat. Bantam Books (1987) (Elmer Lib)

P. Does mathematical formalism express the very Essence of our knowledge of Nature?

B. Pythagoras, Kepler - in the old times.
Recently - Dirac, Heisenberg, Feynman, Wigner.

Heisenberg: Intuition and imagination provide not a picture of Reality, but a mental display of the Meaning of Mathematics.

P.: Without the criteria of mathematical beauty - mathematical aesthetics, a great many discoveries would not have been made.

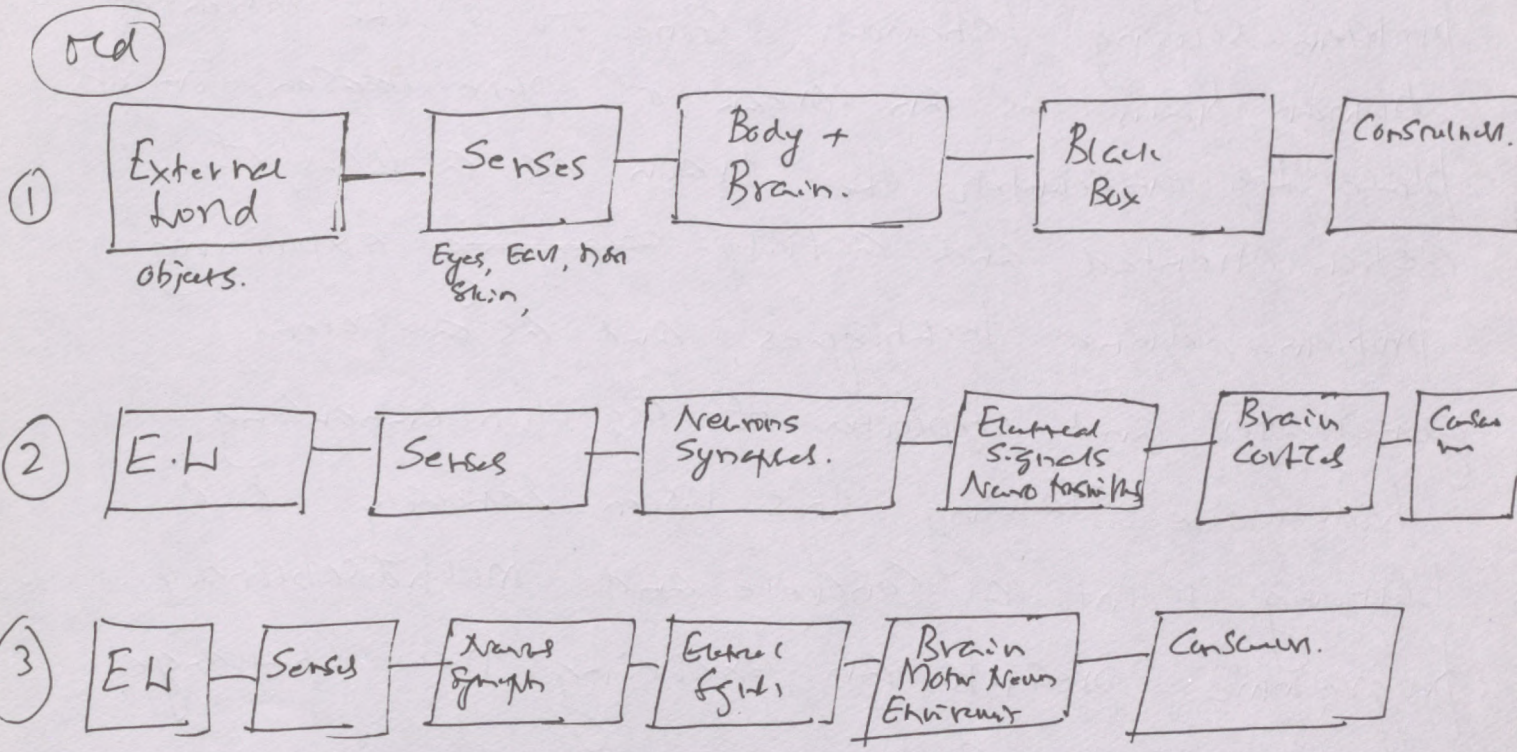
B: Mathematics has never the Sole Criterion.

P: M - the most abstract and logically Coherent way of thinking - open to free Creation and not bounded by experience of ordinary Reality

B.: Every kind of thought, M included is an abstraction

=

The World, Brain and Consciousness
(Channels of Communication)



We must not simply insist that the mental is fully determined by the physical. We must accept that our neural profiles are profoundly geared so as to press maximal benefit from the opportunities afforded by bodily structure, action, and the environmental surroundings

Biological brains are, at root, controllers of embodied action

"The simple almost commonsensical notion of the brain as a system that evolved in order to guide actions of embodied agents in rich real-world settings thus yields substantial and sometimes challenging fruit. Gone is the vision of the environment as simply a source of problem-specifying inputs and

an arena of action. Instead, both basic and imposed aspects of environmental order and complexity now emerge as fundamental components of natural problem-solving behaviour. Gone too is the vision of human brain as an organ of pure reason. In its place we encounter the brain as a locus of action oriented and activity-~~exploiting~~ exploiting problem-solving techniques, and as a potent generator and exploiter of cognition-enhancing hide-ware. Taking this vision seriously and turning it into a concrete and multidisciplinary programme, presents an exciting new challenge for the Science of Mind.

[From Andy Clark.
Daedalus. Spring 1998 p225-226]

How firm and how shaky are the foundations of modern Science ?

The impressive superstructure of Science and technology - the marvels and the horrors. - beneficial aspects of health, transportation, communication, habitats, medical, satellite and electronic technological - the new finds of molecular biology, the dna - the genetic code, the neurological, the new designer molecules - the nanotechnologies, IT, Computers, ..

atom bombs, icbm's, bio and chemical warfare, , AIDS's.

Be that as may -

Fundamental level - hierarchy of Science -

Bio - Chemistry - physics. - Elementary particles and their interactions - space-time -

the ultimate constituents of matter and radiation and the mechanisms of processes at various levels.

unsolved issues
limitations
unsolvable issues

- The Standard Model of Particle Physics.
- The Big Bang Model of Cosmology.
- Alfven's model. (Plasma Model)
- Steady State.

Meaning:

Jacques Monod (Monad?)

"But while myths, religions and philosophers did bring positive answers to the problem of meaning, and while it was believed that science would bring the final definitive solution, we now realise atleast that the problem of meaning is the one to which no scientific answer could ever be found.

Sperry

The meaning of message will not be found in the chemistry of the ink.

?

Memories are the only things that give meaning and identity to our lives.

Bohr
Pauli

While Pauli viewed observations as psychophysical events, Bohr viewed them as conditions which endow appropriate concepts with meaning.

"Forces exist in the natural world that act through the senses of the mind and 'move' people emotionally. They are as real as gravitation and they are certainly more than a metaphor. They need a name and the name is natural magic these forces exist in nature as real, as anything gets"

B.K. Ridley (p 208)

(On Science Thinking in Action

Routledge London & New York 2001.

People are moved in an emotional sense and it is in this sense that non-scientific forces exist they exist because human beings are conscious and self-aware and rationally aware of their environment. These human beings are yet composed of quarks, electrons and photons — nothing supernatural about them-