Signs of an Emerging Paradigm Shift

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Introduction

There are many 'anomalies' that are clearly proven to be part of our reality that persistently remain incomprehensible within the established paradigm. This is a sure sign that a paradigm shift is needed.

Fortunately there are many signs of an emerging paradigm shift at the core of theoretical physics. This article briefly highlights a few of these signs and touches upon questions such as; what realisations characterise it, what preconceptions does it challenge, what are its ramifications and what are the implications for authentic lines of enquiry that are currently considered to be fringe science or unscientific.

Quantum Mechanics and Naïve Realism

> "There is a major 'dangerous' scientific idea in contemporary physics, with a potential impact comparable to Copernicus or Darwin. It is the idea that what the physics of the 20th century says about the world might in fact be true." (C. Rovelli [1])

The most revolutionary things that physics has to say about the world come from quantum physics. Since it's emergence over 80 years ago quantum physics has challenged our common sense notions about the physical universe and the nature of physical systems. These challenges have been heroically faced by many quantum physicists, however there has remained a general acceptance that quantum physics cannot be understood.

> "The one thing that can be said against it is that it makes absolutely no sense!" (R. Penrose [2])

However, this attitude is gradually changing as physicists begin to realise the limitations of the established paradigm that prevent us from understanding quantum physics and many aspects of reality. There are certain assumptions

that we routinely and unknowingly make that present obstacles to accurate understanding. The issues of quantum measurement and complementarity highlight these false assumptions.

> "We have no satisfactory reason for ascribing objective existence to physical quantities as distinguished from the numbers obtained when we make the measurements which we correlate with them. There is no real reason for supposing that a particle has at every moment a definite, but unknown, position which may be revealed by a measurement of the right kind... On the contrary, we get into a maze of contradiction as soon as we inject into quantum mechanics such concepts as carried over from the language and philosophy of our ancestors... It would be more exact if we spoke of 'making measurements' of this, that, or the other type instead of saying that we measure this, that, or the other 'physical quantity'." (E. C. Kemble [3])

The false assumption that is being challenged is the cognitive habit and philosophical position referred to as naïve realism, also called direct or common sense realism. This is the idea that the mind perceives the world directly thus we experience the world *as it is* rather than just *as it appears* within the mind.

> " "[W]e have to give up the idea of realism to a far greater extent than most physicists believe today." (Anton Zeilinger)... By realism, he means the idea that objects have specific features and properties - that a ball is red, that a book contains the works of Shakespeare, or that an electron has a particular spin... it may make no sense to think of them as having well defined characteristics." (P. Ball [4])

It is not just particles and atoms that are governed by quantum mechanics.

> "Quantum mechanics is increasingly applied to larger and larger objects. Even a one-ton bar proposed to detect gravity waves must be analysed quantum mechanically. In cosmology, a wavefunction for the whole universe is written to study the Big Bang. It gets harder today to nonchalantly accept the realm in which the quantum rules apply as somehow not being physically real... Quantum mechanics forces us to abandon naïve realism." (B. Rosenblum and F. Kuttner [5])

Looking Beyond Naïve Realism

Naïve realism operates at the root of our minds and distorts our knowledge of the world, thus we mistakenly interpret the contents of our minds as an external material universe. By taking into account the role of naïve realism in previous interpretations of data and reassessing that data we realise that there is no empirical evidence for the existence of a 'material' universe. Undoubtedly something exists, however the true nature of that which we perceive and that by which we perceive is still an open question.

> "If there is anything to be learned from the long history of the epistemological debate, it is that the issue is by no means simple or trivial, and that whatever is ultimately determined to be the truth of epistemology, we can be sure that it will do considerable violence to our common-sense view of things... In science, irrefutable evidence triumphs over incredibility, and this is exactly what gives science the power to discover unexpected or incredible truth." (S. Lehar [6])

With this emerging paradigm shift cracks are appearing in the wall of denial maintained by established science and valid lines of enquiry that are currently ignored may "with a new paradigm, become the very archetypes of significant scientific achievement" (T.S. Kuhn [7])

Those of us involved with SSE know of many lines of enquiry that may benefit from such a paradigm shift, too many to mention here. Notably, the work of PEAR and ICRL has provided undeniable evidence that consciousness measurably influences physical processes.

> "The composite formal human/machine results are unlikely by chance to the order of 10^{-12}." (R.G. Jahn and B.J. Dunne [8])

Going Beyond Naïve Realism

The Mind and Life Institute, via its ongoing dialogue between scientists and Buddhists is discovering compelling parallels between cutting edge science and ancient wisdom.

> "Emptiness (*śūnyatā*) is a key concept in Buddhism... Emptiness does not mean 'nonexistence' but rather that all entities, including ourselves, lack the independent identity we tend to assume that they possess. Quantum theory has replaced the mechanistic worldview of nineteenth-century physics with a view that offers far less support to naïve realism." (W.L. Ames [9])

The Lankavatara Sutra provides evidence that Buddhism clearly recognises naïve realism and its distorting effect on our knowledge. I quote this at length due to the profound insights that it offers. The suggested ramifications of overcoming naïve realism are profound and cannot be comprehended from within a naïve realist paradigm.

> "So long as people do not understand the true nature of the objective world, they fall into the dualistic view of things. They imagine the multiplicity of external objects to be real and become attached to them and are nourished by their habit energy. Because of this system of mentation, mind and what belongs to it is discriminated and is thought of as real; this leads to the assertion of an ego-soul and its belongings, and thus the mind-system goes on functioning. Depending upon and attaching itself to the dualistic habit of mind, they accept the views of the philosophers founded upon

these erroneous distinctions, of being and non-being, existence and non-existence, and there evolves what we call false-imaginations...

False-imaginations rise from the consideration of appearances; things are discriminated as to form, signs and shape; as to having colour, warmth, humidity, mobility or rigidity. False-imagination consists of becoming attached to these appearances and their names...

The five sense functions and their discriminating and thinking function have their risings and complete ending from moment to moment... By setting up names and forms greed is multiplied and thus the mind goes on mutually conditioning and being conditioned. By becoming attached to names and forms, not realising that they have no more basis than the activities of the mind itself, error arises, false-imagination as to pleasure and pain arises, and the way to emancipation is blocked...

By the cessation of the mind-system as a whole is meant, the cessation of discrimination, the clearing away of the various attachments, and, therefore, the clearing away of the defilements of habit-energy in the face of Universal Mind which have been accumulating since beginningless time by reason of these discriminations, attachments, erroneous reasonings, and following acts... Getting rid of the discriminating mortal-mind is Nirvana.

But the cessation of the discriminating-mind cannot take place until there has been a "turning about" in the deepest seat of consciousness. The mental habit of looking outward by the discriminating-mind upon an external objective world must be given up, and a new habit of realising Truth within the intuitive-mind by becoming one with the Truth itself must be established.... With the ending of pleasure and pain, of conflicting ideas, of the disturbing interests of egoism, a state of tranquillisation will be attained in which the truths of emancipation will be fully understood..." (Lankavatara Sutra [10])

Exactly what overcoming naïve realism will mean in our lives, science and civilisation, cannot be understood from within a naïve realist paradigm. However we may be on the verge of a paradigm shift that will lead to such an understanding.

John Ringland has a BSc in physics and computer science, however decided to avoid the pressure to conform to a materialist paradigm and has since worked full-time for 9 years as an independent system scientist whilst also pursuing yoga, self-enquiry and comparative metaphysics. He is currently writing a book that expresses the core results of his research: "System Science of Virtual Reality: Toward the Unification of Empirical and Subjective Science".
(anandavala.info/SystemSimulation.pdf)

Part one is complete and develops a mathematical model of general systems and massively parallel computational processes. From this, the mathematical

foundations of quantum mechanics are derived, thus situating quantum mechanics within a broader system theoretic context. The model describes a reality generative process that animates virtual systems, which experience a tangible (seemingly physical) universe. In this context the issues of naïve realism and consciousness are discussed. Part two examines virtual metaphysics and virtual science from the perspective of the virtual systems and discusses the possibility of the unification of empirical and subjective science.

All scientific work is in need of peer review, which can be difficult to obtain regarding subjects that challenge the established paradigm, hence he brings this work to the attention of SSE members and would appreciate feedback at (john.ringland@anandavala.info).

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